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**Report on the 2010 update of the 2009 actuarial assessment of the  
Pension Scheme for European Officials (PSEO)**

**Accompanying document to the**

**Proposal for a Council Regulation adjusting, from 1 July 2010, the rate of contribution  
to the pension scheme of officials and other servants of the European Union**

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## 1. INTRODUCTION

Article 83a and Annex XII of the Staff Regulations set out rules to guarantee the equilibrium of the PSEO (Pension Scheme of European Officials).

Annex XII lays down rules for implementing Article 83a of the Staff Regulations. In particular, it stipulates that:

- Eurostat is the authority responsible for the technical implementation of the Annex (see Article 13(1)),
- Eurostat will be assisted by one or more qualified independent experts in carrying out the actuarial assessments (see Article 13(2)),
- each year on 1 September, Eurostat is to submit a report on the assessment and updating referred to in Article 1 of the Annex (see Article 13(3)),
- any questions of methodology raised by the implementation of the Annex shall be dealt with by Eurostat in cooperation with national experts from the relevant departments of the Member States and the qualified independent expert or experts (see Article 13(4)).

Eurostat has drawn up the present report in accordance with the above legal requirements. The second five-yearly actuarial assessment of the pension scheme of the European civil service was carried out in 2008. This report sets out the results of the 2010 update of this 2008 actuarial assessment, based on the population of European officials as at 31 December 2009.

The report provides the information needed by the Commission to propose, if necessary, changes to the staff contribution rate in order to ensure the balance of the scheme.

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## 2. CONTRIBUTION RATE

The 2010 actuarial assessment of the Pension Scheme for European Officials (PSEO) indicates that, in order to guarantee the equilibrium of the scheme, the contribution rate necessary to finance one third of the benefits payable would be **11.0%** of the basic salary (or invalidity or termination of service allowance). This actuarial assessment has been made in accordance with the agreed methodology. It was discussed by the Article 83 Working Group at the 30 June 2010 meeting and has been reviewed and approved by independent actuarial consultants.

The calculated contribution rate indicated above (11.0%) is one third of the ratio between the total of the service cost (1 181 million Euros) and the total of annual basic salaries (3 574 million Euros) (see Appendix I, Tables I and II). This rate is *lower* (-0.3%) than the one calculated in 2009 (11.3%). This change is analysed in point 4.

## 3. UPDATE OF THE ASSESSMENT OF THE ACTUARIAL BALANCE

The PSEO was assessed on the basis of the computation method set out in Chapter 2 of Annex XII of the Staff Regulations.

Compared to the 2009 assessment, some changes were introduced in the methodology, notably in the treatment of staff turnover and invalidity before retirement.

An updated document concerning the calculation methodology is available and can be obtained from Eurostat on request.

In addition, the following elements have been considered in the 2010 assessment:

- The population of contributing members at 31 December 2009,
- The update of Individual Salary Progressions (ISP), which are now decoupled from the issue of staff turnover.

More details about these updates are given in Appendix I.

## 4. ANALYSIS OF THE CONTRIBUTION RATE CHANGE

Changes to the pension contribution rate result from the combined effect of changes in the population structure, in actuarial assumptions and in the methodology. The separate impact of these changes in the officials' contribution rate change is not easy to determine due to their interdependency, although analysis of the actuarial assumptions allows a better understanding of the changes in contribution rate and its sensitivity to the various actuarial assumptions.

As indicated in point 1, the official's pension contribution rate calculated this year (11.0%) is *lower* than the one calculated in 2009 (11.3%). This decrease (-0.3 percentage points) is mainly explained by improvements in the methodology, notably in the incorporation of staff turnover (-0.2% percentage points), the update of the invalidity table (-0.1 percentage points) and by the fact that the Real Discount Rate (RDR) and the General Salary Growth (GSG) have, exceptionally this year, remained

stable. It should be remembered that past increases of the contribution rate in the period 2004 – 2009, from 9.75% to 11.3% (current applied rate) are mainly due to the progressive yearly decrease of the RDR from 3.9% (rate used in the 2004 assessment) to 2.8% (rate used in the 2009 assessment).

Changes in actuarial assumptions and their impact on the contribution rate were presented in detail at the 30 June 2010 meeting of the Article 83 Working Group (see document 20100624 Art83\_05).

#### **4.1. Real Discount Rate (RDR)**

The RDR (2.8%) used in 2010 calculation is the same as in the 2009 assessment. Consequently no effect is observed this year in the pension contribution rate.

#### **4.2. General Salary Growth (GSG)**

The GSG (0.3%) used in 2010 calculation is the same as in the 2009 assessment. Consequently no effect is observed this year in the pension contribution rate.

#### **4.3. Individual Salary Progression (ISP)**

In the 2010 calculation, staff turnover was treated as a separate issue from the ISP. In previous years the ISP tables for certain categories of staff had reflected the inherent tendency for staff turnover in these categories. Separate modelling of staff turnover in the 2010 calculation required a recalculation of ISPs, which reflected individual salary progressions over the time actually spent in service.

The share of staff with non-permanent employment contracts (most Temporary and Contract agents) in the total of active staff has increased significantly since 2004. The expected salary progression of these categories is smaller than that of officials due to their high turnover. In addition, Parliamentary Assistants, a new category included this year for the first time has an ISP equal to 0%. The improvements in the methodology to better integrate turnover and the new calculated ISP rates slightly decrease the service cost and thus the pension contribution rate to finance it.

The effect of using new ISP rates can not be isolated due to the implicit change in methodology. The impact of both elements (ISP and turnover computation) is explained in point 4.11.

#### **4.4. Invalidity table**

The table of probabilities of becoming an invalid was updated, with the most recently observed invalidity rates (2009) also being taken into account. The new invalidity table (2009 EU Invalidity table) is thus an average of 5 years invalidity rates (2005 – 2009). The use of this updated table has had an impact of around -0.1 percentage points. This impact is explained by the fact that the probability of becoming invalid by age according to the 2009 invalidity table has decreased in comparison with the 2008 version (see further explanation in appendix I, point 3.3). Consequently the service cost for invalidity to be financed by the pension contribution rate has decreased.

