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Households' saving and the real rate of interest: the Italian experience, 1970-1983

HOUSEHOLDS' SAVING AND THE REAL RATE OF INTEREST: THE ITALIAN EXPERIENCE, 1970-1983.

by

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The aim of the paper is to assess the theoretical and empirical importance of the real rate of interest on households' financial savings, as a switching device between the accumulation of real and financial assets. We examine first the correct integration of stocks of real and financial assets and flows of income and expenditure through the definition of the private sector's real wealth and of the public sector budget constraint and provide a brief summary of the evolution of sectoral saving and financial balances in Italy since 1970.

We then try to identify the functional form of households' savings in financial assets, for the late 1970s and early 1980s, using both inflation adjusted and unadjusted disposable income, and detect noticeable effects of the real rate of interest on financial savings. The final section contains some considerations on the economic policies pursued with the aim of reconciling the demand for and the supply of funds by different sectors.

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HOUSEHOLDS' SAVING AND THE REAL RATE OF INTEREST: THE ITALIAN EXPERIENCE, 1970-1983.

1. Some introductory considerations

1.1 The 1970s were characterised by two major economic phenomena which, albeit to different extents, were present in all the industrial countries: (a) a sharp increase in public-sector borrowing requirements, and therefore in the ratio of the stock of public debt to the flow of income, and (b) a significant increase in the average rate of inflation.

This made it necessary to re-examine some key simplifying assumptions often implicitly introduced in traditional macro-economic models. The correct integration of stocks of real and financial assets and flows of income and expenditure requires explicit consideration of the definition of the private sector's real wealth and of the public-sector budget constraint. However, the implications for the analytical treatment of the key macro-economic relationship - the saving (or the consumption) function - do not seem to have been fully explored.

Planned savings equal desired accumulation of wealth, which is given in turn by the difference between end-of-period and beginning-of-period real stocks. The difference is accounted for by two components - capital gains or losses and the flow of new savings - i.e. the part of the flow of disposable income of the private sector that is allocated to the accumulation of real wealth. In principle, this aggregate approach can be regarded as the result of summation over all assets. Portfolio choice and savings would then reflect simultaneous and integrated

decisions, with perfect fungibility between (net) capital gains on existing assets and new (net) acquisitions 1/.

Before addressing the question of fungibility, it is worth recalling briefly some of the implications of this approach for the analysis of the interactions between the private and the public sector. To simplify, let us assume for the time being that the private sector can be consolidated and that the price of shares (claims on productive capital) in terms of currently produced output cannot vary.

On these assumptions we have the following identities:

(1) $$W = BM+B+K$$

or

(1') $$w = BM/P+B/P+K/P$$

where W and w denote the stock of current wealth in nominal and real terms, respectively, BM and B represent the stocks of monetary base and government bonds (interest-bearing securities) issued by the public sector (including the central bank) and held by the private sector, and K is the stock of physical capital at current prices, P;

(2) $$S = \Delta W = P\Delta w+w\Delta P = S'+w\Delta P$$

where total savings in nominal terms (S) are the change in nominal wealth and can be divided into the real change at current prices (S') and the increase in the current

value of the previous stock of wealth.

(3) $$S' = YD^H - C$$

represents the budget constraint of the private sector, where YD^H denotes nominal private disposable income, adjusted for capital gains or losses, and C nominal private consumer expenditure. Correspondingly, the budget constraint of the public sector can be written as follows:

(4) $$G-T(Y)+iB = \Delta B + \Delta BM$$

Assuming there is no investment by the public sector, expenditure on goods and services by the Government (G) less taxes net of all transfer expenditures (T), except those connected with interest payments on government debt (iB) 2/, generates the sector's financial balance, which must be covered by changes in the private sector's holdings of base money and/or bonds.

It needs to be stressed that, by writing the budget constraints of the private and public sectors in the above form, we are implicitly assuming that disposable income is affected by the ratio of bond to money-financing, responding to changes in interest rates 3/.

It is easy to show that the definition of the disposable income of the private sector that is consistent with the scheme outlined in the above equations is different from the traditional one, since a link has been introduced between stock of wealth and flow of income:

(5) $$YD^H = Y-T+(i-\dot{p})B-\dot{p}BM$$

where $\dot{p} = \Delta P/P_{-1}$ is the rate of inflation.

If savers abstain from current consumption with the aim of achieving a desired level of wealth - and this is consistent with any of the three major motives for saving: life cycle, bequest, precaution - in principle interest rates will play a crucial role in the saving process, since current wealth should equal the present value of future incomes. Theoretical analysis indicates, however, that the net impact of interest rates on current savings is the resultant of substitution effects on the one hand and income and wealth effects on the other, and these ordinarily act to offset one another. The above propositions can, in principle, be assessed empirically, though this is a rather difficult assignment, for two main reasons. Firstly, measuring ex ante real interest rates involves substantial difficulties 4/. This is especially true if it is held that the income and intertemporal substitution effects should be analysed with reference to the concept of a "permanent" real interest rate, as is done for income. Secondly, national accounts have been developed using the traditional Keynesian flow approach, which entails significant problems in devising an adequate model to integrate flows of funds, income and wealth at constant prices.

The necessary disaggregation between households and enterprises involves serious difficulties, at least in the case of Italy, as described in the Statistical Appendix, Part 1. Some apparently innocuous assumptions used in standard macro-models do not stand up to scrutiny. The major stumbling block is the assumption that all capital is held in the form of shares, with a well-defined market price. Households' savings are in fact primarily directed towards

investment in housing. Productive capital, on the other hand, is not owned wholly by the private sector, so that, in principle, taxation rules should also allow for the revenues of government capital. Quite apart from the problem of allowing for the price of equity to vary with respect to reproduction costs (Tobin's well-known q-theory of productive capital investment), a strong case can be made against the short-term fungibility of new asset purchases and capital gains throughout the full portfolio spectrum. Housing investment can really be regarded as "locked in"; in other words, we can expect that consumption will not respond to changes in the real value of wealth in housing in the same way as for other types of wealth. The adjustment of households' portfolio to net real capital gains or losses on the share of wealth held in houses can be very small within a given time horizon, compared with holdings of other assets. This point is supported by the empirical evidence presented in Section 3 below.

It is therefore of great interest to policy-makers to try to identify the functional form of a specific segment of total saving, i.e. households' savings in financial assets. In particular, one can try to compare a traditional formulation relating financial savings to disposable income and real interest rates with an "adjusted" formulation, where financial savings and disposable income are appropriately corrected. Here again serious analytical as well as empirical difficulties are encountered. Mainly because of data availability problems, the correction generally takes account only of the expected loss in the purchasing power of households' beginning-of-period net financial wealth, and basically amounts to replacing the nominal (average) interest rate with a real one in the computation of the interest

component of disposable income."Adjusted" disposable income is usually computed as:

$$(6) \qquad YD^H = YD - g\,\dot{p}^e\,W^{FA}$$

where:

YD = households' disposable income according to the national accounts;

$\dot{p}^e$ = expected inflation rate;

W^{FA} = households' net financial wealth

and g is a parameter which takes into account not only the degree of money illusion, but also the measurement errors in $\dot{p}^e$ and W^{FA}. These are mainly due to the discrepancies between the classification of households in the national accounts and in the financial statistics.

A further problem stems from the assumed constancy of g, whereas the degree of "inflation awareness" is likely to have increased during the 1970s. All these factors help to account for the range of the estimated g in the consumption functions, which goes from 0 to 1.16, although most estimates fall in the lower half of the range 5/.

An important analytical distinction, as has been indicated, is that between a "correction" made using a current real interest rate and one made using a "permanent" real rate. The former procedure is valid in preparing flow-of-funds accounts at constant prices, while the latter is needed to estimate "permanent" income, and conforms better to Hicks' original definition of income 6/. Work on the consumption function generally adopts the first method of correction and utilises distributed lags over current income thus defined. Implicitly, then, this procedure makes use of the second definition of the "correction" without having to select a value for the permanent interest rate

based on historical experience.

In the case of Italy, the measurement errors due to the different definitions of households in the national accounts and financial statistics are a major cause of the difficulties encountered in determining empirically whether there is (at least partial) money illusion in the consumption function. On the other hand, there are good reasons for arguing against complete money illusion, in particular when account is taken of the increasingly sophisticated behaviour of households in the financial markets and of the fact that the interest component of households' disposable income has increased from 0.2 per cent in 1970 to 7.6 per cent in 1983 (for some evidence on this issue see Marotta, 1984).

An awareness of the formidable problems which are encountered in attempting to throw any empirical light on these questions should not, we believe, cause them to be ignored. In this spirit, in Section 2 we provide a summary of the evolution of sectoral saving and financial balances in Italy since 1970. In Section 3 we submit some preliminary empirical evidence on these issues relating to the late 1970s and early 1980s. Section 4 contains some reflections on the economic policies pursued during the same period with the aim of balancing the demand for and the supply of funds by different sectors.

2. Sectoral savings and financial balances: 1970-1983.

A prominent feature of the Italian economy in the 1970s and the early 1980s have been the increasing financial imbalances of the public and household sectors. The allocation of savings and investment to the main sectors is made difficult by substantial statistical discrepancies between national accounts and financial statistics; in addition, the estimates of residential investment by households are not entirely reliable. In spite of these problems, the picture which emerges from Table 1 clearly shows three main phenomena:

a) the public sector's financial balance deteriorated sharply during the period under consideration. Its rate of saving was positive in 1970; during the period 1981-83, in contrast, its dissaving averaged over 7 per cent of GDP. With some increase in the rate of (what is statistically defined as) government investment, the financial deficit of the sector jumped from 5.5 per cent of GDP in 1970 to nearly 14 per cent in the last three years;

b) the personal sector consistenly had a very high saving rate; its financial surplus was also sizable, and significantly larger in 1983 than in the early 1970s. The increase was due partly to a higher saving rate, and partly to a decline in the investment rate;

c) the corporate sector - whose accounts are affected most by discrepancies - recorded a smaller financial deficit in 1983 (3.7 per cent of GDP) than in 1970 (4.9 per cent). After years of severe deterioration, the

corporate-sector deficit could be reduced, but mainly at the expense of investment spending.

