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Agenda item: 2.4

Imputation of property income in the case of liabilities between the sponsor and the pension fund

Introduction

The 2008 SNA states that when a pension plan sponsor is responsible for meeting the liabilities of the fund in case of any shortfall, the shortfall should be recorded as a claim of the fund on the sponsor. As a consequence, the net worth of the pension fund should remain exactly zero at all times. Under the 2008 SNA, the unwinding of the discount factor on the pension entitlement is shown as property income flowing from the pension fund to households. If the pension fund is persistently underfunded, however, the unwinding of the discount factor also applies to the claim of the fund on the sponsor, suggesting that a property income flow should be recorded from the sponsor to the pension fund reflecting the unwinding of the discount factor on any underfunding of the pension scheme.

Documentation

A paper on: Imputation of property income in the case of liabilities between the sponsor and the pension fund

Main issues to be discussed

The AEG is requested express their views on the following questions:

- Does the AEG agree that a property income transaction between the pension fund and the pension sponsor should be recorded to reflect the effects of the unwinding of the discount factor when the pension fund is underfunded or overfunded?
- Does the AEG agree that property income flow from the fund to the sponsor should be recorded in the case of overfunding, symmetrically with the proposed treatment for underfunding?
- Does the AEG agree with the proposed methodology for calculating the property income transaction, using the same discount factor that is used in calculating the property income payable on pension entitlements?
- Does the AEG agree with the proposed modification of Table 17.8 to explicitly show costs of production and with substituting the term “pension sponsor” for “pension manager”?

Imputation of property income in the case of liabilities between the sponsor and the pension fund

The 2008 SNA recognizes that pension entitlements derived from employment-related defined benefit plans are contractual agreements that should be treated as liabilities of the pension managers (or "sponsors") and assets of households, regardless of whether the pension plan is fully funded. It recommends that the financial accounts and balance sheets should show an explicit liability of the pension fund to the employee with respect to the pension entitlement, and that any excess of the liabilities over the available assets may represent a claim on the sponsor.

The claims of pension funds on the sponsor need to adjust period by period in response to any transactions or other changes in assets that cause the assets and liabilities of the pension fund to change, in order that the net worth of the plan should remain exactly zero at all times. In the case that a pension fund is underfunded or overfunded, one source of changes in the claims of pension funds on the sponsor is the "unwinding of the discount factor" on the pension entitlements. If a pension fund is underfunded and 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 general principle in the SNA is that changes in assets or liabilities that are solely due to the unwinding of the discount factor should be recorded as property income.

This paper proposes the accounts should show an explicit property income transaction between the sponsor and the pension fund during periods when the pension is underfunded or overfunded. When the pension fund is underfunded (that is, the pension entitlements exceed the financial assets held by the pension fund, leading to a claim of the pension fund on the sponsor), we propose that accounts should show an imputed interest flow from the sponsor to the pension fund equal to the discount rate that is used in calculating the pension entitlements times the claim of the pension fund on the sponsor. Conversely, when the pension fund is overfunded, the accounts would show an imputed interest flow from the pension fund to the sponsor calculated using the same discount rate.

I. Introduction

1. The *System of National Accounts 2008* (2008 SNA) recognizes that pension entitlements derived from employment-related defined benefit plans are contractual agreements that should be treated as liabilities of the "pension managers" (referred to in this paper as "sponsors")[1] and assets of households, regardless of whether the pension plan is fully funded. It recommends that the employer's contribution should be based on accrual principles, calculated as the increase in the net present value of the pension entitlement attributable to service to the employer in the period, after accounting for costs of operating the pension and for any contribution made by the employee. It also recommends that the financial accounts and balance sheets should show an explicit liability of the pension fund to the employee with respect to the pension entitlement, and that any excess of the liabilities over the available assets may represent a claim on the sponsor.

2. This paper first reviews the changes introduced by 2008 SNA. It then discusses possible clarifications or modifications to 2008 SNA guidance. In particular, it recommends that guidance should be added regarding the accrual of property income with respect to the claims of pension funds on sponsors for unfunded pension entitlements.