#### **4.5. Life table (healthy persons)**

According to the Staff Regulations the life table may be updated only on the occasion of the five-yearly actuarial assessment<sup>1</sup>. The current life table was updated on the occasion of the 2008 actuarial assessment and this table, 2008 ICSLT, must be used at least until the next five-yearly assessment in 2013.

The life table used in the 2010 calculation is thus identical to that used in the 2008 calculation and there is no impact on the calculated contribution rate due to a change in the table.

#### **4.6. Life table (invalid persons)**

It is normal actuarial practice to consider life expectancy of invalids as slightly shorter than that of healthy persons (e.g. EuroControl applies the mortality rate corresponding to a healthy person 3 years older than an invalid's age). Eurostat considers this approach very logical and applied this actuarial practice for the first time in the 2008 pension assessment, and again in 2009.

The same practice was applied in the 2010 calculation, and since the life table used in the 2010 calculation is identical to that used in the previous calculation, there is no impact on the calculated contribution rate due to a change in the table.

#### **4.7. Assumed retirement age**

Assumed retirement ages by staff categories groups were first estimated for the 2004 pension assessment, and were presented at the June 2004 meeting of the Article 83 Working Group. As provided for in paragraph 3 of Article 83(a) of the Staff Regulations these assumed retirement ages were checked in 2008, on the occasion of the second five-yearly actuarial assessment, and no change was proposed for the following five-year period.

The assumed retirement ages are therefore identical to those used since 2004 and there is no impact on the calculated contribution rate due to a change in assumed retirement age.

#### **4.8. Average difference between men and women**

The average age difference between married men and women (3 years) that has been applied since 2004 in actuarial calculations was checked in 2008, and found to correspond to reality. The test showed that on average married men are 3.01 years older than their partners and married women 3.18 years younger than their partners.

Since the average difference in age is unchanged, there is no impact on the calculated contribution rate due to a change in this age difference.

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<sup>1</sup> Article 9(2) of Annex XII to the Staff Regulations.

#### **4.9. Probability of being married for men and women**

The probabilities of being married for officials and ex-officials aged more than 59 were reassessed in 2008, and updated probabilities were presented at the June 2008 meeting of the Article 83 Working Group. No change was proposed at the June 2010 meeting of the Article 83 Working Group.

Since the probability of being married is unchanged, there is no impact on the calculated contribution rate from a change in probabilities of being married for men and women.

#### **4.10. Loading factor for orphan's and divorced spouse's pension**

Current actuarial practice is to add 10% to a payable reversion pension to allow for the pension payable to orphans after the death of the surviving spouse (or of the official if there is no surviving spouse) and any pension payable to divorced spouses. Eurostat estimates that the impact of this factor on the contribution rate is minor and does not consider an update to this assumption necessary at the present time.

Since the loading factor for pensions payable to orphans and divorced spouses is unchanged, there is no impact on the calculated contribution rate due to a change in the loading factor.

#### **4.11. Methodological changes**

In parallel to the change in ISP computation (see point 4.3), staff turnover is computed separately in the 2010 pension assessment. For this, the methodology of calculation has been improved and some new actuarial assumptions have been defined. The updated methodology was presented at the June 2010 meeting of the Article 83 Working Group.

The implementation of the improved methodology concerning turnover and the use of the new ISP rates has had a combined impact of around **-0.2** percentage points in the pension contribution rate.

#### **4.12. Population change effect**

The yearly population change has not had a significant impact in the pension contribution rate calculated this year. This impact can only be observed on a cumulated basis over a longer period of time. The same contribution rate is obtained if the population at 31.12.2008 is used instead of this at the 31.12.2009.



## 5. COMPUTATION SYSTEM

### 5.1. Variables used in the assessment

In general, two kinds of variables are used in the actuarial calculation:

Parameters. These are values mainly linked to the application of the Staff Regulations. These values change according to certain conditions related to the individual situation of each official (e.g. the annual accrual rate is 1.9% for staff recruited from 01.05.2004 and 2% for those recruited before this date). These values can be clearly established.

Actuarial assumptions. These are values that are not known and cannot be established exactly, such as the invalidity table, the ISP table, the probability of being married at the retirement date, the loading factor for orphans and divorced spouses. The values of these actuarial assumptions are estimated in accordance with general actuarial practices and discussed with national experts from the relevant departments of the Member States at the annual meetings of the Article 83 Working Group, and reviewed by independent actuarial consultants.

A summary of the main variables used (parameters and actuarial assumptions) is given in Appendix I, Tables III and IV.

### 5.2. Demographic parameters

The reference population is made up of contributing members of the PSEO including:

- active officials,
- members whose pension contribution is optional (e.g. officials who have taken leave on personal grounds or parental leave),
- invalids who receive an invalidity allowance under Article 78 of the Staff Regulations,
- beneficiaries of an allowance for termination of service.

**54 223** contributing members were recorded at 31.12.2009, which represents a net increase of **4 270** participants compared to the previous year (at 31.12.2008, 49 953 were used in the 2009 actuarial assessment)

This significant increase in the population is mainly explained by the continuing recruitment of “contract agents” (a new category of population defined in the 2004 Staff Regulations) and temporary agents, and the incorporation into the population of Parliamentary Assistants (a new category in 2009).

There are 8 966 contract agents among the contributing members at 31.12.2009, as against 7 654 at 31.12.2008, which represents an increase of 17.14%. There are 8 001 temporary agents among the contributing members at 31.12.2009, as against 7 044 at 31.12.2008, an increase of 13.59%. In addition, 1381 Parliamentary Assistants were included in the reference population for the first time this year.

A breakdown of the reference population by type of contributing member and by Institution or Agency is included in Appendix I, Tables VI to VIII.

### **5.3. Economic parameters**

In accordance with Articles 10 and 11 of Annex XII to the Staff Regulations, the Real Discount Rate (RDR) and the General Salary Growth (GSG) are calculated in the 2010 update as the average of the corresponding rates for the 12 preceding years (for more information see Appendix I to this report, points 5.4.1 and 5.4.2 and Tables XIV and XV).

