11th Meeting of the Advisory Expert Group on National Accounts,

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Agenda item: 2.1

Outcome of AEG consultation on the treatment of the recording of flows between a defined pension benefit fund and its sponsor

2.1.2 The accrual recording of property income related to claims between a sponsor and a defined benefit pension fund

I. Introduction

1. The 2008 SNA states that when a pension sponsor is responsible for meeting the liabilities of a pension fund in case of any shortfall, the shortfall should be recorded as a claim of the fund on the sponsor. In this way, the net worth of the pension fund is equal to zero at all times. As the pension entitlements and the assets of the pension fund are subject to many changes, the claim between the sponsor and the pension fund will also be affected by a variety of events. It may change for instance due to fluctuations in the entitlements because of the unwinding of the discount factor, or due to changes in the discount factor and life expectancy, or because of shortfalls in the property income of the pension fund to meet changes in these entitlements. It will depend on the underlying event how the change in the claim will be recorded.

2. One of the events that may lead to changes in the claim between the pension fund and the sponsor is when the property income of a defined benefit pension fund does not equal the change in pension entitlements due to the unwinding of the discount factor. Under the 2008 SNA, this unwinding of the discount factor on the pension entitlement is shown as property income flowing from the pension fund to households. However, the property income of the pension fund is not necessarily equal to this amount. Especially in case of persistently over- or underfunding, the property income will differ. That is why it was discussed and agreed by the Advisory Expert Group (AEG), at its meeting of 8-10 September 2014, to explicitly accrue property income on the claims between a defined benefit pension fund and its sponsor, reflecting the unwinding of the discount factor on any over- or underfunding of the pension scheme.

3. Although the AEG agreed on this explicit accrual recording of property income on the claims between a defined benefit pension fund and its sponsor, a final conclusion still needs to be achieved on the classification of this imputed flow. Furthermore, there appeared to be differences of opinion on the exact calculation and recording of the related amounts, to arrive at a zero net worth for the pension fund. Does the shortfall (or surplus) in property income

give rise to an imputed income flow between the pension fund and the sponsor, or is this specifically triggered by any underfunding (or overfunding) at the start of the recording period? The differences of opinion were further fed by the lack of clarity on the possible impact of holding gains and losses on the accumulated assets, and discussion on how other economic flows, such as changes in life expectancy or changes in the discount factor, may affect the relevant flows.

4. This paper discusses two options on how to deal with the unwinding of the discount factor in relation to property income in case of a defined benefit pension scheme in which a sponsor is responsible for meeting the liabilities of the fund. To clearly show the differences between the two options, the paper initially assumes that there are no other changes in the entitlements than those due to the unwinding of the discount factor. The specific impact of other changes on the claim between the pension fund and the sponsor are discussed at the end of the paper.

5. The paper is structured as follows. Section II presents the main outcome of the discussion on the imputation of property income on the claim between the pension fund and sponsor at the 2014 AEG meeting. Section III then explains the current ambiguity in the 2008 SNA after which two options for the calculation of this flow are presented in Section IV. Section V focuses on the pros and cons of both options, also taking into account the impact of holding gains and losses, while Section VI presents a numerical example in which the differences between the two options are highlighted. Section VII then discusses two possible ways to classify the imputed flow. These options are closely related to how the flow is calculated. Section VIII explains how other changes in the volume of assets may affect these discussions and how they could be recorded in the accounts. The paper ends, in section IX, with a number of questions to the Advisory Expert Group.

II. AEG discussion on the imputation of property income on a claim between the pension fund and the pension sponsor

6. At its 9th meeting, the AEG discussed a paper by Marshall Reinsdorf[1], in which it was explained that a property income flow should be imputed between the sponsor and the pension fund in relation to any over- or underfunding of the scheme to reflect the unwinding of the discount factor on this over- or underfunding. The rationale is that the pension sponsor is responsible for meeting the liabilities of the fund in case of any shortfall and that any over- or underfunding will give rise to a mismatch between the property income of the pension fund and the increase of its pension liabilities due to the impact of discounting the existing pension entitlements for one less period (the "unwinding of the discount factor").

7. The paper explains that "*if the sponsor does not make catch-up contributions to the plan, the sponsor's liability will increase with each period that passes as the discount factor is applied to a shorter period of time. […] The claim of the fund on the sponsor will necessarily increase due to the effects of the unwinding of the discount factor and the underfunding.*" Therefore, the paper suggests recording an explicit property income flow

[1] See http://unstats.un.org/unsd/nationalaccount/aeg/2014/M9-24.pdf

between the sponsor and the pension fund, equal to the discount factor that is used in calculating the pension entitlements times the claim of the pension fund on the sponsor or vice versa.

8. During the meeting, the AEG discussed the paper and agreed with the explicit accrual recording of property income on the claims between a defined benefit pension fund and its sponsor.

III. Ambiguity in the 2008 SNA

9. Although the AEG agreed with the explicit recording of an imputed property income flow related to the claim between the pension fund and its sponsor, it was not fully clear on how to calculate the relevant amount. The main reason is that there showed to be divergent opinions on how to deal with a gap between on the one hand the property income of the pension fund on its assets, and on the other hand the investment income payable on pension entitlements which is equal to the unwinding of the discount factor according to the 2008 SNA. Should a flow be imputed only in case of any over- or underfunding at the start of the recording period or at any time there is a gap between the property income and the unwinding of the discount factor? Furthermore, it still needed to be decided how to classify the imputed property income flow. The latter question seems closely related to the question on how the relevant amounts are being calculated.

10. The 2008 SNA does not contain any clear guidance on how to deal with any mismatch between the property income of a pension fund and the unwinding of the discount factor on the pension liabilities[2]. The only reference that is made in paragraphs 11.108 and 11.109, which deal with the financial instrument 'claims of pension funds on pension manager', is that "*the entry [in the financial account] is negative if the pension fund makes more investment income from the pension entitlements it holds than is necessary to cover the increase in entitlements and the difference is payable to the pension manager of the scheme*". This implies that any gap between property income and the unwinding of the discount factor on the pension liabilities leads to a concomitant financial transaction in the claim between the pension fund and the sponsor, although all of this is not very explicit and clear, while the accompanying transactions in the rest of the system are not further explained. In addition, paragraphs 17.163 to 17.166 discuss the relationship between the employer and the pension fund more extensively. Paragraph 17.165 states that the claim between the sponsor and the pension fund "*is equal to the difference between the increase in pension entitlements and the sum of the contributions and contribution supplements in the period, plus the investment income earned on the entitlements, plus the holding gains made on them, less the pensions payable, less the fee charged by the pension administrator. When the amount accruing to the pension fund exceeds the increase in entitlements, there is an amount payable by the pension fund to the employer as pension manager. In this way the net worth of the pension fund remains exactly zero at all times*". Although it explains that the total change in the claim is set in such a way that the net worth of the pension fund remains zero at all times, it does not

[2] The relevant paragraphs from the 2008 SNA have been listed in Annex 1.

specify how the related amount is broken down into the underlying flows and, again, it does not explain how to record the accompanying transactions in the system.

