

Inflation, Indexation and Interest Income Taxation: A Comment

1. Mr. Tanzi's interesting article "Inflation, Indexation and Interest Income Taxation"¹ highlights certain problems which arise in inflationary situations in the case of income producing assets defined in monetary terms, and where interest income is subject to taxation. The following comments are not at variance with the general proposition that, for *equity* reasons, it would be desirable to find some offset to the transfer of wealth which takes place under inflation between borrowers and lenders. Their purpose is, rather, (i) to show that the income tax system may not be the most appropriate practical mechanism to obtain the desired offset; (ii) to raise certain conceptual issues; and (iii) to make a qualified alternative suggestion.

2. To put it briefly, Mr. Tanzi's argumentation, if we understand it correctly, runs as follows:

(a) Where interest income is not taxed, the rate of interest normally *tends* to settle at a level which includes a compensation for the erosion of the principal due to inflation.

(b) Where interest income is taxed, the nominal interest rate *ought* to settle at a level which would compensate for the capital erosion due to inflation, *after taxes*; but *in practice* this does not happen due to a number of factors, including institutional limitations (See p. 75; and, by implication, the conclusion in p. 76). This appears to be the crucial assumption; since, if the rate were to settle at a level which took taxation fully into account no problem of the type discussed in the article would arise.

(c) Because of (b), the taxation of interest income turns out to be excessive (p. 75).

¹ This *Review*, March 1976, pp. 64-76.

(d) An equitable solution would consist of exempting from taxation that part of interest income that represents gross capital erosion, so as to maintain the real value of the asset.

(e) Conversely, the debtors would not be allowed to deduct the "monetary correction".

3. Since we are dealing with taxation matters which eventually would have to be implemented in the form of instructions to individual taxpayers, it seems appropriate to deal with the subject from this practical angle. We shall start with monetary assets whose value is expected to remain unchanged; and will discuss briefly at the end the case of marketable bonds.

(a) Following Mr. Tanzi's suggestion, the lender would be allowed, in preparing his income tax return, to subtract from his interest income the "capital erosion"; i.e., the principal multiplied by the rate of inflation.² Likewise, the borrower would be denied a deduction for the same amount. Presumably, this would be done on an yearly basis. If so, the case of loans which span over a number of years would raise some questions. For the borrower the annual disallowances of deduction would be tantamount to tax payments on *yet unrealized* capital gains of a sort treated as income. For the lender the annual exemptions would constitute a compensation *ahead of time*, in the form of a reduced taxable income, of a capital loss of a sort *expected* to be realized at maturity. In a country which does not have a capital gains tax the suggested procedure would be equivalent to the introduction of one such tax confined only to borrowers. This would discriminate in favor of capital gains on other assets which would remain untaxed.

(b) Another complication would arise in cases where the "capital erosion" were to be in excess of interest payments. Would the borrower be compelled to add that "excess" to his income? If so, the tax payment on unrealized capital gains mentioned above would become more onerous; and yet that would be necessary, for reason of symmetry, if the lender were allowed to deduct that "excess". For the sake of administrative simplicity, this complication

² This reflects Mr. Tanzi's own presentation in pp. 69-70. It is worth noting that with a 200 per cent annual inflation, the exemption, for a loan of 100, would be 200. The rationale for this would seem to be that 300 units at the end of the year would be equivalent, in real terms, to 100 units at the beginning of the year. This, of course, would be applicable where there are other sources of income.

could be avoided by setting a maximum for exemptions and disallowances equal to the actual interest receipts and payments (which appears to be Mr. Tanzi's preference - see p. 76); but, in so doing, the lender would be only partially compensated for the "capital erosion". It should be noted that this would not be an unusual occurrence in the case of medium- and long-term contracts where inflation (of say, more than 5 per cent) started after the contract was stipulated, or it accelerated rapidly afterwards. At any rate, the use of the income tax mechanism would give no protection to holders of monetary assets which produce no income. This is the case of bank demand deposits where no interest is paid on them (as in most areas of the United States and other parts of the world).

