

Eleventh Meeting of the  
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Accrued Interest on Debt Securities with a Fixed Rate of Interest at the Time of Issue

Prepared by the Statistics Department  
International Monetary Fund

## I. OVERVIEW AND ISSUES FOR DISCUSSION

1. This paper discusses several alternative treatments of the accrual of interest on debt securities for the information of the IMF Committee on Balance of Payments Statistics. It discusses the pros and cons of the main options but does not seek decisions at this Committee meeting. **Instead it seeks the members' views on whether implications should be investigated, and, if so, what course of action might be followed.** Of course, comments on the paper would be welcome, either during the meeting or separately in writing.
2. The Fund staff would be prepared to develop an opinion that would reflect the needs of all the macroeconomic statistics supported by the Fund (that is, in addition to the balance of payments, national accounts, government finance statistics, and the monetary statistics).
3. It is envisaged that such an opinion, and any opposing views, would need to be presented to both the ISWGNA and this Committee to make any final decision.

## II. INTRODUCTION

4. How accrual of interest on debt securities with a fixed rate of interest at the time of issue is treated has considerable impact on sector and national saving and hence has major policy implications. It affects the balance of payments current and financial accounts' balances and gross national income as well as having impacts on sector savings, general government and household sectors, in particular. It is a subject that is not adequately or consistently covered in the standard macroeconomic statistics manuals. It is a contentious and complicated issue and one that requires careful consideration.
5. The issue was raised in a recent paper by Mr. Chris Wright and Mr. Graham Semken of the Bank of England which is attached as an appendix to this paper. Mr. Wright has recently reviewed papers by Mr. Peter Hill (ECE), Mr. Peter Harper (in a Fund Working Paper) and Mr. Robert McColl (Australian Bureau of Statistics). These papers have challenged the "traditional" way interest on fixed rate debt securities is measured by indicating that, to a greater or lesser extent, interest is not "fixed" at the time of issue. Because of the importance of this subject on various aggregates and because the European Central Bank has raised the issue, it is appropriate that the issue be discussed and so that a resolution can be reached.
6. The purpose of this paper is to start the process of formally addressing the issue in the balance of payments (and, by extension, in the other macroeconomic series—national accounts, monetary statistics and government finance statistics). The *Balance of Payments Manual (BPM5)*, the *Balance of Payment Compilation Guide (BPCG)*, the *Balance of Payments Textbook (BPT)* and the *System of National Accounts (SNA93)*, each would appear to offer differing, and in some cases, conflicting, views. Having said that, however, it must be remembered that *BPM5* and *SNA93* are the only two of these documents that are international

standards: *BPCG* and *BPT* are documents published by the IMF but which do not have the same standing as *BPM5* and *SNA93* as they have not been subject to the same process of international review. Consequently, statements in the *Textbook* and the *Guide* must be regarded as carrying less weight than *BPM5* or *SNA93*. Having said that, however, this paper will review these differences and indicate some of implications of their adoption.

### III. THE ISSUE

7. Accrual as a principle is not in dispute, merely its interpretation. Accrual accounting underlies the whole of the System of National Accounts and Balance of Payments concepts; that is, cash based, or even “due for payment”, accounting is not appropriate. *SNA93* states:

*“Accrual accounting records flows at the time economic value is created, transformed, exchanged or extinguished. This means that flows which imply a change of ownership are entered when ownership passes, services are recorded when provided, output at the time products are created and intermediate consumption when materials and supplies are being used. The System favours accrual accounting because:*

(a) *The timing of accrual accounting is in full agreement with the way economic activities and other flows are defined by the System. This agreement allows one, for instance, to evaluate the profitability of productive activities correctly (i.e., without the disturbing influence of leads and lags in cash flows) and to calculate a sector’s net worth correctly at any point in time;*

(b) *Accrual accounting can be applied to non-monetary flows.” (SNA 3.94)*

8. By the same token, for balance of payments, for example, exports and imports are recorded when change of ownership occurs, not when the good leaves or enters an economy or when it is paid for. The same applies to income:

*“Under investment income, interest is recorded on an accrual basis, which is the continuous method of recording that matches the cost of capital with the provision of capital. If the interest is not actually paid, an entry is required, together with an offsetting credit entry in the **financial account** for the claim associated with the nonpayment (i.e., an increase in liabilities) The two entries are particularly important for zero coupon and other deep discounted bonds. The difference between the issue price and the value at maturity is treated, on an accrual basis, as interest over the life of the bond” (BPM5 para. 121)*

9. Interest is the payment for the continuing use of debt finance and should be recorded on a continuing basis, not when it is paid or when it comes due for payment.

10. In *BPM4*, recording of income was on a “due for payment” basis (see paras. 299-300), not continuously over time. While not the same as cash based accounting, it has more in common with it than with accrual accounting. What “due for payments” means is that if interest were payable annually, for example, and accounts were prepared quarterly, there would be no interest recorded payable for three quarters of the year, even though the debt finance capital were being used during those periods. In the fourth quarter the cost of the whole year’s use of the capital would be recorded. Such an approach is an inadequate reflection of the use and compensation for the use of economic resources. As capital is being used on a continuing basis, it should be recorded on a continuing basis and that is recognized in both *BPM5* and *SNA93*.

