Should financial accounts include future pension liabilities?

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1. Introduction

In current national and financial accounts, based on the *System of National Accounts 93* (SNA93), the most important categories of future pension liabilities are not considered. In particular, commitments by social security funds, as well as unfunded employer schemes, are not included.

The rationale underlying this treatment relates to how the pension scheme works. Pension relations of a private kind are recognised by SNA93, since the insured subject pays contributions, while his counterparty sets apart corresponding reserves, devoted to financing future pension payments. The commitment is therefore similar to underwriting a private life insurance policy, foreseeing a lump sum at death or retirement time, or to purchasing mutual funds shares: such forms of investment are both recognised in the system of accounts. In each period before payments, the insured individual position can be determined, in a non ambiguous way.

Similar properties do not hold in the case of unfunded schemes, in which current pensions payments are financed by current contributions and transfers, rather than returns on previously accumulated and invested assets. Thus, the debtor commitments are not incorporated in corresponding reserves or segregated assets, and therefore are not analogous to traditional financial instruments. In the accounts it just appears the possible cash imbalance resulting from the gap between contributions received in the current period and pensions paid in the same period, regardless of any commitments relating to future periods.

Under current rules, if an unfunded system faces structural disequilibrium (ie is accumulating pension commitments not covered by corresponding contributions), but contributions received in the current year equate paid pensions, there is no visible effect on the net borrowing. Even though, in economic terms, it was apparent today, the imbalance would enter national accounts in the future only. In more general terms, the imbalance visible today on a cash basis might underestimate the real imbalance, which would result from appropriate, accrual based, measurement.

A proposal for enlarging pension liabilities recording into the system of national accounts has been launched by a discussion group, in the context of the SNA93 revision process (see United Nations, 2002, Pitzer, 2002), and discussed within international working groups (IMF, OECD, Eurostat, ECB and CMFB). The new treatment would imply consistent changes into the financial accounts and general government deficit.

The purpose of this paper is to investigate the possible implementation of the ideas so far discussed, with specific reference to the accounting of *flows*, studying the implications from the viewpoint of statistical consistency as well as perspective economic incentive problems. *In what follows, the central point is relating not to stocks, but to **flows**, as well as to the opportunity to change the current notion of **deficit***.

In the next section we discuss the main economic, statistical and accounting reasons to change current recording criteria, and the status of the decision process. It follows a more detailed exposition on how pensions are recorded into the current system of national and

financial accounts, and on what methods might be used in order to make the proposals effective. (Section 3).

In the next section the new method's robustness is examined, from the point of view of statistical consistency, dependence on uncertain parameters, sensitivity to non-significant operations, and opportunities of manipulations. Even though several arguments have a more general nature, specific attention is paid to points of greater interest for the European countries, in the context of the Excessive Deficit Procedure foreseen by the Stability and Growth Pact. In Section 5 is discussed the ability of the new rules – assuming proper implementation – to capture pension imbalances and provide appropriate incentives for fostering structural reforms. Section 6 summarises this paper's main findings.

2. Why introduce future pensions into the system of accounts?

2.1 Teaching from the crisis of the employer defined benefit schemes

Proposals to measure future pension liabilities are *not* a new phenomenon of recent years (for an example in each of the previous decades, see Franco, 1995; Castellino, 1985 and Feldstein, 1974), at least in the context of expenditure projections and *stock* of debt (but not in the context of national accounts *flows*).[1] The debate was mainly referring either to incorporating future pension in one unique current stock (to be added, possibly, to the debt), or to foreseeing future flows of expenditure without discounting them at a single date (avoiding problems of choice for the interest rate). Therefore, current flows recorded by national accounts (in particular, the net borrowing) were not involved. What is new in recent year proposals is the attempt to record future pensions in the system of national and financial accounts, developing an appropriate accounting for flows, in which the implicit cost for future pensions is added to current deficit (Lequiller, 2004; Oksanen, 2004; OECD, 2004).

To better understand recent developments, a prior examination is needed, of what happened in recent years to employer pension schemes of major corporations in the Anglo-Saxon countries. In the USA, almost 40 per cent of employer pension schemes are defined benefit, ie such that risks relating to future pensions are borne by the employer. This percentage is even greater in the UK (Spadafora, 2004), in spite of recent efforts of "winding-up" towards defined contributions schemes, in which the financial risk is entirely borne by the employees. Since 2001, the negative trend in stock market, compared to given pension commitments, has significantly worsened the corporations' solvability and risks incurred by the creditor banks. In addition, refinancing pension deficits has decreased resources available for productive investments, with consequences of macroeconomic scale. In the previous years, the opposite had happened: the favorable trend in the stock market, causing a significant pension scheme surplus, had induced corporations to decrease pension allowances ("contribution holidays"). Looking at the elements which could have encouraged this under-estimation, many agree on the role played by the previous accounting rules inability to properly evaluate future pension commitments.

Since 2001, the introduction of accounting standards FRS 17 and IAS, foreseeing harmonized and pessimistic methods for employers' commitments, has clarified the real financial fragility of several enterprises in the USA and the UK. Should they have already been in force, IAS on pension liabilities would provide investors, as well as employer corporations, with more realistic evaluation, less dependent on temporary improvements in the cash movements. In the same period, not only in the context of pensions, a new

[1] See Kotlikoff (1984) e Van den Noord e Herd (1993).

approach by statisticians and national accountants started to develop, in order to harmonize as far as possible the national accounting rules with the new standards in good business practices.

Against this background, it is reasonable to ask whether the accounting methods for future pension liabilities might be extended to cases where the debtor is the government, rather than a firm (H.M Treasury, 2002; Blake, 2003). In the extent to which pre-IAS business accounting tended to underestimate the real increase in firms' liabilities, national accounts might likely underestimate the deficit of the government, either regarded as employer, or as guarantor of social security. Actually, the analogy provided by IAS and estimation errors for employer commitments, relating to biased signals based on simple cash-based balances, can be regarded as one of the most appealing elements of pressure in favor of changing the current treatment of pensions in national accounts.