We now turn to a closer analysis of the household sector, partly in order to allow for the adjustment required to take inflation into account. In Table 2, gross saving, financial saving and the inflation adjustment on financial assets are shown as a percentage of households' gross disposable income. The thriftiness of Italian households is clearly demonstrated by these figures: the (unadjusted) saving rate remained above 22 per cent, with a peak of 27.2 per cent in 1978. The (unadjusted) financial saving rate recorded larger fluctuations, with a minimum of 12.4 per cent in 1970 and a maximum of 19.8 per cent in 1983.

As has been explained above, nominal savings should be adjusted in periods of high and variable inflation: the relevance of the adjustment is shown in the third column of Table 2. The loss of purchasing power on financial wealth was 4.5 per cent of disposable income in 1970, and reached peaks of 20.5, 17.3 and 18 per cent in 1974, 1976 and 1980 respectively.

The "corrected" saving and financial saving rates are therefore much more variable than the unadjusted values. In particular, the rate of saving in financial assets at constant prices was over 10 per cent in 1971 and 1972, reached a minimum of -7.6 per cent in 1974 and fluctuated widely between 1975 and 1979. From 1980 to 1983 the rate climbed from -2.9 to 8.1 cent: the significance of this very sharp increase will be discussed below.

Data on saving rates and financial surpluses and deficits are not homogeneous in different countries; comparisons must therefore be made with great care. Table 3, which presents average values for the 1970s, nonetheless

confirms the view that the household sector in Italy has a very high propensity to save. In nominal terms, the ratio is higher in Italy than in Japan, although the reverse is true when adjustment is made for inflation.

As has been indicated, the deficits of the public sector are the main counterpart to the very large surpluses of the household sector. In nominal terms, both are blown up by inflation. When account is taken of the budget constraint at constant prices, it can readily be seen that the change in the volume of public debt is given by the deficit at constant prices minus the "monetary erosion" (loss of purchasing power) that the initial stock of debt undergoes during the reference period.

The size of this adjustment in the 1970s is shown in Chart 1, which depicts the nominal borrowing requirement of the public sector and the change in the corresponding real debt. The area between the two lines represents the monetary erosion, which increases, as a ratio to GDP, from values of 1-2 per cent in the 1960s to 5-10 per cent in the last decade.

Table 4 provides quantitative evidence of both the monetary erosion and the inflation tax, computed as the algebraic sum of the monetary erosion and the nominal interest payments on the debt. According to these figures, the maximum values of the inflation tax were recorded in 1974, 1976 and 1979-80 (5.9, 4.7, 2.5 and 2.8 per cent of GDP). Thereafter the tax gradually dwindled, and in 1983 it changed sign and turned into a net transfer of about 1 per cent, as interest rates became positive in real terms.

Nominal and real yields on total financial assets and selected components and the rate of change of house prices are shown in Table 5. Expected real rates of interest on Treasury bills and the real cost of bank

borrowing are also shown in Charts 2 and 3. Nominal yields tended to rise in the 1970s as inflation increased; there were, however, important lags, especially when inflation peaked. The experience of the 1980s is very different. With a reduction in price pressures, real rates increased substantially, especially on tax-free Treasury paper and on commercial-bank loans. The rate of increase of house prices - which roughly proxies the yield on the real assets of households - followed an inverse course: during the 1970s it exceeded the rate of consumer price inflation. Recently the situation has changed abruptly and the differential in 1984 has turned in favour of financial assets.

The changes in real interest rates on financial assets and in real yield differentials entailed substantial changes in the pattern of saving of the household sector, as will be indicated in the following two sections. As regards the allocation of financial saving in particular, Table 6 and Chart 4 show that as real yields on government paper increased, in absolute as well as relative terms, a growing proportion of saving went directly into Treasury paper; in 1983 this proportion was about one-half.

3. Financial savings, interest rates and inflation: some empirical evidence.

3.1 A simple "traditional" flow approach to the estimation of the propensity of households to financial saving (FS/YD) is to make it depend on the level of the own real after-tax rate of return (RFA) 7/:

$$(7) \qquad \frac{FS}{YD} = b + c\ RFA.$$

Alternatively, the own real yield could be replaced by the differential between the average rate of return on financial wealth and that on real assets (DIF):

$$(8) \qquad \frac{FS}{YD} = b' + c'\ DIF.$$

As is explained in detail in the Appendix, the rate of return on real assets is proxied in this study by the change in the price of houses. It is consequently subject to systematic errors of measurement, as rents and taxes are not taken into account 8/. We therefore view the empirical estimates of equation (8) with great caution.

Table 7 reports the econometric findings derived from equations (7) and (8), obtained by adopting the two extreme assumptions of (a) no inflation correction (COR) to income and financial saving and (b) full adjustment of both these items for purchasing-power losses on financial assets. In addition, allowance has been made for the effects of past as well as current values of the explanatory variables by means of Almon polynomials 9/.

The fit of all four equations is good. However,

the adjusted equations perform slightly less well than the unadjusted ones 10/. In all instances, a positive and significant impact of real rates on financial saving can be detected, but the effect differs considerably in the various equations.

The annual amount of additional financial savings in 1983 lire that would follow a permanent increase of one per cent in the real rate of interest on financial wealth ranges from 1,251 to 7,930 billion lire. The first estimate is obtained in the case of no inflation adjustment and considering the yield differential, the second with full inflation correction and considering the own yield.

While on a priori grounds we expect a downward bias of the c coefficient to be present in the unadjusted estimates, in Table 7 11/ we would also expect the correction, by avoiding specification errors, to improve the overall performance of the econometric estimates. However, the degree of awareness of the inflation correction is likely to have increased over time. We are currently investigating whether this belief is supported by empirical evidence by means of techniques that allow for time-varying parameters.

3.2 Also in view of the difficulties just mentioned, it seemed appropriate to test a different approach to the problem. This time, stress has been laid on the influence of stocks of financial and non-financial assets in determining the allocation of savings. It should be noted that in the following empirical analysis non-financial wealth is proxied by the stock of houses, which is assumed to be entirely owned by the household sector. We stress that, in addition to the incompleteness of this definition, this variable is subject to errors in measurement.

Instead of assuming that households save the amount required to restore the level of financial wealth at constant prices, before taking any other decision on how to allocate their income, it can be argued that they decide about consumption before choosing how to allocate their savings among alternative assets. Although both hypotheses might be considered equally arbitrary in that they transform a simultaneous process of allocation into a sequential one, the second might be closer to reality. Indeed, it seems less arbitrary to establish some socially or psychologically predetermined level of consumption rather than an essential level of financial wealth.

If households determine first their consumption and then the allocation of their savings, decisions regarding the latter will be influenced by past accumulation of real and financial wealth. If W is total wealth, and W^{FA} and W^{H} are net financial and non-financial wealth respectively, the basic hypothesis is that, for a given amount of total wealth, the desired amounts of the two types of asset are functions of the differential between their rates of return, denoted by DIF, and possibly of other variables:

$$(9) \qquad W^{FA*} = aW = (a_o + a_1 DIF + \ldots)W$$

$$(10) \qquad W^{H*} = bW = (b_o + b_1 DIF + \ldots)W$$

where $a + b = 1$.

Given the desired level of financial and non-financial wealth, the actual values will be functions of their pre-existing values, if we add the hypothesis that adjustment to desired values takes time. Among several possible representations of the adjustment process 12/, we have chosen the following:

$$(11)\quad \frac{W^{FA}}{W} - \frac{W^{FA}_{-1}}{W_{-1}} = f_1\left(\frac{W^{FA*}}{W} - \frac{W^{FA}_{-1}}{W_{-1}}\right) + f_2\left(\frac{W^{H*}}{W} - \frac{W^{H}_{-1}}{W_{-1}}\right)$$

which, because of the budget constraint and recalling equation (9), can be written as:

$$(12)\quad \frac{W^{FA}}{W} = fa_o + fa_1 DIF + (1 - f)\frac{W^{FA}_{-1}}{W_{-1}}$$

where $f = f_1 - f_2$ 13/.

How can the effects of inflation be introduced into equation (12)? In steady state the price of non-financial wealth will vary at the same rate as other prices and the price of financial assets will not change, because of the constancy of both real and nominal interest rates. The equilibrium allocation between financial and non-financial assets will be ensured by the difference between the after-tax nominal rates of return on financial and non-financial wealth (including capital gains) being just enough to compensate for the lower degree of liquidity of the second type of asset.

With non-zero inflation the nominal value of real assets will tend to rise in relation to that of financial wealth. As a consequence, assuming that interest income is not immediately reinvested, at time t, when a new decision about the allocation of wealth has to be taken, the distribution of wealth inherited from the past will be different from W^{FA}_{-1}/W_{-1}, i. e. from the distribution resulting from the allocation process of the previous period.

