

La méthodologie utilisée rend les projections en valeur absolue non significatives. Il ne s'agit pas de prévisions.



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Eurostat study on the long-term budgetary implications of pension costs

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1. Chapter I – Introduction

Following the reform of the Staff Regulations of Officials and Conditions of Employment of other Servants of the European Union ("SR Reform"¹ hereinafter), entered into force on 1st January 2014, the Council requested² the Commission to update the Eurostat Study on the long-term budgetary implications of pension costs of staff of all EU institutions and agencies³. The Commission committed itself to comply with the request in due course.

This study addresses the major trends in staff pension expenditure over the fifty-year period 2015-2064. A projection of such length is normal actuarial practice; in addition many Member States have conducted studies over an analogous period.⁴ The long term study allows the assessment of the long term effects of the current situation, whose impact will continue to evolve over the 50-year period.

The parameters and actuarial assumptions used in this study cover the whole period of the projection. However, their interrelation and certain short-term implications are not entirely captured, so that the study cannot be used as a forecast of the exact amounts of pension expenditure in the short or medium term.

It is important to note that, due to the 50-year projection period, the calculations are highly sensitive to the assumptions used in the model.

The parameters and actuarial assumptions were built in compliance with the applicable legal basis (relevant parts of the SR), the best actuarial practices and past observations: a summary of those is available in section 4 of this study.

The impact of the 2013 SR reform on the future Pension Scheme of European Officials (PSEO hereinafter) expenditure, has been analysed by Eurostat by isolating the main parameters affected by the 2013 SR reform which have material effects on pension expenditure.

At a second stage, after having "*isolated*" those parameters, Eurostat has compared the evolution of the PSEO expenditure:

- using the parameters applicable before the 2013 SR reform (so called "*Test Version*", or in other terms the "*hypothetical*" scenario where the 2013 SR reform did not occur),
- using the parameters applicable after the 2013 SR reform (so called "*Current Version*", or in other terms the "*real*" scenario where the 2013 SR reform is implemented).

The difference between the two sets of results ("*Test Version*" minus "*Current Version*") represent the estimated savings on pension expenditure brought by the examined parameters of the 2013 SR reform.

¹ The request by the Working Party on the Staff Regulations was focused on the impact of amendments to the Staff Regulations introduced by Regulation (EU, Euratom) No 1023/2013 of the European Parliament and of the Council of 22 October 2013, the temporary non-application of the method of salary adjustment and the reduction of staff with 5% in all institutions, bodies and agencies to be effected between 2013 and 2017 under the Interinstitutional agreement of 2 December 2013 between the European Parliament, the Council and the Commission on budgetary discipline, on cooperation in budgetary matters and on sound financial management.

² Council Working Party on the Staff Regulations, meeting of 4 December 2014.

³ SEC(2010) 989 final.

⁴ *The 2015 Ageing Report: Economic and budgetary projections for the EU-28 Member States (2013-2060)*, DG ECFIN European Economy series 3/2015.

2. Chapter II - Main Concepts

2.1. *The PSEO lies on sound legal basis enshrined in the Staff Regulations*

Pursuant to Article 83 of the Staff Regulations:

- (a) The benefits paid under this pension scheme are to be charged to the budget of the Union,
- (b) Member States are to jointly guarantee the payment of such benefits,
- (c) Officials are to contribute one third of the cost of financing the pension scheme.

Article 83a and Annex XII of the Staff Regulations set out the actuarial rules for computing the contribution rate in order to guarantee the balance of the pension scheme.

The benefits paid under the scheme are laid down in Chapter 3 of Title V of the Staff Regulations, as well as in Annex VIII thereto.

2.2. *The PSEO is a notional (virtual) fund with defined benefits, in which the contributions of staff serve to finance the future pensions of those contributing*

The PSEO functions as a notional fund with defined benefits⁵. Although there is no actual investment fund⁶ it is considered that the amount which would have been collected by such a fund, is invested in the Member States long-term bonds⁷ and is reflected in the pension liability (*see point 2.4 below*). Member States jointly guarantee the payment of these benefits pursuant to Article 83 of the Staff Regulations and Article 4(3) of the Treaty on the European Union.

Being designed as a notional fund, the contributions of EU staff to PSEO serve to finance the future pensions of those contributing. In fact, the pension contribution actually covers the cost of the pension rights acquired in a given year and is not in any way linked to the pension expenditure of that year. The case law of the EU courts⁸ established the notional fund character of PSEO despite the finding that PSEO also displays some features of a solidarity scheme⁹.

The PSEO is therefore different from most of the schemes which exist in the Member States for public officials. In the latter schemes the pension contribution rate or pension benefits are adjusted in order to have yearly balance between the collected contribution and the pension expenditure. In this type of schemes, in case the balance cannot be achieved, the budget finances the difference through taxes.

⁵ A defined benefit plan is a pension plan that generally defines an amount of pension benefit that an employee will receive on retirement, usually dependent on one or more factors such as age, years of service and remuneration.

⁶ The European Coal and Steel Community (ECSC) had a pension fund, but it was dismantled and replaced by the notional fund upon the merger of the institutions of the Communities. The notional fund has been put in place for the European Economic Community with the adoption of the Staff Regulations in 1962.

⁷ On the basis of the observed average annual interest rates on the long-term public debt of the Member States as provided for in Article 10 of Annex XII to the Staff Regulations.

⁸ See e.g. Case F-105/05 – *Wils vs Parliament*, point 85 and Case T-439/09 *Purvis vs Parliament*, point 45.

⁹ See Case T-135/05 - *Campoli vs Commission*, point 134

The PSEO notional fund is assessed periodically, both annually and on a five-yearly basis, as if a real fund existed which represents a further guarantee for its long-term sustainability.

