Co-funded by the Rights, Equality and Citizenship Programme of the European Union (2014-2020)

Projections of the Gender Pension Gap in Portugal using DYNAPOR

(project MIGAPE, Work Package 3)

February 2021

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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 Portuguese dynamic microsimulation model DYNAPOR and the socio-economic projections of the Working Group on Ageing Populations and Sustainability (AWG) of the Economic Policy Committee (EPC) of the EU for the 2018 Ageing Report.

MIGAPE is co-funded by the Rights, Equality and Citizenship Programme of the European Union (2014-2020) via Grant Agreement no. 820798. The content of this report represents the view of the author only and is his/her sole responsibility. The European Commission does not accept any responsibility for use that may be made of the information it contains.

Contents

List of Graphs

1. Introduction

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

Portugal 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.

This report has three key aims:

a) Based on projections produced using the DYNAPOR model, and in line with macro-economic forecast produced for the 2018 Ageing Report by the Working Group on Ageing Populations and Sustainability (AWG) of the Economic Policy Committee (EPC) (European Commission, 2018), to put froward a likely scenario for the evolution of the Gender Pension Gap in the period between 2020 and 2070, for Portugal:

b) To provide a discussion of the factors that are likely to shape the future development of the Gender Pension Gap in Portugal;

c) To provide an assessment of the potential impact of policies to reduce gender gaps in the labour market (both in terms of pay and of labour market participation) in the development of the Gender Pension Gap in Portugal.

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 DYNAPOR and the data it uses. In Section 3 we provide some background to the GPG projections that follow. We present the recent evolution of the Gender Pension Gap in Portugal, as measured using EU-SILC data. We also sketch the past, current 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. In section four, we put forward our baseline scenario for the future development of the Gender Pension Gap in Portugal. We conduct a number of robustness assessments to assess the strength of our results.

In section five we discuss to what degree our baseline scenario is shaped by the projected changes in the participation of men and women in the labour market (as estimated in the 2018 Ageing Report), and by the structure/rules of the Portuguese pension system. With the view to assess the potential impact of polices aimed at reducing inequalities in pay and labour market participation between men and women, in section six we present the results of two hypothetical scenarios: equalising the employment and unemployment rates between men and women (the *labour market participation equality scenario*); and equalising the wages/earnings of men and women in the labour market (the *earnings equality scenario*). In section seven we revise the key findings and identify future pathways for research in this domain.

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. 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. Where relevant we will explore variants to the standard definition do the GPG, be it by reference to the definition of pension income (see Sections 4.3.2 and 5.2), be it by reference to the measure used to capture the distribution of the earnings of men and women (see Section 4.2).

As mentioned above, this report puts forward prospective measurements of the Gender Pension Gap for the period between 2020 and 2070. These projections are produced using DYNAPOR - a dynamic microsimulation model of the Portuguese Social Security system (see Moreira et al, 2019).[1] DYNAPOR is a cross-sectional dynamic microsimulation model that runs on a random (cross-sectional) sample of the Portuguese population, extracted from 2013 round of the European Union's Survey on Income and Living Conditions (EU-SILC).[2] The model is designed to follow an open-population approach (Zagheni, 2014). Thus, in addition to new births, the model considers the possibility of adding new individuals to the sample through immigration. The model is built using the LIAM2 platform (de Menten et al, 2014).

DYNAPOR allows us to make reliable simulations of the demand for the most relevant pension schemes in the period between 2014 and 2070, and subsequent funding needs. Besides modelling the demand for pensions, DYNAPOR is also able to simulate pension contributions, thus providing valuable evidence on the long-term financial sustainability of the Portuguese Public Pension System. More than just providing reliable long-term simulations, DYNAPOR allows us to simulate the impact and distributive effects of policy reform proposals and of different demographic and economic scenarios.

[1] DYNAPOR was developed from the MIDAS_BE, initially built by the Federal Planning Bureau, in Belgium (see de Menten et al, 2014).

[2]

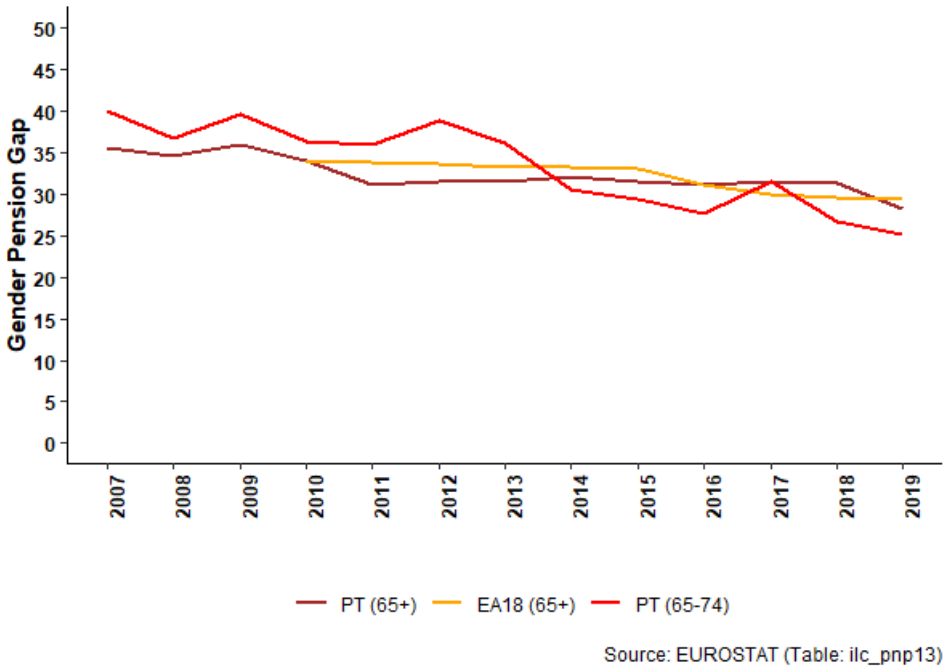
3. Background

In this chapter we first present the recent evolution of the Gender Pension Gap in Portugal, as measured using EU-SILC data. 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

