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INTEREST AND INFLATION ACCOUNTING

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This paper analyses the treatments proposed by Chapter XIX (Annex B) of the 1993 *SNA* and the manual *Inflation Accounting* published by the OECD (Peter Hill) as alternatives to the traditional recording of nominal interest. Real interest and interest prime (annex B) are relevant for different purposes. Their amounts are not the same to the extent that actual compensation and full required compensation for inflation differ. The recording of negative real interest is not compatible with the exclusion of holding gains/losses from the *SNA* current accounts. The accounting treatments in *Inflation Accounting* (capital transfers, additional lending/borrowing, no nominal holding gains/losses) and Annex B (nominal holding gains/losses, no capital transfers, no new lending/borrowing) are contrasted.

INTRODUCTION

Before the preparation of the 1993 *SNA*, issues connected with high or significant inflation had not been addressed in international recommendations concerning national accounts. Uneasiness concerning the recording of nominal interest had been often expressed in Europe and North America at the time of two-digits inflation and more often in Latin America in countries experiencing high or hyper inflation. Especially under conditions of high or hyper inflation, uneasiness extended to the whole set of accounts, because due to the significant rate of inflation within each year annual accounts in current values could no longer be deemed homogenous as regards the level of prices in each year. They combine intra-annual flows that are valued at very different price levels and are not, strictly speaking, additive. The effect of the intra-annual change in the general price level can be neglected for sake of simplicity only when the rate of inflation is low. When it is high, the meaning of annual accounts in current values becomes fuzzy.

In most chapters of the 1993 *SNA* describing the conceptual central framework, annual accounts in current values are taken as meaningful and nominal interest is recorded as primary income in the current accounts. One may thus consider that in these chapters inflation is supposed low. The interpretation is actually a bit more complex. On one hand, the measurement of holding gains/losses and of price and volume measures is given great importance which implicitly means that various rates of inflation, not all of them being very low, can be experienced. On the other hand, the existence of index-linked securities is looked at and the amount accruing as a result of the indexation is treated as nominal interest (index linked loans are treated in the same way). As index-linked securities and loans are typical of inflationary situations, it may be concluded

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that the rationale behind the chapters in question of the *SNA* is neither evident nor fully consistent.

Members of the Expert group were in general aware of these difficulties. Nevertheless a large majority of them preferred the recording of nominal interest and two or three times rejected the recording of "real interest" (the question was formulated in these terms).[1]

However, in the meantime, the degree of consciousness of the impact of high inflation on the building of national accounts grew. As a consequence, a section on high inflation was included in the first draft (August 1989) of future Chapter XIX "Application of the Integrated Framework to Various Circumstances and Needs." *Inter alia*, it is suggested—following a proposal by Michel Séruzier (1989)—to revalue, within a given year, all transactions at the purchasing power of the currency at a certain point or during a short period of time.[2] In 1991, it was decided to complete this chapter by the presentation of "a parallel treatment of interest under significant inflation within the central framework," which became Annex B in the final version of this chapter. In this annex, nominal interest is no longer recorded.

Thus significant steps were made and a treatment of high inflation was included in the 1993 *SNA*, though not fully elaborated, except regarding interest and related issues. However, what was the status of the recommendations and suggestions that are made in Chapter XIX in general, and more specifically concerning high inflation? It must be kept in mind that Chapter XIX is not of a satellite nature. It is part of the presentation of the conceptual central framework of the System. Paragraph 19.6 is worth being quoted entirely: "The purpose of this chapter is not to elaborate in detail how a country may design its system following the *SNA*, but to show how, by using it in a flexible way, a country may adapt the central framework to special circumstances or types of analysis. The chapter provides a number of examples of such adaptations. In order to avoid misunderstanding it must be clear that these adaptations are not outside the central framework, but rather they are ways and means of building up a central framework with specific features according to national circumstances and needs."

The interpretation is that what is recommended in Chapter XIX is part of the *SNA* central framework. A country may decide to implement all or part of it in its central accounts. However, this is not compulsory, even when a country is experiencing problems that are addressed in Chapter XIX. This interpretation illustrates the kind of compromise that has been adopted in order to cope with contradictory objectives. Both standardization and flexibility are required (see the introduction to Chapter XIX for further elaboration). Preferences for the solutions presented in Chapter XIX are distinctly expressed, however these solutions are not imposed and treatments described in other chapters can be used. Concerning the treatment of interest under significant inflation, the compromise went so far as not to define the meaning of the word "significant." The door is thus open

[1]Nominal interest in the wide sense explained above. In the present paper, nominal interest refers to the sum of nominal interest narrowly defined and the increase in the value of the assets/liabilities resulting from index-linking, when relevant.

[2]The experience of the Central Bureau of Statistics of Israel which elaborated more in this direction was not known to me at that time.

for various interpretations. The important point at this stage was to have the door open. The answer depends both on the rate of inflation and the magnitude of the stocks of financial assets and liabilities involved (a rather moderate rate may have impact on large amounts of assets). Everybody would probably agree that an annual rate of 50 percent is significant! Obviously much lower rates of inflation have noticeable effects. Actually the conceptual problems involved are not specifically linked with high or significant inflation. They exist as soon as there are changes in the general price level.

Once the 1993 *SNA* is adopted, countries with significant inflation rates should experiment with the treatments suggested in Chapter XIX. However, as far as the treatment of interest and related issues is concerned, the conceptual debate was re-opened at the end of 1996 by the publication of "Inflation Accounting. A Manual on National Accounting under Conditions of High Inflation," prepared by Peter Hill and issued by the OECD. A part of this manual is a detailed elaboration of constant price level accounts and price and quantity measurement under high inflation. Another part of this manual presents, for the treatment of interest and related issues, positions which—apart from deleting the recording of nominal interest—diverge systematically from the solutions that are developed in Chapter XIX of the 1993 *SNA*.

In such a situation, an open discussion of the issues at stake is warranted. That is the purpose of the present paper. As inflation rates decreased significantly in many countries in the last decade and inflation is no longer a dominant concern, discussing such issues may seem less important. However, inflation remains significant in some countries. For many countries past series of national accounts cover periods of time with significant inflation, which sometimes makes these accounts partly meaningless. Since nobody knows the future and from a theoretical point of view, such a discussion remains fully relevant.

For the benefit of those people who are not fully familiar with the accounting structure of the 1993 *SNA*, a quick reminder can be useful. The 1993 *SNA* distinguishes Current Accounts, Accumulation Accounts and Balance Sheets. The balancing item of the current accounts is saving. Other key balancing items are the balance of primary incomes and disposable income. Accumulation accounts cover the traditional capital and financial accounts, as well as two new accounts, the other changes in volume of assets account (it includes for instance catastrophic losses and uncompensated seizures) and the revaluation account, where holding gains and losses linked with changes in prices are recorded.

For sake of simplicity, I refer simply to "*Annex B*" and "*Inflation Accounting*" respectively.

The paper runs as follows. Firstly, the various treatments under review are presented in general terms (Section 1). Secondly the main mechanisms of protection against inflation are analysed, successively financial instruments denominated in foreign currency (Section 2), index-linking (Section 3) and higher nominal rates of interest (Section 4). The order of the discussion is logically from the most explicit types of protection to the implicit one. At the end of Section 4, a synoptic presentation of the three accounting treatments (traditional *SNA*, Annex B, Inflation Accounting) is made using two simple examples. Thirdly, the issue is discussed in the context of possible different interpretations of the accounting

structure of the 1993 *SNA* (Section 5) and in relation with the concept of income (Section 6)

1. Interest, Nominal Interest, Real Interest, Interest "Prime"

Interest in the 1993 *SNA* is a primary income, a part of property income.[3] Thus, it is not a current transfer, because there is a quid pro quo.[4] A creditor puts financial capital at the disposal of a debtor. As interest is income, it must not include in principle any amount that represents a protection against inflation because such an amount avoids a loss in the real value of the capital involved. In principle interest must also not include any payment, actual or imputed, for the services provided by financial intermediaries.[5]

Nominal interest is what is called interest in common language, extended in Chapter VII of the 1993 *SNA* to cover payments corresponding to the increase in the value of index-linked securities or loans. Nominal interest is a composite flow. When financial intermediaries are involved, it can include implicit payments by debtors for the services of financial intermediaries and exclude implicit payments by creditors of these intermediaries.[6] Above all it can include, under inflationary circumstances, a component of protection against inflation of the principal of the asset involved.