11. The 2008 SNA also contains a numerical example on the transactions for a defined benefit scheme, but that doesn't seem to provide clear guidance either. Paragraph 17.169 deals with the gap between the increase in the pension entitlement coming from past service (which is equal to 4 in the example) and the property income of the pension fund (which is equal to 2.2). However, it only mentions that due to the difference between the two "*there is a shortfall of 1.8 in the pension fund resources but it is not shown in the current accounts*". It is not clear whether this should be interpreted as if the sponsor is responsible for covering the shortfall, in which case a flow should be imputed from the sponsor to the pension fund equal to 1.8, so as to not show the shortfall of 1.8 in the current accounts of the pension fund, or that it should be interpreted as that the shortfall should not be 'solved' in the current accounts via an imputed flow between the sponsor and the fund to close (part of) the gap. Looking at the rest of the example, the issue of how to deal with this specific shortfall does not seem to be addressed. The only changes recorded in assets and liabilities that are mentioned in the example are a change in the claim of the pension fund on the pension manager related to the current service (+4.1), an increase in the pension entitlements (+3.0), and a change in other assets (-2.3). These financial transactions would indeed lead to a net lending/borrowing for the pension fund which is equal to its savings, but would leave the pension fund with a net worth that is not equal to zero (i.e. -1.2) unless additional changes are recorded. These additional changes would in that case concern the claim between the pension fund and the sponsor, but it is not made explicit how the relevant amount would be broken down into underlying flows, as these are not explicitly discussed in the example.

IV. Possibilities to calculate the relevant property income flows

12. Whereas the 2008 SNA does not include any clear guidance on how to deal with the shortfall of property income that arises when the property income of the pension fund is unequal to the imputed investment income on pension liabilities due to the unwinding of the discount factor, the Handbook on Financial Production, Flows and Stocks in the System of National Accounts (Financial Handbook) does provide some further guidance (see paragraphs 3.461 to 3.464). It states that an imputed property income payable by employers (sponsor) and receivable by the funds has to be recorded equal to the shortfall of the property income, meaning that any shortfall is to be compensated by the sponsor and that the pension fund will always end up with zero savings. In other words, in this option the mismatch between the property income and the unwinding of the discount factor is the initiating event to record an imputed property income flow between the sponsor and the pension fund. It basically comes down to the imputed property income flow in period t (PI_t) being equal to the investment income payable on pension entitlements (equal to the pension entitlements at the end of the previous recording period ($AF.63_{t-1}$) times the discount factor (d_t)) minus the property income on the assets accumulated by the pension fund in period t ($D4_t$):

(1) $$PI_{option\ 1,t} = D442_t - D4_t = AF.63_{t-1} \times d_t - D4_t$$

13. On the other hand, the paper by Marshall Reinsdorf presents a solution in which a property income flow is recorded on the basis of the existing claim ($AF.64_{t-1}$) and the discount factor (d):

(2) $$PI_{option\ 2,t} = AF.64_{t-1} \times d_t$$

In this option, the event that leads to the recording of the imputed flow is a shortfall or excess of assets, as compared with the pension entitlements, at the start of the recording period. As this will likely lead to a mismatch between the property income on its assets and the unwinding of the discount factor on the pension liabilities, an imputed property income flow is recorded to correct for the part of the mismatch that is caused by this under- or overfunding. However, in contrast to the first option, this option does not correct for the full mismatch (disregarding any holding gains and losses). Therefore, the pension fund may end up with savings that are not equal to zero, which will then need to be offset in the revaluation or other changes in the volume of assets accounts to arrive at a net worth of zero for the pension fund.

14. Looking at the differences between the two options, the first option focuses on the actual gap between property income and the unwinding of the discount factor in the current period, whereas the second option focuses on the likely shortfall (or excess) in property income due to any under- (or over)funding at the start of the recording period. As a consequence, the two options lead to different flows throughout the system of national accounts. Below it is explained what the flows look like in both options and where they differ.

15. If the property income on the assets of the pension fund (r_t) is not equal to the discount factor (d_t), this will give rise to an additional gap, in addition to the mismatch due to the under- (or over)funding at the start of the recording period. The average property income (r) can be calculated as property income received ($D4_t$) divided by the asset portfolio of the pension fund excluding the claim on the sponsor ($I^*_{pf,t}$):

(3) $$r_t = \frac{D4_t}{I^*_{pf,t}}$$

16. Under the assumption that the pension fund has no other liabilities than the pension entitlements, the assets of the pension fund excluding the claim on the sponsor can be rewritten as pension entitlements minus the claim on the sponsor:

(4) $$I^*_{pf,t-1} = AF.63_{t-1} - AF.64_{t-1}$$

17. Re-writing equation (1) on the basis of equations (2) and (3) gives:

(5) $$PI_{option\ 1,t} = (I^*_{pf,t-1} + AF.64_{t-1}) \times d_t - I^*_{pf,t-1} \times r_t \quad \Leftrightarrow$$

$$PI_{option\ 1,t} = I^{*}_{pf,t-1} \times (d_t - r_t) + AF.64_{t-1} \times d_t$$

18. The last part of equation (5) is equal to the property income flow calculated under option 2, which means that the difference between the two is caused by any differences between the discount factor and the average property income times the asset portfolio of the pension fund ($I^{*}_{pf,t-1} \times (d_t - r_t)$). If the average property income is equal to the discount factor, both options would gain the same results. In case the discount factor exceeds the average property income ($d_t > r_t$), the first option would lead to a higher property income flow between the sponsor and the pension fund to make up for the difference. If the average property income exceeds the discount factor it would be the other way around. Furthermore, the larger the assets of a pension scheme, the larger the possible gaps between the property income derived via option 1 and option 2.

19. The property income flows would also be reflected in the financial accounts. A property income flow from the sponsor to the pension fund would be recorded as a financial transaction ($FT(AF.64)_t$) increasing the claim of the fund on the sponsor:

$$(6) \qquad FT(AF.64)_t = PI_t$$

20. Assuming the validity of the above equation, for any remaining difference between the change in the assets of the pension fund and the change in its pension entitlements due to differences between the unwinding of the discount factor and the property income, another flow would have to be recorded to make sure that the pension fund would end up with a zero net worth. As it concerns changes in the value of the claim that are the result of differences between the property income and the unwinding of the discount factor (on the basis of unchanged underlying assumptions), it would make sense to record it in the revaluation account and not in the account for other changes in the volume of assets.

21. Under the assumption that there are no other changes to the pension entitlement, the revaluation of the claim of the pension fund on the sponsor ($REV(AF.64)_t$) could be calculated as a residual between the change in the stock of the claim minus the financial transaction:

$$(7) \qquad REV(AF.64)_t = AF.64_t - AF.64_{t-1} - FT(AF.64)_t \qquad \Leftrightarrow$$

$$REV(AF.64)_t = (AF.63_t - I^{*}_{pf,t-1}) - (AF.63_{t-1} - I^{*}_{pf,t-1}) \\ -FT(AF.64)_t \qquad \Leftrightarrow$$

$$REV(AF.64)_t = \Delta AF.63_{t,t-1} - \Delta I^{*}_{pf,t,t-1} - FT(AF.64)_t$$

22. Furthermore, under the assumption of no other changes, the change in pension entitlements can be set equal to the unwinding of the discount factor (which is equal to the investment income payable on pension entitlements):

$$(8) \qquad \Delta AF.63_{t,t-1} = D442_t$$

while the change in the asset portfolio of the pension fund can be set equal to its total investment return, i.e. property income plus gains and losses on the accumulated assets:

$$(9) \qquad \Delta I^*_{pf,t,t-1} = D4_t + REV(I^*_{pf,t})$$

23. When looking at the first option, this would lead to a revaluation of the claim which is equal to the holding gains and losses of the pension fund on its accumulated assets with an opposite sign:

$$(10) \qquad REV(AF.64)_{option\ 1,t} = \Delta AF.63_{t,t-1} - \Delta I^*_{pf,t,t-1} - (D442_t - D4_t) \qquad \Leftrightarrow$$

$$REV(AF.64)_{option\ 1,t} = D442_t - (D4_t + REV(I^*_{pf,t}) - (D442_t - D4_t) \quad \Leftrightarrow$$

$$REV(AF.64)_{option\ 1,t} = -REV(I^*_{pf,t})$$

The above makes sense as the property income between the sponsor and the pension fund already made sure that any gap between the unwinding of the discount factor and the average property income was closed. As a consequence, only holding gains and losses will feed into a revaluation of the claim. Any holding gains of the pension fund on its assets would lead to a lower gap between the pension entitlements and the assets, and in that way would decrease the claim of the fund on the sponsor. Obviously, for any holding losses, it would be the other way around.

