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Projections of the Gender Pension Gap in Belgium using MIDAS

(project MIGAPE, Work Package 3)

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Project – Mind the GAp in PEnsions (MIGAPE)

Abstract - This report presents provisional simulation results of the gender pension gap (GPG), using the Belgian dynamic microsimulation model MIDAS and the socio-economic projections of the Working Group on Ageing Populations and Sustainability (AWG) of the Economic Policy Committee (EPC) of the EU.

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1. Introduction

The Gender Pension Gap (GPG) reflects by how much women's pensions are lagging behind those of men.

Belgium has a Bismarckian-style pension system, where the pension an individual receives at retirement is a function of the past career and earnings. The GPG therefore depends on labour market characteristics, such as differences between men and women in the prevalence of part-time work, unemployment, withdrawals from the labour market, and the pay gap. These differences may be related to other gendered behaviour, such as the impact of parental leave on wages after return (e.g. Lequien, 2012; Thévenon and Solaz, 2013). All these inequalities are cumulated over a person's lifetime (Jolly, 2014, 50; Bettio *et al.*, 2013, 8, 37 and 50), and impact the pension benefit during retirement.

However, the relation between the earnings gap and differences in participation rates, on the one hand, and GPGs later in life, is far from linear and depends on many mediating aspects, including state transfers and especially the "compensating" or redistributive elements embedded in the first-tier pension systems. Also, women are the main beneficiaries of survivor pensions, which mainly depend on the career of the former partner, and these have an important dampening effect on the GPG.

In this this report we present projections of the GPG for Belgium, using the dynamic microsimulation model MIDAS, and attempt to elucidate the underlying developments behind these results. Apart from the standard definition of the GPG (based on the means – by gender – of all pensions for persons 65 and over), we use several variants which help to understand the development of the GPG. The simulation is based on projections for Belgium of employment rates by age group and wage growth produced for the 2021 Ageing Report by the Working Group on Ageing Populations and Sustainability (AWG) of the Economic Policy Committee (EPC) (European Commission, 2020) for its projections of the financial and social sustainability of the Belgian pension system.

This report is part of a European-funded international research project, called "Mind the Gap in Pensions"[1]. The goal of the project is to analyse gender differences in pension income, and to do this from various perspectives and to communicate the lessons learned to policy makers and the audience at large.[2]

The report is structured as follows. In the second section below, we discuss the definition of the GPG and its variants, as well as the dynamic microsimulation model MIDAS and the data it uses. Apart from the standard definition of the GPG, we use several variants. This section also contains a brief literature review. In section three we provide some background to the GPG projections that follow. We present the recent evolution of the Gender Pension Gap in Belgium, as measured using EU-SILC data, and compare this to the GPG projections from MIDAS for overlapping years. We also sketch the past, current

[1] This project is funded by the European Union's Rights, Equality and Citizenship Programme (Grant Agreement number: 820798 — MIGAPE — REC-AG-2017/REC-RGEN-PENS-AG-2017).

[2] See www.migape.eu for the project description, ,project partners and other information about the project

and future socio-economic context in which the current GPG has arisen, and which the determines the future GPG, focusing on labour market differences between women and men. The AWG projections are also discussed. Section four presents results for the base or reference scenario. In section five we show the impact of some pension components: survival pensions and the means-tested guaranteed minimum income for the elderly. In section six, we simulate three variant scenarios. The "constant scenario" keeps labour market participation, unemployment rates and all other rates as well as other characteristics of the employed and of the not working or in-active population at their 2021 levels. This scenario serves to put the reference scenario, based on the AWG projections into perspective: what would the evolution of the GPG look like if labour market behaviour of women and men would remain unchanged from 2021 on, instead of converging in some respects? The "equalised scenario" sets key socio-economic values in projection equal for women and men, and so reveals how quickly (or slowly) the GPG would decline if many labour market differences between women and men would disappear overnight. Finally, section seven concludes.

2. Definitions, method and data

The Gender Pension Gap (GPG) refers to the fact that women generally receive a lower gross pension than men. It is often measured as one minus the ratio of the average pensions of women and men. In the measure of the GPG as published by Eurostat and based on EU-SILC, pensions include gross retirement pensions, gross survival pensions as well as (for Belgium) the means-tested Guaranteed Minimum Income for the elderly. People with zero pensions, as well as everyone below age 65 are excluded from the calculation. However, this is not the only possible measure of the GPG. In a general form, the GPG(l, x) can be written as $1 - \frac{l(x)_f}{l(x)_m}$; usually l is the mean of the variable of interest, x, e.g. gross pension income, though l can be any measure of location.

Variants of the GPG can be distinguished according to four dimensions. First, the pension to which they refer can include only retirement pensions, both old-age and survivors' pensions, and include or exclude the means-tested "guaranteed minimum income" (denoted *gmi*) for the elderly. Second, the standard Gender Pension Gap does not take into account zero-values of retirement benefit. One may argue that those who do not have a retirement benefit (i.e. equal to 0) are not retired. However, it can in some cases be interesting to compare the GPG with and without zero-pension values. The GPG including zero pensions can be seen as a combination of the standard GPG and the gender pension coverage gap, which measures the extent to which women have their own independent access to pension system benefits (European Commission, 2018a, p. 71f). Third, the GPG can be calculated using any measure of location (percentile, decile). In this report, we focus on the GPG at the mean and the 10th percentile. Finally, in addition to the GPG in the group of pensioners aged 65+, we present breakdowns by age groups 65-74 and 75+.[3] Furthermore, the GPG is calculated for the whole group of pensioners, irrespective of age. Finally, it is interesting to look at the GPG of people in the year when they retire.

MIDAS is a dynamic microsimulation model designed to simulate the long-term prospective impact (up to 2060) of demographic ageing and social policies on income inequality and poverty measures. It does so while incorporating demographic and macroeconomic projections from the Working Group on Ageing Populations and Sustainability (AWG). This alignment of MIDAS on the AWG results allows projecting the social indicators about pensions in accordance with the budgetary sustainability assessment of the pension system (Dekkers et al., 2015).

MIDAS uses data from a large, administrative sample as its starting dataset, a compound of data from the Datawarehouse Labour Market and Social Protection, the fiscal IPCAL database and the administrative Census 2011. The full sample consists of 601 683 individuals, stratified to the three regions of Belgium and including an oversampling of the Brussels region. After excluding households with missing income information (e.g., border workers), we ended up with a starting dataset of 553 722 individuals. Results are reweighed to the Belgian population.

Using microsimulation techniques to produce projections of the GPG is not new. Halvorsen and West Pedersen (2019) use the model MOSART to simulate gender pension gaps in Norway. However, they

[3] Eurostat publishes the GPG for the 65+, those aged 65-74 and 65-79; https://ec.europa.eu/eurostat/data-browser/view/ilc_pnp13/default/table?lang=en.

do this for one cohort only, so that it is difficult to extend their analysis to the gender pension gap, whose value at any point in time reflects the outcomes of all cohorts in retirement. Baroni (2011) uses microsimulation to study the long-term impact of sharing the parental leave equally on poverty among older persons and gender inequality. This is done using the agent-based model IFSIM that simulates a synthetic population over a period of 150 years. This approach has many advantages, including the theoretical underpinning and the combination of micro-behaviour and macro feedbacks, but, according to the author, it is not predictive but only a theoretical device to isolate the net effects of one change while keeping all other parameters constant. Bonnet et al. (2006) use the dynamic microsimulation model Destinie to simulate to study the effects of France's 1993 and 2003 pension reforms on inequality between men and women and show that the reforms are tending to slow down the narrowing of the gender pension gap. This approach is much closer to ours, but, like Halvorsen and West Pedersen, only describe one country. We use dynamic microsimulation models to project the gender pension gap while aligning as much as possible to the AWG projections (see below). In that sense, our work fits into earlier work by Dekkers et al. (2010), Dekkers et al. (2015) and Dekkers et al. (2018), who project various indicators of pension adequacy using AWG projections and hypotheses. However, these papers do not simulate the gender pension gap.

Some studies have employed other approaches to project the future GPG. The OECD (2018, 31 and further; see also Lis and Bonthuis, 2019) attempts to map the future GPG in many countries stemming from current labour market gender differences by developing a relative wage profile for a person that starts her or his career at the age of 20 in 2016 and who retires at the normal retirement age. This profile is used in the OECD Pension Model to simulate the future pension benefit for this fictitious male or female individual. The earnings profile can be expressed as a product of hourly earnings, the number of hours worked per worker and employment probabilities. Using this approach allows to isolate the impact of current labour market developments on future GPG's in for a typical case. For the countries under study here, the conclusions are that the gender difference in hours per worker is the most important in Belgium followed by the employment differential. The contribution of hourly earnings is small. The pattern is similar in Luxembourg, although the contributions of hours per worker is lower than in Belgium. In Slovenia, the GPG is in roughly equal measure the result of the gender differential in hourly earnings and hours per worker. By contrast, the contribution of the employment differential is absent in Slovenia. In Portugal, the GPG is for the largest part the result of the gender differential in hourly earnings.

Chłoń-Domińczac, (2017) has developed a forward-looking gender pension gap index (FGPGI) for the European Parliament. The FGPGI is a tool to measure the possible future gender pension gap for cohorts that start to work now, assuming that pension rules and labour market participation do not change. It is calculated as a weighted sum of seven indicators related to the GPG (e.g. employment gaps and features of the pension system), with the weights being based on expert assessment. For the countries in MIGAPE, the highest value of the FGPGI (i.e. the strongest expected decrease of the GPG) is expected for Slovenia, mainly because this country has a high proportion of women working full time, while also having a strong compensatory elements in the pension system. Portugal comes at the 16th place, a bit higher than the EU-28 average. Portugal has a lower employment rate of women aged 45 or more on the labour market. The index values for Luxembourg and Belgium are below the EU-28 average, and take the 22th and 23th place, respectively. Although the employment rate is high, a high proportion of

women work part time. Contrary to other countries which have a low FGPGI, the pay gap in Belgium and Luxembourg is relatively low.

The added value of the projections of the GPG presented below is that they are based on an explicit and detailed model of labour market behaviour and pension regulations, while aligning as much as possible to the AWG projections, refer to the whole population and a long period of time, and are made within an international project making comparisons with other countries possible.

3. Background

In this chapter we first present the recent evolution of the Gender Pension Gap in Belgium, as measured using EU-SILC data. This section also contains a validation of the GPG projections from MIDAS which will be discussed in the following chapters. In the second subsection, we provide some indicators of the socio-economic context as it is now and as it will develop in the coming decades, which determine both the current GPG as well as its likely future evolution.

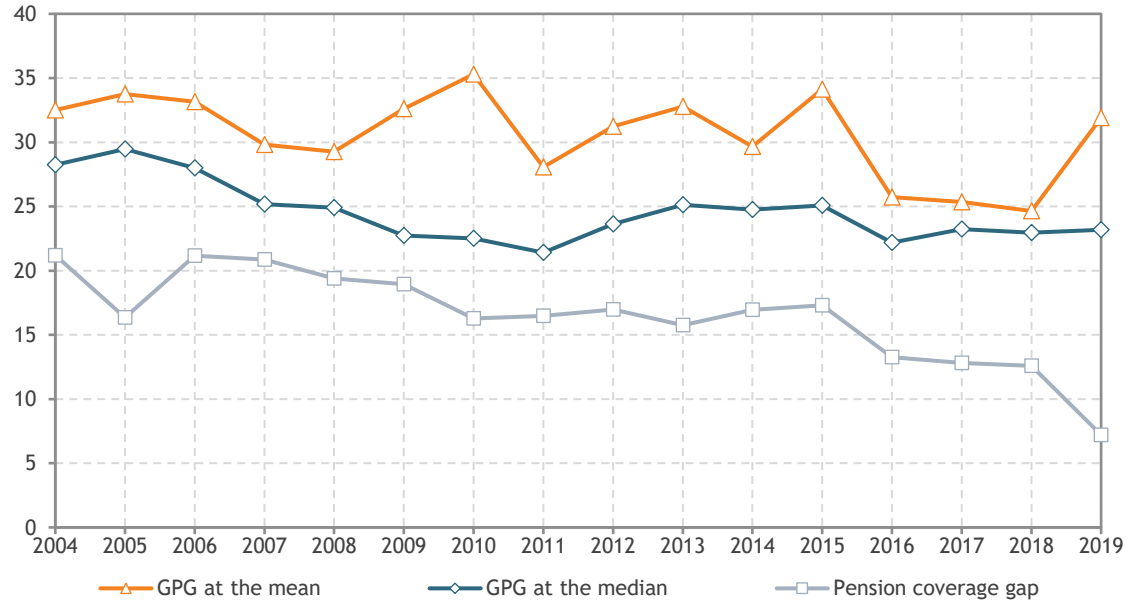
3.1. Recent evolution of the GPG

The GPG at the mean according to the definition by Eurostat (all pensions including those from private plans, population aged 65 and over with a positive pension) appears to be largely stable between 2004 and 2019 (Graph 1). Sample fluctuations and outliers make it difficult to discern a clear trend. The GPG at the median[4] is less affected by outliers and appears to show a declining trend between 2005 and 2011, followed by stability. On the other hand, the pension coverage gap shows a clearly downward trend from 2006 on. This is due to a rise in the percentage of women aged 65+ receiving a pension, from 77% in 2006 to 86% in 2018 and 92% in 2019; the proportion of men in this age group receiving a pension remains unchanged around 98%. The sharp changes in the GPG at the mean and in the coverage gap are likely to be due, at least in part, to a change in the collection of income data from survey responses to administrative sources in 2019. Apparently, the administrative data apparently include a large number of small pensions amounts (below 12 000 Euro) which are not mentioned in the survey.[5] Most pensions below 12 000 Euro are received by women, and so the inclusion of these amounts increases the GPG, while at the same time reducing the gender coverage gap.

[4] Calculated from the EU-SILC micro data. All results are derived in this way; see the note below the Graph.
[5] This is suggested by a comparison of the pension distributions in the EU-SILC 2018 and 2019 wavers.

Graph 1 **Gender Pension Gap at the mean and at the median, Gender Gap in Pension Coverage, Belgium 2004-2019.**

%



Source: EU-SILC data, own computions
Note: The GPG at the mean and the Gender Gap in Pension Coverage shown correspond exactly to those published by Eurostat in tables ilc_pnp13 and ilc_pnp14, except for 2012, when there are small differences of +0.3 for the GPG and -0.2 for the coverage gap.

