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Accounting for Interest on Debt Securities: Why the Creditor Approach Should be Preferred

Prepared by the Australian Bureau of Statistics

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This paper has been written in response to the paper "Accrual recording of interest: Is there a case for revisiting the 1993 SNA?" (Statistics Department, International Monetary Fund, 1999). Its purpose is to advocate the case for the use of the so-called creditor approach for determining interest on debt securities in the national accounts and related statistics. This is the approach used in compiling Australia's national accounts (and balance of payments) statistics.

2 In deciding on the method to use, there was extensive discussion on the various alternatives within the Australian Bureau of Statistics (ABS). In the end, there was strong agreement that the creditor approach is the one that is most consistent with the economic and accounting principles underlying the SNA. As such, it should be preferred over other methods, including the so-called debtor approach. While our decision was based on conceptual consideration, the creditor approach also has the advantage of being relatively straight-forward to apply, as interest on tradeable debt is simply calculated by multiplying the market value of the stock of debt outstanding by the prevailing interest rate. The remainder of this paper expands upon these points. First, the conceptual issues are discussed. Following this is a discussion of the practical implications.

3 We would be happy to provide elaboration or clarification on any of the points made in this paper. Interested persons should contact Peter Harper, Head, National Accounts Branch, Australian Bureau of Statistics (email: peter.harper@abs.gov.au).

Conceptual issues

4 The following criteria were considered to be important in deciding upon the preferred method:

. the method had to be consistent with the principles of current cost (market price) accounting

. it had to produce results that were consistent with economic behaviour

. there had to be symmetry between the recording of interest for the debtor and the creditor

. there had to be no "unexplainable" flows in the reconciliation of opening and closing stocks for each period.

Each of these criteria are elaborated on below. Following this two further conceptual issues are discussed -- the consistency (or otherwise) of the ABS approach with the SNA's definition of "transactions" and the relationship between accrued interest and cash flows.

Current cost accounting

5 The SNA is a current cost accounting system. Transactions and stocks are valued at current (or market) prices. The "price" of debt is the interest rate. When a debt security is tradeable there is no obligation on behalf of the creditor to hold the security for its full term. Likewise, the debtor can "buy back" the security any time the debtor wishes. It follows, therefore, that the relevant market price relating to a security at any point in time is the prevailing interest rate. This is certainly recognised in the valuation of debt stocks. The market values of these stocks are determined by discounting future cash flows by the prevailing interest rate. If a particular interest rate is used to value stocks, then that same interest rate must be used to value the associated flows, including interest transactions. Using another interest rate (eg the rate at the time the debt instrument was issued) to calculate interest transactions would mean that stocks and flows are calculated using different prices.

Tradeable debt and economic behaviour

6 The SNA is a system that provides illumination on the economic behaviour of units within an economy. Accordingly, transactions must be recorded in the system in such a way that best explains economic behaviour.

7 When a creditor invests in a tradeable security, this means that the investor has decided that the security provides the best rate of return that is consistent with the investor's risk preferences. It follows, therefore, that if the investor can identify an alternative that offers a higher rate of return for the same or similar risk exposure then the security will be sold. In assessing alternatives, the investor will always compare the prevailing interest rate with the rate of return on an alternative investment. Therefore it is the prevailing interest rate that best explains the investor's economic behaviour.

8 To record interest on tradeable debt at any rate other than the prevailing rate could produce results that appear economically irrational. For example, if the prevailing interest rate on a security is 10 per cent, the historical rate 12 per cent, and the rate on an alternative investment 11 per cent, then the creditor will sell the security and enter into the alternative investment. If, however, the interest on the security in the period leading up to the sale was recorded at the historical, rather than prevailing rate, the accounts would show the investor seemingly accepting a lower rate of return than that which would otherwise be possible. This would be an odd result indeed.

9 Similar arguments can be made on behalf of the debtor. The debtor issues in the bond market with a preference for both the variable pricing and the buy back option involved in a liquid market. The debtor will buy back a tradeable security when either a cheaper source of funds is available or the investment of the funds is to be unwound.

Of course, in deciding whether an alternative source of funds is cheaper or whether the investment of the funds should be unwound, the debtor will look at the prevailing, and

not historical, interest rate on the debt security.