24. For the second option, holding gains and losses on the accumulated assets would also feed into the revaluation of the claim (as a negative entry). In addition, it will also include any remaining gap between the property income on its assets and the imputed property income flow on the claim:

$$(11) \qquad REV(AF.64)_{option\ 2,t} = \Delta AF.63_{t,t-1} - \Delta I^*_{pf,t,t-1} - AF.64_{t-1} \times d_t \ \Leftrightarrow$$

$$REV(AF.64)_{option\ 2,t} = (AF.64_{t-1} + I^*_{pft-1})\times d_t - (I^*_{pft-1}\times r_t + REV(I^*_{pf,t})) - AF.64_{t-1}\times d_t \quad \Leftrightarrow$$

$$REV(AF.64)_{option\ 2,t} = -REV(I^*_{pf,t}) + I^*_{pft-1}\times(d_t - r_t)$$

25. The above means that the difference between the revaluations in option 1 and 2 is equal to the gap between the discount factor and the average property income times the assets of the pension fund excluding the claim on the sponsor. This item was included in the imputed property income flow between the sponsor and the pension fund in option 1, and is included in the revaluation account of the claim in option 2.

V. Pros and cons of the two options

26. When looking at the pros and cons of the two options discussed in the previous section, the main benefit of option 1 is that it makes sure that the income flows for the pension fund are balanced via an imputed property income flow between the sponsor and the pension fund, as a consequence of which the sponsor ends up with similar results, as if it had run the scheme itself and the scheme would have been consolidated into the accounts of the sponsor. As the sponsor is ultimately responsible for any shortfall of funds in relation to the pension entitlements (and the role of the defined benefit scheme is in theory limited to holding and investing the assets of the pension fund participants), one could argue that any gaps between the unwinding of the discount factor and the actual property income are to be recorded as an imputed income flow between the sponsor and the fund.

27. Option 2 ignores any additional shortfalls in property income as it only focuses on the imputation of a property income flow on the basis of the existing claim. Consequently, it does not incorporate any additional shortfalls in the income account arising from a gap between the unwinding of the discount factor and property income related to the accumulated assets of the fund. Although the sponsor bears the ultimate responsibility for any shortfall, it can be questioned whether it is desirable to solve any (additional) shortage (or surplus) directly in the income accounts via an imputed property income flow. As the pension fund is regarded as a separate entity, it may not be necessary to directly re-direct all individual flows to the sponsor, but instead record an imputed property income flow related to the under- (or over)funding and solve any additional gap via the revaluation account, as is suggested in option 2. This will also make sure that the pension fund ends up with zero net worth. In the end, the decision on how to calculate the imputed flow seems to come down to the specific issue on how to regard the relationship between the pension fund and its sponsor, and how this relationship should be reflected in the flows.

28. In comparing the impact of the two options, it also has to be borne in mind that, under the assumption that the unwinding of the discount factor is usually matched by both property income and holding gains, option 1 in the longer run will lead to an imputed property income flow between the sponsor and the pension fund which is too high (and needs to be cancelled

out via the revaluation account), as it only looks at property income and ignores the impact of holding gains in the calculation of the imputed property income flow between the sponsor and the pension fund[3]. On the other hand, as mentioned before, this would be in line with what the implicit recording in case the sponsor had run the scheme itself.

29. Another downside of option 1 is that it may lead to counterintuitive results, in the sense that a property income flow may be imputed from the sponsor to the pension fund even in case when the scheme is overfunded. If property income were to fall short of the unwinding of the discount factor (which is not unlikely as the unwinding would usually be matched by property income as well as holding gains), a property income flow would still be imputed from the sponsor to the pension fund even though the sponsor has a claim on the fund due to the overfunding (see Annex 3 for an example). The reverse may also be the case, especially in case of a very low discount factor, but is less likely to occur.

30. Finally, in discussing the pros and cons of the two options, it is sometimes argued that option 2 would lead to more stable results than option 1. The discussion then usually refers to the different treatment of holding gains and losses in both options. However, as explained before, holding gains and losses do not directly affect the imputed property income flows in both options (see equations 1 and 2). Large fluctuations in holding gains and losses will only feed into the stock data via revaluations, and would thus affect the amount of revaluations in both options to the same degree (see equations 8 and 9). Any differences in stability of the results for the imputed property income flows will only depend on the development of the property income in relation to the discount factor. Under the assumption that the discount factor will be relatively stable over time (as well as the pension entitlements), any differences in stability will then mainly depend on the stability of the property income. If that tends to fluctuate a lot over time, the imputed property income under option 1 will indeed tend to fluctuate more than under option 2. However, holding gains and losses do not directly affect this stability.

VI. Numerical example to explain the main differences between the two options

31. To gain a better insight in the differences between both options, a numerical example is presented in annex 3. This example focuses specifically on the impact of the unwinding of the discount factor in relation to property income earned on the assets of the pension fund, and has the following starting point:

- At the start of the period the defined benefit pension fund has a pension liability towards households for the amount of 80.0 units.
- The assets of the pension fund at the start of the period consist of deposits (5.0 units) and equity (67.0 units). As the assets fall short of the pension entitlements, the pension fund has a claim on the sponsor at the start of the period of 8.0 units.
- During the period the unwinding of the discount factor (5%) leads to an increase of the entitlement of 4.0 units.

[3] See Annex 2 for a more detailed explanation.

- The investment return of the pension fund consists of actual property income (D4) of 2.2 units and holding gains of 1.6 units. For simplicity, it is assumed that this property income is payable by other resident sectors.

32. As in the first option the imputed property income payable by the sponsor is equal to the shortfall in property income of the fund, the flow would amount to 1.8 units. This would lead to a net lending/net borrowing of the pension fund of zero and for the sponsor of -1.8 units, equal to the imputed property income flow. This amount will also show up as a financial transaction leading to an increase of the claim of the fund on the sponsor. As part of the investment return of the pension fund consists of holding gains, this has a reducing effect on the claim of the fund on the sponsor. This will be recorded as a negative revaluation of the claim (-1.6):

$$PI_{option\ 1,t} = AF.63_{t-1} \times d_t - D4_t = 80.0 \times 0.05 - 2.2 = 1.8$$

$$FT_{option\ 1}(AF.64)_t = PI_t = 1.8$$

$$REV(AF.64)_{option\ 1,t} = -REV\left(I_{pf}^{*}\right)_t = -1.6$$

33. In the second option, the imputed property income flow is equal to the existing claim (8.0) times the discount factor (5%), i.e. 0.4 units. This directly leads to a net lending/net borrowing of the sponsor of -0.4 units. As the imputed property income flow (0.4) is not equal to the gap between the unwinding of the discount factor (4.0) and the property income of the fund (2.2), this leaves the pension fund with a net lending/net borrowing of -1.4 units. The imputed property income flow leads to an increase of the claim of the pension fund on the sponsor in the financial accounts of 0.4 units, but as the total investment return (i.e. actual property income (2.2) plus the imputed property income (0.4) plus holding gains (1.6)) exceeds investment income payable on pension entitlements (4.0), the claim at the end of the recording period is only 0.2 units higher than at the start of the period. The difference is due to the holding gains and is recorded as a revaluation of the claim of -0.2 units.

$$PI_{option\ 2,t} = AF.64_{t-1} \times d_t = 8.0 \times 0.05 = 0.4$$

$$FT(AF.64)_{option\ 2,t} = PI_t = 0.4$$

$$REV(AF.64)_{option\ 2,t} = \Delta AF.63_{t,t-1} - \Delta I_{pf,t,t-1}^{*} - AF.64_{t-1} \times d_t$$
$$= 80.0 * 0.05 - (2.2 + 1.6) - 8.0 * 0.05 = -0.2$$

34. The example presented shows that in case of holding gains, option 1 indeed leads to a higher property income flow between the sponsor and the pension fund which is partly offset via the revaluation account.