(c) The case of multi-year loans was mentioned above because of its own merits, but particularly having in mind the situation of financial intermediaries, especially the mortgage lenders, the savings and loan associations, and the like. These institutions are at the same time creditors (*vis-à-vis* their borrowers) and debtors (*vis-à-vis* their depositors); and they would have to compute exemptions and disallowances for each lending transaction and deposit operation. This would involve a considerable addition of accounting work, particularly in case of frequent deposit withdrawals. Moreover, as long-term lenders, these institutions would seem to derive considerable benefits, particularly in the first years of a repayment schedule, from the exemptions for capital erosion. *De facto* such an erosion would be incurred only to the extent of the annual principal repayments. For instance, a \$100,000 30-year loan at 9 per cent would be serviced by an annual instalment of \$9,733. Of this, the interest receipt of the institution for the first year would be \$9,000. With an inflation of 8 per cent, the exemption on account of capital erosion would be \$8,000, and the institution would pay tax only on \$1,000. On the other hand, the principal repayment, which is only \$733, would seem to be, at the end of the first year, the only part of the principal which, *with certainty*, has been subjected to erosion. It could be suggested that exemptions be granted only to the extent of the erosion of the annual repaid portion of the principal; and this, incidentally, would solve the problem, mentioned above, of the tax treatment of unrealized capital gains and losses. Of course, detailed instructions would have to be given to the taxpayers for these cases; as well as for other, rather common lending practices, such as grace periods, special amor-

tization schedules, the charging (in the USA) of "points" at the conclusion of the contract; and practices of similar nature.

4. So far we have remained faithful to Mr. Tanzi's assumption, as mentioned in 2(b), that the rate of interest, while reflecting inflation, does not take taxation into account. We believe, however, that this assumption is quite unrealistic since, in practice, institutional limitations do not apply (in the USA and in other countries) to the rates for such instruments as certificates of deposit, commercial paper, second mortgages, etc.; and even where they apply, they do not have the feared consequences under inflations of, say, up to 3 per cent. Moreover, there are frequently hidden additions to the lending rates that the banks apply to various customers, which result from various practices, such as, for instance, the "agreed" redepositing of portions of loan proceeds. As to the lender's inability to anticipate accelerations of inflation, which may be true in certain cases, the argument should be valid also for the opposite cases of deceleration. In the following paragraphs we shall also drop, to approach reality, both the assumptions that every lender receives a uniform interest rate; and that interest income falls in the same income tax bracket for each taxpayer.

5. As an introduction, we shall offer a numerical example which will serve the purpose of showing both the varying amounts of exemptions to be allowed, and, perhaps more importantly, the fact that the suggested procedure contains an implicit normative proposition that a lender should be: (a) assured a *given* rate of return; and (b) permitted to maintain his *principal intact* in real terms. Let us start, for convenience, with the interest rates indicated in the fourth column of the Table in p. 74. Our reading of it is that with a 30 per cent inflation and a 50 per cent marginal tax rate, an interest rate of 65 per cent would by itself (on a principal of 100): (i) permit the lender to make a tax payment of 32.5; and (ii) within the remaining 32.5, allow him 30 to avoid capital erosion, and leave 2.5 net income; i.e., a 5 per cent return taxed at 50 per cent.³ That lender would be

³ Our interpretation and computation are based on the following sentence in p. 73: "Thus one way of putting the question is: if an income tax is levied without adjustment on the whole of interest income, what increase in the monetary rate of interest will be needed to maintain *constant* (our emphasis) the after tax real rate for an individual in the face of inflationary changes and of income taxes levied on total current income?" Moreover, footnote 22 in the same page reads: "Only the required rate shown in the fourth column will leave the lender with a constant net-of-tax real

in the same position as a lender who, with no inflation, receives a 5 per cent interest taxed at 50 per cent. In a case like that there would be, therefore, no need to grant the lender an exemption from income tax of part of his interest income. However, any interest rate below 65 per cent would require *some* exemption, which would be larger the lower the interest rate. At a rate of, say, 60 per cent, if the tax authorities permitted an exemption of 5, there would be a 27.5 tax payment (1/2 of 55); and out of the 32.5 which remains, 30 would again go to offset capital erosion, and 2.5 would be the return taxed at 50 per cent. If the authorities granted a different exemption there would be a different net-of-tax rate of return and/or a different degree of protection from capital erosion. Thus, in prescribing any *given* amount of exemption (and disallowance of deduction for the debtor) the tax authorities would inevitably set, we believe arbitrarily, the level of return *to be allowed* to the creditor; and the extent of protection of the principal.⁴