11. When a borrower seeks to raise debt capital, there are two major ways this can be done: through a loan or through a debt security. Each of these options can have fixed or floating rates of interest. It is reasonable to assume that a borrower seeks to raise funds as cheaply as possible, taking into account the specific circumstances of the borrowing needs. In making that assessment, the borrower needs to consider such things as the likely degree of volatility of interest rates over the life of the borrowing, whether such volatility can be accommodated by modifying income derived from the asset (that has been acquired from the borrowing), from tax receipts, or other matters.

12. In the *SNA93* and *BPM5*, loans are assumed not to be marketable. Therefore, apart from instances where the value of the loan is written down, the loan is to be recorded at its nominal, or repayable, value, excluding any unearned income that may be included in the value of the repayable amount. This applies equally to fixed or floating rates loans. The “market value” of a loan at either fixed or floating rate borrowing changes only to the extent that accrued interest is added to the value of loan until paid. Changes in interest rates do not change the value of the loan on the grounds that there is no “market” against which to test the value, loans being non-tradable instruments. The interest payable is the rate applicable times the value of the loan (taking the accrual of interest into account).

13. For debt securities, if the borrowing is undertaken at floating rates, the market value of the security is adjusted according to some agreed criteria in the original contract. Consequently, the market value of the instrument usually remains at or close to market price as the interest rate is adjusted to market conditions. Any deviations from market price are likely to be small and of limited duration, depending on the frequency with which the rate of interest is adjusted and the volatility in interest rates.

14. However, for fixed rate debt securities, changes in market rates of interest will have an effect on the current price of the security as the price of the security will be derived by its net present value. The discount factor applied in its derivation will be the current rate of interest so as the market rate of interest changes the market price of the instrument will change with

it.<sup>1 2</sup> The issue of the treatment of accrued interest on debt securities relates to which application of accrual should be used: the so-called *debtor approach* or the *creditor approach*. (These might be more accurately described as the “historic/contractual” basis and the “prevailing market rate” basis but the *debtor: creditor* appellation seems to have gained a certain degree of currency.) A third option may be called the *acquisition approach*.

15. Under the *debtor* approach for borrowing by debt instrument at fixed rate, the rate of interest payable, and accruing, is fixed at the time the bond was issued. That is, if a debtor were to issue a ten year bond for 1000, at 10 percent, the prevailing rate at the time of issue, with interest payable annually, the interest payments each year is 100 (accruing at 24.1 in the first quarter, to allow for compounding) for the next 10 years. The basis of the argument for this approach is that because the rate has been fixed contractually, the payment does not change because there are subsequent changes in the market rate. It is precisely because there was a fixed rate that the borrower decided to finance its requirements this way—the borrowing costs are known over the life of the debt instrument; if the borrower had been interested in borrowing at rates that changed with market rates, the borrowing would have been undertaken at floating rates, taking due account of the use of financial derivatives<sup>3</sup>.

16. Under the *creditor* approach, the prevailing market rate during the period is used to determine the interest paid whether on a loan or on a security, at fixed or floating rates. For a debt security, the argument put forward for this approach is that the rate of interest on a security is not fixed—it fluctuates with market conditions: as interest rates in the market change, the price of, and hence the return on, the security change. There is no such thing as a fixed rate of interest and under accrual accounting this is more obvious than under cash accounting. This approach is based on the observable rate of interest on the market prevailing during the period. As interest flows apply to a period of time (as opposed to a rate at one

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$$^1 \text{ NPV} = \Sigma \{ i/(1+r)^n \} + (P/(1+r)^n)$$

where NPV = net present value  
i = coupon receipts  
r = rate of discount  
n = number of periods to maturity for coupon payments  
P = principal repayment at maturity

<sup>2</sup> In principle, there is little reason for treating fixed rate loans any differently from fixed rate debt securities. The means of calculating the net present value of a fixed rate debt security as the discounted value of future receipts could apply equally to loans.

<sup>3</sup> An issue which needs further research relates to the use of derivatives in risk management and risk transferal. If a borrower raises funds at floating rates and then takes out an interest rate swap into a fixed rate, or vice versa, to what extent would there be double counting if the *creditor* approach were used?

point in time), and as interest rates change almost constantly, the period average of the prevailing rate applicable to the security in question should be used.

17. Under the *acquisition* approach, the rate to be used is that which is implicit at time of acquisition by the holder. As prices change, the rate of interest implicit in the security changes and it is the rate implicit at the time of acquisition that is relevant to the holder. This could be very different from the rate during the current period as the security may have been acquired at a time when rates were much higher or lower.

18. **Among the questions that need to be resolved are:**

(1) What is the appropriate basis for measuring interest flows on fixed rate interest securities—the so-called *debtor approach* or the *creditor approach*? What does “accrual” accounting mean in this context?

(2) What is the most appropriate basis for analysis? Is more than one approach appropriate for different uses? If so, how should more than one approach be presented? A satellite account?