Denoting the rate of change of prices of financial and non-financial wealth by $\dot{p}_{FA}$ and $\dot{p}_{H}$, respectively, the inherited end-of-period distribution of wealth will be equal to:

$$(13) \qquad \frac{W^{FA'}_{-1}}{W'_{-1}} = \frac{W^{FA}_{-1} + \dot{p}_{FA} W^{FA}_{-1}}{W_{-1} + \dot{p}_{FA} W^{FA}_{-1} + \dot{p}_{H} W^{H}_{-1}}$$

With a positive rate of inflation the value of $W^{FA'}_{-1} / W'_{-1}$ will always be lower than that of W^{FA}_{-1} / W_{-1}. If we assume that households take $W^{FA'}_{-1}/W'_{-1}$, instead of W^{FA}_{-1}/ W_{-1}, as the starting point for their allocation decisions, equation (12) becomes:

$$(14) \qquad \frac{W^{FA}}{W} = vb_0 + vb_1 \, DIF + \ldots + (1 - v) \frac{W^{FA'}_{-1}}{W'_{-1}}$$

The empirical results obtained with the model represented by equations (12) and (14) are reported in Table 8. The first two equations do not contain any adjustment for inflation. They differ in that the real interest rate is used in the first and the rate differential in the second. Both of them produce very poor and implausible values of the estimated coefficients; the standard errors are around 3 per cent of the dependent variable. Transforming them into 1970 billion lire in order to compare them with the corresponding figures of the equations in Table 7, the standard errors turn out to be about 2,000 billion, four times those of equations (7.1) and (7.2), and nearly 80 per cent of the average value of financial savings over the sample period. The estimated speed of the adjustment process oscillates between 22 and

30 per cent per quarter, values which seem improbably high. As already pointed out in the first section of the paper, the reallocation process between houses and financial assets should be very slow.

When these results are compared with those of equations (8.3) and (8.4), which reproduce the inflation adjusted model of equation (14), a substantial improvement is found. One difference between the second pair of equations and the first is the change in the rate of unemployment among the regressors; however, this variable, although significantly contributing to the performance of equations (8.3) and (8.4), is by no means essential to the above-mentioned improvement. The standard errors are reduced to roughly the level of the best equations of Table 7, and are lower than those produced by introducing the inflation adjustment in the equations of that table. The speed of the adjustment process is greatly reduced, in line with our "a priori" expectations, and there are no signs of residual autocorrelation, denoting an overall improvement in the specification of the saving behaviour of households. The effect of a one per cent permanent increase in the average real rate of interest on households' financial assets is to increase financial wealth by 2,000 billion lire in the first year and by 7,000 in the long run (using end-1983 values of the stocks as a reference for our calculations).

3.3 The results described in the previous pages can be summarised as follows:

a) changes in the real rate of interest exert a noticeable effect on financial savings. This effect is partly due to a reallocation of existing wealth between financial and non-financial assets and partly to a change in the

allocation of new savings. The two different approaches tested produce results which are not directly comparable and have to be considered as provisional. However, using 1983 values as a reference for our calculations, an increase in the real average rate of return on financial assets would cause financial savings to increase from about 2,000 (eqs. 7.1, 8.3 and 8.4) to about 7,500 billion lire (eq. 7.3) in the following year;

b) the strong theoretical case for adjusting for the effect of inflation in order to correctly specify the decisions-making process of households as regards saving is difficult to test. Nonetheless, when the decision-making process of households is formulated in a way which explicitly considers the value of the existing stock of wealth, adjusting for inflation makes a significant contribution to both the fit of the equations and the plausibility of the estimates.

4. Policy considerations and conclusion.

In this paper we have tried to assess the theoretical and empirical importance of the real rate of interest on financial investment as a switching device between the accumulation of real and financial assets by the household sector.

During periods of partial monetary accomodation in the 1970s, the expansion of credit, deposits and the monetary base was associated with strongly negative real rates of interest; savers sought to get out of financial assets, and shifted mainly towards housing investment, but also towards consumer durables. Enterprises found it profitable to build up inventories of imported raw

materials and semi-manufactured goods, with adverse consequences for the balance of payments.

Econometric evidence cannot fully capture these developments, mainly because the above-mentioned disequilibrium conditions manifested themselves in three specific and relatively short periods. At the turn of 1972-73 and of 1975-76 and in the second half of 1979 a very strong acceleration was recorded in consumption, imports and inflation. This was accompanied by an expansion of credit and deposits and by high negative values of both the real cost of bank loans and the real yield on bank deposits, as shown in Table 9. The substitution effect resulting from negative real rates of interest - which averaged -9 per cent on loans and -6 per cent on deposits during these three periods - dragged the economy into serious external imbalances and led to sharp falls in the exchange rate, which fed back onto prices.

On the other hand, the steady process of monetary restriction in the 1980s provides evidence of the effectiveness of high real rates in raising households' propensity to accumulate financial assets. As can be seen from Chart 5, in 1980 - when the real yield on financial assets was around -8 per cent - the fraction of disposable income devoted to financial saving was around 3 percentage points below that required to maintain the purchasing power of the initial stock of financial assets. In 1983, when rates climbed back to about zero in real terms, the share of income allocated to financial asset accumulation was 5 percentage points above that required to restore the initial purchasing power.

The high real yields on government paper which emerged in the financial markets as a result of the pressure stemming from a very large demand for funds by the

Treasury and a moderate growth in the monetary base helped to contain households' final expenditure, favouring their accumulation of financial assets, and notably of government paper, as was shown in Section 2. The private sector's holdings of domestic financial assets rose as a ratio of GDP from 1.10 in 1981 to 1.20 in 1983, as shown in Table 10, and is expected to increase to 1.25 by the end of 1984 and to 1.32 by the end of 1985. These two values are the highest recorded by this series, which dates back to 1960.

Thus we return to our starting-point: the intermingling of monetary and fiscal policy in the Italian experience (see Masera, 1984). It must be stressed that under present circumstances it would not be possible to reduce the short-term costs of the adjustment needed in the Italian economy by resorting to the inflation tax again. Quite apart from any other consideration, nearly all government debt is now either short-term or at variable rates of interest. In addition, savers have become extremely alert to the real return on the assets in their portfolios. A renewed acceleration of prices would push them away from financial assets into housing, consumer durables and foreign assets. Nowadays there is no guarantee that, should the economy start off again on an inflationary path, the rate of price changes would not accelerate above the levels reached in the 1970s.

It is also evident, however, that the present situation is not a stable one; in particular, we do not believe that a stringent and rigorous monetary policy can suffice to set public finances on a sound footing. Beyond the short and medium term, real rates of interest on the government debt which exceed the sustainable potential rate of growth of the domestic economy pose problems of stability. In the specific case of Italy this risk is

aggravated by the size of the public debt, which is roughly equal to 90 per cent of GDP. It is also clear that the wealth effect is bound to make itself felt, together with the desire to maintain a balanced composition of portfolios.

In conclusion, time has been and is being bought to make it possible to address the basic problem of reducing the budget deficit net of interest payments. Medium-term scenarios suggest that we are well ahead of the point of no return, but this should not lead to any laxness. As was pointed out by Governor Ciampi in the 1983 Annual Report: "A programme of action must be devised as a matter of urgency to eliminate the imbalance in public finances that has built up over the years; this should comprise measures to curb the growth in expenditure, increase revenues and limit the public debt and the debt servicing burden and should be constructed in such a way that they reinforce one another".

Statistical Appendix

1. Sectoral definitions in the Italian National Accounts and flow-of-funds statistics.

The different definitions of the three main sectors - households, firms and public sector - in the national accounts and in the financial accounts help to explain most of the major discrepancies between the net lending/borrowing figures (basically gross saving minus gross investment expenditure) and the financial surpluses/deficits.

The main differences can be summarised as follows:

- Households: in both classifications this sector is partly obtained as a residual item. According to the flow-of-funds statistics, it includes only private households and non-profit-making bodies. In the national accounts, the sector also includes small unincorporated enterprises - the border line being enterprises with less than 20 employees in agriculture, less than 50 employees in services and less than 100 employees in industry - whereas it excludes non-profit-making bodies.

- Firms: the firms sector in the financial accounts comprises all enterprises - incorporated and unincorporated, private and public - but excludes autonomous agencies, banks, special credit institutions and insurance companies. In the national accounts, in contrast, the sector excludes all financial enterprises and the small unincorporated ones in the household sector, but it

includes all but one of the main autonomous agencies.

- Public sector: the discrepancy between the national and financial accounts is due largely to the treatment of the autonomous agencies: the former include just two of them, whereas the latter contain the whole set.

In the paper we have tried, where possible, to harmonize the different classifications as follows:

a) our household sector, following the financial accounts, is obtained by aggregating the household sector and the non-profit institutions ("Istituzioni sociali private"). Thus, any difference between the financial and national accounts figures should be accounted for only by small unincorporated enterprises;

b) we have deducted from the firms sector (national accounts) the gross saving and investment of the autonomous agencies, and have imputed them to the public sector. Thus, apart from some accounting adjustments relating to the treatment of the actuarial reserves of some public social security funds, the two classifications should correspond.

For a detailed examination of the issue see:

ISTAT, Contabilità Nazionale - Fonti e Metodi, Roma, 1983.

M. ERCOLANI-F. COTULA, "I Conti Finanziari della Banca d'Italia", Ente L. Einaudi, Quaderno di Ricerche n. 4, Roma, 1969.

2. Definitions and sources of the main annual variables

Households' gross disposable income (in billions of lire):the sum of final consumption expenditure and gross saving, including the change in actuarial reserves for severance pay.
Sources: ISTAT, Annuario di Contabilità Nazionale, ed. 1983 and, for the years 1981-83, Bank of Italy, Appendix to the Annual Report for 1983.

Rate of return on households' financial wealth: weighted average of the nominal rate of return (net of taxes) on net financial assets, excluding shares, atypical securities, bankers' acceptances, actuarial reserves and assets denominated in foreign currency.
Source: Bank of Italy

Rate of inflation: annual average percentage change in the consumer price index.