The value of the RDR is **2.8%** and that of the GSG is **0.3%** (these are the same values as those used in the 2009 assessment). Finally, an updated ISP table has been used (see Appendix I, point 5.4.3).

### **5.4. Technical implementation of Annex XII to the Staff Regulations**

Technical questions raised by the implementation of Annex XII are dealt with by Eurostat in cooperation with national experts from the relevant departments of the Member States participating in the Working Group on Article 83 of the Staff Regulations. The minutes of the meeting held in Luxembourg on 30 June 2010 (doc. 20100624\_Art83WG\_09) are available from Eurostat.

Eurostat also exchanges relevant information on actuarial issues with international organisations such as the JPAS (Joint Pensions Administrative Section of the Coordinated Organisations), EPO (European Patent Office) and EuroControl.

### **5.5. Independent examination**

In accordance with Annex XII, Article 13, of the Staff Regulations, Eurostat was assisted by a qualified independent expert with regard to the methodological implementation and the definition and calculation of the corresponding actuarial assumptions.

The independent expert then conducted an actuarial examination of the contribution rate calculated by Eurostat. This examination consisted in confirming the relevance and reliability of the actuarial processes and assumptions used in accordance with the methodology described in Annex XII to the Staff Regulations.

For the aspects not described explicitly in Annex XII, the independent expert checked their compliance with generally accepted actuarial practices. Concerning actuarial assumptions, the independent expert carried out investigations to ensure that the underlying data provided by Eurostat were used correctly.

The executive summary of the assessment by the independent expert is included in Appendix II to this report.

## APPENDIX I - COMPUTATION

### 1. RELEVANT FIGURES FOR CALCULATING THE CONTRIBUTION RATE

**Table I. Breakdown of the contribution rate**

<b>Service cost</b>	<b>Total contribution rate (3/3)</b>	<b>Staff contribution rate (1/3)</b>
Service cost for retirement	30.2%	10.1%
Service cost for invalidity	1.8%	0.6%
Service cost for death	1.1%	0.3%
<b>Total service cost</b>	<b>33.1%</b>	<b>11.0%</b>

**Table II. Service cost and total amount of annual basic salaries**

<b>Service cost</b>	<b>Total (EUR million)</b>	<b>%</b>
- Service cost for retirement	1 078	91.3%
- Service cost for invalidity	65	5.5%
- Service cost for death	38	3.2%
<b>Total service cost</b>	<b>1 181</b>	<b>100.0%</b>
<b>Total annual basic salaries and invalidity and termination allowances</b>	<b>3 574</b>	<b>100.0%</b>

## 2. SUMMARY OF MAIN VARIABLES

The following tables show the values of the main parameters (see Table III) and actuarial assumptions (see Table IV). Please note that the tables only present an overview of the main variables and are not exhaustive. Please refer to the Staff Regulations and their annexes for precise and complete information.

**Table III. Parameters used in the actuarial assessment**

Parameter	Value
Legal source	Staff Regulations in force from 01.05.2004
Reference date for the population (Annex XII Article 1)	<b>31.12.2009</b>
Maximum official retirement age (Staff Regulations Article 52)	65 (67 on an exceptional basis)
Minimum official retirement age (Staff Regulations Article 52 and Annex XIII Article 22)	63 or before for officials in service before 01.05.2004
Minimum age for early retirement (Staff Regulations Article 52, Annex VIII Article 9 and Annex XIII Article 23)	55 or before for officials in service before 01.05.2004
Category and grade for the minimum subsistence figure (Annex VIII Article 6)	first step of grade 1
Maximum retirement pension (Staff Regulations Article 77)	70% of the basic salary at the retirement date
Annual accrual rate (Article 77 of the Staff Regulations and Article 21 of Annex XIII)	1.9% or 2% for officials recruited before 01.05.2004
Bonus for officials in service after the normal retirement age (Annex VIII Article 5 and Annex XIII Article 22)	Barcelona incentive
Minimum retirement pension (Staff Regulations Article 77)	4% of the minimum subsistence figure per year of service
Invalidity allowance (Staff Regulations Article 78)	70% of the basic salary
Minimum invalidity allowance (Staff Regulations Article 78)	100% of the minimum subsistence figure
Reversion pension (Staff Regulations Article 79 and Annex VIII Article 18)	60% of the retirement pension
Minimum reversionary pension (Staff Regulations Article 79 and Annex VIII Article 18)	35% of the last basic salary
Survivor's pension (Staff Regulations Article 79 and Annex VIII Article 17)	60% of the retirement pension that would have been payable to the official
Minimum survivor's pension (Staff Regulations Article 79)	35% of the last basic salary or minimum subsistence figure

**Table IV. Actuarial assumptions**

Actuarial assumption	Value
Average age difference between married men and women	3 years
Probability of being married for men	84%
Probability of being married for women	38%
Marital status	status at evaluation date
Coefficient for orphan's and divorced spouse's pension	10%
Annex VIII coefficient (correction coefficient)	0.0%
Assumed retirement age	63 to 64
Real discount rate (RDR)	2.8%
General salary growth (GSG)	0.3%
General pension revaluation (GPR)	0.3% (equal to the GSG)
Individual salary progression (ISP)	2009 ISP table
Mortality table (healthy people)	2008 ICSLT
Mortality table (Invalids)	Mortality rate corresponding to a person 3 years older than healthy person
Invalidity table	2009 EU Invalidity table

Many of these actuarial assumptions are explained in the following points. Some of them have changed compared to the 2009 actuarial assessment. The following table summarises these changes:

**Table V. Changes in actuarial assumptions**

Assumption	Assessment	
	2009	2010
Real Discount Rate (RDR) (1)	2.8%	2.8%
General Salary Growth (GSG) (1)	0.3%	0.3%
ISP-1. Individual Salary Progression of Officials, recruited before 01.05.2004 (2)	1.5%	1.5%
ISP-2. Individual Salary Progression of Officials, recruited from 01.05.2004 onwards (2)	1.9%	<b>2.1%</b>
ISP-3. Individual Salary Progression of Temporary Agents (3)	0.4%	<b>1.6%</b>
ISP-4. Individual Salary Progression of Contract Agents (3)	0.2%	<b>1.0%</b>
ISP-5. Individual Salary Progression of Parliamentary Assistants (4)	n/a	<b>0.0%</b>
Life	2008 ICSLT	2008 ICSLT
Invalidity	2008 EU Invalidity table	2009 EU Invalidity table