2.2 Sustainability, budgetary surveillance and accrual basis, extraordinary operations

Leaving apart consistency with firms' employer schemes, and focusing only on public accounts, a significant role is being played by the increasing concern about themes of ageing economics. In several European countries, such concerns are linked to the constant decrease in the ratio between labor force and number of pensioners, in systems already experiencing an imbalance on a cash basis (with some exceptions, notably the UK).[2] In the USA, where the pension system is balanced on a cash basis (actually, it is in surplus), the concern relates to how to react to deficits foreseen for the next decades, starting from the time of retirement for the "baby boomers" of the end of the fifties (Diamond e Orszag, 2004). In this context the increasing demand for harmonized statistics able to capture future liabilities reflects, on the one hand, uncertainty on *the overall impact of ageing* (Disney, 2001), and on the other hand the need *to evaluate the effects of pension reforms*.[3]

In European countries, concern for long-term sustainability is accompanied by constant attention to effectiveness of budgetary surveillance, even in the short run. Concerning statistics used for this latter purpose, flow data are based on national accounts, both capital and financial. In this context, efforts to measure future pensions may be regarded in the more general attempt to extend the field of application of the accrual principle. The importance of this principle is linked to the need to avoid advantages for governments just *rescheduling* payments for already made commitments. Actually, many of the most recent (and most discussed) Eurostat's decisions may be considered, after all, as decisions on implementing accrual principles (see European Commission - DG ECFIN, 2005; Council of the European Union – Ecofin, 2005). Recording future pensions may be regarded as an extreme case of accrual accounting, not allowed by current rules, but desirable in the process of revision of the rules.

A strictly related argument concerns the treatment of extraordinary transfers. The most known cases are France-Telecom in France, Daiko Henjo in Japan and Belgacom in Belgium (Lequiller, 2004, Eurostat, 1997 and 2004). Apart of different technicalities, the three transfers have in common the transaction between assets recognized in the system of accounts, and assets which are not. For example, in order to facilitate a privatization

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[2] For a detailed discussion about the European situation, see Castellino and Fornero (2003); Economic Policy Committee (2003).

[3] Worries about future pension expenditure is strengthened in authors arguing a *trade-off* between pensions and other welfare expenditure that, under budget constraints, may induce severe limitation for weaker groups of people (Boeri e Perotti, 2002).

campaign, the government assumes pension commitments of the firm versus the employees, receiving as a counterpart a lump-sum payment. In each of the three above cases, a purely financial transaction occurred, in which acquired pension liabilities are the counterpart of an actuarially equivalent lump-sum payment. However, current rules recognized just one side of the transaction (cash payments). That would imply a fictitious improvement in the net borrowing (deficit) for the sector that assumes the "hidden liabilities" (as a counterpart of a "visible" cash payment; see Lequiller, 2005). The only way to avoid such artificial improvements in government accounts would be recognizing *all* pension liabilities in the system of accounts.

Several other reasons of interest exist, for measuring future pensions. For example, introducing pension wealth into the regressors may improve the estimation of households' consumption function. Intentional exclusion of such arguments allows us to clarify one of this paper's main aspects. Advantages arising from some measurement for pension wealth are unquestionable (Attanasio and Brugiavini, 2003, Blake, 2002 e Blake e Orszag, 1999). This paper purpose is to establish if, and how, it is necessary to use such measurements *even in national accounts and government deficit*.

2.3 Evolution of the rules

In the SNA93 review process, on request by the United Nations Intersecretariat Working Group on National Accounts (ISWGNA), the IFM has coordinated an Advisory Expert Group (AEG), that supported the proposal for new rules on pension treatment, prepared by a dedicated Electronic Discussion Group (EDG).

According to the proposal, obligations of employer retirement pension schemes should be recognized as liabilities, whether or not the scheme is funded, even when the employer is the government (De Rougemont, 2003). Such pension liabilities should be measured using actuarial amounts. The recognition of pension liabilities would be based on the concept of "constructive obligation", foreseen by IAS19. This latter refers to the acceptance, by past practices or explicit statement, of responsibilities versus other parties, able to create valid expectations. The proposal so far illustrated would not change anything in the treatment of funds operated by government in the context of social security. Therefore, the proposal was regarded as a first step, taking for granted that it was "too early" for extension to social security.[4]

In the European context, the *Committee on monetary, financial and balance of payments statistics* (CMFB) mandated Eurostat to investigate implications for government finance statistics (GFS) and multilateral fiscal surveillance, considering that GFS are fully integrated in the system of national accounts (subject to revision) and are the basis for the Excessive Deficit Procedure foreseen by the Stability and Growth Pact. From the beginning, the task force coordinated by Eurostat agreed on the importance to keep ESA95, on which European GFS are based, aligned with SNA: as a practical consequence, this means that including pension liabilities into the SNA would eventually change, accordingly, the ESA95 deficit used for the EDP. No consequence has ever been proposed or envisaged for the stock of Maastricht Debt (a practical concept not directly derived from the system of national accounts).

As a further step, the OECD elaborated a proposal in order to treat equally unfunded employer schemes and social security schemes, preparing a detailed scheme for the

[4] For a more official reason: "*As a first step, the EDG proposal is restricted to employer schemes, because the benefit provided is clearly of a nature of a deferred compensation (in contrast to other pension schemes, such as those by social security)* (…)" Eurostat (2004).

inclusion of all pension liabilities in the system of accounts, next to standard core accounts. It should be stressed that items referring to unfunded pensions would be recorded not into a separate, satellite account, but directly into the sequence of accounts leading to net borrowing. As a result, two notions of net borrowing would be presented: the current one, and a new one, taking into account unfunded pensions commitments (and corresponding imputed transactions). Thus, such a proposal may be regarded as the second step for recording all pension obligations in the net borrowing.

