Table 29

First pillar pensions in Belgium
(Grant report)

October 2017

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Federal Planning Bureau

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Abstract - The supplementary table 29, "Accrued-to-date pension entitlements in social insurance" of the Eurostat transmission program covers the statutory pensions and occupational pension schemes in social insurance in Belgium. In a working paper that was published May 2017, the Federal Planning Bureau presented a first methodology to complete the columns on the statutory pension schemes. Following this publication and the preliminary data transmission towards Eurostat mid-2017, the decision was taken to change the model and implement the PBO-methodology. Moreover, the first model contained an error in the programming part which lead to an overestimation of the accrued rights. This error has been corrected for. Consequently, the accrued-to-date pension entitlements are lower than the ones presented in the working paper.

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Executive summary

The supplementary table 29, "Accrued-to-date pension entitlements in social insurance" of the Eurostat transmission program covers the statutory pensions and occupational pension schemes in social insurance in Belgium. In a working paper[1] that was published May 2017, the Federal Planning Bureau presented a first methodology to complete the columns on the statutory pension schemes. Following this publication and the preliminary data transmission towards Eurostat mid-2017, the decision was taken to change the model and implement the PBO-methodology in the projection of the pensions. Moreover, the first model contained an error in the programming part which lead to an overestimation of the accrued rights. This error has been corrected for. Consequently, the accrued-to-date pension entitlements are lower than the ones presented in the working paper.

The table 29 is described by ESA 2010, the European System of Accounts 2010 and has as goal to establish a complete and consistent coverage of pension entitlements in a country and to promote comparability across countries. Therefore, the table brings together information already shown in the standard or 'core' national accounts (columns A to F of Table 29) with information on unfunded pension systems (the statutory pension schemes), which are not reported in the core accounts (columns G and H of Table 29). To allow consistent comparability across countries, the supplementary table covers only the pension part of social insurance. For Belgium, the statutory pension schemes will contain old-age pensions and survivors' pensions as they are an integral part of the pension scheme. The assistance scheme (guaranteed income for the elderly), disability benefits and unemployment benefits with company allowance non-job seeker are excluded. Individual personal pensions are also excluded as they are no part of social insurance.

The report comments on the assumptions of the modelling and the estimation methodology of the values. The values that are presented in this report are those that will be send in the final transmission to Eurostat. The transmitted information will comprise the table 29, two alternative tables with a different discount rate and the fact sheets on the pension schemes as requested by Eurostat.

When interpreting the values of table 29, one should keep in thought that the pensions entitlements are presented as accrued-to-date liabilities. They are in fact present values of the pension entitlements of the retired population and the part of pension entitlements that is currently accrued by future beneficiaries. Accrued-to-date liabilities do not represent public debt and are not an indicator of the fiscal or financial sustainability of the pension systems and are only appropriate for national accounts purposes. An assessment of the sustainability of the pension systems can be found in the reports of the Ageing Working Group or the Belgian Study Commission for Ageing.

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[1]   Brys, Y. (2017), Accrued-to-date pension entitlements in Belgium, Working paper 06-17, Federal Planning Bureau, 75p.

Synthèse

Le tableau supplémentaire 29 « Droits à pension acquis à une date donnée dans le cadre de l'assurance sociale » du programme de transmission des données à Eurostat couvre les régimes des pensions légales et des pensions complémentaires de l'assurance sociale en Belgique. Le Bureau fédéral du Plan a présenté, dans un working paper[2] publié en mai 2017, une première méthodologie définie pour compléter les colonnes sur régimes légaux de pension. À la suite de cette publication et de la transmission préliminaire de données à Eurostat à la mi 2017, il a été décidé de modifier le modèle et de mettre en œuvre la méthodologie sur les obligations en matière de pension (PBO). En outre, le premier modèle contenait une erreur de programmation qui a entraîné une surestimation des droits acquis. Cette erreur a été corrigée. Par conséquent, les droits à pension acquis à une date donnée sont moins élevés ici que ceux présentés dans le working paper.

Le tableau 29, défini dans le Système européen des comptes (SEC 2010), est destiné à donner un aperçu complet et cohérent des droits à pension constitués dans un pays et à permettre la comparabilité entre les pays. Il rassemble dès lors des informations déjà enregistrées dans les comptes nationaux standard ou principaux (soit les colonnes A à F du tableau 29) et des informations sur les régimes de pension non assortis de réserves, qui ne sont pas repris dans les comptes principaux (colonnes G et H du tableau 29). Afin de permettre des comparaisons cohérentes entre pays, le tableau supplémentaire se limite au volet « pensions » de l'assurance sociale. Pour ce qui concerne la Belgique, les régimes légaux de pension englobent les pensions de retraite et les pensions de survie puisqu'elles font partie intégrante des régimes de pension. Le régime d'assistance (soit la garantie de revenu aux personnes âgées), les allocations d'invalidité et les allocations de chômage avec complément d'entreprise sont exclus. Les pensions individuelles constituées à titre privé sont également exclues dès lors qu'elles ne font pas partie de l'assurance sociale.

Ce rapport commente les hypothèses sous-jacentes à la modélisation et la méthodologie d'estimation détaillée des droits à pension acquis. Les valeurs présentées dans ce rapport seront envoyées à Eurostat dans le cadre de la transmission finale des tableaux. Les informations transmises comprendront le tableau 29, deux tableaux alternatifs calculés sur la base d'un taux d'actualisation différent et les fact sheets sur les régimes de pension comme requis par Eurostat.

Pour interpréter les valeurs du tableau 29, il convient de garder en mémoire que les droits à pension sont présentés comme un passif existant à une date donnée. Ils représentent les valeurs actuelles des droits à pension des bénéficiaires actuels et des droits à pension déjà acquis par les futurs bénéficiaires. Les droits à pension acquis à une date donnée ne représentent pas la dette publique et ne constituent pas, en tant que tels, un indicateur de la soutenabilité budgétaire ou financière des systèmes de pension. Ils ne sont dès lors pertinents que pour la comptabilité nationale. L'Ageing Working Group ou le Comité belge d'étude sur le vieillissement évaluent la soutenabilité des systèmes de pension dans leurs rapports respectifs.

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[2]   Brys, Y. (2017), Accrued-to-date pension entitlements in Belgium, Working paper 06-17, Federal Planning Bureau, 75p.

Synthese

De aanvullende tabel 29 'Verworven pensioenrechten in de sociale verzekering' van het Eurostat transmissie programma heeft betrekking op de wettelijke en de aanvullende pensioenstelsels van de sociale verzekering in België. In een working paper[3] die gepubliceerd werd in mei 2017 presenteerde het Federaal Planbureau een eerste methode om te kolommen van de tabel in te vullen die betrekking hebben op de wettelijke pensioenstelsels. Volgend op deze publicatie en de datatransmissie naar Eurostat midden 2017 werd beslist het model aan te passen en de PBO-methode in te voeren in de projectie van de pensioenen. Bovendien bevatte het eerste model een fout in de programmering wat tot een overschatting van de verworven rechten leidde. Deze fout werd gecorrigeerd en bijgevolg zijn de verworven pensioenrechten nu lager dan wat in de working paper werd gepresenteerd.

Tabel 29 wordt beschreven in ESA 2010, het European System of Accounts 2010 en heeft als doel een compleet en consistent beeld te geven van de pensioenverplichtingen in een bepaald land en de vergelijking tussen landen te bevorderen. Hiertoe verzamelt de tabel informatie die reeds in de standaard nationale rekeningen is opgenomen (kolommen A tot en met F van de tabel 29) en informatie over nietgefinancierde pensioenstelsels (wettelijke pensioenstelsels) die niet in deze standaard nationale rekeningen staat (kolommen G en H van de tabel). Om een samenhangende vergelijking tussen landen mogelijk te maken omvat de aanvullende tabel enkel het pensioengedeelte van de sociale verzekeringen. Voor België bevatten de wettelijke pensioensystemen dus ouderdoms- en overlevingspensioenen aangezien ze een integraal deel van het pensioenstelsel vormen. Het bijstandsstelsel (inkomensgarantie voor ouderen), uitkeringen voor arbeidsongeschiktheid en werkloosheidsuitkeringen met bedrijfstoeslag zijn uitgesloten. Individuele pensioenverzekeringen zijn eveneens uitgesloten aangezien ze geen deel uitmaken van de sociale verzekeringen.

Het rapport beschrijft de onderliggende assumpties van het model en de methodologie die gevolgd wordt bij het schatten van de verworven pensioenrechten. De bedragen die in dit rapport worden gepresenteerd zijn de waarden die in de definitieve transmissie naar Eurostat worden verstuurd. De overgemaakte informatie zal bestaan uit de tabel 29, twee alternatieve tabellen met een verschillende verdisconteringsvoet en de fact sheets over de pensioenstelsels zoals gevraagd door Eurostat.

Bij het interpreteren van de bedragen in tabel 29 moet men steeds in gedachten houden dat de pensioenverplichtingen gepresenteerd worden als verworven rechten. Dit zijn de actuele waarden van de pensioenen van de gepensioneerden en het deel van de pensioenrechten dat de toekomstige begunstigden al hebben opgebouwd. Daardoor drukken verworven pensioenverplichtingen geen schuld van de overheid uit en zijn ze geen indicator van de budgettaire of financiële houdbaarheid van de pensioenstelsels en zijn ze alleen geschikt om gebruikt te worden in de nationale rekeningen. De Ageing Working Group of de Belgische Studiecommissie voor de vergrijzing evalueren de houdbaarheid van de pensioenstelsels in hun respectievelijke rapporten.

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[3]   Brys, Y. (2017), Accrued-to-date pension entitlements in Belgium, Working paper 06-17, Federal Planning Bureau, 75p.

1. Introduction

The supplementary table 29 "Accrued-to-date pension entitlements in social insurance" is part of the data transmission programme towards Eurostat, described by ESA 2010, the European System of Accounts 2010 (2008 System of National Accounts for non-European countries). The idea behind the table is to establish complete and consistent coverage of pension entitlements in a country and to promote comparability across countries. Therefore, it brings together information already shown in the standard national accounts (columns A to F of Table 29) with information on unfunded pension systems (the statutory pension schemes), which are not reported in the standard national accounts (columns G and H of Table 29).

For Belgium, the National Accounts Institute is responsible for delivering this table to Eurostat. It has entrusted the National Bank of Belgium (NBB) and the Federal Planning Bureau (FPB) with the completion of the supplementary table. The contribution of the FPB to Table 29 concerns columns G and H. In its May 2017 working paper[4], the FPB described the methodology used to complete both columns. Preliminary data and the working paper were sent to Eurostat during the test transmission of mid-2017. Following this publication and the preliminary data transmission towards Eurostat mid-2017, the decision was taken to change the model and implement the PBO-methodology. Moreover, the first model contained an error in the programming part which lead to an overestimation of the accrued rights. This error has been corrected for. Consequently, the accrued-to-date pension entitlements are lower than the ones presented in the working paper.