(1) Average of 12 years preceding the year of the assessment

(2) Average of individual rates weighted by population as at 31.12.2009

(3) 2009 estimated rate takes account of turnover. In 2010 assessment turnover is considered separately in calculation

(4) New category of personnel included in the 2010 assessment by the first time

### 3. DEMOGRAPHIC PARAMETERS

#### 3.1. Reference population

Annex XII, Article 1 of the Staff Regulations stipulates that the actuarial assessment shall be carried out in each year  $n$ , on the basis of the population of active members of the PSEO at 31 December of the previous year ( $n-1$ ). Moreover, Article 9 of Annex XII provides that the population of participants in the scheme is to be collected annually by the Commission using information received from the different institutions and agencies whose staff are members of the scheme.

In accordance with these rules, the reference population is taken to be the staff at 31 December 2009 of the 49 institutions and agencies (40 were recorded at 31 December 2008) whose officials are members of the PSEO.

**Table VI. Institutions and Agencies in the PSEO**

Abbr.	Name	Abbr.	Name
<b>Institutions or assimilated organisms</b>		<b>Agencies (next)</b>	
COR	COMMITTEE OF THE REGIONS	EUROFOUND	EUROPEAN FOUNDATION FOR THE IMPROVEMENT OF LIVING AND WORKING CONDITIONS
CONCIL	COUNCIL OF THE EUROPEAN UNION	EIGE	EUROPEAN INSTITUTE FOR GENDER EQUALITY
CDCE	COURT OF AUDITORS	EIT	EUROPEAN INSTITUTE OF INNOVATION AND TECHNOLOGY
COJED	COURT OF JUSTICE OF EUROPEAN COMMUNITIES	EMSA	EUROPEAN MARITIME SAFETY AGENCY
CSC	ECONOMIC AND SOCIAL COMMITTEE	EMCDDA	EUROPEAN MONITORING CENTRE FOR DRUGS AND DRUG-ADDICTION
CEC	EUROPEAN COMMISSION	EFRA	EUROPEAN MONITORING CENTRE FOR RACISM AND XENOPHOBIA
EDPS	EUROPEAN DATA PROTECTION SUPERVISOR	ENISA	EUROPEAN NETWORK AND INFORMATION SECURITY AGENCY
EO	EUROPEAN OMBUDSMAN	CEPOL	EUROPEAN POLICE COLLEGE
EUROPARL	EUROPEAN PARLIAMENT	ERA	EUROPEAN RAILWAYS AGENCY
<b>Agencies</b>		ERC	EUROPEAN RESEARCH COUNCIL EXECUTIVE AGENCY
FRONTEX	AGENCY FOR THE MANAGEMENT OF OPERATIONAL CO-OPERATION AT EXTERNAL BORDERS OF MEMB	ETF	EUROPEAN TRAINING FOUNDATION
ARTEMIS	ARTEMIS JOINT UNDERTAKING	EACI	EXECUTIVE AGENCY FOR COMPETITIVENESS AND INNOVATION
SKY	CLEAN SKY JOINT UNDERTAKING	EAA	EXECUTIVE AGENCY FOR THE PUBLIC HEALTH PROGRAM
CFCA	COMMUNITY FISHERIES CONTROL AGENCY	FCH	FUEL CELLS AND HYDROGEN JOINT UNDERTAKING
CPVO	COMMUNITY PLANT VARIETIES OFFICE	IMI	INNOVATIVE MEDICAMENTS INITIATIVE JOINT UNDERTAKING
EACEA	EDUCATION, AUDIOVISUAL AND CULTURE EXECUTIVE AGENCY	JET	JOINT EUROPEAN TORUS (J.E.T.)
ENIAC	ENIAC JOINT UNDERTAKING	EUROJUST	JUDICIAL COOPERATION
EAR	EUROPEAN AGENCY FOR RECONSTRUCTION	OHIM	OFFICE FOR HARMONISATION IN THE INTERNAL MARKET
OSHA	EUROPEAN AGENCY FOR SAFETY AND HEALTH AT WORK	REA	RESEARCH EXECUTIVE AGENCY
EMEA	EUROPEAN AGENCY FOR THE EVALUATION OF MEDICAL PRODUCTS	SSR	SESAR JOINT UNDERTAKING
EASA	EUROPEAN AVIATION SAFETY AGENCY	ECHA	THE EUROPEAN CHEMICALS AGENCY
ECDC	EUROPEAN CENTRE FOR DISEASE PREVENTION AND CONTROL	GSA	THE EUROPEAN GNSS SUPERVISORY AUTHORITY
CEDEFOP	EUROPEAN CENTRE FOR THE DEVELOPMENT OF VOCATIONAL TRAINING	ITER	THE EUROPEAN JOINT UNDERTAKING FOR ITER AND THE DEVELOPMENT OF FUSION ENERGY
EEA	EUROPEAN ENVIRONMENT AGENCY	TNT-T	THE TRANS-EUROPEAN TRANSPORT NETWORK EXECUTIVE AGENCY
EFSA	EUROPEAN FOOD SECURITY AUTHORITY	CDT	TRANSLATION CENTRE FOR BODIES OF THE EUROPEAN UNION

As approved by the Article 83 Working Group at its meeting of 7 June 2004, the term “active members of the PSEO” is considered in the wide sense to be synonymous with “contributing members of the PSEO”. Consequently, the reference population includes not only officials in “active employment” but also officials in one of the other administrative statuses set out in Article 35 of the Staff Regulations, plus invalids who

receive an invalidity allowance and beneficiaries of an allowance for termination of service.

