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CAPITAL GAINS TAXATION AND INTEREST RATE CHANGES: AN EXTENSION OF PAISH'S ARGUMENT

JOHN WHALLEY*

Introduction

MOST economists suggest taxing capital gains on an accrual basis (with correction for price level changes) as part of a comprehensive income tax. This view follows from an acceptance of the Haig-Simons definition of income as consumption expenditures plus changes in net worth as a comprehensive tax base.

It has been recognized for some time that there are ways in which the Haig-Simons' concept of income can be regarded as deficient. A notable example is that of capital gains which result from the changes in interest rates. It has been widely accepted that capital gains which originate from a fall in interest rates should be treated differently from other capital gains since a fall in market interest rates raises the current value of wealth held in bonds while leaving the income stream accruing to the bond holder unaffected. This argument is often made verbally,¹ or a diagrammatic version of the same argument due to Paish [1940] is used.²

In this note the argument due to Paish is restated in a more satisfactory manner and a number of extensions to the analysis pursued. These extensions strengthen Paish's original argument that a separate tax treatment for capital gains originating from changes in relative prices should be adopted. In particular, it is shown that not only should capital gains to bondholders originating from a fall in interest rates be less than fully taxed, but that taxation of these capital gains on a realization basis will produce a result closer to a tax on the dollar value of the welfare gain to the bondholder than taxation on an accrual basis. It is also shown that with a rise in interest rates, where the Haig-Simons' concept of income suggests that an individual holding bonds would be able to take

a capital loss, a positive change in the bondholder's welfare will result. This reflects the gain accruing to individuals who remain liquid and are able to purchase claims on future consumption at more advantageous terms than individuals who had previously purchased income streams at old interest rates. This gain takes into account the fact that their current net worth falls as a result of the rise in interest rates. This suggests that the Haig-Simons' concept of income can be misleading in suggesting that capital losses of bondholders associated with rises in interest rates should be deductible, when in fact individual welfare has risen and a positive tax would be called for. In this case, similarly, capital gains taxation on a realization basis rather than on an accrual basis will result in a tax base closer to the dollar value of the welfare change.

The analysis is partial equilibrium and reasons for changes in interest rates have been ignored. In a true general equilibrium analysis, changes in real interest rates could only occur from exogenous changes such as a modification in the household rate of time preference (which would result from shifts in indifference curves). The analysis considers a single bondholder/consumer and variations in interest rates are independent of his own decisions.

The Paish Argument for Less than Full Taxation of Capital Gains Originating from a Fall in Interest Rates

The Paish argument considers an individual who holds a bond which pays an income return at the current interest rate. Each period the individual has the option of liquidating the bond to yield current consumption, or holding the bond, foregoing current consumption, and receiving future income. Paish assumes that individuals have indifference curves defined in the space of current and future potential

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consumption. These are represented in Figure 1 where the axes are labelled $C_0(w)$ representing potential current consumption from liquidating bondholdings and $C_1(y)$ representing potential future consumption from continuing to hold bonds and receiving the income stream into the future.

An individual currently holding bonds at existing interest rates is on an initial indifference curve at point A. If interest rates fall the current market value of wealth will rise and, therefore, potential current consumption will rise and the individual will move from A to B. Potential future consumption from holding the bond will remain unchanged even though interest rates have fallen. If the individual is forced to surrender the full amount of the capital gain and liquidate sufficient bondholdings to pay this gain to the government, this would move the individual from point B back onto a lower indifference curve at point C.

The argument³ is therefore that if the individual is taxed on the full amount of the accrued capital gain he is being taxed as if the change in welfare were from point C to point B, whereas, in fact, the individ-

ual will only have moved from point A to point B. Full taxation of accrued capital gains in such circumstances, it is argued, is unjust. Taxation of realized capital gains may be equally unsatisfactory since no realized gain need occur and yet an increase in welfare takes place.

A Reformulation and Extension of the Paish Argument

The Paish argument is essentially that all individuals have an ability to recontract as a result of a change in interest rates. While this is reflected in capital gains or capital losses the value of this ability to an individual cannot be measured in this way.