After the introduction, the report sketches the Belgian pension system, followed by a presentation of the MIDAS microsimulation model. Chapter four discusses on the assumptions concerning the number of projection years, the retirement age, the pension schemes for which the benefits are included in the table, the mortality rates used, the growth rate of future wages, as well as the way how the minimum pension provisions are taken into account under the ADL approach (accrued-to-date liabilities).

Chapter five and six describe briefly the columns and rows of the table. A full coverage of the methodology used to calculate each of the rows can be found in the beforementioned working paper. The table is accompanied in chapter seven by the sensitivity analysis on the discount rate as required by Eurostat. In chapter eight, the ADLs are expressed in terms of GDP which allows a benchmarking of these values to support the results obtained. This benchmarking is presented in chapter nine.

Annexed to this report is the information that will be provided to Eurostat: the columns G and H of the supplementary table on pension schemes in social insurance, the two tables with alternative discount rates and the fact sheets covering the pensions schemes in columns G and H.

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[4]   Brys, Y. (2017), Accrued-to-date pension entitlements in Belgium, Working paper 06-17, Federal Planning Bureau, 75p.

2.   The pension landscape in Belgium

The Belgian pension system is divided into three pillars:

– The first pillar is a statutory public pension scheme with defined benefits (DB) for 99% of its expenses (only the assistance scheme is means-tested) and based on the pay-as-you-go financing (PAYG) principle. This pillar is the most important, with total expenditure reaching 12.2% of GDP in 2013.

This 12.2% should be interpreted with caution as the Ageing Working Group's definition of pension expenditure was followed. This means that, besides the three pension schemes, this total expenditure also comprises the 'guaranteed income for the elderly' assistance scheme (1% of total pension expenditure in 2013 – AWG definition), the unemployment benefit with company allowance non-job seeker under the wage earners' scheme (4%) and the disability benefits under the wage earners' and self-employed schemes (9%).

The three main pension schemes in the first pillar are the scheme for wage earners (47% of total pension expenditure in 2013 – AWG definition), the scheme for the self-employed (7%) and the scheme for civil servants (32%). For a more detailed description of these three schemes, see section 6.1 and 0.

Since 1 January 1995, the financing of all social expenses for the general schemes for wage earners and the self-employed has been carried out via the so-called 'overall financial management' (contributions and some tax revenues), which implies that there is a global contribution rate for all social security schemes and no longer a contribution rate by scheme. Most social benefits for civil servants, including pensions, are financed through the general budget of the federal government.

– Private occupational pension schemes (the second pillar) are of minor importance: pension spending only amounts to 1.2% of GDP in 2012 for retired wage earners dependent on collective contracts entered into with insurance companies or institutions for occupational retirement provision (no data available for total spending).

Concerning these pensions, an act was passed in 2003, the Act on supplementary pensions of 28 April 2003, which focused on sectoral pension schemes. This act aimed at stepping up their development by improving access to them and by giving more guarantees to workers.

– Private voluntary individual pension schemes constitute the third pillar.

3. The dynamic microsimulation model MIDAS[5]

The computation of the entries for rows 1 and 10 of columns G and H is done by means of the MIDAS model. MIDAS (an acronym standing for 'Microsimulation for the Development of Adequacy and Sustainability') is a dynamic population model with dynamic cross-sectional ageing. It is used by the Federal Planning Bureau in its adequacy assessment of pensions in Belgium.

MIDAS is a microsimulation model, meaning that it models on the level of individuals grouped in households rather than on aggregate data. It is also a dynamic population model with dynamic cross-sectional ageing. This means that it starts from a cross-sectional dataset representing a population of all ages at a certain point in time. The model then simulates the life spans of the individuals in the dataset, including their interactions, over a specified number of future years. So, new individuals are born, go through school, marry or cohabit, enter the labour market, retire and, finally, die. All these events are simulated by the model. During their active years, the individuals build up pension rights, which result in a pension benefit when they retire.

The Federal Planning Bureau assesses the budgetary consequences of ageing using its semi-aggregate MALTESE model. These are produced in the European context of the AWG and in Belgium for the Study Committee on Ageing[6]. To sketch an outlook on the prospective adequacy of pensions that is consistent with these budgetary scenarios, the microsimulation MIDAS model is designed to be as consistent as possible with information from MALTESE. This can be AWG projections and assumptions[7] but, in the Belgian context, MIDAS is often aligned with the projections of the Study Committee on Ageing through the extensive use of alignment procedures. MIDAS also makes sure it follows the same assumptions as MALTESE.

MIDAS uses individuals and households from a representative sample of administrative data on Belgian population in 2011. The sample is extracted from the *Datawarehouse marché du travail et protection sociale* of the Crossroads Bank for Social Security. It contains a little more than 600 000 representative individuals, with retrospective data that is complete for wage earners and only partial for civil servants and self-employed workers. The dataset is enriched with information from the 2011 population census and a dataset containing fiscal information.

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[5] For a more detailed description of the MIDAS model, see Dekkers G. *et al.* (2015)
[6] High Council of Finances (2016)
[7] Dekkers, G. *et al.* (2015)

4. Assumptions

4.1. Base year

The supplementary table on pension schemes in social insurance is a mandatory table for all EU member states. It must be published on a three-yearly basis, and for the first time by the end of 2017; the base year of this first Table 29 is 2015. Contributions, payments of benefits and transfers are those realised during the year 2015. Changes in entitlements due to negotiated changes in scheme structures are included if they result from pension reforms voted before or during 2015. The measures pertaining to years after 2015 are included.

4.2. Number of projection years

The question of the appropriate time horizon of the population and pension liabilities projections is not easy to answer. To achieve the best view on accrued-to-date liabilities of future pensions, one should project until the last pension beneficiary dies, which is perfectly possible as the Table 29 methodology requires a closed group approach. Table 29 and the sensitivity analysis will be based on 85 years of projection, simulating the accrued-to-date liabilities up to 2100. This allows to capture the largest part of future benefit payments.

4.3. Reporting values

The elements of Table 29 are recorded in gross amounts (i.e. without deductions for taxes, service charges associated with the pension scheme, other expected revenues of government or further social security contributions).

4.4. Retirement age

The statutory retirement age in Belgium is currently 65 years for both men and women and in all pension schemes. However, during the base year 2015, a pension reform act was voted in parliament. The Act of 10 August 2015 *"aimed at raising the legal retirement age, conditions for the early retirement pension and the minimum age for the survivor's pension"* was published in the Belgian Official Journal of 21 August 2015. The statutory retirement age will increase from 65 to 66 years by 2025 and again to 67 years by 2030. The minimum age to be granted a survivor's pension will be gradually raised from 45 to 55 by 2030.[8]

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[8]   For a more comprehensive description of these reforms, see Federal Planning Bureau (2015).

4.5. Type of benefits covered by the supplementary table

The focus of the supplementary table is on pension benefits. This means that the assistance scheme (guaranteed income for the elderly), disability benefits and unemployment benefits with company allowance non-job seeker, as well as benefits from individual insurance policies are excluded.

Eurostat allows survivors' benefits to be included in the supplementary table if these are part of the pension scheme, as is the case in Belgium. Survivors' benefits include not only widows' benefits but also orphans' benefits. The latter are not yet modelled in the MIDAS model and are hence not included in this supplementary table.

4.6. Mortality rates

To ensure comparability of results between EU countries, Eurostat recommends using the EUROPOP data.[9] Currently, the projections are made using EUROPOP2015 data issued in March 2017. Pension liabilities must be projected up to 2080 (see section 4.2) to meet the goals of Table 29. This corresponds to the projection horizon of the EUROPOP2015 mortality rates. If mortality rates were needed for years after 2080, they would have been maintained at 2080 levels.

4.7. Inflation

The projections are made at constant prices (2011), i.e. they are expressed in real terms. Therefore, inflation expectations are not taken into account.

4.8. Assumptions on future wages

To estimate the present value of future pension liabilities, a decision must be taken on how future wages are treated. This decision also translates as choosing between the PBO approach (projected benefit obligations) or the ABO approach (accumulated benefit obligations) to compute the pension benefits. The PBO approach takes into account future wage increases (general wage increase and/ or promotions) while an ABO approach involves applying no wage increase and using current wages to compute the pension benefit.

The PBO approach is followed. For the active population, the career is projected until the pensionable age. For the computation of the ADLs, the pension amount is later corrected pro rata the career that the person already had worked up to 2015.

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[9]   Eurostat and ECB (2011)

4.9. Assumptions on pension parameters

Table 1 gives an overview of other variables used in the pension computations. They are adjusted according to the parameters used for computing the budget for the adjustment to living standards as stated in the Generation Pact of 2005. As these parameters in reality only serve to compute a total budget and the actual adjustments to living standards are decided on according to this budget constraint, these variables will not necessarily evolve as presented here. Projection according to these variables is consistent with the Federal Planning Bureau's projection method when future government measures remain unknown.

Table 1   Pension projection parameters in MIDAS
Percentages

Parameter	Annual indexation
Pension cap for the minimum right per career year computation	+ 1.25%
Minimum pension for wage earners	+ 1.00%
Maximum pension benefit for civil servants	+ 1.00%
Minimum pension benefit for civil servants	+ 1.00%
Minimum pension for the self-employed	+ 1.00%

4.10. Indexation of existing pension benefits

In accordance with Eurostat/ECB requirements, the indexation practices of the benefit payments in the different pension schemes are included in the model.[10] Pensions in the wage earners' and self-employed schemes are adjusted annually to living standards by a so-called 'welfare adjustment'. This equals a 0.5% annual increase, as defined by the 'Generation Pact' of 2005. The public sector pensions are adjusted to living standards proportionally to the real wage increase of working civil servants (the '*péréquation*') less 0.5%. This corresponds to the historical trend of the difference between real wage increases and the effective welfare adjustment for civil servants' pensions. This results in the long term in an annual adjustment of 1.5% - 0.5% = 1%.

4.11. Discount rate

As recommended in the Technical Compilation Guide issued by Eurostat and the European Central Bank, a discount rate of 3% in real terms is used.

4.12. Guaranteed minimum pensions and minimum claim per working year

In all pension schemes (wage earners, self-employed and civil servants), a minimum pension is guaranteed. Additionally, the wage earners' scheme has a system of minimum claims per working year. The guaranteed minimum pensions and the minimum claim per working year are only granted when certain criteria on the career duration are met:

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[10]   Eurostat and ECB (2011)

– A wage earner must fulfil a career of at least 2/3 of a full career (so-called severe and flexible criterion) for a guaranteed minimum pension and 15 years of which she/he worked for at least 1/3 of a full-time job in each year for the application of a minimum claim per working year (see section 0).