Personnel data were collected from the NAP<sup>2</sup> (New Application for Pay), from PMO<sup>3</sup> and directly from institutions and agencies, and imported into the Eurostat database. The data were checked to guarantee a high level of quality. The actuarial assessment is based on the output from the Eurostat database at the calculation date.

**Table VII. Reference population by administrative status**

Contributing members	31.12.2008		31.12.2009		Yearly change
	Total	Weight	Total	Weight	
<b>Active</b>					
- Officials	34 509	69.1%	35 206	64.9%	2.0%
- Temporary staff	7 044	14.1%	8 001	14.8%	13.6%
- Contract staff	7 654	15.3%	8 966	16.5%	17.1%
- Parliamentary Assistant	n/a	n/a	1 381	2.5%	n/a
<b>Non-active staff (1)</b>	746	1.5%	669	1.2%	-10.3%
<b>Total population</b>	<b>49 953</b>	<b>100.0%</b>	<b>54 223</b>	<b>100.0%</b>	<b>8.5%</b>

(1). Non-active status (Article 41), retirement in the interests of the service (Article 50), termination of service under special measures ("degagement"), invalids who receive an invalidity allowance under Article 78.

This increase in the population is mainly explained by the recruitment of contract agents and temporary agents, and the incorporation of Parliamentary assistants.

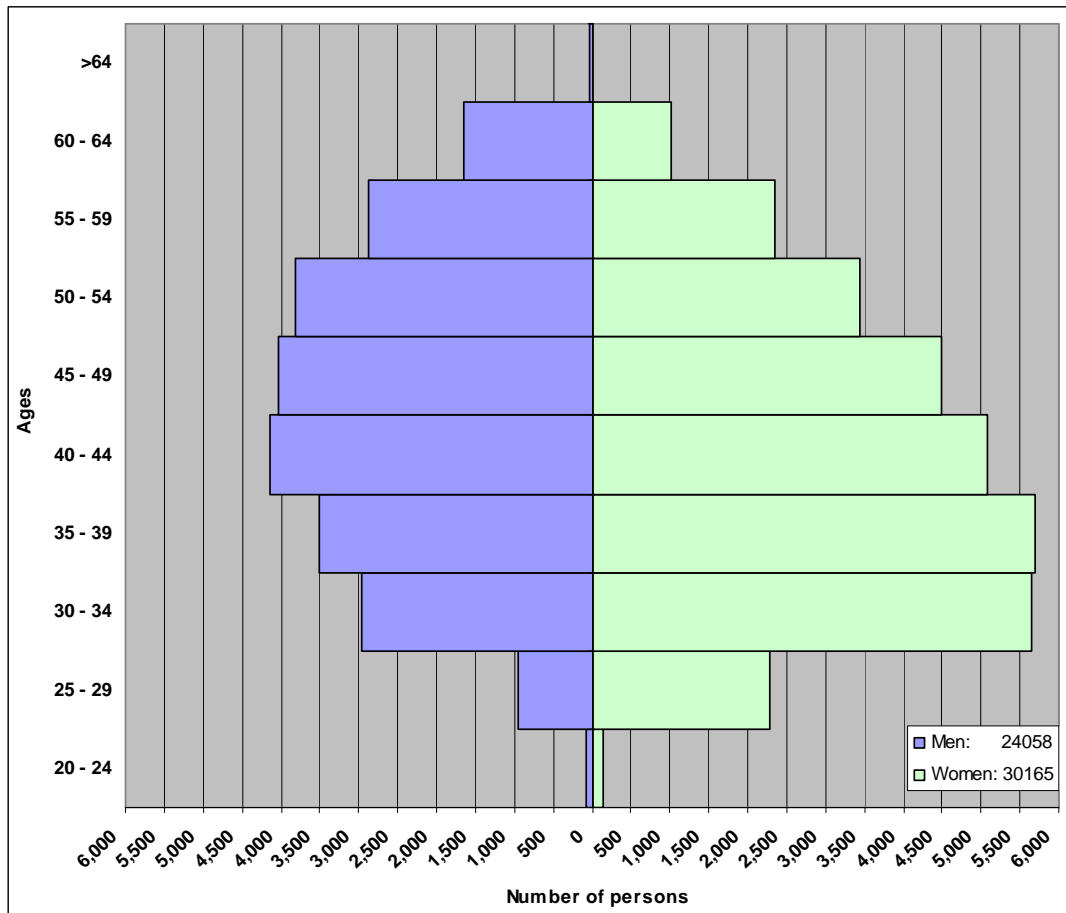
<sup>2</sup> The NAP application is a centralised database that has been created to produce the monthly salary and pension forms for all institutions and agencies. This database contains a large part of the personnel data, particularly amounts paid and pension contributions.

<sup>3</sup> PMO use the Sysper database of the Commission to store data about transfers of pension rights of the staff of the Commission and agencies, and data about pensioners.

**Table VIII. Reference population by institution or agency**

Institution or Agency	31.12.2008		31.12.2009	
	Total	%	Total	%
European Commission	31 340	63%	31 809	59%
European Parliament	6 320	13%	7 943	15%
Council of the European Union	3 362	7%	3 533	7%
Court of Justice of the European Communities	1 998	4%	2 162	4%
Court of Auditors	876	2%	979	2%
Economic and Social Committee	746	1%	808	1%
Committee of the Regions	524	1%	593	1%
Other small institutions and decentralised Community agencies	4 787	10%	6 396	12%
<b>Total</b>	<b>49 953</b>	<b>100%</b>	<b>54 223</b>	<b>100%</b>

**Figure I. Reference population by age**



### 3.2. Assumed retirement age

As stipulated in Article 4 of Annex XII to the Staff Regulations, it is assumed that all retirements will occur at a fixed average age ( $r$ ). The average retirement age may be different according to the group of staff.