The Financial Accounts Working Group coordinated by Eurostat agreed (on May 2005), not unanimously, on a "European position" (for a clear and comprehensive treatment, see Mink and Walton, 2005), based on recognition of all pension liabilities (including social security obligations) into a mandatory scheme, separated from the core accounts and the sequence leading to net borrowing. This approach was supported by the European Central Bank. Further steps are foreseen, with specific regard to some detailed items (like the borderline between unfunded government employer schemes and social security), before reaching a final decision within year 2007.

3. The new method: statistics and accounting aspects

3.1 Future pension liabilities in the system of accounts

Before entering into the new proposal details, it is appropriate to briefly recall and discuss the current treatment of pensions in national accounts. In order to keep exposition simple, we will use only the financial account, without describing the complete sequence of accounts. In fact, the impact on capital accounts (net borrowing) equates the financial account balancing item. The financial account records transactions in financial instruments, on both asset and liability side. The allowed financial instruments are seven: Monetary gold and SDRs (F.1), Currency and deposits (F.2), Securities other than shares (F.3), Loans (F.4), Shares and other equity (F.5), Insurance technical reserves (F.6) and Other accounts receivable/payable (F.7). Each transaction involving one or several financial instruments, held or incurred by a sector, implies therefore recording in its financial account. Purely financial transactions (like an exchange of bonds for a cash payment) move financial instruments only, in equal opposite amounts, and therefore do not impact on the balancing item of the financial account. Conversely, non financial transactions (like an like an exchange of products for a cash payment) do impact on the balancing item.

Current accounting rules foresee that pension commitments be included within financial instruments (as Insurance technical reserves (F.6)) *for funded schemes only. Pension commitments of social security are excluded*.[5] Table 1 depicts, as an example, contributions paid to a firm, sponsoring a defined contribution scheme for its employees. Together with the (contribution) cash payment (F.2), the system of accounts recognizes the incurrence of a financial liability (F.6) of the firm, in an equal amount. Therefore, a purely financial transaction occurs, without any impact on the net lending/borrowing.

[5] When the government acts as an employer, the last version of the IFM *Manual on Government Finance Statistics* (see FMI, 2001) recommends that transactions in unfunded government employer retirement schemes be recognized. However, social security schemes remain excluded.

Table 1

A defined contribution employer scheme

Financial instrument	Description	Financial account	
		Asset flows	Liability flows
F.2 (currency and deposits)	Contributions paid by employees	+100	
F.6 (insurance technical reserves)	Creation of pension commitments		+100
B.9	F.A. Balancing item (= net lending)		0

Source: Compiled by author.

Similarly, at the time of pension payment, a new financial transaction shall occur, with exactly opposite entries (ie cash payment (–), reducing pension liabilities in the same amount). Thus, the impact on net borrowing shall be again zero.

In the case of social security, by contrast, only cash payments (F.2) are recognized. Therefore, contribution payments improve the net borrowing, whereas pension payments worsen it. The balancing item (or net borrowing) shall be zero only if contributions happen to equal paid pensions, in the same year. If a law promises future greater benefits without a corresponding coverage through greater contributions, the imbalance is not immediately visible in the (cash-based) net borrowing.

3.2 Recording future pension liabilities in the financial accounts

On the basis of the results of the electronic discussion group (EDG) on employer schemes operated by government, Lequiller (2004) proposed a generalized method, that would apply, as well, to the government as sponsor of social security.[6] The main aspects are the following: 1) To abandon the different treatment based on the funded/unfunded nature of the scheme; 2) To use actuarial valuation to measure future, defined benefit, commitments; 3) To allocate the net assets of defined benefit pension schemes to the sponsor (either the employer or the social security fund).

Even though the method is rather complex, an extremely simple and intuitive version can be provided, using the financial account only. Without consequences for the main conclusions, some components considered in the proposals will be assumed to be zero.[7] Consider first the case of a private firm in a *pay-as-you-go* pension system. Let the government pay 11 in pensions, and receive 12.5 in contributions. One part (1.5) of contributions is paid by

[6] "*My proposal is [...] to accept from the start an extension of the borderline to include the liabilities of social security.*" (Ibid., pag.5).

[7] In particular, the item corresponding to "*property income*". Beside simplification purposes, this choice reflects our scepticism about the need to add this further component. In our view, such a treatment would require the implicit existence of "second line reserves" (for an actuarial comment, see the Appendix VI, prepared by John Walton, in De Rougemont, 2003).

employees, while the remaining part (ie 11) is paid by the firm. Assume that, in spite of the cash surplus just described, the system be unbalanced, and the contributions be less than the legally recognized increase in pension rights. The *notional* contributions, able to keep the system in equilibrium, are assumed to be 15.5 (3 more than contributions actually paid).

Cash entries (F.2) for received contributions (A+B) and paid pensions (C) are depicted in the first part of Table 2. All matters for the financial account, according to the current rules, is this set of cash entries. What results is a net lending of +1.5.

The next part depicts the further entries that correspond to the new treatment. As in the previous chapter, recognizing pension liabilities (or "quasi-liabilities") within financial instruments implies that contribution (A+B) and pension (C) payments correspond to purely financial transactions: counterpart entries of the cash movements are now incurrence and cancellation of insurance technical reserves(F.6X).[8]

Table 2

Pension liabilities impact on government net borrowing

Financial instrument	Description	Financial account	
		Asset flows	**Liability flows**
F.2	A) Contributions paid by employees	+1,5	
(currency and deposits)	B) Contributions paid by the employer	+11	
	C) Pensions paid	–11	
(B.9)	*Memo: balancing item (net lending/ borrowing) under the current rules*		*(+1,5)*
F.6	Incurrence of liabilities vs. employees (= A+B)		+12,5
(insurance technical reserves)	Redemption of liabilities vs. pensioners (= C)		–11
	Actuarial additions		+3
(B.9S)	*Memo: net pension quasi-liabilitites*		*(–4,5)*
B.9X	Balancing item or net lending (new defintion)		
	= B.9+B.9S		–3

Source: Compiled by author.