6. Let us now move to a more generalized case and refer, for simplicity, only to the lender. It appears correct to state that the amount of exemptions is a function of four variables: (i) the nominal rate of interest; (ii) the rate of inflation; (iii) the marginal rate of taxation; and (iv) the return that (rightly or wrongly) the authorities were to decide to guarantee. That amount would have to be calculated for each taxpayer, and would vary from zero to a very large figure, even in excess of the principal, in extreme but not too rare inflationary cases. To exemplify, let us maintain the rate of inflation constant at 30 per cent, and the rate of assured return gross-of-tax at 5 per cent. We shall give below general statements, and then show numerical values of deductions, but only for two tax brackets: 50 per cent (referred to as A), and 10 per cent (referred to as B), for a principal of 100.

(1) Whenever the actual interest rate is at an "upper" level, or above it, no exemption is granted. This level is given by Mr.

rate of interest". Finally, it should be noted that only a computation along the lines of our text gives a *constant* after tax result at the various rates of inflation. The alternative, consisting of reducing the tax base *first*, and then applying the tax on the residual income would not give constant after tax rates of return. Under this alternative the returns would be, for zero inflation and for the five rates of inflation assumed in the Table in p. 74, as follows: 2.5; 5.0; 7.5; 10.0; 12.5; and 17.5.

⁴ This, incidentally, is also true of the proposition mentioned at the beginning of paragraph 3(a). It has been highlighted here only as a matter of presentational convenience.

Tanzi's formula [5]. For A that level is 65 per cent; for B, 38.33 per cent.

(2) For any actual rate below the level mentioned above there should be *some* exemption. The exemptions are, of course, different for different tax brackets, and they increase with the decline of the actual interest rate. For the different tax brackets the exemptions *converge*, however, to the what may be called the "lower" level which corresponds to an actual interest rate equal to the rate of inflation plus the rate of return. For instance, for interest rates of 50, 40, 37 per cent the exemptions for A would be: 15, 25, and 28, respectively; those for B would be zero, zero, and 12, respectively. With a 35 per cent interest rate, i.e., at the "lower" level (30 inflation plus 5 rate of return) the exemptions would be equal for A and B, and, as stated, they would amount to the principal multiplied by the rate of inflation; i.e., 30.

(3) At actual interest rates below the "lower" level, larger exemptions should be allowed. At *some* point they become as high as the total interest income itself. The *progression* towards that point, however, is speedier the lower the income tax bracket. For A the point is at an interest rate of 32.5 per cent; for B it is at 34.5 per cent.

(4) For actual interest rates below the point mentioned in (3) above, the exemption of the whole of the interest is not sufficient to avoid the erosion of the capital; and if this objective is to be attained additional deductions should be allowed. This falls under the case described in 3(b) above; and the same considerations made there apply here.

It appears from the above that Mr. Tanzi's proposal at p. 70 represents a special case where the interest rate is at the "lower" level of the tier described in (2) above.

The curious reader may repeat the exercise conducted in this paragraph to determine the exemptions for different tax brackets, different allowed rates of return, and different rates of inflation. We believe, however, that what was said above, and in earlier paragraphs, is sufficient to show not only how complex the instructions to the taxpayer would be to implement the proposal under discussion, but also the amount of work which would be required particularly for the tax authorities to verify the validity of the claimed exemptions (and the sufficiency of the disallowances in the case of the borrower).