(3) What does “market price” mean when applied to fixed rate interest flows? Is it the current rate? Is the “market price” of the interest flows fixed at time of issue?

(4) Under the *debtor approach*, what is the meaning of the difference between the change in the market value of the security and the “accrual” of the “interest”, that is, the amortized change? Is it a price change, even when there has been no change in the related price (i.e., interest rates)? As the debtor and creditor approaches are incompatible, which should take precedence? How is this to be achieved? If the *debtor approach* is adopted, and bond prices include accrued interest, what is being accrued? In markets where bond prices do not include accrued interest, what is the meaning of “market price” of the security when SNA93 recommends including accrued interest with the security?

(5) If current rates of interest are used, how should government/household/business/national savings be interpreted when there has been no change in anything other than interest rates?

(6) Is it appropriate to use market values for debt instruments on the debtor side (especially for governments), given the importance of debt: GDP ratios in certain circumstances and the volatility that would be introduced by use of market values? If market values are not to be used on the debtor side, what mechanism should be applied to secure a balance in the system?

(7) How important is liability management?

(8) Does the availability of financial derivatives have an impact on the treatment?

#### IV. WHAT THE METHODOLOGICAL DOCUMENTS STATE

##### *The System of National Accounts*

19. SNA93 defines interest as:

*“Under the terms of the financial instrument agreed between them interest is the amount that the debtor becomes liable to pay to the creditor over a given period of time without reducing the amount of principal outstanding.” (SNA 7.93)*

20. What does this sentence tell us about how to record interest on debt securities that change in value as a result of changes in market rates of interest? The price of a fixed rate debt security is influenced by a number of factors: term to maturity, current rates of interest, coupon rate (if any), credit risk of issuer. If market rates of interest change, so will the market value of the security. Accordingly, if the market value of the security changes, how is this sentence to be applied? If interest rates rise, the value of the principal outstanding will fall; does that mean that interest accruing and owing has fallen, risen or remained the same? If the principle to be applied is that the payment to be made *without reducing the amount of principal outstanding* is interest it could be said that as the value of the principal has fallen the amount of interest to be repaid has fallen as well. On the other hand, if market rates of interest have risen, it could equally be argued that the amount of interest to be paid has also risen. Alternatively, it could be said that the nominal principal outstanding is unchanged; in which case, interest remains unchanged. It is not clear which is the appropriate interpretation.

21. In paragraph 7.94, the SNA discusses accruing interest:

*“Interest is recorded on an accrual basis, i.e., interest is recorded as accruing continuously over time to the creditor on the amount of principal outstanding. It may differ not only from the amount of interest actually paid during a given period but also the amount of interest due to be paid within the period.” (SNA 7.94)*

22. With regard to interest on securities, the SNA differentiates between *bills and similar instruments* and *bonds and debentures*.

23. For *bills and similar instruments*, which are taken to be short-term instruments (less than one year and sold at a discount, that is, having no coupon attached) interest is defined as the difference between the issue price and the maturity price:

*“Bills are traded on money markets at values which gradually rise to reflect the interest accruing on the bill as they approach maturity. The increase in the value of a bill due to the accumulation of accrued interest does not constitute a holding gain because it is due to an increase in the principal outstanding and not a change in the price of the asset.” (SNA 7.99)*

24. *Bonds and debentures* are defined as

“...long-term securities that give the holder the unconditional right to:

(a) *A fixed or contractually determined variable money income in the form of coupon payments;*

*or*

(b) *A stated fixed sum on a specified dates or dates when the security is redeemed;*

*or*

(c) *Both (a) and (b). Most bonds fall into this category.*

*The amounts of the fixed or variable money incomes or coupon payments **due for payment** within the accounting period are treated as interest receivable and payable by the creditor and debtor, respectively.” (SNA 7.100) (emphasis added)*

25. This would seem to be a mistake. The whole thrust of the *SNA* is to record transactions on an accruals basis. To indicate that *due for payment* is appropriate runs counter to that principle.

26. Zero-coupon bonds are discussed and treated in the same fashion as bills, that is, the difference between issue and maturity is taken to equal interest:

*“This interest has to be distributed over the life of the bond. **One possible method is to assume interest is credited at the end of each year at an annual rate that is constant over the life of the bond.**” (SNA 7.101) (emphasis added)*

27. This statement appears to lend support to the debtor approach. However, “*one possible*” method is also an indication that there are other methods but none is indicated.