– The pension scheme of self-employed workers provides for a guaranteed minimum pension in case the self-employed has a career of at least two thirds of a full career (see section 0).

– A guaranteed minimum pension is also provided for when the future beneficiary has had a career in both the wage earners' scheme and the self-employed workers' scheme. Specific criteria based on career duration apply in this case.

– Civil servants are entitled to a guaranteed minimum pension if they have been working for at least 20 years as a civil servant. If the civil servant fulfils this criterion and the earnings-related pension is lower than the guaranteed minimum, a pension supplement is added to the retirement pension to reach this minimum amount (see section 6.1).

A common concept of these guaranteed minimum pensions is that they can only be accessed when a certain career duration can be proved. Following the PBO approach the career of each person is projected up to the pensionable age. The persons will hence be able to build up enough future career years to eventually access the minimum pension. While computing the accrued rights pro rata the career up to 2015, the minimum rights will also be accounted for pro rata the career up to 2015.

5.   Columns of the supplementary table

5.1. Columns G and H

The pension schemes recorded in column G and H are those schemes whose stock of pension entitlements are not recorded in the core national accounts, although a part of their transactions are. Column G covers government schemes for its own employees. This means that this column will hold information on the first pillar pension benefits of civil servants. Column H covers the social security pension schemes and will contain all the information on the first pillar pension benefits of wage earners and the self-employed. As mentioned before, the pension benefits in the supplementary table will refer to old-age pension benefits and survivors' pension benefits.

5.2. Columns J and K

The pension entitlements acquired or held by resident households are reported in column J. The pension entitlements acquired or held by non-resident households are to be reported separately in column K if they are significant.[11] Information on pension benefits paid out to non-residents is only available in the social security pension system for wage earners and the self-employed (column H). In January 2015, 9.8% of all pension benefits were paid out to non-residents (in numbers), or 3.9% of the amount of pension benefits paid out in that month.[12] There is no information on the level of contributions into these systems. Furthermore, information is lacking on the social security benefits for non-resident public service pensioners (column G) and columns A to F.

The limited information that is available does not allow to make a sound estimation of the values that must be entered in columns J and K. As such, these columns will remain empty.

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[11]   The Technical Compilation Guide only mentions column J. However, the official SDMX templates by Eurostat also contain column K.

[12]   Office National des Pensions (2016)

6.   Rows in the supplementary table

In this section, the different rows of the supplementary table are discussed. Columns G and H will be addressed separately.

6.1. Government schemes for own employees

6.1.1. Pension scheme description

The public pension scheme provides benefits for civil servants working in the general government. It consists of the old-age pension, the survivors' pension, and the disability pension (when civil servants are declared permanently unfit to continue their career, regardless of their age or seniority). The disability pension is not included in the Table 29.

The statutory retirement age for civil servants is 65 (there are some exceptions, in particular for the armed forces). This age will be raised to 66 in 2025 and to 67 from 2030 onwards. Early retirement is allowed at the age of 62 for a minimum career length of 40 years. As from 2019 onwards, this will be allowed at 63 for a minimum career length of 42 years.

The pension is calculated as follows:

$$Pension \ = reference \ wage \ . \frac{considered \ service \ years \ (max \ 45 \ years \ )}{tantième} \tag{1}$$

= max 75% reference wage

The retirement pension is calculated in proportion to the reference wage, i.e. the average wage of the last ten years of work (five years for people born before 1962), based on wage brackets. The basic denominator is 60 (the *tantième*) but some have a preferential denominator (55 in teaching and 48 years for magistrates and academic services). With a maximum career length of 45 years, a *tantième* of 60 leads to a maximum replacement rate of 75% of the reference wage.

Civil servants can benefit from a minimum pension, which is a fixed amount, provided they have 20 years of service. If applicable, a pension supplement is added to the retirement pension to reach this minimum amount. Besides the relative maximum of 75% of the reference wage, pensions are also capped at an absolute maximal pension, which is also a fixed amount.

The rules on survivors' pensions were changed in 2015. If an (ex-)civil servant dies, the surviving partner becomes eligible for a survivor's pension. If case the surviving partner has reached a certain minimum age, she/he will receive the survivor's pension. If the surviving partner is younger than this minimum age, she/he will not receive a survivor's pension but a transitional allocation benefit. The minimum age was 45 for the year 2015 and will be gradually raised to 55 by 2030.

A divorced spouse can also be entitled to a survivor's pension under certain conditions. These conditions will not be discussed here. The minimum age condition plays a similar role in these situations. This minimum age was also 45 for the year 2015 and will be gradually raised to 55 by 2030.

Survivors can cumulate (up to a ceiling) a survivor's pension with their own old-age pension. Moreover, the pension is compatible with a professional activity, provided that the income from that activity does not exceed a certain limit. The survivor's pension is calculated as follows:

$$Pension = 60\% \,.\, Reference\ wage \,.\, \frac{considered\ service\ years}{reference\ period} \tag{2}$$

The reference wage and the equivalent service years are determined in the same way as the retirement pension. The reference period consists of the number of months between the first day of the month after the 20th birthday of the deceased spouse and the last day of the month of his/her death, with a maximum of 480 months (40 years). A guaranteed minimum pension also applies here, which is only granted to the surviving spouse (not to orphans or divorced spouses).

Civil servants' pensions are automatically adjusted to the evolution of prices by the health index (unless otherwise decided – see index jump in 2015) and to the real wage increases of active civil servants (the so-called *péréquation*). Retired civil servants therefore share in the benefits of productivity increases. Additional discretionary increases can also be decided on.

Pension schemes for civil servants exist that were once set up by general government or regional authorities, but as today do not longer depend on general budget for their financing (public agencies with a semi-autonomous character, the police force and pension fund structures for local authorities, …). Coherent with current practices in the national accounts, these pension schemes will be reported under the social security schemes.

MIDAS replicates the rules of the civil servants' pension benefits and survivors' benefits, including minimum and maximum pension regulations. However, the dataset used by MIDAS does not contain information on the past revenues of civil servants. These are therefore simulated by means of the observed wage evolution in the public sector. Furthermore, each civil servant is modelled at a *tantième* of 60.

6.1.2. Rows in column G

Row 1 Pension entitlements

To compute the accrued-to-date liability of a retired civil servant, the rights the person is holding at the beginning of the base year (2015) must be taken into account. The ADL for a currently retired person i is obtained by summing up the actual value of all his future pension benefits l:

$$ADL_{i,t} = \sum_{l=1} pension_{i,l} \,.\, v^l \tag{3}$$

A civil servant is entitled to a pension computed on the basis of an average wage at the end of his career, proportional to the years worked until the beginning of the base year (= real number of years already worked). The average wage is based on the wages earned during the last ten or five years before retirement. As this pension is a future benefit, it must be discounted to the beginning of the base year by means of the discount rate to obtain the accrued-to-date liability. For a civil servant i, the formula for the ADL computation of his future pension benefits is as follows:

$$ADL_{i,t} = \frac{x_i}{n_i} \cdot \sum_{l=1} \left(\frac{n_i}{60} \cdot \sum_{j=1}^{10 \, or \, 5} \frac{Wage_{i,t-j}}{10 \, or \, 5} \right) \cdot v^{l+P_i-t} \tag{4}$$

where 't' is the base year, 'P$_i$' the year of retirement for a person i, 'v' the discount factor, 'n$_i$' the number of eligible years spent in the public service up to his retirement and 'x$_i$' the career up to the base year. The number of years 'j' for which the wages are taken into account depends on the date the person was born (giving 10 or 5 years). By summing over 'l', all future pension payments are taken into account.

As described earlier, a part of the ADLs represents the actual value of the pension entitlements of civil servants whose pension schemes were once set up by general government or regional authorities, but as today do not longer depend on general budget for their financing (public agencies with a semi-autonomous character, the pension fund structures for local authorities, …). The part of ADLs that belongs to these categories is estimated pro rata by means of the benefit payments that are reported in the national accounts. Based on this information, 40.36% of the computed ADLS for civil servants will be reported under column H as social security schemes. The ADLs of the pension system for general government employees in column G represent a total amount of 185 101.61 million euro.

Row 2   Increase in pension entitlements due to social contributions

Row 2 collects all the increases in pension entitlements, less the pension scheme service charges if these are deducted from the pension entitlements.

Row 2.1   Employer actual social contributions

This row records the employer actual social contributions. In principle, there are no actual social contributions made by the government for its own employees. Public agencies and public enterprises that must pay a contribution to the general government to finance the pensions of their statutory personnel are reported under the social security schemes of column H. Row 2.1 of column G is put to 0.

Row 2.2   Employer imputed social contributions

Row 2.2 records the imputed contributions made by the government as an employer for its own employees. As column G is classified under the defined benefits pension schemes, this row will be measured as a balancing item. Row 2.2 will capture any changes in pension entitlements not included in the other rows of the table and any 'experience effects' where the observed outcome of pension modelling assumptions (real wage growth rate, discount rate, etc.) differs from the levels assumed.[13]

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[13]   Eurostat and ECB (2011)

$$Row\ 2.2 = R\ 10 - R\ 1 - R\ 2.1 - R\ 2.3 - R\ 2.4 + R\ 2.5 + R\ 4 - R\ 6 - R\ 7 - R\ 8 - R\ 9 \tag{5}$$

Row 2.2 is estimated at 3 036.48 million euro. However, as this row serves as a balancing item, it is less straightforward to interpret the outcomes. This small positive value would imply that actual pension contributions are not totally sufficient to cover the increase in pension entitlements and the pension benefit payments. As for row 3 of column H (see section 6.2.2), it is wiser not to comment on this row yet and to interpret it only when a sufficiently long series of values has been established in future years.

Row 2.3   Household actual social contributions

This row records the household actual social contributions. In principle, there are no actual social contributions made by the households to the public sector pension scheme. The contributions paid by households in the pension scheme, the most important being the mandatory contributions for survivors' pensions, are reported under the social security schemes (see section 6.2.2). Row 2.3 of column G is put to 0.