VII. Classification of relevant property income flows

35. In addition to the question on how to calculate the imputed property income flow between the pension fund and the sponsor, the question has to be answered how to classify this income flow. Two options have already been described in a paper[4] presented to the AEG at the meeting in April 2016: either recording it as investment income payable on pension entitlements, or as interest.

36. The paper explains that the main argument in favour of recording the imputed property income as investment income payable on pension entitlements is that "*the SNA links assets with the type of income derived from that asset*". As the claim of the pension fund on the sponsor is recorded under AF6 (Insurance, pensions, and standardized schemes) for which investment income categories are shown in income category D44 (Investment income disbursements), the paper states that "*this type of income is excluded from the definition of interest, which is defined as the return on specified financial instruments that do not include AF6*".

37. On the other hand, the paper also explains that income on the claims between a defined benefit pension fund and its sponsor can also be regarded as "*income on an accrued claim of a pension fund on a company or government entity. […] It does not arise as a result of a special relationship like that between households accruing pension entitlements and pension funds and does not have the characteristics of a claim by households accruing pension entitlements on a pension scheme*". The argument to record the imputed property income as interest is that the claim can be seen as a "*claim of a creditor over a debtor that has accrued and the income accruing is compensation for the time value of money*".

38. Looking at the two possible ways of classifying these imputed property income flows, they seem closely related to the two options on how to calculate the relevant amounts. Either the gap between the unwinding of the discount factor and the property income on the accumulated assets is taken as the basis for the imputed property income flow, in which case the flow would have a direct link with the accrual of the pension entitlements, and a recording as investment income related to the pension entitlement would make sense; or the outstanding claim at the start of the recording period is taken as the basis for recording of the imputed property income flow, in which case it seems more related to property income on a financial liability and recording as interest would be logical.

39. In both options it would be preferable to explicitly show the relevant amounts as separate sub-item to distinguish it from other property income flows under that category. For interest (D41) it would imply a subcategory 'imputed interest on the claim between the

[4] "The accrual recording of property income in the case of liabilities between a pension manager and a defined benefit pension fund", paper discussed at the 10th meeting of the Advisory Expert Group on National Accounts, 13-15 April 2016 in Paris.

pension fund and the sponsor' and for investment income disbursements (D44) it would imply a separate subcategory 'imputed income between sponsor and pension fund for defined benefit schemes'. As it does not necessarily involve a claim at the start of the recording period, the latter category should not include a reference to the claim, but rather to the role of the sponsor in defined benefit schemes, to account for any shortfalls or surpluses of the fund in running the pension scheme.

VIII. Other changes in the volume of assets

40. In addition to gaps between the unwinding of the discount factor and the property income of the pension fund, the claim between the sponsor and the fund may also be affected by other changes having an impact on either the accumulated assets or the pension entitlements of the pension fund. Examples affecting the latter may relate to changes in the discount factor, changes in life expectancy, differences between expected and actual mortality, differences between assumed and actual retirement dates, unexpected salary changes, and indexation to adjust for cost of living. These will not directly affect the imputed property income flow between the pension fund and the sponsor as described in the previous sections, but they will affect the claim. The main question is how these changes in the claim should be reflected in the flow of funds. From the 2008 SNA it is clear that the above mentioned changes in pension entitlements should feed into the other changes in the volume of assets account (see par. 17.177-179), but one may question the recording of the impact of these changes on the claim of the pension funds towards the sponsor?

41. To be consistent with the recording in case the sponsor ran the scheme himself, changes caused by modifications such as described above should be recorded in the other changes in the volume of assets account as well. In that way, a direct link between the pension entitlements and the claim between the sponsor and the pension fund would be maintained. This would make sense as any changes in the entitlements would be directly reflected in the claim between the sponsor and the pension fund. On the other hand however, it could also be argued that the relevant changes in the claim are only derived effects and that they thus should be reflected in the revaluation account, similar to the valuation of a share. If the issuer of the share has to write off part of its financial assets as they can no longer be collected, this will be reflected in the other changes of assets account for the issuer, but for the holders of these shares it will most likely be reflected in a decrease of the value of their shares, and thus be recorded in the revaluation account.

42. The question therefore is whether one would like to assume a direct link between the entitlements and the claim (and in a sense between the pension fund and the sponsor), and thus record it also as other changes in the volume of assets; or whether one would like to assume an indirect link, and record it as revaluations. Again, this also seems closely related to the questions and answers on how to calculate and record the imputed property income flow.

IX. Questions for discussion

- Which of the two options is to be preferred to calculate the imputed property income flow between a pension fund and a sponsor?
  a) Equal to the shortfall (or excess) in property income
  b) On the basis of the existing claim between the fund and the sponsor

- How should the property income flow be classified?
  a) Investment income disbursement
     If so, what would be an appropriate term for this specific imputed flow?
  b) Interest
     If so, what would be an appropriate term for this specific imputed flow?

- Which of the two options is to be preferred to classify the impact of other changes on the claim between a pension fund and a sponsor?
  a) In the revaluation account
  b) In the other changes in the volume of assets account

Annex 1: Relevant paragraphs from the 2008 SNA

11.107 An employer may contract with a third party to administer the pension funds for his employees. If the employer continues to determine the terms of the pension schemes and retains the responsibility for any deficit in funding as well as the right to retain any excess funding, the employer is described as the pension manager and the unit working under the direction of the pension manger is described as the pension administrator. If the agreement between the employer and the third party is such that the employer passes the risks and responsibilities for any deficit in funding to the third part in return for the right of the third part to retain any excess, the third party becomes the pension manger as well as the administrator.

11.109 When the pension manager is a unit different from the administrator, with the consequences that responsibility for any deficit, or claims on any excess, rest with the pension manager, the claim of the pension fund on the pension manager is shown under this heading. (The entry is negative if the pension fund makes more investment income from the pension entitlements it holds than is necessary to cover the increase in entitlements and the difference is payable to the pension manager of the scheme.)

12.60 The changes in the volume of reserves for pension entitlements apply to defined benefit schemes, those where the pension to be provided is determined wholly or in part by a formula. No such adjustments are needed for defined contribution schemes where the benefits are determined solely in terms of the investment earnings on contributions fed into the scheme.

12.61 The exact delineation between which changes in pension entitlements are treated as transactions and which as other changes in the volume of assets is still being researched. Part 2 of chapter 17 describes the present situation.

12.116 As far as pension entitlements are concerned, increases in the value of entitlements due to indexation are recorded via reinvestment of investment income payable to the beneficiaries and not in the revaluation account.

12.117 The assets the financial institutions use to meet their commitments under these schemes do indeed benefit from holding gains, for example investments in equity and investment funds, but the liabilities towards the policyholders and beneficiaries change only as a result of transactions and other changes in the volume of assets.

13.78 The entitlements due under pension schemes comprise two elements; one when the formula determining the amount of the pension is agreed in advance (as under a defined benefit scheme) and one where the amount of the pension depends on the performance of financial assets acquired with the future pensioner's contributions (a defined contribution scheme). For the former, an actuarial estimation of the liabilities of the pension provider is used; for the latter the value is the market value of the financial assets held by the pension fund on behalf of the future beneficiaries. The basis on which pension entitlement is calculated and the alternative means of representing these in the accounts of the SNA are described in detail in chapter 17.