Symmetry between debtor and creditor recording

10 Symmetry, of course, essential in any closed system such as the national accounts. It is possible to impose theoretical symmetry under any method. However, in our view it makes little sense (assuming it is even possible) to calculate the creditor's interest income using an interest rate that is completely irrelevant to the creditor (such as the use of the interest rate at the time of issue to calculate interest receipts for a creditor who may have purchased the security sometime after it was issued) to force such symmetry. The method chosen by the ABS, on the other hand, ensures that symmetry is achieved simply in both theory and practice without resorting to such distortions.

Reconciliation of stocks and flows

11 Under the method used by the ABS, the only time that there will be a non-transaction flow is when the interest rate changes. This is most appropriate, as changes in interest rates reflect changes in the price of debt, so the non-transaction flow is easily explainable for what it is - a price change.

12 On the other hand, the use of the debtor approach will cause non-transaction flows in all periods when the prevailing interest rates (which are used to value stock positions) are different to the interest rates at the time of issue (which are used to calculate transactions). There is no explanation for these flows. They cannot be attributable to price changes, as there has been no price change in the period in question. Nor can they be considered as "other changes in volume", because the same quantum of debt is outstanding at both the beginning and end of the period.

13 With regard to this point, it has been suggested that the ABS method for calculating interest violates the SNA93 definition of interest. On the contrary, it is only this approach that is consistent with this definition. Returning to the example above where the prevailing interest rate is different to the interest rate at the time of issue, the use of the latter rate to calculate interest would lead to the recording of interest that is either greater than or less than the amount that the debtor becomes liable to pay the creditor over a given period of time without reducing the amount of principle outstanding. This is clearly in contradiction of paragraph 7.93 of SNA93. Following on from this, it is clear that the assertion that interest represents the total return over a life of a security can be true only when there are no price changes. (An analogy can be found in the discussion of consumption of fixed capital. Paragraph 7.93 of SNA93 states that this is equal to the difference in the value of an asset at the start and end of a period. This statement is clearly true only when there have been no asset revaluations.)

14 The points made in the three paragraphs above can be best understood by referring to the example provided in the appendix to this paper. The appendix shows entries that would be required under both the ABS and debtor approaches for a 3 year

zero-coupon bond, where the interest rate changes one year after the bond is issued. In the example, it can be seen that the entries for 1996 -- the year in which the bond is issued -- are identical under both approaches. This is because, for that year, the interest rate at the time the bond was issued and the prevailing rate are the same. For 1997, however, different amounts are recorded in the income, financial and revaluation accounts under each of the approaches. It is the revaluation account entries that are particularly illuminating. Under the ABS approach, the debtor records a holding gain of $7, which is exactly equal to the change in the value of the security due to the change in interest rate. This is consistent with paragraph 12.111 of SNA93 which describes holding gains on bonds. Under the debtor approach, a holding gain of only $4 is recorded. This is $3 less than the actual change in the value of the security at the time of the change in the interest rate. The $3 understatement in the value of the holding gain is caused by a corresponding understatement of the interest reinvested in the bond.

15 For 1998, when in the example prevailing interest rates remain unchanged, the ABS approach does not show any holding gains. Again, this is consistent with paragraph 12.111 of SNA93 which states that holding gains on bonds can only occur when market interest rates change. The value of interest accrued, and subsequently reinvested, is equal to the amount that the debtor becomes liable to pay the creditor during 1998 without reducing the amount of principle outstanding. This is entirely consistent with paragraph 7.93 of SNA93. On the other hand, for 1998, the debtor approach records a holding loss of $4, in spite of the fact that there was no change in the price of the bond (as defined in paragraph 12.111 of SNA93) during 1998. Again, this is because the value of reinvested interest is understated, as it is less than the amount that the debtor becomes liable to pay the creditor during 1998 without reducing the amount of principle outstanding.

Does the ABS approach contradict the definition of a transaction?

16 It has been suggested that the ABS approach is a contradiction of the definition of a transaction, which is provided in SNA93 paragraph 3.12. Paragraph 3.12 simply sets out the criteria for recognising a transaction. There is no disagreement on whether interest transactions should be recorded on debt securities. Paragraph 3.12 says nothing about how such transactions should be valued.

Relationship between accrued interest and cash flows

17 It has been said that the debtor approach should be preferred as it ensures that, over the life of a security, interest on an accrual basis equals interest on a cash basis. However, the cash payments associated with a security (other than those associated with the repayment of the initial borrowing) can only be considered interest if there has been no change in the price of the security. Otherwise, the payments must reflect a mixture of both interest and realised holding gains. When a debtor issues a security, it is true that future cash outlays are fixed (presuming that the security is not redeemed

early). However, how much of these cash outlays will ultimately represent interest payments and how much will relate to holding gains is unknown at the time of issue.