2.3. *The PSEO is designed to be in actuarial balance by default through the rate of contribution to the scheme and the pensionable age*

The balance of the PSEO is ensured regularly through the variation of the rate of contribution to the scheme and, where relevant, of the pensionable age.

The PSEO follows an actuarial balance principle where the annual contribution paid by the staff has to cover one third of the rights accrued in the same year¹⁰. The acquired rights of EU civil servants during that given year correspond to the future pensions that the staff will receive after retirement, as well as to the entitlement (under certain conditions) to an invalidity allowance, a survivor's pension, and an orphan's pension. In order to make this computation¹¹ possible, the series of payments for European civil servants are evaluated at its present value using an interest (discount) rate. The computation is thus an actuarial valuation.

The pension contribution rate is the mechanism that maintains the scheme in balance on annual basis. If the actuarial assessment of the various parameters defined by the Staff Regulations shows that a pension contribution rate different from the rate in force should be applied in order to fully cover the pension rights acquired during a given year, then the pension contribution rate is updated through an automatic procedure. Consequently, when staff members pay the updated pension contribution rate, they acquire pension rights for a given year protected by the principle of acquired rights.

In addition, the 2013 reform of the Staff Regulations introduced the pensionable age as the second element balancing the system. In particular, the Staff Regulations mandated the Commission to carry out a five-yearly assessment of the pensionable age, taking into account the evolution of pensionable age for civil servants in the Member States and the evolution of life expectancy of EU staff¹². The first report by the Commission to the European Parliament and the Council is to be delivered in 2019.

2.4. *The PSEO liability is jointly guaranteed by the Member States*

2.4.1. *PSEO's liability is not funded*

Whilst staff contributes from their salaries one third of the expected cost¹³ of pension benefit that an employee will receive on retirement, the PSEO scheme is not funded. Pursuant to Article 83 of the Staff Regulations the benefits paid under PSEO shall be charged to the budget of the Union and the

¹⁰ Article 83(2) of the Staff Regulations

¹¹ In technical terms, the method used in the computation of the pension contribution rate is that prescribed by international accounting standard IPSAS 25 and referred to as "projected unit credit". The sum of the actuarial values of rights acquired by active members of staff, referred to in actuarial practice as "service cost", is compared to the annual total of their basic salaries in order to calculate the contribution rate.

¹² Article 77, par.6 and 7 of the SR.

¹³ The expected cost is determined under a set of specific rules and assumptions defined in the Staff Regulations

Member States shall jointly guarantee payment of such benefits in accordance with the scale laid down for financing such expenditure.

2.4.2. Calculation of the liability

Eurostat annually calculates the liability recognised in the Budget of the Union, which is called the "Defined Benefit Obligation" (DBO). The projected unit credit method¹⁴ is used. The liability recognised in the balance sheet is the present value of the defined benefit obligation at the balance sheet date. The present value of the defined benefit obligation is determined by discounting the estimated future cash outflows using interest rates of government bonds that are denominated in the currency in which the benefits will be paid, and that have terms to maturity approximating to the terms of the related pension liability¹⁵.

2.4.3. The historical accumulation of the PSEO liability

Under the notional fund approach, staff contributions have not been set aside in an actual pension fund, instead have been credited to the EU budget at the time when they were collected and spent in accordance with the decisions of the budgetary authority i.e. they were not assigned to any particular policy field. Since the entering into force of the PSEO, it was decided that the employer's part of the PSEO contribution was not to be collected: instead the EU Institutions undertook to pay future pension benefits (to be charged to the Union budget) when staff retire.

From the budgetary perspective the PSEO has produced net revenue in the past, this was due to the fact that the PSEO is not yet mature or in other terms numbering active staff paid contributions for pension rights they acquired against a limited number of retirees or invalids drawing benefits. The PSEO revenue consisted of both the pension contribution paid by the staff and the employer's contribution (this latest not paid into a fund but only reflected in the pension liability). In this way the EU budget was actually borrowing money from the members of the scheme in return for a guarantee to pay future benefits.

The balance of the amounts borrowed and the amounts repaid is reflected in the pension liability.

¹⁴ The valuation is carried out in accordance with the IPSAS 25 methodology. This accounting standard requires the employer to determine his actuarial commitment on an ongoing basis, taking into account both the promised benefits during the active lifetime of employees, and foreseeable increases in salaries.

¹⁵ The DBO of the PSEO at 31st December 2014 has been valued at around EUR 57 billion. It should be pointed out that the DBO is calculated according to international accounting standards (IPSAS 25). It is strongly influenced by the inherent volatility of the real discount/interest rate which corresponds to a market value at 31st December of each year. For instance, most of the increase of the liability between 2013 and 2014 (from EUR 45 billion to EUR 57 billion) is due to the decrease of the real discount rate from 1,8% on 31 December 2013 to 0,7% on 31 December 2014. All other parameters remaining equal, if the interest rate was to increase up to 1,8% on 31.12.2015, the liability would go down to its value at 31st December 2013

2.4.4. The recent two substantial reforms aimed to keep PSEO in line with the key requirements for an adequate and sustainable pension scheme

The EU pension scheme went through two substantial reforms in less than ten years, i.e. in 2004 and 2013. Both reforms had an impact on various parameters of the pension scheme such as reducing pension entitlements and increasing the age of retirement.

The 2013 reform has increased the pensionable age, introduced lower yearly pension rights accrual rate, created a new category of staff with lower-entry salaries, slowed career paths just to mention the main elements intended to entail savings in pension expenditure.

The additional financial impact in terms of pension expenditure savings, arising from the 2013 reform of PSEO is the subject of the current study.

3. Key Parameters affected by the 2013 SR reform

The Eurostat study assesses the effect of the four aspects of the 2013 reform of the Staff Regulations involving the biggest impact on pension expenditure.

The approach taken was to estimate the extra pension costs which would be incurred by 2064 if those four provisions of the 2013 Staff Regulations had not been introduced.