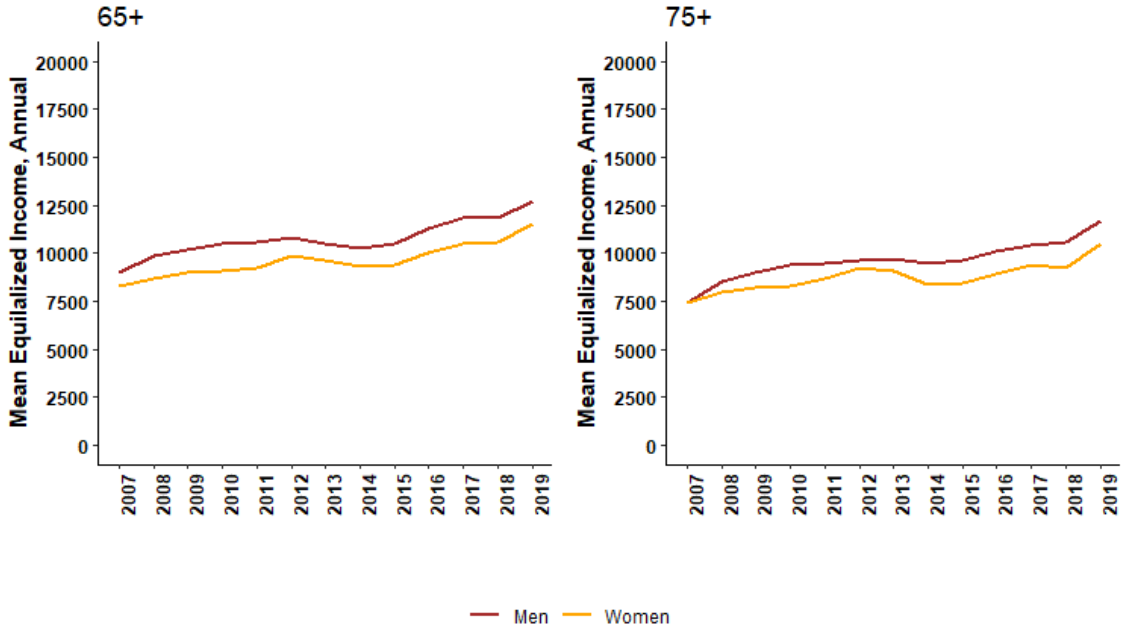
As can be seen in Graph 1, in 2019 the Gender Pension Gap in Portugal was at very much in line with the EU27 average in 2019 - 28.2%, compared to 29.5%. However, the way this has evolved in recent years is significantly different. Whereas in the European Union (EU27) the Gender Pension Gap has been steadily decreasing since 2007, in Portugal (following a sharp drop in 2010) this has remained relatively stable since 2011 – having registered another drop in 2018. It should be noticed, however, that the difference between men and women has been decreeing more consistently for the younger cohorts (65-74).

Graph 1 Gender Pension Gap, in Portugal and the Eurozone (EA18), 2104-2019.



Source: EUROSTAT (Table: ilc_pnp13)

Graph 2 Mean Equivalised Net Income, by gender and age group in Portugal



Source: EUROSTAT (Table: ilc_di03)

Acknowledging that this is a very limited proxy of pensioner incomes[3], the existing data does seem to confirm idea that the incomes of women and have grown at a pretty even pace, which would explain the relative stability of the Gender Pension Gap during this period.

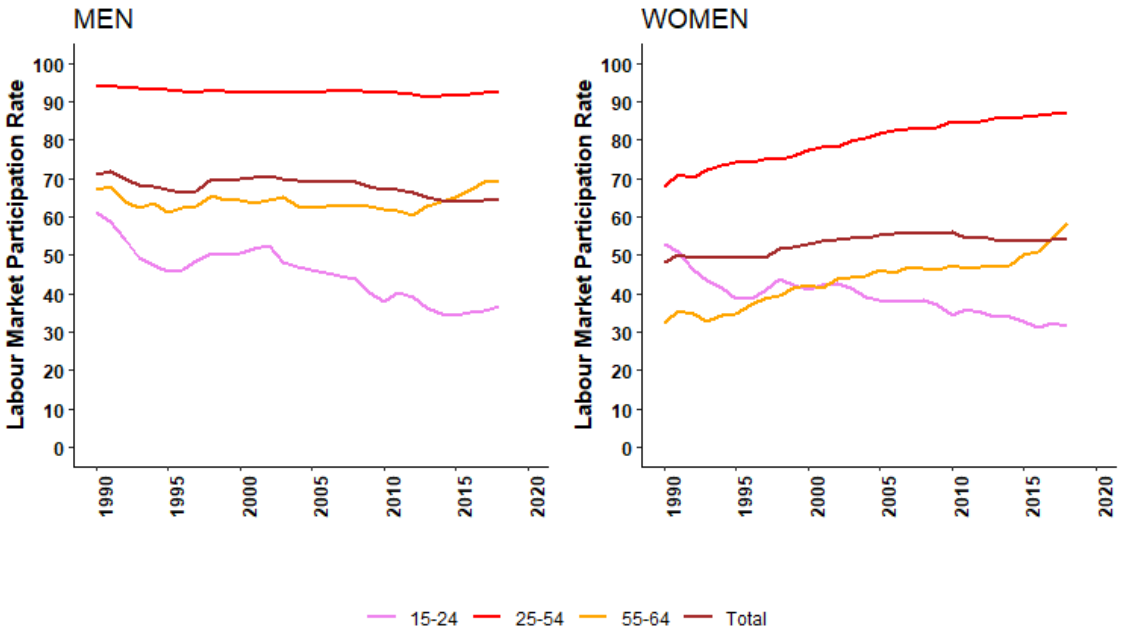
3.2. Socio-economic context

The recent developments in the Gender Pension Gap mentioned above (see Graph 1) reflect longer-term trends concerning the terms in which men and women participate in the labour market. As can be seen in Graph 3, in the last three decades, Portugal saw a significant increase in the participation women in the labour market - from 48% (in 1990) to 54% (in 2018). In contrast, the labour market participation rates for men have decreased from 71% in 1990 to 64% in 2018. Still, overall, women consistently participate less in the labour market during this period – 54.5% against 64.4% in 2019.

The increase in the labour market participation of women was particularly visible for prime-age women (25-54) - from 68% in 1990 to 87% in 2018 - and for women aged 55 to 64 - from 32% in 1990 to 58% in 2018.

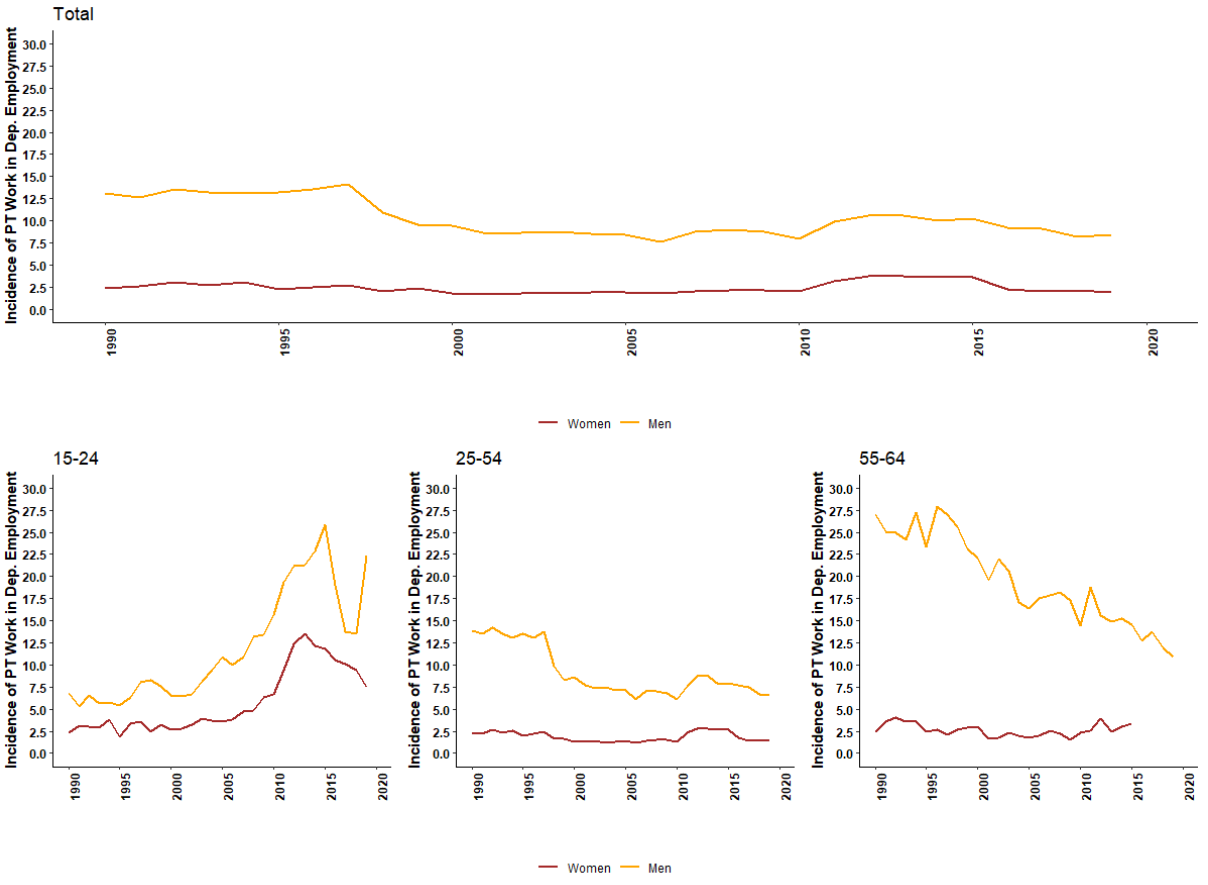
[3] First, this measure includes other sources of income (income from work, income from property), which may lead to an overestimation (or underestimation) of the gender differences produced by the pension system. Second, unlike measurements of the income from pensions, which are computed on an individual base, total income is computed on a household basis, which might impacts on how different sources of income are distributed within households – which could then bias our estimates of differences in income between men and women.