II. Background: 2008 SNA treatment of defined-benefit pension plans

3. The fundamental conceptual change to the treatment of defined-benefit pensions in 2008 SNA was to recognize that pension entitlements are long-term contractual agreements between employers and employees that are legally enforceable. The promise to pay a fixed pension benefit is recognized as a liability of the sponsor towards households, regardless of whether a pension fund exists that holds the necessary assets to fulfill those promises (2008 SNA A3.127, 11.107). Furthermore, accrual-based estimates of pension compensation and liability are to be based on actuarial calculations, which have now become standard in business accounting. 2008 SNA clarifies that the assets of the fund are regarded as belonging to the fund and not (as stated in 1993 SNA) as belonging to the employee, that an explicit liability of the pension fund to the employee for the actuarial pension entitlement should be shown in the financial account and balance sheet, and that a liability for any underfunding should be recorded as a claim of the pension fund on the plan manager, and a claim of the sponsor on the pension fund should be recorded for any overfunding. (2008 SNA 17.166)

4. An employer who offers a defined-benefit plan is obligated to pay future benefits according to a formula that usually is based on the level of pay and the time in service. Thus, with each additional year of service, there is an increase in the employee's pension entitlement.

[1] In 2008 SNA the unit that "retains the responsibility for any deficit in funding as well as the right to retain any excess funding" is referred to as the "pension manager." This usage of the term "pension manager" differs from the common usage of the term in the financial services industry, where it generally refers to the person or institutional unit engaged to manage the operations of the pension fund. In section IV, this paper suggests that the SNA substitute the term "pension sponsor" for improved clarity.

The claims to benefits accrued through service, also known as “normal cost,” are equal to the present value of the incremental addition to benefits accrued through the employee’s service during the period. The pension component of compensation of employees is calculated as the normal cost plus the service charge, less the employees’ actual contributions. In the numerical example, which is shown in Table 1 (which is based on Table 17.8 of 2008 SNA), the normal cost is 15.0, the employees’ actual contribution is 1.5, and the service charge is 0.6, so the pension component of compensation of employees is calculated as 14.1 = 15.0 + 0.6 – 1.5. As seen in Table 1, 2008 SNA introduced a new transaction for “employers’ imputed pension contributions,” which is calculated residually as the total (actuarially derived) pension compensation less the employers’ actual contributions (that is, 4.1 = 14.1 – 10.0).

5. The next change introduced in 2008 SNA is that the property income attributable to policyholders has been renamed as “property income payable on pension entitlements.” Furthermore, the calculation has been changed, so that the property income payable to households is no longer equal to the investment income received by the pension fund, but instead is equal to the increase in pension entitlement coming from past service, due to the effects of discounting the previously existing pension entitlement for one less period (the “unwinding of the discount factor”). In Table 1, the result of this change in calculation is to attribute more property income to households under 2008 SNA (4.0) than under 1993 SNA (2.2), presumably because the discount rate being applied to the pension fund is larger than the investment return recognized by the system.[2]

6. The other changes in the numerical example largely flow from these first two. The employers’ imputed pension contributions are included along with other contributions in the secondary distribution of income account. The pension contribution supplements are equal to the property income payable on pension entitlements, which in turn reflect the unwinding of the discount factor. Both of these changes are reflected in the adjustment factor in the use of income account, which has been renamed as the “adjustment for the change in pension entitlements.” The name change reflects the idea that the pension assets held by households are the entitlements to future pension benefits, rather than the assets of the pension fund.

7. In the secondary distribution of income account in Table 1, the household total pension contributions (19.0) in the secondary distribution of income account equal the sum of employers’ actual pension contributions (10.0), employers’ imputed pension contributions (4.1), employees’ actual pension contributions (1.5), and household pension contribution supplements (4.0), *less* pension scheme service charges (0.6). The adjustment for the change in pension entitlements in the use of income account is equal to total household contributions in respect of pensions *less*

[2] The discount rate used in actuarial calculations will typically be larger than the rate of return implied by the plan’s investment income because the SNA excludes returns on investment that are due to holding gains. Pension funds usually invest a substantial portion of their assets in equity shares, so a substantial portion of their returns to investment are expected to come in the form of holding gains. (Note that *expected* holding gains have effects on the discount rate, and thereby on saving, even though actual holding gains and losses are excluded from the system.)

pension benefits payable (in the Table 19.0 – 16.0 = 3.0). Note that the saving of the pension fund (–1.8) is no longer equal to zero, as under 1993 SNA, but is equal to the difference between property income received by the fund (2.2) *less* the property income payable on pension entitlements (4.0).