Finally, a further increase in liabilities, called "Actuarial additions", depicts the incurrence of other pension liabilities, not covered by corresponding cash contributions. Such an entry is defined as the difference between current contributions and actuarial (ie able to keep the system balanced) contributions.

An alternative version for this part of the account may depict, directly, the equilibrium total actuarial contribution (assumed to equal 15.5), without this artificial split into three

[8] Capital X denotes that it is a memo expansion of item F.6 (this should also clarify the term "quasi-liabilities"). Similar comments hold for B.9X, memo expansion of net borrowing B.9.

components (several kinds of contributions and, by difference, the actuarial additions). The version in Table 2 has been preferred in order to separate the component of purely financial transaction (ie contributions or pensions identically compensating corresponding entries in the first part of the account) from the component regarded as non financial transaction.

Adding new quasi-liabilities (F.6X) to pre-existing financial instruments (F.2), a new version of net borrowing is obtained. In the previous example, thanks to the change in definition, the balancing item moves from a net lending of 1.5 to a deficit (or net borrowing) of 3, which seems to better illustrate the underlying imbalance.

3.3 Implementing the reference scheme

The documents prepared by the discussion group coordinated by the IMF do not provide explicit formulas and general computing methods, even though it is very accurate on all conceptual points. Such computations are already taken for granted into the numerical examples. In addition, the examples refer to micro-data, notably a single firm. Similar comments apply to what followed, including the proposal by F. Lequiller (OECD) for extending the results to the social security. However, to facilitate next paragraphs discussion, it is appropriate to develop the method into a more general context, having regard to possible implementation on aggregate data as well.

Consider an unfunded scheme, without detailing whether it belongs to a firm or to social security. Beneficiaries are divided into employees and pensioners.[9] For a generic employee (*j*), the stock of future pension rights E_{t_0}, corresponding to his counterparty's commitments, may be written as:

$$E_{t_0}^{j} = \sum_{h=1}^{\infty} \frac{w_{t_0+h}^{j}}{(1+r)^{h}} \cdot \gamma_{t_0+h}^{j} \alpha_{t_0+h}^{j} \qquad (3.1)$$

t_0 = current year, w^j_t = pension income for individual j at tme t;

γ_t^j *= probability for individual j of receiving a pension at time t;*

α_t^j *= prob. for individual j of being alive at time t; r = rate of discount*

In the case of already pensioned individuals, the relationship is simpler. Stock P_t^j of future pension benefits for pensioner *j* is:

$$P_{t_0}^{j} = \sum_{h=1}^{\infty} \frac{w_{t_0+h}^{j}}{(1+r)^{h}} \cdot \alpha_{t_0+h}^{j} \qquad (3.2)$$

[9] For the sake of simplicity, inflation is ignored.

Let N_E denote total number of employees, and let N_P denote total number of pensioners participating in the scheme. Denote by α e γ the two arrays of actuarial coefficients from which sequences of values α_t^j e γ_t^j per each individual are obtained. For the given population of employees and pensioners, the total stock S_{t_0} of future pensions at time t_0 shall be therefore:

$$S_{t_0}(r, w, \alpha, \gamma) = \sum_{j=1}^{N_E}\left(\sum_{h=1}^{\infty}\frac{w_{t_0+h}^j}{(1+r)^h}\cdot\gamma_{t_0+h}^j\alpha_{t_0+h}^j\right)+\sum_{j=1}^{N_P}\left(\sum_{h=1}^{\infty}\frac{w_{t_0+h}^j}{(1+r)^h}\cdot\alpha_{t_0+h}^j\right) \tag{3.3}$$

where $w_t = (w_t^1, w_t^2, ...w_t^{N_E}; w_t^1, w_t^2, ...w_t^{N_P})$, and $w = (w_1, w_2, ...w_t, ...)$

It should be stressed that, in the above formulas, future pension income (as expected today) may or may not take into account probable future promotions and future increases in real wages. The first approach is referred to as "Projected benefit obligation" method (or PBO); whereas the second method (in which no projection is made for future promotions etc) is referred to as "Accrued benefit obligation" (or ABO). Both methods are used by the actuaries, and present some pros and cons. However, the ABO seems to be closer to the national accounts approach.

The value obtained in (3.3) is the stock of pension wealth for households. To obtain the corresponding flow – to be recorded into the financial accounts – it is necessary to identify and isolate the components to be excluded from simple changes in stocks (the *Other economic flows*, or OEF).[10] For example, the effect of a change in the disocunt rate can, according to (3.3), be approximated through the expression $\frac{\partial S_{t_0}(r, w, \alpha, \gamma)}{\partial r}\cdot\Delta r$, whereas similar expressions hold for the impact of other parameters. However, elaborating on conclusions reached by the EDG (pp. 38-42), the flow can be directly obtained by comparing two successive values in (3.3), by imposing constancy in the actuarial parameters. For example, in the case of discount rate changes, the following formulas are easily obtained for change of stock, flow and revaluation:

$$\Delta S_{t_0} = S_{t_0+1}(r_{t_0+1}, \cdot) - S_{t_0+1}(r_{t_0}, \cdot) \tag{3.4}$$

$$FL_{t_0+1} = S_{t_0+1}(r_{t_0}, \cdot) - S_{t_0}(r_{t_0}, \cdot) \tag{3.5}$$

$$OEF_{t_0+1} = \Delta S_{t_0+1} - FL_{t_0+1} \tag{3.6}$$

[10] In national accounts, "*Other economic flows*" (OEF) are changes in stock not explained by fows (transactions). The OEF include *revaluations* and *Other changes in volume.*

The flow defined as in (3.5) measures exactly the increase in future benefits earned by employees and pensioners during the accounting period.[11] The procedure to obtain the flow is similar in case of simultaneous change of several parameters: as a first step, the flow is computed assuming no change in all actuarial parameters; the *OEF* is therefore obtained by difference.