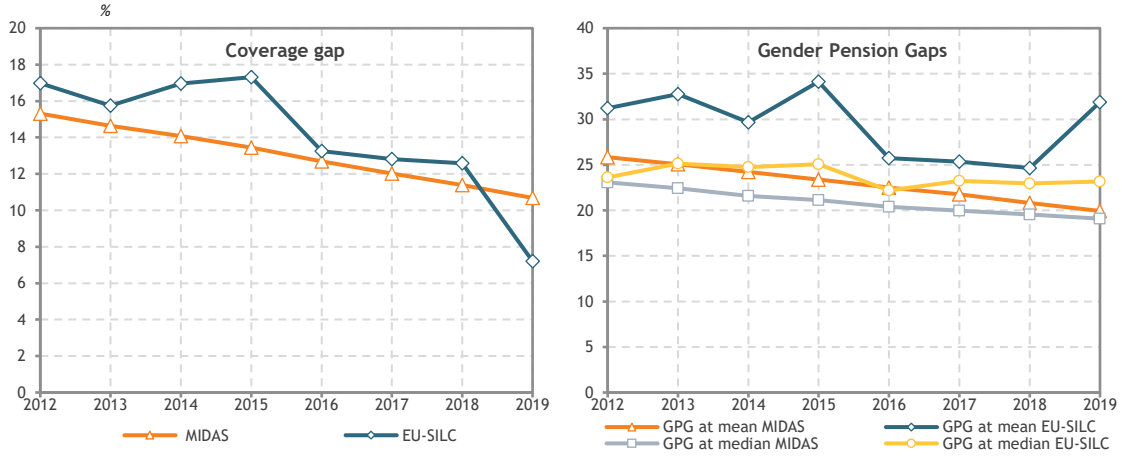
Comparison of EU-SILC results with MIDAS projections

When comparing the MIDAS projections with the EU-SILC results, several important differences have to be kept in mind, both as regards the population covered, as well as regards the pension concept. First, the EU-SILC sample excludes people living in collective households, notably older people in care homes, while these are covered in the MIDAS projections. In the MIDAS starting database for 2011, the GPG at the mean among people living in collective households was only 7.7% using the MIDAS pension definition (7.7% using a variable with all pension incomes); the GPG at the median in that group was only 2.6%. The population in care homes consist mainly of the oldest old. The men in this group therefore have lower pensions then the average male pensioner. Most women in care homes receive a survivor pension and for this reason their average pension is higher than that of other retired women. Therefore, the GPG will be a bit higher in the non-institutionalized population than among all pensioners. (Unfortunately, entry into care homes is not modelled in MIDAS, so we cannot present a projection of the GPG for the population of pensioners outside care homes.)

Secondly, the EU-SILC pension variable comprises all kinds of pensions, including 1st pillar pensions, 2nd pillar pensions and pensions from private pension plans. By contrast, because of data limitations, the MIDAS pension variable includes only Belgian statutory pensions (foreign pensions are excluded). Other important differences between EU-SILC and MIDAS are that MIDAS is based on very large administrative sample (see chapter 2), while the EU SILC, in contrast, is a survey with a sample size for the 65+ that varies between 1784 in 2004 to 2987 in 2019. Also, the EU-SILC is a rotating panel: every year, one quarter of the sample is replaced, while the MIDAS projections use the same sample of individuals throughout the projection period (except for birth and death). This implies that the EU-SILC results are much more subject to sample fluctuations than the MIDAS projections (cf. Fusco et al., 2019)

Graph 2 shows, for overlapping years, a comparison of the MIDAS projections with the EU-SILC results. Compared to the EU-SILC, the coverage gap according to the MIDAS projections is a bit lower, but the difference is not large. This may be due to the exclusion of the institutionalized population in EU-SILC: this consists mostly of single women with a pension of their own, even if that is only a GMI. The GPG at the mean according to the MIDAS projection is considerably below the same indicator from EU-SILC. The differences regarding the GPG at the median are much smaller. The main reason for the lower GPG according to MIDAS is probably that 2nd pillar pensions are included in its database. More men than women receive a 2nd pillar pension, and the amounts received by the former are higher (Studiecommissie voor de Vergrijzing, 2020, pp. 60-61). As a consequence, we find are a number of very high pension amounts in EU-SILC 2019, mainly for men: the 99th percentile for men is 80 300 Euro, for women this is only 51 300 Euro.

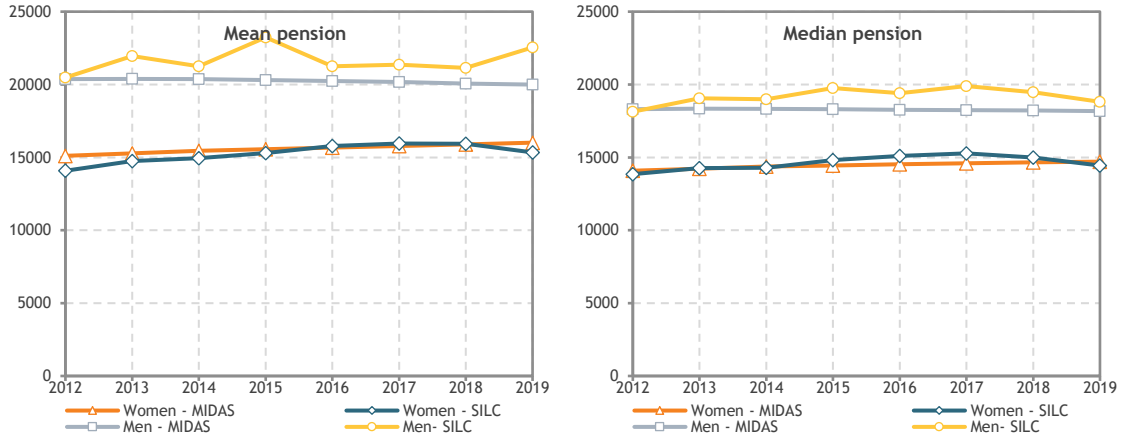
Graph 2 **Gender Pension Gap at the mean and at the median, Gender Gap in Pension Coverage, comparison between EU-SILC and MIDAS projections for overlapping years .**



Source: EU-SILC data, own computions, and MIDAS projections
Note: See Graph 1.

Graph 3 shows that the differences between the MIDAS projections and the EU-SILC results are located mainly in the group of men. For women there is hardly any differences between the median and mean pension between MIDAS and EU-SILC. The mean pension for men in EU-SILC is between 1% and 14% higher than according to MIDAS; for the median pension, the difference ranges between 0% and 9%. For both the mean and the median, differences fluctuate across years with no clear trend.

Graph 3 **Average and median pensions by gender, comparison between EU-SILC and MIDAS projections for overlapping years.**
Euro



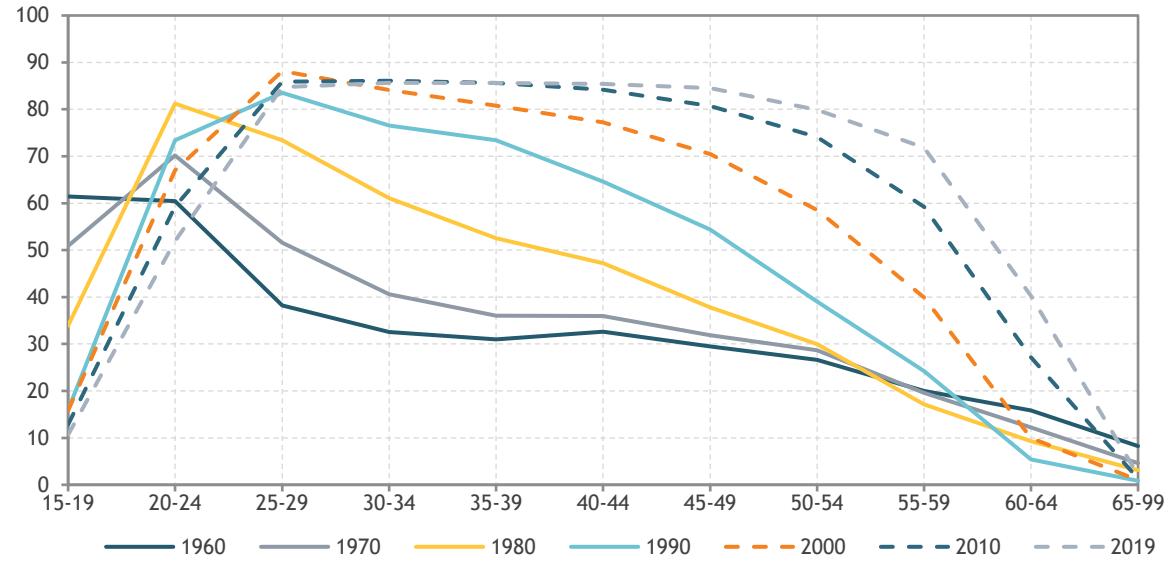
Source: EU-SILC data, own computions, and MIDAS projections
Note: EU-SILC amounts have been recalculated to prices of 2011, to make them comparable to the MIDAS projections.

3.2. Socio-economic context: past, present, and future

The Gender Pension Gap, as it is now and as it will develop in the coming years, is determined by the labour market situations and behaviour of women and men during the past and in the future. In this chapter, we present some general indications of these. For the past and the present, we use various sources. For the future we use the projections of the Working Group on Ageing Populations and Sustainability (AWG), which are made, on the basis of population projections by Eurostat, as input for the long-term budgetary projections by the EU's Economic Policy Committee to be published later in 2021 (European Commission, 2020). We refer to that report for the assumptions made and methodologies used for these projections. As mentioned, these projections are also used in our projections of the GPG.

Graph 4 charts the past evolution of activity rates of women by age bracket (5-year) from 1960 to 2019. It shows the important development in the behaviour of women during the last six decades: they participate increasingly, and in particular they stay on the labour market until a higher age. Until the 1980's, women left the labour market in large numbers around the age of 25, probably to raise their children, and never returned. Obviously, this resulted in rather short careers when they retired. In recent decades, participation declined for the two youngest age groups as women stay longer in education. However, more importantly, starting in the 1970s women stay longer on the labour market, and in 2019, participation rates are stable until age 49, and they start to decline strongly only after age 59.

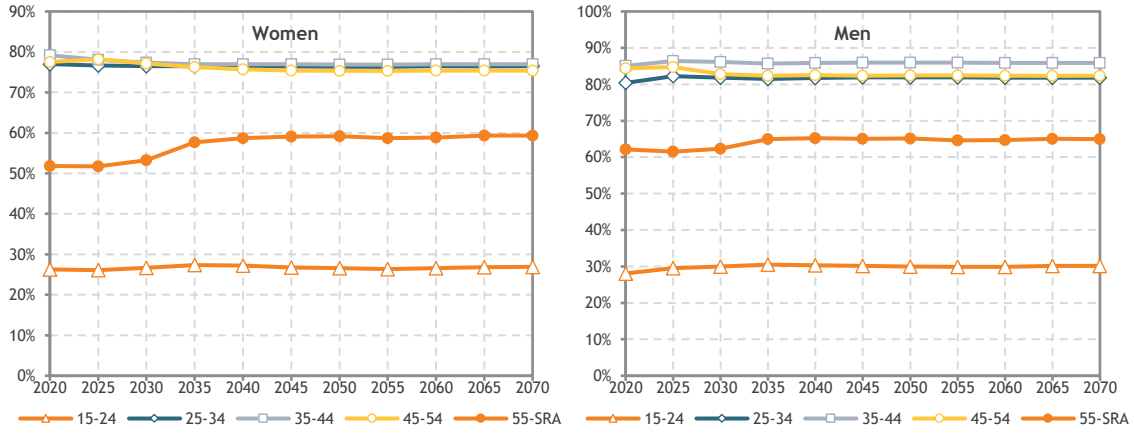
Graph 4 **Evolution activity rate of women, by age bracket, 1960-2019**
In %



Source, Study Commission on Ageing, 2021.

The main development for the future, as shown in Graph 5, is that among women aged 55+ the percentage who are working (as employee, civil servant or self-employed) will continue to increase to about 59% in 2040 and later. Men in the same age group will also work more often, the percentage is expected to reach 65% in 2040. Otherwise, there are few changes compared to the current situation. In all age groups, the working rate of women will stay somewhat below that of men.

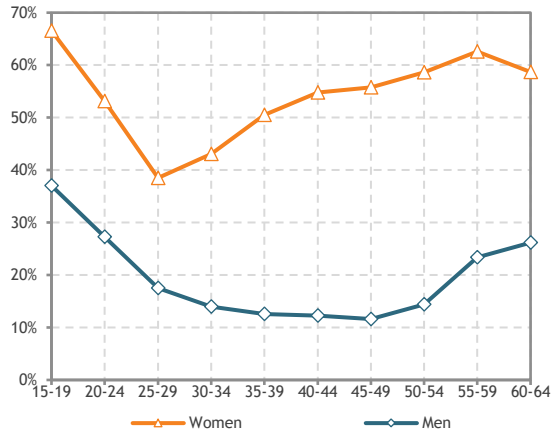
Graph 5 **Working rate in future years, 2020-2070, by gender and age category**
%



Source: AWG projections
Note: SRA: Statutory retirement age: 65 in 2020, 66 in 2025, 67 in 2030 and after

Graph 6 **Part-time work among wage earners by gender and age category**

%



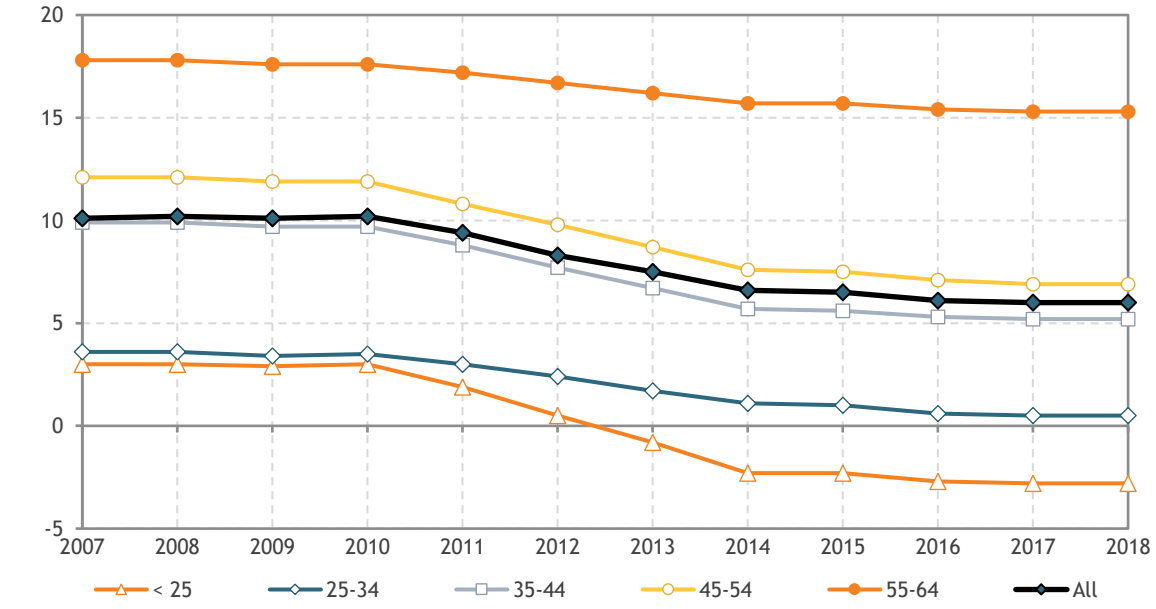
Source: Datawarehouse (administrative) data for 2011
Note: percentage relative to the total group of wage-earners

Following the assumptions made by the AWG (2020, p. 61), the percentages of wage-earners who work part-time observed by 5-year age bracket in the starting data of 2011 (see Graph 6) are assumed to remain constant throughout the projection period. Women work much more often part-time than men; the difference is largest at ages 35-50, when more than half of women work part-time, and only around 12% of men. It should be kept in mind, though, that many women work 4/5th ofa full-time job.

