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#### COMPILATION OF ACCRUED-TO-DATE PENSION ENTITLEMENTS IN THE CONTEXT OF ESA 2010

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## COMPILATION OF ACCRUED-TO-DATE PENSION ENTITLEMENTS IN THE CONTEXT OF ESA 2010

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### 1. Overview

The 1993 SNA and ESA 95 recognised pension obligations only for funded “private” schemes. Hence, the activities of many pension schemes, such as social security and unfunded employer schemes, did not lead to recognition of financial assets/liabilities. As the set-up of pension schemes, funded or unfunded, private or public, differs from country to country the information on pension entitlements provided by national accounts was neither fully comparable nor comprehensive.

The 2008 SNA and ESA 2010 recognise that employment-related pension entitlements are contractual engagements that are expected to be enforceable. Hence, a supplementary table has been introduced into the accounts, to allow estimates to be recorded for all pension entitlements in social insurance, whether funded or unfunded.

The ESA 2010 foresees a number of changes to the ESA 95 recommendations in the case of defined benefit schemes. The most important change is that the level of the pension contribution should be determined by assessing the increase in the net present value of the pension entitlement the employee has earned in the period in question. The calculation of these pension entitlements is based on actuarial methods and assumptions. In order to provide guidance leading to a comparable calculation of pension entitlements a methodological guidance manual has been produced by Eurostat and the European Central Bank. The "Technical Compilation Guide for Pension Data in National Accounts" was published in January 2012.

Data on pension obligations are part of the Transmission Programme of ESA 2010. The Member States of the EU will transmit the table “Accrued-to-date pension entitlements in social insurance” on a mandatory basis for the first time by the end of 2017 (see annex). In the future the work of statisticians on the one hand and of experts on ageing populations will be closely coordinated, at both national and European levels, with respect to macroeconomic assumptions and other actuarial parameters in order to ensure consistency and cross-country comparability of the results. In this respect, it should also be made clear that accrued-to-date pension entitlements in social insurance are not as such a measure of the sustainability of public finances.

### 2. Methodological guidance and documentation

With respect to *the methodological work*, the Task Force on the statistical measurement of the assets and liabilities of pension schemes in general government developed, and took forward, an international compromise on the treatment of pension schemes in the SNA 2008. This compromise particularly focused on the treatment of unfunded government pension schemes, introducing flexibility in the recording of their entitlements. However, ESA 2010, a legally binding regulation which will be applied by all Member States of the European Union, has to provide more detailed guidance regarding the recording of unfunded

government pension schemes. ESA 2010 stipulates that entitlements with respect to these government schemes are recorded in a supplementary table only.

Furthermore, the Task Force agreed on the coverage of the supplementary table, taking into account old age pensions in social insurance only. Individual insurance claims taken out independently of the employer or government, social assistance, health and long-term care are not part of this table. The coverage of the table is reflected in the name of the ESA 2010 pension table: "Accrued-to-date pension entitlements in social insurance".

The *practical statistical estimation* of defined benefit pension entitlements (for past periods) requires model estimates of the outstanding stocks and the related transactions, revaluations and other changes in the volume of assets. In this context, the Task Force made several recommendations which are taken into account in the section on actuarial assumptions of chapter 17 of ESA 2010. Further advice is provided in the Technical Compilation Guide for Pension Data in National Accounts<sup>1</sup>.

### 3. Mains issues for the practical calculation of pension entitlements

#### 3.1 The discount rate

The single most important actuarial assumption is the discount rate. The ECB/Eurostat Task Force agreed that the discount rate should predominantly be based on yields on central government bonds (where the market is sufficiently liquid and the instruments are sufficiently mature) or, exceptionally, high quality corporate bonds. ESA 2010 recommends a risk-free rate:

*Some criteria for identifying suitable rates are given in the following sentences. The discount rate on high quality government and corporate bonds, e.g. of "AAA"-rating provides an appropriate reference. Yields for high quality corporate bonds are only used where the markets are broad. The bonds are to be of a residual maturity of the same order as the pension entitlements. The use of a discount rate based on a long-term maturity, where long-term is taken to be 10 years or longer, is recommended. The average of several years of the discount rate, linked to the length of the economic cycle, can be applied to smooth the time series of the discount rate. The assumption on the discount rate and the future development of wages should be consistent. Member states are required to provide the elements demonstrating the validity of the discount rate used for pension entitlements in the light of the various criteria mentioned above.*

The Technical Compilation Guide for Pension Data in National Accounts recommends setting the discount rate at three per cent in real terms and five per cent in nominal terms. This should considerably improve the comparability of results across EU countries.

This decision is based on the considerations of the European Commission (DG ECFIN) and the Ageing Working Group which was set up by the Economic Policy Committee (EPC). It was decided to assume a constant real interest rate in the projections of the baseline scenario with a value of 3.0% over the entire projection period and to run a sensitivity test on the interest rate. While interest rate developments have not been stable over time, rates have been close to 3% in most European countries and the US over the long term. Over the last forty years (1969-2009), average real interest rates have ranged from around 2.4% to 3.7% in most EU countries and the US. As shown in in the Table below, average rates were 3.7% in Belgium and Germany, between 3 and 3.4% in Austria, Finland, France and the Netherlands, and below

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<sup>1</sup> The technical compilation guide for pension data is available for download under the following URL: [http://epp.eurostat.ec.europa.eu/portal/page/portal/product\\_details/publication?p\\_product\\_code=KS-RA-11-027](http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-RA-11-027)

3% in Ireland, Italy, Sweden and the UK. Over the same time interval an average rate of 3% was reported for the US.