Uneasiness with the recording of nominal interest has been expressed for a long time by users of national accounts every time the rate of inflation was significant. However, until the elaboration of the 1993 *SNA*, the proposed alternative treatments were to my knowledge always formulated in terms of recording real interest instead of nominal interest.

Real interest, a concept commonly used by analysts, is calculated by deducting from nominal interest the amount which has been or would have been necessary in order to keep intact the purchasing power of the principal of the financial asset/liability to which the interest refers.[7,8] The latter amount can be greater than the actual nominal interest itself. In such a case, the creditor incurs a real holding loss, whereas the debtor benefits from a corresponding gain. This loss/gain corresponds to what is commonly called "negative interest". Thus real interest is also a composite concept, though differently from nominal interest. It may correspond to a primary income flow in the *SNA* sense, if positive, or to a

[3]According to the 1968 *SNA* terminology, interest is a "factor income." Unfortunately, this expression has been deleted from the 1993 *SNA*. Anyway, a factor income is a primary income.

[4]All or part of interest sometimes has been analysed as a current transfer in the history of national accounting, especially in relation to interest on the public debt. However, this choice has no influence on the issues discussed here.

[5]Sometimes it has been proposed to treat all interest as an output of services (sometimes known as "non-factor services," outside the context of national accounts) in the production account. Again, this choice has no influence on the issues discussed here.

[6]The 1993 *SNA* adjusts nominal interest in this respect, even if the option of continuing to follow the 1968 *SNA* treatment—not involving any such adjustment—is left open.

[7]In this paper I exclude the issue of the financial intermediation services indirectly measured (FISIM). It is made much more complex in conditions of significant inflation.

[8]Real interest should not be confused with interest in real terms, which is the amount of interest estimated at the constant purchasing power of the currency in a reference period.

real holding gain/loss, when negative. The interpretation is simple. When real interest is negative, not only does the creditor not receive any current income from his asset, but he also loses part of it. In this respect, he is in the same position as a shareholder who would not receive any dividend and moreover would incur a holding loss because of a fall in the relative price of his shares.

Annex B fully acknowledges the analytical usefulness of real interest (paragraph 6) whose measurement as a satellite construct is strongly recommended (*ibid.* paragraph 3; Chapter XXI, paragraphs 21.19 up to 28). However in the present state of international recommendations, it is not possible to record negative real interest in the *SNA* current accounts, which would mean recording real holding gains/losses in these accounts. In effect it is a basic principle of the System that holding gains or losses, nominal or real, whatever their origin is, must not influence the measurement of value added, income, saving as well as net lending or borrowing.[9] In the 1993 *SNA* real interest may be obtained by combining interest recorded in the current accounts and real holding gains/losses on the corresponding assets/liabilities, as recorded in the revaluation account.

Of course, one could prefer the inclusion of real holding gains/losses in the concept of income of the *SNA* central framework. This would be a far reaching proposal which, in any case, could not be limited to monetary assets. Recording real holding gains/losses in the current accounts of a system of national accounts would imply a drastic reshaping of the conceptual central framework, something which neither *Annex B* nor *Inflation Accounting* contemplates.

In order to find a satisfactory solution to the treatment of interest, as a primary income flow in the current accounts under significant inflation, the 1993 *SNA*, in *Annex B*, had to revisit the analysis of nominal interest. The solution reached is based on the measurement, and deduction from nominal interest, of the component of protection of the principal of the asset against inflation which is *actually* included in nominal interest and can fall short of full protection. The idea is that the *actual* protection against inflation that a creditor obtains is at most equal to the total amount of nominal interest itself. Beyond that point, he may incur a real holding loss on his asset. Note the difference of approach with the measurement of real interest. In the latter case, what is calculated and deducted from nominal interest is the amount necessary in order to keep the value in real terms of the capital intact, irrespective of the fact that nominal interest actually includes or not an equivalent amount.

Thus *Annex B* records, as interest in the current accounts under significant inflation, the amount that remains, if any, after deducting from nominal interest the component of protection against inflation of the principal of the asset which is actually included in nominal interest [*Annex B*, paragraph 1(b)]. After such an adjustment, interest as a primary income flow in the *SNA* sense is positive or

[9]This is a basic principle of the *SNA* since the first 1953 version. Before, Stone's position was not so clear cut. For instance, Stone (1947) excludes "as far as possible capital gains of all kinds" from operating surplus (p. 61), but adds net "realised capital gains" to the income of productive enterprises (pp. 45, 62). This treatment was most probably a direct transposition from business accounting. Kuznets always excluded capital gains from the measurement of national income.

zero. It may not be negative.[10] The same holds for dividends in the *SNA* current accounts (*Annex B*, paragraph 6). For sake of convenience a purely neutral term has been chosen for calling interest after such an adjustment: "*interest prime.*"[11]

To be clear: the intention is not to advise economists to use interest prime instead of real interest. The usefulness of interest prime is to permit a much more satisfactory recording of interest as a current income than available by using nominal interest, while totally respecting the rule that *SNA* current accounts should not include any holding gain or loss. Interest prime is not an artificial tool however, it can be paralleled to dividends in this respect. Nobody would take dividends as the full return to equity when analysing the performances of various types of financial assets. The same holds for interest prime. Nevertheless, both dividends and interest prime are relevant for the *SNA* current accounts which to date do not try to measure the full return on assets.

Contrary to *Annex B*, *Inflation Accounting* reintroduces the old suggestion of recording real interest in the income accounts under high inflation (p. 86), even when they are negative (p. 87).[12] In the latter case "in effect, real interest is payable by the creditor to the debtor" (*ibid.*). As said before, in such a case, negative real interest reflects a real holding loss for the creditor and a real holding gain for the debtor. This conclusion seems indisputable.

Nevertheless, *Inflation Accounting* pretends that this is not true: "Superficially, recording real interest may appear to involve subtracting the creditor's real holding loss from nominal interest to obtain a more appropriate measure of income" (p. 88). It concludes "recording real rather than nominal interest does not imply treating the real holding losses on interest bearing assets as negative income" (p. 89). The issue is confused by the fact that *Inflation Accounting* defines the creditor's real holding loss as the full amount necessary to keep intact the value in real terms of his capital. It is not of course this total amount which is in question, but only that part which has not been actually compensated by nominal interest. This is what *Annex B* calls real holding loss, that is, only the negative interest The whole argument seems based on a formal disconnection between the real holding loss (that "the creditor continues to incur . . . and which is quite properly recorded outside of the transactions accounts of the system," *ibid.*) and the compensation from the debtor to the creditor that is based on a contractual relationship between two different institutional units (p. 88).

As *Inflation Accounting* makes the proposal (which I discuss below) to record as capital transfer an amount corresponding to the full amount necessary to keep the value in real terms of the principal intact, it argues that a real holding loss and a compensation of equal value cancel each other (p. 89). From there, it concludes that "neither disposable income nor the change in real net worth is reduced

[10]*Annex B* should not be misunderstood. It does not say that real interest may not be negative. Interest prime and real interest are differently defined, even if their amounts coincide when actual and required protection against inflation are equal.