Summing up, before the statistical job there are starting data (3.1, 3.2) similar to those used in models for forecasting of government expenditure, whose results are used and published in several countries. As far as the actuarial parameters remain unchanged, all is needed for statisticians is a single stock, and the corresponding flows is simply determined by its change over time. If – by the law or by the actuaries – a decision to change some parameters is made, what is needed by statisticians is, in addition, a second stock; this latter is derived from the model by computing the new year data just using old parameters. Comparing the two stocks allows for isolating OEF of the year.

4. Statistics and measurement problems

4.1 How to overcome difficulties relating to the discount rate

Several doubts about efficacy of the new method have been mainly related to uncertainty on the main occupational and income data involved in formula (3.5). Nevertheless, the argument that seems to have been most widely accepted refers to dependence of the results on the rate of discount. On this regard, two kinds of problems can be identified: on the one hand, arbitrariness in the choice of the initial rate; on the other hand, volatility induced by rate movements over time, even in absence of creation or redemption of commitments. In the case of private firms, both effects were magnified by pre-IAS accounting practices, allowing for discounting of liabilities by means of an average rate based on the expected returns on the firm's assets (with degrees of freedom in evaluating returns, weights and expectations). Once determined such a rate, the second problem was relating to ample movements in the scheme's commitments, induced by changes in asset prices.

By contrast, the new accounting standards foresee discounting based on the return rate of a "double A", long term, debt security, with further specific restrictions. This dramatically decreases both discretional power and sensitivity to market trends. Even though not all researchers, actuaries included, have regarded such a method like superior, this can today be considered largely agreed, and however "exogenous" with respect to statistics: the results of discounting would not depend on arbitrary choice by the statistician.[12]

This latter discussion does not eliminate all doubts about the impact of the discount rate on stock data but, in our view, the criticisms seem significantly weakened for *flow* data, thanks to the specific, proposed method. When adopting the accounting scheme developed in the previous section, it can be easily checked that the flow derived by (3.5) cannot be influenced by volatility in the discount rate. Robustness to rate movements should be regarded as a main characteristic of the new method. The impact of rate movements is deleted from flow

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[11] Even though no formulas are used, what in Lequiller's paper is called "*Actuarial addition*" does not correspond to the flow defined in formula (3.5). It should necessarily correspond to the difference $FL_{t_0+1} - \sum_{j=1}^{N_E} C_j^E(t_0+1) - \sum_{j=1}^{N_F} C_j^F(t_0+1)$, between the present value of new commitments (3.5) and contributions paid in the current year (N_E and N_F, denote the number of employees and employers; C^E and C^F denote contributions paid by employees and employers).

[12] It is not clear why a different rate should be used for social security. See however Mink e Walton (2005), p. 6.

data and included into the "*Other Economic Flows*". As a result, all main flows (income, saving and net lending) would be unaffected by problems of rates volatility (De Rougemont e Lequiller, 2004, pp. 3-4)[13]).

Actually, arguments based on rates continue providing excellent reasons to exclude future pension liabilities from (the stock of) Maastricht debt.[14] However, any attempt to adapt the same arguments to measurement of national accounts flows is, in our view, in contrast with the new method's characteristics.

4.2 Possible inconsistency in the "accrued-to-date" method

A similar answer holds for other reactions,[15] that have been related to hypotheses on population trends (considered, however, the less difficult data to be foreseen, see Mink and Walton, 2005), as well as to difficulties in forecasting its employed components and the corresponding income.

Actually, the new method does not rely on hypotheses and forecasts on population trends. In some senses, valuation of pension commitments at any date starts from the past, by considering only rights that have been accruing up to that time, for a *given* number of individuals registered in the social security system. The flow is thus obtained as "*present value of additional rights accrued (actuarially estimated) due to the work service delivered during the period*" (De Rougemont e Lequiller, 2004, p. 3). It corresponds, exactly, to the definition of "accrued-to-date liabilities" (Franco *et al*., 2004, p. 17).

Other two aspects exist, not well developed in the international discussions, but deserving further analysis. They both refer to the treatment of contributions. It is clear from our re-exposition of the OECD proposal (par. 3.3) that the method takes into account the commitment to pay for future pensions, but ignores the right to receive future contributions. If the rationale for the new method is to recognize in the system of accounts the notion of "constructive obligation" (par. 2.3), it is not clear the reason for this asymmetric treatment. The two obligations (for pensions and contributions) are often foreseen by the same law, and share the same nature. Moreover, being forced to make a choice between the two, the commitment about contributions appears to be more binding, due to the asymmetric positions of the two parties. Unlike their counterparty, the contribution payers have no means to unilaterally change the law.

A counterargument may be found in the view expressed by economists, in other contexts. For example, Disney (2001) indirectly expressed a view consistent with the new method, by arguing that future contributions should not be subtracted from pensions *of the same period*. Such contributions are the basis for further liabilities, referring to *later* future periods. In this view, unfunded systems are implicitly assimilated to funded systems, in which any increase in future pensions is the exact counterpart of what happens to current contributions. The price to be paid for implementing this analogy is a major deviation from cash basis.

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[13] Of course, we are referring to the accounting effect of rate changes for actuarial evaluation, not to direct effects of rate changes on returns (for those schemes that hold assets too).

[14] For a list of arguments against inclusion of pension liabilities in debt, see Fenge and Werding (2003), Franco (1995), Bohn (1992).

[15] "While population forecasts may to some extent be reliable, it is extremely difficult to make appropriate employment and income forecasts by institutional sector over a (very) long time horizon. The compilation of future entitlements based on such assumptions may have to be revised continuously and substantially. As a consequence, fiscal variables such as government ***deficit*** and ***debt*** would be surrounded by a high degree of uncertainty and be prone to manipulation." (Mink e Walton, 2005, p. 6). We disagree on the "deficit" part of the last sentence, and totally agree with the "debt" part.