Row 2.4   Household social contribution supplements

Row 2.4 captures the property income earned or imputed in the scheme. This property income is equivalent to the unwinding of the discount rate, meaning that the value is equal to the discount rate (3% in the base scenario) times the pension entitlements at the beginning of 2015. The property income is estimated at 5 553.05 million euro

Row 2.5   Pension scheme service charges

Row 2.5 covers the cost of running the pension scheme. These costs consist of wages and social contributions, but also of normal operating costs such as overheads, rents for buildings and investment in furniture and ICT equipment. As the institution, responsible for the pension scheme (the Public Sector Pensions Service, PSPS) is a public service, no costs are charged to the pension scheme members (public servants). They are not deducted from the social contributions, nor are they a charge on the pension entitlements. The pension scheme service charges are financed via the overall budget of the federal state. For this reason, row 2.5 will be left blank. For information, in 2015 the service charges for running the public sector pension scheme amounted to 44.1 million euro.

Row 3   Other (actuarial) increase of pension entitlements in social security pension schemes

This row is not applicable to defined benefits schemes for general government employees. Any 'experience effects', where the observed outcome of pension modelling assumptions (real wage growth rate, discount rate, etc.) differs from the levels assumed, are covered by row 2.2.

Row 4   Reduction in pension entitlements due to payment of pension benefits

Row 4 contains information on the amount of pension benefits paid out during the accounting period. The payment of pension benefits has the effect of 'settling' a part of the pension entitlements at the balance sheet opening (row 1). This information is found in the national accounts. A total amount of

9 040.44 million euro was paid out in 2015 on old-age and survivors' pensions from the public sector scheme. Also here, it is important to stress that this amount does not contain the benefit payments to the civil servants whose pension scheme does not longer rely on the budget of the general government for its financing. Those benefit payments are reported in column H.

Row 5   Changes in pension entitlements due to social contributions and pension benefits

Row 5 summarises the changes in pension entitlements due to contributions and benefits. Row 5 is obtained by adding rows 2 and 3 and subtracting row 4.

Row 6   Transfers of pension entitlements between schemes

To obtain the right to a civil servant's pension, a career of at least 5 years as a civil servant is required. Careers falling short of this condition give no right to a civil servant's pension. In that case, the career years will be recognised in the social security scheme and constitute rights for a wage earners' pension. A second case in which a civil servant's career does not give right to a civil servants' pension is when the person is dismissed as a disciplinary sanction. This dismissal results in the loss of the right to a civil servant's pension. The career years will be recognised as career years in the social security pension scheme. In both cases, the creation of pension rights in the social security scheme is accompanied by the transfer of social contributions from the Public Sector Pension Service to the National Pensions Office.[14] In 2015, 4.89 million euro was transferred for these reasons.

Another situation in which pension rights can be transferred from the civil servants' pension scheme is when the person starts working for the European Community and his pension rights are recognised. In 2015, 906 000 euro was transferred for this reason.[15] See section 6.2.2 (row 6) for further information on the pension contributions coming from the social security scheme for wage earners. For the year 2015, the contributions transferred from and into the civil servants' pension scheme can be summarised as follows:

Table 2   Pension contributions transferred from and into the civil servants' pension scheme
Euro

Transfers from the civil servants' scheme towards	Transferred amount
The social security schemes	-4 892 000
European pension schemes	-906 000
Transfers from the social security scheme for wage earners towards	
The civil servants' pension scheme	360 304 000
Total	354 506 000

Row 6 of column G will show the result of these contribution flows: +354.51 million euro in 2015.

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[14]   Janvier, R., Janssens, J. (2014)
[15]   Ibid.

Row 7   Change in entitlements due to negotiated[16] changes in scheme structure

Row 7 shows the impact of negotiated reforms of pension scheme structures on entitlements related to past service (= benefits accrued in past years). To be reported in this row, the reform should lead to a change in pension entitlements in the supplementary table. The reform should be formally enacted during the base year (2015) and must be voted by parliament. If a formally enacted reform has no impact on current pension entitlements, no measurement should be recorded. Only reforms affecting existing pension scheme members for their accrued-to-date rights are to be reported.[17] During the base year 2015, a pension reform act was voted in parliament. The Act of 10 August 2015 *"aimed at raising the legal retirement age, conditions for the early retirement pension and the minimum age for the survivor's pension"* was published in the Belgian Official Journal of 21 August 2015. See section 4.4 for further details on this reform.

To assess the impact of pension reforms, two scenarios will be run. The present value will first be computed under the old pension rules, i.e. the set of rules by which the present value of entitlements at the beginning of the base year was computed (row 1). The present value will then be computed a second time, but now following the new pension rules introduced by the reform. The difference between these two values at the end of the base year is the impact of the pension reforms. It is important that the computation according the new pension rules must be executed on a *ceteris paribus* basis by implementing only the pension reform. The impact of changes to other assumptions must be estimated separately (see other rows). The pension reform is estimated to have an impact on the accrued-to-date liabilities of the civil servants' pension scheme of -3 074.52 euro corresponding to -1.66%.

Row 8   Changes in entitlements due to revaluations

Revaluations take place due to changes in key model assumptions in the actuarial computations. These assumptions are the discount rate, the wage rate and the inflation rate. The impact of those revaluations is computed as the difference in the present value of the pension entitlements at the end of the base year. The present value of the pension entitlements at the end of the base year is computed a first time under the original assumptions, i.e. the assumptions by which the present value of entitlements at the beginning of the base year was computed (row 1). The present value at the end of the base year is computed a second time, but now under the new assumptions. The supplementary table on pension schemes in social insurance, base year 2015, is the first table to be composed for Belgium. Therefore, changes in key model assumptions are not possible as it is the first time these assumptions will be defined.

Row 9   Changes in entitlements due to other changes in volume

Other changes in volume due to changes of non-key assumptions in the actuarial computations, such as changes in the demographic assumptions, are reported here. The impact of those changes is computed as the difference in present value of pension entitlements at the end of the base year. The present

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[16]   Changes in pension entitlements under social security schemes approved by Parliament are recorded as if the changes had been negotiated (Eurostat and ECB (2011)). The pension scheme for civil servants is in fact not a social security scheme. Even so, the impact of the pension reform is represented in row 7, as will be the case for the social security schemes in column H.

[17]   The way study periods are recognised in the pension calculation is still discussed at the moment of writing this report. Even if there would be a reform enacted on this topic, the impact would not be included in the Table 29 with base year 29 as the enactment would not have taken place in 2015.

value of the pension entitlements at the end of the base year is computed a first time under the original assumptions, i.e. the assumptions by which the present value of entitlements at the beginning of the base year was computed (row 1). The present value at the end of the base year is computed a second time, but now under the new assumptions. The supplementary table on pension schemes in social insurance, base year 2015, is the first table to be composed for Belgium. Therefore, other changes in volume are not possible as it is the first time these assumptions will be defined.

Row 10   Pension entitlements

Row 10 captures the accrued-to-date liabilities at the end of the reporting period. The row is computed in the same way as row 1, but one year later, on 31 December 2015. This also means that the ADLs are computed after implementation of the measures of the pension reform. This reform has no impact on the ADLs of retired civil servants but only on the ADLs of currently active civil servants.

This row should be interpreted as the result of the rows of the column: the present value of pension entitlements at the beginning of the reporting period, increased by social contributions and financial return on the assets, decreased by pension settlements and eventually corrected for model corrections or changes in assumptions.

$$Row\ 10 = Row\ 1 + Row\ 5 + Row\ 5 + Row\ 7 + Row\ 8 + Row\ 9 \tag{6}$$

As described earlier, the part of the ADLs representing the actual value of the pension entitlements of civil servants whose pension schemes were once set up by general government or regional authorities, but as today do not longer depend on general budget for the financing, is reported in column H as social security scheme. The ADLs for the public sector pension system in column G are estimated at 181 930.69 million euro.

6.2. Social security pension schemes

The social security pension schemes consist of the scheme for wage earners, the pension scheme for the self-employed and the pension scheme for civil servants for which the financing is no longer depending on the budget of the federal government.

6.2.1. General remarks on the pension schemes for wage earners and the self-employed

Wage earners

For this Table 29, the first pillar pension scheme for wage earners consists of old-age pensions and survivors' pensions. The old-age pension is linked to occupation and is essentially function of the past career. The pension benefit is based on past wages corrected for the development in prices and wealth increase, but lies within a range comprised between minimum provisions and ceilings.

The statutory retirement age is 65 for men and women until 2024, 66 from 2025 to 2029 and 67 from 2030 onwards. Early retirement is allowed at the age of 62 for a minimum career length of 40 years. As from 2019 onwards, this will only be allowed at the age of 63 for a minimum career length of 42 years.

The pension is calculated as follows:

$$Pension = 75\% \ or \ 60\% \cdot \frac{1}{45} \sum_{j=1}^{n} Wage_j^{ceil} \cdot \frac{PI_n}{PI_j} \tag{7}$$

The pension is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other cases. The reference wage is calculated on the wages effectively earned during the career up to a wage ceiling. These wages are adjusted to current prices and wealth increase. The sum of those adjusted wages over the career is multiplied by 1/45th (a full career is 45 years). Some periods of unemployment, disability, etc. are valued at the last corresponding earned wage and others at the minimum claim per working year.

This minimum claim per working year is used in an alternative pension computation in case the beneficiary can prove a career of at least 15 years in the wage earners' scheme of which she/he worked for at least one third of a full-time job in each year. For each past career year, the actual wage is replaced by the minimum claim in case this latter is higher (compared on the same price value). The beneficiary will receive this alternatively computed pension if this is more favourable to him.

Additionally, a guaranteed minimum pension can be granted on either of two criteria:

– The 'severe' career duration criterion: the wage earner must prove a career as a wage earner lasting at least two thirds of a full career, with at least 208 'fulltime day equivalents' per year. If this criterion is met, the guaranteed minimum pension is calculated as the guaranteed minimum pension of a full career multiplied by a career fraction. This career fraction is calculated as the number of career years with at least 52 'fulltime day equivalents' per year divided by the number of years of a full career.

– A more 'flexible' career duration criterion which allows years with part-time employment to be taken into account: the wage earner has to prove a career as a wage earner lasting at least two thirds of a full career with at least 156 'fulltime day equivalents' per year. If this criterion is met, the guaranteed minimum pension is calculated as the guaranteed minimum pension of a full career multiplied by a fraction equal to ((total days of employment and assimilated days/312)/number of years of a full career).

Besides these two minimum pension rights, maximum amounts are also defined.

The rules on survivors' pensions were changed in 2015. After the death of the spouse who was either a wage earner or received a replacement income (pension included) in the wage earners' scheme, the surviving spouse is entitled to a survivor's pension. However, conditions must be met for this, the most important one the minimum age. If the surviving partner has reached a certain minimum age, she/he will receive a survivor's pension. If she/he is younger than this minimum age, she/he will not receive a survivor pension but a transitional allocation benefit. The minimum age was 45 in 2015 and will be gradually raised to 55 by 2030.