[11]In fact, "interest prime" is simply interest as a primary income flow correctly measured according to the *SNA* general principles. However the word interest is used in other chapters as covering nominal interest. Actual interest, as opposed to nominal, would have been possible but it is often contrasted with imputed interest.

[12]Note that the issue of possible negative real interest, which is essential in a *SNA* context, is not mentioned in the Executive Summary (Chapter 1 of *Inflation Accounting*).

by the occurrence of the real loss on the loan" (*ibid.*). As far as disposable income is concerned, this conclusion does not hold. Even in the context of the treatment proposed by *Inflation Accounting*, the possible negative interest is recorded in the current accounts, thus influencing the measurement of primary incomes, disposable income and saving, and this negative impact is compensated only afterwards in the capital account.

It is worth stressing that the amount of negative real interest can be very significant. It is probably smaller, everything else being equal, when explicit index-linking of the financial assets/liabilities involved does exist, in which case indexing obtains full or nearly full protection against inflation. When protection is sought only through high rates of nominal interest, these rates can fall short of the rate of inflation (in *ex post* national accounting, all these rates are observed during the same period of time). During long periods of time, a number of European countries experienced negative real rates of interest on saving deposits or even more important, on transferable deposits.

Unconsciously perhaps, *Inflation Accounting* seems uneasy at the possible occurrences of large negative real interest. Of course, it does not deny that "Negative *ex post* real rates of interest have been observed in many countries at one time or another" (p. 87).[13] Nevertheless it makes proposals that can be interpreted as limiting as much as possible the extent of negative real interest. Let us leave aside notes and coins which are by nature non-interest bearing assets and look at deposits. *Inflation Accounting* suggests not to record real interest on transferable bank deposits on which no nominal interest is paid. The rationale proposed for this is that "If there is no nominal interest there can be no real interest. It is conceptually incorrect to regard non-interest bearing assets of this kind [currency and transferable deposits] as paying negative real interest" (*ibid.*). This argument is surprising. Moreover it seems in contradiction to the analysis made in the 1993 *SNA* of the financial intermediation services indirectly measured (FISIM). The preferred way of calculating indirectly the service charge on depositors is by the difference between the interest they would receive if a reference rate was used and the interest they actually receive (1993 *SNA*, paragraphs 6.124 and 6.127). The implicit assumption in the *SNA* is that the interest they actually receive can be low or even zero. This is immaterial. It means that an apparent absence of nominal interest on transferable deposits is a deceptive appearance. In fact, after calculating and allocating FISIM to users, owners of non-bearing interest transferable deposits actually receive (adjusted) nominal interest (1993 *SNA*, paragraph 7.108). Otherwise either they would have to be looked at as non-consuming services of financial intermediaries or as receiving these services free of charge from intermediaries. Both assumptions are not tenable.

Starting from this incorrect position, *Inflation Accounting* feels increasingly uncomfortable with "transferable deposits on which very low token rates of interest are payable." This case is "more problematic" (*ibid.*) indeed because there now exists apparent nominal interest. *Inflation Accounting* presents two possible

[13] *Inflation Accounting* also notes (*ibid.*) that "even negative nominal rates of interest have occasionally been observed when banks, or the authorities that supervise them, have sought actively to discourage deposits." However most probably such flows, though not explicitly dealt with, are to be treated as taxes in the context of the 1993 *SNA*.

treatments. The first one would be "to treat the whole of the token interest as property income" (*ibid.*). If I understand correctly the proposal, it means that real interest would not be calculated in this case, but that nominal interest would be treated as if it were positive real interest. The second, "more appropriate solution" may be to apply "the ratio of the real to the nominal rate of interest on savings deposits held as investments to the token rates of interest on transferable deposits" (*ibid.*). Obviously interest on transferable deposits calculated that way is not consistent with the definition of real interest. Both solutions are not acceptable. There is no good reason for excluding transferable deposits, bearing low or zero (apparent) interest rate, from the calculation of real interest.

Actually *Inflation Accounting* could have left real interest aside in the current accounts, proposed to record interest prime instead and then tried to uphold with some adjustments the other proposals it contains. It is thus necessary to look at these proposals, even if the point of departure is irrelevant in the context of the *SNA* central framework.

Before doing this, a detour about financial instruments denominated in foreign currency is useful.

2. Revaluation of Financial Instruments Denominated in Foreign Currency

The treatment of financial assets/liabilities denominated in foreign currency is exactly the same in the 1993 *SNA* as a whole, *Annex B* and *Inflation Accounting*. Interest denominated in foreign currency is converted into national currency using the exchange rate at the time it accrues. Then the amount in national currency is recorded as a primary income flow in the institutional sectors concerned and the rest of the world account. The principal of the financial assets/liabilities involved is revalued in the revaluation account, as a result of the change in the exchange rate. The increased value of the assets/liabilities in the balance sheets comes directly from the revaluation account. It must be carefully excluded from the financial accounts, because it is not a new flow of financing during the period in question.

A resident creditor can incur a real holding gain/loss in national currency if the rate of inflation in his country of residence is lower/greater than the rate of change of the exchange rate (conversely for a resident debtor). Thus the protection against inflation through the holding of financial assets denominated in foreign currency may fall short of, or exceed full compensation.

By recording nominal interest, inclusively by treating as nominal interest the change in the value of the principal of a loan, security or deposit through index-linking, the *SNA* traditionally deals inconsistently with financial instruments denominated on one hand in national currency and on the other hand in foreign currency. This may have non-negligible practical consequences as soon as the rate of inflation is significant. A country that I was advising tried some years ago (against my recommendation), in a preliminary version of its new accounts, to overcome such an inconsistency by treating as nominal interest the change in the value of financial instruments in foreign currency resulting from changes in the exchange rate. The results were awful but very illustrative. Of course what had

to be done, in a country experiencing high inflation, was to stop recording nominal interest on financial instruments denominated in national currency and to find a better measure of interest instead.

3. Protection Against Inflation Through Index Linking of Financial Instruments Denominated in National Currency

Practical arrangements concerning index-linking can be diverse. The value of the principal and the amount of interest can be index-linked separately. Or the initial rate of interest is applied in each period to the indexed value of the principal. *Inflation Accounting* also presents (p. 87) the case when index-linking is made only through interest, the applied rate of interest being a fixed percentage of the (initial) principal plus a further percentage equal to the percentage increase in a designated price index. In all cases, the value of the principal is in fact indexed. The value of interest itself can be indexed or not.[14] Indexes used for index-linking can be various. They may approximate more or less efficiently the general rate of inflation.

For sake of simplicity, I suppose in the following discussion that the value of the principal of a loan, security or deposit is index-linked as such.[15] Also, that no reimbursement takes place in the period under review. Thus index-linking increases the amount that the debtor will have to reimburse to the creditor in due time. How should this additional value be analysed and recorded?

Annex B analyses it as a nominal holding gain for the creditor and a nominal holding loss for the debtor. If the rate of change of the index used for index-linking is higher than the rate of inflation as measured for calculating neutral holding gains/losses, there is a real holding gain for the creditor (a loss for the debtor) or vice-versa, equal to the difference between nominal and neutral holding gains/losses. The nominal revaluation of the principal is then reflected in the balance sheets.

Inflation Accounting follows a totally different path. It does not record anything under nominal holding gains/losses in the revaluation accounts. It records two flows instead. "First, the debtor is recorded in the capital accounts of both parties as paying the creditor an amount equal to the increase in the loan as compensation for the real holding loss incurred by the latter. Second, the creditor is recorded in the financial accounts as lending back to the debtor the amount received in compensation" (p. 88). In the revaluation accounts, a real holding

[14]In the above case presented in *Inflation Accounting*, as underlined p. 87, the initial real rate of interest is held constant (the nominal rate is equal to this real rate plus the rate of inflation). As it is applied to the initial value of the principal, the amount of real interest does not change upon time. As a consequence the value in real terms of real interest declines. This kind of agreement seems improbable under high inflation (it certainly existed under significant though not high rates of inflation). Also, in order to keep the value in real terms of interest constant, the nominal rate must be equal to the initial real rate, plus the rate of inflation, plus the initial real rate multiplied by the rate of inflation.