Even though no problems arise from the point of view of *internal consistency*, some consequences of this approach may appear questionable or not desirable when attempting to capture and describe imbalances. Taking from granted that none of the two methods is always superior, we describe an example of conflict, in order to better illustrate some characteristics. In the example in Table 3, a defined benefit scheme is described, where the fund statute foresees an obligation to keep cash balance in equilibrium and the legal power to change the contribution level accordingly (this situation is common for the so-called "privatized schemes"). Assume that (a) paid pensions and accrued rights grow in the same amount and (b) contributions are constantly updated, in order to cover current pension payments.

Table 3

Annual increase in pensions perfectly financed by a corresponding increase in contributions (a privatised scheme):

Financial instrument	Description	Financial account	
		Asset flows	**Liability flows**
Year t			
F.2	Contributions received	+10	
	Pensions paid	–10	
(B.9)	*Memo: net lending/borrowing (old definition)*		*(0)*
F.6X	Incurrence of liabilities		+10
	Redemption of liabilities		–10
	Actuarial additions		+1
(B.9S)	*Memo: net pension quasi-liabilitites*		*(–1)*
B.9X	Net lending (new defintion)		
	= B.9+B.9S		–1
Year t+1			
F.2	Contributions received	+11	
	Pensions paid	–11	
(B.9)	*Memo: net lending/borrowing (old definition)*		*(0)*
F.6X	Incurrence of liabilities		+11
	Redemption of liabilities		–11
	Actuarial additions		+1
(B.9S)	*Memo: net pension quasi-liabilitites*		*(–1)*
B.9X	Net lending (new defintion)		
	= B.9+B.9S		–1

Source: Compiled by author.

The old method (balancing item B.9) shows in each period a zero net borrowing, that seems to appropriately reflect the economic situation. The new method, by contrast, shows *a deficit in each year*, not easily interpretable (not only in terms of sustainability). Such a deficit seems to relate to not taking into account the double equilibrium between benefits and contributions (both current and future; in both cash and legal terms).

The informative content of such a deficit seems questionable. The same deficit may be easily obtained for a fund imbalanced in cash terms, requiring continuous external financing, and such that there are neither obligations, nor attempts, to achieve balancing. The very fact that the new method may treat in the same way such different situations could rise doubts on the advantages of the new definition of deficit.

4.3 Other expenditure components

Other points deserving specific attention are arbitrariness of the separating line between contributions and taxation, and possible inconsistencies with the treatment of other expenditure components.

In *pay-as-you-go* systems, classification of paid amounts as contributions, rather then taxes, is largely discretional. When a direct link between payments received and made by the government does not exist, and in addition both contributions not used for pension payments, and pensions not entirely financed through contributions are observed, separating contributions from taxes may be a *fictio iuris*, able to change at any time without any real or economic reason. For example in Italy, in 1995, a reclassification of about 4.5 points between taxes and contributions occurred (leading the latter to 23.81 per cent of the salary). This left both total labor cost for the employers and, of course, sustainability, unchanged. *If* similar changes impacted on the net borrowing, then governments could easily improve their accounts without any real counterpart.

The net borrowing corresponding to the old definition does not depend, of course, on such "cosmetic" changes. It seemed that the new treatment could be affected (this point was raised in international working groups). However, it is shown in the appendix that the new method is robust with regard to such operations, and that the new definition of net borrowing, like the old one, does not allow for an impact from reclassification within taxes and contributions.

Discussion on consistency within several components of expenditure is based on a simple fact: no significant difference exists between pension obligations of a *pay-as-you-go* system and obligations relating to public health expenditure (the point was mentioned, but not entirely developed, in the OECD workshop: "*Accounting for implicit pension liabilities*"; see Lequiller, 2004). In both cases:

- The government assumes the obligation to provide benefits in the future years.
- The "insured" individuals pay some amounts, without a direct link with benefits.
- In principle, a "notional contribution" exists, corresponding to the amount that a private insurance would receive for the same benefits.

If, based on the principle of "constructive obligations", unfunded pensions were recognized in the system, a serious inconsistency would arise with other significant components of public expenditure. However, if health liabilities (like pensions, lacking any link with corresponding, explicit assets) were recognized, it would no longer be clear where the stopping point might be. Some criticisms consistent with this view were expressed in the discussion of the *Panel of external fiscal experts* of the Internation Monetary Fund (Aaron *et al*., 2003).

5. Incentive problems

5.1 Rights accrued before the change of method

So far we have been discussing measurement aspects only, in order to test the new method statistical consistency *regardless of incentive problems*. In this section, regardless of statistical and measurement problems, we shall consider both method as applicable, and compare them with regard to different incentives that are provided. As sketched in sections 1-2, *the comparison refers to the following use of pension liabilities: to compute flow data in order to change the current notion of net borrowing, adopted in the context of a threshold-based fiscal rule* (like the three per cent rule foreseen by the Stability and Growth Pact). In fact, a change in the definition of net borrowing may impact on the flow data only (net borrowing or deficit), whereas no change is envisaged for the Maastricht debt (a concept that does not depend on the revision of national accounts).

Denote by *K(t)* the new pension rights accrued during year *t*, by *P(t)* and *C(t)*, respectively, cash pensions and contributions paid in the same year; by B.9*(t)* e B.9X*(t)* the corresponding balancing items, according to the old and to the new definition. The following formulas can be easily derived (see Appendix):

- The impact of the pension system on *B.9(t)* is *C(t) – P(t)*;
- The impact on the new *B.9X* is *C(t) – K(t)*
- Therefore, the difference between *B.9X(t)* and *B.9(t)* equates *P(t) – K(t)*

As an example, consider two identical countries (A and B), in which two generations exist, with different pension systems: 1) a young generation, of people at the beginning of working life; 2) an old generation, of people, whose age is just before the retirement age. For the old generation, once the retirement age is reached, pensions are determined by the last wage (without a direct link with the individual's complete contribution history). In the years before retirement, the new method already recognizes pensions liabilities in favor of this generation, on the basis of current wages. For the young generation, a formula links the individual pension to *all* previously paid contributions. This implies a pension liabilities increase in each year as a consequence of contribution payments.