It should be noted that only the four aspects specifically mentioned here were taken into account in the study. Other aspects that might play a role for future pension expenditure and lead to considerable additional savings, such as the average recruitment age, the average presence at higher grades or the evolution of the pension contribution rate, before and after the 2013 SR reform, are not taken into account, as not directly originating from amendments to the legal provisions of the Staff Regulations.

Those four elements (parameters hereinafter) are:

- the **pensionable age**: the normal pensionable age is 66 years for staff recruited after 1st January 2014, with transitional measures for staff recruited before that date (Article 52 of the SR and Article 22 of Annex XIII thereto);
- **the accrual rate** of 1.8% per year for staff recruited since 1st January 2014, 1.9% for staff recruited between 1st May 2004 and 31st December 2013 and 2.0% for staff recruited before 1st May 2004 (Article 77(2) of the SR and Article 21 of Annex XIII thereto);
- the **temporary non-application of the salary method** and the creation of the **new function group AST/SC** corresponding to clerical and secretarial duties (Articles 5, 65(4) and 66 of the SR);
- **the new career structure in function groups AST and AD**: access to the higher grades of AD13 and AD14 is made possible only via a selection procedure for officials not assigned to the types of post 'Head of Unit or equivalent', or 'Adviser or equivalent', similarly access to grades AST 10 and AST 11 (Senior Assistant) is now available for the best performing assistants who pass a selection procedure and carry a high degree of responsibility (Article 45(1) of the SR and Annex I thereto).

The interdependence of these parameters means that analysing their impact *ceteris paribus* may lead to biased results. Nevertheless, despite their potential statistical uncertainty, single impacts are provided in section 7 in a synthesis of the simulations.

In order to establish the individual impact of each parameter, two scenarios were drawn up for each:

- "Test Scenario" is a fictional situation where it is assumed that the 2013 SR reform had not entered into force,
- "Current Scenario" involves forecasting population and expenditure following the 2013 SR Reform.

4. Actuarial Assumptions

The assumptions have a fundamental influence on the long-term projections. Those made in this study were developed in conjunction with DG HR and made consistent with accepted actuarial practices. Finally, they were validated by independent experts.

4.1. Literature

Actuarial literature¹⁶ universally agrees on the fact that it is highly unlikely that projections will exactly be realised: experience will diverge from the projected values.

The actual values of the parameters may differ from those assumed, and there will be stochastic variations around those parameters.

Long-term projections require long-term assumptions. Unfortunately, the long-term average rates are unpredictable, so **this is not a prediction but an assumption: the *hypothetical nature of a long-term pension cost analysis*** must be emphasised.

*"The purpose of a pension forecast is to test the future cost impact of some expected or proposed changes. The emphasis is on the future trend of the cost. Forecast results should be shown as estimates. Each individual item (e.g. liabilities, benefit payments, assets, etc.) may differ greatly from that produced by a subsequent valuation. It is not necessary, and it is often misleading, to provide detailed results for each forecast year."*¹⁷

The opportunity to use the so-called "actuarial methods" when performing social security pension schemes projections, has been outlined by Crescentini and Spandonaro (1992)¹⁸ among others.

¹⁶ See for instance Subramaniam Iyer, "Actuarial mathematics of social security pensions", *Quantitative Methods in Social Protection Series, International Labour Office (ILO) and International Social Security Association (ISSA), 1999.*

¹⁷ Sze M., "The process of pension forecasting", *Journal of Actuarial Practice* vol.1, No.1, 1993

¹⁸ Crescentini Laura, Spandonaro Federico, 1992, "Methodological developments in forecasting techniques";

In particular, the "*component method*" suggests breaking the covered population down into components, and then simulate the evolution of each component over time. The extent of the breakdown depends on the availability of the data for the valuation and on the computing capacity at disposal of the actuary. The minimum breakdown required is by:

- category of covered person (active staff, retirees, invalids, widows and orphans),
- sex,
- age.

Additional breakdown is justified only if it is expected to lead to a commensurate increase in the precision of the projections.

Methodology has to be tailored to the level of complexity of the assumptions. Depending on the assumptions, the methodology can be simplified: assumptions should be kept as simple as possible, unless there are adequate grounds to do otherwise.

4.2. Demographic assumptions

4.2.1. Population

The population at the beginning of the projection exercise is composed by the individuals present in the PSEO database¹⁹ at 31st December 2014.

Active staff include Officials, Temporary Agents, Contract Agents, Parliamentary Assistants.

Pensioners include the Retirees, the Deferred Pensioners, the Beneficiaries of an Invalidity Pension, the Beneficiaries of an Invalidity Allowance, the Widows and the Orphans.

The total PSEO population has been split into 2 971 homogeneous classes named "*population aggregate for projection purpose (PaP)*", and this on the basis of the criteria below:

- administrative status,
- applicable Staff Regulations depending on the date of recruitment,
- contract type,
- contract length,
- function group,
- age.

The approach known as "*open group*" is used, which involves that new members (hereinafter "*New Entrants*") are allowed to enter the PSEO population all along the projection exercise.

It is widely accepted actuarial practice, to put in place some simplifications when carrying out similar exercises.

¹⁹ The PSEO database is maintained, yearly updated and managed by the Pension Team in Unit C3 of Eurostat

The present study, consistently with what was done in the 2010 one, neglects any future EU enlargements mainly due to their very low predictability in terms of likelihood and extent. Moreover since 2010 (date of release of the previous study) only one EU enlargement occurred.

Such a stable framework is realistic and permits to "*isolate*" and outline the impact of the current population structure on future pension expenditure.

In addition, the staff reductions foreseen by the Interinstitutional agreement for the remaining years of the period 2013-2017 have been implemented in the calculation tool.