**Table IX. Assumed retirement age and Barcelona incentive by age group of officials**

Staff group (age and years of service as at 30.04.2004)		Annual accrual rate	Barcelona incentive	Barcelona incentive maximum	Normal retirement age	Assumed retirement age (4)	
			(1)	(2)		(3)	Actives
Group 1	Old Staff Regulations	2.00%	(5)		60	63	65
Group 2	>= 50 years old or >= 20 years of service	2.00%			60	63	63
Group 3	40 - 49 years old and < 20 years of service	2.00%	3.00%	4.50%	61	63	63
Group 4	35 - 39 years old and < 20 years of service	2.00%	2.75%	4.00%	62	63	63
Group 5	30 - 34 years old and < 20 years of service	2.00%	2.50%	3.50%	63	64	64
Group 6	< 30 years old and < 20 years of service	2.00%	2.00%	-	63	64	64
Group 7	New officials (after 30.04.2004)	1.90%	2.00%	-	63	64	64

(1) The Barcelona incentive corresponds to an increase in pension expressed as a percentage of the last basic salary (Article 5 of Annex VIII and Article 22 of Annex XIII).

(2) The Barcelona incentive maximum is a percentage of the total pension rights acquired by an official at the age of 60 (Article 5 of Annex VIII and Article 22 of Annex XIII).

For example, the Barcelona incentive for officials aged between 40 and 49 is 3% of the last basic salary but not exceeding 4.5% of the pension rights acquired by those officials at the age of 60.

(3) The age in this column is the simple average of ages from the table detailed in Article 22 of Annex XII, rounded to entire year. This average is calculated only to facilitate the presentation in this table.

In practice, institutions apply the table detailed in Article 22 of Annex XIII when calculating individual rights. Eurostat does not use this column when calculating the contribution rate for pension; assumed retirement ages detailed in columns (4) are used instead.

(4) In accordance with to Article 3 of Annex XII, it is assumed that all retirements (except for invalidity) will occur at a fixed average age.

This column shows these average ages by staff group, which have been deduced from the observations in accordance with Article 9 of Annex XII.

(5) Officials, aged 50 years or over or with 20 or more years service as at 30/04/2004, who remain in service after the normal retirement age are entitled, for each year worked after that age, to an increase in their pension equal to 5% of the amount of the pension rights acquired at the age of 60 (the same premise was applied in the past under the former Staff Regulations)..

### 3.3. Invalidity table

A first invalidity table (2004-EU Invalidity table) was used in the 2004, 2005 and 2006 assessments of the PSEO. This invalidity table was presented to the Article 83 Working Group at its 7 June 2004 meeting.

The table was updated on the occasion of the 2007 actuarial assessment to take account of the evolution of beneficiaries of *invalidity allowance* (a new category of population under the new Staff Regulation in force from 1 May 2004). This new table was presented to the Article 83 Working Group at its 26 June 2007 meeting (see document 20070623 Art83 WG 07 Assumptions EN, available on CIRCA) and it was decided to update the table each year using as input a moving average of 5 years of invalidity observation.

The number of invalids recorded in 2004 (103) has been replaced by the number recorded in 2009 (93) in the moving 5 years average of invalidity observations. Thus the total of invalids in this 5-year period decreased from 510 to 500 invalids

The following table shows the number of invalids from 2005 to 2009.

**Table X. Invalids by year**

Year	Invalids
2005	122
2006	108
2007	88
2008	89
2009	93
<b>Total</b>	<b>500</b>

The decrease in the number of invalids, in conjunction with the increase of the active population makes the probability of becoming an invalid lower than in the past.

The 2005 to 2009 invalidity observations have been used to update the invalidity table by sex (2009-EU Invalidity table). The following table is an extract from the unisex version of the table. The unisex version is only used for presentation; the complete table by sex is used in computation.

**Table XI. 2009-EU Invalidity table — Unisex version**

Age	Invalidity (probability of becoming an invalid)
x	q <sup>x</sup>
20	0.000050
25	0.000072
30	0.000147
35	0.000404
40	0.001259
45	0.002260
50	0.003791
55	0.006010
60	0.005328
65	0.002653

### 3.4. Life table of healthy persons

The life table used for the calculation was updated in 2008 (2008 ISCLT table) on the occasion of the five-yearly assessment of the actuarial balance of the pension scheme. The methodology used to set up this life table was presented to the Article 83 Working Group at the 27 June 2008 meeting (document 20080627 Art83\_05, available from Eurostat). The 2008 ISCLT life table must be used at least until the next five-yearly assessment in 2013.

Consequently, the 2008 ICSLT has been used in the 2010 pension assessment.

The following table is an extract from this table:

**Table XII. 2008 ICSLT**

Age x, y	Men				Women	
	Dying probability	Life expectancy	Desease	Living individuals	Dying probability	Life expectancy
	qx	ex	dx	lx	qy	ey
40	0.00063370	44	57	98 573	0.00054775	46
45	0.00106107	39	94	98 187	0.00092086	42
50	0.00176523	35	156	97 542	0.00152344	37
55	0.00282667	30	250	96 494	0.00242203	32
60	0.00481751	25	411	94 813	0.00372321	28
65	0.00838934	21	696	91 962	0.00605132	23
70	0.01458993	17	1 154	87 190	0.01074871	19
75	0.02531453	13	1 844	79 451	0.01863843	15
80	0.04374552	10	2 758	67 558	0.03307728	12
85	0.07506895	8	3 681	50 912	0.05836406	9
90	0.12727809	5	4 026	31 080	0.10193574	6

### 3.5. Life table of invalids

It is normal actuarial practice to consider life expectancy of invalids as slightly shorter than that of healthy persons (e.g. EuroControl applies the mortality rate corresponding to a healthy person 3 years older than an invalid's age). This approach cannot be confirmed in the case of European civil servants as the number of invalids is too small. Eurostat considers this approach very logical and has applied the same actuarial practice in its own actuarial calculations.

The use of this approach makes hardly any change in the contribution because the probability of an active staff member becoming invalid is very small.

The implementation of this approach in the 2008 pension assessment had a negligible impact, close to 0 percentage points, on the pension contribution rate.

### 3.6. Average age difference between men and women

The average age difference between married men and women (3 years) that has been applied from 2004 in actuarial calculations should be used in future assessments. The result of a test based on population from 2004 to 2007 confirmed that this actuarial assumption corresponds to reality. The test showed that on average married men are 3.01 years older than their partners and married women 3.18 years younger than their partners.