The Gender Pay Gap has declined in recent years in Belgium, as Graph 7 shows, both overall and in all age groups. In the youngest age groups (below 35) the Gender Pay Gap has even been eliminated or reversed. In a longer time perspective, the decline of the Gender Pay Gap is much more dramatic: in 1960, the pay gap based on gross hourly wages was 41%, compared with 15% in 2011. Women today are coming on to the labour market with an equally high and even higher level of qualifications than young men. Also, the latest generations of women are achieving longer years of service. (Institute for the Equality of Women and Men, 2014, pp. 16-17). The AWG does not make projections of this indicator. Since the wage equations used in MIDAS were estimated on 2011 data, the Gender Pay Gap remains largely stable in the reference projection.

Graph 7 **Gender Pay Gap, by age group, Belgium 2007-2018**

%

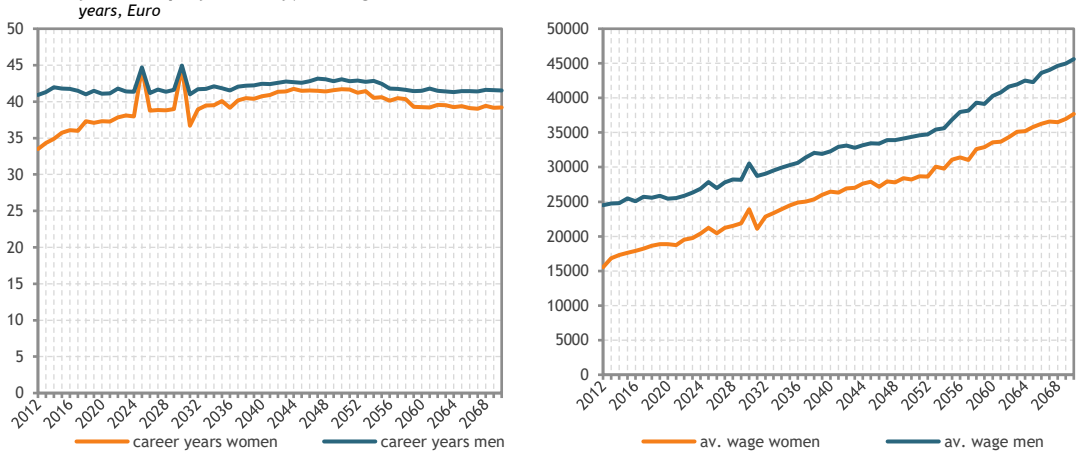


Source: Statbel: https://statbel.fgov.be/nl/themas/werk-opleiding/lonen-en-arbeidskosten/loonkloof#figures

These differences in labour market participation and wages obviously have an impact on the career records when women and men go into retirement. Graph 8 shows the number of career years and the average wage (including assimilated wages and taking into account the earnings cap) at the time of retirement., i.e. in the year and at the age when they start to receive a retirement pension, which can be at or before the statutory retirement age. In 2020 there is a gap of 3.8 years between the number of career years of women and those of men. This is mainly due to the important number of women with no or rather few career years, and who consequently have no pension rights, or, if they are married, forego their pension so that their husband is entitled to a family pension. This difference in career years – between women and men when retiring – is projected to be get smaller until the mid-2040s. (The spikes in this graph in 2025 and 2030 are due to the legislated increase in the statutory retirement age to, respectively 66 and 67. This means that in those years the only persons who can retire are those career makes them eligible for early.) The average wages during the past career of women and men who retire move with a quasi-constant difference in Euro of around 6 500 Euro; in percentage terms, this wage gap declines from 26% in 2020 to 17% in 2051, after which it remains stable. Note that this is the wage that is taken into account for the calculation of the pension, so it includes assimilated wages during periods out of work, and after the application of the wage ceiling.

Graph 8 **Number of career years (employee, self-employed and civil servant schemes- and average wages (per year, employees only) during the career at retirement**

years, Euro



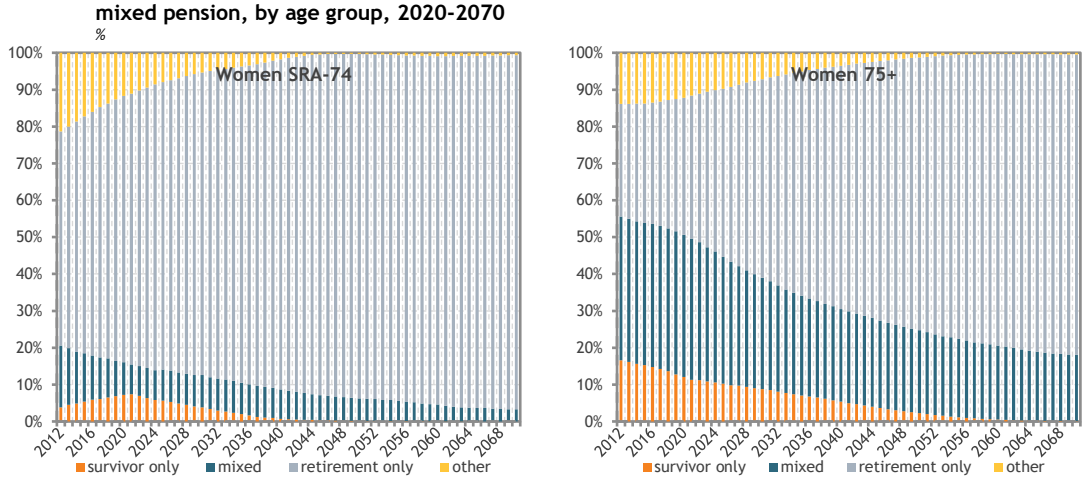
Source: MIDAS projections
Note: Average wages of employees during the career of people actually retiring, i.e. receiving a retirement pension. The wages are the wages taken into account for the calculation of the pension, including assimilated waqes. Wages at constant 2011 prices.

Due to the ageing of the population and in particular that of the large baby-boom cohort, the average age of pensioners increases in a nearly linear way between 2020 and 2070 from 75 to 80 for women, and from 73.5 to 78.0 for men; life expectancy at age 65 increases somewhat more for men than for women. As the GPG is lower among the oldest pensioners than among the younger ones, this pensioner ageing could decrease the GPG.

A final relevant development is the decrease of the percentage of women with a survivor pension, as shown in Graph 9. (Among men, the percentage with a survivor pension, which is virtually always combined with a retirement pension, rises a bit, but remains always below 6%.) As more and more widowed women have their own retirement pension, those with only a survivor pension are near to extinction in 2060. Also the percentage of pensioner women who have a mixed pension decreases

strongly; among the 75+ from 39% in 2020 to 18% in 2070. Apart from the stronger increase in longevity of men relative to women, two factors are behind this development. First, fewer women are expected to get married in future, and more women will remain single or cohabit all their lives. Under current legislation, only formerly married women are entitled to a survivor pension. Second, because of cumulation rules (which differ for employees, civil servants and self-employed), many widows with a sufficiently high retirement pension of their own will not receive a survivor pension.

Graph 9 **Percentage of women above retirement age with only a survivor pension, only a retirement pension, or a mixed pension, by age group, 2020-2070**



Source: MIDAS projection.
Notes: SRA: Statutory Retirement age. "Other" includes women with no Belgian statutory pension, or only GMI.

4. Base results

4.1. Overview

Table 1 gives an overview of the projection results, where the GPG is evaluated at the mean of various pension concepts, including or excluding zero's, and for five populations. The top row in panel A represents the Eurostat definition of the GPG. The GPG declines until about 2060 at a decelerating rate: the strongest decrease is between 2020 and 2030. The other rows in panel A show that a similar pattern over time occurs in all groups that are distinguished. Among pensioners aged 65-74, the GPG is a bit higher and the decline somewhat slower; while among the oldest pensioners of 75 and over, the GPG is somewhat less than among all 65+, and there is a sharp fall between 2020 and 2030. The results for all pensioners, irrespective of age, are quite similar to those for the 65+. At retirement, the GPG is higher than for all pensioners, and this remains the case throughout the projection period. So the GPG is lower the longer pensioners are in retirement. This, as we will see below, is due to the impact of survivor pensions, which gets more important with increasing age. These pensions are mainly received by women, and depend on the pension rights of their former husbands.

Table 1: Overview of projected indicators of the GPG at the mean, using various pension concepts and for five populations

	2020	2030	2040	2050	2060	2070
A. retirement pensions, survivor pensions and GMI, excluding zero values						
All 65+ with pension	0.195	0.132	0.097	0.075	0.066	0.068
65-74 with pension	0.214	0.154	0.110	0.083	0.092	0.091
75+ with pension	0.188	0.122	0.091	0.070	0.051	0.054
At retirement	0.200	0.111	0.109	0.103	0.115	0.116
All pensioners	0.192	0.133	0.097	0.075	0.066	0.069
B. retirement pensions, survivor pensions and GMI, including zero values						
All 65+	0.278	0.174	0.114	0.080	0.068	0.070
65-74	0.295	0.185	0.119	0.085	0.096	0.094
75+	0.271	0.171	0.113	0.078	0.053	0.055
At SRA	0.272	0.175	0.117	0.105	0.122	0.120
C. Only retirement pensions and GMI, excluding zero values						
All 65+ with pension	0.398	0.281	0.196	0.136	0.107	0.100
65-74 with pension	0.284	0.196	0.135	0.099	0.103	0.100
75+ with pension	0.517	0.356	0.235	0.156	0.107	0.096
At retirement	0.227	0.122	0.126	0.115	0.124	0.123

Note: GMI: Guaranteed Minimum Income for the elderly.
Source: MIDAS projections.

As mentioned above, the GPG when including zero pensions (panel B) can be interpreted as a combination of the standard GPG and the pension coverage gap between women and men. As the coverage gap is positive in Belgium (i.e. women have less access than men), the values in panel B are always higher than the corresponding ones in panel A, without zero pensions. However, the decreases of the GPGs when including zero pensions are even stronger than those of the GPGs excluding zero pensions,

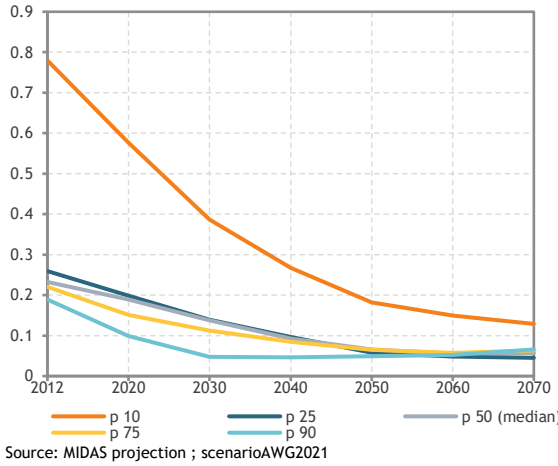
and in 2070 the difference between the former and the latter is very small, as nearly all women and men 65+ receive a pension of their own.

Excluding survivor pensions from the calculations (panel C) doubles the GPG among all pensioners aged 65+. The impact is especially large among the older pensioners aged 75+, where a survivor pension is currently for many women their only or main source of income. Conversely, it is fairly small at retirement, when few women are widowed. These differences with the standard GPG definition persist throughout the projection period, though getting much smaller. This reduction is related to the decline in the proportion of women receiving a survivor pension, see section 3. We come back to the impact of survivor pensions on the GPG in section 5.2 below.

The GPGs at the means of the pension variables considered do not necessarily provide a fully adequate perception of the pension differences between women and men. For instance, theoretically, the average pension of men could be pushed upwards by a few very high values, while apart from those extremes no difference in mean pension between women and men would be observed. For this reason, it is useful to look at the GPG at various points in the distribution of pensions, as is done in Graph 10. A percentile is the value below which a certain percentage of data, in this case pensions, falls. In 2020, the GPG at the 75th percentile is projected to be 0.15, which means that in the distribution of pensions, the amount where 75% of women receives less than that, is only 85% of the amount below which 75% of the pensions of men are situated.

The GPG at the median amounts is slightly below that at the average pensions, and follows the same pattern over time. Interestingly, at higher percentiles, the GPG is lower, but declines less, and at the 90th percentile it even increases after 2030. Note that we only model 1st pillar pensions, and for employees these are subject to an indirect cap, as wages are taken into account in the pension calculation only up to a ceiling. Most striking in Graph 10 is the very large initial GPG at the 10th percentile, which also remains substantial at the end of the projection period. This indicates that a much larger proportion of women than of men receive small pensions, and that this difference is never entirely eliminated. We come back to this issue below. Given the results in Graph 10, below we will focus on the GPGs at the mean and at the 10th percentile.