17.144 The fundamental difference in accounting for a defined benefit pension scheme as compared with a defined contribution pension scheme is that, for the defined benefit pension scheme, the benefit to the employee in the current period is determined in terms of the undertakings made by the employer about the level of pension ultimately receivable, whereas for the defined contribution pension scheme the benefit to the employee in the current period is determined entirely by the contributions made to the scheme and the investment income and holding gains and losses earned on these and previous contributions. Thus while there is (in principle) exact information available on the benefits for the participant in the defined contribution pension scheme, the benefits for the participants in a defined benefit pension scheme must be estimated. The source of these estimates is the actuarial estimates the employer is faced with in drawing up his own accounts.

17.145 There are four sources of changes in pension entitlements in a defined benefit pension scheme. The first of these, the current service increase, is the increase in entitlement associated with the wages and salaries earned in the current period. The second source, the past service increase, is the increase in the value of the entitlement due to the fact that for all participants in the scheme, retirement (and death) are one year nearer. The third change in the level of entitlement is a decrease due to the payment of benefits to retirees of the scheme. The fourth source of change comes from other factors, factors that are reflected in the other changes in assets account.

17.146 As with a defined contribution pension scheme, both employer and employee may make actual contributions to the scheme in the current period. However, these payments may not be sufficient to meet the increase in the benefits accruing from the current year's employment. Therefore an additional contribution from the employer is imputed to bring equality between the contributions and the increase in current service entitlements. These imputed contributions are usually positive but it is possible for them to be negative if the sum of the contributions received exceeds the increase in current service entitlements. The implications of this case are discussed below when examining the relationship between the employer and the fund.

17.147 At the end of an accounting period, the level of the pension entitlements due to past and present employees can be calculated by estimating the present value of the amounts due to be paid in retirement using actuarial estimates of the expected life length of the beneficiaries. This is the amount that appears in the balance sheet as the liability towards the employees. One element in the increase of this amount year by year is the fact that the present value of the entitlements existing at the beginning of the year and still due at the end of the year have increased because the future is one year nearer and so one fewer discount factor must be used to calculate the present value. It is this unwinding of the discount that accounts for the past service increase in entitlements.

17.151 The initial discussion assumes that the employer retains the whole responsibility for meeting the pension payments. Alternatives involving the use of a multiemployer scheme or where government assumes responsibility on behalf of the employer are discussed subsequently.

17.152 The total contribution made by an employer to a defined benefit pension scheme on behalf of his employee must be sufficient that, together with any actual contribution by the employee and excluding the cost of operating the scheme, it exactly matches the current service increase in the employee's pension entitlements. The contribution by the employer is divided into an actual and an imputed part, the latter being calculated so as to meet the need of an exact match between all contributions to the fund adding to the entitlements of the employee and the current service cost of these entitlements.

17.153 The contribution by the employer should be calculated in relation to the pension entitlement earned in the period regardless of any investment income earned by the scheme in the same period or any overfunding of the scheme. The current period entitlement is part of compensation of employees and not to include the full value of the employer's contribution understates compensation of employees and therefore overstates operating surplus. An extreme case has occurred in the past when the investment of the pension entitlements has done so well that the employer has taken a "contribution holiday", that is he has not made an actual contribution towards new entitlements. It is important that contributions continue to be recorded even in the event of a contributions holiday, the benefit to the employer being regarded as a change in liabilities between the pension fund and the employer. This leaves the net worth of both the same as when contributions are not recorded under a contributions holiday without reducing compensation of employees artificially.

17.155 The sum of employers' actual and imputed pension contributions is treated as part of compensation of employees. It is recorded as payable by the employer in the generation of income account and receivable by the employee in the allocation of primary income account.

17.156 The increase in the present value of the entitlements of continuing employees and those who no longer contribute but remain eligible for pensions in future (the past service increase) represents the investment income distributed to the employees. No deduction is made for any amount that may be funded from holding gains or that is not actually matched by existing funds. It matches the amount that is unequivocally due to the employee under the prevailing agreements; the means by which the employer may ultimately match this obligation is not relevant for the recording of this as investment income any more than the means by which interest or dividends are actually financed affect their recording as investment income. The investment income is recorded as payable by the pension fund and receivable by households. It is immediately reinvested by the households in the fund and in this guise is described as pension contribution supplements.

17.163 As noted above, an employer may contract with another unit to administer the pension fund and arrange disbursements to the beneficiaries. There are two ways in which this may happen. The operator of the pension fund may simply act as the employer's agent and the responsibility for any shortfall in the fund (or the benefit of any excess) remains with the employer. In this case the unit handling the day to day running of the pension fund is called the pension administrator.

17.164 However, it is not uncommon for a single unit to contract with several employers to manage their pension funds as a multiemployer pension fund. The arrangements are such that the multiemployer pension fund accepts the responsibility for any shortfall in the funds to meet the liabilities in return for the right to keep any excess funds. By pooling the risks over a number of employers the multiemployer fund expects to balance under- and overfunding so as to emerge with an excess over all the funds taken as whole in a similar way that an insurance corporation pools risk for many clients. In such a case, the unit assuming responsibility for meeting the pension obligations becomes the pension manager in place of the employer.

17.165 In the case where the employer retains the liability for any underfunding or the benefit of any overfunding, a claim on (or liability towards) the employer (the pension manager) by the pension fund should be recorded for any deficit or surplus. This claim is equal to the difference between the increase in pension entitlements and the sum of the contributions and contributions supplements in the period, plus the investment income earned on the entitlements, plus the holding gains made on them, less the pensions payable, less the fee charged by the pension administrator. When the amount accruing to the pension fund exceeds the increase in entitlements, there is an amount payable by the pension fund to the employer as pension manager. In this way the net worth of the pension fund remains exactly zero at all times.

17.166 The amount due to the pension manager by the pension fund is where the impact of a contribution holiday shows up since it includes the amount of the employer's contributions that would normally be payable.

17.167 In order to illustrate the recording of transactions connected with a defined benefit pension scheme, table 17.8 shows a numerical example. Figures that are imputed are shown in bold; those that result from re-routing are shown in italics.

17.168 Actuarial calculations show that the increase in pension entitlement coming from current service, that is the pension "earned" in the year in question is 15. Households (the employees) contribute 1.5. The employer therefore is obliged to provide 13.5. In addition the cost of operating the scheme is estimated at 0.6. In total therefore the employer must provide 14.1. He actually contributes 10 so the remaining 4.1 is an imputed contribution. The output of 0.6 is shown in the production account; the contributions by the employer are shown as payable by the employer in the generation of income account and receivable by the households in the allocation of primary income account.

17.169 In the allocation of primary income account, investment income is also shown. The increase in pension entitlement coming from past service, due to the unwinding of the discount factor because retirement is one year nearer, is 4. This is shown as an imputed flow of investment income from the pension fund to households. At the same time, the pension fund actually earns 2.2 from investment income of the funds they manage. At this point, therefore, there is a shortfall of 1.8 in the pension fund resources but it is not shown in the current accounts.

17.170 In the secondary distribution of income accounts, the payments from households to the pension fund are shown. This can be viewed in one of two ways. The sum of the contributions paid by households should be equal to the increase in entitlements coming from current service (15) plus that coming from income on past entitlements (4) or 19 in total. The amounts actually paid are 10 received as the employers' actual contributions, 4.1 as the imputed contributions, 1.5 of the households own contributions, contribution supplements of 4 less the service charge of 0.6; again 19 in total. In the same account pensions of 16 are also shown as payable by the pension fund to households.

17.171 In the use of income account, as well as the purchase of the service charge as part of household final consumption expenditure, the change in pension entitlement is shown as payable by the pension fund to households. In this example, the amount of household contributions of 19 is set against pension benefits of 16. There is thus an increase in pension entitlements of 3 owing to households.