Graph 3 Labour Market Participation Rate, by gender and age group, 1990-2019



Source: OECD (Table: GENDER_EMP)

Graph 4 Incidence of Part-Time Work in Dependent Employment, by age-group and gender

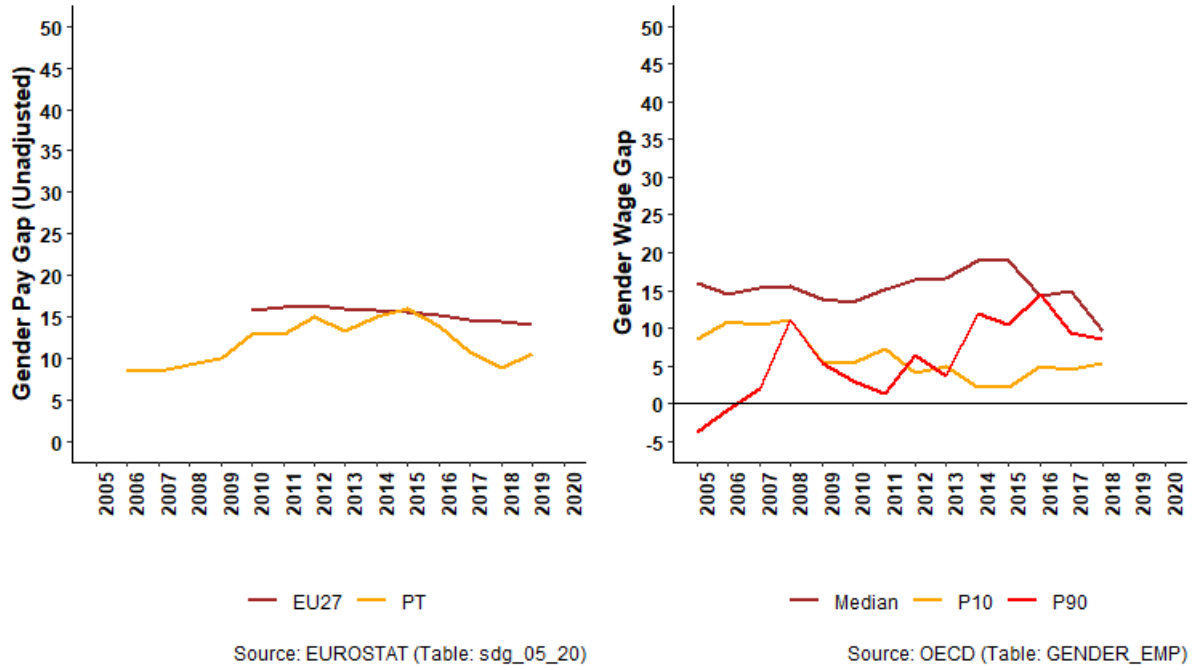


Source: OECD

Not only are women less likely involved in the labour market, they are also less likely to be in full-time employment than men. As can be seen in Graph 4, in 2018, only about 2% of men in dependent employment worked part-time. In contrast, in the same year, around 8% of women in dependent employment worked 30 or less hours per week.

Although the percentage of women in dependent employment working part-time has remained relatively stable since the turn of the century (see Graph 4), the prevalence of this form of employment has changed significantly across age groups - increasing significantly for younger women all the way to 2015 – from 6.6% to 25.9%; and decreasing sharply for women age between 55 and 64 – from 22% (2000) to 11% (2018).

Graph 5 Gender Pay Gap, at the mean (PT and EU27) and key percentiles, 2005-2020



Besides differences in the level and pattern of labour market participation, the evolution of the Gender Pension Gap reflects disparities in the level of pay that men and women receive. Unfortunately, data on this issue is seriously limited – with data available from 2005 onwards only. Still, the data available does suggest that (unadjusted[4]) disparities in pay between men and women increased significantly in the period between 2005 and 2015 – from 8.4% in 2006 to 16% in 2015. This was followed by a sharp drop (of almost 7 percentage points) in the period between 2015 and 2018. This drop means that (unadjusted), in 2019, disparities in pay between men and women in Portugal are below the EU27 average (10.6% versus 14.1%).

[4] This indicator measures the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees (EUROSTAT, 2020).

The existing evidence also suggest that, in contrast to what happens for lower income groups, gender wage disparities for individuals in the upper echelons of the income increased significantly in the period between 2010 and 2016 - from 2.9% to 14.4%.

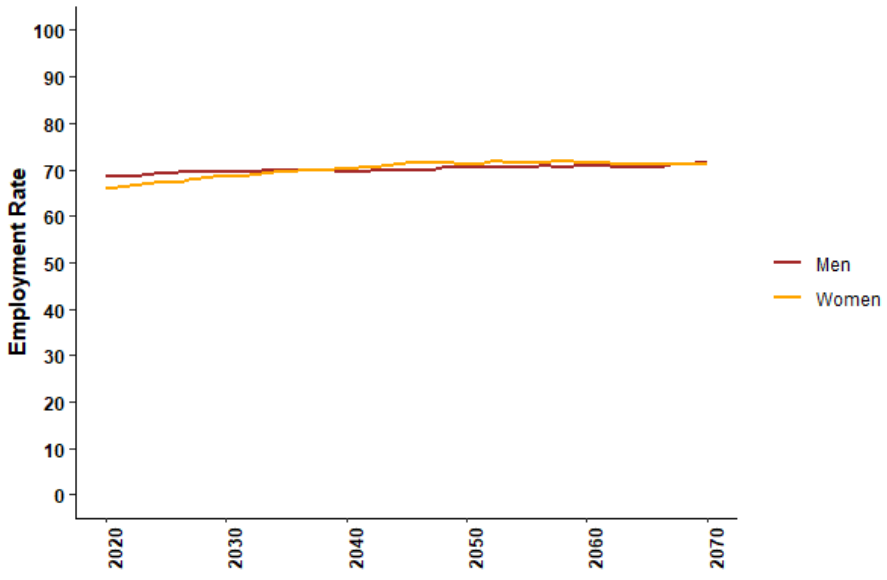
4. Prospective Gender Pension Gap (2020-2070)

Having looked at recent developments in the Gender Pension Gap, we now focus on how this indicator is likely to evolve in the period up to 2070. We start by charting the key labour market trends that are likely to shape the future of the GDP, and then put forward our projection. We conclude with a robustness assessment of our prediction.