Graph 10 GPG (standard version) at various percentiles of the distribution of pensions

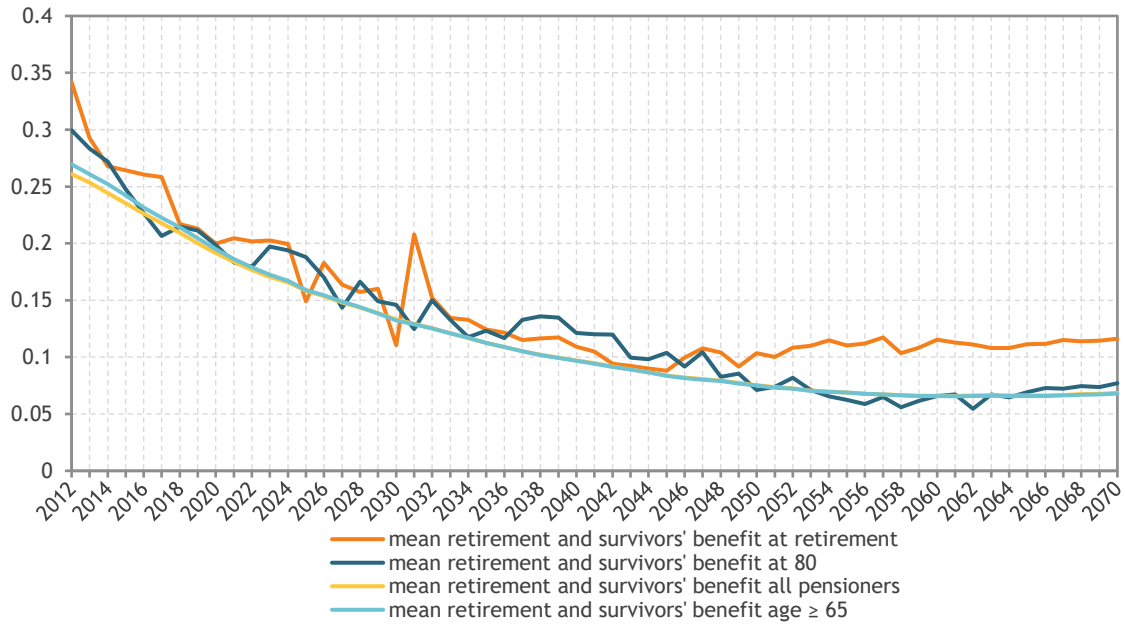


Source: MIDAS projection ; scenarioAWG2021

4.2. GPG for the complete statutory pension, base scenario.

Graph 11 presents the Gender Pension Gap in the standard form, based on gross retirement and survivors' pensions, and including the guaranteed minimum income *gmi*.

Graph 11 Reference (base)-scenario gender pension gap; gross retirement and survivors' pensions



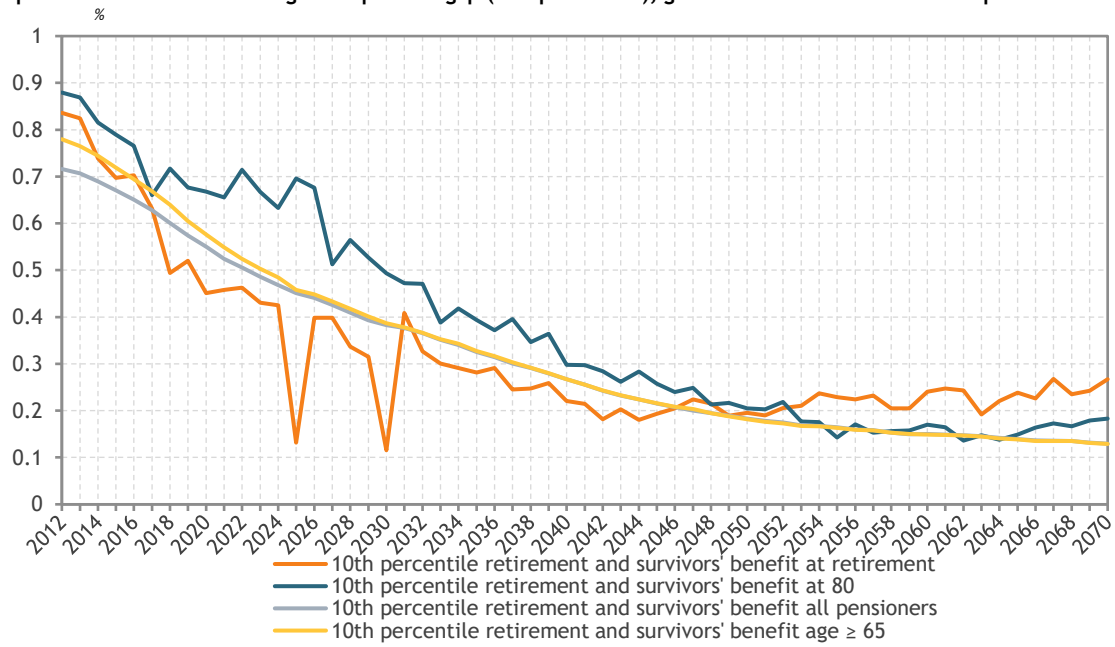
Source: MIDAS projection; scenarioAWG2021.
Note: Retirement and survivors' benefits, including GMI. GPG based on means. GPG at the mean for all pensioners and for age >= 65 virtually coincide.

The two irregular lines show the GPG's for two separate and small groups, being the comparison of the retirement and survivor's benefit at retirement, and at the age of 80. The two smooth lines reflect the GPG of two larger groups, being all pensioners and all pensioners aged 65 and older. We refer to section 3.1 for a comparison between these MIDAS projections and the EU-SILC results on the GPG.

All GPG's in Graph 11 show a decrease over the simulation period, and stabilize from the mid-2050's on to one-third or less of their value at the beginning of the projection period. This means that the pension handicap of women relative to men decreases markedly, or, inversely, that the pension benefit of women increases relative to that of men. The rather fast projected decline of the GPG during the coming decades can be understood as the result of the increased activity rates of women in the past 50 years, as documented in Graph 1. The remaining GPG at the end of the projection period is due to lasting differences in the working rate, the much larger percentage in part-time work among women, and the persistent gender wage gap.

In Graph 12 we present the GPG based not on the ratio of gross pensions of women and men, but rather at the 10th percentile of the pension distributions by gender. The GPG at the 10th percentile is much higher than the GPG based on means, but on the other hand, the decrease of the former is considerably stronger than that of the latter.

Graph 12 Reference-scenario gender pension gap (10th percentile); gross retirement and survivors' pensions



Source: MIDAS projection; scenarioAWG2021.
Note: Retirement and survivors' benefits, including GMI. GPG based on 10th percentiles.

A higher value of the GPG at the 10th percentile implies that the ratio of the 10th percentile to the mean pension is lower for women than it is for men.[6] Put differently, the inequality at the low end of the pension distribution is higher for women than for men. Currently, a large group of retired women receive a rather low pension, which is of course related to the labour market career of these women. Most of them have only short careers. The results also suggests that the floors included in the pension system, including the guaranteed minimum income of pensioners, are less often applied or less effective for women than for men, as these floors are proportional to the length of the career, and are conditional on a minimum number of career years. The way the career length is calculated implies that the higher prevalence of part-time work among women also has an important effect, as will be explored below. As the career length of women retiring in recent years and in future is increasing (see Graph 8), the GPG at the 10th percentile falls dramatically, first for new retirees and later also for all women in retirement.

[6] GPG(p10, x) > GPG(mean, x can be written as 1-(p_10 (x,f))/(p_10 (x,m))> 1-(avg(x,f))/(avg(x,m)), where x refers to penson, f to women and m to men. The latter expression can be rewritten as (p_10 (x,f))/(avg(x,f))< (p_10 (x,m))/(avg(x,m)) .

5. Impacts of pension components within the base scenario

5.1. Impact of zero-pensions

The standard GPG does not include zero pensions. This is an obvious condition because one might argue that people without pensions are not pensioners. However, for the population of 65 and older, there might be reasons to include at least some people with zero pensions. The Belgian pension system allocates a "household pension" instead of a single persons' pension benefit to married couples when that exceeds the joint single pensions of both partners. The household pension equals 75% of the earnings base of the high-earning partner, instead of 60% for a single pension, but is granted to the high-earning partner, which means that the low-earning partner foregoes his or her pension benefit. Hence, if we observe a married woman without a pension benefit at all, then it is possible that her husband was allocated the higher household rate. In that case, she is not considered in the GPG, even though these women have a (limited) labour market career, have built up (some) pension rights, and arguably are retired. There are also other reasons why people aged 65 or more do not have a pension, e.g. because they have no work history or immigrated recently into the country. Since most of these zero-pension older persons are women, we expect that including zero pensions will increase the GPG in the starting year.

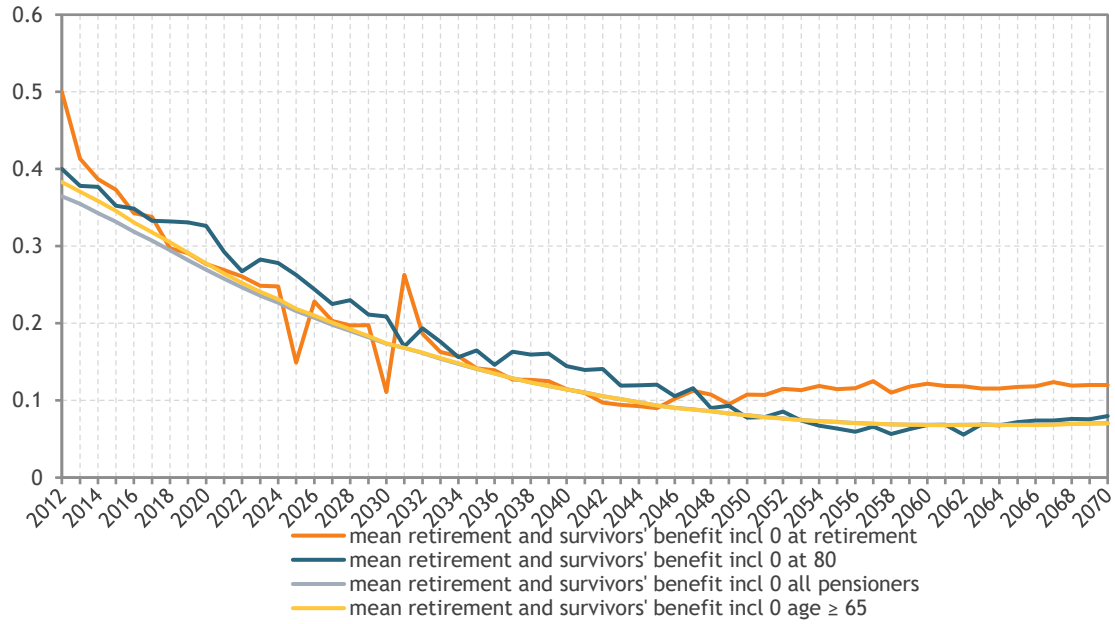
The European Commission recognises this issue by complementing the standard GPG with the "Gender gap in pension coverage", which measures the extent to which women have less access to the pension system than men (European Commission, 2018 p. 76). In 2019, the Gender gap in pension coverage was 6.4%, very near the EU average of 6.5%. (In 2018, the estimate for Belgium was 13.0%; this seemingly large drop is presumably due to the change in the income data collection method from survey questions to administrative sources; see section 3.1) Arguably it makes sense to combine both the GPG and the Gender gap in pension coverage into a single indicator, as is done in Dekkers et al. (2019, Graph 5, page 6).

Furthermore, with an increasing participation rate of women (see section 3), an increasing number of pensioners will receive the single persons' pension instead of the household pension. This will have a dampening effect on the pensions of married men. By contrast, while the average pension of married women in the starting year will be lower when including those with zero pensions, an increasing participation rate will reduce the proportion of zero values, which over time will increase the average pension of these women. As a result, the GPG including zero pensions is expected to decline faster than the GPG according to the standard definition.

Graph 13 shows the difference between the GPG of pensions with and without zero pensions for the population of 65 and older. The results in Graph 13 must be compared to those in Graph 11 in order to see the impact of taking into account the zero values. When including the zero values in Graph 13, the GPG typically is about 40% higher than without them in the standard GPG. Over time, as the proportion of older people without pensions decreases, the GPG's in Graph 13 converge to those in Graph 11 , and end up only slightly higher at the simulation horizon. The conclusion is therefore that including the zero values causes the GPG to start at a higher level, but to decrease faster over time.

Graph 13 The impact of including zero pensions on the gender pension gap; mean retirement and survivors' pensions

%



Source: MIDAS simulation; scenario AWG2021.
Note: Retirement and survivors' benefits. GPG based on averages, including zero values. The results in Graph 5 must be compared to those in Graph 1 in order to see the impact of taking into account the zero values.

5.2. Impact of survivors' pensions

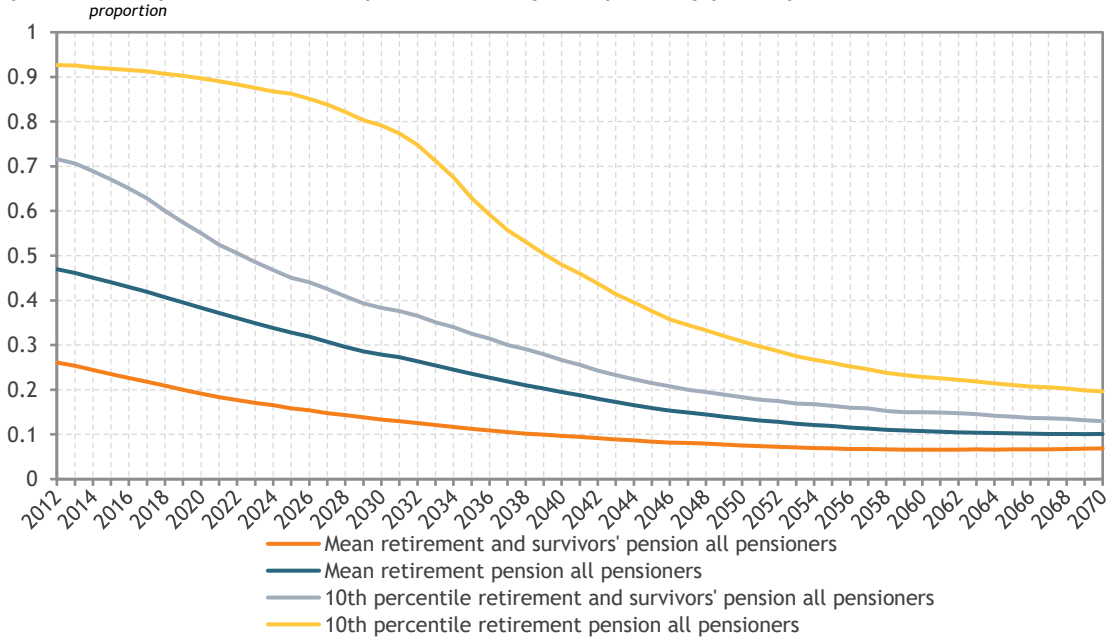
Individuals whose partner (or ex-partner) has deceased are eligible to a survivors' pension benefit. The recipient needs to be single and older than a minimum age depending on the date of the decease of the partner (currently it is 47 years and 6 months; Federal Pension Service, 2020). Finally, for the surviving partner to be eligible to a survivors' benefit, the couple must have been married for at least one year at the moment of decease.