***The Balance of Payments Manual and other balance of payments methodological publications***

28. The balance of payments publications offer alternative, and conflicting, views. *BPM5* does not provide a definition but states that:

*“Interest is payable in accordance with the binding agreement between the creditor and the debtor.” (BPM5 para. 274)*

which has a similar tone to the SNA93 para. 7.93. Apart from traded zero coupon and deep discounted bonds (see below), *BPM5* follows the same general principles as *SNA93* which, as was seen above, would seem to be those of the *debtor* approach. It is only in regard to traded zero coupon and deep discounted bonds that there is a departure from this approach:

*“(S)uch a bond is sold at a discount from par value, and the full return is paid at maturity... This difference is treated as interest income and is recorded as accruing (i.e., converted into a series of monthly, quarterly or annual payments) over the life of the bond. The difference (interest income) is not recorded when due for payment... Thus, the cost of providing capital is matched to the periods for which the capital is provided. If, prior to maturity, a zero coupon or deep discounted bond is traded in the secondary market, the transaction price may include a realized capital gain or loss in addition to accrued interest. ... **Prevailing interest rates reflecting the difference between the new owner’s cost and the value of the bond at maturity should be used for the subsequent recording of interest on the bond.**”* (*BPM5* para. 396) (emphasis added)

29. From these statements in *BPM5*, it would appear that there is no consistency of treatment: all zero coupon and deep discounted bonds (but not short-term discounted instruments) are to be treated on the *acquisition* approach and all other instruments on the *debtor* approach. Not only is this unsatisfactory in practice, it is unsatisfactory in principle. Even though much of the discussion on whether it is appropriate to use the contractual, acquisition or current market rate is related to the special nature of zero or deep discounted instruments, the principles apply to all debt instruments. In the first place it is rare for a debt instrument to be issued at exactly 100 (most will have a small discount or premium to reflect the changes in rates between the time of determining the coupon rate and market rates on issue day). As a consequence, the statistician has to deal with issue premia and discounts on virtually all debt instruments. Secondly, as time passes, market rates will change from those prevailing at time of issue. In consequence, trading in secondary markets will produce the same issue: how to deal with a debt security that is trading at a substantial premium/discount from the issue price?

30. In the *BPCG*, para. 614, in line with *BPM5*, it is recommended that interest be treated on an accrual basis. It then goes on:

*“For securities (portfolio investment), **accrued interest for a particular period should be calculated by applying the prevailing interest rate to the average market rate of the security.** The result may differ from coupon interest payments made during the period.”* (*BPCG* para. 620) (emphasis added)

31. However:

*“... use of prevailing interest rates may or may not parallel ways that debtors or creditors record interest in their accounts. Debtors may calculate accrued interest on the basis of the*

*interest rate applicable at the time a security was issued. Creditor calculations may be based on the time a security was acquired...Also interest may be recorded when coupon payments are due. This method of recording interest will have a detrimental impact on the BOP only in the case of zero coupon and deep discounted bonds. In each of these cases the compiler should make adjustments when the impact is significant.” (BPCG para. 621) (emphasis added)*

32. *“For **other types of debt**, accrued interest should be calculated in accordance with interest terms specified in the contract. For example, **if a contract specifies a fixed-interest rate of 10 percent each year, the accrued interest for each year should be calculated as 10 percent of the amount outstanding.**” (BPCG para. 622) (emphasis added)*

33. While these statements may appear to offer alternative approaches, in fact, it is more a difference between concept and practice. Para. 620 and the first part of para. 621 quoted, set the principles: the creditor approach. The latter part of para. 621 is a reflection of what might need to be adopted for practical purposes, appropriate advice in a compilation guide, where the concept may not be possible to measure. Para. 622 provides practical guidance that is in line with the debtor approach for all non-traded and/or non-tradeable debt (including loans and deposits) and therefore reflects the views of *BPM5* and *SNA93*.

34. The *BPT* is a further modification. Interest is defined in much the same way as *SNA93*:

“... income that is normally paid in accordance with a binding agreement between a creditor and debtor.” (Para. 381)

35. *BPT* discusses the treatment of a zero coupon bond, first with no change in interest rates during its life, and then where there are changes in market rates.

36. *“A possible approach would be to ignore changes in interest rates and calculate the accrual of interest for all periods by using the interest rate prevailing at the time the security was issued. Such a method would probably be consistent with the way the issuing enterprise accrues interest in its accounts. However, there are two disadvantages with this method. The first is, that if the security is traded, the new holder of the security is unlikely to know, or care, what the interest rate was at the time the security was issued. The purchaser’s concern will relate to the prevailing interest rate and the effect of that rate on the return that he or she will receive on the instrument. The second disadvantage with using the interest rate prevailing at the time of issue to accrue interest over the life of the security is that this method does not reconcile well with the use of market values for measuring levels of investment. The change in the market value of the security in a particular period reflects (among other things) the prevailing rate of interest and not the rate of interest prevailing when the security was issued. **If the latter rate were used in the calculation of accrued interest, there would be distortions between the levels of investment and financial***

*transactions and in the apparent rate of return on the securities.*” (Para. 402) (emphasis added)

37. “To overcome these difficulties, the BPM5 recommendation is that, if securities are traded, prevailing rates should be used to determine accrued interest.” (Para. 403).

(This statement is not completely accurate: as we have seen, the use of prevailing rates of interest is recommended by *BPM5* only for zero coupon and deep discounted bonds, not all securities as is implied by this statement.)

38. These statements are not completely consistent with the use of the prevailing rate. The creditor may be more interested in the rate of return at the time of acquisition than with the current rate though it depends on what is meant by “rate of return”—for many market practitioners the rate of return is the yield, that is, holding gains as well as income flows.