[15]It is useful to note that in countries using index-linking, the rate of interest agreed upon separately is often called "real rate of interest." This kind of *ex ante* real rate of interest may differ from the *ex post* real rate if the change in the index used for index-linking differs from the rate of inflation.

gain/loss equal to the full amount necessary for compensation against inflation is recorded.

Before looking at the implication of such a treatment, it is useful to present and discuss the rationale behind it. The rationale presented in *Inflation Accounting* is that "The price of the *numeraire* cannot change over time so that there can be no nominal holding gains on holdings of national currency (p. 48). Said a bit differently (p. 88) "there can be no nominal holding gain [on a loan] as the 'price' of a loan cannot change." This seems to be an impressive argument. However is it not a superficial one in the context of inflation accounting?

The fact that a unit of the national currency (the usual numeraire in national accounts) keeps the same face value upon time (its "price" does not change) is self-evident. However does an index-linked loan represent the same number of units of the national currency at any point of time as at the beginning? An index-linking agreement precisely states that this loan will represent a changing number of units of the national currency in relation with inflation. In such a case, *Annex B* speaks of a price adjustment mechanism for the loan. The price adjustment mechanism is settled as $1+p$, p being the rate of change of the chosen index. This is equivalent to stating that the amount which is lent/borrowed at the beginning is not the volatile nominal value of the capital in question at time 0. Instead it is its value in real terms (a "volume" of capital). As time passes, the current value of this capital is represented by an increasing number of currency units, but the volume of the loan, its real size, is not changed, until repayment takes place.

Of course, when looking at this issue, one should be careful not to be confused by what is written about the revaluation account in Chapter XII of the 1993 *SNA* (paragraphs 12.69 or 12.79 for instance). This chapter has been drafted and discussed in the context of the prior decision to record nominal interest in the current accounts. Under such an assumption, the result of the index-linking of the principal of a loan could not have been treated as a nominal holding gain/loss, because it had already been included in nominal interest. The question simply did not arise.

The objection could be made perhaps to the treatment advocated in *Annex B* that nominal holding gains/losses can occur only when there is a change in the specific price, narrowly defined, of the asset in question itself, not when depending on the choice of some other index or price as in the case of index-linking. However, such a subtle distinction would not seem relevant. There are many cases in economic life where the current value of a good, service or asset changes in relation to the change in some index or price of another instrument. To stay in the field of financial instruments, the value of the capital of certain life insurance agreements for example changes according to the variation of some stock exchange index. Financial arrangements of this type are increasingly numerous. It is up to the contractors to decide upon the price adjustment mechanism to be applied. There is no reason not to record nominal holding gains/losses in the revaluation accounts in such cases.

Inflation Accounting reasons as if there were two different agreements. One relates to the initial nominal value of the loan that does not change upon time except when reimbursement takes place. The other states separately that the debtor will pay to the creditor a compensation for inflation, and the creditor then

will lend back this money to the debtor. Though it is presented as a simple idea (see for instance p. 16), it is actually complex, counter-intuitive and contrary to the basic idea of index-linking of financial capital. Nevertheless, let us see the implications of the proposed treatment.

In order to facilitate the understanding of the issues involved, the recording of a simple case according to *Annex B* and *Inflation Accounting* respectively is shown below. I suppose that the protection against inflation resulting from the index-linking of a loan is 1,000 units of national currency and it compensates fully for inflation. No part of the loan is reimbursed in the period. Interest prime and real interest are of the same amount in this case. Thus interest in the current accounts (they are not shown in the table for sake of simplicity), income and saving are the same in both treatments.

TABLE 1

RECORDING WITH INDEX-LINKING

Annex B				*Inflation Accounting*			
Creditor		*Debtor*		*Creditor*		*Debtor*	
Δ *Assets*		Δ *Liabilities and Net Worth*		Δ *Assets*	Δ *Liabilities and Net Worth*	Δ *Assets*	Δ *Liabilities and Net Worth*
				Capital accounts			
				Capital transfer	+ 1000		− 1000
				Financial accounts			
				Loan + 1000			+ 1000
Revaluation accounts					*Revaluation accounts*		
Nominal holding gains (+)/ losses (−) + 1000		− 1000		0			0
Neutral holding gains (+)/ losses (−) + 1000		− 1000		+ 1000			− 1000
Real holding gains (+)/ losses (−)	0	0		− 1000			+ 1000
Balance sheets						*Balance sheets*	
A	*L*	*A*	*L*	*A*	*L*	*A*	*L*
$A_0 + 1000$			$P_0 + 1000$	$A_0 + 1000$			$P_0 + 1000$

First of all, the compensation for inflation resulting from the index-linking mechanism does not fit well the concept of transfer in the 1993 *SNA*: "A transfer is defined as a transaction in which one institutional unit provides a good, service or asset to another unit without receiving in return from the latter any counterpart in the form of a good, asset or service" (1993 *SNA*, 10.131). In the case under review, the so called "capital transfer" received by the creditor has a defined counterpart, the holding gain (real according to *Inflation Accounting*) accruing to the debtor. There is a quid pro quo.

The recording proposed in *Inflation Accounting* seems also to contradict the agreement underlying the principle of index-linking. The purpose of such an

agreement is to prevent the occurrence of a real holding loss/gain in so far as the actual compensation does not fall short of the amount that would be required for insuring full compensation. Nevertheless *Inflation Accounting* records a value of real holding gains/losses corresponding to the amount required for full compensation. Then it is obliged to record, artificially in my view, a capital transfer in the capital accounts. This transfer is exactly of the same amount as the real holding gains/losses (unduly) recorded in the revaluation account. When actual compensation due to the index-linking mechanism and required compensation differs, *Inflation Accounting* (p. 88) adjusts the interest to be recorded in the current accounts. In such a case, neither the amount of interest recorded in the current accounts nor the amount of the capital transfer recorded in the capital accounts correspond to the supposed contractual agreements between the creditor and the debtor.

Recording capital transfers between debtors and creditors has a serious implication when contrasting the recording of nominal interest and the recording of real interest. The latter "reduces the disposable income and saving of creditors but not their net lending" (*Inflation Accounting*, p. 16). In effect, the amount subtracted from nominal interest and saving is reintroduced as capital transfers. Those who are familiar with the past debate in countries experiencing high inflation know that the recording of nominal interest under such circumstances was criticized because it distorted both the disposable income and saving of institutional sectors and their net lending/borrowing. The net borrowing of governments for instance was deemed to be overestimated because it mixed together current borrowing due to the government's policy of the accounting period and the mechanical increase in the public debt resulting from the indexation of past borrowing.

Note that such a mixture is carefully avoided when dealing with financial instruments denominated in foreign currency. Everybody records changes in their value in national currency resulting from changes in the exchange rates in the revaluation accounts. They do not appear in the financial accounts. Treating differently financial instruments denominated in national currency, as *Inflation Accounting* does, would result under high inflation in large amounts of capital transfers and financial transactions due to the index-linking of past lending/borrowing.[16] The picture given by the accounts of institutional units or sectors would also be distorted depending on the origin of their borrowing or lending, internal or external. This means that one of the main drawbacks of the recording of nominal interest under significant inflation would not be eliminated.[17]

[16]Note that financial instruments (loans for instance) denominated in foreign currency can involve only resident economic units, which deal in fact only with flows of national currency units. In such cases the denomination of the principal in a foreign currency is simply a way of indexing the number of units of the national currency lent-borrowed. Such assets/liabilities have no influence whatsoever on the external position of the country. The foreign currency is used purely as a unit of account, not as a unit of payment. (Similarly, under certain circumstances current flows are expressed in foreign currency when all payments are made in national currency; this often has been the case for the rent of certain types of dwellings.) Such cases illustrate the fact that index-linking the principal of a financial asset/liability is a way of indexing the number of units of the national currency. The form of the index-linking mechanism is immaterial.