This survivors' pension benefit is equal to the individual retirement benefit of the deceased partner. Or, if the partner was not retired at the moment of his or her death, the survivors' benefit equals the fictitious individual retirement benefit, considering only the time between the age of 20 and the age of decease, i.e. the career length (number of days worked) is compared to the maximum number of working days in that period (Federal Pension Service, 2020b). So if the deceased individual has worked (or has been in an equivalent state) for all years from the age of 20 on, then the fictitious pension benefit is calculated based on a full career. The survivors' benefit is however subject to a ceiling, in that the total amount of survivors' benefit and a possible own retirement benefit for former employees are limited to 110% of the fictitious survivors' benefit assuming a full career equivalent to 45 years (Federal Pension Service, 2020c).

By definition, only widowed men and women are eligible to a survivors' benefit. Because women live longer than men, and wives tend to be younger than their husbands, there are many more widows and widowers. Furthermore, anti-cumulation rules limit the combination of a retirement and a survivor

pension. For these reasons, survivors' benefits are predominantly received by women. Hence, we expect the standard GPG including survivors' benefits to be lower than a GPG variant excluding survivors' benefits. As a survivors' benefit can be combined with an own retirement benefit of the widow(er) only to a limited extent, we expect the impact of the survivors' benefit to be larger on the GPG at the 10th percentile than on the GPG at the means. Finally, as a result of the increasing age condition, the expected lower rate of marrying and the higher retirement benefit of married women in future, the impact of the survivors ' benefit on the GPG is expected to decrease over time, and the GPGs with and without survivors' benefits are therefore expected to converge. As we saw in section 3, the percentage of women receiving any survivor pension is expected to decline precipitously.

Graph 14 The impact of of survivors' pensions on the gender pension gap of all pensioners
proportion

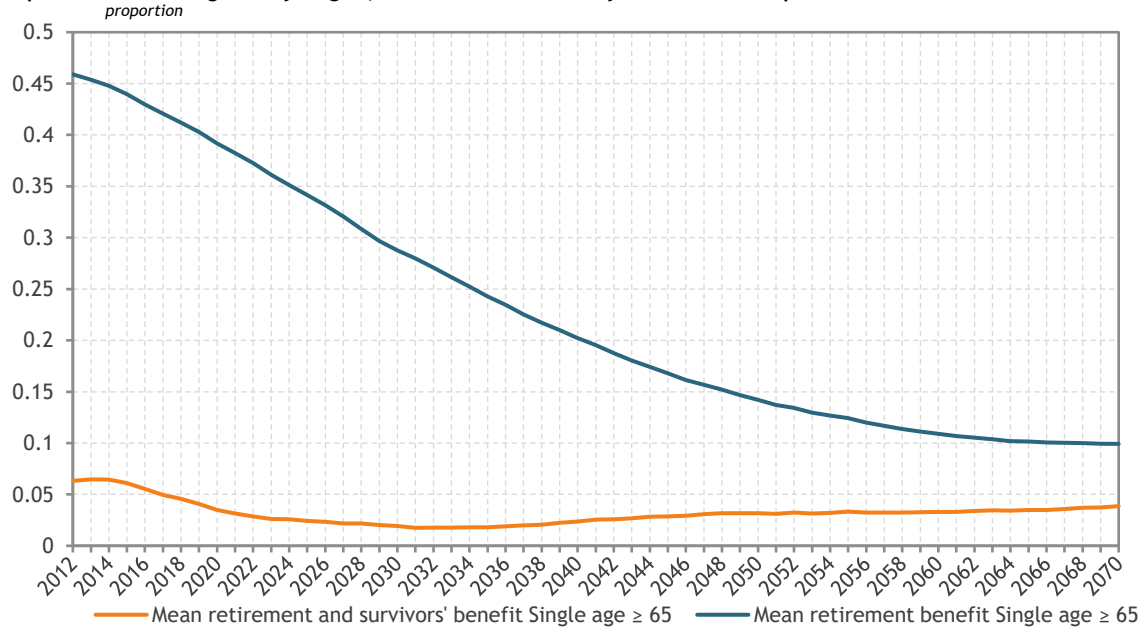


Source: MIDAS simulation; scenario AWG2021.
Notes: GPG based on averages and 10th percentile, excluding zero values. Figures pertain to the entire retired population who receive a positive pension. The GMI is included in both pension income measures.

The results presented in Graph 14 confirm expectations. First of all, the gender pension gaps based on retirement benefits only are much higher than the standard GPGs based on all pensions. This holds for the GPG at the mean, but even more so for the GPG at the 10th percentile. From the early 2030s on, the various GPGs converge, proportionally as well as in percentage points, implying that the dampening effect of the survivors' benefit on the GPG decreases over time, as fewer women receive any survivor pension.

However, presenting the impact of the survivor pension on the GPG for all pensioners, is misleading in the sense that the key condition for being eligible for a survivors' benefit is that one is single. So it is interesting to look at this impact for singles only. Graph 15 shows the GPG based on retirement benefit on the one hand, and retirement and survivors' benefits on the other hand, but only for those that are 65 and older, and that are not married nor cohabiting.

Graph 15 GPG among elderly singles, retirement benefit only and retirement plus survival benefit
proportion



Source: MIDAS simulation (3_output_gpg_3.xls); scenario AWG2021.
Notes: GPG based on averages, excluding zero values. Figures pertain to the single (not married not cohabiting) 65+ population who receive a positive pension. The GMI is included in both pension income measures.

As could be expected, the difference is considerably larger for this group. The GPG for singles based on retirement benefit only resembles that of the entire population shown in the previous Graph 14. In stark contrast, the GPG for singles is almost closed when survivors' benefits are being taken into account. This is because the survivors' pension benefit is equal to the individual retirement benefit of the deceased partner. Furthermore, the sum of the retirement and the survivors' benefit is subject to a ceiling, which in practice means that male survivors more often than female survivors will have their survivors' benefit reduced or even abolished. As a result, the average survivors' benefit for women is (considerably) higher than for men. Over time, the increase of the level of the retirement benefit of women causes the impact of the survivors' benefit on the GPG to become smaller. In other words, the GPG based on the retirement and survivors' benefit converges towards that of the retirement benefit alone.

5.3. Impact of the Guaranteed Minimum Income (GMI)

The Guaranteed Minimum Income (IGO/GRAPA) is a means-tested minimum benefit for almost all people that reside in Belgium and that are 65 or older[7]. The means test includes foreign and domestic statutory pensions (for 90%) of the beneficiary and his or her partner, their labour income (at 75% for wages and salaries and 100% for self-employment income; with an exemption of €5000), social benefits and other pensions. In addition, savings and other (financial and non-financial) capital are taken into account in a complicated way. (Federal Pension Service, 2020d).

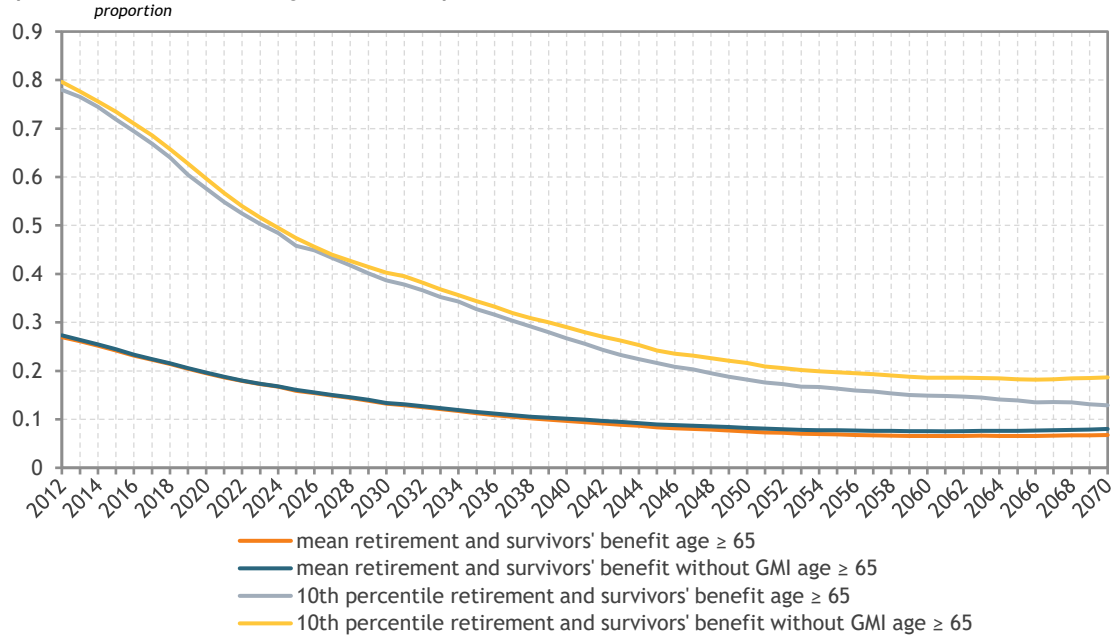
[7] Exceptions are people who immigrated recently from most non-EU countries and have not contributed to any Belgian pension scheme.

If one is cohabiting (married or unmarried), then each partner receives a lower benefit (currently € 789, since January 1st, 2021) than if one is single (€1184, idem).

The simulation results for the standard GPG were including the GMI. As a result of leaving out the GMI, obviously the total pension benefit decreases for some people, and this is probably more often the case at the 10th percentile than at the mean. Furthermore, as the GMI is means-tested for the income of the individual recipient and his or her partner, it is likely that removing the GMI will affect more single women than other groups. All in all, we expect that removing the GMI will result in a higher GPG, and this especially for singles and more so for the GPG based on the 10th percentile.

Graph 16 GPG when excluding GMI from the pension benefit

proportion



Source: MIDAS simulation; scenario AWG2021.
Notes: GPG based on averages, excluding zero values.

Graph 16 shows the impact of excluding the GMI from pension income for the GPGs at the mean and the 10th percentile. The above expectations are confirmed by the data: leaving out the means tested Guaranteed Minimum Income increases the GPG. However, this effect is stronger for the GPG of the 65+ at the 10th percentile than for the GPG at the means.

6. Variant scenarios

In the previous chapter, the impacts of including or excluding parts of the complete statutory pension have been discussed. In this section, we depart from the reference scenario and simulate three variant scenarios. The "constant scenario" (also referred to as CO) keeps labour market participation, unemployment rates as well as other characteristics of the employed and of the not working or inactive population at their 2021 levels. The "equalised scenario" (EQ) sets key socio-economic values in projection equal for women and men. Finally, we present one policy scenario: we simulated the effect on the GPG of the recent decision of the current Belgian government to raise gradually the minimum pension.

The constant scenario serves to put the reference scenario, based on the AWG projections into relief: what would the evolution of the GPG look like if labour market behaviour of women and men would remain unchanged from 2021 on, instead of converging in some respects? The equality scenario reveals how quickly the GPG would decline if many labour market differences between women and men would disappear overnight. We emphasize that these scenarios have an analytical purpose, and do not represent policy options and do not necessarily correspond to plausible socio-economic developments. The main message of these scenarios is that the GPG changes fairly slowly, because at any moment, the GPG is a function of past labour market behaviour of men and women (Veremchuk, 2020). So, in the microsimulation model MIDAS as in the real world, the prospective development of the GPG is a function of 1) the gender differential in currently observed pension benefits; 2) the gender differentials in previous labour market behaviour of currently active people, and 3) the gender differentials in prospective labour market behaviour of currently active people, as well as of future entrants into the labour market. The variant scenarios to be discussed in this section affect the latter, i.e. the prospective labour market behaviour. The effects of the first two sets of variables take a long time to wear off, as current cohorts of pensioners and active people are replaced by new ones.

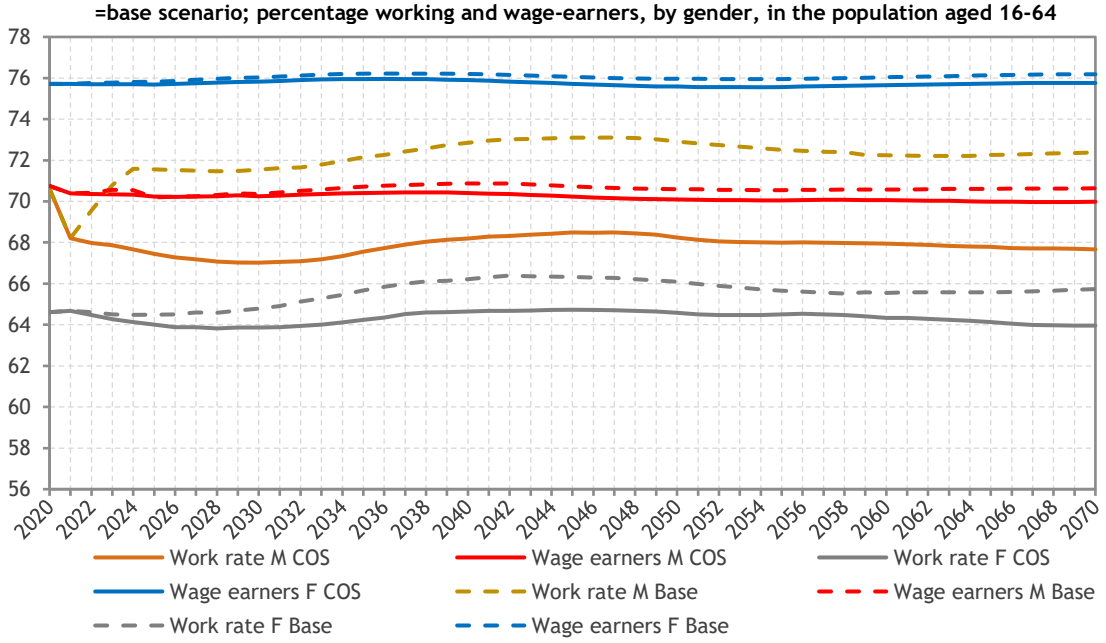
6.1. The Constant Scenario (CO)

The CO scenario keeps labour market participation, unemployment rates and many other rates of the employed and not working or inactive population at their 2021 levels. Hence the results of this variant and the base scenario will diverge from 2022 onwards. This CO scenario will describe how the GPG projection would change if relevant labour market characteristics were kept at their 2021 levels. Note that employment rates and other rates are set by 5-year age-groups and gender. Setting them equal to their 2021 value for 2022 and later hence implies a notion of constant labour market behaviour by age group. The overall rates will however still change, as demographic ageing changes the age distribution over time.