Inflation adjustment (in billions of lire): loss in purchasing power of the domestic net financial assets owned by households, calculated as:

$$\text{Infl. Adj.} = \dot{p}\ W_{-1}^{FA} + \dot{p}_s\ FS$$

where: $\dot{p}$ and $\dot{p}_s$ are the twelve-month and six-month percentage changes in the consumer price index and W^{FA} and FS are the end-of-year stock and the flow of net

financial assets respectively.
Source: Bank of Italy.

Rate of change in house prices: this is taken as a proxy for the rate of return on houses. The "price" is actually a weighted average (the weights being the percentages of home-owners and tenants) of the values imputed by the residents to their own houses. All the information comes from the Bank of Italy's annual survey of households' incomes and savings. As the answers are taken to relate to the end-of-year situation, the rate of change is calculated on mid-year centred average values. For further details, see Lecaldano, Marotta and Masera, 1984.

3. Definition and sources of the variables used in the equations of Tables 7 and 8.

FS = households' acquisition of financial assets, excluding shares, actuarial reserves, atypical securities, bankers' acceptances and assets denominated in foreign currency (in billions of lire).

W^{FA} = the stock of households' financial assets (in billions of lire).

RFA = the weighted nominal after-tax rate of return of W^{FA}, deflated by the seasonally adjusted percentage change in the consumer price index over the previous and the following three months on an annual basis (in percentages).

GFA = capital gains on financial assets, defined as

$$(W^{FA} - W^{FA}_{-1}) - FS$$

YD = households' gross disposable income, excluding changes in actuarial reserves for severance pay (in billions of lire, seasonally adjusted).

COR= the loss in purchasing power of financial assets, calculated as:

$$COR = \dot{p}\ (W^{FA}_{-1} + \frac{FS}{2})$$

where $\dot{p}$ is the rate of consumer price inflation over the quarter (in billions of lire).

W^H = the value of the housing stock, assumed to be entirely owned by the household sector (in billions of lire). It is constructed by multiplying a stock expressed as a quantity (number of houses) by a price (as described in the Statistical Appendix, Part 2) interpolated quarterly using the residential construction cost index. For a detailed description of the stock series, see Lecaldano, Marotta and Masera (1984).

DIF = the differential between RFA and the rate of return on the housing stock. The latter is defined as the percentage change in house prices over the previous and the following quarter, on an annual basis (in percentages).

GH = capital gains on houses, defined as W^H_{-1} times the quartely percentage change in house prices (in billions of lire).

FOOTNOTES

* This paper was prepared for the Autumn meeting of central bank economists at BIS held in Basle on November 7-8, 1984. Although the paper is a joint work, E. Lecaldano Sasso la Terza is mainly responsible for Section 3.2, G. Marotta for the Statistical Appendix and R. S. Masera for the remaining. The views expressed do not necessarily represent those of the Bank of Italy.

1/ For a detailed analysis of these points see, for instance, Hicks (1946, Chapter 14), Turnovsky (1977), Cotula and de' Stefani (1979, Chapters 1 and 2), Masera (1979), Tobin (1980).

2/ We are implicitly assuming here that bonds are unit period bills or variable interest rate securities. This is done for simplicity's sake, but this is a fair approximation of today's Italian situation. The actual composition of the stock of government bonds has an important role in explaining the impact of a change in interest rates on savings. It is also assumed that interest payments on government debt are exempt from tax, as in Italy. It would, of course, be easy to allow for their being taxed at the average income-tax rate.

3/ Bond-financing is ultimately more expansionary than money-financing because it implies interest payments; the system tends to be unstable if the real rate of interest exceeds the real rate of growth (see Masera, 1979, 1984).

4/ The measurement of expected real interest rates poses difficult analytical as well as empirical problems. For a discussion of the estimates presented in this work see Galli and Masera (1983). On these points see also Visco (1984).

5/ The estimated values of g range from 0.2 for Italy in Rossi-Schiantarelli (1982), to 0.3 for the United States in Davidson-MacKinnon (1983), 0.5 for the United Kingdom in Hendry-Ungern Sternberg (1980), 0.6 for Canada in Davidson-MacKinnon, and 1.16 for Germany in Ungern-Sternberg (1981). Recently, Davis (1982) has found g=1 for the United Kingdom.

6/ On this see Buiter (1983) and Miller-Babbs (1984).

7/ For a similar approach see Cotula and Masera (1980).

8/ Owing to changes in tax legislation, rent-fixing intervention, and the interaction of inflation and progressive taxation, net of tax rates of return on housing, leaving aside nominal capital gains, have decreased over the period considered.

9/ To test for distortions due to simultaneous equations bias, a two-stage least-squares estimation procedure was used, as an alternative to the OLS estimates presented in Table 7. To this end, the real yield on financial assets was regressed on its own past values and on the real yield on foreign assets. The results obtained did not differ significantly from the OLS estimates.

10/ Two other ways of adjusting equations (7) and (8) for the effects of inflation were also tried by adding to the set of regressors of equations (7.1) and (7.2) the current value of COR or the current and three past values of the same variable, using an Almon polynominal. However, this produced no improvement.

11/ Suppose that the "true" model is

$$(I) \qquad \frac{FS - COR}{YD - COR} = \beta + \gamma\, RFA$$

Equation (I) can be solved for the unadjusted variables as follows:

$$(II) \qquad \frac{FS}{YD} = \beta\left[1 - \frac{COR}{YD}\left(1 - \frac{1}{\beta}\right)\right] + \gamma\left(1 - \frac{COR}{YD}\right) RFA$$

Estimates of equation (II) therefore yield downward-biased estimates of the parameter γ.

12/ On this point, see Friedman (1977).

13/ Equation (11) can be written as:

$$\frac{W^{FA}}{W} = f_1 \frac{W^{FA*}}{W} + f_2\left(1 - \frac{W^{FA*}}{W}\right) + (1-f_1)\frac{W^{FA}_{-1}}{W_{-1}} + f_2\left(\frac{W^{FA}_{-1}}{W_{-1}} - 1\right) =$$

$$= (f_1 - f_2)\frac{W^{FA*}}{W} + (1 - f_1 + f_2)\frac{W^{FA}_{-1}}{W_{-1}}$$

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Table 1

SECTORAL GROSS SAVING, INVESTMENT AND NET FINANCIAL SAVING

(in percentages of GDP)

Year	Households				Non-financial enterprises				Public sector			Foreign sector
	Gross saving	Gross investment * A	Gross investment * B	Net financial saving	Gross saving	Gross investment * A	Gross investment * B	Net financial saving	Gross saving	Gross investment	Net financial saving	Net financial saving
1970	18.1	9.5	8.5	10.0	5.0	7.9	10.6	- 4.9	0.2	3.5	- 5.5	-1.1
1971	19.5	8.6	9.3	12.8	5.0	7.9	7.8	- 5.8	-2.6	3.5	- 6.7	-1.7
1972	20.7	8.0	7.9	16.4	4.7	7.6	8.3	- 1.3	-4.2	3.6	- 8.5	-1.6
1973	20.5	8.6	8.6	12.2	5.4	8.6	11.9	- 8.4	-4.4	3.2	- 9.4	1.8
1974	19.8	9.2	7.8	10.7	5.1	9.3	14.9	-10.1	-4.4	3.5	- 8.8	4.7
1975	23.0	8.1	5.9	15.6	2.2	8.1	9.9	- 6.0	-7.3	4.0	-11.9	0.3
1976	22.2	8.4	8.7	14.4	3.1	7.4	10.7	- 7.1	-5.1	3.9	- 9.4	1.5
1977	21.7	8.4	7.8	14.5	3.2	7.0	9.4	- 6.3	-4.4	3.9	- 9.0	-1.1
1978	23.0	8.0	8.1	16.3	3.0	6.7	7.9	- 4.2	-5.9	3.6	-10.7	-2.4
1979	21.9	8.7	8.1	14.9	4.0	6.2	9.2	- 2.9	-5.3	3.5	-10.0	-1.7
1980	19.9	9.0	10.8	12.3	3.9	6.5	9.9	- 7.9	-4.0	3.9	- 9.7	2.4
1981	20.5	9.0	8.1	14.1	2.7	6.5	8.6	- 6.5	-7.2	4.3	-13.4	2.3
1982	20.7	8.0	8.9	14.8	3.1	5.8	6.3	- 4.0	-7.8	4.7	-14.1	1.6
1983	19.4	7.5	n.a.	16.2	2.2	4.8	n.a.	- 3.7	-7.0	5.0	-14.1	-0.2

* Column A: Gross fixed investment; column B: gross fixed investment and change in stocks (changes in stocks include the statistical discrepancies in the national accounts).

Sources: ISTAT, Annuario di Contabilità Nazionale, ed. 1983, and for the years 1981-83 Banca d'Italia, Relazione Annuale per il 1983, Appendice. See also Statistical Appendix below, Parts 1 and 2.

Table 2

HOUSEHOLDS' GROSS SAVING, NET FINANCIAL SAVING AND INFLATION ADJUSTMENT

(in percentages of households' gross disposable income)

Year	Gross saving (A)	Net financial saving (B)	Inflation adjustment (C)	(A) - (C)	(B) - (C)
1970	22.4	12.4	4.5	17.9	7.9
1971	23.8	15.6	4.1	19.7	11.5
1972	24.8	19.7	7.0	17.8	12.7
1973	24.7	14.7	11.3	13.4	3.4
1974	24.0	13.0	20.5	3.4	- 7.6
1975	26.4	17.8	9.0	17.4	8.8
1976	26.1	16.9	17.3	8.7	- 0.4
1977	25.9	17.3	10.2	15.8	7.2
1978	27.2	19.3	9.7	17.4	9.6
1979	26.4	18.0	16.5	9.9	1.4
1980	24.5	15.1	18.0	6.5	- 2.9
1981	24.7	17.0	15.0	9.8	2.0
1982	24.9	17.9	14.0	10.9	3.8
1983	23.6	19.8	11.7	11.9	8.1

Sources: see Table 1.