The 2013 reform of the Staff Regulations introduced the new Function Group of Secretaries and Clerks (AST-SC)

In the light of these observations, the growth rate of the active population has been set to -3% for the whole projection. The population at the beginning of the projection incorporates the staff reductions already operated under the interinstitutional agreement.

4.2.2. Population Transitions

First step in the projection technique is the production of estimates of number of individuals in each of the population sub-groups at discrete time-points (year 0 to 50), starting from given initial values (time $t=0$ on 31.12.2014).

Death, invalidity, retirement, turnover are events which involve a "*negative*" demographic impact. Those events determine a *Population Transition* which involves a transfer from one population class to another.

For each of the 50 years under analysis, it is necessary to generate new entrants which will permit to keep the active population stable.

New entrants are introduced according to the formula below:

$$\text{number of newcomers at } T_n = \text{number of actives disappeared between } T_{n-1} \text{ and } T_n$$

4.2.3. Active Staff

The present study assumes that the active population will remain constant over the period 2014-2064 exception made for years 2015, 2016 and 2017 when the staff reduction is implemented.

4.2.4. Life Tables

The Life Table employed in the present study is the same as the one used in 2014 for the calculation of the pension liability and pension contribution rate: the International Civil Servant Life Table 2013 (ICSLT 2013). ICSLT 2013 is the outcome of a joint project between Eurostat and the International Service for Remunerations and Pensions (ISRP) attached to the OECD: the ICSLT 2013 has been

adopted by the Eurostat Working Group on Article 83 of the Staff Regulations at its June 2014 meeting.

ICSLT 2013, which is a prospective (dynamic) mortality table, is applied to the whole population. In particular separate Life Tables are used for the Male and Female populations.

Concerning the disabled staff, in accordance with common actuarial practices assuming that they die at slightly younger age than healthy persons, the 2013 ICSLT brought three years forward is applied.

This life table has to be updated only on the occasion of the five-yearly actuarial assessment which will take place in 2018²⁰.

No specific rules related to the Life Tables were directly affected by the 2013 SR reform, thus no savings are expected directly originating from this item.

4.2.5. Invalidation Tables

The employed Invalidation Table is the “EU 2013 Invalidation Table” which contains the probabilities to become disabled depending on age.

The calculations differentiate between the beneficiaries of an Invalidation Pension as provided by the Staff Regulations before 1st May 2004 and the beneficiaries of an Invalidation Allowance as created by the 2004 SR reform with less favourable conditions, especially with respect to the calculation of their financial entitlements as compared to the former disability pension.

No specific rules related to the Invalidation Tables were directly affected by the 2013 SR reform, thus no savings are expected directly originating from this item.

4.2.6. Deferral Tables

Staff who has contributed to the PSEO for ten years at least, are entitled to a pension deferred to the moment upon reaching the pensionable age.

Deferral Tables contain the probabilities for an active to become a deferred pensioner (deferral rates).

4.2.7. Retirement Tables

The Retirement Tables contain the probability that an individual will retire before a certain age.

Those probabilities depend on the individual status: in particular the date of recruitment certainly affects the retirement behaviour. In particular different applicable accrual rates involve different

²⁰ Please refer to art. 9.2 of Annex XII of the SR

number of service years needed to reach the ceiling of 70% for the computation of the retirement pension (respectively 35 years, 36.8 years and 38.9 years).

It is evident that aside legal provisions, individual choices will deeply affect the actual behaviour of the concerned staff once they have reached the minimum retirement ages.

The estimated additional expenditure without the 2013 SR reform, is obtained taking into account the changes concerning the pensionable ages.

4.2.8. Widow Rates

The surviving spouse of an active, retiree, deferred pensioner or invalid, is entitled to a survivor pension under certain conditions laid down in Annex VIII of the SR.

Widows' rates are the probabilities to generate widows at each age.

No specific rules related to the widows' rates were directly affected by the 2013 SR reform, thus no savings are expected directly originating from this item.

4.2.9. Orphan Rates

The death of a PSEO member may involve paying an orphan's pension to his surviving children.

Orphan rates are the probabilities to die and generate an orphan.

No specific rules related to the orphan's rates were directly affected by the 2013 SR reform, thus no savings are expected directly originating from this item.

4.2.10. Recruitment Policy

The active population is basically kept stable all along the projection period with the following exceptions.

Due to the staff reductions the population of actives is affected by a 1% cut in years 2015 to 2017.

In addition, following the introduction of the new Function Group of AST-SC, in the course of the first 20 years of the projection exercise, Secretaries and Clerks will gradually replace the Assistants till reaching the same number of members.

The estimated additional expenditure without the 2013 SR reform is obtained taking into account the two elements above.

4.2.11. Turnover Rate

The theory distinguishes between involuntary (due to expiry of a contract for instance) and voluntary (resignation for instance) turnover.

Voluntary turnover is generally expected to be higher at younger ages.

In the case of the PSEO, turnover is also strictly dependent on the function group (Contract Agents have evidently higher turnovers than Administrators).

Average turnover rates per function group are used.

No specific rules related to the Turnover rates were directly affected by the 2013 SR reform, thus no savings are expected directly originating from this item.

4.2.12. Age of New Entrants

No specific rules related to the age at recruitment, were directly affected by the 2013 SR reform, thus no savings are expected from this item.

4.3. Economic assumptions

4.3.1. General Salary Growth (GSG)

Salaries are yearly updated compliant with art. 65 of the Staff Regulations.

Annex XI to the SR details the method of calculations of those yearly updates.

A thirty-years moving average of the yearly General Salary Growth (GSG) is used.

In the course of 2011 to 2014 the applied yearly salary updates were different from the calculated ones ("*salary freeze*").

The estimated additional expenditure without the 2013 SR reform, is obtained taking into account the difference between:

- 30y moving average of calculated GSG (without salary freeze);
- 30y moving average of applied GSG (with freeze).