Table - *Average real long-term interest rates (1969-2009)*

1969-2009	AT	BE	DE	DK	FI	FR	IE	IT	NL	SE	UK	US
Real interest rate	3.4	3.7	3.7	4.6	3.1	3.0	2.6	1.8	3.2	2.8	2.4	3.0

Source: Ameco database.

Note: the real long-term interest rate corresponds to an aggregate measure of government bond yields (generally 10-year maturity), deflated using the GDP deflator. Data for Western Germany until 1991; data for IE from 1971.

### 3.2 Wages: ABO vs. PBO

Defined benefit pension schemes apply a formula to the member's salary (whether final salary, an average of a period of years or lifetime earnings) to determine the level of pension. Hence, pensions paid will be affected by the growth of members' salaries (notably through promotions/career progression). It is therefore appropriate to consider what assumption might be made for the future development of wages.

One prudent approach is to assume that there is no future wage growth (whether nominal or real) – the Accumulated Benefit Obligation method (ABO). The ABO method is equivalent to members' pensions being determined on the basis of their current salary. The alternative approach is to make an explicit non-zero assumption for wage growth – the Projected Benefit Obligation method (PBO). The PBO method takes into account expected promotions and other real or nominal wage growth factors.

The discussion and the long list of possible approaches show that only a unique definition of ABO and PBO can assure comparability between countries. Due to their extremely heterogeneous treatment this aim cannot be reached for pension entitlements of occupational pension schemes. But for government pension schemes (columns G and H of the supplementary table) usually model calculations have to be undertaken and one common definition of entitlements should be chosen.

The choice between the two concepts will have a significant impact on the level of pension entitlements. Results are usually by 10 to 20% higher when applying PBO instead of ABO. Therefore, clear guidelines are needed in order to ensure comparability of results across pension schemes and also across EU countries. The International Public Sector Accounting Standards (IPSAS 25) recommends applying the PBO approach to measure pension obligations of defined benefit plans. Business accounting standards, in particular the International Accounting Standards 19 (IAS 19), also recommend the PBO approach. The ESA 2010 rules regarding the valuation methods; ABO vs. PBO; are in line with these international standards. Where the pension formula includes implicitly or explicitly a factor for wage increases then the PBO approach is followed. Where such a factor is not present an ABO approach is used.

## 4. Implementation of actuarial calculations in national accounts - Knowledge sharing in Europe

The practical calculation of accrued-to-date pension entitlements is a complex task. Data sources, models and institutional responsibilities vary from country to country. The ECB and Eurostat arranged several workshops on pensions and a training course in November 2012 in order to facilitate the implementation of actuarial calculations in national accounts.

The next pension workshop is expected to be organised in spring/summer 2014. The workshop will analyse the different institutional set-ups for the calculation of social security and government unfunded pension entitlements in Europe. The workshop will identify the pros and cons of the national approaches and provide further guidance for a comparable calculation of pension entitlements in Europe.

In the future the work of statisticians on the one hand and of experts on ageing populations working under the auspices of the Economic Policy Committee (EPC) on the other hand will be closely coordinated, at both national and European levels, with respect to macroeconomic assumptions and other actuarial parameters in order to ensure consistency and cross-country comparability of the results as well as efficient communication to users and stakeholders of the data and information related to pensions.

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Annex: Table "Accrued-to date pension entitlements in social insurance"

Relations	Code	Row No.	Core national accounts										Total Pension Schemes	Counter-parts Pension entitlements of non-residents
			S13X - Non-general government											
			S13 - General government											
Code	Column number	A	B	C	D	E	F	G	H	I	J			
												S12PC - Defined contribution schemes		S12P - Total
Opening balance sheet														
	XAF61.S	1	Pension entitlements (net contingent pension entitlements)											
Changes in pension entitlements due to transactions														
2.1 to 2.4 - 2.5	XP61P	2	Increase in pension entitlements due to social contributions											
	XP6111	2.1	Employer actual social contributions											
	XP6121	2.2	Employer imputed social contributions											
	XP6131	2.3	Household actual social contributions											
	XP6141	2.4	Household social contribution supplements <sup>9)</sup>											
	XP615C	2.5	Less: Pension schemes service charges											
	XP619	3	Other (actuarial) change of pension entitlements in social security pension schemes											
	XP62p	4	Reduction in pension entitlements due to payment of pension benefits											
2+3-4	XP8	5	Changes in pension entitlements due to social contributions and pension benefits											
	XP81	6	Transfers of pension entitlements between schemes											
	XP82	7	Changes in entitlements due to reorganised changes in scheme structure											
Changes in pension entitlements due to other flows														
	XP7	8	Changes in entitlements due to revaluations <sup>9)</sup>											
	XP5	9	Changes in entitlements due to other changes in volume <sup>9)</sup>											
Closing balance sheet														
1+ 2.5 to 9	XAF61.E	10	Pension entitlements (net contingent pension entitlements)											
	XP71	11	Retained indicator											

1) Such other non-defined contribution schemes, often described as hybrid schemes, have both a defined benefit and a defined contribution element.  
 2) Schemes organised by general government predominantly for its current and former employees.  
 3) These are non-autonomous defined benefit schemes whose pension entitlements are recorded in the standard accounts.  
 4) Counterpart data for resident and non-resident households will only be shown separately when pension relationships with the rest of the world are significant.  
 5) These supplements represent the return on members' claims on pension schemes, both through investment income on defined contribution schemes' assets and for defined benefit schemes through the unwinding of the discount rate applied.  
 6) A more detailed split of these positions has to be provided for columns G and H based on the model calculations carried out for these schemes.