Table 3

HOUSEHOLDS' GROSS AND NET FINANCIAL SAVING
IN MAJOR INDUSTRIAL COUNTRIES

(in percentages of gross disposable income;
average 1970-79)

	United States	Japan	United Kingdom	France	Germany*	Italy
Gross saving	12.7	25.0	10.5	17.0	13.8	25.2
Net financial saving	6.2	13.8	7.9	6.9	12.3	15.8
Gross saving adjusted for inflation	10.7	21.1	4.0	13.3	n.a.	15.9

* Germany is recorded to give a broader country coverage, although the household sector in the German accounts differs from SNA definitions in a number of important aspects. In particular, capital formation in owner-occupied dwellings, and its financing, are treated as transactions of a housing sector which also includes the activities of commercial enterprises and non-profit institutions providing housing services.

Sources:
- gross saving ratios, adjusted and unadjusted; for the United States, Japan, the United Kingdom and France; D. Blades, "Alternative measures of saving", OECD Occasional Studies, June 1983;
- net financial saving ratios for the United States, Japan, the United Kingdom, France and Germany: OECD, Financial Accounts and National Accounts;
- Italian data: see Table 1.

Table 4

LOSS OF PURCHASING POWER AND INFLATION TAX
ON THE PUBLIC SECTOR'S NET FINANCIAL LIABILITIES

Year	Loss of purchasing power (A)	Interest paid by the public sector (B)	Inflation tax (C)=(A)-(B)	*(A)*	*(B)*	*(C)*	(A)	(B)	(C)
	in billions of lire			*at 1970 prices*			in percentages of GDP		
1970	1,108	1,268	160	*1,107*	*1,266.9*	*159.9*	1.8	2.0	0.3
1971	1,152	1,589	437	*1,098*	*1,514.5*	*416.5*	1.7	2.3	0.6
1972	2,185	1,943	- 242	*1,970*	*1,751.8*	*- 218.2*	2.9	2.6	-0.3
1973	4,421	2,532	-1,889	*3,597*	*2,060.1*	*-1,536.9*	4.9	2.8	-2.1
1974	10,169	3,691	-6,478	*6,945*	*2,520.8*	*-4,424.2*	9.2	3.3	-5.9
1975	6,276	5,285	- 991	*3,665*	*3,086.3*	*- 578.7*	5.0	4.2	-0.8
1976	14,766	7,439	-7,327	*7,386*	*3,721.0*	*-3,665.0*	9.4	4.7	-4.7
1977	10,540	9,664	- 876	*4,506*	*4,131.5*	*- 374.5*	5.5	5.1	-0.5
1978	11,730	13,360	1,630	*4,474*	*5,095.7*	*621.7*	5.3	6.0	0.7
1979	22,800	16,046	-6,754	*7,575*	*5,331.1*	*-2,243.9*	8.4	5.9	-2.5
1980	31,014	21,525	-9,489	*8,500*	*5,899.4*	*-2,600.6*	9.2	6.4	-2.8
1981	33,120	29,465	-3,655	*7,595*	*6,756.8*	*- 838.2*	8.3	7.3	-0.9
1982	41,139	40,570	- 569	*8,063*	*7,951.5*	*- 111.5*	8.7	8.6	-0.1
1983	44,402	50,137	5,735	*7,568*	*8,545.5*	*977.5*	8.3	9.4	1.1

Source: Updating of data presented in Cotula and Masera (1980).

Table 5

NOMINAL INTEREST RATES, CONSUMER PRICE INDEX
INFLATION AND CHANGES IN HOUSE PRICES

Year	Net of tax nominal interest rates			Change in consumer price index	Change in house prices
	Bank deposits	Treasury bills	Households' financial assets		
	in percentages				
1970	5.0	6.8	4.9	5.0	5.2
1971	4.8	6.1	4.7	4.9	-0.8
1972	4.4	5.1	4.4	5.7	13.3
1973	4.6	7.4	4.4	10.8	36.0
1974	6.9	14.1	6.0	19.0	32.4
1975	6.8	11.0	6.0	17.2	22.9
1976	9.2	16.6	8.3	16.7	22.9
1977	10.3	15.2	9.3	17.1	15.7
1978	8.6	12.2	8.1	12.7	14.5
1979	8.2	12.5	7.9	14.7	22.0
1980	9.4	15.9	9.2	21.2	29.3
1981	11.1	19.7	11.5	17.8	22.4
1982	11.8	19.4	12.2	16.5	22.8
1983	11.0	17.9	11.8	14.7	16.1

Sources: Bank of Italy (columns 1, 2, 3 and 5) and ISTAT (column 4).

Table 6

ALLOCATION OF HOUSEHOLDS' FINANCIAL SAVING

(in percentages of total gross financial assets)

Year	M2	Treasury bills and CCT (1)	Other medium and long-term bonds	Other financial assets	Financial liabilities
		Stocks			
1970	58.0	....	17.3	24.7	- 8.5
1971	60.7	....	18.3	21.0	- 8.5
1972	61.8	....	18.0	20.2	- 8.4
1973	64.6	....	15.4	19.9	-10.0
1974	69.4	....	14.1	16.4	- 9.6
1975	68.8	0.2	12.6	18.4	- 9.5
1976	70.2	1.6	10.8	17.5	- 8.6
1977	73.0	3.8	8.8	14.4	- 8.2
1978	70.8	5.7	8.6	14.9	- 7.5
1979	70.1	8.7	7.5	13.7	- 7.3
1980	62.7	11.3	5.3	20.7	- 7.0
1981	60.9	16.2	5.4	17.5	- 7.0
1982	60.5	18.0	4.9	16.6	- 6.8
1983	56.6	22.4	5.3	15.7	- 6.3
		Flows			
1970	61.9	....	25.6	12.5	- 9.3
1971	68.6	....	19.4	12.0	- 6.2
1972	67.4	....	22.1	10.5	- 7.8
1973	82.0	....	8.6	9.5	-15.0
1974	76.1	0.4	16.8	6.8	- 2.1
1975	76.3	0.8	10.8	12.0	- 4.7
1976	81.3	9.2	1.4	8.1	- 3.9
1977	81.9	15.2	- 3.9	6.9	- 5.3
1978	67.9	15.1	7.9	9.2	- 5.1
1979	69.4	23.9	0.3	6.4	- 7.2
1980	59.5	33.5	- 5.5	12.5	-10.3
1981	43.1	41.3	4.0	11.5	- 6.3
1982	57.2	26.2	1.5	15.1	- 6.1
1983	39.6	45.6	8.8	6.1	- 5.0

(1) CCT are Treasury medium and long-term securities whose rate of interest is linked to that of Treasury bills.

Source: Bank of Italy.

HOUSEHOLDS' PROPENSITY TO FINANCIAL SAVINGS (*)

$$\frac{FS_t}{P_t} = a + \sum_{i=0}^{3} b_i \, (YD_{t-i} - g \; COR_{t-i}) / P_{t-i} + \sum_{i=0}^{3} c_i \; x_{t-i} (YD_{t-i} - g \; COR_{t-i}) / P_{t-i} + g \; COR_{t-i} / P_{t-i}$$

FS = households' financial savings (in billions of lire);
P = consumer price index (1970=100);
RFA = net of tax real average rate of return on households' financial wealth (in percentages);
YD = households' gross disposable income (in billions of lire);
COR = inflation adjustment (in billions of lire) defined as $\dot{p} \, W_{-1}^{FA} + \frac{1}{2} \, \dot{p} \, FS$ where $\dot{p}$ is the quarterly rate of change of P;
DIF = differential between the net of tax average rate of return on households' financial wealth and the "current" rate of change of house prices (in percentages).

Equation 7.1 : g = 0 x = RFA

a	b_0	b_1	b_2	b_3	c_0	c_1	c_2	c_3	$\sum_{i=0}^{3} b_i$	$\sum_{i=0}^{3} c_i$	R^2	SER	$\frac{SER}{FS/P}$-%	DW	$\sum_{i=0}^{3} c_i$YD (1983)
2,659	0.12	0.08	0.04	0	0.003	0.002	0.002	0	0.23	0.005	0.94	503	17.0	2.17	2,086
(2.30)	(3.58)	(3.58)	(3.58)		(1.75)	(2.31)	(0.84)		(3.58)	(3.66)					

Equation 7.2 : g = 0 x = DIF

a	b_0	b_1	b_2	b_3	c_0	c_1	c_2	c_3	$\sum_{i=0}^{3} b_i$	$\sum_{i=0}^{3} c_i$	R^2	SER	$\frac{SER}{FS/P}$-%	DW	$\sum_{i=0}^{3} c_i$YD (1983)
3,061	0.10	0.07	0.03	0	0.001	0.001	0.001	0	0.20	0.003	0.95	479	16.2	2.29	1,251
(2.70)	(3.23)	(3.23)	(3.23)		(1.18)	(2.81)	(1.29)		(3.22)	(4.34)					

Equation 7.3 : g = 1 x = RFA

a	b_0	b_1	b_2	b_3	c_0	c_1	c_2	c_3	$\sum_{i=0}^{3} b_i$	$\sum_{i=0}^{3} c_i$	R^2	SER	$\frac{SER}{FS/P}$-%	DW	$\sum_{i=0}^{3} c_i$YD (1983)
4,031	0.02	0.01	0.01	0	0.009	0.006	0.003	0	0.04	0.018	0.89	699	23.7	1.73	7,510
(2.10)	(0.33)	(0.33)	(0.33)		(3.22)	(3.52)	(1.41)		(0.33)	(5.48)					

Equation 7.4 : g = 1 x = DIF

a	b_0	b_1	b_2	b_3	c_0	c_1	c_2	c_3	$\sum_{i=0}^{3} b_i$	$\sum_{i=0}^{3} c_i$	R^2	SER	$\frac{SER}{DFA/PC}$-%	DW	$\sum_{i=0}^{3} c_i$YD (1983)
4,762	-0.01	-0.001	-0.004	0	0.002	0.005	0.004	0	-0.03	0.019	0.89	695	23.5	1.93	7,930
(2.40)	(0.20)	(0.20)	(0.20)		(1.20)	(4.19)	(2.45)		(0.20)	(5.91)					

OLS estimates based on quarterly seasonally unadjusted data for the period 1974/1-1983/4; t ratios in parentheses. Three seasonal dummies are included among the regressors. Sources and definitions of data are given in the Statistical Appendix, Part. 3. An Almon polynomial of 1st order with an end constraint was used for the b_i coefficients; an Almon polynomial of 2nd order with an end constraint was used for the c_i coefficients. $\sum c_i$ *YD (1983) is the amount of additional financial savings (in 1983 lire) which would result from a permanent increase of one percentage point in the real rate of interest on financial wealth; 1983 disposable income is used as a basis for the calculations. The average value of the dependent variable in the estimation period was 2,954.