The CO-scenario affects the following rates and proportions by age-and-gender group: the activity rate, the proportions of employees in the private and public sector, and the proportions who are civil servant, self-employed, unemployed, disabled and early retired. Graphs 17 and 18 show the impact of the CO

scenario on a selection of labour market states[8]. The first, Graph 17 compares a selection of labour market states in the reference and the CO scenario. The "work rate" shows the proportion of people in work as a fraction of the population at active age. For both men and women, the proportion of people in work is lower in the CO scenario than in the base scenario. The increase in activity and working rates projected by the AWG, in particular in the 55+ age group, is not implemented in the COS scenario, and so the overall working rate is lower than in the reference AWG scenario.

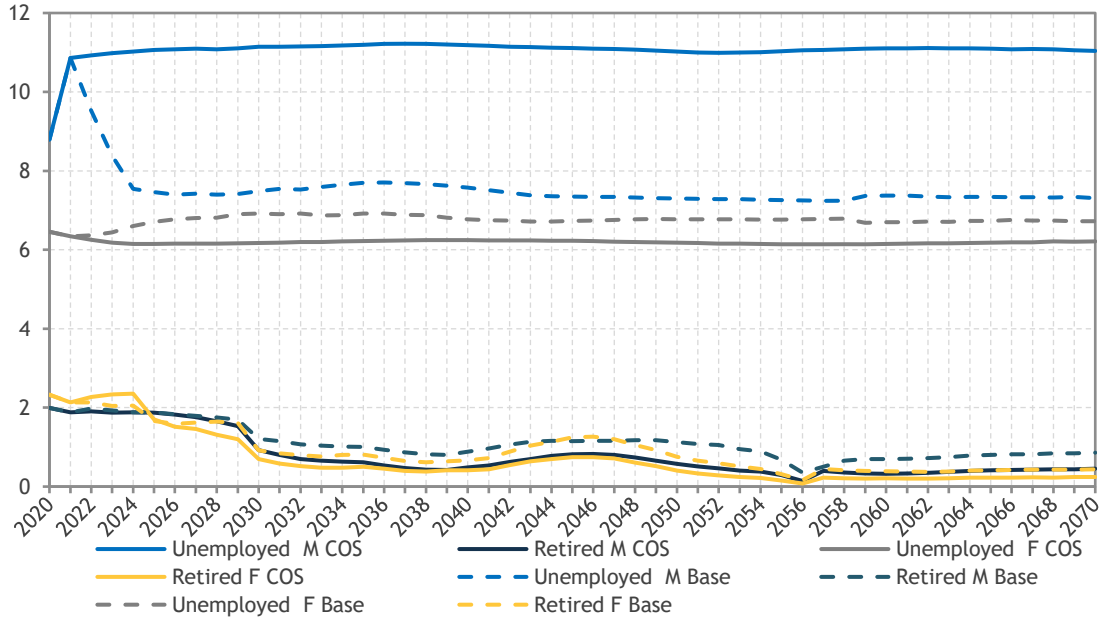
Graph 17 Impact of the CO Scenario on a selection of labour market states: comparison with AWG 2021 reference =base scenario; percentage working and wage-earners, by gender, in the population aged 16-64



Source: MIDAS simulations, AWG projections

[8] As the variant scenarios start in 2020, the implications of the CO and EQ scenarios on employment rates and other labour market parameters is only shown from 2020 on.

Graph 18 Impact of the CO Scenario on a selection of non-working states (comparison with reference (= base) scenario): proportion of population aged 16-64



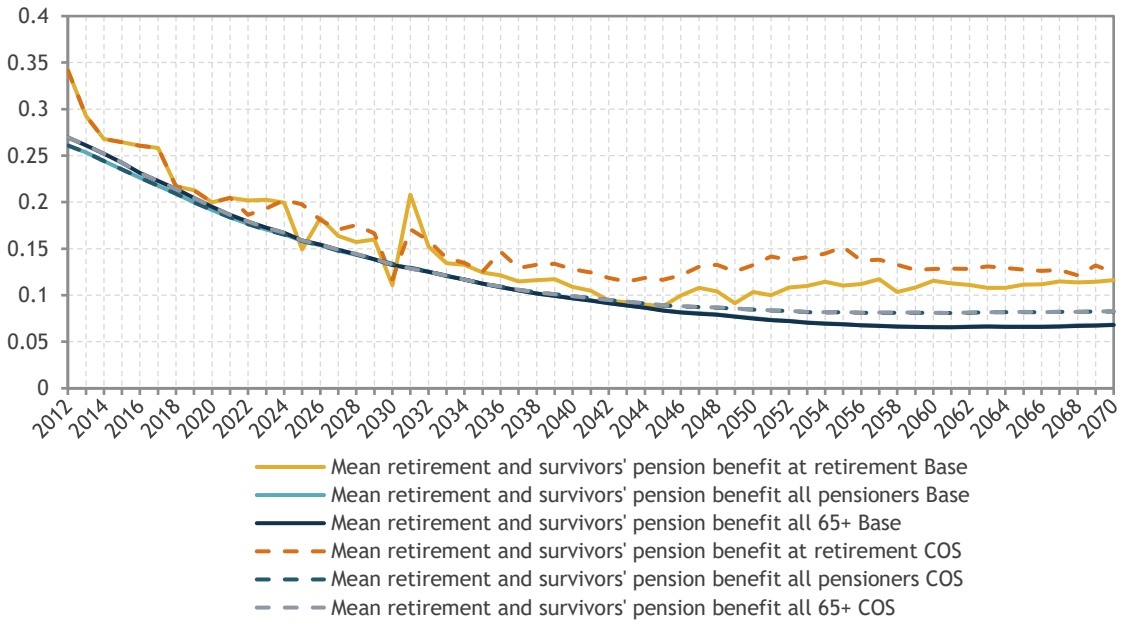
Source: MIDAS simulations, AWG projections

Furthermore, the "wage earners" rate shows the proportion of employees in the private and public sector (hence all those that work but are not self-employed; we exclude also civil servants from this category) as a proportion of the working population. For both men and women, this rate is slightly lower in the CO scenario than in the reference scenario. Graph 18 shows the impact of the CO scenario for the most important non-working states, as a fraction of the population at active age. We see that the unemployment rate is considerably higher for men in the COS scenario, while it is bit lower for women, compared to the reference scenario. Especially for men, the projections in the reference scenario show a significant decrease in unemployment, partly as a result of ageing, and in the CO scenario, unemployment stays at its higher level.

In the MIDAS model, retirement and "other non-active" (other than retirement, disability and studying) are balance entry states, in that everybody who is younger than the statutory retirement age, and ceases to be in one of the other states, either enters retirement (if he or she has reached the minimum age, and meets the career requirements for early retirement) or moves into the "other inactive" state. The COS scenario, relative to the AWG scenario, results in somewhat more early retirement among men, while there is little difference for women. This is mainly a consequence of the stable working rates in the COS scenario among the 55+, while these are increasing in the AWG scenario. Men who leave the labour force after age 60 are more often eligible for early retirement than women. Women therefore move more often into the state of "other non-active".

Graph 19 shows the impact of the CO scenario on various gender pension gaps. Specifically, this figure shows the GPG for the entire group of elderly (65+) and pensioners, as well as the GPG at retirement.

Graph 19 Impact of the CO Scenario on a selection of Gender Pension Gaps (comparison with Base scenario)



Source: MIDAS simulation; constant scenario.
Note:. Results for all pensioners and for pensioners >= 65 virtually coincide, making the curves for the latter group nearly invisible in the graph.

Compared to the reference (base) scenario, the effects of the constant scenario become visible only after several years. In the first years of the projection period, the careers of people entering retirement are hardly affected by the differences between the AWG and CO scenarios (which themselves are quite limited during the first decades). After the mid-2030s, the GPG at retirement following the CO scenario starts to be higher than it is in the AWG scenario, a few years later the GPG for all pensioners follows. Note that the Gender Pay Gap is unchanged between the AWG and CO scenarios.

The main conclusion from the CO scenario is that the GPG will decline during the next three decades to about a third of its current level, even if from now on labour market behaviour would not change, and current gender gaps on the labour market would remain at the same level. The main reason for this is that the cohorts of women entering retirement during those decades have worked much more often and at higher wages (also relative to men) than the women currently in retirement, and therefore have much longer and better remunerated careers.

6.2. Equality scenario

The CO scenario keeps labour market participation, unemployment rates and all other rates of the employed and not working or inactive population at their 2021 levels. In the equalised scenario (henceforth EQ scenario), key socio-economic variables have equal values for women and men from 2021 on. These values are the average levels across genders for both men and women. The comparison between the reference (base) and the EQ scenario shows the impact on the GPG of the remaining differences between men and women in the base scenario.

This scenario is composed of three sub-scenarios (1, 2, and 3 below). In sub-scenario 1 (henceforth EQS1), labour market participation, unemployment and employment rates by age category are set at equal

levels for both women and men. The same applies to rates of disability and other non-active states, insofar as people in those states build up pension rights. The sub-scenario 2 (EQS2) includes the characteristics of EQS1, while also equalising part-time work rates of female and male wage-earners and, if applicable, of self-employed persons, by age category. Furthermore, the average number of hours worked for part-time working men and women are equalised through calibration. The sub-scenario 3 (EQS3) includes EQS2 and EQS1 as well as the equalisation of hourly wage rates, i.e. the elimination of the gender wage gap.

Note that equality is imposed in a rather technical way. We do not specify the mechanisms through which equality could come about, and we do not change any behavioural equation in the models. We emphasize again that these scenarios have an analytical purpose, do not represent policy options and do not necessarily correspond to plausible socio-economic developments.

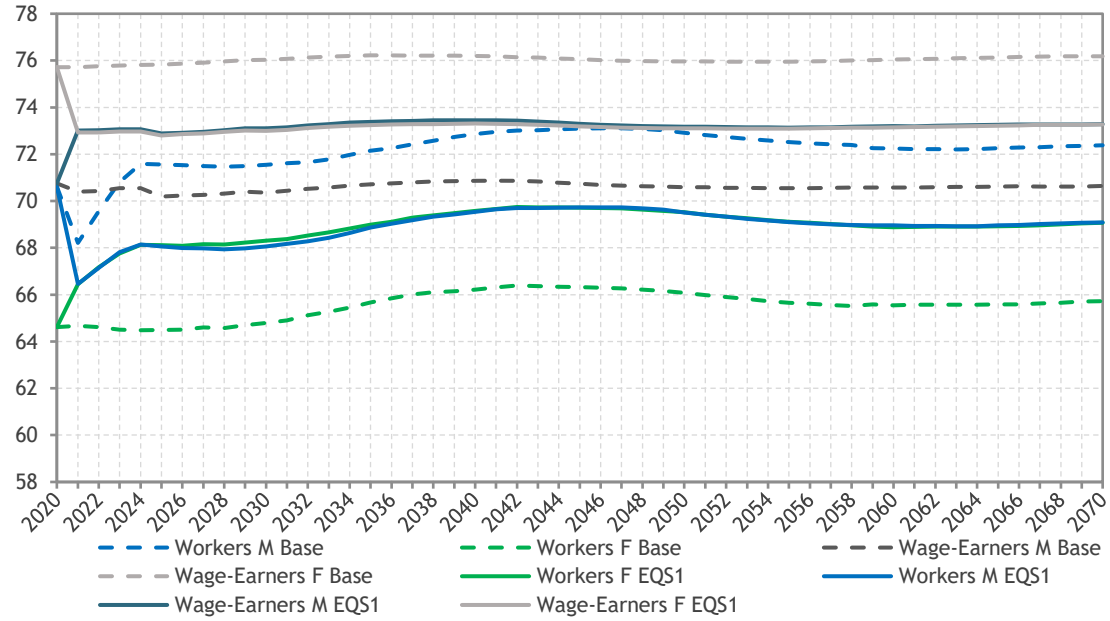
6.2.1. Equalised scenario, sub-scenario 1 (EQS1)

In this first sub-scenario EQS1, labour market participation, unemployment and employment rates by age category are set at equal levels for both women and men, corresponding to the overall averages. This is also done to rates of disability and other non-active states, insofar as people in those states build up pension rights. Within the group of working women and men, the proportions of self-employed persons, of civil servants and of people working in the public sector as employees are also set at equal levels by age category and gender.

Graphs 20 and 21 show the impact of the EQS1 scenario on a selection of labour market states[8]. The first compares a selection of labour market states in the reference and the EQS1 scenario. The graphs of the states directly affected by the alignments go towards their across-gender average from 2021 onward. This is the case for all working states in Graph 20 and the unemployment state in Graph 21. The proportion of women at work increases from 2021 on, when the proportion of men at work self-evidently must decrease. Likewise, the proportion of women wage-earners (among those that are working) decreases, and the proportion of male wage-earners increases. Also, in the base scenario, proportional more men work as self-employed whereas proportional more women work as civil servants (among other sectors in education and healthcare). As a result, in the EQS1 scenario, and again among the working, the proportion of women working as civil servants decreases at the expense of men, while the proportion of men working as self-employed decreases at the expense of women.