To accurately reflect this line of reasoning an alternative diagrammatic approach is needed to that used in Section 1. The effects of changes in interest rates should appear as movements in budget constraints rather than simply as movements between indifference curves. This approach is followed in Figure 2 where a single individual is considered with an indifference curve map defined on current consumption C_0 and future consumption

Figure 1

Paish's argument for less than full taxation of capital gains

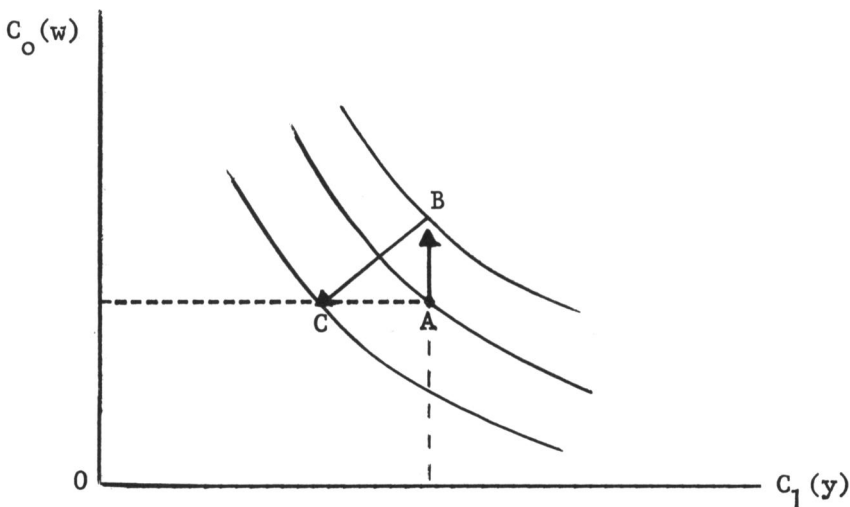
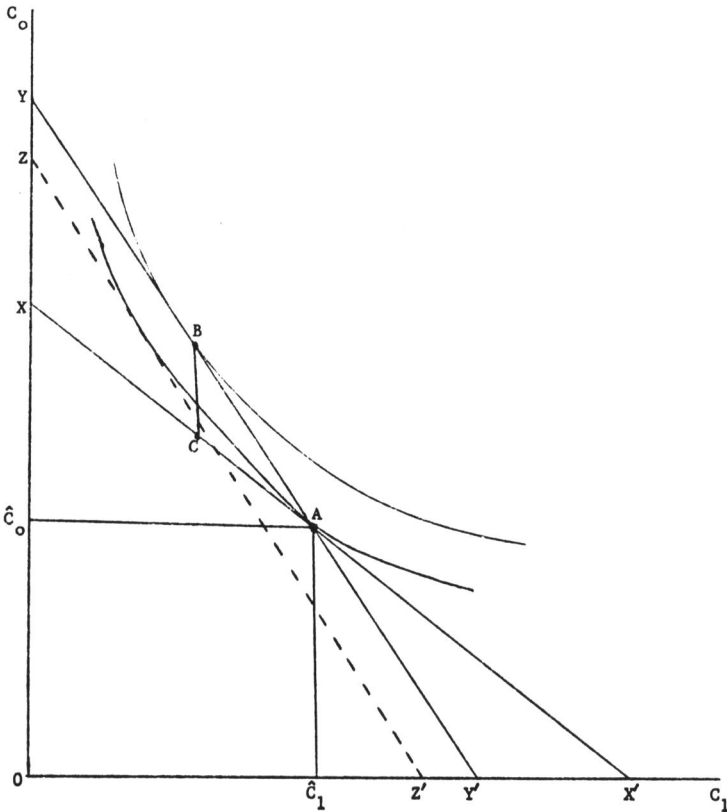


Figure 2
The Effect of a Fall in
Interest Rates



C_1 . The individual is considered to have a fixed amount of wealth available to him in an initial period, and faces a given interest rate r paid on bonds sold by financial institutions. XX' represents the budget constraint the individual faces between current consumption and future consumption at existing interest rates and point A defines his initial plan in terms of current and future consumption. This involves holding a portion of his wealth in cash and a portion in an interest-bearing bond.

The effect of a change in interest rates before the individual has purchased cur-

rent consumption goods with the cash he holds can be considered; i.e., recontracting is permitted when interest rates change. The fall in interest rates tilts the budget constraint through point A . By selling bonds he can realize a capital gain and for any planned future consumption beyond that which would have been possible prior to the fall in interest rates. If he wishes to increase his future consumption stream beyond \hat{C}_1 he must do this by lending some of his holdings of cash at lower interest rates than previously. Thus, the tilted budget constraint YY'