7. The conclusions at the end of the preceding paragraph suggest that we pause briefly at this juncture to take a broad look at the whole matter. Essentially, what is suggested is that, because of 'inequitable' transfer of wealth resulting from inflation, the income tax system be used to remedy wholly or in part that consequence. This would appear, however, a roundabout complicated way to solve such a problem, and we believe that a more direct and technically simpler alternative would consist of merely indexing the monetary claims and liabilities.⁵ This would be much easier to administer and would not raise some of the practical and conceptual problems mentioned in the above paragraphs and in those which follow. The income tax system would then be confined to the interest income, and would not be assigned the burdensome task of offsetting wealth transfers. Having mentioned the alternative of asset indexing, we hasten to add that it does not mean that we endorse it in all cases, nor that we consider this to be necessarily a matter for the government to legislate upon indiscriminately. As indicated earlier, the credit markets may provide partial or total remedies; and asset indexing is not itself free of problems.⁶ Nevertheless, should the government feel that it is responsible for inflation and for its consequences, it could make asset indexing mandatory in cases of gross disparities in the bargaining power of the two parties. One of the reasons for our cautious attitude is discussed below.

8. The implicit proposition that the government should so use the income tax system as to guarantee the lender a *given* rate of return and the *maintenance* of the principal in real terms, prompts the following additional considerations. Before lending, an individual has before him a variety of investment opportunities, financial and non-financial, among which to choose. Contrary to a common intuitive notion, the value of *each* individual *real* asset — including paper representing real assets, such as shares in joint stock companies — does not necessarily rise at the same pace as inflation. While such a parallel movement *may* take place for the whole patrimony of, a

⁵ Mr. Tanzi mentions this alternative in his footnote 14, p. 70; but he discards it without giving any reason therefor.

⁶ For a discussion of the problems involved, see OECD, "Indexation of Financial Assets", Paris, 1975; and, by the same Agency: "Indexation of Fixed Interest Securities", Paris, 1973. A brief discussion within a broader context can be found in our "Indexation as a Tool of Economic, Monetary and Redistributive Policy. A Critical Analysis.", in *Economic Notes*, Vol. II, No. 2, 1974.

country, the rate of change of the prices of various real assets may be higher or lower than that of the general price level. In the United States an investor who, to protect himself against inflation, had purchased in January 1973 the 30 shares included in the Dow Jones Industrial Average would not yet have recuperated (at the time of writing) the monetary value of his investment, let alone the real value. Those who had bought the same shares in January 1966 would be in a slightly better position, but still losing heavily in real terms; and anybody who had bought at any time during the last ten years all the shares quoted in the NY Stock Exchange would be in a still worse position. Many buyers of apartments have had the same experience. The point to be emphasized here is that the disparities in the behavior of individual prices are attributable not only to changes, of an autonomous nature, in demand and supply conditions, but also to inflation itself. For instance, should an investor decide to purchase an apartment building instead of acquiring a monetary asset, his future income will depend on the level of the rent he can charge in a supposedly competitive market, on the rate of vacancy, on the cost of the maintenance inputs, etc. The effects of inflation on these costs and on income distribution, which in turn determines the demand for space in that particular building, may be such as to cause the financial return to the investor to lag behind inflation, or even become negative. Moreover, under these circumstances, the real value of the property, insofar as it reflects its income, will likely fall. (Obviously, inflation may produce the opposite effects on other incomes and property values.) On the whole, it appears safe to state that investors in non-monetary assets are *likely* to receive, through the play of the price mechanism, *some* protection for their investments under inflationary conditions, and that this is not necessarily true in the case of *all* holders of monetary assets. The difference, however, is only a matter of degree, and not always against the monetary asset holder. Some lenders may be able to obtain full protection via interest rates (and thus be better off than the hypothetical investor depicted above); others may be only partially protected; while still others, including depositors in financial institutions, may be largely unprotected. This appears to lead to the conclusion that where investors have an effective free choice between monetary and non-monetary assets, and among the various monetary assets, it is open to question whether the government *should*, through the income tax system or otherwise, protect *fully* all holders of monetary assets

from a downside risk attributable to inflation, insofar as the principal is concerned; and *should* insure a minimum return from investment.