4.3.2. Salary Progression

The Salary Progression depends on step advancements and promotions.

While step advancements generally occur after a fixed period of two years (Article 44(1) of the SR), promotions intervene only after a variable number of years in the same grade and are based on comparative merits (Article 45 to the SR and Annex I thereto).

Average Salary Progression Rates by Function Group are used.

The estimated additional expenditure without the 2013 SR reform, is obtained incorporating (see part. 4):

- amendments to the average career rates from provisions of Table B.1 of Annex I to the Staff Regulations (for Administrators and Assistants),
- introduction of specific slower average career rates from provisions of Table 2 of Annex I to the Staff Regulations (for Secretaries & Clerks),
- slower average career rates proposed by DG HR to reflect the actual career perspectives,
- career limitations imposed to AD 12, AD 13 and AST 9 staff²¹.

4.3.3. Basic Salaries at Recruitment

The Basic Salaries at Recruitment are clearly set by the legislator²².

Those basic salaries are used for the purpose of the projection.

The estimated additional expenditure without the 2013 SR reform, is obtained by:

- Incorporating the hypothetical salary adjustments as described in part. 4.2.1 above;
- applying the basic salaries of the AST members to the members of the AST-SC function group, thus assuming that the AST-SC function group had not been introduced with the 2013 SR reform and that ASTs are recruited to perform clerical and secretarial duties.

4.3.4. Pension Accrual Rate

The yearly pension accrual rates are linked to the date of entry into service (see part 4).

The estimated additional expenditure without the 2013 SR reform, is obtained observing the impact of the "fictitious" application of a 1.9% yearly rate to the staff recruited after 2014.

4.3.5. Inflation Rate

The forecast is made at constant prices to strengthen the comparability over the years, by isolating the variables that have real influence on the pension expenditure, that is, the population structure and the long term impact of the 2013 SR reform.

²¹Articles 30 & 31 in Annex XIII of the SR.

²²Please refer to Article 66 of the SR.

5. Results

5.1. Key Findings

The two recent (2004 and 2013) reforms of the Staff Regulations amended a number of legal provisions related to the pension expenditure.

Some amendments are directly meant to reduce the cost of pensions such as the further reduction of the yearly pension accrual rate from 1.9% to 1.8%, and the further increase of the pensionable age from 63 to 66.

Other changes to the Staff Regulations, while not directly related to pension cost, have an impact on the overall cost of pensions by limiting the final salaries on which pension benefits are calculated. These include the creation of the AST/SC function group, lower entry level salaries, slower or capped careers paths, the suspension of the application of the salary method as well as staff reductions in the framework of an interinstitutional agreement.

On the assumption that the active population will remain constant once the staff reductions are fully implemented, the number of beneficiaries of the scheme (old-age pensioners, invalids and survivors) will pass from around 20,700 in 2014²³ to about 49,100 in 2064 (please refer to Table 2 below) for an overall increase of 137%.

However at the same time, the yearly pension expenditure (at constant prices) will have its peak in year 2043/2044 when it is estimated to 1 956 million Euros, before falling to 1 339 million Euros in 2064 (please refer to Table 8 below).

This long-term pension expenditure stability, analysed together with the 137% increase in the real number of beneficiaries observed over the same period, is a clear demonstration of the effectiveness of the combined 2004 and 2013 reforms of the Staff Regulations.

The simulation performed reveals also that, without the 2013 SR reform, the expected additional pension expenditure would have been remarkably higher (33.6%, Table 10)

As mentioned above, the new measures introduced by the 2013 SR reform are expected to lead to growing annual cost savings between 2015 and 2064: those savings will reach 450 million Euros in 2064.

The total cost savings over 50 years are projected to be 12 768 million Euros.

It has to be outlined that the referred expected savings, are additional to those produced by the 2004 reform of the SR, having the present study only focused on the impact of the four above mentioned key parameters (please refer to Chapter 3 of the present report) amended by the 2013 SR reform.

The impact of other items (not directly originating from the new text of the Staff Regulations after the 2013 reform) on future pension has not been addressed by the present study: the additional savings associated with those items could be sizeable.

²³ In this study, population data always refer to the 31st December of a given year, whereas expenditure is that of the whole year.

5.2. Evolution of the Population

5.2.1. Projection of the Active Population

The active population is assumed to remain constant throughout the period, exceptions made for the 1% staff reductions applied in years 2015 to 2017.

Active staff will pass from 58 565 in 2015 to 56 808 in 2064 (end of the projection timeframe).

Table 1: Active Population

Active Population		
Category	Number in 2014	Number in 2064
Officials	36057	34975
Temporary Staff	9460	9176
Contract Staff	11361	11020
Parliamentary Assistants	1687	1636
Total	58565	56808

5.2.2. Projection of the Not-Active Population

The number of not actives (retirees, disabled staff, survivors) over the 50 years period is expected to increase by 137% equivalent to a 2.7% linear yearly increase. The highest yearly increase occurs after ten years from the beginning of the projection whereas in the last decade the total of retirees remains practically stable.