39. Also, it would have been useful if the distortions mentioned in the highlighted text in para. 402 had been identified. However, it is the very issue that is highlighted that is at the nub of the difference in view. Is the purpose of the exercise to identify the apparent rate of return (which is a creditor viewpoint) or is the purpose of the exercise to identify the cost of capital to the user (the debtor view)? Or are these the same? To what extent is the measurement of the opportunity cost of capital a part of the framework of the national accounts and the balance of payments?

40. From the foregoing, it is clear that there are very different views in the standard texts. These differences need to be resolved. In that regard, it is worthwhile examining how these issues are addressed in the accounting profession.

## **V. WHAT ARE THE ACCOUNTING STANDARDS**

41. Accounting standards do not require the symmetry in treatment between the debtor and the creditor that the national accounts and the balance of payments require because the purpose of the company accounts is different. Each unit’s accounts are a discrete exercise; the information is for use by management, shareholders and taxation authorities. The way counterpart information is treated by the counterparty is not a consideration. Moreover, what accounting standards require for companies may not be an appropriate basis for economic statistics. A notable example of this is the difference in treatment between depreciation in company accounts and consumption of fixed capital in the national accounts. Another instance is the difference in the treatment between finance leasing, though company accounting practices may differ, depending on whether the reports are for taxation reporting or other purposes.

42. A major difference in view between macroeconomic statistics and corporate accounting is the focus. For the latter, the purpose of the exercise is primarily to see how the entity is using its resources, how profitable it is, how much net worth is changing and—by extension—what is the value of the organization, either in terms of the price of the shares as quoted on stock markets or the net asset value. For macroeconomic statistics, there are many uses of the data, and while the framework of the national accounts, and the balance of payments, is similar to a company's accounts, the focus is not the same. Part of that difference is how income is treated: for company accounts, as the focus tends to be on net worth, the means by which net worth changes is not as important as the change itself. For macroeconomic statistics, the means is very important. In particular, in this context, for a company, drawing a distinction between holding gains and losses, on the one hand, and interest, on the other, is not very interesting or important (except perhaps, if they are taxed at different rates). In the national accounts and the balance of payments, that distinction is essential. Consequently, while a useful indicator of how information should be gathered and interpreted, corporate accounting is not the arbiter of national accounting and balance of payments' concepts. That having been said, however, as company accounts are the basis for most of the information that is fed into economic statistics, how, and why, transactions and balances are recorded is not just of academic interest.

43. In general, interest on fixed rate securities is not treated consistently between the debtor and the creditor: for the debtor, interest is generally recorded on the basis of the rate (implicit) at the time of issue. For the creditor, interest is likely to be recorded on the basis of the (implied) rate at time of acquisition, which may not be the same rate as the current market rate either during or at the end of the period in question.

44. As interest is related to the underlying debt instrument, how interest is treated is related to the recording of the value of the instrument. For the most part, accounting standards use, for the holder of the security, the lower of cost or market, in line with the conservative nature of the profession, for longer term instruments but other methods are also possible, such as amortized value or straight line accrual, especially for discounted instruments. At the same time, the debtor's liability may be recorded at issue price, par value or amortized value (and in some instances, at market price). The use of the amortized value implies the interest rate implicit at time of issue, and the interest will compound over the life of the instrument, in line with approach recommended by the *SNA93* and *BPM5* for the treatment of (short-term) discount instruments.

45. *“With respect to a note by the provisions of this section requires the imputation of interest, the difference between the present value and the face amount shall be treated as discount or premium and amortized as interest expense or income over the life of the note in such a way as to result in a constant rate of interest when applied to the amount outstanding at the beginning of any given period.”* (FASB, *Current Text, Accounting Standards*, as of June , 1994, Volume 1 General Standards) (emphasis added)

46. This statement from the U.S. Federal Accounting Standards Board is a reasonably clear cut statement of support for the debtor approach.

47. Straight line accrual will record the same amount of interest per period but the implicit rate is falling (as the principal rises but the amount of interest recognized does not). From a national accounts' and balance of payments' perspective, a variety of valuation methods is unsatisfactory because consistency is necessary between holder and issuer to make sure the systems balance.

48. Increasingly, however, there is a movement toward "marking assets to market", that is, to recording assets on a market value basis (which is sometimes called a "fair market" basis) as at balance sheet day. Marking to market is often done on a daily basis for active market traders. Marking to market, however, removes any ready means of identifying holding gains and losses separately from "interest": market participants are primarily interested in "yield" which is not the same as "interest": yield takes into account changes in price and any interest received or receivable.

49. There have been proposals put forward by a variety of accounting bodies to move toward a recognition of "fair value" (equivalent to "market value" as used in the balance of payments and the national accounts) in the recording of interest. These bodies include the USA's FASB, the UK's ASB, the Canadian Institute of Chartered Accountants (CICA) and the International Accounting Standards Committee (IASC). The latter two institutions put out a document in February 1997 (*Accounting for Financial Assets and Liabilities*) which adopted an approach very similar to that presented in the *BPCG*. However, it has encountered strong criticism.

