

# **Holding Gains and Interest Accrual**

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## **Introduction**

This note is a comment on the documents by Bob McColl, dated 08/12/95, on *Full Accrual Accounting for Investment Income*, and also the earlier paper by Peter Harper on *Interest in the BoP*, June 1995.

My general comment is that I agree with the position taken in these papers. The 1993 SNA does not explain how to record changes in the interest Accruing on securities when their market prices change in response to changes in market interest rates, whereas the IMF's fifth BoP Manual does. There seems to be an error of omission in the SNA. Neither the 1993 SNA nor the BoP Manual state that the two manuals intend to take a different position on this point. One of the main objectives of both revisions, as laid down by the Statistical Commission, was to eliminate differences between them. The position that I have already taken in the *Manual on Inflation Accounting* that I have just completed for the OECD, prior to coming to ABS, is the same as that in Bob McColl's paper and in the BoP Manual.

## **Full accrual**

The 1993 SNA tried to distinguish three bases for recording transactions:

- (1) recording actual payments,
- (2) recording when a payment is due to be made,
- (2) recording when the activity or event that gives rise to a claim occurs.

As (2) is often called accrual accounting, (3) has been described as full accrual accounting. It is not easy to provide a succinct definition of full accrual that is also precise and informative, although it is usually not difficult to determine how it should be applied in practice. The basic idea is to try to record transactions at the time that whatever it is that gives rise to a claim by one party over another occurs.

In the case of a transaction involving the change of ownership of a good or asset, full accrual requires the transaction to be recorded when the change of ownership occurs. In the case of the provision of a service, it is the time the service is delivered. However, some services are produced continuously over a long period of time: e.g., educational or hotel

services. In such cases, the claim of the producer over the consumer is recorded as building up continuously over that period. If the production spans two accounting periods the total claim (payment) is divided *pro rata*.

Compensation of employees is similarly recorded when the work is done that gives rise to the employee's claim over the employer—not when the wages are paid or are due to be paid. The claim accrues continuously as the work is done. Similarly, any tax liability that may be incurred should, in principle, also be treated as accruing continuously. Although the 1993 SNA recognizes that it may not always be feasible to use full accrual for taxes in practice (see paras. 8.49 and 8.52).

### **Interest accrual**

Consistently with the general principle outlined above, interest is recorded as accruing continuously over time to the creditor on the amount of the principal outstanding (para. 7.94). The implication is clearly that interest should be calculated by applying the rate of interest at each moment of time to the amount of principal outstanding at that moment, although this does not seem to be said explicitly in the 1993 SNA.

Some guidance is provided, however, in the case of bills or bonds issued at a discount. Assuming no change in interest rates, the difference between the issue price and the face value at which the security is eventually redeemed, i.e., the redemption price, is treated as interest that accrues continuously over the life of the asset. This interest is recorded in the Primary Income Accounts as interest payable by the issuer to the holder of the security which is simultaneously recorded in the Financial Accounts in both parties as being reinvested in the same security (see paras. 7.95 and 7.100 - 7.103).

In addition to this interest, there may also be periodic cash payments of interest, or coupon interest. If the cash payments as a percentage of the face value of the security are higher than the market rate of interest at the time of issue, the security may be issued at a premium in which case the excess of the issue price over the redemption price generates negative interest, although this case is not referred to explicitly in the SNA.

In para. 12.110, it is emphasized that the gradual increase in the market price of a bond that is attributable to the accumulation of accrued, reinvested interest reflects a growth of the principal outstanding—i.e., in the size of the asset. It is essentially a quantum or volume increase and not a price increase. It does not generate any holding gain for the holder of the bond or holding loss for the issuer of the bond.

Para. 12.111 goes on to point out that holding gains occur when the market prices of the securities change in response to interest rate changes.

It may appear that recording interest on an accrual basis is a national accounts imputation. In fact, however, the issue is one of classification rather than imputation. The question is how to record in the accounts the increase in the market value of a security that is traded on markets, assuming interest rates are unchanged. In order to capture the economic reality of what is happening, the SNA classifies the increase as an increase in the principal

outstanding due to additional lending out of the interest accruing. Of course, when market rates of interest change during the accounting period, changes in the price of the security are superimposed on this additional lending, but it is easy to disentangle the two effects arithmetically and financial markets have no difficulty in arriving at the overall changes in the values of the securities in these circumstances.

This paper is concerned with the interaction between changes in the market prices of securities induced by changes in interest rates and the interest accruing on the securities. It argues that the relationship is very simple because the sum of the total interest accruing over the life of the security (excluding any cash or coupon interest payments) plus or minus the total holding gains or losses accruing is a constant, fixed by the difference between the redemption price and the issue price. It follows that if the market price of a security changes as a result of a change in market rates of interest, there must be a consequential equal and opposite change in the interest received over the remaining life of the security.

### **Holding gains and interest accrual**

It is sometimes argued that the interest on a deep discounted bond, for example, is inexorably fixed by the difference between the issue and the redemption price at the time at which it is issued and that nothing can change it subsequently. Obviously, nothing can change this difference, but that does not imply that it must all be interest when the security can be traded. What the difference actually measures is the *total return* received by the holder(s) and this return may include some holding gains (or losses) as well as interest when the market price of the security can change. The total return on a security may be fixed at the time it is issued, but not the split between holding gains and interest, which depends on movement in interest rates and the associated movements in securities prices. Only if there are no price changes is it all interest.