8. In the financial account, the same amount—total household contributions *less* benefits—appears as the change in pension entitlements, representing the claim of households on the pension fund. Changes in pension entitlements due to other factors, such as changes in the discount rate or other assumptions that enter the actuarial formulas, are generally recorded in the other changes in assets account, though certain plan amendments could be classified as current or capital transfers.

9. In the balance sheet, the pension entitlements for defined-benefit plans are based on an actuarial estimate of the liabilities of the sponsor (paragraphs 13.78, 17.147). If the sponsor (usually, though not necessarily, the employer) is responsible for meeting the liabilities of the fund in case of any shortfall, a shortfall—whether due to the increase in pension entitlements, contributions and contribution supplements, investment income, or holding gains or losses—should be recorded as a claim of the fund on the sponsor. Similarly, when the assets held by the pension fund exceed the pension entitlements, the excess should be shown as a claim of the sponsor on the pension fund. In the United States, for example, the sponsor generally cannot withdraw such an excess from the fund without incurring a large tax penalty, but the surplus does allow the sponsor to take a "contribution holiday" and refrain from contributing until the fund's assets and liabilities are again in balance. Thus, any claim of the sponsor on the pension fund functions analogously to a prepayment. Overfunding provides economic benefits to the sponsor and is recognized as an asset, even if the excess is seldom withdrawn from the fund. Consequently, when a sponsor exists, the net worth of the pension fund should remain exactly zero at all times, as any shortfall or excess is immediately offset by a change in the claim of the pension fund on the sponsor (paragraph 17.165). However, as we will discuss below, 2008 SNA is somewhat unclear regarding how these changes in the claim of the pension fund on the sponsor should be recorded, with the exception of employers' imputed pension contributions, which are fully described in its example in Chapter 17.

10. With respect to non-autonomous pension funds and unfunded pension plans, 2008 SNA provides only limited guidance. It states that "employment-related pension entitlements are contractual engagements, that are expected or likely to be enforceable. They should be recognized as liabilities towards household, irrespectively of whether the necessary assets exist in segregated schemes or not" (paragraph A3.127). If a fund exists but is part of the same institutional unit as the employer, it should be recorded in the sector where the fund is located. If a fund does not exist, a notional fund is recorded in the employer's sector (paragraph 17.131, 17.149). 2008 SNA also allows for flexibility in the case of unfunded pension schemes sponsored by government via social security for all employees. Recognizing that in these cases

reliable estimates of the entitlements may not be readily available and the government may possibly change the basis for determining pension benefits, it allows countries with these types of schemes to present information about pensions in a supplementary table rather than in the core accounts (paragraphs 17.191–17.206). With those exceptions, the recommendations for recording pension entitlements for non-autonomous and unfunded plans appear to be the same as for autonomous funds.

III. Issue of property income on plans' claims on sponsor

11. As noted in paragraph 9 above, paragraph 17.165 states that the claims of pension funds on the sponsor need to adjust period by period in response to any transactions or other changes in assets that cause the assets and liabilities of the pension fund to change, in order that the net worth of the plan should remain exactly zero at all times. However, it does not indicate (except in the case of employers' imputed pension contributions) how that adjustment should take place. There seem to be three possibilities: property income, other changes in volume of assets, or revaluation. (We have ruled out the possibility of the adjustment appearing in the employers' imputed pension contributions because 2008 SNA is very clear that this item should only represent the difference between the actuarial value of the pension entitlement earned in the period and the employers' actual contribution; see, for example, paragraphs 17.146, 17.152–17.153.)