### **3.7. Probability of being married for men and women**

In 2008 Eurostat analysed the recent population of officials and ex-officials older than 59 years and calculated the probability of them being married. The probabilities found for men and women are:

0.84 for men (0.8 to one decimal place)

0.38 for women (0.4 to one decimal place)

These updated probabilities were used in the 2008 and in this 2010 pension assessment.

#### 4. ECONOMIC PARAMETERS

##### 4.1. Real Discount Rate (RDR)

Annex XII, Article 10 of the Staff Regulations provides that:

*1. The interest rates to be taken into consideration for the actuarial calculations shall be based on the observed average annual interest rates on the long-term public debt of Member States as published by the Commission. An appropriate consumer price index shall be used to calculate the corresponding interest rate net of inflation as needed for the actuarial calculations.*

*2. The effective annual rate to be taken into consideration for the actuarial calculations shall be the average of the real average interest rates for the 12 years preceding the current year.*

Consequently, real discount rates (RDR) from 1998 until 2009 have to be used in the 2010 assessment of the PSEO.

Nominal discount rate: Average of 1998 to 2009 nominal rates of Euro area zero-coupon (government bonds) yield with a maturity of 21 years, 21 years being the duration of the scheme, the rate in 2008 as produced by the ECB being 4.4%): **.5.0%**

Inflation rate: Average of 1998 to 2009 appropriate consumer price index; the HICP of EU area in 2009 being 1.0%: **2.1%**

Real discount rate: Average of 1998 to 2009 real discount rates; the last being calculated as " $100 * (100 + \text{NDR}) / (100 + \text{IR}) - 100$ ": **2.8%** (it was the same in the 2009 assessment).

The 12 years moving average of real discount rates (RDR) that has been calculated this time (2.8%), will be used in the final assessment of the PSEO to be published by 1 September 2010.

**Table XIII. Real Discount Rate (RDR)**

Year	Nominal rate (NDR)	Inflationrate (IR)	Real discount rate (RDR)
	(1)	(2)	(3)
1997	6.4	2.4	3.9
1998	4.9	1.7	3.1
1999	5.6	1.1	4.5
2000	5.9	2.4	3.4
2001	5.7	2.5	3.1
2002	5.5	2.2	3.2
2003	5.1	2.0	3.0
2004	5.0	2.1	2.8
2005	4.0	2.2	1.8
2006	4.2	2.2	2.0
2007	4.5	2.3	2.2
2008	4.8	3.7	1.1
2009	4.7	1.0	3.7
<del>Aver. 1997 - 2008</del>	<del>5.4</del>	<del>2.2</del>	<del>2.8</del>
<b>Aver. 1998 - 2009</b>	<b>5.0</b>	<b>2.1</b>	<b>2.8</b>

- (1) Till 1998: long-term government borrowing rates. Since 1999: Euro zero-coupon government bond curve with a maturity of 21 years.
- (2) Till 1998: National Accounts private consumption deflator. Since 1999: Harmonised Index of Consumer Prices (HICP).
- (3) The following formula is used:  $RDR = 100 \cdot (100 + NDR) / (100 + IR) - 100$

## 4.2. General Salary Growth (GSG)

As for the discount rate, Annex XII contains specific rules for calculating General Salary Growth. Article 11 stipulates on the one hand that the annual change in salary scales to be used for the actuarial calculations must be based on the specific indicator (SI) and on the other hand that the effective annual rate is the average of the net SIs for the 12 years preceding the current year.

In 2009 the European Commission proposed an adjustment of salaries and pensions of 3.7% with effect from 1 July 2009. The Council adopted with effect from 1 July 2009 an increase of remunerations and pensions of only 1.85%, which, combined with the Brussels International Index (BII) inflation rate of 0.9%, led to a calculated SI of 0.94%, ( $1.009 \times 1.0094 = 1.0185$ ).

As the net SI applied in 2009 is 0.94% (0.9% to one decimal place), the 12-year moving geometric average from 1998 to 2009 (GSG) is 0.3% (the same as this used in the 2009 assessment).

**Table XIV. General Salary Growth**

Year	SI
1997	0.7
1998	0.5
1999	1.8
2000	-0.1
2001	0.6
2002	1.7
2003	1.1
2004	-1.2
2005	0.0
2006	0.2
2007	0.0
2008	-1.3
2009	0.9
GSG (Aver. 1997 - 2008)	0.3
<b>GSG (Aver. 1998 - 2009)</b>	<b>0.3</b>

## 4.3. Individual Salary Progression (ISP)

### 4.3.1. Population groups

The Individual Salary Progression (ISP) refers to the salary increase due to the career advancement of EU officials, i.e. promotions and seniority steps.

The ISP has a significant impact on the contribution rate, though less than that of the RDR and GSG.

With the introduction of the new Staff Regulations on 1.5.2004, the career progression of EU officials has been completely reviewed. Annex XIII of these Staff Regulations includes transitional measures which made the determination of this assumption quite complicated.

This time, the active population has been divided into the following 5 homogeneous groups:

- (1) Officials recruited before 01.05.2004
- (2) Officials recruited from 01.05.2004 onwards
- (3) Temporary Agents
- (4) Contract Agents
- (5) Parliamentary Assistants

The groups above are slightly different from those used in the 2009 assessment.

The weight of each of these new groups in the total population is shown in Table XV below.

**Table XV. Weight of the active population by ISP group at 31.12.2009**

ISP Group	Weight
1 Officials recruited before 01.05.2004	49%
2 Officials recruited from 01.05.2004 onwards	17%
3 Temporary Agent	15%
4 Contract Agent	17%
5 Parliamentary Assistant	3%
<b>Total</b>	<b>100%</b>

#### 4.3.2. Turnover

The ISP of the population groups above is influenced by their turnover rates (affecting career progression and seniority increases: salary increases are thus small for staff having fixed contracts).

All active members of the PSEO (Officials, Temporary Agents, Contract Agents and Parliamentary Assistants) will definitely stop activity one day for several reasons and eventually leave the pension scheme.