A survivor's pension is calculated as 80% of the deceased person's retirement pension, computed at the tariff for a household (which means 80% of 75%, or 60% of the reference wage), or, if she/he was still working, at 80% of the retirement pension she/he would be entitled to, should she/he have worked until the age of 65. Survivors can cumulate (up to a ceiling) a survivor's pension with their own old-age pension. Moreover, the pension is compatible with a professional activity, provided that the income from that activity does not exceed a certain limit. Up to the age of 65, the limit for someone receiving only a survivor's pension is higher. Pension benefits are automatically adjusted to the evolution of prices by the health index (unless otherwise decided – see index jump in 2015) and partially adjusted to living standards according to the 'Generation Pact'.

Self-employed individuals

For this Table 29, the pension scheme for self-employed workers consists of old-age pensions and survivor's pensions. The legal retirement age for the self-employed is currently 65, but will be raised to 66 as of 2025 and to 67 as of 2030. Early retirement is allowed at the age of 62 for a minimum career length of 40 years. As from 2019 onwards, this will be allowed at 63 for a minimum career length of 42 years.

$$Pension = 75\% \ or \ 60\% \ . \frac{1}{45} \sum_{j=1}^{n} Income_j^{ceil} . \frac{PI_n}{PI_j} \ . correction \ coefficient \qquad (8)$$

The pension is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other cases, just as in the wage earners' scheme. The working years before 1984 are valued at a fixed income. For the working years (during which a self-employed professional activity was exercised) as from 1984, the pension right is calculated on the basis of the business income used to compute social security contributions and income tax, up to an income ceiling. The income is adjusted to current prices.

As in the wage earners' scheme, minimum and maximum pensions are provided for. The guaranteed minimum pension is granted in proportion to the career if the self-employed person has a career of at least two thirds of a full career as self-employed and/or wage earner. There is no minimum claim per career year. In 2009, 70% of 'pure' self-employed pensioners[18] received the minimum pension.[19] This high number of self-employed individuals benefiting from the minimum pension is caused by the scheme's computation formula, which is less generous than that for wage earners. Other than a so-called 'correction coefficient' (reduction coefficient), the employee and self-employed pension schemes are quite similar.

The 'correction coefficient' is equal to the ratio between the old (lower) contribution rate for the self-employed for their pension scheme and the old contribution rate (employer + employee) for the pension scheme for wage earners. It reflects the discrepancy between the contributions paid by wage earners and by the self-employed. As a consequence, this gives a self-employed pension of almost half of the pension that would have been computed under the wage earners' regime. Finally, and unlike wage earners, the self-employed were subjected to a malus system up to and including 2013. The system consisted of a progressive actuarial discount factor which reduced pension benefits in the case of early retirement between 60 and 65 years, except in the case of a career of 43 years or more.

When pensions (from the wage earners' scheme and the self-employed scheme) are cumulated, the total amount of the pension cannot exceed a given ceiling.

The rules on survivors' pensions were changed in 2015. After the death of a spouse who was self-employed, the surviving spouse is entitled to a survivor's pension if certain conditions are met. The most important condition is the minimum age. If the surviving partner has reached a certain minimum age, she/he will receive a survivor's pension. If she/he is younger than this minimum age, she/he will not receive a survivor's pension but a transitional allocation benefit. The minimum age was 45 in 2015 and will be gradually raised to 55 by 2030. The minimum amount of the survivors' pension is the same as the amount of the minimum retirement pension.

The adjustments of pension benefits to prices by the health index and to living standards are similar to those in the wage earners' scheme: they are automatically adjusted to the development in prices (unless otherwise decided – see index jump in 2015) and partially adjusted to living standards according to the 'Generation Pact'.

The modelling in MIDAS follows closely the current regulations of the pension benefits for wage earners, including the minimum provision and ceilings. MIDAS does not replicate yet the exact rules of the self-employed pension benefits and surviving benefits due to a lack of data concerning the past revenues. The model therefore assigns to retirees the minimum pension for the self-employed (proportional to their actual career) in the year of retirement. The minimum pension is projected as described in section 4.8. As stated further on in section 6.2.2 (Self-employed individuals), the consequences of this simplification might be limited because 70% of 'pure' self-employed pensioners received the minimum pension in 2009.[20] Nevertheless, it is a point for attention in the future development of MIDAS.

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[18] A pure self-employed pensioner is a pensioner only receiving benefits from the pension scheme for the self-employed.
[19] Commission de la réforme des pensions 2020-2040 (2014)
[20] Ibid

6.2.2. Rows in column H

Row 1 Pension entitlements

Wage earners

To compute the accrued-to-date liability for a retired wage earner, the rights the person is entitled to at the beginning of the base year (2015) must be taken into account. As row 1 gives the situation at the beginning of the year, no pension reform is considered (see section 4.4). The ADL for a currently retired person i is obtained by summing up the actual value of all his future pension benefits l:

$$ADL_{i,t} = \sum_{l=1} pension_{i,l} \cdot v^l \tag{9}$$

Where the pension benefit for a full career is computed based on wages from the whole career, the ADL will compute the pension benefit for a currently active person only on the fraction of the career up to the base year. A future pension benefit is obtained which will be discounted to the beginning of the base year by means of the discount rate. This results in the accrued-to-date liability. For one wage earner i, the formula for the ADL computation of his future pension benefits is as follows:

$$ADL_{i,t} = \frac{x_i}{n_i} \cdot \sum_{l=1} \left((75\% \ or \ 60\%) \cdot \frac{1}{45} \sum_{j=1}^{n_i} max\big(min(wage_{i,j}, \ ceil_j), minright_{P_i}\big) \right) \cdot v^{l+P_i-t} \tag{10}$$

Where 't' is the base year, 'n_i' the number of years of career up to the pensionable age, 'x_i' the career years up to 2015, '$wage_{i,j}$' is the person's annual wage in year 'j' re-evaluated at year 't', '$ceil_j$' the wage ceiling applicable in year 'j', '$minright_{P_i}$' the minimum right per career year a person is entitled to if the wage was too low, 'P_i' the year of retirement of person i and 'v' the discount factor. If the resulting pension benefit falls below a certain amount and the beneficiary fulfills certain career duration conditions, a guaranteed minimum pension will be applied. See section 4.12 for these conditions. By summing over 'l', all future pension payments are taken into account.

Self-employed individuals

To compute the accrued-to-date liability for a self-employed person, the rights the person holds at the beginning of the base year (2015) must be taken into account. As row 1 gives the situation at the beginning of the year, no pension reform is considered (see section 4.4). The ADL for a currently retired person i is obtained by summing up the actual value of all his future pension benefits l. For an active self-employed person, this means in the MIDAS model the minimum pension of a self-employed person in the year of retirement, proportional to the fraction of career worked until the end of the base year.

$$ADL_{i,t} = \sum_{l=1} pension_{i,l} \cdot v^l \tag{11}$$

This pension is a future benefit; hence, it will be discounted to the beginning of the base year by means of the discount rate to obtain the accrued-to-date liability. For one self-employed person i, the formula for the ADL computation of his future pension benefits is as follows:

$$ADL_{i,t} = \frac{x_i}{n_i} . \sum_{l=1} \left(\frac{n_i}{45} . Minimum\ pension_{P_i} \right) . v^{l+P_i-t}$$

(12)

Where 't' is the base year, 'n_i' the number of years of career up to the pensionable age, 'x_i' the career years up to 2015, 'Minimum pension$_{P_i}$' is the minimum pension in the year of retirement of person i, 'P_i' is the year of retirement of person i and 'v' the discount factor. If the resulting pension benefit falls below a certain amount and the beneficiary fulfills certain career duration conditions, a guaranteed minimum pension will be applied. See section 4.12 for these conditions. By summing over 'l', all future pension payments are considered.

Civil servants

As described earlier in section 6.1, column H also contains the values for civil servants whose pension schemes were once set up by general government or regional authorities, but as today do not longer depend on general budget for their financing.

The final step is done by summing the ADLs of the pension schemes that are reported under the social security systems: wage earners, the self-employed and a part of the civil servants, leading to a total amount of 949 182.66 million euro.

Row 2   Increase in pension entitlements due to social contributions

Row 2 collects all the increases in pension entitlements, less the pension scheme service charges if these are deducted from the pension entitlements.

Row 2.1   Employer actual social contributions

Employer actual social contributions are recorded in row 2.1. As stated in Eurostat's Technical Compilation Guide, the actual social contributions paid by the employers can be found in the national accounts. 36 206.4 million euro were paid during 2015 as social contributions to general government. Not all of the 36 206.4 million euro paid to the general government was paid on behalf of wage earners into the social security pension system. General government paid 2 401.5 million euro on behalf of civil servants whose pension system does not longer depend on the budget of the federal authorities. The remainder of 33 804.9 million euro social contributions were paid on behalf of wage earners. This amount includes not only pension contributions, but also contributions for a series of other social risks such as sickness and invalidity, unemployment, occupational illnesses and workplace accidents. Since the overall financial management of the social security system was introduced in 1994, separate contribution rates do no longer exist for each social risk. The part of the pension contributions in the total social contributions must be estimated.[21]

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[21]   The estimation procedure was detailed in Brys, Y. (2017).

In column H, row 2.1 (Employer actual social contributions for pensions) is estimated at 14 420.4 million euro: 12 018.9 million euro on behalf of wage earners and 2 401.5 million euros on behalf of civil servants whose pension system does not longer depend on the budget of the federal authority (see section 6.2.1).

Row 2.2   Employer imputed social contributions

For social security pension schemes, the 'experience effects', where the observed outcome of pension modelling assumptions (real wage growth rate, discount rate, etc.) differs from the levels assumed, are not recorded in row 2.2 but in row 3. Therefore, this row does not have to be completed.

Row 2.3   Household actual social contributions

In row 2.3, household actual social contributions are recorded. As stated in Eurostat's Technical Compilation Guide, these contributions are published in the national accounts. Since the introduction of the overall financial management in the Belgian social security system in 1994, separate contributions no longer exist for each of the social risks. Therefore, what is found in the national accounts is the total amount of social contributions. In 2015, households paid 22 492.9 million euro of social contributions to the general government. Only part of the total social contributions is aimed at financing first pillar pensions. The other part covers sickness and invalidity, professional illnesses, profession-linked accidents, etc.

The 'households sector' of the national accounts is subdivided in three socio-economic categories: 'wage earners, 'self-employed' and 'no professional activity'. An important remark to make here is that the category 'wage earners' covers in fact real wage earners and the civil servants whose pension system does not longer depend on federal or regional budgets. There is no publicly available split between these two categories. The category of 'no professional activity' is composed of retired people, unemployed people and a variety of other small categories. Again, no subdivision is publicly available. For each of the three socio-economic categories in the national accounts, the pension contributions must be estimated based on the reported total social contributions. The estimates and assumptions made are explained below. The estimates will be done separately as the contribution rates in Belgium depend on the worker's socio-economic category.[22]

The aggregate amount of the pension contributions for the households in the national accounts ('wage earners', 'self-employed' and 'no professional activity') adds up to a total pension contribution of 13 013.15 million euro.

