

# ESA95 Manual on General Government deficit and debt

## III.3 RECORDING INTEREST ON AN ACCRUAL BASIS

### PART 1 / BACKGROUND OF THE ISSUE

*Recording interest on an accrual basis is a major change in the new edition of the European system of national accounts (ESA 95). It means that the economic nature of transactions between units is stressed in preference to institutional and practical arrangements, in regarding the effective payment of interest. Thus, the national accounts aim to measure at any point in time the rights and commitments between economic agents, expressed through financial assets and liabilities.*

*Recording accrued interest is a crucial issue for General Government regarding the weight of debt in most Member States and the specific debt instruments that are frequently used for deficit financing.*

The principle of recording interest on an accrual basis may be seen as rather simple and quite explicit in ESA95, as shown by the main provisions contained in the first part of this chapter. However, the implementation needs further consideration, in order to clarify, and possibly interpret and complete ESA 95 provisions. This is the purpose of the second part.

### PART 2 / SELECTED PROVISIONS IN ESA95

#### *General principle*

##### 1.57. (Abstract)

The system records flows on an accrual basis; that is, when economic value is created, transformed or extinguished, or when claims and obligations arise, are transformed or are cancelled.

Thus, output is recorded when produced, not when paid for by a purchaser, and the sale of an asset is recorded when the asset changes hands, not when the corresponding payment is made. Interest is recorded in the accounting period when it accrues, regardless of whether or not it is actually paid in that period. Recording on an accrual basis applies to all flows, monetary as well as non-monetary and intra-unit as well as between units.

#### *Time of recording interest*

##### 4.50.

Interest is recorded on an accrual basis: that is, interest is recorded as accruing continuously over time to the creditor on the amount of principal outstanding. The interest accruing in each accounting period must be recorded whether or not it is actually paid or added to the principal outstanding. When it is not actually paid, the increase in the principal must also be recorded in the Financial Account as a further acquisition of that kind of financial asset by the creditor and an equal acquisition of a liability by the debtor.

#### *Interest and financial transaction*

5.17.

The counterpart transaction of a financial transaction may be interest (D.41). Interest is receivable by the creditors and payable by the debtors of certain kinds of financial claims classified in the categories currency and deposits (AF.2), securities other than shares (AF.3), loans (AF.4) and other accounts receivable/payable (AF.7). In the system, interest is recorded on an accrual basis, that is to say interest is recorded as accruing continuously over time to the creditor on the amount of principal outstanding (see paragraph 4.50.). The counterpart transaction of an entry in interest (D.41) is always a financial transaction creating an additional financial claim of the creditor against the debtor. The effect of this financial transaction is that interest is reinvested. The actual payment of interest is not recorded in interest (D.41), but it involves a transaction relating to the change in ownership of the means of payment. The counterpart transaction is a financial transaction reducing the net financial claim of the creditor against the debtor. When accrued interest is not paid when due, this gives rise to interest arrears. As accrued interest is already recorded in the system, interest arrears do not change the total of financial assets or liabilities but possibly their classification (see paragraph 5.131.).

#### *Difference between accrued interest and nominal holding gains*

6.52.

When bonds are issued at a premium or discount, including deep discounted and zero coupon bonds, the difference between its issue price and its face or redemption value when it matures measures interest that the issuer is obliged to pay over the life of the bond. Such interest is recorded as property income payable by the issuer of the bond and receivable by the holder of the bond in addition to any coupon interest actually paid by the issuer at specified intervals over the life of the bond (see paragraph 4.46.). The interest accruing is recorded in the financial account as being simultaneously reinvested in the bond by the holder of the bond (see paragraph 5.17.). It is, therefore, recorded in the financial account as the acquisition of an asset that is added to the existing asset. Thus the gradual increase in the market value of a bond that is attributable to the accumulation of accrued, reinvested interest reflects a growth in the principal outstanding – that is, 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. The situation is analogous to that of a good, such as wine, that matures while it is being stored. Any increase in the price of the wine that is attributable to an improvement in its quality reflects an increase in volume and not price. Bonds change

qualitatively over time as they approach maturity and it is essential to recognise that increases in their values due to the accumulation of accrued interest are not price changes and do not generate holding gains.

## **PART 3 / RULES TO BE FOLLOWED**

### **3.1. On general features**

- All financial instruments bearing interest are covered by the accrual rule.
- Interest is accrued on the basis of a "debtor approach".
- Accrued interest can be calculated by simple or compound interest method.
- Accrued interest is always reinvested under the instrument.
- All instruments issued at a discount are treated in a similar way.
- Arrears are kept under the instrument.

### **3.2. On specific instruments or transactions**

- Stripping has no effect on the amount of accrued interest.
- Correction may be necessary in the case of instruments with floating rates and assimilated issues (including saving premium)
- Lottery instruments are normally recorded on an accrual basis.
- The accrual rule applies to index-linked bonds.
- There are no specific rules in the case of short-term negotiable instruments.
- Accrued interest may be recorded during grace periods.

-Accrued interest on instruments denominated in foreign currencies give rise to an adjustment in the revaluation account.

-Income of Mutual Funds assigned to holders is recorded on an accrual basis.

-Early redemption of debt instruments (including exchange) may give rise to nominal holding gains.

## **PART 4 / RATIONALE OF THE RULES**

### **4.1. General features**

#### **a) Coverage**

In ESA 95, there is evidence that recording interest on an accrual basis should be applied in an extensive way. This basic principle covers all financial instruments bearing interest and not only on debt securities.

In the description of interest in chapter 4, all kinds of debt instruments are mentioned. 4.44, referring to interest on deposits, loans and accounts receivable and payable, states that interest is determined “at each point of time throughout the accounting period”. 4.50, dealing with the general question of time of recording, is written in very similar terms: "interest is accruing continuously over time on the amount of principal outstanding." It is taken up precisely in 5.17. As it is not specified to which instruments this rule should be applied, it is obvious that there is no exception. Thus, recording interest on an accrual basis applies to any financial instrument which generate flows of interest paid between two parties, whatever the specific features of instruments, the institutional arrangements or national practices relating to the recording and payment of interest.

From an economic point of view, as soon as a unit provides funds to another one, remuneration is due. A cost of borrowing appears. It must be shown in the national accounts in a continuous way. Initial exchange of funds is a sufficient condition for recording interest on an accrual basis. There is no rational ground for excluding some debt instruments from this analysis, for instance arguing that interest is not added to principal or that both are recorded separately in the parties' accounting system.

In these conditions, national arrangements relating to interest on debt instruments should not be used as a ground for recording or not interest on an accrual basis. For instance, in the case of some non-negotiable instruments interest may be "paid" (added to the principal) only at the beginning of a following period, generally a calendar year. Thus interest is not available before this date, unless the holder asks for a total liquidation. According to ESA95, it must nevertheless be accrued throughout the year.

## **b) "debtor approach"**

From a general point of view, interest can be accrued according to three possible treatments that could be respectively called:

-“Debtor or original cost of borrowing principle”, based on the rate prevailing at the time of creation of the financial instrument, applied to the issue price (in some cases incremented by accumulated accrued interest),

-“Acquisition principle”, based on the “historical” rate prevailing at the time the creditor records for the first time the financial instrument in his balance sheet, applied to the purchasing price,

-“Full market approach”, based on the rate prevailing at the time of compilation, applied to the current price of the instrument.

For practical and consistency reasons, the second solution does not seem to be relevant.

Although there is no explicit provision in ESA95 about this issue, there are some elements for considering that accrued interest should be based on the on the point of view of the debtor, as an issuer of a debt security or a financial institution managing a deposit. Thus, paragraph 5.138b states that “the difference between the issue value and the redemption value is treated as interest that is accrued over the life of the security”. The conditions prevailing at the time of the creation of the financial instrument are favoured. Changes in market rates during the life of the instrument are not mentioned. Paragraph 4.46 provides similar evidence.

The other two approaches emphasise the implications of price movements in financial markets. Many financial instruments are fully tradable in secondary markets so that the market rate prevailing at the time of transactions is a key determinant of the price of the instrument.