[17]See paragraph 7.104 of the 1993 *SNA* where, in the context of the recording of nominal interest, "the interest accruing as a result of the indexation is effectively reinvested in the security and this additional investment must be recorded in the financial accounts of the holder and the issuer."

In contrast, *Annex B* treats consistently in this respect financial instruments denominated either in national or in foreign currency. As compared to the recording of nominal interest, *Annex B* changes by the same amount disposable income, saving and net lending/borrowing.

When a fraction of an index-linked loan or bond is repaid, this is recorded in the financial accounts. If the amount recorded is the same in both sets of proposals, its interpretation is different. For *Annex B*, what is repaid is the sum of the fraction of the initial nominal value which is repayable during this period, plus the accumulated revaluation of that fraction (Annex B, paragraph 19(a)). For *Inflation Accounting*, it is a sum of fractions of various loans or bonds in nominal value that are deemed to take place in the course of time.

4. Protection Against Inflation Through Higher Nominal Rates of Interest

In the absence of any index-linking mechanism, protection against inflation is sought through higher rates of nominal interest.

Inflation Accounting records real interest, positive or negative, in the current accounts. Then a capital transfer equal to the amount that would be necessary for full protection against inflation is again recorded in the capital account (an equivalent real holding/gain loss is shown in the revaluation accounts). As the nominal interest, sum of these two items, is actually payable in each period under such circumstances, the payments are recorded in the financial accounts.

The interpretation of *Annex B* is that there exists also a price adjustment mechanism in such a case. However this mechanism is implicit, which of course complicates the picture. Breaking nominal interest between primary income (interest prime) and actual compensation for inflation can only be done on some conventional basis.[18] However, as explained in paragraph 14 of *Annex B*, "The existence of a margin of uncertainty in the cases covered in the previous paragraph should not be cause for alarm. When inflation is significant, this margin of uncertainty is much less important than the error made when recording nominal interest in the current accounts."

The accounting treatments proposed by *Annex B* and *Inflation Accounting* are in line with each approach respectively. Most of the previous discussion is therefore valid here and is not repeated. In addition, it is useful to look at the financial accounts carefully. *Inflation Accounting* records the payments that are the counterpart of nominal interest (total of real interest and the capital transfer element). On the other hand, possible repayment of fractions of loans or securities

[18]Suggestions are made in paragraph 13 of *Annex B*. Two main types of situations are referred to. When non-index-linked financial instruments co-exist with index-linked ones, it is possible to apply to the first instruments solutions derived from the second ones, the same rate of interest prime or the same price adjustment mechanism—i.e. the same index—or the same proportion between the two components as for index-linked instruments. When only non-index-linked financial instruments exist, the simplest procedure seems to be the use of the *ex post* rate of inflation for calculating the component of protection against inflation, subject to the constraint that interest prime are only positive or zero. To be fully consistent with the explicit index-linking case, it would be necessary but it does not seem feasible to know what anticipated rates of inflation have been taken into account when interest rates were decided upon. These anticipated rates can fall short of, or exceed *ex post* rates of inflation.

concerns only their initial face-value. *Annex B*, in addition to the latter element, also records as repayment of loans or securities the full value of the revaluation that occurred during the accounting period. *Annex B* interprets this way of recording as follows: "This procedure is to be analysed as an accelerated repayment of a part of the initial purchasing power of the principal of the financial asset/liability in question" [paragraph 19(b)].[19] Such an interpretation is quite familiar to many analysts in countries experiencing significant inflation.

TABLE 2

RECORDING WITH HIGH NOMINAL INTEREST

Annex B				*Inflation Accounting*			
Current accounts				Current accounts			
Creditor		*Debtor*		*Creditor*		*Debtor*	
Uses	Resources	Uses	Resources	Uses	Resources	Uses	Resources
Interest 0		0			−50	−50	
					Capital accounts		
Δ Assets	Δ Liabilities and Net Worth	Δ Assets	Δ Liabilities and Net Worth	Δ Assets	Δ Liabilities and Net Worth	Δ Assets	Δ Liabilities and Net Worth
				Capital transfer	+1000		−1000
	Financial accounts				*Financial accounts*		
Loan −1020			−1020	−70			−70**
Cash +1020		−1020		+1020		−1020	
	Revaluation accounts				*Revaluation accounts*		
Nominal HGL	+950		−950	0			0
Neutral HGL	+1000		−1000	+1000			−1000
Real HGL	−50		+50	−1000			+1000
	Balance sheets				*Balance sheets*		
Loan $A_0 - 70$*			$P_0 - 70$*	$A_0 - 70$**			$P_0 - 70$**
Cash $C_0 + 1020$		$C_0 - 1020$		$C_0 + 1020$		$C_0 - 1020$	
* $-70 = +950 - 1020$				** $-70 = +1000 - 1000 - 70$			

A numerical example illustrates the two ways of recording (Table 2). The rate of interest is supposed to be lower than the rate of inflation, 95 percent of the latter. Nominal interest is 950, analysed as nominal holding gains/losses by *Annex B*, as capital transfer (1,000) and real interest (−50) by *Inflation Accounting*. The repayment of a fraction of the initial face value of the loan in question is 70. *Annex B* records as repayment of loan this amount plus the full revaluation of the period (70 + 950). It is balanced by a flow of cash (1,020). Following *Inflation Accounting*, this flow of cash is the counterpart mostly of a capital transfer

[19]Note that this analysis holds for all non-index-linked financial instruments (denominated in national currency) bearing only nominal interest, and also for certain index-linked financial instruments, depending on the contractual arrangements (*ibid.*).

(1,000), negative interest (–50) and repayment of the initial face value only (70).[20] The difference between the amount necessary for keeping capital intact (the neutral holding gains/losses), that is, 1,000 and the amount of the actual component of protection against inflation which is at most equal to the nominal interest (950) is recorded by *Annex B* as real holding gains/losses, by *Inflation Accounting* as negative interest.

It is useful at this stage, using two simplified examples, to parallel in a synoptic way the *traditional SNA* treatment, *Annex B* and *Inflation Accounting*. This is made in Table 3. The left part of the table refers to a loan of 1,000 and shows what happens after one year, the rate of nominal interest being 25 percent and the rate of inflation 30 percent. In the right part of the table a loan of 1,000 is index-linked. The index used shows an increase of 25 percent, the rate of interest agreed upon and applying to the principal after indexation is 3.2 percent (interest is thus 40) and the rate of inflation is 30 percent. No repayment of the nominal value of the loan (left) or of its indexed value (right) is supposed to occur during this period.

Transactions in cash, neutral holding gains/losses and balance sheets are recorded in the same way according to all treatments. The traditional *SNA* distorts the measurement of interest, income and saving. It also, as well as *Inflation Accounting*, distorts net lending/borrowing and records an artificial new lending/borrowing in the right side case (in the left side example this is offset by an equivalent concomitant repayment). The row for Loan deserves being analysed carefully. On the left-hand side, *Annex B* shows a repayment (250) that corresponds to the revaluation of the principal of the loan (implicit index-linking). As explained in Section 4, it is to be interpreted, that is, nominal interest is to be interpreted in this case as an accelerated repayment of a part of the initial real value of the loan. In this example, 19.23 percent of this initial real value is repaid (250/1.3). The real value of the asset is in fact reduced by 23.08 percent, because there is a real holding loss of 50, that is, 3.85 percent of the initial real value.