Row 2.4   Household social contribution supplements

Row 2.4 captures property income either earned or imputed in the scheme. This property income is equivalent to the unwinding of the discount rate, meaning that the value is equal to the discount rate (3% in the base scenario) times the pension entitlements at the beginning of 2015. The property income is estimated at 28 475.48 million euro

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[22]   The estimation procedure was detailed in Brys, Y. (2017).

Row 2.5   Pension scheme service charges

Row 2.5 covers the cost of running the pension schemes. As the institutions managing the pension schemes (the National Pensions Office and the National Institution for the Social Security of the Self-Employed[23]) are federal organisms, no costs are charged to the pension scheme members (wage earners and the self-employed). The costs are mainly financed via the global budget of the federal state. For this reason, row 2.5 will be left blank. For information, the service charges for running the social security pension schemes amounted in 2015 to 145.4 million euro.

Row 3   Other (actuarial) increase of pension entitlements in social security pension schemes

This row is used when actual contributions to the social security pension scheme are not actuarially based, and, therefore, there is an imputed contribution which is not the responsibility of any employer.[24] A positive value arises for example when the social contributions do not cover the financing needs of the social security pension scheme. Row 3 also collects the 'experience effects' observed for social security pension schemes, where the observed outcome of pension modelling assumptions (wage growth rate, inflation rate and discount rate) in any one year differs from the levels assumed.[25] As such, this row can be seen as the equivalent of row 2.2 for the public sector pension scheme.

$$Row\ 3 = R\ 10 - R\ 1 - R\ 2.1 - R\ 2.3 - R\ 2.4 + R\ 2.5 + R\ 4 - R\ 6 - R\ 7 - R\ 8 - R\ 9 \tag{13}$$

The row is defined as a balancing item and is estimated for 2015 at -3 161.64 million euro. Caution must be used when interpreting this result. This negative value would imply that the actual contributions are sufficient to cover the increase in pension entitlements and pension benefit payments. Considering an ageing population, a growing part of the government budget earmarked for pension benefits and already implemented pension reforms, this would be a dangerous message to give. It is therefore wiser not to comment on this row yet and to interpret it only when a sufficiently long series of values has been established in future years.

Row 4   Reduction in pension entitlements due to payment of pension benefits

Row 4 contains information on the amount of pension benefits paid out during the accounting period. The payment of pension benefits has the effect of 'settling' a part of the pension entitlements at the balance sheet opening (row 1). It is important to remember that this row also contains the benefit payments to the civil servants whose pension scheme does not longer rely on the budget of the general government for its financing. Those benefit payments were excluded from column G. A total amount of 32 864.90 million euro was paid out in 2015 on old-age and survivor's pensions from the social security schemes.[26]

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[23]   Since the 1 April 2016, the Public Sector Pensions Service and the National Pensions Office have been merged into the Federal Pensions Service (FPS).

[24]   Eurostat and ECB (2011)

[25]   Ibid.

[26]   The estimation procedure was detailed in Brys, Y. (2017).

Row 5 Changes in pension entitlements due to social contributions and pension benefits

Row 5 summarises the changes in pension entitlements due to contributions and benefits. Row 5 is obtained by summing rows 2 and 3 and subtracting row 4.

Row 6 Transfers of pension entitlements between schemes

It is possible for a non-statutorily appointed (= contractual) employee or a temporarily appointed civil servant to become a statutorily appointed civil servant. Under certain conditions, their past career can be taken into account for the computation of the civil servants' pension.[27] In this case, the pension rights are transferred from the social security scheme towards the pension scheme of the civil servants. In accordance to this transfer of rights, the National Pensions Office will transfer the corresponding amount of contributions to the Public Sector Pensions Service. A similar transferring mechanism does not exist for the self-employed. Another situation in which pension rights can be transferred from the social security schemes (both wage earners and self-employed) is when a person starts working for the European Community and their pension rights are recognised.

As referred in section 6.1.2 (row 6), a similar flow of contributions exists in the opposite direction, from the Public Sector Pensions Service towards the National Pensions Office. For the year 2015, the contributions transferred from and into the social security pension schemes can be summarised as follows:

Table 3   Pension contributions transferred from and into the social security schemes
Euro

Transfers from the social security scheme of	
Wage earners towards	
The civil servants' pension scheme	-360 304 000
European pension schemes	-24 841 000
Self-employed individuals towards	
European pension schemes	-566 000
Transfers from the civil servants' scheme towards	
The social security schemes	4 892 000
Total	-380 819 000

Row 6 of column H will show -380.82 million euro (out-flow).

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[27] Janvier, R., Janssens, J. (2014)

Row 7 Change in entitlements due to negotiated²⁸ changes in scheme structure

As described in section 6.1, this row shows the impact of negotiated reforms of pension structures on entitlements related to past service. Only reforms affecting existing pension scheme members for their accrued-to-date rights are to be reported if the reform was formally enacted during the base year (2015) and agreed upon by parliament.²⁹ In Belgium, this is the case with the pension reform act of 10 August 2015 as discussed in section 4.4.

The present value of the pension entitlements at the end of the base year is first computed under the old pension rules. Then, the present value is computed a second time, but now following the new pension rules introduced by the reform. The impact of pension reforms is the difference in the present value of the pension entitlements at the end of the base year. Here, it is important that the computation with the new pension rules must be executed by implementing only the pension reform. The ADLs decrease with 27 221.48 million euro, which corresponds to an impact of -2.81%.

Row 8 Changes in entitlements due to revaluations

As discussed in section 6.1, row 8 captures the revaluations that are caused by changes of key model assumptions in the actuarial computations. These assumptions are the discount rate, the wage rate and the inflation rate. The impact of those revaluations is computed as the difference in present value of the pension entitlements at the end of the base year. The supplementary table on pension schemes in social insurance, base year 2015, is the first table to be composed for Belgium. Therefore, changes in key model assumptions are not possible as it is the first time these assumptions will have been defined.

Row 9 Changes in entitlements due to other changes in volume

Other changes in volume due to changes of non-key assumptions in the actuarial computations, such as changes in the demographic assumptions, are reported here. The impact of those changes is computed as the difference in present value of pension entitlements at the end of the base year. The supplementary table on pension schemes in social insurance, base year 2015, is the first table to be composed for Belgium. Therefore, other changes in volume are not possible as it is the first time these assumptions will have been defined.

Row 10   Pension entitlements

Row 10 captures the accrued-to-date liabilities at the end of the reporting period. The row is computed in the same way as row 1, but one year later, on 31 December 2015. This also means that the ADLs are computed after implementation of the measures of the pension reform. This row should be interpreted as the result of the rows of the column: the present value of pension entitlements at the beginning of the reporting period, increased by social contributions and the financial return on the assets, decreased by pension settlements and, if necessary, corrected for model corrections or changes in assumptions.

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²⁸   Changes agreed in parliament to pension entitlements under social security schemes are recorded as if the changes had been negotiated. (Eurostat and ECB (2011)).

²⁹   The way study periods are recognised in the pension calculation is discussed at the moment of writing this report. Even if there would be a reform enacted on this topic, the impact would not be included in the Table 29 with base year 2015 as the enactment would not have taken place in 2015.

$$Row\ 10 = Row\ 1 + Row\ 5 + Row\ 5 + Row\ 7 + Row\ 8 + Row\ 9 \qquad (14)$$

As described earlier, this column also contains the part of the ADLs representing the actual value of the pension entitlements of civil servants whose pension schemes were once set up by general government or regional authorities, but as today do not longer depend on general budget for their financing. The ADLs for the social security pension schemes in row 10 are estimated at 941 462.87 million euro.

7. Sensitivity analysis

The ESA 2010 transmission programme asks to accompany Table 29 with a sensitivity analysis for the discount rate used in the computation of the present value of the pension entitlements from the unfunded defined benefit schemes of government and social security schemes (columns G and H). In the original set-up of Table 29, the present values of the pension entitlements of columns G and H are computed by means of a real discount rate of 3% (5% nominal). In the alternative scenarios, the real discount rate will be 2% and 4% respectively. Table 29 for the base scenario (3%) is represented in annex 1; the complete tables of the alternative scenarios can be found in annexes 2 and 3.

Table 4   **Sensitivity analysis for defined benefit schemes of government employees (column G)**
Million euro

	Sensitivity 1: -1%	Basic scenario	Sensitivity 2: +1%
Row 1	214 504	185 102	162 034
Row 2.2	4 280	3 036	2 122
Row 2.4	4 290	5 553	6 481
Row 10	210 641	181 931	159 411

Table 5   **Sensitivity analysis for social security schemes (column H)**
Million euro

	Sensitivity 1: -1%	Basic scenario	Sensitivity 2: +1%
Row 1	1 145 205	949 183	801 982
Row 2.4	22 904	28 475	32 079
Row 3	5 751	-3 162	-9 393
Row 10	1 134 866	941 463	796 418

A change in rows 1 and 10 should be logical as they represent the discount future pension benefit payments. The ADLs for 2015 (row 10) change by -12% for government employees and by -15% for the social security schemes due to an increase in the discount rate by 100bp. A decrease in the discount rate of 100bp results in, respectively, an increase of 16% and 21%. Section 9 provides a benchmark for these values. Row 2.4 represents the unwinding of the interest rate on the present value of pension entitlements at the beginning of the base year (row 1). These rows move in the same direction as the discount rate. Row 2.2 (for the unfunded defined benefit schemes of government employees) represents the employer imputed contributions. The role of this row is fulfilled by row 3 for the social security pension schemes. These rows are the last to change as they serve as balancing items. Consequently, they contain the changes in ADLs during the base year that were not explained by other rows.

Sections 6.1.2 and 6.2.2 already cautioned against a quick interpretation of these rows. A positive value would imply that actual pension contributions are not sufficient to cover the increase in pension entitlements and the pension benefit payments. In contrast, a negative value would then imply that the actual contributions are sufficient to cover the increase in pension entitlements and the pension benefit payments. Considering an ageing population, where a growing part of the government budget is earmarked for pension benefits and already implemented pension reforms, this would be a dangerous

message to give. It is therefore wiser to not comment yet on these rows and their sensitivities but to interpret them when a sufficiently long series of values has been established in future years.