4.1. Prospective Labour Market Developments

The future development of the Gender Pension Gap in Portugal is likely to reflect recent developments in how men and women participate in the labour market (see Section 3.2), but how these patterns are likely to evolve in coming decades. In line with the macro-economic scenario that underpins the 2018 Ageing Report, we expect that the labour market participation of women will continue to increase for the foreseeable future. As can be seen in Graph 6, Working Group on Ageing Populations and Sustainability (AWG) of the Economic Policy Committee (EPC) expects that employment rate of women will continue to increase and to converge with the employment rate of men by mid 2030 – at around 69%. From that point onwards, the employment rate of women is expected to be marginally above that of men.

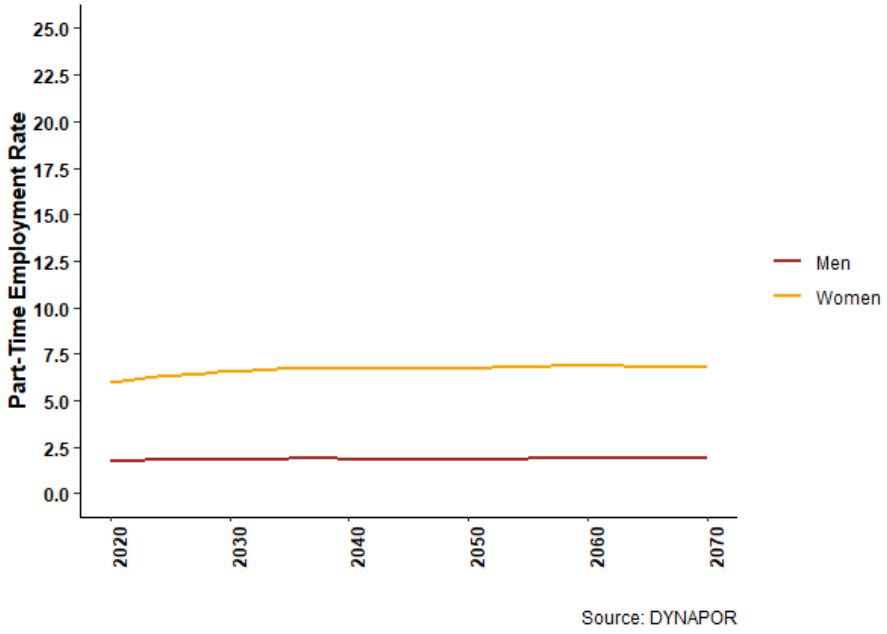
Graph 6 Prospective Employment Rates, by gender, 2020-2070



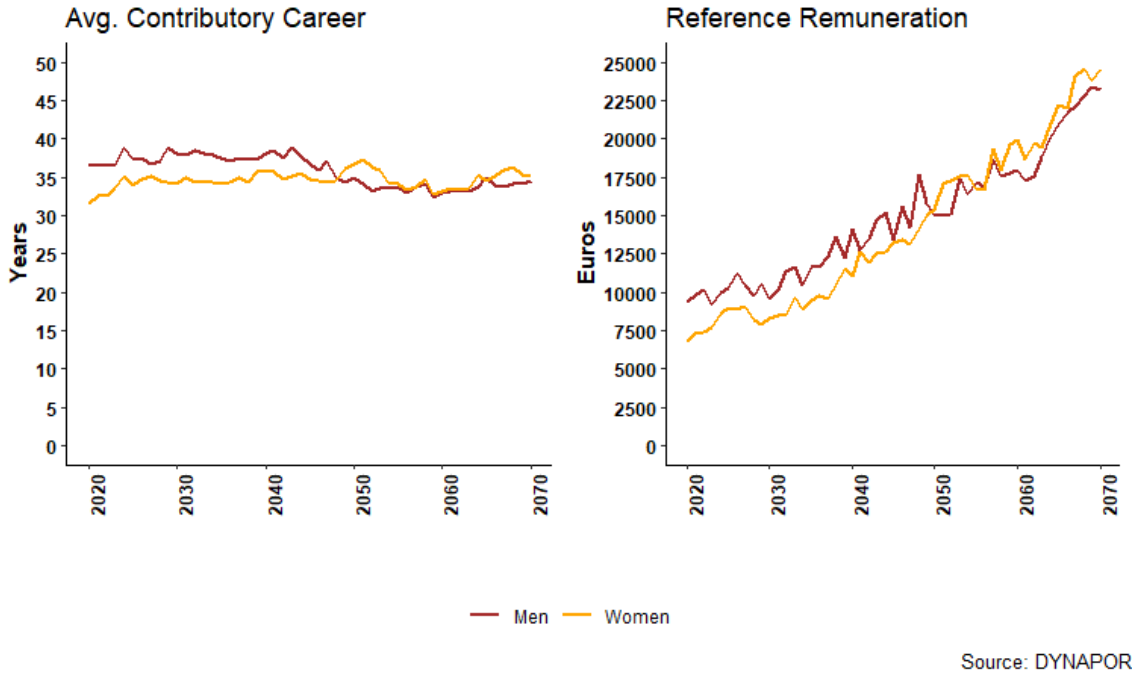
Source: DYNAPOR

In addition to this increase in the percentage of women in employment the AWG expects that women will continue to be more exposed to part-time work than men throughout this period - with part-time employment rates for men at around 2% and for women at 7% (see Graph 7).