12. A number of factors contribute to fluctuations in a pension fund's assets, such as market fluctuations in property income received and holding gains and losses on those assets. It seems reasonable that the effects of those types of fluctuations on the claims of pension funds on the sponsor should be treated as revaluations.

13. However, when a plan is underfunded, another factor that is predictable is the unwinding of the discount factor on the pension entitlements. 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. For example, if a pension fund owes pension entitlements of 100, has a discount factor of 4 percent, and is 55 percent funded, then even if the fund's assets earn property income at a 4 percent rate (with no holding gains or losses), the property income earned (2.2) will fall short of the increase in pension entitlements due to the unwinding of the discount factor (4.0), which 2008 SNA records as property income payable on pension entitlements. 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.

14. The general principle in the SNA is that the unwinding of the discount factor should be recorded as property income, with the classic example being the treatment of zero-coupon bonds (paragraphs 17.270–17.272). Indeed, another example is the SNA's recommended treatment of property income payable on pension entitlements, which also represents the unwinding of the discount factor for households' pension entitlements. The example shown in Chapter 17 does not

show a property income transaction between the sponsor and the pension fund with respect to any underfunding or overfunding, however, but this seems to have been an oversight, perhaps based on an assumption that pension funds are normally fully funded. However, periods of persistent underfunding may not be uncommon, so the issue should not be overlooked. In the United States, for example, public sector pensions have been persistently underfunded for long periods (see Chart 1).

15. We suggest that the accounts should show an explicit property income transaction between the sponsor and the pension fund during periods when the pension is underfunded or overfunded. When the pension fund is underfunded (that is, the pension entitlements exceed the financial assets held by the pension fund, leading to a claim of the pension fund on the sponsor), we propose that accounts should show an imputed interest flow from the sponsor to the pension fund equal to the discount rate that is used in calculating the pension entitlements times the claim of the pension fund on the sponsor. Conversely, when the pension fund is overfunded, the accounts would show an imputed interest flow from the pension fund to the sponsor calculated using the same discount rate.

16. The effects of this suggested modification of the SNA example are illustrated in Table 2. As seen in the allocation of primary income account, we have added a line for "imputed property income on plans' claims on sponsors." We suggest that the same discount rate that is used in the calculation of pension entitlements can be used to calculate imputed interest transactions for any claims of pension funds on their sponsors due to under- or overfunding. The value shown in this line (1.1) is calculated as the discount factor used for the calculation of pension entitlements times the value of claim of the pension fund on the sponsor.

17. In the case of an overfunded plan, the claim of the pension fund on the sponsor will be negative, in which case the imputed interest would flow from the pension fund to the sponsor. It represents property income payable by the sponsor and receivable by the pension fund to reflect the unwinding of the discount factor on the portion of the pension entitlements that are not funded by other assets of the pension fund. In effect, the sponsor's failure to fully fund its pension obligations is similar to a loan from the pension fund to the sponsor.

18. It is important to recognize that the imputed property income is not a purely hypothetical expense for the sponsor or sponsor. If the sponsor persistently fails to adequately fund a pension plan for a long period of time, eventually it will have to make large catch-up contributions in order to meet its benefit obligations. An example of such a situation occurs in the United States for the pension plans that the federal government provides to its employees. As seen in Chart 1, the federal government pension plans have been persistently underfunded, with financial assets that represent only about 40% of pension obligations. As a consequence, the federal government's actual contributions have greatly exceeded the employer's cost for the benefits accrued the service, which is recorded as compensation of employees under 2008 SNA, resulting

in large negative imputed pension contributions. If the system does not record imputed property income on plans' claims on sponsors, the adoption of 2008 SNA would result in a large improvement in the federal government's recorded fiscal balance due to the underfunding of the pension plans, which would be wholly inconsistent with the actual effects of the underfunding.[3] Interestingly, the magnitude of the imputed property income on the plans claims on the U.S. federal government, as sponsor, are almost exactly equal and offsetting to the negative imputed pension contributions (about 0.6% of GDP). This result emphasizes the importance of showing the imputed property income, because persistent deficits in contributions must eventually be repaid by large catch-up cash contributions. This example illustrates that a system that uses accrual methods for contributions also needs to take account of accrued property income to maintain consistency of the estimates.