8. ADL in terms of GDP

ADLs measure the amount of money required by the pension system to meet its commitments in the theoretical case of closing down the system. Such a scenario is in theory ruled out for public or government-sponsored unfunded pension schemes. Expressing the ADLs of the unfunded defined benefit schemes of government employees and social security schemes in terms of GDP gives an indication of the number of years a country would have to use its GDP to meet its pension commitments if it was to dedicate the entire GDP to it.

Table 6   ADL in terms of GDP
Million euro and percentages

	Sensitivity 1: -1%	Basic scenario	Sensitivity 2: +1%
ADL	1 345 507.72	1 123 393.57	955 828.35
GDP 2015	410 435.20	410 435.20	410 435.20
ADP/GDP	328%	274%	233%

With a discount rate of 3%, the MIDAS model and its dataset, the assumptions made and the estimation procedures described in this report, the ADL/GDP ratio for 2015 is determined at 274%. The present value of the accrued-to-date liabilities of all first pillar pension schemes in Belgium equals roughly 2 years and 9 months of the total Belgian production capacity. To illustrate the sensitivity of this ratio to the discount rate, two alternative ratios are computed, at a rate of 2% and 4%, respectively leading to a ratio of 328% and 233%. The complete tables of the alternative scenarios can be found in annexes 2 and 3.

Some considerations must be made on these ratios. Table 29 shows the pensions entitlements on an accrued-to-date basis. These are present values of the pension entitlements of the retired population and the part of pension entitlements that is already accrued by the future beneficiaries. As such, accrued-to-date liabilities do not represent public debt and are not an indicator of the fiscal or financial sustainability of the pension systems and are only appropriate for national accounts purposes. Accrued-to-date liabilities should only be interpreted as an asset from the households in national accounts' terminology. An assessment of the sustainability of the pension systems can be found in the reports of the Ageing Working Group or the Belgian Study Commission for Ageing.

9.   Benchmarking

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Several studies have been conducted in the past to estimate the present value of pension entitlements in Belgium (social security and public pension scheme). These studies might not always cover the same scope and might apply another methodology. However, all studies point to a high value for this ratio.

For various reasons caution must be used when regarding the ADL/GDP ratios. The first remark is on the age of these studies. The most recent study, from 2013, uses a representative dataset of the Belgian population on 1 January 2002. However, it also bases its ADL computation back in 2002, disregarding pension evolutions over more than a decade. Other studies are older and are based on data from before 2002. Secondly, it is not always clear which benefits are within the scope of the study. In the studies where this is clear, the scope may differ from the scope of Table 29. A last important remark must be made on the applied computation principles. Not all studies follow the ADL approach. Even when the ADL/GDP ratio might seem comparable, a study following the open-group approach is not comparable to the Table 29 values. The ADL approach considers only people alive at the valuation moment and does not take into account the acquisition of future pension rights. In contrast, the open-group approach not only considers the acquisition of pension rights in the future, but also new active entrants.

Table 7   Studies on the Belgian pension system

Reference	Base year	Benefits in scope (with certainty)	Discount rate	% GDP	Population	Computation principle	Other assumptions
Flawinne et al. (2013)	2002	Old-age Survivors' Means-tested	2% (real) 3% (real) 4% (real)	228.6% 179.7% 143.4%	Active + Pensioners	ADL (micro-Simulation)	Pension age: men 65, women 62
Jousten et al. (2012)	2001	Old-age Survivors' Means-tested	3% (real)	+-168%	Active + Pensioners	ADL (micro-Simulation)	
Mink (2008)	2005	Old-age Survivors' Means-tested Early retirement Disability	3% 5%	208% 165%			Based on a European Commission[30] study: Present value of projected ratios of future pension expenditure in terms of GDP
ABN Amro (2003)	2000	Old-age	5.25% (nominal)	296%	Active + Pensioners	Open group	Net present value Projections up to 2050
Kune (1996)	1990	Old-age	4%	75% (ABO) 101% (PBO)			Not comparable due to differences in scope and methods Uses current value of average real pensions. Population >25 years
Bouillot and Perelman (1995)	1985 2015 (proj)	Old-age Survivors' Means tested	3% (real)	218.4% (GNP!) 246.2% (GNP!)	Active + Pensioners	ADL[31]	Not comparable due to differences in methods - Compares the ADL to GNP - Average pension benefits per age group - Outdated: pension landscape has changed (e.g. pension age: men 65, women 60)
Perelman (1981)	1967 - 1977	Old-age Survivors'	5-9% (nominal)	/	Active + Pensioners		Not comparable due to differences in methods - Compares the ADL to total wealth of households. Not to GDP - Average pension benefits per age group - Outdated: pension landscape has changed (e.g. pension age: men 65, women 60)

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[30]   European Commission (2006)

[31]   Bouillot and Perelman (1995) use the concept of "Équivalent Patrimonial des Droits à la Pension", which is equivalent to ADL.

10. Data sources

Computation of pension entitlements

Database

"Datawarehouse marché du travail et protection sociale" of the Crossroads Bank for Social Security.

Population projection: life expectancy

Eurostat, EUROPOP2015 - European population projections, base year 2015.

Social security contributions

Institut des Comptes Nationaux (2017b), Comptes nationaux: Comptes détaillés et tableaux 2016, octobre 2017, 131p.

Payment of pension benefits

Institut des Comptes Nationaux (2017a), Comptes nationaux: Comptes des administrations publiques 2016, octobre 2017, 119p.

Service charges of the respective pension schemes:

National Bank of Belgium.

GDP numbers

Institut des Comptes Nationaux (2017b), Comptes nationaux: Comptes détaillés et tableaux 2016, octobre 2017, 131p.

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High Council of Finances (2016), Rapport of the Study Committee on Ageing, Brussels, Federal Planning Bureau, 60p.

Institut National d'Assurances Sociales pour Travailleurs Indépendant (2016), Rapport annuel 2015, 53p.

Institut des Comptes Nationaux (2017a), Comptes nationaux : Comptes des administrations publiques 2016, 119p.

Institut des Comptes Nationaux (2017b), Comptes nationaux : Comptes détaillés et tableaux 2016, 131p.

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Jousten, A., Perelman, S., Sigismondi, F. and Tarantchenko, E. (2012), Accrued Pension Rights in Belgium: Micro-Simulation of Reforms, *International Journal of Microsimulation*, 5, 2, 22-39.

Mink, R. (2008), General government pension obligations in Europe, *IFC Bulletin*, n 28.

Modart, C. (National Bank of Belgium), (Personal communication), 20 September 2017.

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Annexes

Annex 1: Columns G and H of supplementary table 29

Table 8   Columns G and H of supplementary table 29
Euro

Code	Row n°		DB scheme for general government employees – Classified in general government	Social security pension scheme
			G	H
		Opening balance sheet		
XAF63LS	1	Pension entitlements	185 101 611 314	949 182 657 917
		Changes in pension entitlements due to transactions		
XD61p	2	Increase in pension entitlements due to social contributions	8 589 532 371	55 909 047 420
XD6111	2.1	Employer actual social contributions	0	14 420 417 095
XD6121	2.2	Employer imputed social contributions	3 036 484 031	■■■■■
XD6131	2.3	Household actual social contributions	0	13 013 150 588
XD6141	2.4	Household social contribution supplements	5 553 048 339	28 475 479 738
XD6151	2.5	Pension scheme service charges	0	0
XD619	3	Other (actuarial) change of pension entitlements in social security pension schemes	■■■■■	-3 161 636 382
XD62p	4	Reduction in pension entitlements due to payment of pension benefits	9 040 437 572	32 864 900 000
XD8	5	Changes in pension entitlements due to social contributions and pension benefits	-450 905 201	19 882 511 037
XD81	6	Transfers of pension entitlements between schemes	354 506 000	-380 819 000
XD82	7	Change in entitlements due to negotiated changes in scheme structure	-3 074 517 811	-27 221 477 019
		Changes in pension entitlements due to other flows		
XK7	8	Changes in entitlements due to revaluations	0	0
XK5	9	Changes in entitlements due to other changes in volume	0	0
		Closing balance sheet		
XAF63LE	10	Pension entitlements	181 930 694 301	941 462 872 936

Annex 2: Sensitivity analysis (discount rate -1%)

Table 9 Sensitivity analysis (discount rate -1%)
Euro

Code	Row n°		DB scheme for general government employees – Classified in general government	Social security pension scheme
			G	H
		Opening balance sheet		
XAF63LS	1	Pension entitlements	214 503 836 207	1 145 204 954 413
		Changes in pension entitlements due to transactions		
XD61p	2	Increase in pension entitlements due to social contributions	8 569 899 428	50 337 666 771
XD6111	2.1	Employer actual social contributions	0	14 420 417 095
XD6121	2.2	Employer imputed social contributions	4 279 822 704	▮
XD6131	2.3	Household actual social contributions	0	13 013 150 588
XD6141	2.4	Household social contribution supplements	4 290 076 724	22 904 099 088
XD6151	2.5	Pension scheme service charges	0	0
XD619	3	Other (actuarial) change of pension entitlements in social security pension schemes	▮	5 750 533 183
XD62p	4	Reduction in pension entitlements due to payment of pension benefits	9 040 437 572	32 864 900 000
XD8	5	Changes in pension entitlements due to social contributions and pension benefits	-470 538 144	23 223 299 954
XD81	6	Transfers of pension entitlements between schemes	354 506 000	-380 819 000
XD82	7	Change in entitlements due to negotiated changes in scheme structure	-3 746 403 459	-33 181 117 820
		Changes in pension entitlements due to other flows		
XK7	8	Changes in entitlements due to revaluations	0	0
XK5	9	Changes in entitlements due to other changes in volume	0	0
		Closing balance sheet		
XAF63LE	10	Pension entitlements	210 641 400 604	1 134 866 317 547

Annex 3: Sensitivity analysis (discount rate +1%)

Table 10   Sensitivity analysis (discount rate +1%)
Euro

Code	Row n°		DB scheme for general government employees - Classified in general government	Social security pension scheme
			G	H
		Opening balance sheet		
XAF63LS	1	Pension entitlements	162 033 974 944	801 981 604 251
		Changes in pension entitlements due to transactions		
XD61p	2	Increase in pension entitlements due to social contributions	8 603 402 035	59 512 831 852
XD6111	2.1	Employer actual social contributions		14 420 417 095
XD6121	2.2	Employer imputed social contributions	2 122 043 037	▓▓▓▓▓
XD6131	2.3	Household actual social contributions	0	13 013 150 588
XD6141	2.4	Household social contribution supplements	6 481 358 998	32 079 264 170
XD6151	2.5	Pension scheme service charges	0	0
XD619	3	Other (actuarial) change of pension entitlements in social security pension schemes	▓▓▓▓▓	-9 392 871 841
XD62p	4	Reduction in pension entitlements due to payment of pension benefits	9 040 437 572	32 864 900 000
XD8	5	Changes in pension entitlements due to social contributions and pension benefits	-437 035 537	17 255 060 011
XD81	6	Transfers of pension entitlements between schemes	354 506 000	-380 819 000
XD82	7	Change in entitlements due to negotiated changes in scheme structure	-2 540 806 066	-22 438 132 369
		Changes in pension entitlements due to other flows		
XK7	8	Changes in entitlements due to revaluations	0	0
XK5	9	Changes in entitlements due to other changes in volume	0	0
		Closing balance sheet		
XAF63LE	10	Pension entitlements	159 410 639 341	796 417 712 893

Annex 4: Pension fact sheet: public sector pensions

1. General description of the scheme and the computation model

    a. <u>Coverage of the scheme and classification in Table 29 of the transmission programme</u>

Column G covers the public sector pension scheme. This scheme consists of the old-age pension, the survivor's pension, and the disability pension. However, the disability pension is not included here. The pension expenditures for civil servants counts as 37% of total first pillar pension expenditures.