Table 8

ALLOCATION OF HOUSEHOLDS WEALTH BETWEEN FINANCIAL ASSETS AND HOUSES (*)

$$\frac{W_t^{FA}}{(W_t^{FA} + W_t^{H})} = a_0 + a_1 x_t + a_2 DUN_t + a_3 \frac{W_{t-1}^{FA} + g\ GFA_t}{(W_{t-1}^{FA} + g\ GFA_t + W_{t-1}^{H} + g\ GH_t)}$$

W^{FA} = households' financial assets (in billions of lire);
W^{H} = value of the stock of houses (in billions of lire);
DUN = absolute change in the rate of unemployment (in percentages)
GFA = capital gains (or losses) on W^{FA} (in billions of lire);
GH = capital gains (or losses) on W^{H} (in billions of lire);
P, RFA and DIF = see Table 7

Equation 8.1 : $a_2 = 0$ $g = 0$ $x = RFA$

a_0	a_1	a_3	R^2	SER	$\frac{SER}{dependent\ variable}$%	MLM(1)	MLM(1-4)	1-year effect	Long-term effect
0.087	0.0003	0.70	0.63	0.0080	3.1	3.34	18.02	1,480	1,850
(2.87)	(0.72)	(5.61)							

Equation 8.2 : $a_2 = 0$ $g = 0$ $x = DIF$

a_0	a_1	a_3	R^2	SER	$\frac{SER}{dependent\ variable}$%	MLM(1)	MLM(1-4)	1-year effect	Long-term effect
0.070	0.0005	0.78	0.66	0.0077	3.0	1.22	9.44	2,775	4,254
(2.48)	(2.00)	(6.71)							

Equation 8.3 : $g = 1$ $x = RFA$

a_0	a_1	a_2	a_3	R^2	SER	$\frac{SER}{dependent\ variable}$%	MLM(1)	MLM(1-4)	1-year effect	Long-term effect
0.038	0.0003	- 0.003	0.92	0.97	0.0023	0.9	18.25	30.33	2,035	7,029
(4.31)	(3.39)	(1.81)	(25.76)							

Equation 8.4 : $g = 1$ $x = DIF$

a_0	a_1	a_2	a_3	R^2	SER	$\frac{SER}{dependent\ variable}$%	MLM(1)	MLM(1-4)	1-year effect	Long-term effect
0.040	0.0003	- 0.003	0.92	0.98	0.0021	0.8	14.91	28.77	2,035	7,029
(5.13)	(4.49)	(2.04)	(29.27)							

(*) OLS estimates based on quarterly seasonally unadjusted data for the period 1974/1-1983/4; t ratios in parentheses. Three seasonal dummies multiplied by a linear trend are included among the set of regressors. Sources and definition of data are given in the Statistical Appendix, Part 3. MLM (1) and MLM(1-4) provide the confidence levels for accepting the hypotesis of residual autocorrelation up to the first and the fourth order respectively, using a modified Lagrange Multiplier test (see A. Harvey, Econometric Analysis of Time Series, London, 1981) The "1-year effect" and the "Long-term effect" are the amount of wealth (in billions of end-1983 lire) which would be reallocated between financial assets and houses, after one year and in the long term respectively, following a permanent change of one point in the net of tax rate of return on financial wealth. The calculations are based on the end-1983 values of financial assets and houses. The average value of the dependent variable in the estimation period was 0.258.

Table 9

CONSUMER EXPENDITURE, IMPORTS OF GOODS AND SERVICES AND REAL INTEREST RATES

(percentage changes expressed on an annual basis;
seasonally adjusted data at 1970 prices)

Periods	Consumer expenditure	Imports	Net of tax real interest rate on bank deposits	Real interest rate on bank loans
1972/4 - 1973 /2	7.0	50.9 (*)	- 5.96	-11.16
1975/3 - 1976 /1	5.5	49.3	- 5.17	- 9.38
1979/2 - 1979 /4	7.0	24.9	- 7.49	- 5.26

(*) Based on the periods 1972/2 - 1972/4.

Sources: ISCO, Quaderni Analitici and Bank of Italy.

Table 10

GDP, TOTAL DOMESTIC CREDIT AND FINANCIAL ASSETS OF THE PRIVATE SECTOR
(in billions of lire; annual growth rates in heavy lines; in percentages of GDP in brackets)

Year	Gross domestic product		State-sector borrowing requirement	Funds to the non-state sector		Total domestic credit (A) + (B)			Financial assets of the private sector 1/			
		%		(A) 2/	(B)	%		%		%	3/	4/
1970	62883	12.5	3222	3031	5237	12.2	8268	13.8	(13.1)	6376	11.0	(10.1)	(102.0)
1971	68510	8.9	4823	4293	7657	15.9	11950	17.5	(17.4)	10196	15.9	(14.9)	(109.0)
1972	75124	9.7	5910	5644	9875	17.8	15519	19.3	(20.7)	13525	18.1	(18.0)	(118.0)
1973	89746	19.5	7993	7242	13784	21.1	21026	21.9	(23.4)	19962	22.5	(22.2)	(118.0)
1974	110719	23.4	8960	8796	12547	16.2	21343	18.4	(19.3)	13279	12.5	(12.0)	(108.9)
1975	125378	13.2	16444	14238	16896	18.8	31134	22.7	(24.9)	24838	20.6	(19.8)	(115.1)
1976	156657	24.9	14627	14200	19844	18.9	34044	20.2	(21.7)	29630	20.5	(18.9)	(111.5)
1977	190083	21.3	22443	17923	17371	14.3	35294	17.4	(18.6)	34176	19.6	(18.0)	(110.1)
1978	222254	16.9	34248	31707	17686	12.9	49393	20.7	(22.2)	48829	23.3	(22.0)	(116.3)
1979	270198	21.6	30343	28503	25293	16.5	53796	18.7	(19.9)	58448	22.6	(21.6)	(117.6)
1980	338743	25.4	37010	34008	29189	16.3	63197	18.5	(18.7)	51865	16.3	(15.3)	(109.4)
1981 5/ 5/	401579	18.5	52954	44904	28070	13.5	72974	18.0	(18.2)	70910	19.1	(17.7)	(110.2)
1982 5/	471390	17.4	72587	68951	31362	13.3	100313	20.8	(21.3)	89390	20.2	(19.0)	(113.1)
1983	535904	13.7	88493	85709	34737	13.0	120446	20.6	(22.5)	107647	20.2	(20.1)	(119.7)
1984 6/	609595	13.8	95800	92100	44000	14.3	136100	19.2	(22.3)	121800	19.0	(20.0)	(125.2)