17.172 Households have saving of 17.5 of which 3 is the increase in their pension entitlements. This means that they have acquired other financial assets (or reduced liabilities) by 14.5. This figure is the difference between the benefits received (16) and households' actual contributions of 1.5.

17.173 For pension funds, saving is -1.2 but this can be seen as the composite of the actual and imputed elements. In terms of actual flows, pension funds receive contributions of 10 from employers routed via households, 1.5 from households and pay out benefits of 16. In addition, they receive investment income of 2.2. Their disposable income is thus -2.3. When the change in pension entitlements of 3 is taken into account, saving is -5.3. In addition, employers make an imputed contribution of 4.1. This is routed via households but adds 4.1 to the saving of the pension fund and reduces saving of the employer by the same amount.

17.174 In the financial account of the pension fund, the figure of 4.1, which was the imputed contribution, is shown as the claim of the pension fund on the employer. There is a claim by households on the pension fund of the change in pension entitlements of 3. In addition the pension fund either runs down financial assets or increases liabilities by 2.3, the figure corresponding to disposable income excluding the imputed contribution element from the employer.

17.177 At first sight it would seem that there are no entries to be made in the other changes in assets accounts for a defined benefit pension scheme since the two components recorded as the pension contributions and investment income are matched exactly to the increase in entitlements. However, because the nature of a defined benefit pension scheme is that the amounts due are determined by a formula, there are other factors that may intervene to change the level of entitlements. These factors include a price escalation clause, changes in the formula used to determine benefits and demographic assumptions about life length. The special case of the impact of promotions on entitlements is discussed separately below.

17.178 A pension fund invests the funds at its disposal. If they work on a fully funded basis, the investment income should be more than enough to cover any price escalation clause in the pension agreement. The excess may also be sufficient to cover some other adjustments to entitlements. However, a major source of revenue comes from holding gains on investments. These were assumed to be sufficient to cover most or all changes in entitlements. It has become clear that many schemes were underfunded in the expectation that holding gains would make up this shortfall also.

17.179 Given these adjustments are funded in large part by holding gains which appear in the revaluation account, it seems reasonable to record the contingencies that they are assumed to cover in the other changes in the volume of assets account except for the price escalation factor which should appear in the revaluation account.

Table 17.8:Accounts for pension benefits payable under a defined benefit scheme - uses

Uses	Employer	Pension fund	Households	Other sectors	Total economy
Production account					
Output					
Generation of income account					
Employers' actual pension contributions	10.0				10.0
Employers' imputed pension contributions	**4.1**				**4.1**
Allocation of primary income account					
Employers' actual pension contributions					
Employers' imputed pension contributions					
Property income				2.2	2.2
Property income payable on pension entitlements		**4.0**			**4.0**
Secondary distribution of income account					
Household total pension contributions			19.0		19.0
Employers' actual pension contributions			*10.0*		*10.0*
Employers' imputed pension contributions			***4.1***		***4.1***
Household actual pension contributions			1.5		1.5
Household pension contribution supplements			***4.0***		***4.0***
Pension scheme service charges			***-0.6***		***-0.6***
Pension benefits		16.0			***16.0***
Use of income account					
Final consumption expenditure			**0.6**		**0.6**
Adjustment for the change in pension entitlements		3.0			3.0
Saving (actual)	-10.0	-5.3	17.5	-2.2	0.0
Saving (imputed)	**-4.1**	**4.1**			**0.0**
Changes in assets					
Financial account					
Net borrowing/lending (actual)					
Net borrowing/lending (imputed)					
Change in pension entitlements			3.0		3.0
Claim of pension fund on pension manager (current service)		**4.1**			4.1
Other financial assets	-10.0	-2.3	14.5	-2.2	0.0

Table 17.8 (cont):Accounts for pension benefits payable under a defined benefit scheme - resources

					Resources
	Employer	Pension fund	Households	Other sectors	Total economy
Production account					
Output		0.6			0.6
Generation of income account					
Employers' actual pension contributions					
Employers' imputed pension contributions					
Allocation of primary income account					
Employers' actual pension contributions			10.0		10.0
Employers' imputed pension contributions			4.1		4.1
Property income		2.2			2.2
Property income payable on pension entitlements			4.0		4.0
Secondary distribution of income account					
Household total pension contributions		19.0			19.0
Employers' actual pension contributions		10.0			10.0
Employers' imputed pension contributions		4.1			4.1
Household actual pension contributions		1.5			1.5
Household pension contribution supplements		4.0			4.0
Pension scheme service charges		-0.6			-0.6
Pension benefits			16.0		16.0
Use of income account					
Final consumption expenditure					
Adjustment for the change in pension entitlements			3.0		3.0
Saving (actual)					
Saving (imputed)					

				Changes in liabilities	
Financial account					
Net borrowing/lending (actual)	-10.0	-5.3	17.5	-2.2	0.0
Net borrowing/lending (imputed)	-4.1	4.1			0.0
Change in pension entitlements		3.0			3.0
Claim of pension fund on pension manager (current service)	4.1				4.1
Other financial assets					

Annex 2: Explanation of the impact of holding gains on imputed property income flows

Under the assumption that the investment strategy of a pension fund is set up in such a way that it meets the increase of the pension entitlements due to the unwinding of the discount factor, over the longer term, the following equation will hold:

$$(12) \qquad \bar{r} + \bar{h} = \bar{d}$$

in which $\bar{h}$ reflects the average holding gains and losses on the asset portfolio of the pension fund:

$$(13) \qquad h_t = \frac{REV\left(I_{pf}^{*}\right)_t}{I_{pf,t}^{*}}$$

Looking at the imputed property income flow between the sponsor and the pension fund over the longer term, using this assumption, for option 1 it could be rewritten as:

$$(14) \qquad \overline{PI}_{option\ 1} = \bar{I}_{pf}^{*} \times \left(\bar{d} - \bar{r}\right) + \overline{AF.64} \times \bar{d}$$

$$\overline{PI}_{option\ 1} = \bar{I}_{pf}^{*} \times \bar{h} + \overline{AF.64} \times \bar{d}$$

The latter equation boils down to the fact that the average property income on the claim between the sponsor and the pension fund would be equal to the average discount factor times the average claim plus the average holding gains on the assets of the pension fund. In case the pension fund would be fully funded on average, it means that still a property income flow would be recorded equal to the average holding gains of the pension fund on its assets. This would then be cancelled out via a negative revaluation in the financial accounts:

$$(15) \qquad \overline{REV(AF.64)}_{option\ 1} = -\bar{I}_{pf}^{*} \times \bar{h}$$

For the second option, the average property income flow could be rewritten as:

$$(16) \qquad \overline{PI}_{option\ 2} = \overline{AF.64} \times \bar{d}$$

$$\overline{PI}_{option\ 2} = \overline{AF.64} \times \bar{r} + \overline{AF.64} \times \bar{h}$$

This results in an imputed property income flow that consists of two parts, the first part reflecting the property income that is lacking due to the underfunding, and the second part reflecting the holding gains and losses that would be lacking due to the underfunding. In case there is no underfunding on average, no property income flow would be recorded.

The difference between both options is the treatment of the average holding gains on the asset portfolio of the pension fund in relation to the imputed property income flow between the sponsor and the pension fund. In option 1 these average holding gains would feed into the imputed property income flow (and a concomitant financial transaction), and then be offset via a negative entry in the revaluation account. In option 2 the average holding gains on the asset portfolio would be excluded from the imputed property income flow (only the average holding gains and losses that are lacking due to underfunding would be included), as a consequence of which no revaluation needs be recorded in the revaluation account for the claim. Option 2 will leave the pension fund with a net lending/net borrowing which is offset via the holding gains on its assets, which will be recorded in the revaluation account of the pension fund. In option 1 the net lending/net borrowing of the pension fund will equal zero, and any holding gains or losses will be offset via an opposite entry in the revaluation account of the claim.