Table 2: Projection of the number of Not-Active Population (Retirees+Invalids+Survivors)

Year of projection	Retirees+Invalids+Survivors	Yearly Change	Year of projection	Retirees+Invalids+Survivors	Yearly Change	Year of projection	Retirees+Invalids+Survivors	Yearly Change
2014	20701	0.00%	2031	32902	3.10%	2048	46369	0.85%
2015	20856	0.75%	2032	33838	2.85%	2049	46743	0.81%
2016	21074	1.05%	2033	34818	2.89%	2050	47052	0.66%
2017	21348	1.30%	2034	35660	2.42%	2051	47354	0.64%
2018	21725	1.76%	2035	36437	2.18%	2052	47591	0.50%
2019	22272	2.52%	2036	37153	1.97%	2053	47804	0.45%
2020	22891	2.78%	2037	37881	1.96%	2054	48014	0.44%
2021	23651	3.32%	2038	38608	1.92%	2055	48215	0.42%
2022	24460	3.42%	2039	39345	1.91%	2056	48400	0.38%
2023	25247	3.22%	2040	40173	2.11%	2057	48565	0.34%
2024	26097	3.36%	2041	41104	2.32%	2058	48721	0.32%
2025	27071	3.73%	2042	42037	2.27%	2059	48845	0.25%
2026	28041	3.58%	2043	42965	2.21%	2060	48924	0.16%
2027	29017	3.48%	2044	43887	2.15%	2061	48993	0.14%
2028	30012	3.43%	2045	44810	2.10%	2062	49036	0.09%
2029	31002	3.30%	2046	45466	1.46%	2063	49066	0.06%
2030	31912	2.93%	2047	45979	1.13%	2064	49067	0.00%

5.3. Pension Expenditure

The performed estimation of the pension expenditure over a fifty-years period, covers pension-related expenditure under Chapters 2, 3 & 4 of Annex VIII to the SR (Retirement Pension and Severance Grant, Transfers-Out, Invalidation Pension/Allowance, Survivor's Pensions).

Figures provided in the tables below show the major trends that are expected over the period 2015-2064.

Tables 3 to 8 give projected expenditure broken down as follows:

- Table 3: Retirement Pensions Expenditure;
- Table 4: Invalidation Pensions and Allowances Expenditure;
- Table 5: Survivor Pensions Expenditure;
- Table 6: Retirement, Invalidation, Survivor's Pensions Expenditure;
- Table 7: Transfers-Out & Severance Grants Expenditure;
- Table 8: Total Pensions Expenditure.

5.3.1. Retirement Pension Expenditure

Table 3: Projection of Retirement Pension Expenditure (€ m)

Year of projection	Retirement Pension Expenditure	Yearly Change	Year of projection	Retirement Pension Expenditure	Yearly Change	Year of projection	Retirement Pension Expenditure	Yearly Change
2014	994	0,00%	2031	1495	2,28%	2048	1524	-1,87%
2015	998	0,49%	2032	1522	1,86%	2049	1493	-2,02%
2016	1005	0,65%	2033	1547	1,62%	2050	1459	-2,24%
2017	1016	1,16%	2034	1562	0,94%	2051	1425	-2,38%
2018	1033	1,65%	2035	1571	0,59%	2052	1390	-2,45%
2019	1058	2,35%	2036	1576	0,36%	2053	1355	-2,52%
2020	1086	2,71%	2037	1579	0,16%	2054	1321	-2,51%
2021	1122	3,26%	2038	1578	-0,04%	2055	1287	-2,56%
2022	1159	3,37%	2039	1576	-0,13%	2056	1254	-2,57%
2023	1197	3,21%	2040	1577	0,03%	2057	1222	-2,56%
2024	1234	3,16%	2041	1581	0,28%	2058	1191	-2,54%
2025	1277	3,46%	2042	1584	0,21%	2059	1161	-2,51%
2026	1317	3,10%	2043	1587	0,14%	2060	1132	-2,48%
2027	1353	2,75%	2044	1588	0,08%	2061	1104	-2,44%
2028	1390	2,74%	2045	1588	0,00%	2062	1078	-2,40%
2029	1430	2,88%	2046	1574	-0,85%	2063	1053	-2,35%
2030	1461	2,17%	2047	1553	-1,36%	2064	1028	-2,29%

5.3.2. Invalidity Pension/Allowance Expenditure

Table 4: Projection of Invalidity Pension and Allowance Expenditure (€ m)

Year of projection	Invalidity Pension / Allowance Expenditure	Yearly Change	Year of projection	Invalidity Pension / Allowance Expenditure	Yearly Change	Year of projection	Invalidity Pension / Allowance Expenditure	Yearly Change
2014	153	0,00%	2031	74	-3,13%	2048	43	-0,69%
2015	144	-5,30%	2032	72	-2,92%	2049	42	-0,41%
2016	137	-4,89%	2033	70	-2,56%	2050	42	-0,19%
2017	130	-5,08%	2034	68	-2,57%	2051	42	0,28%
2018	124	-4,60%	2035	66	-2,67%	2052	43	0,41%
2019	118	-4,86%	2036	65	-2,84%	2053	43	0,42%
2020	113	-4,21%	2037	63	-2,90%	2054	43	0,31%
2021	108	-4,76%	2038	61	-3,26%	2055	43	0,42%
2022	103	-4,52%	2039	59	-3,19%	2056	43	0,34%
2023	99	-4,37%	2040	57	-3,70%	2057	43	0,24%
2024	95	-4,18%	2041	54	-4,20%	2058	43	0,23%
2025	91	-3,97%	2042	52	-4,38%	2059	43	0,14%
2026	87	-3,76%	2043	49	-4,37%	2060	44	0,10%
2027	85	-3,15%	2044	47	-4,78%	2061	44	0,09%
2028	82	-3,37%	2045	45	-4,68%	2062	44	0,00%
2029	79	-3,30%	2046	44	-2,83%	2063	44	0,00%
2030	76	-3,30%	2047	43	-1,85%	2064	44	0,06%

5.3.3. Survivors' Pension Expenditure

Table 5: Projection of the Survivor's Pension Expenditure (Widows+Orphans' expenditure) (€ m)