By contrast, ESA95 appears to focus on the financial burden, the cost of borrowing, that was anticipated when the debtor raised funds through the issuance of financial instruments. Thus, in ESA95, the role of secondary markets in measuring the opportunity cost of existing as well as new borrowing is not considered in the context of recording accrued interest.

In this sense, both kinds of approaches are quite irreconcilable. Due to change in market rates, the issuer and the holder of a security have different perceptions of the amount of interest being accrued. Any mix would undermine the symmetry and coherence of the sector accounts framework. However, it does not mean that the issuer will be quite indifferent to market developments. He is not locked into the original cost of borrowing but he will have to change the initial financial instrument (see the case of exchange on markets) or to use financial derivatives, recorded in the system as separate instruments.

For clarification, interest should be distinguished from the notion of yield. The former is based on the cost of borrowing, as the payment made by a borrower in compensation of funds received from a lender. The latter is expressed from the point of view of an investor or lender. It is the return on funds provided to another agent taking into account all flows of payments and re-payments, their exact moment. It can be based either on the own situation of one creditor (the historical purchasing price) or on the general present market conditions.

From a theoretical point of view, under the three approaches all the flows resulting from the contractual arrangements would be similar during the whole life of a financial instrument. But in each case, there will be a specific split between transactions (in the financial account) and other flows (in the revaluation account).

ESA 95 specifies the treatment of nominal holding gains/losses in chapter 6 only as a change in price of assets/liabilities. Thus, 6.52 clearly indicates that accrued interest “(does) not generate holding gains” because it is “the acquisition of an asset which is added to the existing asset”. 6.53 specifies that holding gains are linked to a change in interest rate that has an effect on the market price of the instrument, a main factor. It must also be taken in account the remaining maturity and the nominal amount of the coupon. It means that, even if the rates are stabilised over the life of an instrument, any change in the value of the bond due to the decreasing maturity is considered as a change in price recorded only in the revaluation account.

The change in the value of the instrument cannot be assimilated to a change in price on the market. It is not the result of the confrontation between supply and demand as it is for the principal of a security. Under ESA95 conceptual framework, accrued interest is a source of income, affecting saving and net borrowing/net lending, with a simultaneous entry in the non-financial and financial accounts. It is not the case with only a change in price recorded in the revaluation account. Moreover, as ESA 95 stresses on the creation of financial assets and liabilities, the cost of borrowing resulting from the initial agreement between the agent (s) providing funds and the beneficiary is a crucial point. It also applies to floating rate or index-linked instruments where the cost of borrowing is not known at inception but where the conditions in which the reference would be used are fully determined at the time of issuance. Obviously, it is not the case for a change in price during the life of a debt instrument. If the point of view of the creditor (the historical rate at purchasing time) or of the market (the present rate) were favoured, finally the cost of borrowing would be variable even in the case of fixed rate instruments.

For a zero-coupon bond, the market approach would raise conceptual difficulties. The price of a zero-coupon bond is the present value of the redemption value, or face value, on the basis of the prevailing market rate. Each day, this price is affected both by the effect of the accumulation of interest (paid at the time of the redemption of principal) and by change in market conditions. The latter factor has an impact on the volume of interest previously accrued. In case of a sudden rise in the rate of interest, this amount would have a minor value. In fact, on markets, this component is not considered at all. The valuation is done globally and only in a prospective way. Under ESA95, all change in price on the market could be recorded as a valuation change in the revaluation account, close to the market reality. But, in this case, it would not be consistent with ESA provisions, as finally no interest would be accrued over the life of the instrument.

The relevant treatment is of course to make a distinction between the component for accrued interest and the principal outstanding amount. Under the debtor approach, the first is determined from the origin on the basis of the rate prevailing at time of issuance, in most cases in coherence with the method used in the issuer's own accounting system. In the national accounts, any difference between the current price and the sum of issue price and accrued interest would be recorded as valuation change in the revaluation account. It makes sense. For instance, in case of an early redemption, these nominal holding gains or losses would affect the original cost of borrowing. Under a market approach, the component for accrued interest would be estimated on the basis of the average market rate during a period then re-evaluated on the basis of the rate observed at the end of this period, showing nominal holding gains or losses. As said before, the cost of borrowing would be therefore an "elastic" concept that does not seem to be the basic choice in ESA. In addition, from a conceptual point of view, the entry in the revaluation account may be seen as purely artificial whereas the amount of accrued interest recorded as such could not be equal to the difference between issue price and redemption value, in contradiction with basic statements in ESA95.

### **c) Method for calculating accrued interest.**

The issue is to determine which method should be used to calculate accrued interest. The choice is between simple interest, applied only on the principal outstanding amount, and compound interest that takes into account the amount of interest previously accrued.

On the one hand, paragraph 4.50 clearly stated that when interest is "not actually paid", "the increase in the principal must also be recorded in the Financial Account as a further acquisition of that kind of financial asset by the creditor and an equal acquisition of a liability by the debtor." As the result interest should be calculated in a compound way. On the other hand, chapter 5 is not so precise, saying only that accrued interest is reinvested (see further the question of the instrument used for this reinvestment. Moreover, in chapter 7, paragraph 7.47 makes a distinction within the "global total volume" between two components, "one representing the principal and the other the accrued interest". As a consequence, accrued interest should apply only to the former.

It must be stressed that in any case, following market practice, interest on zero-coupon bonds, is accrued in a compound way. It is the same for all discounts or premiums treated as interest (see later). By consistency, one could argue that a single method should apply for all accrued interest, including any instrument.

However, on this point, there is room for some flexibility, according to national practice as mentioned in ESA95 for various areas.

For instance, as regards bonds with regular interest payments (annual or more frequent), accrued interest effectively exchanged on secondary markets (the buyer of the bond paying to the seller the amount accrued since the last payment) may be determined *pro rata temporis*, according to a very simple arithmetic proportionality. Thus, for practical

reasons, it would be more convenient to stick to the market practice, avoiding some adjustment, as recording would exactly fit to the amounts effectively exchanged between investors. Anyway, it is obvious that differences in methods should have a very small effect where markets are fully developed and so regular payments are rather well distributed during the year, or, at least, fairly equal on half-yearly period. Overestimating interest by simple method for a short period of accrual (compared to compound method) tends to be balanced by underestimating it for a longer period. Notably, it can be assumed that it is generally the case for securities issued by General Government.

Concerning non-negotiable instruments, attention should be paid to the current practice for fixing effective interest, from a nominal annual rate. For instance, a six-year deposit may be remunerated at half the annual rate or according to an actuarial formula.

#### **d) Reinvestment of accrued interest**

ESA 95 provides some guidelines in paragraph 5.130 about the classification of reinvestment of accrued interest within the financial account. “Preferably, the counterpart financial transaction of interest accruing on financial assets (see paragraph 5.17) should be recorded as being reinvested in that financial asset. The recording of interest will, however, have to follow national practices. If the interest accrual is not recorded as being reinvested in the financial asset, it should be classified in sub-category F.79.”

As a conclusion to work undertaken on accrued interest, it has been judged relevant to give a more restrictive statement. In any case, the reinvestment of accrued interest should be recorded under the same item as for the underlying instrument. However, this component would be identified in a memorandum sub-item under the “parent” instrument category within the ESA 95 classification for financial instruments. It must be stressed that the effect on the measure of the debt, under ESA95 framework, is directly linked to the periodicity of the coupon. The more the payment is frequent, the less is the increase of the debt due to accrued interest.

This treatment applies to all kinds of debt instruments.

-For securities other than shares, it based on the following arguments.

First, for zero-coupon bonds or short-term securities issued at a discount, it seems to be the only possible solution, i.e. under the item "securities other than shares". The reason is that, contrary to other kinds of debt securities, accrued interest cannot be identified separately from the value of principal when a transaction occurs. It is an intrinsic element of the price of the bond and not an amount exchanged in parallel to the basic transaction as for "normal" bonds. The notion of “clean price” is not relevant in this case. Moreover, in the system deep-discounted bonds have two interest components (§ 4. 46b), one for the discount accrued over the life of the bond, one for the coupon regularly paid. For the former, the same reasons as in the case of a zero-coupon bond forces to recording the reinvestment under the instrument. It would not be consistent to treat both components in different ways as they are related to the same instrument. In these conditions, the same treatment should apply to all other debt securities, the only difference being that the



discount component is zero. In addition, for analytical purposes, a comprehensive approach of securities markets seems highly preferable and friendlier for users of financial accounts.