Column G does not include the ADLs of the civil servants whose pension scheme does not longer depend on the budget of the federal government. These values are reported under the social security schemes.

    b. <u>Institutional set up</u>

Data is used from the Datawarehouse marché du travail et protection sociale of the Crossroads Bank for Social Security. It contains a little more than 600 000 representative individuals, with retrospective data that is complete for wage earners and only partial for civil servants and self-employed workers. The dataset is enriched with information from the 2011 population census and a dataset containing fiscal information.

The institution responsible for Table 29 is the National Accounts Institute of Belgium. It has entrusted the National Bank of Belgium and the Federal Planning Bureau, with the completion of the supplementary table. Column H a responsibility of the latter.

    c. <u>Major formulas: benefit formula; indexation of benefits</u>

The retirement pension is calculated on the average wage of the last ten years of work (five years for people born before 1962) and is proportional to the career, with the considered service years in the numerator and a *tantième* of 60 in the denominator. Some civil servants have a preferential denominator (55 in teaching and 48 years for magistrates and in academic services).

Civil servants can be granted a minimum pension, which is a fixed amount, provided they have 20 years of service. The pension benefit is also subject to a relative maximum of 75% of the reference wage and pensions are capped to an absolute maximum pension, which is a fixed amount.

Civil servants' pensions are automatically adjusted to the health index and to the real wage increases of the active civil servants (the *péréquation*).

    d. <u>Type and structure of the computation model</u>

MIDAS is a microsimulation model, meaning that it models on the level of individuals grouped in households rather than on aggregate data. It is also a dynamic population model with dynamic cross-sectional ageing. This means that it is based on a cross-sectional dataset representing a population of all ages at a certain point in time.

2. Assumptions and methodologies applied

a. Discount rate

A discount rate of 3% in real terms is used.

b. Wage growth

Future wage growth is modelled at a rate of 1% on long term.

c. Valuation method: ABO/PBO

PBO

3. Data used to run the model

a. Mortality tables

MIDAS uses EUROPOP2015 data in the projections used for table 29.

b. Entitlement statistics; other relevant statistics

The entitlement statistics are taken from the 2016 national accounts (government accounts).

4. Reforms incorporated in the model

The Act of 10 August 2015 "*aimed at raising the legal retirement age, conditions for the early retirement pension and the minimum age for the survivor's pension*". The reforms that have an impact on the benefits covered by Table 29 are considered: i) the statutory retirement age will increase from 65 to 66 by 2025 and further to 67 by 2030 and ii) the minimum age to be granted a survivor's pension will be gradually raised from 45 to 55 by 2030.

5. Specific assumptions

a. How are careers modelled?

Future career evolution is projected by the microsimulation model MIDAS.

b. How are survivors' pensions calculated?

Deaths are simulated through MIDAS' demographic module. If an (ex-)civil servant dies, the surviving partner becomes eligible for a survivor's pension. If the surviving partner has reached a minimum age, she/he will receive the survivors' pension. If she/he is younger than this minimum age, she/he will not receive a survivor's pension but a transitional benefit. The age condition was 45 for the 2015 and will gradually increase to 55 by 2030.

A divorced spouse can also be entitled to a survivor's pension under certain conditions. These conditions will not be discussed here. The minimum age condition plays a similar role in these situations. This age condition was also 45 for the 2015 and will gradually increase to 55 in 2030.

    c. <u>How is the retirement age modelled over time?</u>

The statutory retirement age in Belgium is currently 65 (both men and women and all pension schemes). In 2015, a pension reform act was passed in parliament. The statutory retirement age will increase from 65 to 66 by 2025 and to 67 by 2030. The minimum age to be granted a survivor's pension will be gradually raised from 45 to 55 by 2030.

    d. <u>Other specific features of the model</u>

6. Links to (national) publications providing further information on the pension schemes

For old-age pensions for public sector workers (French):
http://pdos-sdpsp.fgov.be/sdpsp/pdf/publications/retirement_pension_201609.pdf

For survivor's pensions (French):
http://pdos-sdpsp.fgov.be/sdpsp/pdf/publications/survival_pension_201609.pdf?version=20161108

Annex 5: Pension fact sheet: social security pension schemes

1. General description of the scheme and the calculation model

a. <u>Coverage of the scheme and classification in Table 29 of the transmission programme</u>

Column H covers the social security pension schemes for both wage earners and the self-employed. Both pension schemes consist of an old-age pension and a survivors' pension. The column also includes the ADLs of the civil servants whose pension scheme does not longer depend on the budget of the federal government.

Of the total pension expenditure on first pillar pensions, 55% is on wage earners and 8% on self-employed individuals.

b. <u>Institutional set up</u>

Data is used from the Datawarehouse marché du travail et protection sociale of the Crossroads Bank for Social Security. It contains a little more than 600 000 representative individuals, with retrospective data that is complete for wage earners and only partial for civil servants and self-employed workers. The dataset is enriched with information from the 2011 population census and a dataset containing fiscal information.

The institution responsible for Table 29 is the National Accounts Institute of Belgium. It has entrusted the National Bank of Belgium and the Federal Planning Bureau, with the completion of the supplementary table. Column H a responsibility of the latter.

c. <u>Major formulas: benefit formula; indexation of benefits</u>

Wage earners

The pension of wage earners is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other cases. The reference wage is calculated on the wages actually earned during the career up to a wage ceiling. These wages are adjusted to current prices. The sum of those adjusted wages over the career is multiplied by 1/45 (a full career is 45 years).

A guaranteed minimum pension exists for the pensions accrued over a career which equals at least two thirds of a full career in the wage earners' scheme. A minimum right per working year also exists if some conditions are met. Besides these two minimum pension rights, retirement pensions are also subject to a maximum pension.

Pension benefits are automatically adjusted to the health index and partially adjusted to living standards according to the 'Generation Pact'.

Self-employed individuals

The pension of self-employed individuals is computed at 75% of the reference wage for the head of household with a dependent spouse and 60% in all other cases. The working years before 1984 are valued at a fixed income, while for the working years as from 1984 the pension right is based on the business income used to compute social security contributions and income tax, up to an income ceiling. The income is adjusted to current prices.

The pension is capped to a maximum pension and a minimum pension can be granted when the person can prove at least two thirds of a full career as a self-employed individual and/or wage earner.

Pension benefits are automatically adjusted to the health index and partially adjusted to living standards according to the 'Generation Pact'.

d. Type and structure of the calculation model

MIDAS is a microsimulation model, meaning that it models on the level of individuals grouped in households rather than on aggregate data. It is also a dynamic population model with dynamic cross-sectional ageing. This means that it is based on a cross-sectional dataset representing a population of all ages at a certain point in time.

2. Assumptions and methodologies applied

a. Discount rate

A discount rate of 3% in real terms is used.

b. Wage growth

Future wage growth is modelled for self-employed individuals at a rate of 1% on long term and 0.5% for wage earners.

c. Valuation method: ABO/PBO

PBO

3. Data used to run the model

a. Mortality tables

MIDAS uses EUROPOP2015 data in the projections used for table 29.

b. Entitlements statistics; other relevant statistics

The entitlements statistics are taken from the 2016 national accounts (government accounts).

4. Reforms incorporated in the model

The Act of 10 August 2015 "*aimed at raising the legal retirement age, conditions for the early retirement pension and the minimum age for the survivor's pension*". The reforms that have an impact on the benefits covered by Table 29 are considered: i) the statutory retirement age will increase from 65 to 66 by 2025 and further to 67 by 2030 and ii) the minimum age to be granted a survivor's pension will be gradually raised from 45 to 55 by 2030.

5. Specific assumptions

a. How are careers modelled?

Future career evolution is projected by the microsimulation model MIDAS.

b. How are survivors' pensions calculated?

Wage-earners

The rules on survivors' pensions were changed in 2015. After the death of the spouse who either earned a wage or received a replacement income (pension included) in the wage earners' scheme, the surviving spouse is entitled to a survivor's pension if some conditions are met. The most important is the minimum age. If the surviving partner has reached a minimum age, she/he will receive the survivor's pension. If she/he is younger than this minimum age, she/ he will not receive a survivor's pension but a transitional benefit. The age condition was 45 for the year 2015 and will be gradually increased to 55 by 2030.

A survivor's pension is calculated as 80% of the deceased person's retirement pension, computed at the family rate (which means 80% of 75%, or 60% of the reference wage), or, if he was still working, at 80% of the retirement pension she/he would have had, should she/he have worked until the age of 65.

Self-employed individuals

In this system, the rules on survivors' pensions were also changed in 2015. After the death of the spouse who was self-employed, the surviving spouse is entitled to a survivor's pension if some conditions are met. The most important is the minimum age. If the surviving partner has reached a minimum age, she/he will receive a survivor's pension. If she/he is younger than this minimum age, she/he will not receive a survivor's pension but a transitional benefit. The age condition was 45 for the year 2015 and will be gradually increased to 55 by 2030.

The calculation takes into account the career of the deceased person and his/her business income.

c. How is the retirement age modelled over time?

The statutory retirement age in Belgium is currently 65 (both men and women and all pension schemes). In 2015, a pension reform act was passed in parliament. The statutory retirement age will increase from 65 to 66 by 2025 and further to 67 by 2030. The minimum age to be granted a survivor's pension will be gradually increased from 45 to 55 by 2030.

    d. <u>Other specific features of the model</u>

6. Links to (national) publications providing further information on pension schemes

Institution managing the pension schemes for wage-earners: (French):
http://www.onprvp.fgov.be/FR/profes/calculation/Pages/default.aspx

Institution managing the pension schemes for the self-employed: (English):
http://www.nisse.be/en?_ga=1.53618988.562573872.1479120952