As was mentioned before, pension funds usually rely on both property income and holding gains to fund the increase of pension entitlements due to the unwinding of the discount factor. That means that h will usually be positive for most funds (at least over a longer period of time). As a consequence, for most schemes this will lead to an imputed property income flow between the sponsor and the pension fund which is too high over the longer term (overstating the sponsor's pension expenses and understating its savings) and which will be offset via the revaluation account in option 1.

Annex 3: Numerical example of the transactions associated with defined benefit pension schemes

This annex presents a numerical example of the transactions associated with the unwinding of the discount factor for defined benefit pension schemes 1) as described in the Financial Handbook and 2) as described in the paper by Marshall Reinsdorf. For simplicity only amounts related to the past service increase will be shown.

The example has the following starting point:

- At the start of the period the defined benefit pension fund has a pension liability towards households for the amount of 80 units.
- The assets of the pension fund at the beginning of the period consist of deposits (5 units) and equity (67 units). As the assets fall short of the pension entitlements, the pension fund has a claim on the sponsor at the start of the period of 8 units.
- During the period the unwinding of the discount factor (5%) leads to an increase of the entitlements of 4 units.
- The investment return of the pension fund consists of actual property income (D4) of 2.2 units and holding gains of 1.6 units. For simplicity, it is assumed that this property income is payable by other resident sectors.

Option 1: Imputed property income flow from sponsor to pension fund equal to the shortfall of property income.

In the first option, the shortfall of property income (i.e. 1.8) will be recorded as imputed property income payable by the sponsor to the fund, in line with the recommendations by the Financial Handbook.

That will lead to the following recordings:

Uses: Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Resources: Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Allocation of primary income account															
1.8			2.2	4.0		4.0	D4	Property income		4.0			4.0		4.0
	4.0			4.0		4.0	D442	Investment income payable on pension entitlements			4.0		4.0		4.0
-1.8	0.0	4.0	-2.2	0.0		0.0	B5g	Balance of primary income, gross/National income, gross							
Secondary distribution of income account															
		4.0		4.0		4.0	D61	Net social contributions		4.0			4.0		4.0
		4.0		*4.0*		*4.0*	*D6141*	*Household pension contribution supplements*		*4.0*			*4.0*		*4.0*
-1.8	4.0	0.0	-2.2	0.0		0.0	B6g	Disposable income, gross							
Use of disposable income account															
	4.0			4.0		4.0	D8	Adjustment for change in pension entitlements			4.0		4.0		4.0
-1.8	0.0	4.0	-2.2	0.0		0.0	B8	Saving							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Opening balance sheet: assets													**Opening balance sheet: liabilities**		
	5.0		5.0	10		10	F2	Currency and deposits				10	10		10
	67			67		67	F5	Equity and investment fund shares				67	67		67
		80		80		80	F63	Pension entitlements		80			80		80
	8.0			8.0		8.0	F64	Claim of the pension fund on sponsor	8.0				8.0		8.0
							B90	*Net worth*	*-8.0*	*0.0*	*80.0*	*-72*	*0.0*		*0.0*
Financial account															
							B9	Net lending (+)/net borrowing (-)	-1.8	0.0	4.0	-2.2	0.0		0.0
	2.2		-2.2	0.0		0.0	F2	Currency and deposits							
		4.0		4.0		4.0	F63	Pension entitlements		4.0			4.0		4.0
	1.8			1.8		1.8	F64	Claim of the pension fund on sponsor	1.8				1.8		1.8
	1.8			*1.8*		*1.8*		*From past service increase*	*1.8*				*1.8*		*1.8*
Revaluation account															
	1.6			1.6		1.6	F5	Equity and investment fund shares				1.6	1.6		1.6
	-1.6			-1.6		-1.6	F64	Claim of the pension fund on sponsor	-1.6				-1.6		-1.6
Closing balance sheet: assets													**Closing balance sheet: liabilities**		
	7.2		2.8	10		10	F2	Currency and deposits				10	10		10
	68.6			68.6		68.6	F5	Equity and investment fund shares				68.6	68.6		68.6
		84		84		84	F63	Pension entitlements		84			84		84
	8.2			8.2		8.2	F64	Claim of the pension fund on sponsor	8.2				8.2		8.2
							B90	*Net worth*	*-8.2*	*0.0*	*84*	*-75.8*	*0.0*		*0.0*

Option 2: Imputed property income flow on the basis of the existing claim between sponsor and pension fund

In the second option, the property income payable by the sponsor to the fund will be calculated as the existing claim times the discount factor (i.e. 0.4), in line with the recommendations by the paper presented to the AEG in 2014.

That will lead to the following recordings:

Uses															**Resources**
Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Allocation of primary income account															
0.4			2.2	2.6		2.6	D4	Property income		2.6			2.6		2.6
			2.2	2.2		2.2		*Actual property income*		*2.2*			*2.2*		*2.2*
0.4				*0.4*		*0.4*		*Property income on claim on sponsor*		*0.4*			*0.4*		*0.4*
	4.0			4.0		4.0	D442	Investment income payable on pension entitlements			4.0		4.0		4.0
-0.4	-1.4	4.0	-2.2	0.0		0.0	B5g	Balance of primary income, gross/National income, gross							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Secondary distribution of income account															
		4.0		4.0		4.0	D61	Net social contributions		4.0			4.0		4.0
		4.0		*4.0*		*4.0*	*D6141*	*Household pension contribution supplements*		*4.0*			*4.0*		*4.0*
-0.4	2.6	0.0	-2.2	0.0		0.0	B6g	Disposable income, gross							
Use of disposable income account															
	4.0			4.0		4.0	D8	Adjustment for change in pension entitlements			4.0		4.0		4.0
-0.4	-1.4	4.0	-2.2	0.0		0.0	B8	Saving							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Opening balance sheet: assets									**Opening balance sheet: liabilities**						
	5.0		5.0	10		10	F2	Currency and deposits				10	10		10
	67			67		67	F5	Equity and investment fund shares				67	67		67
		80		80		80	F63	Pension entitlements		80			80		80
	8.0			8.0		8.0	F64	Claim of the pension fund on sponsor	8.0				8.0		8.0
							B90	*Net worth*	*-8.0*	*0.0*	*80.0*	*-72*	*0.0*		*0.0*
Financial account															
							B9	Net lending (+)/net borrowing (-)	-0.4	-1.4	4.0	-2.2	0.0		0.0
	2.2		-2.2	0.0		0.0	F2	Currency and deposits							
		4.0		4.0		4.0	F63	Pension entitlements		4.0			4.0		4.0
	0.4			0.4		0.4	F64	Claim of the pension fund on sponsor	0.4				0.4		0.4
	0.4			*0.4*		*0.4*		*From interest on the claim*	*0.4*				*0.4*		*0.4*
Revaluation account															
	1.6			1.6		1.6	F5	Equity and investment fund shares				1.6	1.6		1.6
	-0.2			-0.2		-0.2	F64	Claim of the pension fund on sponsor	-0.2				-0.2		-0.2
Closing balance sheet: assets									**Closing balance sheet: liabilities**						
	7.2		2.8	10		10	F2	Currency and deposits				10	10		10
	68.6			68.6		68.6	F5	Equity and investment fund shares				68.6	68.6		68.6
		84		84		84	F63	Pension entitlements		84			84		84
	8.2			8.2		8.2	F64	Claim of the pension fund on sponsor	8.2				8.2		8.2
							B90	*Net worth*	*-8.2*	*0.0*	*84*	*-75.8*	*0..0*		*0.0*

Annex 4: Numerical example of the transactions with an overfunded scheme

The example has the same starting point as in Annex 3, but with the only difference that the assets in the pension scheme are equal to 88 (deposits still being 5 units, but equity now being 83 units):

- At the start of the period the defined benefit pension fund has a pension liability towards households for the amount of 80 units.
- The assets of the pension fund at the beginning of the period consist of deposits (5 units) and equity (83 units). As the assets exceed the pension entitlements, the sponsor has a claim on the pension fund at the start of the period of 8 units.
- During the period the unwinding of the discount factor (5%) leads to an increase of the entitlements of 4 units.
- The investment return of the pension fund consists of actual property income (D4) of 2.2 units and holding gains of 1.6 units. For simplicity, it is assumed that this property income is payable by other resident sectors.