Graph 7 Prospective Part-Time Employment Rates, by gender, 2020-2070



Graph 8 Prospective Contributory Careers and Reference Remunerations (at time of Retirement), OAP beneficiaries, by gender, 2020-2070



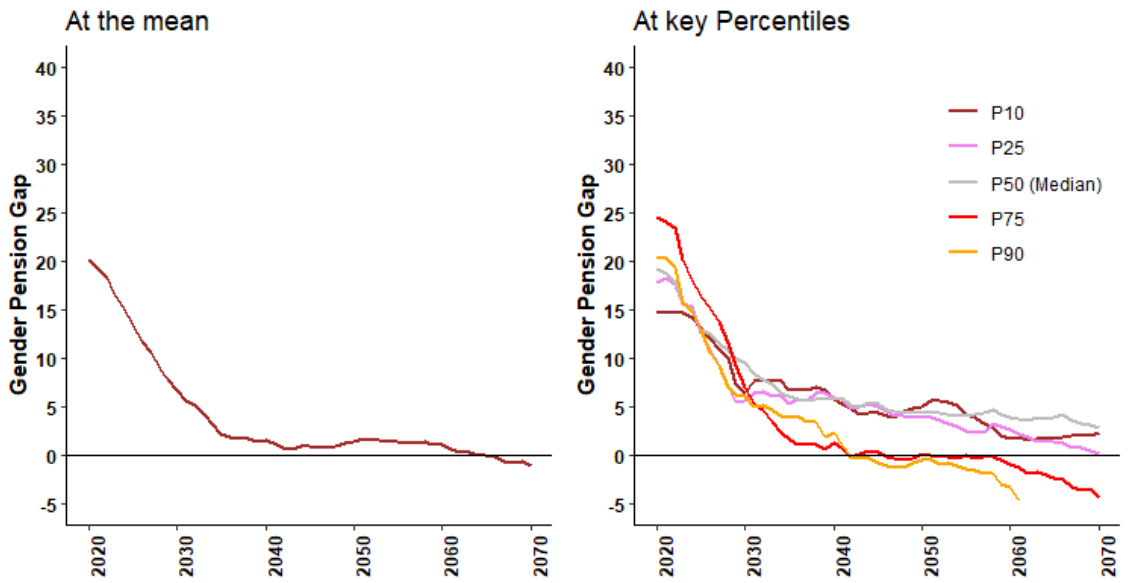
Reflecting the projected increases in the employment rates in the next two decades (see Graph 6), we expect to see that the gap in the contributory careers of men and women to start to narrow from 2040 onwards – and in fact to be eliminated from 2055 onwards (see Graph 8). Even more interestingly, future changes in the labour market participation of men and women are also expected to lead to a narrowing in the differences in the reference remuneration of men and women in the period up to 2050 - with the

reference remuneration of women marginally surmounting that men for the remaining of the projection period.

4.2. Prospective Gender Pension Gap

As can be seen in Graph 9, reflecting both recent changes in the labour participation of women, and the design of pension institutions in Portugal (see Section 5), the Gender Pension Gap is expected to decrease sharply in the period up to 2040 – to the point of being almost eliminated. From that point onwards, the Gender Pension Gap is likely to remain relatively stable at around 1-2%. Crucially, from 2064 onwards we foresee a reversal of the Gender Pension Gap – which means that, in average, male pensioners would get lower pensions than their female counterparts.

Graph 9 GPG at the mean and at key percentiles of the distribution of pension income, 2020-2070



Source: DYNAPOR

As can also be seen, the reduction of gender pension disparities is much weaker for low income groups (p10 and p25) (see Graph 9). In fact, for these groups the convergence in pension incomes across gender only becomes a reasonable prospect by the end of the projection. In contrast with this, we cannot but highlight the very strong reduction of gender disparities in the higher income groups (P75 and P90) - with the reversal of the Gender Pension Gap already expected to happen from 2055 onwards. Also worth noticing, we find that the reduction of gender pension disparities is slowest for middle income groups (P50).

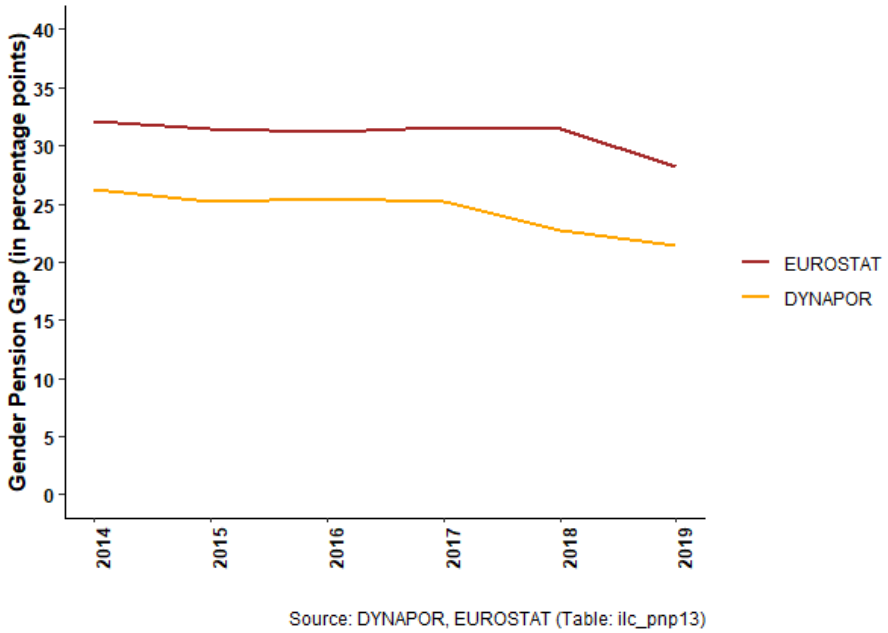
4.3. Robustness Assessment

In the previous section we suggest that the Gender Pension Gap is to experience a sharp drop in the next two decades, stabilising thereafter. In the sections bellow, we examine to what degree these estimates are sensitive to design issues in the DYNAPOR model and other key methodological issues, and to the way the Gender Pension Gap is measured.

4.3.1. Comparison of EU-SILC results with DYNAPOR projections

As can be seen in Graph 10, the Gender Pension Gap as estimated by the DYNAPOR for the period between 2014 and 2019 is consistently around 6 percentage points bellow that which is estimated by the EUROSTAT using EU-SILC data. There are a number of potential explanations for this. First, the Gender Pension Gap estimated by DYNAPOR is based solely benefits from first pillar benefits. Thus, unlike the estimates produced by EUROSTAT, it does not include sources pensioner income (2nd pillar and private pension plans) that – if taken in consideration - are likely to increase the disparities in pension income between men and women.

Graph 10 Gender Pension Gap at the mean, comparison between EU-SILC and DYNAPOR projections for overlapping years.



Source: DYNAPOR, EUROSTAT (Table: ilc_pnp13)

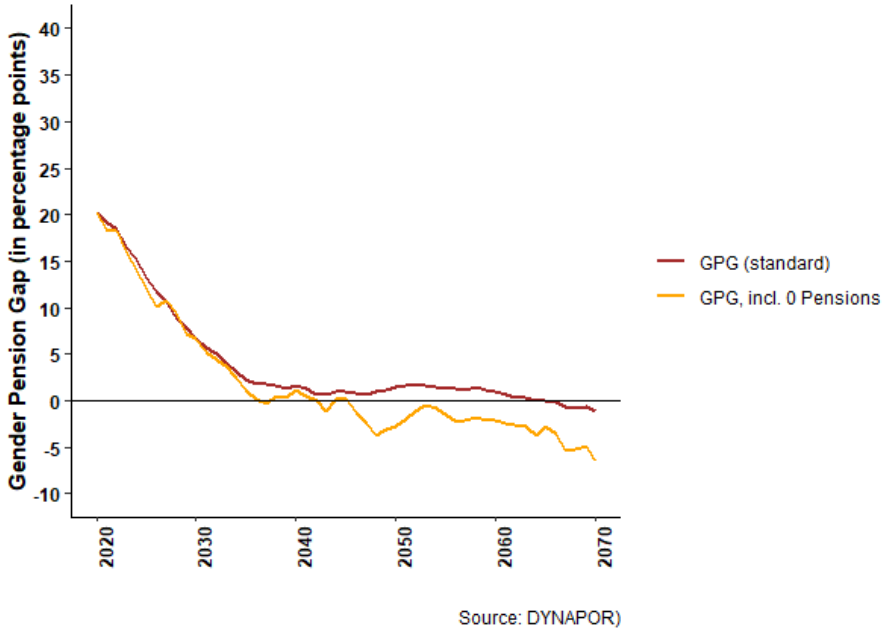
Second, although is based on a cross-section of the EU-SILC for Portugal, the DYNAPOR dataset was the object of a set of data imputations aimed at aligning the take-up of pensions in the dataset with administrative statistics on the topic (see Moreira et al, 2019). In particular, it was necessary to impute

pension benefits for the civil servants' sub-system (CGA), where one can find a significant proportion of women with higher salaries.