IV. Other suggested clarifications to terminology and presentation

19. This section includes two other minor suggestions that do not affect the substantive accounting treatment, but rather are intended to improve the clarity of the presentation of the treatment of defined benefit pensions in *2008 SNA.*

20. The numerical illustration in Table 1 reproduces the example appearing in Table 17.8 of *2008 SNA.* However, the accounts for the pension fund shown in that table are not identical to Table 17.8, which shows the pension fund having output of 0.6, but it does not show any costs of production. In practice, the output of pension funds are usually based on the sum of costs of production, and the example would be clearer, and would better illustrate the effects of the treatment on pension fund saving, if the costs of production were explicitly shown. The costs could take the form of intermediate consumption, when a pension fund pays a financial management enterprise to operate the fund, or as value added and compensation of employees if the fund is managed and operated by its own employees.

21. The other suggested modification is in terminology. As noted in footnote 1 above, *2008 SNA* describes the institutional unit that "retains the responsibility for any deficit in funding as well as the right to retain any excess funding" as the "pension manager." In the financial services industry, however, the term "pension manager" is generally used to refer to institutional units that contract with pension funds to administer the fund's investments and other operations, or in the case of self-administered funds, to the employees who manage the fund's investments. To avoid confusion, we suggest that it may be preferable to substitute the term "pension sponsor" to refer to the unit that is responsible for any deficit in funding. A pension plan's sponsor is usually the employer, though it may also be a labor union, an industry association, or other unit, especially in the case of multi-employer plans.

[3] In its implementation of the 2008 SNA treatment of defined-benefit pensions in 2013, the U.S. Bureau of Economic Analysis has already adopted the treatment of imputation of interest on pension funds' claims on sponsors that is proposed in this paper.

22. The effects of these modifications of the *SNA* example are also illustrated in Table 2. As seen in the allocation of primary income account, we have added a line for "imputed property income on plans' claims on sponsors." The value shown in this line (1.1) is calculated as the discount factor used for the calculation of pension entitlements times the value of claim of the pension fund on the sponsor. In the case of an overfunded plan, the claim of the pension fund on the sponsor will be negative, in which case the imputed interest would flow from the pension fund to the sponsor. It represents property income payable by the pension sponsor and receivable by the pension fund to reflect the unwinding of the discount factor on the portion of the pension entitlements that are not funded by other assets of the pension fund. In effect, the sponsor's failure to fully fund its pension obligations is similar to a loan from the pension fund to the pension plan sponsor.

23. In order to show costs of production, we have added an entry for intermediate consumption of 0.6, assuming that the pension fund outsources all of its management and other production activities to an external administrator. (This assumption reflects the most common situation with respect to pension funds in the United States, for example, where most pension funds contract with financial advisors to administer their funds.)

V. **Recommendations**

24. This paper recommends the following modifications and clarifications to 2008 SNA:

A. A property income transaction, in the form of imputed interest, should be explicitly recorded, whenever there is a pension sponsor that is ultimately responsible for the pension entitlements and the pension fund is underfunded or overfunded.

B. When the pension fund is underfunded (that is, the pension entitlements exceed the financial assets held by the pension fund, leading to a claim of the pension fund on the sponsor), we accounts should record an imputed interest flow from the sponsor to the pension fund equal to the discount rate that is used in calculating the pension entitlements times the claim of the pension fund on the sponsor.

C. When the pension fund is overfunded, the accounts should show an imputed interest flow from the pension fund to the sponsor calculated using the same discount rate.

D. We suggest that Table 17.8 would be clearer if the example explicitly showed the costs of production associated with the pension fund's output (for example, by showing intermediate consumption equal to output).

E. We suggest that the terminology might be clarified if the term “pension sponsor” were used instead of “pension manager” for the institutional unit that is responsible for the liabilities of the pension scheme.

VI. Questions for discussion:

- Does the AEG agree that a property income transaction between the pension fund and the pension sponsor should be recorded to reflect the effects of the unwinding of the discount factor when the pension fund is underfunded or overfunded?