Secondly, as already mentioned, in case of transactions on secondary markets, the amount of accrued interest is simultaneously exchanged with the principal. It cannot be separately negotiated. The transaction must be considered as a whole. The buyer pays to the seller the amount of accrued interest. Conceptually, it cannot be treated as a distributive transaction at this time. All the value of the transaction is to be recorded in the financial account, with no entry in the property income. This transaction has no effect on the compilation of accrued interest from the point of view of the issuer. In the accounts of the new holder, interest is accrued since the date of entry in his portfolio. Later, if he has kept this asset, the actual payment for the “full coupon”, recorded only in the financial account, is the counterpart of the initial entry in the category of the instrument and the following reinvestment of accrued interest. From a practical point of view, it means that compilers have no need to distinguish between principal and interest within the amounts of secondary transactions.

A third argument is based on the difference between change in “size” and change in price, as developed in paragraph 6.52. Including accrued interest under the item “other accounts” would finally mean considering it only as a “timing difference between (this) transaction and the corresponding payment”. But, according to ESA 95, accrued interest is not only a question of timing but represents a change in the “size” of the asset, until the following payment. In a sense, the reinvestment of accrued interest cannot be seen as a transaction of a different nature than for the debt instrument.

Finally, as a very strong argument, comparability and aggregation data at the European Union level require a deep harmonisation. ESA95 refers to this possible flexibility in several paragraphs (5.121, 5.128, 5.129 (f) and 5.130). The only justification seems to be to follow “national practice”. But, in this case, it is a highly questionable ground. A harmonised system of national accounts cannot be based on specific arrangements, which are necessarily different between countries and even within countries for instruments or in accounting systems used by economic agents.

-Concerning non-negotiable instruments, as deposits and loans, the last two arguments are totally relevant in order to justify a similar treatment of reinvestment under the relevant instrument. Nevertheless, rules in chapter 7 about valuation in balance sheets need to be specified.

For deposits, 7.46 stated that are recorded “the amounts of principal that the debtors are contractually obliged to repay to the creditors under the terms of the deposits when the deposits would be liquidated on the date the balance sheet is set up.” It is added: “the values may include accrued interest”, with a reference to 5.130.

For loans, 7.51 says that are recorded “the amounts of principal that the debtors are contractually obliged to repay the creditors”. There is no mention of the question of accrued interest.

In both cases, normally transactors would not consider accrued interest as principal. For deposits, interest may be added to principal only under certain arrangements (at the end of a given period). For loans, the contract between debtor and creditor mentions

explicitly a value of principal (due capital) that excludes interest. In addition payments of interest and repayments of principal are not necessarily concomitant. However, as ESA 95 explicitly states that accrued interest is assimilated to the acquisition of new amounts of the instrument, the reinvestment of accrued interest must analytically be considered as principal. In the case of deposits, the payment of accrued interest is, conceptually, a partial liquidation whereas payment of interest on loans is integrated in the amortisation process.

#### **e) Instruments issued at a discount**

The question of discounted bonds is mentioned in paragraph 5.138:

a) zero-coupon bonds: there are no coupon payments. The interest based on the difference between the redemption price and the issue price has to be distributed over the years to the maturity of the bond. The interest accruing each year is reinvested in the bond by its holder, thus counterpart entries equal to the value of the accrued interest must be recorded in the Financial Account as the acquisition of more bond by the holder and as a further issue of more bond by the issuer or debtor (i.e. as a growth in the 'volume' of the original bond);

b) other bonds, including deep-discounted bonds. The interest has two components:

(1) the amount of the money income receivable from coupon payments each period;

(2) the amount of interest accruing each period attributable to the difference between the redemption price and the issue price, calculated in the same way as for zero-coupon bonds.

b) Security issues are recorded at the issue value. When securities are issued at a discount or at a premium, the proceeds to the issuer at the time of sale, and not the face value, is recorded in the accounts as the actual issue value. The difference between the issue value and the redemption value is treated as interest that is accrued over the life of the security;

c) Deep-discount or zero-coupon bonds should be treated as securities issued at a discount. The interest is accrued over the life of the bonds and treated as being reinvested in such bonds (see paragraph 4.46.);

d) when long-term securities are issued at a discount, which is not significant, the difference between the issue value and the redemption value can be imputed at the date of issue;

The first four statements raise no difficulties but it has been considered preferable not to apply the last provision. All bonds issued at a discount should be treated in the same way, whatever the size of the discount. There are several reasons to recommend that.

First, there is no definition in ESA 95 of these bonds and it is not a category existing on the market. Obviously, any definition, any provision related to the size of the discount would be rather arbitrary and without rational economic grounds.

Second, ESA 95 allows this flexible opportunity only for long-term securities. One could conclude that in any case for short-term securities the discount must always be recorded on an accrual basis. It might be the case where a discount on short-term securities could be accrued over time whereas it could be smaller than in the case of long term securities.

Third, the original provision has no theoretical grounds and is only based on practical reasons that would depend very much on the national conditions in which the financial accounts are compiled. Some countries may have no difficulty by using a security-by-security database. But others would not be in the same position. As a result, rather dissimilar treatments could be observed. The impact on General Government deficit might be not at all negligible as a large part of General Government debt is issued with small discounts that could be considered as "non significant". Thus, for comparability and harmonisation reasons, it is better to provide a single and clear guideline.

Fourth, it must be stressed that General Government debt is often issued in a large part under the form of "fungible bonds" (also named "linear bonds") that should be affected by the ESA provision. This point needs special attention.

In this case, securities are issued under one similar line (concerning nominal interest rate, coupon payment date and final maturity) by tranches. The latter are issued generally during a rather short period, such as a calendar year, but in some cases they may be more spaced out in the time. However, this feature has no importance for the treatment of accrued interest. Each tranche is issued at the prevailing market conditions at a different issue price. This feature allows recording them under the same mother-line.

At the time of issuance, the investor pays to the debtor an accrued coupon, calculated by reference to the date of regular coupon payment. There is in fact no fundamental difference with the aforementioned case of sales/purchases of debt securities on a secondary market where the purchaser pays back to the seller the corresponding amount. Thus, the same treatment should be applied, meaning that it should be included in the total amount of the issuance. Effectively, this payment for accrued interest cannot be considered as a pre-paid interest. It is not linked to holding the asset during a future period as in the case of discount instruments where prepaid interest applies a future period of time. This payment could not also be considered as an advance, reimbursed later by the payment of the full coupon. It would not be consistent with the basic statement on accrual principle in ESA 95 that insists on the similar nature of accrued interest and the relevant instrument. It is considered as a reinvestment in the latter and not a parallel, new and specific financial operation. Moreover, at the time of the actual payment of the "full coupon" it would be difficult to split the payment between two shares, one corresponding to the reimbursement of this advance and the other to the offsetting of interest accrued since the time of issuance.

Concerning the treatment of discount or premium in the case of fungible bonds, ESA 95 provides clear guidance. The paragraph 5.138b indicates that the actual issue price must be taken into account, following the general rule on the valuation of financial

transactions (see §5.134). This figure (positive or negative) is added to the nominal coupon regularly paid to the holders. In the system, the difference between the issue price and the redemption value is considered as interest and must be “spread” all over the life of the security. Fungible bonds may be seen as a perfect example of the case described in paragraph 4.46b where interest is a compound of two components: a share for the regularly paid nominal coupon and a share for the aforementioned difference. As in the case of any zero-coupon bond, the second one is only offset by a final payment at the redemption time.

When new tranches are issued in a short term and/or within a period of stable market conditions, premium or discount is in all likelihood very small. In addition, in most cases the nominal rate of the tranches is expressed with round figures (for instance, only one decimal) and there is necessarily a premium or discount. Thus, by nature, these instruments show a “non significant discount”. Accepting treatment stated in 5.138d would mean ignoring the basic nature of this category that represents a large share of General Government debt in several Member States. The argument about comparability of data is in this case particularly reinforced.