4.3.2. Controlling for pension coverage

A second (potential) source of uncertainty in this domain concerns the fact that estimates of the Gender Pension Gap do not control for gender differences in the coverage of pensions. As it fails to capture the presence of individuals who have not accumulated any type of pension rights, it can be argued that the standard definition of the Gender Pension Gap actually underestimates the disparities between men and women in the field of pensions. Acknowledging this, we have estimated the Gender Pension Gap including individuals, aged 65 and over, with pension income equal to 0 (see Graph 11).

Graph 11 The impact of including zero pensions on the Gender Pension Gap



This exercise uncovers two interesting findings. First, we find that - for the period between 2020 and 2040 – gender differences in pension coverage do not significantly impact on our estimate of the Gender Pension Gap. This is not surprising as the pension system as a number of mechanisms for providing protection to seniors with insufficient contributory careers: a Social Old Age Pension for persons with less than 15 years of contributions; minimum pension supplements ('Minimum Pensions') for individuals with short working careers; and a minimum income guarantee ('Seniors Solidarity Supplement') for seniors (see Moreira et al., 2019).

Second, we find that as the labour market participation of women and the earnings of women increase, relative to that of men (see Graphs 6 and 8), controlling for gender differences in pension coverage would actually work to reverse the Gender Pension Gap in favour of women, from 2045 onwards.

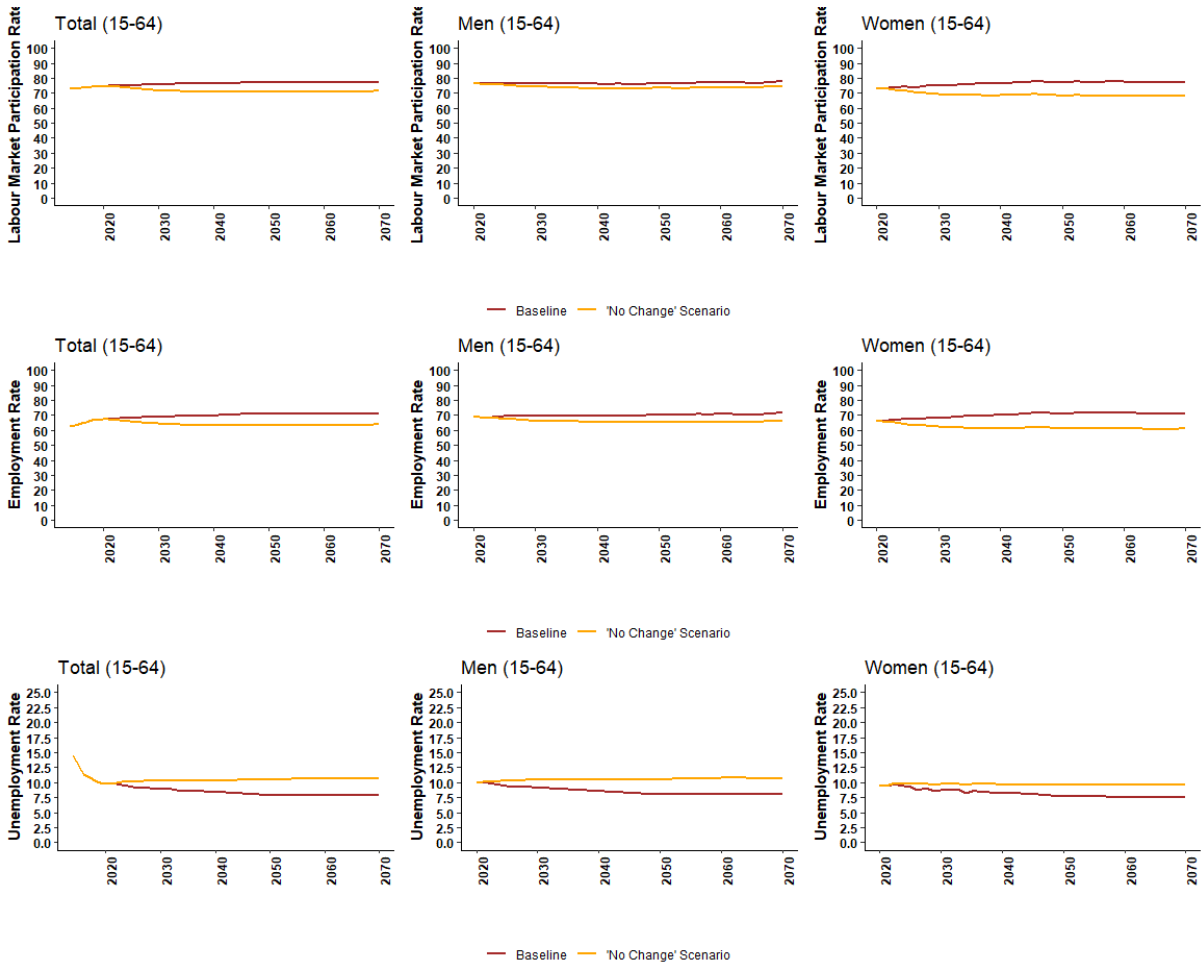
5. Key factors shaping the prospective Gender Pension Gap

In the previous section we projected that the Gender Pension Gap is to decrease in the next two decades, stabilising thereafter. In this section we examine to what degree this reflects a) the AWG projections concerning the participation of men and women in the period between 2020 and 2070; and b) de design of the Portuguese pension system.

5.1. Assessing the importance of prospective labour market developments

For the purpose of assessing to what degree the AWG macro-economic projections explain the projected evolution of the Gender Pension Gap presented above (see Section 4.2), we estimated an alternative scenario whereby (private [5]) employment-to-population and unemployment-to-population rates, by gender and age-group, are kept constant at their values in 2021 - which we labelled as 'No Change' scenario (see Graph 12).