Year of projection	Survivor's Pension Expenditure	Yearly Change	Year of projection	Survivor's Pension Expenditure	Yearly Change	Year of projection	Survivor's Pension Expenditure	Yearly Change
2014	141	0,00%	2031	211	2,04%	2048	255	-0,13%
2015	146	3,30%	2032	216	2,00%	2049	254	-0,29%
2016	150	2,91%	2033	220	1,97%	2050	253	-0,44%
2017	154	2,64%	2034	224	1,87%	2051	251	-0,59%
2018	158	2,59%	2035	228	1,79%	2052	249	-0,77%
2019	163	2,62%	2036	232	1,70%	2053	247	-0,95%
2020	167	2,48%	2037	236	1,61%	2054	244	-1,13%
2021	170	2,31%	2038	239	1,51%	2055	241	-1,31%
2022	174	2,40%	2039	242	1,37%	2056	237	-1,50%
2023	178	2,23%	2040	245	1,24%	2057	233	-1,67%
2024	182	2,24%	2041	248	1,08%	2058	229	-1,82%
2025	186	2,25%	2042	250	0,91%	2059	225	-1,97%
2026	191	2,18%	2043	252	0,75%	2060	220	-2,11%
2027	195	2,14%	2044	254	0,54%	2061	215	-2,22%
2028	199	2,16%	2045	255	0,35%	2062	210	-2,33%
2029	203	2,10%	2046	255	0,18%	2063	205	-2,43%
2030	207	2,06%	2047	255	0,02%	2064	200	-2,51%

5.3.4. Retirement, Invalidity, Survivors' Pension Expenditure

Table 6: Projection of the Retirement, Invalidity and Survivor's Pension Expenditure (€ m)

Year of projection	Ret_Inv_Surv Pension Expenditure	Yearly Change	Year of projection	Ret_Inv_Surv Pension Expenditure	Yearly Change	Year of projection	Ret_Inv_Surv Pension Expenditure	Yearly Change
2014	1288	0,00%	2031	1780	2,02%	2048	1821	-1,60%
2015	1289	0,11%	2032	1810	1,68%	2049	1789	-1,74%
2016	1293	0,28%	2033	1837	1,50%	2050	1755	-1,94%
2017	1301	0,67%	2034	1854	0,92%	2051	1718	-2,06%
2018	1316	1,13%	2035	1865	0,61%	2052	1682	-2,13%
2019	1338	1,70%	2036	1873	0,41%	2053	1645	-2,22%
2020	1366	2,07%	2037	1877	0,24%	2054	1608	-2,23%
2021	1400	2,48%	2038	1878	0,04%	2055	1571	-2,29%
2022	1437	2,64%	2039	1877	-0,03%	2056	1535	-2,32%
2023	1474	2,55%	2040	1879	0,07%	2057	1499	-2,34%
2024	1511	2,56%	2041	1883	0,25%	2058	1463	-2,34%
2025	1554	2,85%	2042	1887	0,17%	2059	1429	-2,35%
2026	1595	2,59%	2043	1888	0,09%	2060	1396	-2,35%
2027	1632	2,36%	2044	1889	0,02%	2061	1363	-2,33%
2028	1671	2,35%	2045	1887	-0,07%	2062	1332	-2,31%
2029	1712	2,48%	2046	1873	-0,76%	2063	1301	-2,29%
2030	1745	1,90%	2047	1851	-1,19%	2064	1272	-2,25%

5.3.5. Transfers-Out & Severance Grants Expenditure

Table 7: Projection of Transfers-Out & Severance Grants (€ m)

Year of projection	TrOut+SevGr Expenditure	Yearly Change	Year of projection	TrOut+SevGr Expenditure	Yearly Change	Year of projection	TrOut+SevGr Expenditure	Yearly Change
2014	113	0,00%	2031	77	-1,68%	2048	67	-0,04%
2015	108	-4,52%	2032	76	-1,53%	2049	67	-0,11%
2016	103	-3,96%	2033	74	-1,72%	2050	67	0,15%
2017	100	-2,95%	2034	73	-1,67%	2051	67	0,00%
2018	99	-1,51%	2035	72	-0,96%	2052	67	-0,05%
2019	97	-1,54%	2036	72	-1,13%	2053	67	0,10%
2020	96	-1,37%	2037	71	-0,68%	2054	67	0,03%
2021	94	-1,84%	2038	71	-0,75%	2055	67	0,18%
2022	91	-3,42%	2039	70	-0,79%	2056	67	-0,10%
2023	89	-1,60%	2040	69	-0,88%	2057	67	0,14%
2024	88	-1,77%	2041	69	-1,06%	2058	67	-0,16%
2025	86	-1,87%	2042	68	-0,52%	2059	67	0,12%
2026	85	-1,83%	2043	68	-0,64%	2060	67	-0,09%
2027	83	-1,92%	2044	67	-0,77%	2061	67	0,14%
2028	81	-2,64%	2045	67	-0,24%	2062	67	-0,11%
2029	79	-1,79%	2046	67	-0,64%	2063	67	0,16%
2030	78	-1,59%	2047	67	-0,04%	2064	67	-0,34%

5.3.6. Total Pension Expenditure

Table 8: Projection of total Pension Expenditure (Retirement,Invalidity,Survivor,Transfers-out) € m)

Year of projection	Ret_Inv_Surv Pension Expenditure & Tr Out	Yearly Change	Year of projection	Ret_Inv_Surv Pension Expenditure & Tr Out	Yearly Change	Year of projection	Ret_Inv_Surv Pension Expenditure & Tr Out	Yearly Change
2014	1400	0.00%	2031	1857	1.86%	2048	1888	-1.55%
2015	1397	-0.26%	2032	1885	1.54%	2049	1856	-1.68%
2016	1396	-0.04%	2033	1911	1.37%	2050	1821	-1.86%
2017	1402	0.40%	2034	1927	0.82%	2051	1785	-1.98%
2018	1415	0.95%	2035	1937	0.55%	2052	1749	-2.05%
2019	1436	1.48%	2036	1944	0.35%	2053	1711	-2.13%
2020	1462	1.84%	2037	1948	0.20%	2054	1675	-2.14%
2021	1494	2.20%	2038	1949	0.01%	2055	1638	-2.19%
2022	1528	2.26%	2039	1947	-0.06%	2056	1601	-2.23%
2023	1563	2.30%	2040	1948	0.03%	2057	1566	-2.24%
2024	1599	2.31%	2041	1952	0.21%	2058	1530	-2.25%
2025	1641	2.59%	2042	1955	0.14%	2059	1496	-2.24%
2026	1679	2.36%	2043	1956	0.07%	2060	1462	-2.24%
2027	1715	2.14%	2044	1956	-0.01%	2061	1430	-2.22%
2028	1752	2.11%	2045	1954	-0.08%	2062	1398	-2.21%
2029	1792	2.29%	2046	1940	-0.76%	2063	1368	-2.17%
2030	1823	1.75%	2047	1917	-1.15%	2064	1339	-2.15%