- Does the AEG agree that property income flow from the fund to the sponsor should be recorded in the case of overfunding, symmetrically with the proposed treatment for underfunding?

- Does the AEG agree with the proposed methodology for calculating the property income transaction, using the same discount factor that is used in calculating the property income payable on pension entitlements?

- Does the AEG agree with the proposed modification of Table 17.8 to explicitly show costs of production and with substituting the term “pension sponsor” for “pension manager”?

Table 1. Treatment of defined-benefit pensions under *2008 SNA*

Uses: Employer	Uses: Pension fund	Uses: Households	Uses: Other sectors	Uses: Total economy		Resources: Employer	Resources: Pension fund	Resources: Households	Resources: Other sectors	Resources: Total economy
					Production account					
					Output		0.6			0.6
					Generation of income account					
10.0				10.0	Employers' actual pension contributions					
4.1				**4.1**	**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**
			2.2	2.2	Property income		2.2			2.2
	4.0			**4.0**	Property income **payable on pension entitlements**			**4.0**		**4.0**
					Secondary distribution of income account					
		19.0		19.0	Household total pension contributions		19.0			19.0
		10.0		10.0	= Employers' actual pension contributions		10.0			10.0
		4.1		**4.1**	**+ Employers' imputed pension contributions**		**4.1**			**4.1**
		1.5		1.5	+ Household actual pension contributions		1.5			1.5

		4.0		**4.0**	+ Household pension contribution supplements		**4.0**			**4.0**
		-0.6		-0.6	– Pension scheme service charges		-0.6			-0.6
	16.0			16.0	Pension benefits			16.0		16.0
					Use of income account					
		0.6		0.6	Final consumption expenditure					
	3.0			**3.0**	Adjustment **for the change in pension entitlements**			**3.0**		**3.0**
-14.1	-1.2	17.5	-2.2	0.0	*Saving*					
Change in assets									Change in liabilities	
					Financial account					
					Net borrowing/lending	-14.1	-1.2	17.5	-2.2	0.0
		3.0		**3.0**	Change **in pension entitlements**		**3.0**			**3.0**
	4.1			**4.1**	Claim of pension fund on pension sponsor	**4.1**				**4.1**
-10.0	-2.3	14.5	-2.2	0.0	Other financial assets					

Source: *2008 SNA*, Table 17.8.

Note: Changes from *1993 SNA* are shown in **bold** typeface.