Graph 20 **Impact of the EQS1 Scenario on a selection of labour market states (comparison with AWG 2021 Base scenario); percentage of the population aged between 16 and 64.**

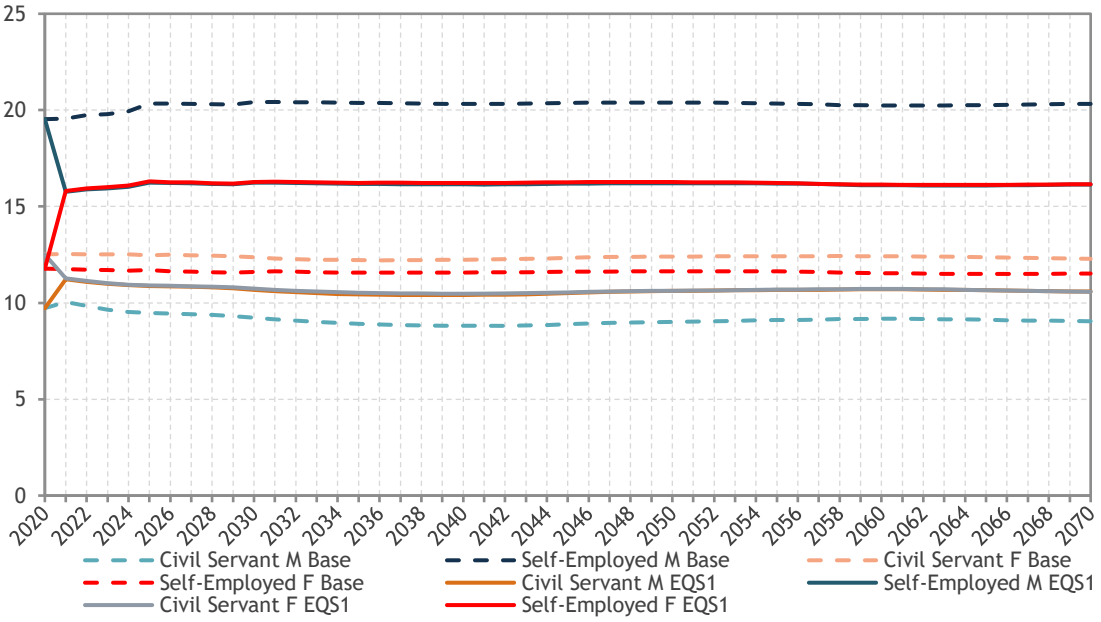
%



Source: MIDAS simulatio; constant scenario.

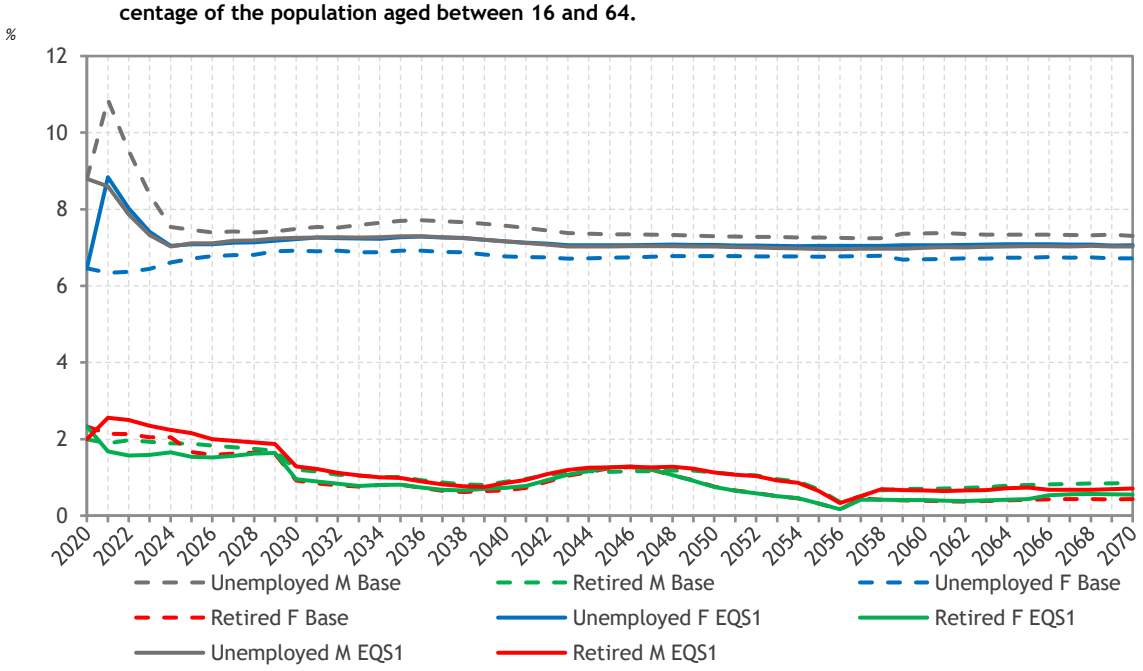
Graph 21 **Impact of the EQS1 Scenario on the proportion of workers as civil servants and self-employed (comparison with AWG 2021 Base scenario); percentage of the working population aged between 16 and 64.**

%



Source: MIDAS simulations; constant scenario

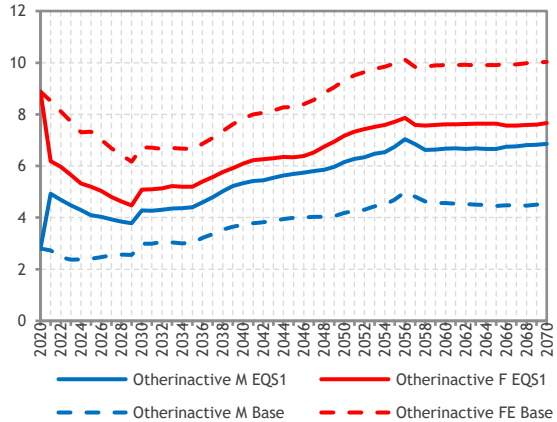
Graph 22 **Impact of the EQS1 Scenario on a selection of non-working states (comparison with Base scenario); percentage of the population aged between 16 and 64.**



Source: MIDAS simulations

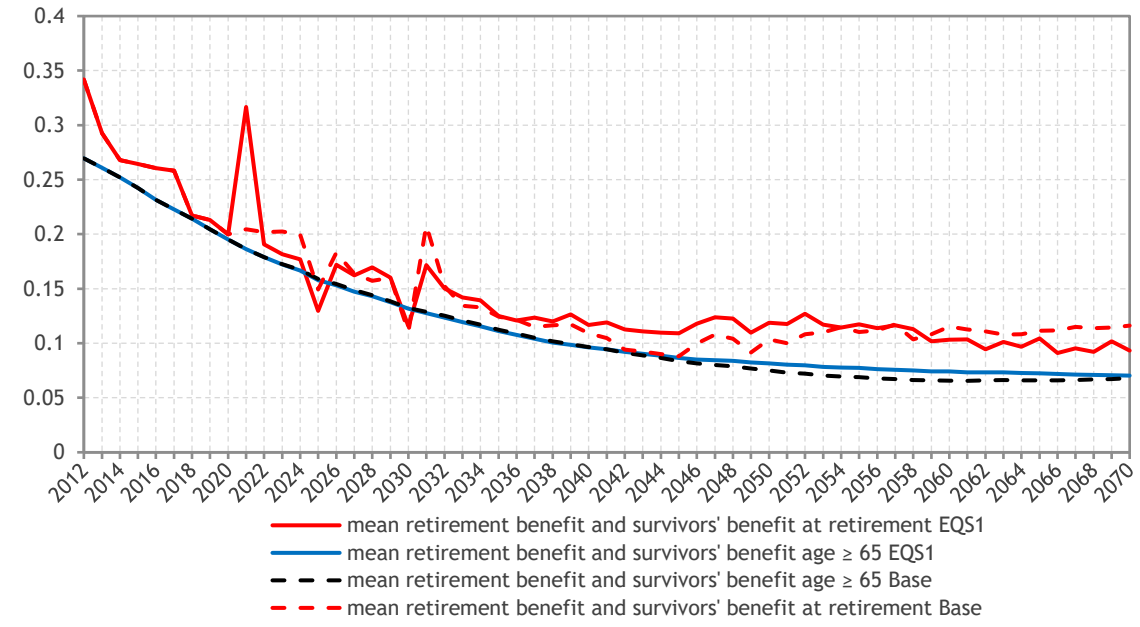
Again, gender equality cannot be imposed for the state of retirement and the "other non-active" (not retired, disabled or student) state. As explained in the section on the COS scenario, in the MIDAS model, retirement and "other non-active" (other than retirement, disability and studying) are balance entry states. Everybody who is younger than the statutory retirement age and ceases to be in one of the other states, enters retirement if he or she has reached the minimum age, and meets the career requirements for early retirement. If the person is not eligible for early retirement, she or he becomes "other inactive". As more men than women meet the eligibility criteria, the proportion of men in early retirement increases somewhat in the EQS1 scenario, while that of women is largely stable, and these proportions do not become equal (Graph 22). As more women work than in the reference scenario, the EQS1 scenario implies fewer women and more men in the "other non-active" state, though the proportions do not become equal, as Graph 23 shows.

Graph 23 **Impact of the EQS1 Scenario on the "other non-active" state (comparison with Base scenario); percentage of the population aged between 16 and 64.**



Source: MIDAS simulations

Graph 24 Impact of the EQS1 Scenario on a selection of Gender Pension Gaps (comparison with Base scenario)



Source: MIDAS simulations
Note: retirement and survival pensions, including the GMI.

The results (Graph 24) at first glance may appear to be rather counterintuitive: when equalising labour market rates of women and men, the GPG at the mean pension of the older persons shows very little change relative to the base scenario, and is in fact even a bit higher during the second half of the projection period. As the EQS1 scenario involves higher activity and working rates of women, and lower rates for men, which imply higher, resp. lower pensions after retirement, one would have expected the reverse. The EQS1 scenario results in a slightly larger GPG because there are several counteracting forces at work. In particular, the EQS1 scenario also implies that self-employment is higher among women than in the reference scenario, while it is lower for men. as shown in Graph 21. The opposite holds for the proportions that work as civil servants. These effects drive down the average pension benefit of women relative to men.

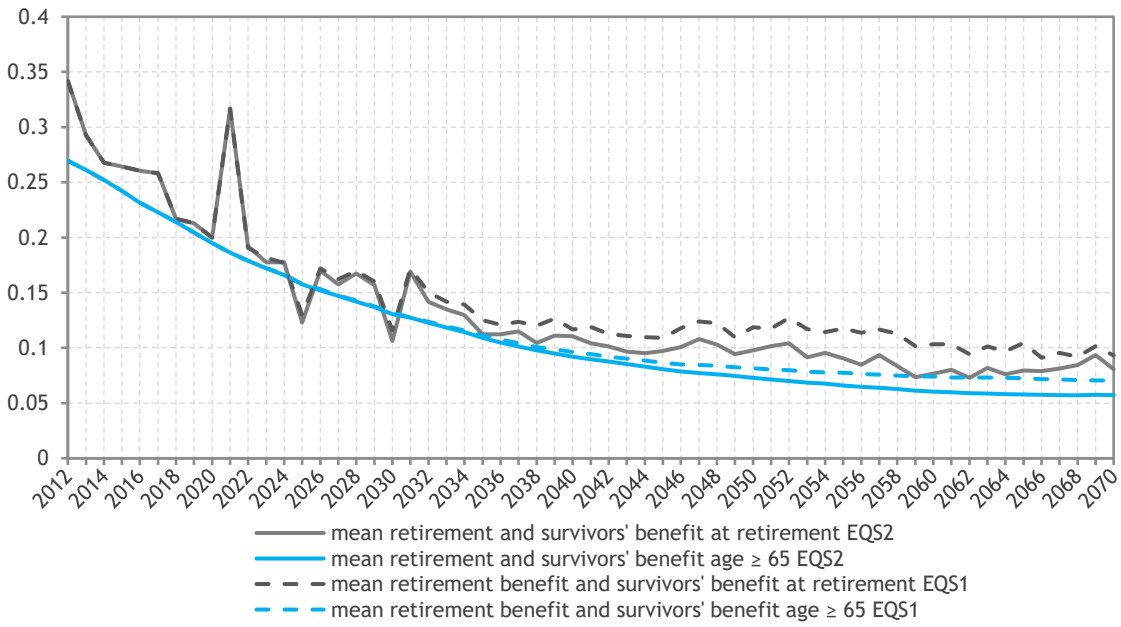
6.2.2. Equalised scenario, sub-scenario 2 (EQS2) - equal part-time work rate scenario

In sub-scenario EQS1, the active and most inactive states for people in the active life phase were set at equal (average) levels by age category for women and men. The sub-scenario 2 (EQS2) discussed in this section includes the characteristics of EQS1, while also equalising part-time work rates of female and male wage-earners by age category[9]. Furthermore, the average number of hours worked for part-time working men and women are equalised through calibration. As part-time working rates by age group are assumed to be constant over the whole projection period (lacking a projection of this parameter), the overall part-time rate among wage earners is nearly constant around 35%, which represents a decrease for women from 53%, and an increase for men from 17%.

[9] For self-employed this is not needed because we assume that they all work full-time and the maximum number of hours (1976) per year, assuming 52 weeks at 38 hours per week.

Graph 25 presents the impact of this scenario EQS2 (which includes EQS1) on the various gender pension gaps, compared to that of the EQS1 scenario. Of course, the equalisation of part-time working rates and hours worked in this scenario affects the earnings per year, increasing those of women and decreasing those of men. This will change the retirement benefit only after the individual will have reached retirement. As a result, we see that the GPG in the EQS2 scenario gets below the EQS1 scenario only gradually, as newly retired women have worked full-time during more years of their career, and new male retirees have more often worked part-time.