Option 1: Imputed property income flow from sponsor to pension fund equal to the shortfall of property income.

In the first option, the shortfall of property income (i.e. 1.8) will still be recorded as imputed property income payable by the sponsor to the fund, in line with the recommendations by the Financial Handbook. However, it will lead to a negative financial transaction with regard to the claim as it is now a decrease of the claim of the sponsor on the pension fund. Furthermore, the revision of the claim should also be recorded on the assets side of the sponsor, so will show up as a positive value.

That will lead to the following recordings:

Uses															**Resources**
Employers	**Defined benefit pension funds**	**Households**	**Other sectors**	**Total economy**	**Goods and services**	**Total**	**2008 SNA code**	**Transactions and balancing items**	**Employers**	**Defined benefit pension funds**	**Households**	**Other sectors**	**Total economy**	**Goods and services**	**Total**
Allocation of primary income account															
1.8			2.2	4.0		4.0	D4	Property income		4.0			4.0		4.0
	4.0			4.0		4.0	D442	Investment income payable on pension entitlements			4.0		4.0		4.0
-1.8	0.0	4.0	-2.2	0.0		0.0	B5g	Balance of primary income, gross/National income, gross							
Secondary distribution of income account															
		4.0		4.0		4.0	D61	Net social contributions		4.0			4.0		4.0
		4.0		*4.0*		*4.0*	*D6141*	*Household pension contribution supplements*		*4.0*			*4.0*		*4.0*
-1.8	4.0	0.0	-2.2	0.0		0.0	B6g	Disposable income, gross							
Use of disposable income account															
	4.0			4.0		4.0	D8	Adjustment for change in pension entitlements			4.0		4.0		4.0
-1.8	0.0	4.0	-2.2	0.0		0.0	B8	Saving							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Opening balance sheet: assets															**Opening balance sheet: liabilities**
	5.0		5.0	10		10	F2	Currency and deposits				10	10		10
	83			83		83	F5	Equity and investment fund shares				83	83		83
		80		80		80	F63	Pension entitlements		80			80		80
8.0				8.0		10.0	F64	Claim of the pension fund on sponsor		8.0			8.0		8.0
							B90	*Net worth*	*8.0*	*0.0*	*80.0*	*-88.0*	*0.0*		*0.0*
Financial account															
							B9	Net lending (+)/net borrowing (-)	-1.8	0.0	4.0	-2.2	0.0		0.0
	2.2		-2.2	0.0		0.0	F2	Currency and deposits							
		4.0		4.0		4.0	F63	Pension entitlements		4.0			4.0		4.0
-1.8				-1.8		-1.8	F64	Claim of the pension fund on sponsor		-1.8			-1.8		-1.8
-1.8				-1.8		-1.8		*From past service increase*		-1.8			-1.8		-1.8
Revaluation account															
	1.6			1.6		1.6	F5	Equity and investment fund shares				1.6	1.6		1.6
1.6				1.6		1.6	F64	Claim of the pension fund on sponsor		1.6			1.6		1.6
Closing balance sheet: assets															**Closing balance sheet: liabilities**
	7.2		2.8	10		10	F2	Currency and deposits				10	10		10
	84.6			84.6		84.6	F5	Equity and investment fund shares				84.6	84.6		84.6
		84		84		84	F63	Pension entitlements		84			84		84
7.8				7.8		7.8	F64	Claim of the pension fund on sponsor		7.8			7.8		7.8
							B90	*Net worth*	*7.8*	*0.0*	*84*	*-91.8*	*0.0*		*0.0*

Option 2: Imputed property income flow on the basis of the existing claim between sponsor and pension fund

In the second option, a property income flow will be recorded from the fund to the sponsor on the basis of the existing claim times the discount factor (i.e. 0.4), in line with the recommendations by the paper presented to the AEG in 2014. That means that in option 2 it is recorded as a resource of the sponsor and a use for the pension fund (in contrast to option 1). It is recorded as a financial transaction that increases the claim. As the total investment return (property income and holding gains) falls short of the unwinding of the discount factor on the total assets), there is a negative revaluation, decreasing the claim with 0.6.

That will lead to the following recordings:

Uses | **Resources**

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Allocation of primary income account															
	0.4		2.2	2.6		2.6	D4	Property income	0.4	2.2			2.6		2.6
			2.2	*2.2*		*2.2*		*Actual property income*		*2.2*			*2.2*		*2.2*
	0.4			*0.4*		*0.4*		*Property income on claim on sponsor*	*0.4*				*0.4*		*0.4*
	4.0			4.0		4.0	D442	Investment income payable on pension entitlements			4.0		4.0		4.0
-0.4	-1.4	4.0	-2.2	0.0		0.0	B5g	Balance of primary income, gross/National income, gross							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Secondary distribution of income account															
		4.0		4.0		4.0	D61	Net social contributions		4.0			4.0		4.0
		4.0		*4.0*		*4.0*	*D6141*	*Household pension contribution supplements*		*4.0*			*4.0*		*4.0*
0.4	*1.8*	0.0	-2.2	0.0		0.0	B6g	Disposable income, gross							
Use of disposable income account															
	4.0			4.0		4.0	D8	Adjustment for change in pension entitlements			4.0		4.0		4.0
0.4	-2.2	4.0	-2.2	0.0		0.0	B8	Saving							

Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total	2008 SNA code	Transactions and balancing items	Employers	Defined benefit pension funds	Households	Other sectors	Total economy	Goods and services	Total
Opening balance sheet: assets															**Opening balance sheet: liabilities**
	5.0		5.0	10		10	F2	Currency and deposits				10	10		10
	83			83		83	F5	Equity and investment fund shares				83	83		83
		80		80		80	F63	Pension entitlements		80			80		80
8.0				8.0		10.0	F64	Claim of the pension fund on sponsor		8.0			8.0		8.0
							B90	*Net worth*	*8.0*	*0.0*	*80.0*	*-88.0*	*0.0*		*0.0*
Financial account															
							B9	Net lending (+)/net borrowing (-)	*0.4*	-2.2	4.0	-2.2	0.0		0.0
	2.2		-2.2	0.0		0.0	F2	Currency and deposits							
		4.0		4.0		4.0	F63	Pension entitlements		4.0			4.0		4.0
0.4				0.4		0.4	F64	Claim of the pension fund on sponsor		0.4			0.4		0.4
0.4				*0.4*		*0.4*		*From interest on the claim*		*0.4*			*0.4*		*0.4*
Revaluation account															
	1.6			1.6		1.6	F5	Equity and investment fund shares				1.6	1.6		1.6
-0.6				-0.2		-0.2	F64	Claim of the pension fund on sponsor		-0.6			-0.2		-0.2
Closing balance sheet: assets															**Closing balance sheet: liabilities**
	7.2		2.8	10		10	F2	Currency and deposits				10	10		10
	84.6			84.6		84.6	F5	Equity and investment fund shares				84.6	84.6		84.6
		84		84		84	F63	Pension entitlements		84			84		84
7.8				7.8		7.8	F64	Claim of the pension fund on sponsor		7.8			7.8		7.8
							B90	*Net worth*	*7.8*	*0.0*	*84*	*-91.8*	*0.0*		*0.0*