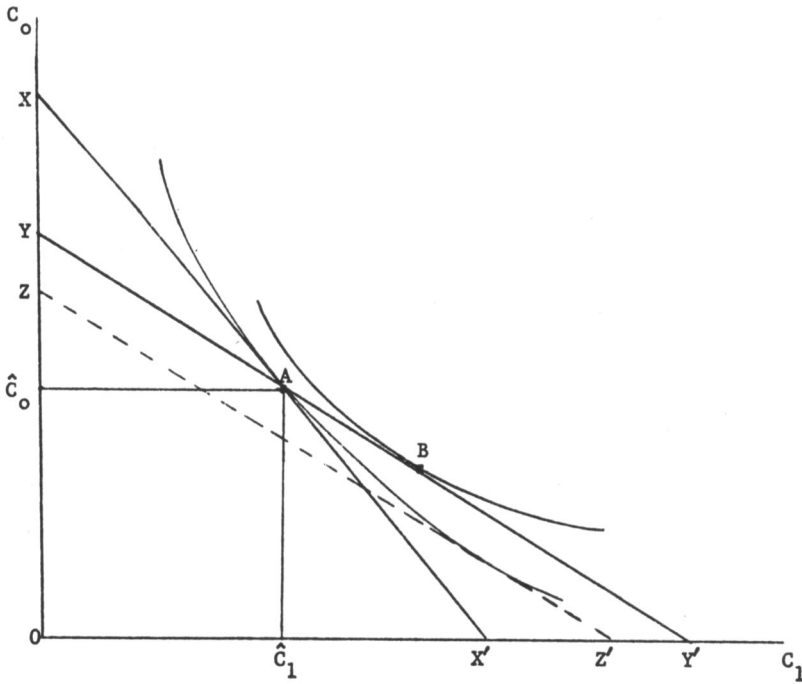
gives an individual the opportunity to move to a point B giving an increase in welfare. Movement to point B will involve the realization of a capital gain measured by the distance BC.

Under a Haig-Simons' concept of income the individual would be taxed on the full amount of the accrued capital gain YX. Under a capital gains tax on a realization basis he will be taxable on the amount BC. The current dollar value of the change in welfare is, however, smaller than either of these and is given by the amount YZ. In this situation it is inappropriate to tax the individual on the full amount of the

capital gain. Instead, he should be taxed on a smaller amount and the presumption applies that taxation on a realization basis, while an overestimate, will be closer to taxation of the welfare gain than capital gains taxation on an accrual basis.

This same approach can also be used to consider the case of a rise in interest rates where a more striking result can be obtained. This case is considered in Figure 3. As before the individual makes an initial plan in terms of current and future consumption at given interest rates taking him to point A. With a rise in interest rates if he liquidates any of his bondhold-

Figure 3
The Effect of a Rise in
Interest Rates



ings he will incur a capital loss. However, the enhanced ability of the individual to lend money at higher interest rates means that he can now plan for an increased future consumption stream and moves from point A to point B yielding an increase in welfare. Under a taxation system which taxes accrued capital gains and has loss offset provisions the individual will be allowed to take a capital loss given by XY. Under a capital gains taxation system operated on a realization basis there will be no realized capital gain and no tax will be paid. There has, however, been an increase in the welfare level of the individual. Taxation on a realization basis understates the loss compared to accrual based capital gains taxes and gives a result closer to a tax of the current dollar value of the welfare change than taxation on an accrual basis.

This set of arguments therefore casts doubt on the appropriateness of the Haig-Simons' concept of income as a blanket income concept in that special treatment is called for for capital gains depending upon their source. While this has been accepted for some time some further implications of this do not seem to be fully appreciated in the literature. In the event of a rise in real interest rates the Haig-Simons' concept of income suggests allowing a capital loss whereas it might be more appropriate to have a positive tax given that an increase in welfare occurs for individuals who have remained liquid in

their portfolio and can now lend at higher interest rates. In circumstances of changing interest rates taxation of capital gains on a realization basis gives a closer approximation to taxation of dollar equivalents of welfare gains than taxation on an accrual basis.

FOOTNOTES

¹A lengthy discussion of this point appears in the Appendix to Chapter 1 in Kaldor [1957]. In Kaldor's rejection of the income tax in favour of the expenditure tax, one of the principal arguments is the difficulty in defining income along Haig-Simons' lines, and the problems connected with changes in interest rates constitute one of the prime objections which Kaldor raises to a simple Haig-Simons' concept of income.

²This diagram also appears in Prest's public finance text [1975].

³In the next section it is shown that this line of argument is essentially correct, although the Paish argument has a built-in inconsistency. As the indifference curve diagram is defined in terms of potential future and current consumption and not actual current and future consumption, the indifference curves represent unattainable points and cannot describe true preferences. At point B, if the potential current consumption is achieved as a result of the liquidation of wealth, no future consumption can be enjoyed. This inconsistency in the Paish argument is removed in the next section.

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