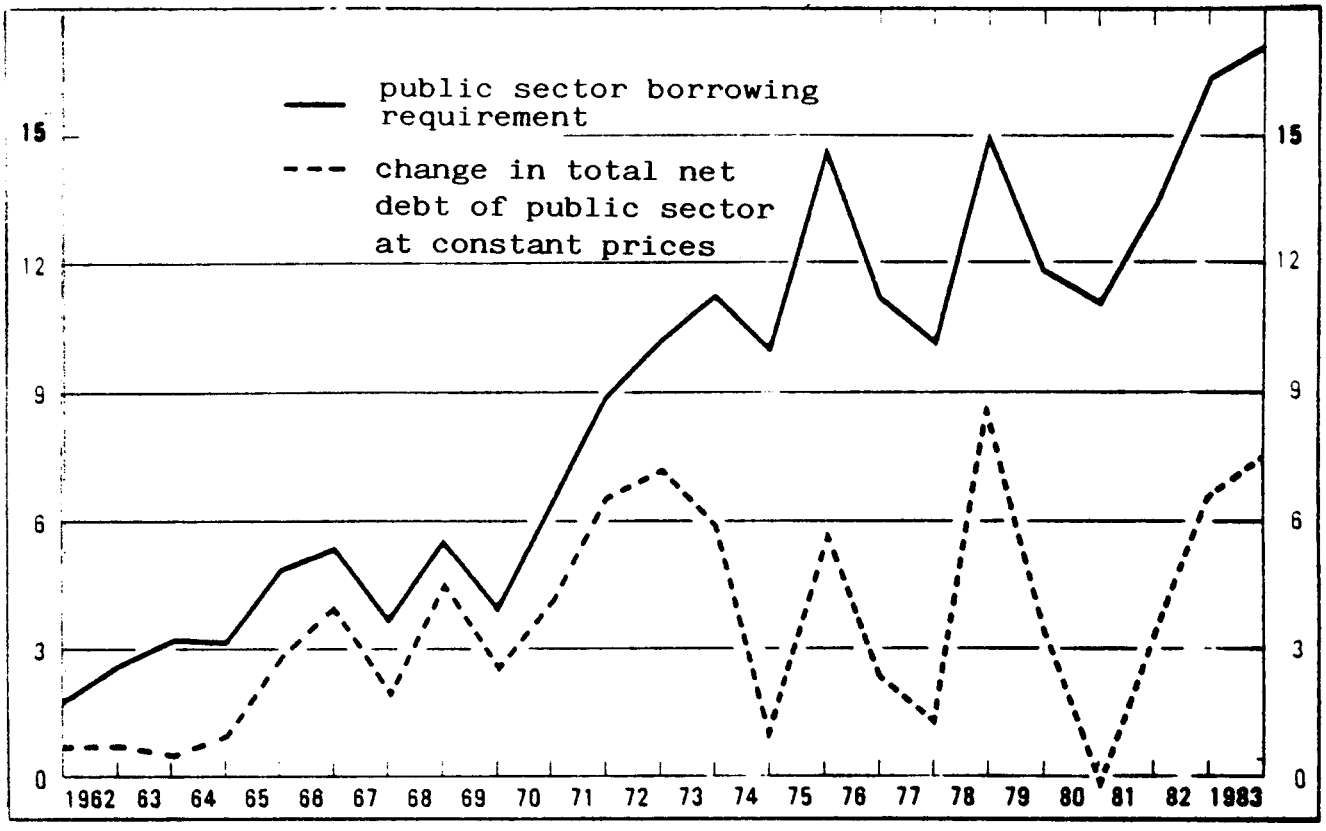
1/ Domestic assets excluding shares, actuarial reserves and atypical securities.
2/ Domestically financed.
3/ Annual flow.
4/ End-of-period stock.
5/ Funds to the non-state sector and total domestic credit are adjusted for non-interest-bearing deposits on payments abroad.
6/ Estimates.

Source: Bank of Italy.

Chart 1

PUBLIC SECTOR BORROWING REQUIREMENT AND CHANGE IN THE PUBLIC SECTOR NET DEBT AT CONSTANT PRICES

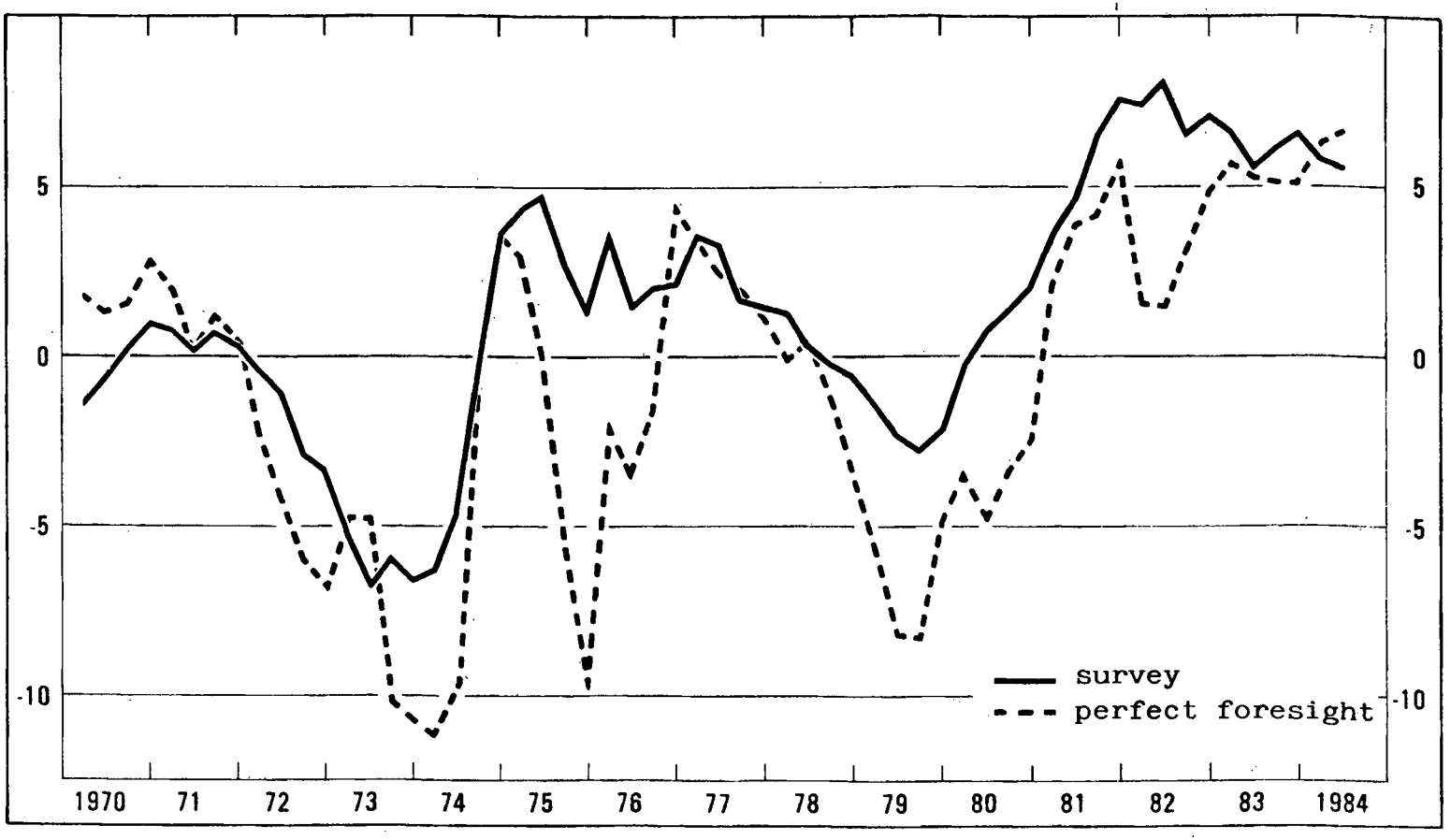
(ratios to GDP)



Source: Bank of Italy

Chart 2

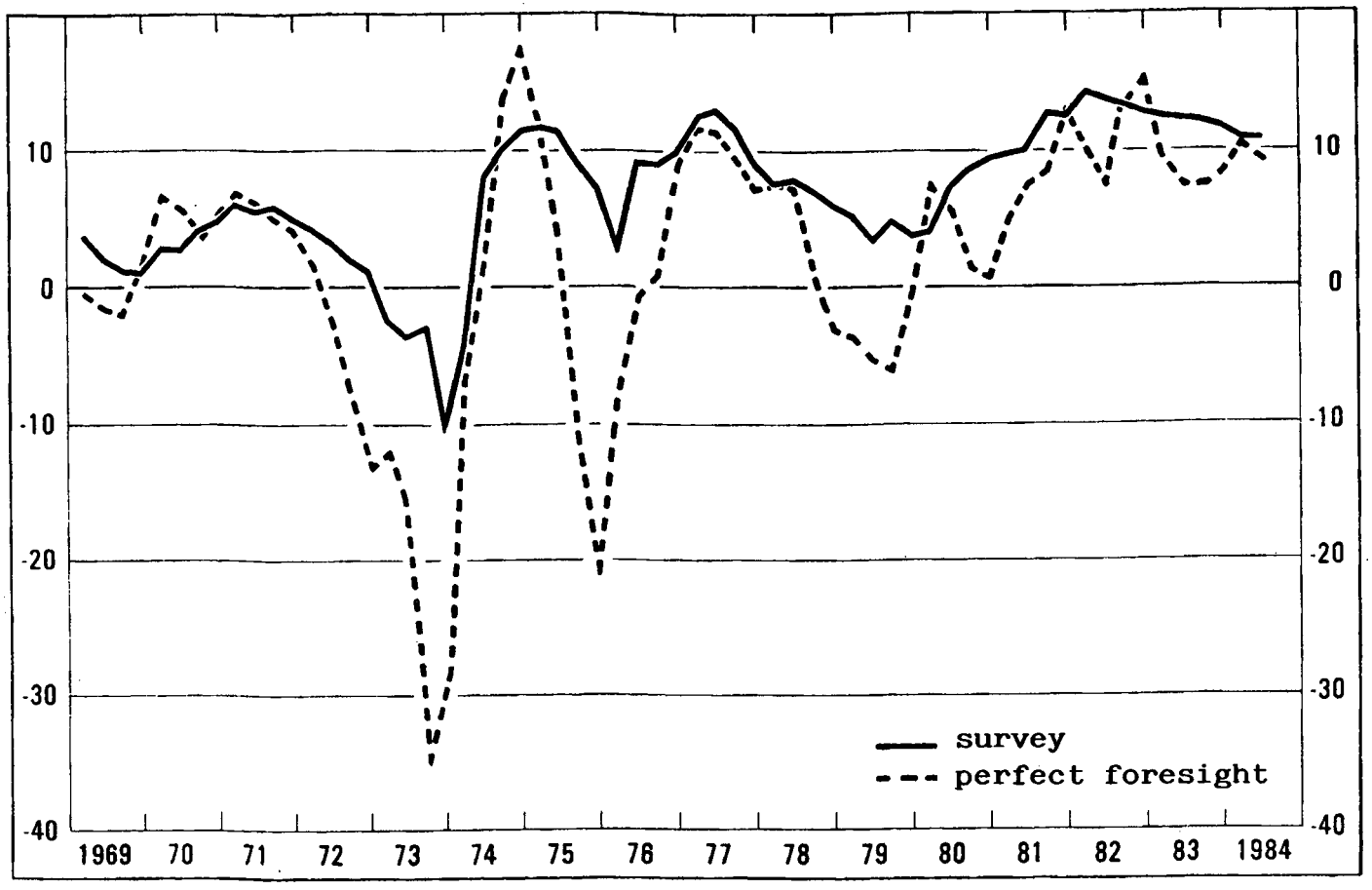
EXPECTED REAL RATE OF INTEREST ON SIX-MONTHS TREASURY BILLS (1)



Source: Bank of Italy

(1) Until the third quarter 1975 weighted average rate for all T.B. issued. The perfect foresight rate of inflation (dashed line) is defined as the rate of change in the next six months of the consumer price index. Alternatively (heavy line) a survey-based six-month expected rate of change of consumer price index is used. (see Visco, 1984).