To facilitate computation, turnover has been divided into two types:

- Turnover due to end of contract validity.
- Turnover due to voluntary and unexpected departures. (This concerns resignation before the end of a contract, dismissal for incompetence, etc.)

Departures due to other unexpected reasons (invalidity and death) and voluntary decisions (mainly secondment, retirement, non active status according to Article 41 of SR, leave on personal grounds, leave for military service, parental or family leave) are



excluded from the definition of turnover as these causes of leaving are already computed in another way.

ISP rates to be applied to officials (ISP groups 1 and 2 above) have been updated to take account of the observed promotion rates from 2005 to 2009 (the methodology agreed at the June 2006 Art83 WG meeting). Turnover has been considered when calculating ISP rates for groups 3 to 4.

#### 4.3.3. *ISP rates*

The following table shows weighted ISP rates by groups of active population:

**Table XVI. Weighted ISP rates by group of active population**

ISP groups		Average ISP rate by group
1	Officials recruited before 01.05.2004	1.5%
2	Officials recruited from 01.05.2004 onwards	2.1%
3	Temporary agents	1.6%
4	Contract agents	1.0%
5	PA. Fixed contract. Art 130	0.0%

ISP rates in the table above are the average of ISP rates weighted by the population in each group. These average rates are calculated for publication purposes only, the detailed rates by grade and years to retire being used in computation.

The ISP rates used in this assessment cannot directly be compared to those used in the 2009 assessment as the methodology to compute turnover and ISP rates has changed. The updated methodology was presented at the June 2010 meeting of Article 83 WG.

The implementation of the improved methodology concerning turnover and the use of the new ISP rates slightly decreases the service cost and thus the pension contribution rate to finance it. The combined impact is around **-0.2** percentage points in the pension contribution rate.

#### 4.4. **Loading factor for orphan's and divorced spouse's pension**

Current actuarial practice is to add 10% to a payable reversion pension to allow for the pension payable to orphans after the death of the surviving spouse (or of the official if there is no surviving spouse) and any pension payable to divorced spouses. Eurostat estimates that the impact of this factor on the contribution rate is minor and the same assumption has been used in the 2010 actuarial assessment.

## 5. ANNUITIES

Articles 6 to 8 of Annex XII to the Staff Regulations refer to the annuities used in the calculation. The values of these annuities according to age are presented below.

In order to comply with Commission policy on equal opportunities, values are not presented by sex. However, Eurostat conducted its analyses taking into account all relevant features of the population, including sex. The figures are aggregated by weighted averages only for presentation in this report.

The table below was calculated using:

- the Real Discount Rate (RDR) from Table XIII,
- the General Salary Growth (GSG) from Table XIV,
- an assumed retirement age ( $r$ ) equal to 64 years of age for officials younger than 35 on the reference date (31.12.2003) and equal to 63 years of age for the others,

where:

$x$  is the age of the official,

$y$  is the age of the official's spouse,

$m = r - x$  (number of years between the official's age and the assumed retirement age),

$y = x \pm 3$  according to the sex of the official.

**Table XVII. Some annuities in accordance with Articles 6 to 8 of Annex XII to the Staff Regulations**

Age $x$	Immediate deferred		Immediate temporary		Age $y$	Immediate annuity at age $y$ $a_y$
	annuity at age $x$ ${}_m a_x$	reversionary annuity at ages $x$ and $y$ ${}_m a_{xy}$	annuity at age $x$ $a_x$	reversionary annuity at ages $x$ and $y$ $a_{xy}$		
21	4.899242	0.718630	26.260384	0.254617	21	31.833127
25	5.308594	1.160548	24.779962	0.278019	25	30.746411
30	6.137150	1.253527	22.741496	0.278850	30	29.536636
35	7.445991	1.595564	19.961651	0.261250	35	28.059108
40	8.522135	1.918554	17.297921	0.255103	40	26.427902
45	9.820874	2.180285	14.306024	0.227747	45	24.670967
50	11.291756	2.575876	10.942157	0.177811	50	22.682307
55	13.034030	3.009815	7.154873	0.104261	55	20.505024
60	15.190133	3.346189	2.865001	0.026529	<b>60</b>	<b>18.192256</b>
63	16.631260	3.722760	0.000000	0.000000	<b>63</b>	<b>16.631260</b>

${}_m|a_x$  is described in article 6 § 3a

${}_m|a_{xy}$  is described in article 6 § 3b

$a_x$  is described in article 7 § 2a

$a_{xy}$  is described in article 7 § 2b

$a_y$  is described in article 8 § 2

## **APPENDIX II – INDEPENDENT EXAMINATION**

An independent expert conducted an actuarial examination of the contribution rate calculated by Eurostat. This examination consisted in confirming the relevance and reliability of the actuarial processes and assumptions used in accordance with the methodology described in Annex XII to the Staff Regulations. For the elements not described explicitly in this Annex, the independent expert checked their compliance with generally accepted actuarial practices. Regarding the actuarial assumptions, the independent expert carried out investigations to ensure that the underlying data provided by Eurostat were used correctly.

The independent expert report concluded that:

*"... as an independent expert, has conducted an actuarial examination of the 2010 update of the actuarial assessment of the pension scheme referred to in Article 83a (3) of the new Staff Regulations for which Eurostat endorsed the technical responsibility towards the Commission according to the Annex XII "Rules for implementing Article 83a of the Staff Regulations". This examination consisted in confirming the relevance and the reliability of the actuarial processes and assumptions used in accordance with the methodology described in Annex XII to evaluate the contribution rate of officials.*

*For the aspects explicitly mentioned in Annex XII, we did not detect any elements likely to cast doubt that the calculations determined by Eurostat are not compliant with the rules of Annex XII.*

*For the aspects not described explicitly in Annex XII, we have checked their compliance with the generally accepted actuarial practices and we did not detect any significant difference with the methodology and the assumptions we would have chosen ourselves to perform the calculations.*

*... has no reasons to doubt that the official's contribution rate (11.0%) calculated by Eurostat is a sufficiently accurate estimate of the reality..."*

The complete independent expert report on the actuarial examination of the contribution rate is available from Eurostat.