Thus, premiums or discounts observed at issuance of fungible bonds are to be considered as interest and accrued over time. Each tranche should be identified separately in order to be in a position to estimate accrued interest from the liability side on the basis of the relevant rate of interest. This information is assumed to be easily available for compilers in the case of issues by General Government. However, there is in this case a specific difficulty for splitting the amounts of accrued interest between holders, as after issuance, all tranches are “mixed” under the global line and cannot be traded separately on secondary markets, so that they are not identifiable as such in portfolios. It would be necessary to estimate a weighted average discount (or premium) resulting from issuing different tranches and updates at each new issue. The rate applied to the total outstanding line for accruing purposes would be adjusted consequently.

## **f) Arrears**

In 5.121 and 5.131, ESA95 proposes the following treatment.

Accrued interest may not be offset at due time by a payment in cash (or eventually under the form of another financial instrument). The debtor is not in a position to respect his commitments. The nature of the claim coming from the reinvestment of accrued interest is assumed to change. Provided that the creditor has identified separately in his accounts these arrears (in a first stage he may automatically transfer the amounts to one or several following payments), there should be in the national accounts an entry in the category “other accounts receivable/payable.” (F79) As it is written in chapter 5, this statement applies whatever the classification of the reinvestment of accruals in the financial account, under the instrument or already in F79. Thus, as stated in 5.17, “interest arrears do not change the total of financial assets or liabilities but possibly their classification.”

This is in line with SNA which specifies (11.101): “When accrued interest is not paid when due, this gives rise to interest arrears. As accrued interest is already recorded in

the accounts under the appropriate asset or under this category {other accounts receivable/payable}, no separate entry for such arrears is required." Note that SNA adds that "when they are important it may be useful to group all arrears of interest and repayment under a memorandum item."

This statement meets closely the definition of F7 as the "counterpart transactions in case payment is due and not yet paid".

In any case, it is clearly stated in ESA that arrears for debt principal remain under the instrument item until an actual payment, a debt cancellation or a write-off. In ESA there is no specific category for "bad debt" that could not be considered in itself as a financial instrument. 5.122 e specifies that category F7 does not include late payment for redemption of liabilities other than classified in category 7.

However, for some instruments such as loans and securities (but less frequently), debt may be continuously amortised and not through a final repayment. Any regular payment includes both interest and principal. Thus, in case of default by a debtor, the corresponding payment concerns both interest and principal, without any distinction. If penalty interest were charged, they would generally be calculated on the basis of the total amount that has not been paid in due time. It may be assumed that in this case the creditor would rather classify the non-paid amount under the instrument category. Thus, the recommendation could be implemented only for some instruments, depending on the amortisation technique, which would not be consistent and is not a criterion for classification in the national accounts.

Moreover, where accrued interest would be classified under the same item as the principal outstanding in case of arrears, it should be easier to record a possible debt cancellation (with a counterpart in capital transfer) or write-off (with an entry as other change in volume) that might occur later and would generally concern both principal and interest arrears.

Finally, keeping interest arrears under the relevant instrument seems to be the logical consequence of the recommendation to record in all cases accrued interest under the instrument. As said before, in ESA95 accrued interest is seen as reinvested in the instrument. It means that at this time accrued interest is assimilated to principal, showing the same nature as liability. As a consequence, all arrears must be recorded in the same way as principal and so remained under the instrument. As there is no exception for accruals recording, all interest arrears would follow this treatment. Note that 5.122e specifies that arrears must not be included in F7 in case of the redemption of liabilities other than classified in category F7, remaining classified in their category.

## **4.2. Specific instruments or transactions**

### **a) Stripped bonds**

In ESA 95, there is no explicit reference to stripping. The latter means transforming a "normal bond" into a set of zero-coupon bonds representing both future payments of interest and repayment of principal. This operation is neutral for the issuer in terms of streams of effective payments. It is generally used for improving a financial market by enlarging the number of negotiable instruments. Each strip can be traded separately on secondary markets. Investors do not care whether it is an "original" zero-coupon bond (issued directly under this form) or resulting from stripping. In most countries, when stripping is undertaken, bonds issued by Central Government are generally concerned. Other points should be noted.

First, stripping is operated on a voluntary basis by investors. Thus, the conversion may take place for only a minor part of the total outstanding amount of a bond, with no change in quotation, trading and recording balance sheets, for the non-stripped share. This is clearly a big difference from other zero-coupon bonds.

Second, in most cases, stripping is a permanent option that can be exercised at any time, generally through specific intermediaries on the market. However, strips are fungible for the same redemption value and maturity date. Thus strips created at different moments are not considered as separate securities. It means that for accruing interest on strips, conditions prevailing at each transaction should be considered, as in the case of tranches of fungible bonds. In many cases, where markets are very active, it would be completely unrealistic from a practical point of view.

Third, stripping may normally be reversed. An investor may ask to convert back into the basic "conventional" bond by supplying a complete set of strips. Reverse operations are not at all infrequent. It may be a complex matter to compile and estimate accruals.

As mentioned above, the sum of the strips values are actuarially equal to the total streams of flows for the corresponding non-stripped bond, including principal redemption and regular payments of interest. It is neutral on the issuer's liability. At the time of stripping, the total issue price of strips is equal to the present market value of principal under the original form. For the issuer, it would not be consistent to record at nominal value both strips for principal and for interest payments. There would be an artificial increase in the debt outstanding amount. Where the debt is recorded (as is generally the case in issuers' books and for the excessive deficit procedure) at nominal (face) value, there is thus no reason to change recording of the original bond. From the point of view of the issuer, stripping is finally a transaction concerning only the secondary market and not affecting the primary debt.

However, under ESA95 framework, it would not be appropriate to keep strips in the national accounts under the original form and to ignore the conversion. Strips exist on the market as such and can be traded separately. Cross-border transactions may be significant. Stripping could be analysed as the conversion of interest payments into capital repayments, interest charge for original funding taking now the form of the reimbursement of zero-coupon bonds. Regular payments of interest to holders are replaced by the redemption of a security. There could be a positive effect on net borrowing/net lending. However, recording interest on an accrual basis prevents such change from being conceptually acceptable. In no way must stripping change the cost of borrowing.

Under ESA95 framework, strips are recorded in the financial accounts at the transaction value, i.e. issue price. But strips are substituted to the market value of the original bond. So, the transaction is neutral on the balance sheet of the issuer. It is only a change in presentation. On all strips, the difference between the redemption value and the issue price is considered as interest and accrued, according to the basic rule, over the remaining maturity. In these conditions, accrued interest would be actuarially equal to all coupons that should have been normally paid under the previous form.

Contrary to the case of other zero-coupon bonds, the rate of interest used for accruing interest on strips is not the rate prevailing at the time of stripping. First, because, as already mentioned, stripping is a permanent process so that it would be impossible to differentiate strips according to their date of issuance. Second, again, the choice of the rate for accruing interest in ESA 95 is linked to the original cost of borrowing. Stripping provides no additional funding to the issuer and there is no impact on the original cost of borrowing, fully determined at the issuance time (in case of fixed rate) or following rules that cannot be changed (in case of floating rate). Third, as strips are only another expression of the original bonds, the total amount of interest paid by the issuer over the whole life of a bond is equal whether stripping occurs or not.

Thus, interest on strips should be accrued by reference to the underlying bond, from the point of view of the issuer. On this point, stripping has no impact on the calculation of interest on an accrual basis. If it is easy when considering the issuer's side, obviously it may raise some difficulties when dispatching accrued interest between holders or looking into portfolios. This treatment requires at a minimum to identify strips on an individual basis as on the market and to be able to refer to the underlying bond.

However, market practice in some countries may make things a little more complex. It is the case where interest strips are issued according to a fungible-like method, referring to coupons from several bonds but paid at the same date. The amounts of the underlying nominal coupon are different. There is thus an adjustment through the number of securities provided in the exchange. In this case, it would be necessary to use the average nominal rate on the different underlying bonds, calculated in proportion to the share of each stripped portion of the bonds.

A final point relates to repurchases of strips by the issuer. The latter may not obtain a complete set that would allow him to reconstitute the original bond under its "conventional" form and then to offset it in his debt amount. In these conditions, gross recording seems more relevant. These repurchases would not affect the debt. For the purpose of sector allocation in the national accounts, the market price at the time of compiling outstanding amounts should be used. Under the framework of Excessive Deficit Procedure, the consolidation should preferably take into account the share in the total outstanding principal amount of the principal at face value of the strips (representing interest or principal) held by units in General Government. This conversion can easily be derived from the market value of the latter.