5.4. Impact of the 2013 Reform – Synthesis of the simulations

Sensitivity analysis is highly recommended²⁴ to assess the impact of each parameter intervening in the related calculations.

Table 9 shows the extra pension costs which would be incurred by 2064 in the hypothetical scenario where no 2013 SR reform is implemented.

The model estimates that the total pension expenditure in 2064 without the 2013 reform, would have been 450 million Euros higher (33.6%). This amount is split into several components each linked to a particular parameter.

Table 10 provides the related information.

Table 9: Impact analysis of the 2013 SR Reform

Additional costs without the 2013 SR Reform (year 2064)		
Parameter	Mio €	%
Entry Salary Level	102	7.64%
General Salary Growth	94	7.05%
Recruitment Policy	74	5.55%
Retirement_Table	74	5.49%
Individual Salary Progression	71	5.31%
Accrual Rate	34	2.54%
	450	33.6%

When analysing the effect of the single parameters involving savings, it is necessary to observe that some of the effects are correlated, for instance changes in the accrual rate are correlated with changes in the pensionable age.

It is to be outlined that the estimations are meaningful only at the most aggregated level being the parameters described above statistically interrelated.

5.5. Impact of the 2013 SR reform: yearly savings

Graph 1 provides a view of the expected savings from the 2013 SR reform.

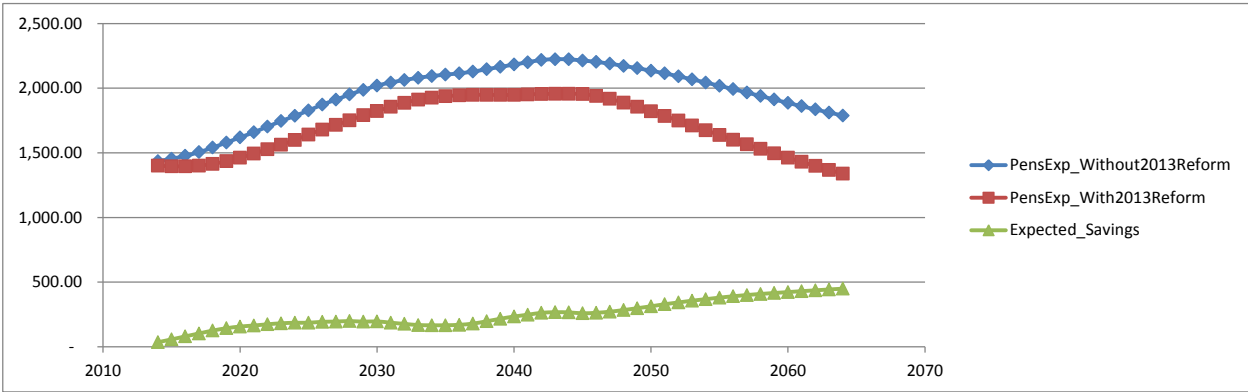
Those savings are expected to grow over time and reach their maximum of 450 million Euros in 2064 (last year of the projection exercise).

Graph 1 shows that in the second half of the projection period the pension expenditures is supposed to decrease: this is due to the generational effect of replacing members benefitting from old Staff Regulations provisions with members subject to the less favourable conditions introduced with the reform.

Overall the estimated hypothetical additional costs over 50 years, without the 2013 SR, are expected to be of the order of 13 billion Euros (12 768 million Euros).

²⁴ McGillivray (1996) and Picard (1996)

Graph 1: Projected pension expenditure with and without the 2013 reform of the Staff Regulations and annual cost savings at 2014 prices



6. Comparative analysis of the 2010 and 2016 studies

Following the two major reforms of the Staff Regulations occurred in 2004 and 2014, two studies were carried out to analyse the effects of some relevant provisions on the long-term pension expenditure.

The time lag between the entry into force of the amended Staff Regulations in 2004 and the completion in 2010 of the study itself which enabled Eurostat to benefit from substantial insights on the practical impact of the new legal provisions.

The 2004 reform coincided with the EU enlargement and its catalysing impact on recruitment, a substantial part of the reference population was already subject to the amended rules.

The present study relies on a restricted experience of the actual impact of the 2013 SR reform. This is due on the one hand to the narrow period of time between the reform itself and the reference date of the study, and on the other hand to the constrained recruitment policy under the 2013 Interinstitutional agreement.

These contextual differences are reflected in the assumptions made in the two studies, making it difficult to undertake an objective comparison between them. However, due regard should be made to the combined findings of these studies when it comes to the projected pension expenditure in the long-term. Indeed it should be pointed out that in the recent years the PSEO was joined by the EEAS, the parliamentary assistants of the European Parliament and a number of agencies. Therefore the present study reveals additional savings resulting from the 2004 reform that could not be assessed under the assumptions of the 2010 Eurostat study.

7. Review of Eurostat calculations

Consistently with what was done on occasion of the 2010 Eurostat study on pension expenditure savings derived from the 2004 SR reform, the methodology, assumptions, and computations performed by Eurostat have been reviewed and validated by external actuarial experts.