50. As indicated in the title its primary focus was on the best means to value the financial assets and liabilities, with a strong argument in favor of current market, or fair value. It chose not to address some balance sheet items, including (i) claims between parents and subsidiaries, associates and joint ventures; (ii) employers' obligations under defined pension plans and stock option and stock purchase plans; and (iii) non-financial assets. These latter it proposes should continue to be measured on an historic cost basis. Other items it proposed needed further study, including insurance obligations and reinsurance receivables. One of the primary purposes of the document was to recognize financial derivatives as on-balance sheet assets and liabilities (in much the same way as proposed in *The Statistical Measurement of Financial Derivatives*).

51. As part of the process of recognizing assets and liabilities at market value, the document discusses the implications of the treatment of interest. The appendix to this paper reproduces, from *Accounting for Financial Assets and Liabilities*, an example of a rise in interest rates and what that means for the valuation of a debt instrument and the associated interest flows. Possible alternatives are presented but the document argues for the use of the "creditor" principle, that is, to use the current rate of interest. Most of the discussion in the document is on the asset holder but the points are made that the arguments apply equally, only

in reverse, to the debtor. The underlying argument is that as a real loss, in the case of the holder, has occurred it should be recognized immediately and transparently rather than recording it gradually and in a non-transparent manner over the balance of the life of the instrument. The options for accounting the document suggests are:

(1) Recognizing the loss for the holder immediately and then record the income at the new, higher level, which would be in part in the form of cash and partly in the form of accumulating (amortized) value of the instrument; or

(2) Continue to record the asset at its historic value and record the interest at the historic rate over the balance of the instrument.

52. A third option, to record the change (drop) in value of the instrument but continue to record the interest at the historic value, is not presented. The reason for this may be that it might be inconsistent—to have income on one basis and asset on another and may cause discontinuities in the accounts of the entity.

### Examples

53. To illustrate: a government issues a 10000 bond with a 10 year life and a 10 percent annual coupon. Prevailing rates of interest at issue are 10 percent. It is, therefore, issued at par. It is purchased by a non-resident. On the first day of the following year, interest rates fall to 8 percent, and remain at this level for the rest of the year. The drop in interest rates raises the bond's market value to 11266 at the beginning of the year, a holding gain for the holder of 1266, and a holding loss for the issuer of the same amount.<sup>4</sup> The *SNA* and *BPM5* indicate that both the holder and the issuer should record the value of the bond outstanding at market price, that is, 11266 (which would mean a revaluation in the Other Changes in Assets Account of 1266). At this point, the holder decides to realize the gain and sells the bond to a resident who promptly re-sells it to a another non-resident. The new holder, having acquired the bond for 11266, has an effective rate of interest of 8 percent. At the end of the second year, as interest rates have remained unchanged after the fall at the beginning of the year, the value of the bond has fallen to 11165, which is the present value of the receipts and final principal

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<sup>4</sup>The holding gain is the result of the net present value of the future stream of payments being discounted at 8 percent, rather than 10 percent, i.e.,

$$NPV = \Sigma \{ i/(1+r)^n \} + (P/(1+r)^9)$$

where NPV = net present value  
i = coupon receipts  
r = rate of discount  
n = number of periods to maturity for coupon payments  
P = principal repayment at maturity

repayment over the coming eight years, discounted at 8 percent. How the difference of 101 between the opening value of 11266 and the closing value of 11165 is treated is at the heart of the debate.

54. Under the *creditor* approach, the interest receivable/payable will be 899 (the coupon of 1000 less the amortization of the premium of 101 in the first year: amortization of premia is treated as negative interest). As there is a cash payment of 1000, the 101 represents an early repayment of the outstanding balance and should be recorded as a financial account transaction, reducing the balance outstanding.

55. Ignoring, for exemplary purposes, the transaction which resulted in the resident holding the bond for only a short time, the balance of payments and IIP entries are as follows:

*Closing balance period t-1*

Portfolio		
Investment: Liabilities		
debt securities		10000

*Income Account period t*

Interest: payment		899 Dr
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*Financial Account period t*

Other investment: assets		
Currency and deposits	101 Cr (early redemption of bond)	
	899 Cr (payment of "interest")	
		11266 Dr (proceeds of bond sale to non-resident)

Portfolio		
Investment: Liabilities		
debt securities	11266 Cr (sale of bond)	
		101 Dr (partial early redemption of bond)

*Other Changes in Asset Account period t*

Revaluation:		
Portfolio		
Investment: Liabilities		
debt securities		+ 1266

*Closing balance period t*

Portfolio	
Investment: Liabilities	
debt securities	11165

56. Under the *debtor* approach, and again ignoring, for exemplary purposes, the transaction which resulted in the resident holding the bond for only a short time, the interest receivable/payable is 1000 (the coupon payment). The balance of payments and IIP entries are as follows:

*Closing balance period t-1*

Portfolio	
Investment: Liabilities	
debt securities	10000

*Income Account period t*

Interest: payment	1000 Dr
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*Financial Account period t*

Other investment: assets		
Currency and deposits	11266 Dr	(proceeds of bond sale to non-resident)
	1000 Cr	(payment of "interest")
Portfolio		
Investment: Liabilities		
debt securities	11266 Cr	(sale of bond)

*Other Changes in Asset Account period t*

Revaluation:	
Portfolio	
Investment: Liabilities	
debt securities	+ 1165

*Closing balance period t*

Portfolio	
Investment: Liabilities	
debt securities	11165

57. As noted above, it is how the 101 “premium” is treated that is the center of the difference in the treatment between the *creditor* and *debtor* approaches. Whereas under the creditor approach, the premium is treated as a prepayment of the outstanding principal, under the *debtor* approach, there is no “premium” to amortize: the bond having been issued at par, the change in its value in the market does not represent a transaction. All of the coupon payment is treated as interest. Capital and interest, income and holding gains and losses are kept separate.