#### **b) Floating rates and assimilated issues (including saving premium)**

Treatment of floating rate debt instruments does not raise particular conceptual issues but may need special considerations relating to needed information. References for floating rates are very numerous and may apply in a significant number of ways. Note that where fixed and floating rates are combined (case of “mixed bonds”) two different instruments must be considered.

In the case of securities, there is usually a link between the nature of the rate index and the frequency of interest payments. For a quarterly indexed interest is normally paid every quarter with a delay of one quarter. Thus, the exact amount paid to the holders is known in advance. Interest is “pre-determined”. There should be no discrepancy between the accrued amount and the actual payment.

However, in some cases, interest is “post-determined”. For instance, the annually paid interest is indexed on an average for a given rate over the previous twelve months. The exact coupon due for payment is known only a little time before the actual payment and the corresponding rate cannot be used during the accruing period, or at least over all the latter. Thus, only provisional estimates of accrued interest could be made with the risk that the actual payment would not offset the reinvestment of accrued interest in the financial account. Such a gap must not be considered as a capital gain/loss. It is only a shortcoming in the estimation of accrued interest. So, it must be corrected. As it is applied to instruments with regular interest payments, a revision of data should be entered preferably on the last period of compilation, as it would mainly concern quarterly accounts or provisional annual data, easily revisable. However, considering that the discrepancy would be generally very small, for simplification the adjustment could also be entered during the period the actual payment occurs.

In regard to loans and deposits, from a general point of view, a great number of references may be used, with a large range of spreads due to the quality of debtors/creditors and various payment practices for interest. In addition, in the case of some loans, the rate can float only under the condition of a minimum change in the index and within specific upward limits. As compilation is not conceivable on an individual basis, only global information could be used. Under these conditions, interest would be accrued on the basis of estimates of the most probable rate that would be effectively paid. General Government is first concerned when granting loans or borrowing under this form. However, straight rates are the most frequent and one could assume that exact reference for floating rates would be easily available. On the contrary, global estimates would be more relevant for deposits, notably in countries where units manage significant amounts.

Although it should be at the present time really a minor issue for General Government, the question of saving premiums must be considered as it may raise similar problems to the case of floating rates.

In ESA95, this point is mentioned only for securities (5.138g) although it is currently rather exceptional within the European Union. On the contrary, some non-negotiable saving instruments may be designed with such a feature. A saving premium is treated in the system as interest, clearly distinguished from the case of redemption premium, paid whatever the holder’s behaviour and similarly treated as interest but through the accrual component due to the difference between issue price and redemption value (5.138c).



A saving premium is paid only under a certain condition, generally regarding minimum holding stability. It is an additional remuneration and not a nominal holding gain. It must be recorded on an accrual basis, like any interest. However, the exact total amount paid cannot be known with certainty before the end of a given period. One solution could be to record accrued interest on the basis of the “normal” rate, excluding the premium, then making a correction (both in the property income and in the financial account) when the latter is effectively granted to the holder. In fact, in most cases, only a very small minority of holders would not get the additional remuneration whereas the majority would meet the specific requirement. Thus, using the maximum yield, including the premium, would be more relevant. In case the latter were not paid, a negative entry would be recorded, theoretically on the whole accrual period but, in case of small amounts, possibly only on the last compilation period. This treatment should also apply to instruments with “progressive interest” in which the remuneration paid to the holder increases proportionally to the holding time.

### **c) Lottery instruments**

ESA95 mentions in paragraph 5.138g the case of securities with lottery payments, i.e. attributed by drawing. It is stated that these payments are to be treated as interest. However such instruments are not described. At the present time, it is very infrequent that units of General Government issue bonds with this feature. Moreover, some non-negotiable instruments, specifically held by households, may also include lottery payments possibly managed by General Government units.

From a general point of view, a lottery payment depends exclusively on chance and is not guaranteed in the initial arrangements. Each holder ignores the exact amount of future repayments he would get. In addition, the additional “gift” is only given to some of them. On this point, there is a clear difference from floating rate securities, where all the bonds are treated in the same way, or from redemption premiums that, in addition, are totally known at issuance time. It is also different from savings premiums that are not undetermined for all holders and depend on their own behaviour. In the case of lottery instruments, it is only a matter of chance.

However, the lottery element may take various forms. For instance, in the case of bonds, it may concern the redemption. Each year, a tranche of the outstanding amount is drawn and redeemed to the holders. The repayment is normally at the nominal value. The redemption may also occur under the form of repurchases at market price. In this case, any difference between the amount of the transaction and the value in opening balance sheets is to be considered as nominal holding gain or loss recorded in the revaluation account.

The issue of accrued interest deals with debt instruments, negotiable or not, whereas lottery consists in paying a bonus, or a set of bonuses, at specific dates (one or several), to some holders (possibly only one) chosen at random.

This additional payment is not to be considered as a holding gain for the holder, even if he perceives it at such. It does not result from a change in market valuation. All the

arrangements concerning the lottery, as the bonus amount or the number of lucky beneficial investors, are fixed in advance. Under these conditions, any additional payment is part of the remuneration of the instrument, included in the cost of borrowing.

As lottery payments are treated as interest, they should normally be recorded on an accrual basis. The debtor knows he will have to pay it. The lottery payment is a liability that increases with time, in the same conditions as for other interest.

#### **d) Index-linked bonds**

Some units in General Government may issue debt instruments, namely bonds that include an indexing clause meaning a link with a specific index. The latter may apply only to the coupon. In this case, it is similar to variable interest financial instruments. The provision may concern only the value of principal and the coupon is affected through the fixed rate applied to principal. In other cases, both are changed according to the same index-linkage formula.

ESA 95 deals with the case of index-linked securities in paragraphs 4.46 and 5.138e. 4.46 covers only the case of a price index.<sup>1</sup> By contrast, 5.138e is more extensive as it adds the cases of the price of a commodity and of an exchange rate index.<sup>2</sup> From a general point of view, the list is not complete. Other references are used by issuers, such as Stock Exchange index (it is in fact a price index) or the price of a specific security. It is true that General Government uses more frequently an index-link based on consumer price index or exchange rate. Nevertheless, in spirit, ESA provisions about this matter should imply to any case of index-link. In addition, it must be stressed that debt instruments other than bonds can be index-linked and are to be recorded in the system in the same way. It could be the case for bonds index-linked on a rate of exchange. In the system (similar to the System of National Accounts and the Balance of Payments Manual) they would be treated differently from bonds denominated and issued in a foreign currency. In the latter case (covering the situation in some Member States), any change in the rate of exchange would be recorded only in the revaluation account, whereas for indexed bonds the capital uplift would have an impact on saving. That should not be seen as a source of inconsistency as both instruments are not similar by nature, issued for different reasons and bearing different risks.

According to ESA, similar to SNA (11.78) and BOP 5<sup>th</sup> Manual (397), any additional payment to holders due to the evolution of the index is considered as interest,

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<sup>1</sup>"c) index-linked securities: the amounts of the coupon payments and/or the principal outstanding are linked to a price index. The change in the value of the principal outstanding between the beginning and the end of a particular accounting period due to the movement in the relevant index is treated as interest accruing in that period, in addition to any interest due for payment in that period. The interest accruing as a result of the indexing is effectively reinvested in the security and must be recorded in the financial accounts of the holder and issuer."

<sup>2</sup>"e) in case of securities where the value of the principal is linked to a price index, the price of a commodity or an exchange rate index, the issue price of the security is recorded as the principal and the index payment paid periodically and/or at maturity is treated as interest that is accrued over the life of the security, and the counterpart is recorded as reinvestment in securities other than shares in the financial account;"

even in the case of an index-linkage on principal. Any supplementary charge paid to investors increases the cost of borrowing. It is consistent with provisions relating to issue price and redemption value. ESA95 specified also that the accrual rule applies to any index payment, regardless of the moment it is actually paid to creditors. The index should apply continuously all over the life of the bond. So, the changes must be taken into account at each compilation date, even if the arrangements stated that the payment would be based on the value of the index at a certain point of time, for instance close to the final redemption date.