Graph 12 Prospective Labour Market Participation Rates, Employment Rates and Unemployment Rates, 15-64, by gender: Baseline and 'No Change' Scenario

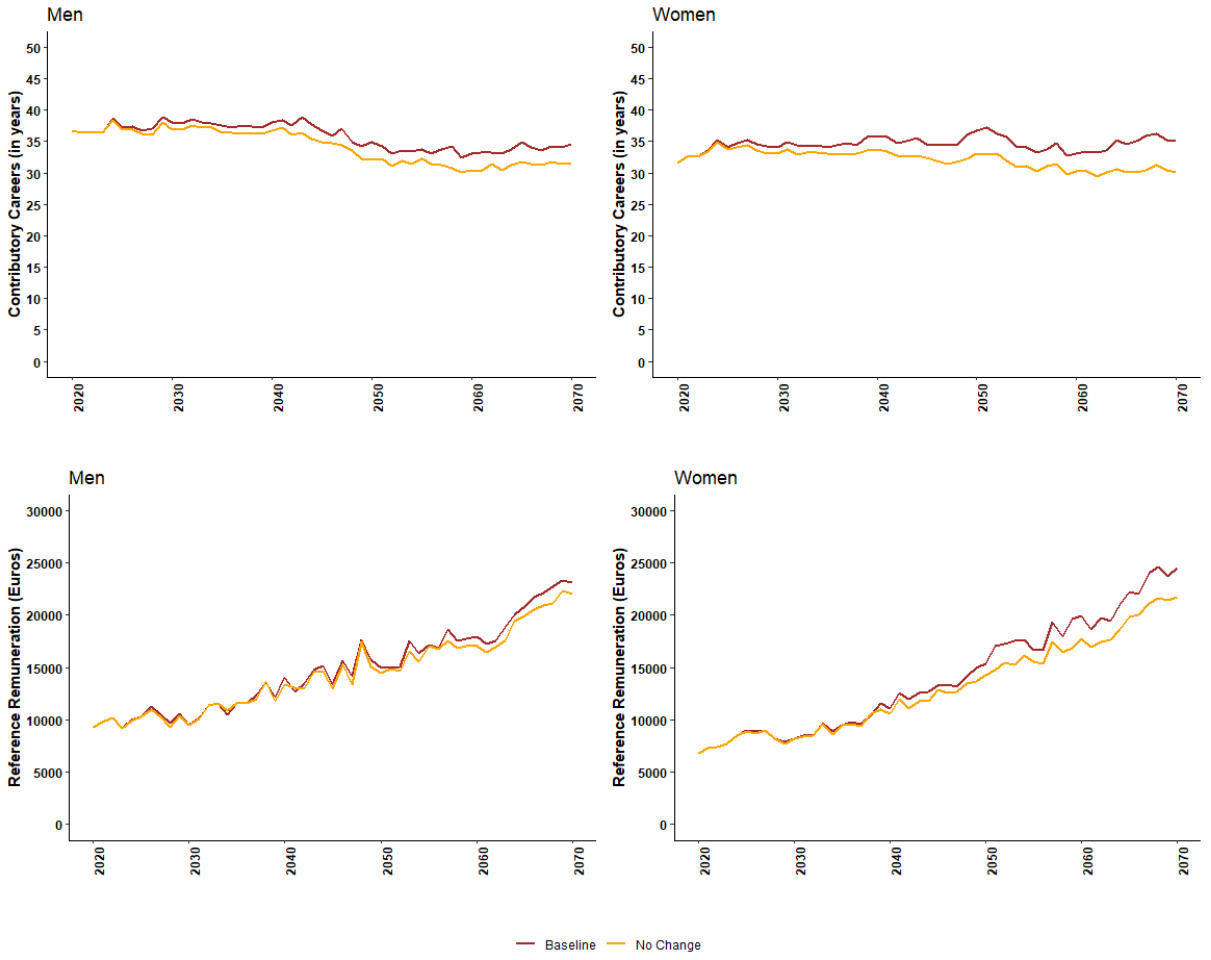


Source: DYNAPOR

[5] Given its specificty, public employment rates were kept in line with the baseline scenario.

As can be seen in Figure 12, under this alternative scenario the employment rates of women (aged 15 to 64) are well below those that are projected in the AWG baseline scenario. Not only that, unemployment rates would be higher among women than currently projected – even if they were to remain bellow that of their male counterparts. Unsurprisingly, this translates in visible decrease in the average contributory career of women, and of their reference remunerations – the effects being stronger for women than for men (see Graph 13). It should be stresses, however, that these effects only become evident in the later part of our projection and are therefore less likely to impact on the Gender Pension Gap.

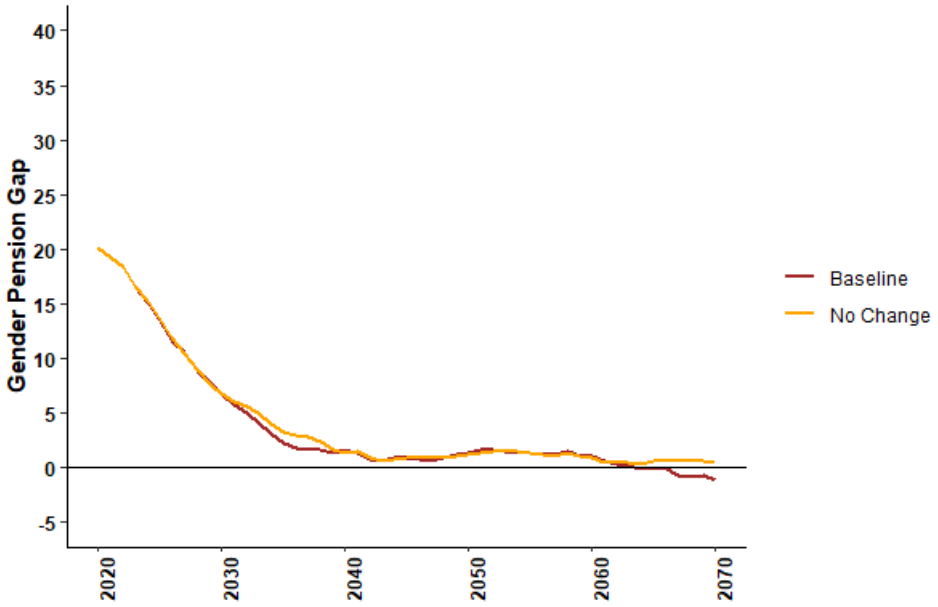
Graph 13 Contributory Careers and Reference Remunerations, by gender: Baseline and 'No change' Scenario



Source: DYNAPOR

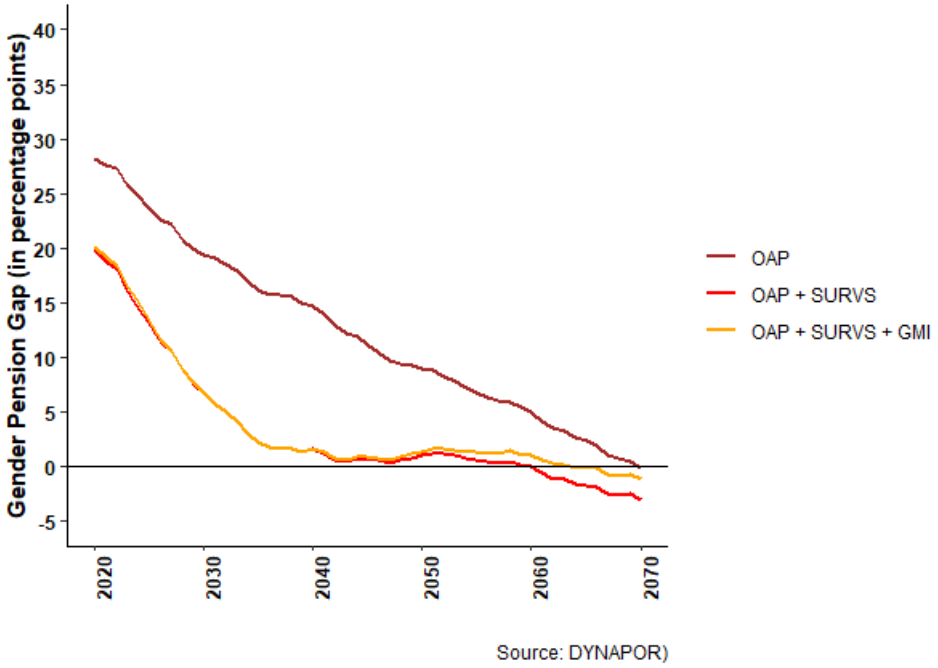
Confirming our earlier assessment, we do not find a significant impact of this alternative scenario on the projected evolution of the Gender Pension Gap in the period up to 2070 (see Graph 14). The only noticeable difference is that the projected reversion of the Gender Pension Gap after 2060 would not take place.