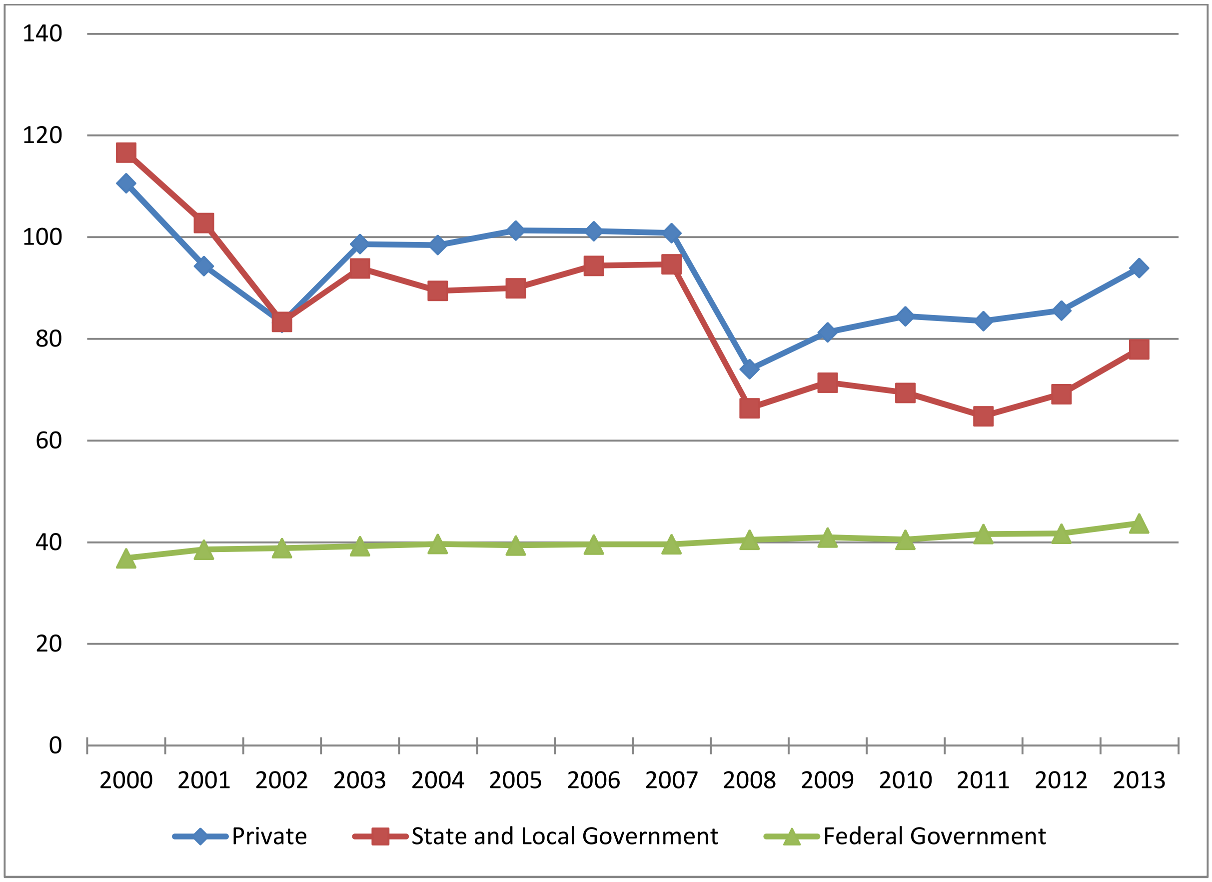
Table 2. Suggested treatment of defined-benefit pensions under *2008 SNA*

Uses										Resources
Employer	Pension fund	Households	Other sectors	Total economy		Employer	Pension fund	Households	Other sectors	Total economy
					Production account					
					Output		0.6		**0.6**	1.2
	0.6			**0.6**	**Intermediate consumption**					
					Generation of income account					
10.0				10.0	Employers' actual pension contributions					
4.1				4.1	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
			2.2	2.2	Property income		2.2			2.2
1.1				**1.1**	**Imputed property income on plans' claims on sponsors**		**1.1**			**1.1**
	4.0			4.0	Property income payable on pension entitlements			4.0		4.0
					Secondary distribution of income account					
		19.0		18.3	Household total pension contributions		19.0			18.3
		10.0		10.0	= Employers' actual pension contributions		10.0			10.0
		4.1		4.1	+ Employers' imputed pension contributions		4.1			4.1
		1.5		1.5	+ Household actual pension contributions		1.5			1.5
		4.0		**3.3**	+ Household pension contribution supplements		4.0			**3.3**
		-0.6		-0.6	– Pension scheme service charges		-0.6			-0.6

	16.0			16.0	Pension benefits			16.0		16.0
					Use of income account					
		0.6		0.6	Final consumption expenditure					
	3.0			3.0	Adjustment for the change in pension entitlements			3.0		3.0
-15.2	-0.7	17.5	-1.6	0.0	*Saving*					
Change in assets										Change in liabilities
					Financial account					
					Net borrowing/lending	-15.2	-0.7	16.8	-1.6	0.0
		3.0		3.0	Change **in pension entitlements**		3.0			3.0
	5.2			**5.2**	**Claim of pension fund on pension sponsor**	**5.2**				**5.2**
-10.0	-2.9	14.5	-1.6	0.0	Other financial assets					

Note: Modifications of *2008 SNA* are shown in **bold** typeface.

Chart 1. Shares of Defined-Benefit Pension Plans Funded by Assets, by Sector
United States, 2000–2013



Sources: Federal Reserve Board, financial accounts of the United States, tables L.117 to L.119.