On the right-hand side (column *Inflation Accounting*) the financial transaction in Loan corresponds indirectly to the result of the index-linking mechanism (250). It is a bit delicate to interpret perhaps, but it comes from new lending equivalent to capital transfers (300), less partial repayment in cash (40), less negative interest (10). Negative interest is the loss of value of the asset, calculated after adding the new current value of the loan and cash ($-10 = -300 + 40 + 250$). However, *Annex B* shows a greater real holding gain/loss (50). It does not mean that the latter holding gain is overestimated. Strictly speaking, from an economic point of view, the real holding gain should be measured after taking into consideration some kind of normal return on the asset, that is, in the example under review, the rate of interest agreed upon in the *ex ante* index-linking agreement. From this viewpoint, only the closing value of the loan is to be taken into account when calculating the real holding gain/loss (50) that measures the current value of the loss in the real initial value of the loan ($1,000 - 300 + 250 = -50$ or -3.85

[20]To be complete: *Inflation Accounting* also records implicitly new lending/borrowing (1,000), corresponding to the above capital transfer, and equivalent repayments during the period (1,000), which cancel out.

TABLE 3

A SYNOPTIC PRESENTATION OF THE THREE ACCOUNTING TREATMENTS

	High Nominal Interest						Index-Linking					
	Traditional *SNA*		Annex B		Inflation Accounting		Traditional *SNA*		Annex B		Inflation Accounting	
	C	D	C	D	C	D	C	D	C	D	C	D
	R–U	R–U	R–U	R–U	R–U	R–U	R–U	R–U	R–U	R–U	R–U	R–U
Interest	+250	−250	0	0	−50	+50	+290	−290	+40	−40	−10	+10
Income saving	+250	−250	0	0	−50	+50	+290	−290	+40	−40	−10	+10
	A–L	A–L	A–L	A–L	A–L	A–L	A–L	A–L	A–L	A–L	A–L	A–L
Capital transfer	0	0	0	0	+300	−300	0	0	0	0	+300	−300
Net lending	+250	−250	0	0	+250	−250	+290	−290	+40	−40	+290	−290
Financial transactions												
Cash	+250	−250	+250	−250	+250	−250	+40	−40	+40	−40	+40	−40
Loan	0	0	−250	+250	0	0	+250	−250	0	0	+250	−250
HGL												
Nominal	0	0	+250	−250	0	0	0	0	+250	−250	0	0
Neutral	+300	−300	+300	−300	+300	−300	+300	−300	+300	−300	+300	−300
Real	−300	+300	−50	+50	−300	+300	−300	+300	−50	+50	−300	+300
Balance sheets												
Cash	+250	−250	+250	−250	+250	−250	+40	−40	+40	−40	+40	−40
Loan	0	0	0	0	0	0	+250	−250	+250	−250	+250	−250

Notes: C: stands for creditor; D: debtor; R–U: Resources—Uses; A–L: Δ in assets—Δ in liabilities or Assets—Liabilities (in terms of changes in balance sheets); HGL: Holding gains/losses.

percent of the initial value, as seen before). Looked at that way, negative real interest (−10) appears as the difference between −50 (the actual real loss) and 40 (the amount of interest agreed upon). A reinterpretation of the left-hand part of Table 3 can be done along this line. Negative real interest (*Inflation Accounting*) and real holding gain/loss (*Annex B*), both being ±50, do not take into account the loss of income which occurs in addition to the loss of capital. Supposing the normal interest is 40, as in the right-hand example, the total loss is in fact 90.

5. Differing Views About the Interpretation of the Accounting Structure of the 1993 *SNA*?

One of the main new features of the 1993 *SNA* is the introduction of a more complete set of accumulation accounts and balance sheets. The objective is to cover exhaustively economic flows (both transactions and other flows) and stocks of economic assets. Purposely items or accounts referred to in the past as reconciliation entries or reconciliation accounts are directly integrated in the accounting structure.[21] They play now an important role of their own and are no longer thought of basically as explaining "the differences between the changes in balance-sheet items and the transactions in capital finance accounts" (M60 paragraph 1.13). For instance, real holding gains/losses, which were not introduced in M60, are essential information for estimating the return to capital invested in various types of assets, this return not being totally accounted for by the income recorded in the current accounts. To take another example, many events concerning non-produced assets are recorded in the other changes in volume of assets account, thus providing important links with the environment.[22] Estimates of catastrophic losses, due to wars or natural disasters, if they were actually made, would provide essential data in order to assess, for example, the paying capacities of the countries involved in a much better way than by looking only to their domestic product or national income.

The fact that the two accounts in question, as well as balance sheets, are not widely implemented for the time being should not lead to underestimating their importance and significance. Even if they are not implemented, or only partially, in practice, they have to be taken into account when discussing a number of unsettled questions, especially when dealing with the relations between national accounts and economic theory on one hand, national accounts and environmental issues on the other hand. Without a good and common understanding of the meaning of the 1993 *SNA*, discussion on many new issues may prove exceedingly confused and fruitless.

Nevertheless, when summing up the accounting structure and principles of the *SNA*, in its Chapter 2, *Inflation Accounting* gives the impression of favouring a narrower interpretation of the 1993 *SNA*. Of course, it does not ignore the existence of the other changes in volume of assets account and the revaluation

[21]See for instance, "Provisional International Guidelines on the National and Sectoral Balance-sheet and Reconciliation Accounts of the System of National Accounts. Statistical papers—Series M no. 60, United Nations, New York, 1977.

[22]The fact that the treatments that are presented in the 1993 *SNA* are not always the best ones, concerning for instance subsoil resources, is another issue.

account. However, in contrast with the *SNA* itself, it presents a part of the sequence of accounts, going from the production account to the financial account, as a self-contained system in itself. "It is shown in this chapter that the transactions accounts of the *SNA* form an integrated interdependent system of accounts of their own [. . .].[23] The purpose of this chapter is therefore [. . .] to demonstrate how the transactions accounts fit together to form a complete and self-contained system of accounts. The resulting integrated set of transactions provide a very simple and compact presentation of the *SNA* which can be exploited to examine the feasibility and implications of alternative accounting procedures that may be contemplated under conditions of high inflation" (p. 19).

Surely, this part of the sequence of accounts is in principle arithmetically self-balanced (the total of uses is equal to the total of resources, without requesting any balancing item to be introduced). However, it is difficult to understand how the so called "transactions accounts," that are a part of the *SNA*, can provide a simple and compact presentation of *the SNA*, that is, of the *SNA* as a whole. Moreover, it is surprising that when dealing with inflation accounting the importance of establishing the revaluation account is not stressed, contrary to what the *SNA* does (1993 *SNA*, paragraph 19.80). A key issue, under high inflation, is to see if and to what extent changes in relative prices are influenced by high rates of inflation. Possible redistributional effects of inflation must take into account the wealth aspect, that is, the real holding gains/losses.

More generally, transactions on existing assets recorded in the capital account or the financial account, and their financial counterparts, being balanced by definition, tell us nothing about the creation of economic value, positive or negative, that is associated with the transactions in question (as well as with assets which are not transacted during the accounting period). Real holding gains/losses and possibly certain other volume changes in assets have to be measured if one likes to estimate the full return on the capital invested in various types of assets. In some cases, it is even necessary to take into account nominal holding gains/losses in order to measure in a proper way the profits of certain activities in the financial field, when part, sometimes the major part of these profits originates in differences of prices between many short-term financial transactions in national or in foreign currency.