In the past, previous to introducing the new statistical method, both countries implemented a pension reform, by increasing the retirement age for both generations. In comparison to B, country A limited more the pensions for the old generation. A positive component of *K* shall exist, depending on successive contribution payments by young workers. Therefore, the total flow *K* shall be positive. Since contributions are assumed to be the same in both countries, this flow *K* shall be the same too.

It follows that *P(t) – K(t)* is greater in country B, which faces the same *K(t)* but pays more pensions. From the third relation recalled above, this means that in country B the new definition ensures a lower deficit. A first, direct conclusion follows: *the change in method created an accounting advantage for the less virtuous country. Therefore, the analogy with the introduction of IAS in business accounting does not apply. In that case, introducing the new method implied non ambigous worsening in the accounts of the firms that have been less prudent in previous years.*

It should be noticed that what just described implies that deficit alone is not able to capture a part of the relevant information included in the stock data. However, if the proposal to change SNA93 was adopted, within the two indicators subject to a threshold fiscal rule, the deficit would be the only one to change (without any impact on the Maastricht stock of debt).

5.2 Scheduling

Consider now the case of a *single country* under *constant, new method rules*. The country has to compare the deficit impact of two alternative pension reforms. We shall show that a permanent incentive may exist, to postpone the reform efficacy.

Assume one young generation with components at the beginning of working life, and one older generation, with components closer to retirement age, but not just before. Thus, the old generation may continue acquiring pension entitlements. The new generation rights are acquired together with contribution payments.

The two reforms foresee an overall similar cut in pension rights, with different distribution over time. The first reform foresees a similar cut in rights for the two generations, whereas the second reform puts most of the cost on the younger generation, postponing the reform efficacy. Assume that, in the year in which the reform is implemented, the cut in older people's rights is able to keep deficit under the threshold of the fiscal rule, for both reforms.

Table 4 shows an example relating to any of the years that follow the introduction, provided that some old generation pensioners are still alive. The right-hand columns show the financial account, computed in each of the three hypotheses (no reform, the first reform, and the second reform). In comparison to *status quo*, Reform 1 foresees less pensions,[16] as well as less growth in future rights (*K* moves from 13 to 12), while paid contributions remain the same. Reform 2 leaves pensions paid to the old generation almost unchanged (from 16 to 15), by reducing more the growth in future pension rights for younger people (this results in a lower *K*), for given paid contributions. In comparison to the other, Reform 2 foresees greater pensions today in counterpart of poorer pensions tomorrow. In spite of delaying effects to the future, Reform 2 does not worsen net borrowing B.9X: actually, this latter results ***improved***. Of course, similar inequalities would never apply under the old (cash-based) definition of B.9.

The main reason why Reform 2, while foreseeing greater cash disbursement, does not worsen deficit B.9X is shown in the central rows of Table 4 (the account for pension quasi-liabilities). In such a section, a greater current pension payment implies an accounting benefit, since it is interpreted as greater cancellation of liabilities. Other things being equal, paying more in current pensions improves the pension account (B.9S).[17]

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[16] Effects on *P* e *K* may be equivalently interpreted in terms either of lower income, or greater retirement age.

[17] This does not imply any problem of internal consistency for the new method, but may create incentive problems. Doubts on this regard were expressed by Franco *et al*., (2004), in case of extension to flow accounts of the *accrued-to-date* method "*Pensions would be considered as loan repayment (...) An increase in contribution rates would, ceteris paribus, have no effect either on current or future deficits*. (*Ibid*., p. 27)".

Table 4

Postponing the reform effects

Strum.	Description	No reform		Reform 1		Reform 2	
		A	L	A	L	A	L
F.2	C) Contributions received	+10		+10		+10	
	P) Pensions paid	–16		–12		–15	
(B.9)	*Memo: net lending/borrowing (old definition)*		–6		–2		–5
F.6X	Incurrence of liabilities vs employees = C		+10		+10		+10
	Redemption of liabilitites vs pensioners = P		–16		–12		–15
	(Memo: actuarial contribution (K))		(13)		(12)		(11)
	Actuarial additions = K–C		+3		+2		+1
(B.9S)	*(Memo: net pension quasi-liabilities)*		+3		0		+4
B.9X	Net lending/borrowing (new Definition = B.9+B.9S)		–3		–2		–1

Source: Compiled by author.

In the same section, a second aspect is shown, resulting from the attempt to make extreme the application of the accrual principle. It is the possibility *to exchange current cash with future promises*, leaving the pension account (B.9S) unchanged.[18] For countries in which a pension imbalance already exists and a fiscal rule on deficit holds, it seems that such properties of the new method may allow greater freedom of action rather than prompt the immediate adoption of rigorous measures.

More accurate measurements may be obtained trough a specific, account for pensions, including forecasts for pension expenditure in future years (a concept outside the range of national accounts). In absence of such a specific account, however, if we were forced to use a single, imperfect indicator, a *stock* data would be by far a better choice. In both the examples above, a stock measurement would provide more reliable information: it would remain higher in the less virtuous country (in the first example) and would contrast the misleading information on deficit in the choice between reforms (in the second example).

The conclusion is that, in the specific context of the European fiscal rules, the attempt to include pension liabilities in *one* of the two indicators seems to pose more problems than solutions. The above examples show how the inclusion of pension liabilities only in one indicator are far from being a compromise solution, able to move things in the “right” direction. Actually, such a partial inclusion may do strictly worse than both the extreme cases (ie pension liabilities in both the indicators or in none). Chances of manipulation easily excluded in any of the two extreme cases may become available in the mixed regime.

[18] In addition, with a counterintuitive *trade-off*: if current pension payments increase, it is necessary increasing (instead of reducing) the future rights, in order to the keep pension account balancing item (B.9S unchanged.