Under these conditions, a difference may appear between the amount accrued and the sum effectively paid. The question is clear for index-linkage related to coupon or interest. It is very similar to the case of a post-determined coupon. Thus, the same rule should apply and the accrued amount should be corrected, both in property and in financial income. Concerning an index-linkage on the value of capital, it must be stressed that ESA95 requires a market valuation for negotiable instruments. In fact, the current price of the instrument would include the effect of the specific linkage on the principal. However, contrary to the case of other elements affecting the value of the instrument (change in market rates of interest, declining maturity, possibly the rating), this change in value is treated as other flows, recorded in the revaluation account as nominal holding gains or losses. It is considered as a transaction included in the financial account. It is the reason why it would be inconsistent to enter any adjustment in the revaluation account. So, any above mentioned difference between the estimation of accrued interest from principal linkage on a continuous basis and the effective payment to holders should be corrected in the same conditions as for coupons. There might exist cases where the correction could be rather significant but their probability seems really very low in the case of General Government, considering the kinds of index-linkage that are currently put in force.

#### **e) Short-term negotiable instruments**

As a reminder, ESA95 is quite flexible on the definition of short-term instruments. As in international standards, this maturity is normally defined as “one year or less” but ESA95, like SNA, accepts a limit of two years at the maximum. In ESA, it is “in exceptional cases” that however are not mentioned. This flexibility has no effect on the treatment for recording interest on an accrual basis. From a conceptual point of view, there is no reason to use for these instruments an approach different from the case of bonds. All provisions relating to accrued interest are fully applicable, such as the choice of the relevant rate at time of issuance, the treatment of premiums and discounts, reinvestment under the instrument, etc.

Instruments with an original maturity over one year, include generally regular payments of interest. In this case, accrued interest should be recorded rigorously in the same conditions as for long term bonds and notes. In specific cases, interest may be paid once at final maturity. There is no effect on accrual rules.

Concerning instruments with maturity at a maximum of one year, issuance at a discount is very frequent. Most Central Governments issue Treasury bills of this kind for infra-annual liquidity purposes. All the statements relating to bonds issued at a

discount are to be applied whatever the size of the discount. It is clearly stated in 4.45<sup>3</sup>. In a majority of cases, these instruments are similar to zero-coupon bonds. It is assumed that information should be easily available for short-term securities issued by General Government. An instrument-by-instrument approach should be implemented as a priority but estimations based on average maturity and average rate of interest prevailing at issuance could be also provide reliable figures.

#### **f) Instruments with grace periods**

Some debt instruments may include a grace period during which no interest is paid. This case is not mentioned in ESA95 and SNA. Such arrangements are mainly observed in the case of loans and seem currently rather infrequent in the case of bonds. As lender under specific conditions, General Government may be involved, notably for loans granted to developing countries or for public policy purposes.

A first case relates to instruments bearing a zero rate of interest during the grace period. No interest is to be accrued, as the cost of borrowing is really zero. During this time, the debtor has no commitment concerning the payment of interest.

In other cases, interest payments are only postponed from the grace period to the remaining lifetime of the instruments. The cost of borrowing is not equal to zero. Interest is really due but is capitalised. The amount of accrued interest during the first period is paid later under various forms. It can be added to the first coupon, spread all over the remaining period, increasing each regular coupon, or paid with the final repayment. In some cases, it may be distributed under the form of new securities. These different ways have no effect on accrual recording that must apply until the effective payment as soon as interest is due by the debtor on a permanent basis.

It may happen that the rate of interest applied in a second time period takes into account this situation. The rate is thus higher than the current one so that the final yield is roughly similar to normal conditions over the total life of the instrument. The purpose of the grace period is in this case to temporarily lighten the pressure on the borrower's treasury. However, it not a reason to record accrued interest during the first period where no interest is due by the debtor.

#### **g) Accrued interest on instruments denominated in foreign currencies**

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<sup>3</sup> "The difference between the face value and the price paid at the time of issue (i.e. the discount) measures the interest payable over the life of the bill. 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. Other changes in the value of the bill are treated as holding gains/losses."

There is no explicit recommendation on this issue in ESA95. However, provisions relative to financial transactions are clearly specified in 6.58. Nominal holding gains (or losses) are change in the value of an asset as a result of a change in price. The exchange rate is a price. Thus, as a general principle, "nominal holding gains may therefore occur not only because the price of the asset in local currency but also because the exchange rate changes." It is further said that "transactions in the financial assets in foreign currency must be converted into the national currency using the exchange rates at the time the transactions occur, while the opening and closing balance sheet values must be converted using the exchange rates prevailing at the dates to which the balance sheets relate." As a consequence, nominal holding gains and losses may appear due to the difference in exchange rates used for transactions and for balance sheets.

Obviously this provision must apply for accrued interest. Paragraph 5.17 states that "the counterpart transaction of an entry in interest (D.41) is always a financial transaction creating an additional financial claim of the creditor against the debtor." The reinvestment of accrued interest is a transaction in a financial instrument and, thus, the same rules than for other financial transactions. There is no reason to implement a specific treatment in this case, such as using only the rate of exchange of the effective payment if known at the compilation time, which would not be consistent with basic rationale grounds.

As already mentioned in the note, in the system interest is recorded as accruing continuously over time to the creditor on the amount of principal outstanding. Analytically, accrued interest should be implemented each day using the daily rate of exchange for instruments denominated in foreign currency. In fact, compilers should use the average rate observed during the period of compilation. Under these conditions, in all likelihood, recording accrued interest will generate an adjustment in the revaluation account, due to distortion between the accrued amount and the effective payment. On a global basis, this adjustment would be equal to the gap between the amount of accrued interest observed at the end of the year, at a given rate of exchange, and the value of this amount on the basis of the rate of exchange during the effective accruing period. For instance, at the end of one year, if accrued interest represents five months of annually paid interest, the revaluation adjustment is the difference between the spot rate at this time and the average rate during the previous five months applied to the observed amount.

Although the adjustment might depend on various factors (such as frequency of compilation, volatility of rates of exchange), it is fully meaningful from an economic point of view. It expresses the difference, positive or negative, between the measurement of interest on an accrued basis (two rates) and on a cash-based system (one rate). The accrued interest is the sum that should have been received by a debtor if interest were transferred continuously to him. It is the choice of the system and in no case should the currency change it. Again, the economic features must prevail on the simple arrangement concerning effective payments.

## **h) Income of Mutual Funds**

Units classified within General Government sector may hold shares issued by Mutual Funds. ESA95 states that income received by Mutual Funds is assigned to holders of their shares, after deduction of management fees. The latter are not considered in the system as a distributive transaction but are treated as financial services directly charged to the owners of the shares, included in output and consumption.

On the assets side of these units, income received by the Mutual Fund is recorded according to ESA rules, i.e. on an accrual basis for interest and “at the time they are due to be paid” (in practice close to the effective payment date) for dividends. As a reminder, holding gains or losses are not recorded as property income in the system.

Concerning the liability side, paragraph 5.141 specified that the income assigned to shareholders is reinvested. Thus, it must be recorded according to accrual rules, in the same conditions as for other debt instruments, regardless of whether this income is distributed regularly or capitalised and, so, automatically included in the value of the share.

In practice, this treatment may raise difficulties. This is the case for estimating management fees, identifying separately income and nominal holding gains or losses, notably where income is capitalised. In addition, accrued interest received by Mutual Funds is to be estimated from the point of the view of the issuers of instruments they hold, any adjustment with their income statement being recorded in the revaluation account.

### **i) Early redemption of debt instruments (including exchange)**

Whatever the instrument, a debtor may have the possibility of breaking the initial contract and offsetting his own debt before the maturity date that had been agreed at inception. In some cases, he must give notice at least before a specific period of time. The creditors, as holders of securities, lenders of loans or managers of deposits, are generally entitled to compensation.

-The case of securities is first considered.