EXPECTED REAL RATE OF INTEREST ON BANK LOANS' (1)

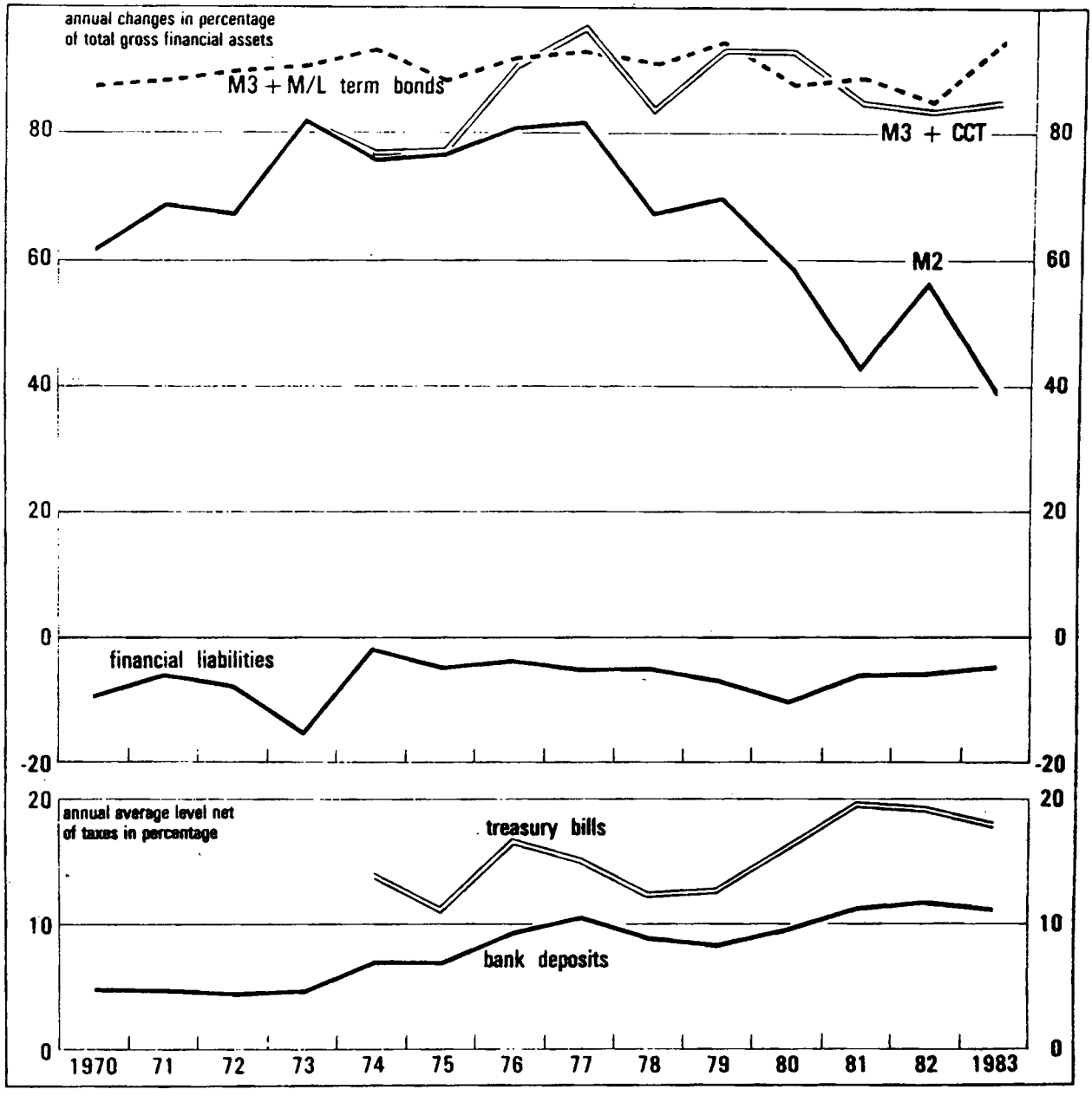


Source: Bank of Italy

(1) The perfect foresight rate of inflation (dashed line) in defined as the wholesale price index actual rate of change in the next six months. The expected inflation rate (heavy line) is a survey-based six-month rate of change in the wholesale prices (see Carosio and Visco, 1977 and Visco, 1984).

Chart 4

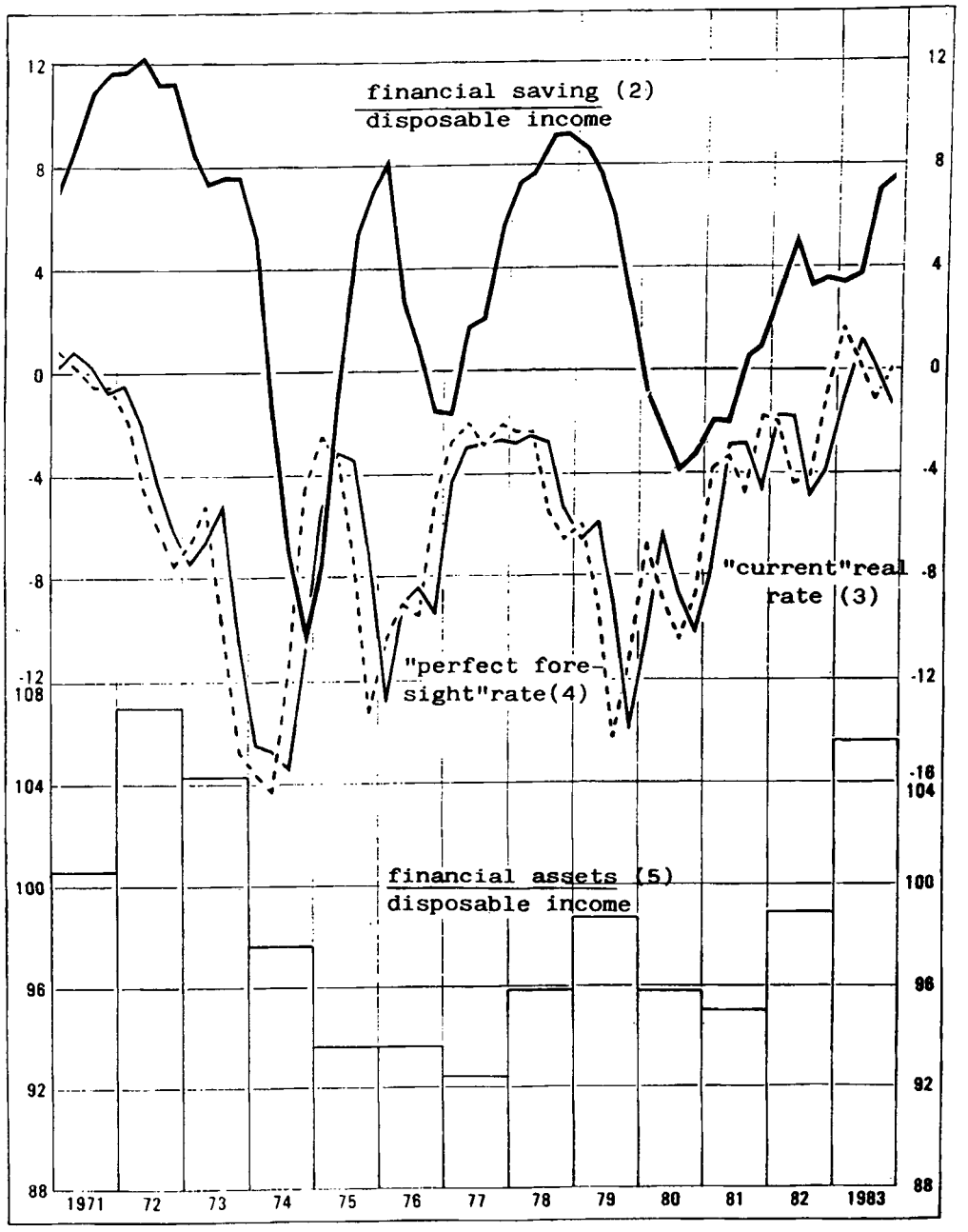
HOUSEHOLDS' FINANCIAL ASSETS AND LIABILITIES
AND INTEREST RATES



Source: Bank of Italy

Chart 5

HOUSEHOLDS' FINANCIAL ASSETS, INCOME AND INTEREST RATES (1)



(1) Excluding shares, actuarial reserves, bank acceptances and foreign denominated assets. (2) Cumulative changes over four quarters net of the purchasing power loss on financial assets. (3) Weighted average of rates of return net of taxes, deflated by the annualised rate of change of the consumer price index over the previous and the following three months. (4) Weighted average of rates of return, net of taxes, deflated by the rate of change of the consumer price index over the next semester, on an annual basis. (5) 5 quarters average quarterly stocks.
Sources: ISTAT and Bank of Italy

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