Perhaps, a specific reason for the insistence of *Inflation Accounting* upon the "transactions accounts" is the wish to demonstrate that the flow of compensation for inflation is a transaction, and not an other flow (using the *SNA* terminology), and that, as such, it cannot be recorded as nominal holding gains/losses in the revaluation account. This view is formulated explicitly. On the basis of the indisputable "existence of a contractual relationship between two different institutional units," it states that "the contract between a creditor and a debtor gives

[23]The expression "transactions accounts" as grouping the partial sequence from the production account to the financial account is not used in the 1993 *SNA*. In the 1993 *SNA* the expression "transactions account" is used instead for an account which shows, for a given transaction or group of transactions, resources and uses for each sector (or industry if relevant) engaged in this type of transaction (1993 *SNA*, paragraph 2.152 and Table 2.6). The content of the whole of the transactions accounts, in this narrower sense, is of course—excepting the balancing items—the same as in *Inflation Accounting*. However, the philosophy is different.

rise to transactions between them. The question at issue is not the treatment of real holding gains or losses but the correct classification of actual monetary transactions between units" (p. 88).

This is the last issue to be discussed. I do it in two steps:

—firstly, if the analysis quoted above were correct, the amount to be recorded as capital transfer (and consequently the amount of interest entered in the current accounts) would not be the amount that *Inflation Accounting* actually records;

—secondly, not all the consequences of an agreement constitute in fact transactions.

Look at the first aspect. *Inflation Accounting* records as capital transfer the full amount that would be required in order to protect fully against inflation. Generally, there is no such agreement. When an index-linking is decided upon, the change in the index chosen (or imposed by the public authorities) may fall short of or in excess of the general rate of inflation. There is no agreement, between a creditor and a debtor, on a full protection against inflation, except when the index chosen for index-linking is the measure of the general rate of inflation itself. In other cases, the actual protection resulting from the agreement may be partial or in excess. However, *Inflation Accounting* departs from the explicit terms of agreement and record capital transfers as if there were full compensation, and adjusts interest (real interest) accordingly, thus departing from the agreed upon amount of interest.

In the absence of index-linking, the agreement between a creditor and a debtor is on a rate of interest, that may possibly cover an element of primary income and an element of protection against inflation, which are not distinguished in the agreement itself. Only the total amount of nominal interest payable is the result of an agreement.

Thus, even if *Inflation Accounting* were correct in recording a capital transfer because the flow involved would be a supposed transaction, the amount to be recorded would have to be the actual compensation for inflation resulting from the agreement, not the notional required one. As a consequence, interest in the current accounts would have to be interest prime, not real interest.

I turn to the second, slightly more delicate point to be discussed, that is, are all the consequences of an agreement to be analysed as transactions? Start with the case of index-linking. In each period, there can be two actual flows of payment between a debtor and a creditor. One is a flow of interest. The other is a repayment of a part of the principal. Both are transactions of course. Then, as a result of the index-linking agreement, there is also an increase in the nominal value of the principal in question. What is the nature of this increase? *Inflation Accounting* says: it is a transaction because it is the result of an agreement between two units and thus it has to be entered in the "transactions accounts." Then, as discussed previously, *Inflation Accounting* is obliged to imagine two imputed transactions: a capital transfer from the debtor to the creditor and an additional lending from the creditor to the debtor. However such imputed transactions cannot be found in the agreement. The agreement does not say: as the debtor will actually obtain a holding gain from inflation, he will give the creditor an equivalent amount as compensation for the latter's loss, then the creditor will lend an equivalent

additional amount to the debtor. The agreement says simply: the value of the principal in question will evolve according to the evolution of a given index.

As the liability of the debtor increases automatically and simultaneously with the change in the chosen index, the debtor does not benefit from a holding gain. Reciprocally, as the asset of the creditor increases at due concurrence, the latter does not suffer from a holding loss. *Annex B*, by recording the change in the value of the principal due to index-linking as a nominal holding gain for the creditor and a nominal holding loss for the debtor, closely follows the terms of the agreement. As explained in Section 3, the agreement settles a price adjustment mechanism for the principal in question. Then every year the consequences of this mechanism are nominal holding gains or losses, similar to other price mechanisms.

In the absence of index-linking, in each period there is a single flow of payables, a composite transaction, that has to be partitioned between interest, if any, and another component. The latter is analysed as a transaction in both *Inflation Accounting* and *Annex B*, though in a different way, capital transfer in the first analysis, repayment of a part of the principal (more precisely an accelerated repayment of a part of the initial purchasing power of the principal) in the second one (see Section 4). In addition, *Annex B* records, similar to the index-linking case, a nominal holding gain/loss equivalent to the estimated actual amount of compensation for inflation included in nominal interest (through an implicit price adjustment mechanism).

The last case supports the conclusion that the amount recorded by *Annex B* as nominal holding gains/losses is not a component of the flows of transactions involved. The latter are correctly recorded in either the current accounts or the financial accounts of the units in question.

6. Interest, Holding Gains/Losses and the Concept of Income

Finally it is useful to revisit the issue of real interest, whether positive or negative, as income. In effect one could say that income in the 1993 *SNA* should be what remains after the capital has been kept intact. Of course, this sounds like the familiar theoretic concept of income. Following such an approach, it could be argued that interest, as income, should include both what *Annex B* analyses as interest prime and possible real holding gains/losses, that is, should be equal to real interest. Nominal holding gains/losses would then always be equal to neutral holding gains/losses. No real holding gains/losses would ever have to be recorded in the accumulation accounts because what they try to measure would be by definition, whether negative or positive, either this side or beyond the amount necessary for keeping capital intact (the neutral holding gains/losses) and as a consequence would have to be included in the measurement of income. This seems to be what *Inflation Accounting* has in mind when looking at cases where the index used for indexing is not a general price index (implicitly, not the one that is used for calculating neutral holding gains/losses), but some specific index or even the price of an individual good. "In this case, the amount of the compensation payable by the debtor under the indexing agreement may not equal the real holding loss [note that the amount of the real holding loss here is the same

as the amount of the neutral holding gain]. There may be some under or over compensation depending on the choice of index. In principle, the amounts of interest payable should be adjusted by the amounts of the under or over compensation to obtain real interest . . . ." (p. 88).[24]

Thus the proposal to record real interest in the current accounts seems based on a direct application of the theoretic concept of income. The appeal to the economic theory is impressive. However the *ex post* concept of primary or disposable income in the 1993 *SNA*, and more traditionally in national accounting, does not correspond strictly to the theoretic concept of income, that may be interpreted in various ways. The 1993 *SNA* is much more explicit in this respect than previous international standards "This concept [disposable income] is equivalent to the economic theoretic concept only when the net worth at the beginning of the period is not changed by capital transfers, other volume changes in the volume of assets or real holding gains or losses" (1993 *SNA*, 8.15).

The implication of this text is that the relation between income in the *SNA* and income according to economic theory may have to take into account not only primary or disposable income but also, some flows that are recorded in the accumulation accounts of the System. This means that disposable income does not necessarily correspond exactly to the theoretic income (supposing there is only one definition of theoretic income, which is debatable).

Inflation Accounting seems to propose a different interpretation when it says: "Thus, windfalls are excluded from both the *ex ante* and the adjusted *ex post* income measures according to Hicks. It follows that income as defined in the *SNA* is broadly consistent with the Hicksian concept of income. In *SNA* terms, windfalls consist of capital transfers, holding gains and 'other volume changes in assets,' all of which are excluded from income" (p. 83).

It is hard to accept the idea that any economic theoretician would always define as windfalls all the flows listed above that are recorded in the accumulation accounts of the 1993 *SNA* and exclude all of them from any *ex post* measurement of income. Analysts often required real holding gains either only realized or both realized and unrealized in financial markets to be included in the measurement of income.[25] Such gains can occur during rather long periods of time. In the past decades real holding gains also have been recorded on real estate. Even when unrealized they most probably have been one determinant of economic behaviour. A number of economists would advocate more than one definition and measure of income, furthermore varying over time depending on the economic interpretation of certain flows and the purpose of analysis. This means that at least a varying part of real holding gains/losses can be income-oriented following a theoretic approach. As a consequence, the borderline between income in the *SNA*

[24]*Inflation Accounting* adds "in most cases such adjustments are unlikely to be worthwhile in practice." This is questionable. A famous issue of French government bonds indexed on gold was followed by periods of significant increases in the relative price of gold. In Latin America indexing of government bonds based on a specific index fell sometimes short of general inflation.