9. So far we have discussed interest producing assets in the form of credits that are repaid at maturity in their nominal amount. A few additional considerations are now in order with respect to interest earned out of marketable fixed income securities. We focus on medium- and long-term bonds of which there is normally a large supply in modern advanced countries. In a very large number of cases these securities are purchased and sold between issue and maturity, and, thus, in these cases, the maintenance of the real value of the investment depends on the difference between the sale and the purchase prices. The granting of exemptions, in the manner discussed above, in the case of these interest producing assets may either result in a gross overcompensation, or not be sufficient to maintain the real value. Basically, the reason is that, to the extent that the market interest rate (yield) on these securities varies with the change in the rate of inflation, their market prices undergo corresponding, but amplified, fluctuations. A \$100 security, with a \$5 coupon, purchased at par at issue, under monetary stability and a 5 per cent market rate, would be quoted at \$50 under a 10 per cent market rate (assuming at par, under monetary stability and a 5 per cent market rate, to sell this bond, the mere exemption of \$5 from taxation would go nowhere near full compensation. On the other hand, its purchaser at \$50 would see its value rise to about \$77, should a *deceleration* of inflation (i.e., while inflation still prevails) result in a reduction of the market interest rate from 10 per cent to 6.5 per cent. In this case, the persistence of inflation, though at a declining rate, would call for the exemption of the whole or part of the interest income; while the holder (and seller) of the asset would be more than compensated for inflation, insofar as the principal is concerned, through an increase of the price of the bond of the order of 54 per cent. These considerations would seem to indicate that marketable securities should be excluded from the application of the suggested exemption from taxation of interest income. It would, further, follow that those exemptions should be strictly confined to credits which are held until maturity; for, the holder, for instance, of a second mortgage at 14 per cent (contracted under a 9 per cent inflation) may privately negotiate it at a substantial profit if inflation recedes to 4 per cent, having already benefitted from tax exemptions.

10. Our comments above can be summarized as follows, having mainly the lender in mind, rather than the borrower.

(i) The practical implementation of exemptions (and disallowances) under the income tax law to maintain the real value of the principal of straight credits, involves complex, burdensome, and costly accounting work, both for the taxpayer and the tax administration, especially in the case of financial intermediaries. Simplifying rules could be introduced in certain instances, but this could be at the cost of reducing the extent of the protection. Moreover there would be no protection, under this approach, for the holders of assets, such as demand deposits, on which no interest is paid.

(ii) In the case of multi-year loans the full implementation of the proposal would *tend* to "overshoot the target"; i.e., to overcompensate the lender and to overtax the borrower; and would raise some questions of equity, particularly in countries where capital gains are not taxed.

(iii) In practice, interest rates in unrestricted credit operations — which are more the rule rather than the exception — are likely to fall within a range where they afford, by themselves, varying degrees of protection of the principal (and sometimes possibly a full protection) including the offsetting of taxation. This being so, there would be no simple formula to determine the amounts of the exemptions, if any. For each case, these would have to be graduated and would depend on four variables; the rate of inflation, the rate of interest, the tax bracket, and the intended rate of return. In issuing instructions to this effect, the tax Administration would implicitly assure a given return on the investment, in addition to protecting the principal. While it may be questioned that the former is a proper government function, it may be also argued that granting all creditors full insurance against downside risk may go beyond what is appropriate in terms of "equity", since a number of investors in non-monetary assets may suffer a decline in the real value of their investments for purely inflationary reasons.

(iv) On the basis of the above, it would appear that the income tax system is not the most suitable mechanism to achieve the purposes aimed at. These may be more simply and directly attained through the indexation of the assets themselves. It is debatable, however, that even this alternative should be implemented through

legislation in favor of all creditors. Upon close scrutiny, this appears to be appropriate only in some cases, such as those where there are gross disparities in bargaining power between the parties.

(v) At any rate, it would appear appropriate to exclude from the suggested remedy investments in the form of acquisition (and subsequent sale) of marketable interest-producing assets; and, probably, to go as far as to prescribe that, in the case of multi-year credits, exemptions apply only where such credits are held until maturity.

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