An early redemption may take the form of repurchases on the market by the issuer, provided that the contract allows it. But it may also be the result of an exchange of securities. The issuer calls for some specific bonds (or bills/notes) and “pays in paper”, supplying a new security or a new tranche of a security previously issued. The price may be fixed through a competitive procedure, such as a tender. Such operations generally occur after a fall in market rates, so that the market prices of stated-rate bonds have increased. In this case, the issuer is aiming a reduction of the interest burden, at the expense of a rise in the repayments of principal. However one could imagine the symmetrical situation (interest rate has increased) and an exchange implemented for reducing the amount of the debt. In the most frequent first case, the issuer would “pay” the previous securities at market price, higher than the nominal (face) value. Because of the

significance of debt issued by General Government, this sector is often involved in such exchange.

Thus, in this context, a difference is observed between the nominal value and the effective redemption value, sometimes called “premium”. Where the latter is a positive premium, it is a holding gain for the holder and a holding loss for the issuer, recorded in the national accounts within their respective revaluation accounts. It must be stressed that the amount of this premium depends strictly on the way the debt is measured.

In the framework of ESA 95, financial instruments are valued in principle at current prices, where meaningful prices are available. This is generally the case for debt securities markets. Thus, the premium is equal to the difference between value of the outstanding amount at the end of the previous reporting period and the price used effectively in the exchange. It results from the change in interest rate since this date and also from the decreasing maturity of the instrument.

On the contrary, where the debt is not valued at market price but at face value, as is currently the case for the Excessive Deficit Procedure, in all likelihood the premium would be higher than in the previous case. The effect of the decrease in interest rate would be only taken into account in the case of a transaction undertaken by General Government. Nevertheless, that feature does not impact the treatment that is completely the same in both cases.

Units of the bond presented in the exchange by holders definitively disappear. They are reimbursed. According to ESA 5.138g the redemption value includes redemption premiums. For its part, paragraph 5.138 b specifies that the difference between the latter and the issue price is treated as interest, accrued over the whole life of the bond. It is stated for the case of bonds issued at a discount but conceptually, it applies to all redemption premiums. However, in the case of an early redemption, the premium observed cannot be assimilated to a redemption premium. The latter should have been fixed at the time of issuance, corresponding to a basic feature of the bond, and is not linked to changes in market conditions. Thus, such holding gain/loss (premium) should not be recorded as interest.

In fact, the treatment of these exchanges of bonds should be similar to transactions of bonds on secondary markets between holders of securities. From the latter's point of view, an exchange looks like a sale on the secondary market that is immediately, and not as a separable transaction, followed by an automatic reinvestment in the same category of debt instrument. Any transaction on the secondary market normally provides holding gains or losses, recorded in the system in the revaluation account. The same approach applies to the case of an exchange of bonds.

In the exchange, there is a strict equivalence between the amount bought back by the issuer and the new amount issued. As the nominal value of each individual security is identical, the holder gets a number of new securities larger than he brings, with eventually a cash adjustment. For bonds with regular interest payments, there is, in addition, a payment by the issuer for the accrued coupon, except if the latter is also converted into new bonds. It is clear that the premium cannot be imputed on the issue value. It has already been taken in consideration in the amount of the new issue. It has no effect on the interest or yield of the bond provided by the issuer.

An exchange is of course neutral on the flows in the financial accounts, because both operations are recorded at their actual price. Except if accrued coupon is reinvested, the market value of the debt is unchanged. On the other hand, the “volume” of the debt, as defined in ESA 95 7.47, is changed because of the increase of principal amount.

According to ESA 95, the exchange has no effect on net borrowing/net lending at the time of the exchange. Later, it is affected through new amounts of effectively paid interest. The exchange is neutral from an actuarial point of view but it changes the distribution of repayments over the time, between regular payments of interest and repayment (s) of principal.

Second, an early redemption also occurs for loans. This case may involve units within General Government sector, as lenders or as borrowers.

From a general point of view, the debtor may be allowed to reimburse a loan before the final maturity. In compensation, he may be forced to pay to the lender an indemnity, a lump sum. The latter cannot be considered as a capital transfer. Obviously, in ESA 95, paragraphs 4.132 about fees and penalties and 4.136 about payments of compensation do not cover this case. Treating the indemnity as the price of levying an option held by the borrower would not be consistent with ESA because this kind of option is not considered as a financial derivative in the system. It looks like a contingent asset or an “embedded derivative” as the right of an early withdrawal cannot be separately traded (or off-set) from the debt instrument. The indemnity cannot be treated as a service charge, not because this charge may vary in large proportions (some fees are also proportional) but because there is in the operation no provision of specific intermediation services. An early redemption of loan is only a time-adjustment in repayments that have been agreed in an initial contract.

Thus, the treatment would depend on the way the indemnity is calculated.

A first case is where it is based on the amount of principal that has been effectively provided and for the exact time of borrowing. The borrower is asked to pay an additional interest for all (or partially) the time before the redemption, so that the interest rate is finally increased, through a retroactive effect. The contract includes a clause stating that the rate would be higher if the loan is reimbursed in advance. This additional payment should be treated as interest. However, by derogation to the accrual principle, it could be recorded only at the time of payment and not spread all over the time the loan had been in force. Besides practical reasons, notably for long-term loans reimbursed only a little time before maturity, this solution seems fully consistent with the above-mentioned debtor approach based on interest rate at inception. Effectively, accrued interest must represent an unquestionable claim when it is recorded in the property income and simultaneously reinvested. The rate cannot take in consideration the effect of an event that is only conditional, whatever the intention of the borrower and the eventual precautions taken by the lender. There would be an impact on net borrowing/net lending.

A second case is where the indemnity is calculated as a fixed percentage over the remaining amount of principal. There are strong rational grounds for recording the indemnity as holding gain (for the lender) and loss (for the borrower). The indemnity is added to the principal and both form the redemption value as a whole. It cannot be



considered as interest as it is charged on a principal that is no more available for the borrower. Finally, this treatment would be similar to the above-mentioned case of an early redemption of bonds. The difference is in the initiative agent, creditor or debtor, but in both cases the sum reimbursed is different from the nominal value. The fact that the redemption value is not in this case the result of market pricing does not matter, as loans are normally not valued on a market. There would be no impact on net borrowing/net lending.

Third, the case of deposits must be considered, notably because in some countries units classified in General Government manage this category of instruments.

For some instruments, as time deposits or saving deposits, a given rate of interest may be paid only under the condition of a minimum holding period. An early liquidation, if contractually allowed, is balanced by a reduction in the rate of interest paid to the holder. It might be also the case where a delay is not respected for deposits redeemable at notice.

For recording interest on an accrual basis, the original rate of interest must be considered. In this case, it should be the maximum rate that the depositor could receive in the normal course of the contract, i.e. respecting the arrangements about maturity or notice. When it is not the case, the question is to qualify the difference between the accrued amount of interest and the amount effectively paid to the depositor. Similar arguments to the case of early redemption of loans may be used to reject treatment as capital transfer or option. It seems also difficult to see the reduction of interest as a holding gain/loss as the principal outstanding amount is not affected by this kind of penalty. In addition, the provision of liquidity cannot be considered as a new financial relationship, the above-mentioned difference being the price of this service, as this transaction is an intrinsic element of financial instruments that are convertible into liquidity by the manager and not through a specific market.<sup>4</sup>

In the system, the actual payment of interest must exactly offset the reinvestment of accrued interest in the financial account. Otherwise, the over-estimation of the reinvestment compared to its further repayment would lead to some discrepancies within the integrated system of accounts.

In these conditions, the amount of interest accrued previously should be corrected on the basis of the new final rate. As this amount is in all likelihood globally very small compared to the total interest on deposits, for practical reasons, the correction could be imputed only on the last period of compilation.

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<sup>4</sup> This treatment would not be consistent with the “Financial intermediary services indirectly measured” (FISIM) that is composed of one share for commissions and fees or charges separately charged and of one share for net flows of interest, calculated on the basis of effective payments by financial institutions. Any double counting must be avoided. For instance, the maximum rate was 5% and the FISIM equal to  $7\% - 5\% = 2\%$ . Due to an early redemption, the rate effectively paid falls to 4%. The FISIM is now  $7\% - 4\% = 3\%$ . The FISIM takes into account the effect of the penalty.