[25]Measuring only realized real holding gains is not an easy task of course. It is necessary to estimate the value of the real holding gains that occurred between the buying and selling dates of the assets disposed of, and not simply between the opening balance sheet and the selling dates. Moreover, the real holding gains that occurred in previous periods are not part of the (extended) income of the current period.

sense and income according to a more theoretic approach is not necessarily a stable one.

It seems that *Inflation Accounting* is taking an exaggeratively theoretical approach when referring to income and permanent consumption: "Even the recipient of a real holding gain, however, cannot afford to spend the whole of it on consumption in the same period and expect to be able to continue to spend at the same rate in real terms indefinitely in the future" (p. 84). If this is the criterion for an economic flow to be interpreted as income (it sounds like sustainable income) according to economic theory, it is certainly not what primary or disposable income in the *SNA* intends to measure annually. Counter-examples are many, such as widely fluctuating activities like agriculture especially in certain regions of the world, employees who lose their jobs, active people who save in provision for retirement time. In all such cases, income as measured in national accounts does not correspond to permanent or sustainable consumption.

The *SNA* has to be more pragmatic in measuring income while defining as strictly as possible the elements of change in net worth that do not originate in saving (capital transfers, other changes in volume of assets, holding gains/losses). In this respect, a point needs to be underlined, that is not always well perceived perhaps by users of the *SNA*. The 1993 *SNA* records under other changes in volume of assets and holding gains/losses economic flows that do not originate in production and consist of non-produced economic value.[26] Thus for instance real holding gains/losses are excluded from income according to the *SNA* because they are non-produced economic value, even if part of them can be analysed as income from the point of view of economic theory. Relying heavily on the concept of production and flows derived from it directly or indirectly, the *SNA* concept of income is not strictly based on the idea of keeping capital intact in so far as non-produced value may have to be taken into account when assessing the permanence of the value of capital in real terms.

This can be illustrated by many examples. Dividends for instance are recorded as primary income independently of the fact that the financial capital invested in buying shares can see its value in real terms varying as the relative prices of shares. Thus dividends are recorded as they are even when the owners of shares incur real holding losses, that is, when their capital is not kept intact. Conversely dividends are not increased when their recipients obtain real holding gains in addition to keeping their capital intact.

Gold is another interesting case in point. It is a non-interest bearing asset. Whatever real holding gains or losses may occur to owners of gold, no income is recorded in the System.

These two examples show the distinction between income in the *SNA* sense and the concept of return to capital. The latter may cover various components that are recorded in the *SNA* as income, real holding gains/losses or even other changes in volume of assets (for instance unforeseen obsolescence of fixed assets).

The fact that primary or disposable income, according to the *SNA*, is not measured after necessarily keeping capital intact can be further illustrated by

[26]The 1993 *SNA* is not always consistent with its own principles. The intrinsic value of the subsoil resources that are extracted is recorded as value added and income, when it (that is, the estimated economic rent) should be excluded as a non-produced economic value.

the case of notes and coins. Real holding losses on them do not enter the *SNA* measure of income.

Summing up the paragraphs above: in the *SNA* so far, there can be at the same time a primary income recorded on the investment of a given capital and a real holding gain/loss occurring on this capital and recorded in the revaluation account; or no primary income at all and a real holding gain/loss.[27] These rules apply to interest-bearing assets.

7. Conclusion

This paper analyses the treatment of interest under significant or high inflation proposed by the 1993 *SNA* in *Annex B* to Chapter XIX and by the OECD publication *Inflation Accounting*, written by Peter Hill.[28]

Both real interest and interest prime are useful concepts for a much better analysis of interest and income than the use of nominal interest. However, as long as the *SNA* excludes real holding gains/losses from its current accounts, real interest may not be used for the measurement of primary income in the *SNA* sense. Negative real interest would transfer to primary income real holding gains/losses in so far as the actual element of protection against inflation included in nominal interest falls short of or exceeds (which is possible with index-linking) full compensation. Interest prime is a relevant tool for the measurement of the *SNA* primary income because it excludes from nominal interest only the component of protection against inflation actually included in nominal interest and is therefore positive or null.

Primary or disposable income in the 1993 *SNA* (or in previous versions, but it is made more explicit now) does not correspond fully to the concept(s) of income that can be derived from economic theory. This is due to the fact that non-produced values, such as holding gains or losses, are excluded as a matter of principle from the current accounts of the *SNA* which rely heavily on the concept of production and not only on the idea of keeping capital intact. This can be accepted or rejected. However it is an actual characteristic of the present *SNA*. Measuring income according to economic theory, which can give rise to variants, may imply taking into account not only income as defined in the *SNA* but also all or part of real holding gains/losses and possibly some other changes in volume of assets. Without a good understanding of this issue, discussing for instance certain complex environmental issues in a national accounts context cannot be fruitful.

[27]In this context, one could ask the question if using the word income, with the specific meaning given to it in the *SNA*, is justified. This is certainly a relevant question on the ground of economic theory and analysis. In a paper published in 1989 with Jean-Paul Milot and Pierre Teillet, we very tentatively used expressions like current income as opposed to extraordinary income and we showed, for sake of illustration, a parallel extraordinary income account (Table 8, p. 180). The scope of the latter, in this paper, was certainly too broad. What remains is the idea that the terminology may have to be revisited and additional concepts of income defined.

[28]It may be common knowledge that I have written most of Chapter XIX and that I am the originator of the treatment of interest described in *Annex B*. However, the expression "interest prime" itself was proposed by Kevin O'Connor, from the IMF and the 1993 *SNA* was a collective undertaking. For this reason, I did not want the present paper to take the form of a personal debate.

The index-linking of the principal of a loan, a security or a deposit represents an explicit price adjustment mechanism of the initial amount denominated in national currency. The change in the number of monetary units resulting from the index-linking is to be analysed and recorded as a nominal holding gain for the creditor, a loss for the debtor in the revaluation account. In the absence of index-linking, the amount of the actual compensation for inflation included in nominal interest has to be estimated indirectly. It represents an implicit price adjustment mechanism and is also to be analysed and recorded as indicated above. Thus real holding gains/losses appear only if the actual element of compensation for inflation resulting from the explicit or implicit price adjustment mechanism falls short of or exceeds the neutral holding gains/losses, that is, the amount required for insuring full protection against inflation.

Rejecting, as does *Inflation Accounting*, the recording of nominal holding gains/losses corresponding to the element of actual protection against inflation leads to unacceptable consequences. Real holding gains/losses equal to neutral holding gains/losses are shown, when actually the explicit or implicit price adjustment mechanism of the principal in question has prevented all or part of such real gains/losses from occurring. An equivalent capital transfer is recorded, which is a quite artificial construct. Significant distortions are as a consequence introduced in the measurement of net lending/net borrowing, as happens with the recording of nominal interest. New lending/borrowing equal to the capital transfer referred to above is recorded, when there is actually no new source of finance (exactly as when a financial instrument denominated in foreign currency is revalued). When the component of actual protection against inflation is actually payable, it appears as a counterpart of an imputed capital transfer. A correct analysis shows that it represents an accelerated repayment of a part of the initial purchasing power of the asset/liability in question. As compared to both the traditional *SNA* and *Inflation Accounting*, the treatment followed by *Annex B* avoids this overestimation of net lending/borrowing. It adjusts primary and disposable income, saving and net lending/borrowing by the same amount as compared to the recording of nominal interest.

Finally, it should be emphasized that the conceptual issues involved are the same whatever the rate of change in the general price level.

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