Graph 25 Impact of the EQS2 Scenario on a selection of Gender Pension Gaps (comparison with EQS1 scenario)

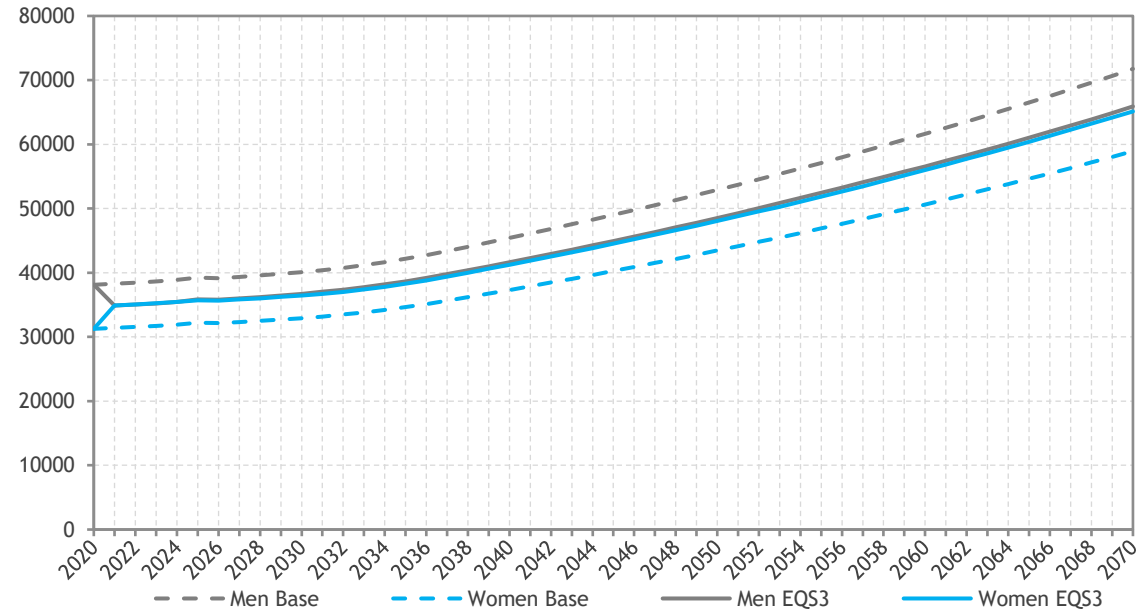


Source: MIDAS simulations
Note: retirement and survival pensions, including the GMI

6.2.3. Equalised scenario, sub-scenario 3 (EQS3) - Equalised wage rate scenario

The third sub-scenario consists of the equalisation of hourly wage rates, i.e. the elimination of the gender wage gap. This is also achieved by simple calibration within age categories, like the one used for the number of hours of part-time workers. Like EQS2, this scenario EQS3 is cumulative and so incorporates EQS1 and EQS2. The results are compared to those of the EQS2 scenario, presented in the previous section. Since the correction of hourly wage rates is done for wage earners as well as for the self-employed, and taking into account that the results in EQS3 already include the equalisation of part-time rates and working hours imposed in EQS2, the results imply that annual gross earnings for men and women become virtually equal in EQS3. This is shown in Graph 26[8].

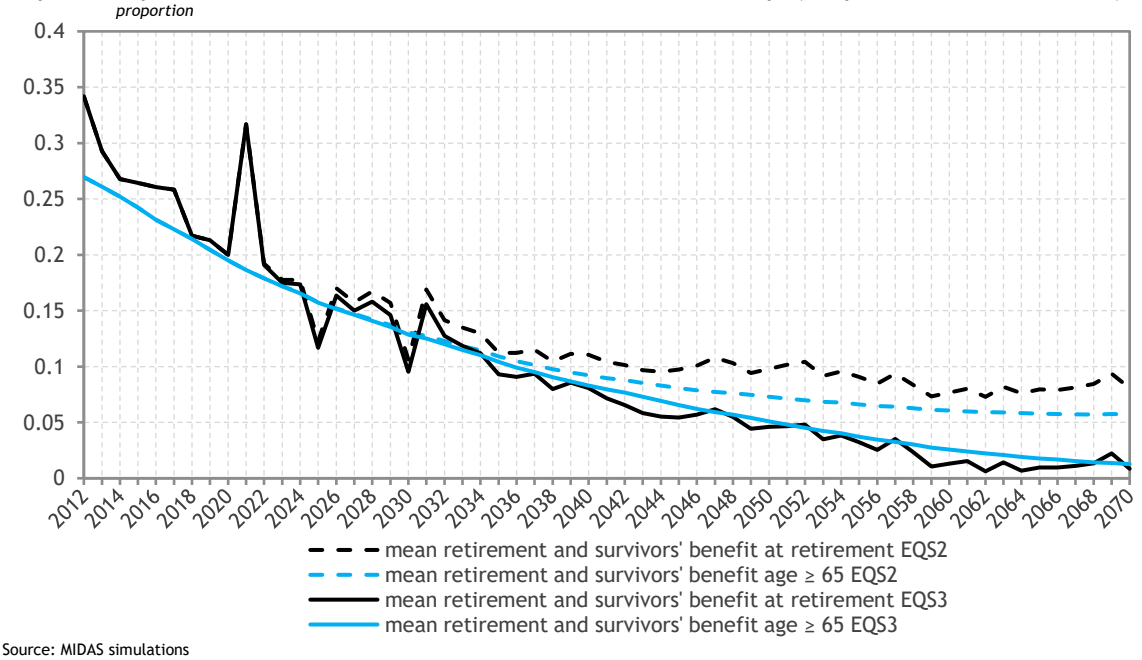
Graph 26 Impact of the EQS3 Scenario on average earnings by workers (comparison with Base scenario)
Euro



Source: MIDAS simulations

Of course, the equalisation of earnings per hour worked in this scenario will affect pension benefits increasingly through time as persons who spend a larger part of their career under the equality regime enter retirement. Hence the GPGs only gradually diverge from the levels in the previous EQS2 scenario, as shown in Graph 27. This graph also shows that the equalisation of earnings has an important impact on the Gender Pension Gap, reducing in 2070 the remaining GPG by an additional 4.4 percent-points to only 1.3%.

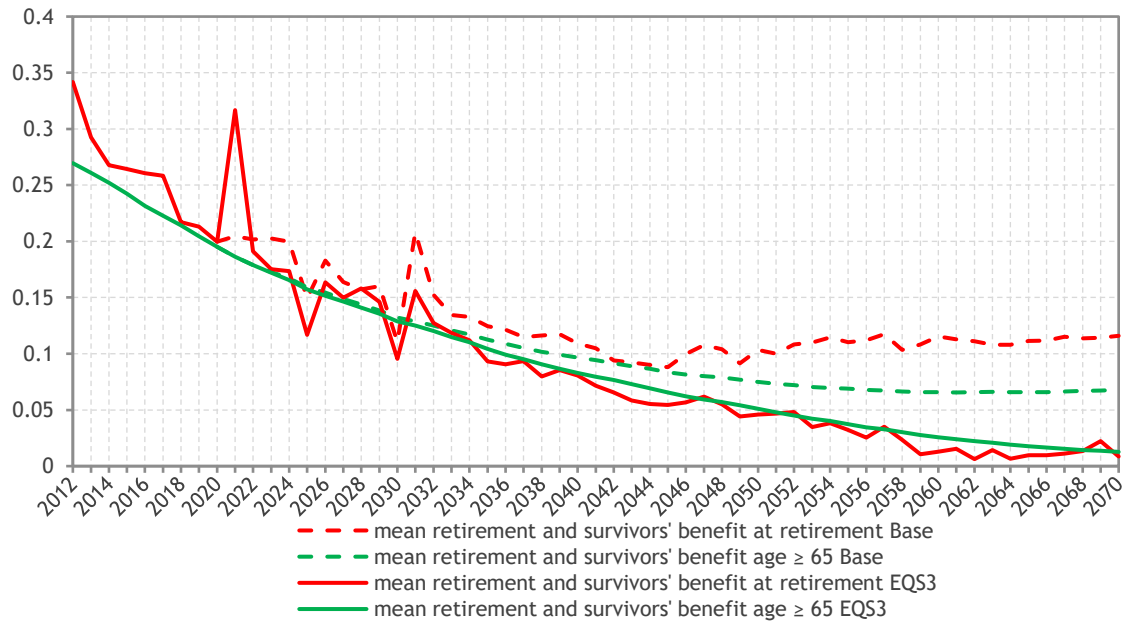
Graph 27 Impact of the EQS3 Scenario on a selection of Gender Pension Gaps (comparison with EQS2 scenario)
proportion



Source: MIDAS simulations
Note: retirement and survival pensions, including the GMI

As the EQS3 scenario includes all the changes in the Equality Scenario (equalisation of labour market rates, average part time working rates, average number of hours worked, and average earnings per hour), it is interesting to make a comparison between the GPGs in this scenario and those in the base scenario. This is done in Graph 28. The combined impact of the EQ scenarios nearly closes the Gender Pension Gap by the simulation horizon. Compared to the reference base AWG scenario, in which the GPG already declined from 19.5% to 6.8%, in the EQ scenario a further reduction is achieved of 5.5 percentage-points to only 1.3%. Comparing across the three stages of the EQ scenario, it appears that most of this reduction is due to the closing of the Gender Wage Gap.

Graph 28 Impact of the EQ Scenario on a selection of Gender Pension Gaps (comparison with Base scenario)



Source: MIDAS simulations
Note: retirement and survival pensions, including the GMI

7. Summary and Conclusions

The Gender Pension Gap (GPG) indicates by how much women's pensions are lagging behind those of men. This note describes projections of the future GPG with the Belgian dynamic microsimulation model MIDAS, and attempts to identify some of the underlying developments that cause these results. Apart from the standard GPG as defined by Eurostat, we show results for several variant GPGs. We consider the GPG when older people without a pension are included, and analyse the separate impact of three components of statutory pensions: retirement pensions, survivor benefits and the Guaranteed Minimum Income, a means-tested benefit. Furthermore, we distinguish a base or reference scenario, in which overall employment and wage growth follow the trends projected by the Ageing Working Group (AWG) of the EU Councils Economic Policy Committee, and two variant scenarios. These are a constant scenario, where the employment rate and other labour market rates are kept at their 2021 levels, and an equality scenario, where those rates, the part-time working rate and the average wages of women and men are assumed to be the same. We emphasize that these simulations are only carried out for analytical purposes, and do not represent realistic or necessarily desirable developments or policy options.

In the base scenario, the standard GPG of the total statutory pension and all its variants decrease over the simulation period, and stabilize from the mid-2050's on to, roughly, one-third of their initial value. This means that the pension handicap of women relative to men decreases markedly, or, inversely, that the pension benefit of women increases relative to that of men. This projected trend is obviously related to the increasing labour market participation of women during the last decades. Furthermore, the GPG at the 10th percentile sets off higher than the GPG at the mean, but on the other hand its decrease is considerably stronger. Hence, the catching up of pensions of women to those of men is especially strong at the low end of the distribution. Notwithstanding, a first conclusion is that the currently observed and projected labour market behaviour of men and women will not suffice to reach a near-full equality of pensions between men and women.

A second finding is that, as expected, the GPG is higher when including zero pensions. This version of the GPG is in fact a combination of the standard GPG and the Gender gap in pension coverage. However, it also decreases faster over time as the proportion of older people – in particular women – without pensions decreases, so that the impact of including zero-pensions at the end of the simulation period is small.

A third finding is that at this moment survivors' benefits has an important impact on the GPG for the group of recipients as a whole. This impact is very large for the group of single 65+,: the GPG for single persons based on the retirement pension is substantial, while it is low when the survivor benefits are added. (Married pensioners cannot receive a survivor pension.) In the long run, the impact of survivors' benefits erodes, as fewer women will receive a survivor pension, and the GPG based on retirement benefits only and that based on both retirement and survivors' pensions converge. The means tested Guaranteed Minimum Income has a small effect on the GPG of the 65+ at the mean, but a substantial impact on the GPG at the 10th percentile, which persists throughout the projection period.

Fourth, the main conclusion from the constant scenario where the employment rate and other labour market rates are kept at their 2021 levels, is that the GPG will decline during the next three decades to about a third of its current level, even if from 2021 on labour market behaviour would not change, and current gender gaps on the labour market would remain at the same level. The main reason for this is that the cohorts of women entering retirement during the coming decades have worked much more often and at higher wages (also relative to men) than the women currently in retirement, and therefore have much longer and better remunerated careers. The labour market changes projected by the AWG, in particular the increase in the employment rate of people aged 55+, start to have a limited effect on the GPG only from about 2040 on.

Fifth, compared to the reference AWG scenario, in which the GPG already declined precipitously, the equality scenario results in a further reduction of the GPG to a very small level. Comparing across the three parts of the equality scenario, it appears that most of this reduction is due to the closing of the Gender Wage Gap. Against expectations, when equalising only the labour market rates of women and men, the GPG based at the mean shows very little change relative to the base scenario. This sub-scenario implies not only higher activity rates of women, relative to the AWG scenario, but also more women in self-employment (who tend to have low pensions) and fewer working as civil servants (who have high pensions). Equalisation of part-time work rates leads – in the long run – to a somewhat lower GPG compared to the base scenario. Eliminating the gender gap in hourly earnings leads gradually, as currently working women and men move into retirement, to a substantial additional reduction of the GPG to a level approaching zero in 2070.

The projections presented in this report have a few limitations, which form at the same time challenges for future work. The most important one is that they pertain only to the statutory first pillar pension. Hence, gender differences in labour market pensions (2nd pillar) and private pension savings (3rd pillar) are not accounted for. There is evidence that including these – increasingly important – parts of the pension system would increase the gender pension gap (High Council of Finances, 2020), but it is less clear how this would affect the future trajectory of the gender pension gap. Furthermore, the tax treatment of old-age pension benefits is an important factor affecting the distribution and adequacy of retirement incomes across different socioeconomic groups, including men and women. As the gender pension gap is based on gross pensions, this impact is ignored. For future research and to establish a link between the gender pension gap and (other) indicators of pension adequacy, such as poverty risks of men and women in retirement, a measure of the net gender pension gap might be developed and simulated. More broadly, future research could assess how our conclusions would change with different concepts of (net) income (Halvorsen & West Pedersen, 2019).

Finally, as will become clear, gender pension gaps depend on differences between men and women in the prevalence of part-time work spells, unemployment, withdrawals from the labour market, and the pay gap. These differences accrue and are reinforced over a person's lifetime. As the standard simulations in work package 2 of the MIGAPE project have shown, interruptions of work due to care responsibilities can have an important effect on the later pension, if those interruptions lead to a wage penalty in the later career. The empirical assessment and modelling of such effects within a dynamic microsimulation model would be interesting, but is also very complex and will require more work in the future.

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