5.3 Consequences

In previous paragraphs, examples have been shown in order to discuss the general ability of the new method to properly illustrate pension imbalances through the national accounts net borrowing, and to provide incentives for adopting structural reforms (see Fenge e Werding, 2003).[19]

Taking into account the supporting examples in Section 3, as well as the above counterexamples, the new deficit seems more efficacious in capturing pension imbalances while they are being created, without waiting for impact visible in cash terms. By contrast, it may not be so efficacious in countries where the imbalance already occurred in cash terms. One intuitive explanation may be found by observing that the new method, beside its complexity, boils down to a change in the time of recording for the *same* flows. On this point, the authors and supporters of the new method seem to agree too:

"In the long-term, and taking into account a whole cycle of pension debt creation and extinction, the cumulated deficit of the previous account and of this one are equal. The timing is however different, the last one giving a better picture in terms of structural deficit." (De Rougemont e Lequiller, 2004, p. 6).

A key to understand the view expressed in the last sentence is provided by pension situation in the USA, where the social security system is currently facing cash *surplus*, and this surplus shall be continuing for the next two decades. Nevertheless, many economists are worried about cancellation of the social security system when, in successive decades, cash deficits will occur (Diamond e Orszag, 2004). The new method seems conceived and designed in order to deal with this problem. If applied, it would immediately change the current surplus in deficit, providing therefore a picture more consistent with economists' worries.

The point is that, considering what just observed about time of recording, it may be the case that no method exists, able to simultaneously penalize the USA and European countries – ie who is in the step of creation of the imbalance, and who is in the step of recovery – and able to provide better incentives to both, in comparison to simple cash accounting.

On this regard, it should be stressed that our counterexamples do not show that the old method is better than the new one. They just show that cases exist where imbalances are better depicted and penalized by the old method, and cases where the opposite is true. Indeed, what could be deducted is the general impossibility to capture in *one* current data (either B.9 or B.9X) all the information that would result from the time *series of forecasts* for pension expenditure. This series would allow for better understanding of pension reforms, without deleting information on the dates of actual implementation of real effects.

Incentive bias, as well as measurement problems, seem to arise from the attempt to summarize too many pieces of information into one data (general deficit). If the aim is to better measure pension imbalances, without creating artificial bias or errors, it is not necessary to remain into the range and limits of national accounts. What really matters is harmonising methodologies used in the various countries to report pension outlays and forecast future public spending, as well as defining common standards as to the frequency of expenditure forecasts and the length of the forecast horizons. Keeping this in mind,

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[19] In a different context, referring to stock measurements, Franco *et al* (2004) noticed that the size of unfunded pension liabilities might not imply univocal consequences about sustainability or future imbalances (Ibid., p. 21 e sgg.). A case is discussed, in which a difference arises in pension liabilities to GDP, but sustainability is the same. A second example refers to a demographic shock, causing a significant change in sustainability, without any corresponding change in pension liabilities to GDP.

development of specific, harmonized pension accounts may provide better results, in comparison to reshuffling the definition of deficit.

6. Conclusions

After reviewing, in the first part, the rationale underlying current statistical rules, and discussed the main reasons to change, a first conclusion is that valid reasons do exist, to evaluate the revision of current national and financial accounts.

After drawing a formal treatment and exam of the new method proposed by OECD and IFM, many objections so far put forward do not seem entirely justified. The proposed method seems to efficaciously deal with problems of arbitrariness as well as volatility of parameters and rates, and its practical implementation would not require entirely new pieces of information (in comparison to what is already used in model for pension expenditure forecast). In addition, the new deficit does not directly depend on long term forecasts on population or employment, thanks to using the accrued-to-date formulas.

Beside such advantages, however, the method suffers from problems of sensitivity to non significant operations. It is of course less sensitive to extraordinary operations (eg like Belgacom), but it is also able to create, starting from similar situations, entirely different effects on net borrowing. Other doubts refer to asymmetry in treatment with regard to health expenditure and legally binding future contributions. In addition, the accrued-to-date formula may be well defined for employees close to retirement age, but noticeable uncertainty may be faced for all others.

Together with such problems of measurement and statistical consistency, the new proposal raises economic questions, related to potential incentive effects. On the one hand, if already in force at the right time, the new method would allow to discover imbalances while their causes are created: for countries facing deficit-based fiscal rules, this would generate a useful counterincentive to place the cost on younger generations. On the other hand, results may dramatically change if the method, far from being in force at the right time, had to be introduced in economies already facing pension system crisis. Moving to the new method may worsen the position for countries that are increasing the coverage of pensions through contributions. Second, the change in method may create an accounting advantage for countries less virtuous in the past (ie previous to the adoption of new accounting rules, unlike what happened in the IAS case). Finally, under constant (new) rules, a country that is postponing effects of pension reforms may face a comparative advantage for deficit.

We recalled, in paragraph 2.3, the common opinion according to which it is “too early” for extending the new method to social security. From the above analysis, the new method would seem to provide appropriate incentives during the first part of pension imbalance: eg, in cases that are similar to the USA system, where the cash deficit will occur after the next twenty years. By contrast, the method seems to provide opposite results in systems were cash pension imbalance already occurred. It may be said that, for most European countries, it is indeed “too late” rather “too early”.

One estimation, even rough, of pension liabilities, would undoubtedly be useful in many contexts (for a list of applications, see Franco 1995, p. 11). Doubts concern the opportunity to link such estimates to the calculation of net borrowing, used in European fiscal rules. In such a context, on the basis of the examples discussed above, the ability of the new method to provide appropriate incentives is not clear too. Creating a separate account for pensions, and improving other indicators like forecasts for pension expenditure to GDP or equilibrium contribution quotas (concepts external to the context of national accounts) would ensure better elements for judgment. By contrast, an aggregated indicator like overall net borrowing, subject to a fixed threshold fiscal rule, seems to be a shortcut attempt not able to provide efficacious and well founded results.

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