## PART 5 / ACCOUNTING TREATMENTS

### 1) Instrument issued at par and regular coupon/interest payments

On first of July in year 1, Central Government issues a bond with a principal of 1000, a rate of interest of 5% paid every year at this date, a maturity of 10 years and a redemption *in fine*. At end of year 1, the market price (excluding accrued coupon) is 102%. At end of year 2, the market price is now 105%.

*(In Italics, estimation with compound interest)*

YEAR 1			
Non Financial account			
U		R	
D.41	25 (24.3)	B.9	-25 (-24.3)
Financial account			
$\Delta A$		$\Delta L$	
F22	+ 1000	F.332	+1025 (1024.3)
		B.9	-25 (24.3)
Revaluation account			
$\Delta A$		$\Delta L$	
		F.332	+20
Closing balance sheet			
A		L	
		F.332	1045 (1044.3)
			(EDP: 1000)

YEAR 2  
Opening balance sheet

A	L
	F.332    1075 (1074.3) (EDP: 1000)

Non Financial account

U	R
D.41            50	B.9            -50

Financial account

$\Delta A$	$\Delta L$
F.22            -50	F.332    0 (+50 - 50) B.9            -50

Revaluation account

$\Delta A$	$\Delta L$
	F.332            +30

Closing balance sheet

A	L
	F.332    1075 (1074.3) (EDP: 1000)

## 2) Instrument issued at a discount with regular coupon payments

On 01/09 n year 1, Central Government issues a new tranche of a bond (principal 1000, rate of interest 5%, maturity 10 years, payment date on 1st July, and redemption *in fine*). The issue price is 95% (roughly a yield of 6%). The discount of 50 is spread for 1 in the first year, 4 in the second year and 3 in the tenth year. For simplification, the bond is always quoted 100% at ends of period. (Figures are rounded)

### YEAR 1

#### Non Financial account

U		R	
D.41	13.5 (12.5+1)	B.9	-13.5

#### Financial account

ΔA		ΔL	
F.22	+958	F.332	971.5 (950+8+13.5)
		B.9	-13.5

#### Closing balance sheet

A		L	
		F.332	971.5
			(EDP: 1000)

### YEAR 2

#### Opening balance sheet

A		L	
		F.332	971.5

#### Non Financial account

U		R	
D.41	54	B.9	-54

#### Financial account

ΔA		ΔL	
F.22	-50	F.332	+4 (+54-50)
		B.9	-54

#### Closing balance sheet

A		L	
		F.332	975.5
			(EDP: 1000)

YEAR 10  
Opening balance sheet

A	L
	F.332      1022

Non Financial account

U	R
D.41      28	B.9      -28

Financial account

$\Delta A$	$\Delta L$
F.22      -1050	F.332      -1022
	B.9      -28

Closing balance sheet

A	L
	F.332      0

### 3) Instrument issued at a discount without regular coupon payments

Central Gov. issues on 01/07 a zero-coupon bond for 3 years for 75 (nominal value is 100). The implicit interest rate is 10%. (Figures are rounded)

#### a) no change in the market interest rate

YEAR 1			
Non Financial account			
U			R
D.41	3	B.9	-3

Financial account			
$\Delta A$			$\Delta L$
F.22	+75	F.332 B.9	+ 78 (75 +3) -3

Closing balance sheet			
A			L
		F.332	78 (EDP: 100)

YEAR 2			
Opening balance sheet			
A			L
		F.332	78

Non Financial account			
U			R
D.41	8	B.9	-8

Financial account			
$\Delta A$			$\Delta L$
		F.332 B.9	+8 -8

Closing balance sheet			
A			L
		F.332	86 (EDP: 100)

YEAR 3

Opening balance sheet

A	L
	F.332 86

Non Financial account

U	R
D.41 9	B.9 -9

Financial account

$\Delta A$	$\Delta L$
	F.332 +9
	B.9 -9

Closing balance sheet

A	L
	F.332 95
	(EDP: 100)

YEAR 4

Opening balance sheet

A	L
	F.332 95

Non Financial account

U	R
D.41 5	B.9 -5

Financial account

$\Delta A$	$\Delta L$
F.22 -100	F.332 -95
	B.9 -5

Closing balance sheet

A	L
	F.332 0

**b) with change in market rate**

At the beginning of the following year, interest increases up to 15% for a maturity of 2 years and half (and does not change any more). The price on the market falls to 70. (Figures are rounded)

YEAR 2			
Opening balance sheet			
A			L
	F.332		78
Non Financial account			
U			R
D.41	8	B.9	-8
Financial account			
$\Delta A$			$\Delta L$
	F.332		+8
	B.9		-8
Revaluation account			
$\Delta A$			$\Delta L$
	F.332	-5 (81-86)	
Closing balance sheet			
A			L
	F.332	81 (70+11)	



YEAR 3  
Opening balance sheet

A		L
	F.332	81

Non Financial account

U		R
D.41	9	
	B.9	-9

Financial account

$\Delta A$		$\Delta L$
	F.332	+9
	B.9	-9

Revaluation account

$\Delta A$		$\Delta L$
	F.332	+3(93-90)

Closing balance sheet

A		L
	F.332	93 (81 + 12)

YEAR 4  
Opening balance sheet

A	L
	93
	F.332

Non Financial account

U	R
D.41	5
	B.9
	-5

Financial account

$\Delta A$	$\Delta L$
F.22	-100
	F.332
	B.9
	-95 (+5 -100)
	-5

Revaluation account

$\Delta A$	$\Delta L$
	F.332
	+2(100-98)

Closing balance sheet

A	L
	0
	F.332

#### 4) Strips

Central Government has issued the following bond : fixed rate of 15%, principal of 1000, redemption *in fine*, payment date on 1st July. At a remaining maturity of three years, it is decided to create a set of four strips.

##### a) on the basis of the original interest (pedagogical case)

There are three coupon certificates for each annual interest payments (valued respectively 99, 113, 130 on the basis of price equal to 65.8%, 75.7% and 87% for a nominal of 150 ) and one certificate for the final repayment of principal (valued at 658 as the price is 65.8% for a nominal of 1000).

(Figures are rounded)

YEAR 1			
Opening balance sheet			
A			L
	F.332	1075	
Non Financial account			
U			R
D.41	150	B.9	-150
Financial account			
$\Delta A$			$\Delta L$
F.22	-150	F.332	0 (+150 - 150)
		B.9	-150
Closing balance sheet			
A			L
	F.332	1075	

(1075 is the sum of the market values of four certificates: 7017 + 106 +122 +140 or is the sum 1000 + 75 for accrued interest)

YEAR 2

Opening balance sheet

A		L	
		F.332	1075

Non Financial account

U		R	
D.41	150	B.9	-150

Financial account

ΔA		ΔL	
F.22	-150	F.332	0 (+150 - 150)
		B.9	-150

Closing balance sheet

A		L	
		F.332	1075

(1075 is the sum of the market values of three certificates: 813 + 122 140, or is still equal to 1000 + 75 for accrued interest)

**b)with a change in interest rate**

Stripping is implemented in new market conditions, for instance when the market rate has fallen to 10%. The current price of the bond is 1125. At this time, the values of the strips are 113, 124, 136 and 752 (on the basis of prices in percentage 75.2, 82.7 and 90.8).

YEAR 1			
Opening balance sheet			
A			L
	F.332		1075
Non Financial account			
U			R
D.41	150	B.9	-150
Financial account			
$\Delta A$			$\Delta L$
	F.332		+150
	B.9		-150
Revaluation account			
$\Delta A$			$\Delta L$
	F.332	+107(1182-1075)	
Closing balance sheet			
A			L
	F.332		1182

(1182 is the sum of the market values of four certificates: 790 + 119 +130 +143, or is the market value of 1000, including accrued interest)

YEAR 2

Opening balance sheet

A		L	
		F.332	1182

Non Financial account

U		R	
D.41	150	B.9	-150

Financial account

ΔA		ΔL	
F.22	-150	F.332	0 (+150 -150)
		B.9	-150

Revaluation account

ΔA		ΔL	
		F.332	-39(1143-1182)

Closing balance sheet

A		L	
		F.332	1143

(1143 is the sum of the market values of three certificates: 869 + 131 + 143, or is the market value of 1000, including accrued interest)