Consider what happens when the market price of a security changes in response to an interest rate changes. Following SNA rules, the asset must be valued at its new market price. This implies that a nominal holding gain, or loss, equal to the change in the market price must accrue to the holder and the issuer. Because the asset is tradable, a positive gain can actually be realized by the holder selling the asset, if desired. Alternatively, if the market price falls as a result of a rise in interest rates, the issuer can realise the holding gain (i.e., fall in the price of a liability) by buying back. Once a gain or loss occurs, it is not possible for the holder to continue to receive the same amount of interest as before simply by holding on to the asset to maturity. It is an accounting impossibility.

Suppose the market price of a security increases because of a fall in interest rates thereby narrowing the gap between the current market price and the redemption price. From then onwards, the market value of the asset increases at a slower rate than before as it approaches maturity. This is how markets react in practice as the return gained by holding the

asset to maturity is obviously less than before. This implies that the rate at which interest accrues and is reinvested also slows down.

Consider the accounts for the year in which the price increase occurs.

- (1) The market value of the asset increases between the opening and the closing balance sheets.
- (2) This increase is equal to the holding gain plus the reinvested interest.
- (3) The reinvested interest is less than if the price increase had not occurred. However, the reduction in the reinvested interest must be less than the holding gain. (The reduction in interest resulting from the holding gain is spread over the whole of the remaining life of the security so that only a fraction of it affects any single period.)
- (4) Thus, the increase in the value of the asset between the opening and closing balance sheets is greater than if the price increase had not occurred.

However, if interest were to be recorded as accruing and being reinvested at the same rate as before the holding gain occurred, the sum of the interest plus the holding gain would exceed the actual increase in the market value of the asset between the opening and closing balance sheets. There would be an inconsistency, indeed a contradiction, between the flow accounts and the balance sheets of the SNA.

The situation in subsequent periods would be even worse if interest were recorded at the same rate as before. In each period, the interest accruing and being reinvested would exceed the increase in the market value of the asset. The flow accounts would be irreconcilable with the balance sheets in every single period. Over the whole life of the asset, the sum of the interest reinvested and the holding gain would exceed the increase between the issue price and the redemption price, an economic and accounting impossibility.

What happens in reality, of course, is that when the price of the asset rises, the holder accepts an instant holding gain *in exchange for* an equal reduction in interest in the future. It makes no difference whether the asset is actually sold or not, but the accounting is more obvious when the asset is sold to a third party.

Because the occurrence of a holding gain merely changes the split between holding gain and interest over the life of the asset, it may look as though the gain brings no real benefit. This is obviously incorrect, however. The occurrence of a holding gain brings a benefit forward in time so that the recipient is better off. It changes the time profile of the benefits received by the holder of the asset and the time profile of the liabilities incurred by the issuer. Similar arguments apply, *mutatis mutandis*, to holding losses.

It has been argued that any holding gain must be subsequently reversed over the life of the asset because the market price eventually converges on the same figure, the redemption price, whether a holding gain occurs or not. Superficially, it may appear that holding gains must cancel out over the life of the asset so that the total return is interest after all. This is a fallacy.

The confusion results from failing to distinguish changes in the market value of the security due to the accumulation of reinvested interest from price changes. As the quote from para. 12.110 given above indicates, the growth in the market value of a security due to the accumulation of reinvested interest is not a price increase. The growth is due to the stream of new lending which increases the size of the asset and the liability and has no effect on its price. It does not generate a holding gain. {*Note:* There is a serious semantic difficulty here because it is normal to describe the market value of the security as its price, which does in fact increase as interest accumulates. One way of interpreting the situation is to think of the security as improving qualitatively as it approaches maturity (its size is changing). If the price of the security is adjusted for this quality change there is no increase in resulting true price. For this reason, no holding gains are generated. }

Suppose there is an increase in the market price of a security due to a reduction in the interest rate and that there are no subsequent changes in interest rates. The interest accruing over the remaining life of the asset is equal to the difference between the new market price and the redemption price. As interest accrues (at the new lower rate of interest) there are no further changes in the price of the asset and no further holding gains or losses. The initial holding gain is not canceled out. The subsequent growth in the market value of the asset is entirely a volume change due to the reinvestment of the accruing interest which increases the size of the principal outstanding over time. It is a fallacy to conclude that holding gains must cancel out over the life of the asset. Once a gain occurs, it can only be canceled out by subsequent changes in interest rates. *A priori*, it is impossible to make any generalizations about the cumulative holding gains or losses on a security.

In practice, there may be many changes in the price of a security during its lifetime as a result of interest rate changes. Each time its market price changes, the subsequent interest on the security also changes.

### **The 1993 SNA**

The 1993 SNA fails to offer any guidance on how to record the interest accruing on a security whose market price changes as a result of a change in market interest rates. It is sometimes argued that such guidance is unnecessary on the grounds that the interest is irrevocably fixed at the time of issue anyway. It has been shown above, however, that such a position is untenable and inevitably leads to inconsistencies between the flow accounts and the balance sheets in the SNA. As explained in chapters X and XII of the 1993 SNA (paras. 10.15 to 10.18 and paras. 1 to 7 of the Annex to chapter XII), the system provides a complete and

exhaustive accounting for the difference between the opening and closing balance sheet values in terms of transactions, other volume changes and holding gains or losses. There is no reconciliation account in the system and no room for conceptual discrepancies.

There is an oversight, or error of omission, in the 1993 SNA which should be rectified. It would be appropriate for ABS to raise this issue in a suitable forum as soon as is convenient.