18 Put another way, if the difference between the redemption and issue price of a security was considered to be interest regardless of whether or not there were changes in interest rates, what should be done for securities that are redeemed early? Returning to the example in the appendix, if the debtor had redeemed the security at the end of 1997 for $87, then should not the cash "interest" on the security equal $4 (the difference between the issue and redemption value)? If so, then this is $12 less than the $16 that has been recorded as interest (in 1996 and 1997) under the debtor approach.

19 Taking this argument to its logical extreme would imply that all property income flows should be recalculated when assets providing income flows mature or are otherwise extinguished, as the cash flows associated with maturity/extinguishment would provide the definitive measure of "income" on the assets. This would mean, for example, that a corporation repurchasing its own equity would need to recalculate the "dividends" payable on the equity over the life of the equity by taking account of the repurchase price. Clearly, such an approach would be contrary to both the letter and spirit of the SNA.

Practical implications

20 As mentioned above, the ABS method is simple to apply. Prevailing interest rates are readily observable, and market values of securities outstanding are available from our sectoral balance sheets.

21 On the other hand, unless the compiler had information about each individual security held by creditors, including information on the interest rate at the time the security was issued, it would be impossible to implement the debtor approach, certainly at least for those securities that may have been traded. In Australia's case, it would be extremely difficult, as well as very expensive, to collect this type of information. Our resources are better spent elsewhere.

Conclusion

22 We are of the strong view that SNA93 provides a clear, consistent and intellectually defensible market price framework that encompasses interest income on debt securities measured at market prices. However, it does not provide sufficient practical clarification on the method that should be used to calculate interest on debt securities in line with its theoretical structure . In Australia we are using a method that we are firmly convinced is the most conceptually correct, fully consistent with SNA93, and readily applied in the accounts. In our view, alternative methods (such as the debtor approach) are flawed. We agree that SNA should be re-worked to provide greater clarity in this area, and obviously our strong preference would be for the method that is being used in the Australian national accounts.

Appendix

A zero-coupon bond is issued on 1 January 1996. The bond matures on 1 January 1999, and has a face value of $100. The interest rate at the time issue is 10%. Therefore, the value of the bond at issue is $75. The interest rate remains at 10% until 1 January 1997, when it jumps to 15%. The change in interest rate causes the price of the bond to fall from $83 to $76. The interest rate then remains at 15% until the bond matures.

The table below shows the entries that would be recorded in the debtor's accounts, under both the ABS (creditor) approach and the debtor approaches. The creditor would record similar entries, but on opposite sides of the accounts.

Year	Account	ABS (creditor) approach		Debtor approach	
1996	Income account -- interest payable	8		8	
	Financial account -- change in liabilities	83	(a)	83	(a)
	Revaluation account -- change in liabilities	0		0	
	Opening balance sheet -- liabilities	0		0	
	Closing balance sheet -- liabilities	83		83	
1997	Income account -- interest payable	11	(b)	8	
	Financial account -- change in liabilities	11	(c)	8	(c)
	Revaluation account -- change in liabilities	-7	(d)	-4	(e)
	Opening balance sheet -- liabilities	83		83	
	Closing balance sheet -- liabilities	87		87	
1998	Income account -- interest payable	13	(f)	9	
	Financial account -- change in liabilities	13	(c)	9	(c)
	Revaluation account -- change in liabilities	0		4	(e)
	Opening balance sheet -- liabilities	87		87	
	Closing balance sheet -- liabilities	100		100	
1999	Income account -- interest payable	0		0	
	Financial account -- change in liabilities	-100	(g)	-100	(g)
	Revaluation account -- change in liabilities	0		0	
	Opening balance sheet -- liabilities	100		100	
	Closing balance sheet -- liabilities	0		0	

(a) Equals the issue price ($75) plus accrued interest ($8)
(b) 15% of the value of security on 1 January 1997 ($76)
(c) Accrued interest
(d) Equals the fall in the value of the bond on 1 January 1997 due to change in interest rate
(e) Derived residually to ensure flows equals change in stocks
(f) 15% of the value of the security on 1 January 1998
(g) Redemption value