58. It is unclear how respondents would report in this situation. Probably the debtor would report using the debtor approach although that is not certain. If the creditor were the resident and the issuer a non-resident, it is unclear how the coupon receipts would be recorded but it is probable under present accounting practices that they would be recorded as interest.

59. However, if the example is modified so that the bond becomes a zero coupon instrument, the entries become more complicated. A 10000 par value bond over 10 years, with no coupon, has a present value of 3855, if market rates are 10 percent at time of issue. Again, the resident issues the bond to a non-resident. Again, assume that interest rates remain unchanged over the first year, and then on the first day of the second year, they fall to 8 percent and remain there for the balance of the year. The drop in interest rates means that the market value of the security rises to 5002 which is the present net value of 10000 in nine years, discounted at 8 percent pa. Assume also, that on the first day of the second year, the original holder takes the holding gain and sells the bond to a resident who immediately resells it to a non-resident. At the end of the second year, the bond has a market value of 5402, being the NPV of 10000, discounted at 8 percent over 8 years.

60. For the first year, interest of 385.5 would have been recorded, being 10 percent of the issue proceeds (3855). As interest rates did not change in the first year, the market value for the zero coupon bond at the end of the first year is, therefore, 4240.5. With the drop in interest rates, the value rises immediately to 5002, a holding gain of 761.5 for the holder and a holding loss of the same amount for the issuer. At the end of the second year, as noted, the value of the bond has risen to 5402. The difference between the opening balance of 5002 and this closing balance amounts to  $5002 \times 8$  percent, that is, 400, the accrued interest.

61. The following are the balance of payments and international investment position entries using the *creditor* approach, and ignoring, for exemplary purposes, the transaction which resulted in a resident holding the bond for only a short time:



*Financial Account period t*

Portfolio

Investment: Liabilities

debt securities

5002 Cr (sale of bond)

424 Cr (reinvestment of accrual of interest @ 10 percent)

*Other Changes in Asset Account period t*

Revaluation:

Portfolio

Investment: Liabilities

debt securities

+ 737.5<sup>5</sup>

*Closing balance period t*

Portfolio

Investment: Liabilities

debt securities

5402

63. Under the *creditor* approach, the interest for the year is 400 as it would appear that the difference between the opening and closing balances can only be interest—there has been no further change in market rates and the credit worthiness is assumed to be unchanged. What is the appropriate treatment under the *debtor* approach? If the debtor is marking his/her bond to market value, as *SNA93* and *BPM5* recommend, what is to be charged to the income and expenditure account, 400 or 424 (4240.5\*10 percent, that is, the balance outstanding at the end of the first year times the implied rate at time of issue)?

64. If the bond has been valued on the balance sheet at market price, the entity/sector/economy is taking an extra “charge”, that is, the value of the debt rises by more than is implicit in the initial issue price (i.e., it rises by an extra 761.5 to 5002 rather than to 4240.5 which it would have been without the fall in interest rates) while the amount of interest charged to the income statement remains the same as that implied from the issue price (424), not the lower amount that would be implied by use of the current market value (400). It is improbable the debtor will account in this way. It is more likely that s/he will amortize the discount over the ten years at a constant rate—10 percent pa—and not mark the bond value to market rates. Or s/he will value everything at market price, that is the creditor approach. S/he is unlikely to value the bond at market price and the interest at historic cost.

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<sup>5</sup> The revaluation of 737.5 is the difference between the accrual of interest and the market value at the end of the period; it is partly due to price change (i.e., 761.5, from the drop in interest rates) but the negative 24 (between 761.5 and 737.5) is attributable to accrual of an “extra” 24 (the higher rate of interest) as a volume change.

65. As it is likely that the holder will report at market value, the distinction between interest and holding gain is unlikely to be made: yield is the only item of concern. Consequently, “interest” will not be reported as it is not something that the respondent measures. Accordingly, the statistician may be unable to separate income from the change in price due to changes in market rates without the maintenance of a detailed database of issues and holders. Without that information, maintaining the distinction between income and holding gains—a major one in the national accounts and the balance of payments—will be difficult. In the examples above, under the creditor approach, the change in interest rates means that income becomes, in part, principal. If the change in interest rates indicated in the example were to continue to the end of the life of the bond, more principal would have been repaid than had been borrowed<sup>6</sup>. In his note on this subject, Peter Hill notes

66. *“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 the 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 ... Only if there are no price changes is it all interest.”* (Hill, p.3)

67. Such a view may not sit readily with many national accounts and balance of payments compilers.

68. Nonetheless, the issue remains that for the secondary holder, the difference between her/his purchase price and the maturity value is “interest” and this will be different from the issuer’s view that interest was fixed at the time of issue. This difference between the debtor’s view and the creditor’s view is incompatible and is based on different applications of the principle of market price for valuation for transactions and balances.

69. This principle is central to *SNA93* and *BPM5*. Transactions are measured at market price as, assuming independent agents operating without duress and at arm’s length, will derive an exchange of value to mutual satisfaction, with each maximizing his/her utility. It is the market price that provides the means of measuring the exchange of value which is fundamental to the operations of market economies and is the basis of economic theory and observation. It permits different types of transactions involving different players and different goods, services, transfers, etc. to be compared. This applies equally to assets and liabilities.

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<sup>6</sup> This is not to say that this cannot happen: foreign currency borrowings may result in more of the domestic currency being repaid where the foreign currency has appreciated.

Measuring liabilities at market price not only means that net worth can be derived accurately, but it also gives the debtor an accurate measure of what would be involved in the re-purchase of the bond, that is, active liability management, where conditions might be favorable to the debtor to do so and where such activity is permitted by the terms of the initial contract.

## VI. SOME IMPLICATIONS OF THE USE OF THE ALTERNATIVE APPROACHES

70. The creditor and debtor methods are incompatible. Accordingly, one method will need to be imposed on the other if symmetry is to be achieved within the systems (national accounts and balance of payments) and across systems (national accounts, balance of payments, monetary statistics and government finance statistics). To achieve that goal, it may require a security by security database, for both domestically issued and held debt instruments (for national accounts', government statistics and monetary statistics purposes) as well as for securities that are traded with and held by non-residents (for balance of payments purposes). Otherwise, the "imposition" of one side's view on the other is likely to be very arbitrary. For example, in an active capital market, the creditor is unlikely to know what was the rate of interest at time of issue. If the debtor approach were adopted, it would mean that the amount of interest reported receivable by the holder would need to be discarded and replaced by the amount deemed payable by the debtor. If the information on which securities are held—by sector and by non-residents—is known then it is possible to allocate interest under the debtor approach. If the information on security holdings is not known, and it is unlikely to be, the method of allocation will need to be done in such a fashion that it is assumed that all the sectors and non-residents are holding each of the securities on issue in the same proportions to their total holdings of issues by the debtor sectors. Not only is that not a valid assumption, it also assumes that countries will have information on debtor and creditor balances (in aggregate, even if not security by security). On the other hand, if the creditor approach were adopted, for countries with active capital markets, the current rate of interest is generally known for most (actively traded) instruments and can be applied by both sides<sup>7</sup> but it may be that the creditor may not be able to separate, or be interested in the separation of, price change from accrual of income.

71. For balance of payments, the situation is made more difficult because, in the case of a creditor reporting receipt of "interest", there is no "debtor view" to superimpose. That is, if a holder in country A has a zero coupon bond issued by country B, the balance of payments statisticians do not know what the issuer of the bond will know: the implied rate of interest at the time of issue. So the amount of interest reported receivable by the holder in country A cannot be confirmed with the interest reported payable by the issuer in country B.

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<sup>7</sup> For countries without active capital markets, there is no adequate measure of "market value" and so the debtor valuation of the debt outstanding and the interest accruing is the only appropriate method.

72. To decide which is appropriate, the following considerations, inter alia, should be taken into account.

**(1) If the *creditor* approach is used:**

- (i) holding gains and losses tend to become co-mingled with income.
- (ii) even when there has been no other change, increases in interest rates will lead to:
  - increases in current account deficits for countries with deficits in their income accounts of their balance of payments;
  - increases in government sector deficits where governments have debt securities outstanding;
  - increases in household sector saving where this sector is a holder, directly or indirectly, of debt securities.

How these changes are to be interpreted and the appropriate policy response, if any, is not clear.

(iii) to what extent use of financial derivatives may prompt a “double count” is not clear.

(iv) a downgrade in credit rating will prompt, *ceteris paribus*, an increase in “interest” payments (as the market value of the debt outstanding will fall).

(v) it may be in line with the direction that the accounting profession is moving which would lead to consistency of reporting. If the creditor approach were adopted, both sides would be able to report on the same basis as the rate(s) would be known and observable, provided there were an active enough capital market to produce an appropriate current market price. Where there was not such a market, the debtor principle is more likely to be appropriate.

**(2) If the *debtor* approach is used:**

(i) reconciling the effective interest receipts of the creditor with those of the debtor will be difficult, especially in the balance of payments where only one party’s entries are known or measurable by the resident balance of payments compilers. A creditor may have no idea of the debtor’s view of the interest payable.

(ii) it may run counter to the direction the accounting profession is moving.

(iii) it may be more in line with what countries want, especially those countries with sensitivities to debt: GDP or government debt: GDP ratios.

73. What the user community wants is not known. If the debtor approach is the generally accepted standard at present (and it is not clear that it is) then any possible change in the statistical standard should be discussed among the user community(ies) to ensure that is what is needed and that it is understood.

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