Graph 14 Gender Pension Gap, Baseline and in 'No Change' scenario



5.2. Assessing the role of pension institutions/rules

Graph 15 The impact of Survivors' Pensions and Minimum Income benefits on the Gender Pension Gap



Source: DYNAPOR)

As seen above (see Section 4.3.2), in addition to changes in the labour market, the way the Gender Pension Gap is likely to progress is shaped by the design of the pension system. In order to better understand how the design of the Portuguese pension system shapes the future development of the Gender Pension Gap, we estimated this measure using different definitions of pensioner income. As Graph 15 makes obvious, Survivors Pensions (both from Social Security and the civil servants' sub-system) play a decisive role in reducing the Gender Pension Gap. In fact, if we take the Gender Pension Gap of recipients of the Old Age Pensions (both from Social Security and the civil servants' sub-system) as a proxy of how labour market developments, per se, impact on the Gender Pension Gap – we can conclude that the design of the Portuguese pension system plays a decisive role in explaining the projected reduction of the Gender Pension Gap in the coming decades.

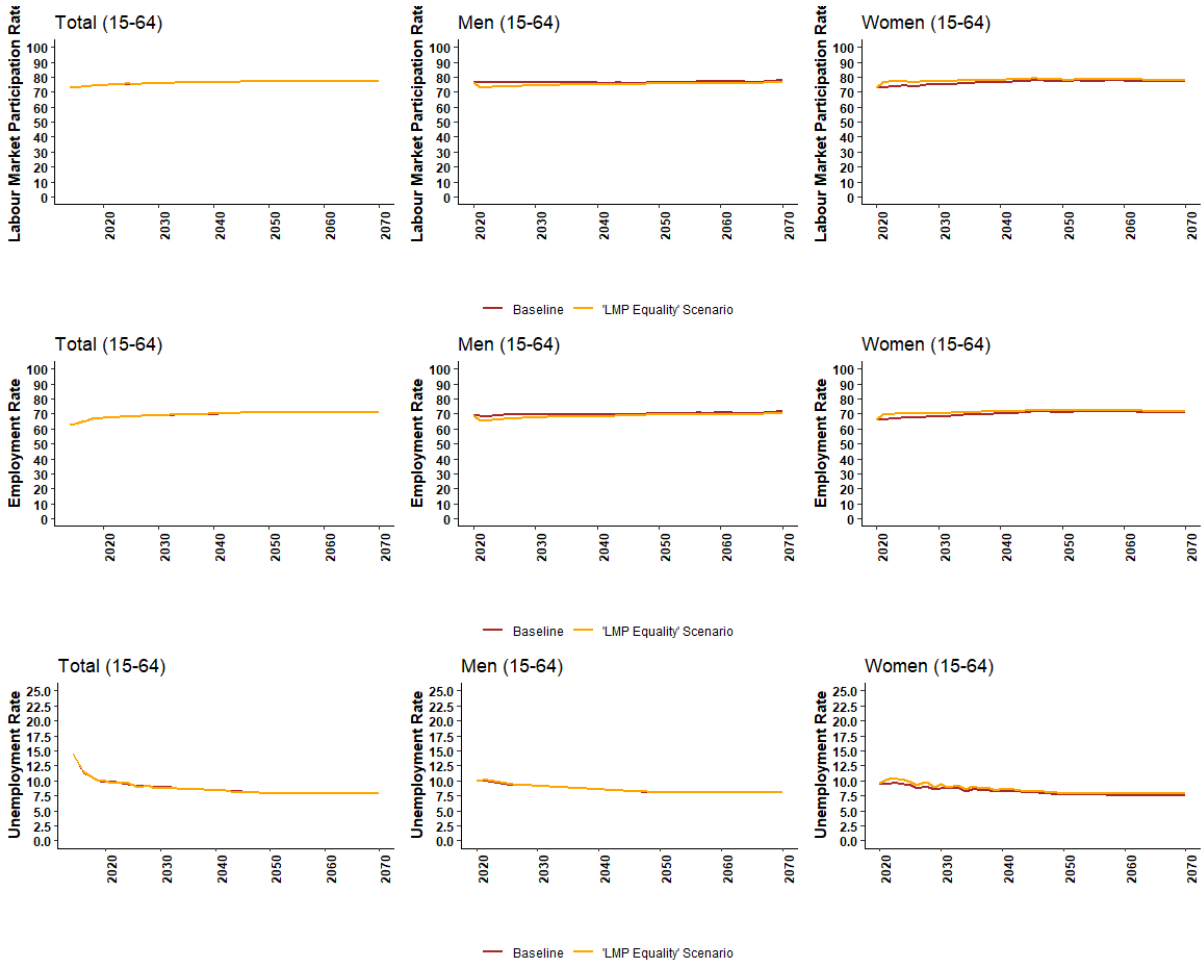
This finding is not entirely surprising. Women are significantly more represented in Survivors Pensions caseloads. Second, there are relatively few barriers to the entitlement to Survivors Pension in Portugal and there are no special limitations on how much beneficiaries can receive – in fact, the value of the Survivors Pension is calculated using the same rules used to compute the Old Age Pension (see Moreira et al, 2019).

Graph 15 also provides an important insight into the role of minimum income benefits (namely the Social Old-Age Pension and the Solidarity Supplement for the Elderly) in reducing gender disparities in the system. From being relatively irrelevant during the first stage of the stage of our projection, they evolve to some kind of redistributive role in the period where the combined influence of the labour market developments and the Survivors Pension act to reverse the Gender Pension Gap in favour of women.

6. Assessing the potential impact of equalising labour market participation of men and women

Although we already project that Portugal will experience a steep reduction in Gender Pension Gap in the next decades, it is nonetheless important to assess how the adoption of measures to reduce the disparities in the labour market would impact on the future trajectory of the Gender Pension Gap in Portugal. Acknowledging this, we estimated an alternative scenario - which we labelled as ''Labour Participation Equalization' scenario (see Graph 16) - whereby (private [6]) employment-to-population and unemployment-to-population rates, by age-group, are equalised across genders from 2021 onwards.

Graph 16 Prospective Labour Market Participation Rates, Employment Rates and Unemployment Rates, 15-74, by gender: Baseline and 'Labour Participation Equalization' Scenario



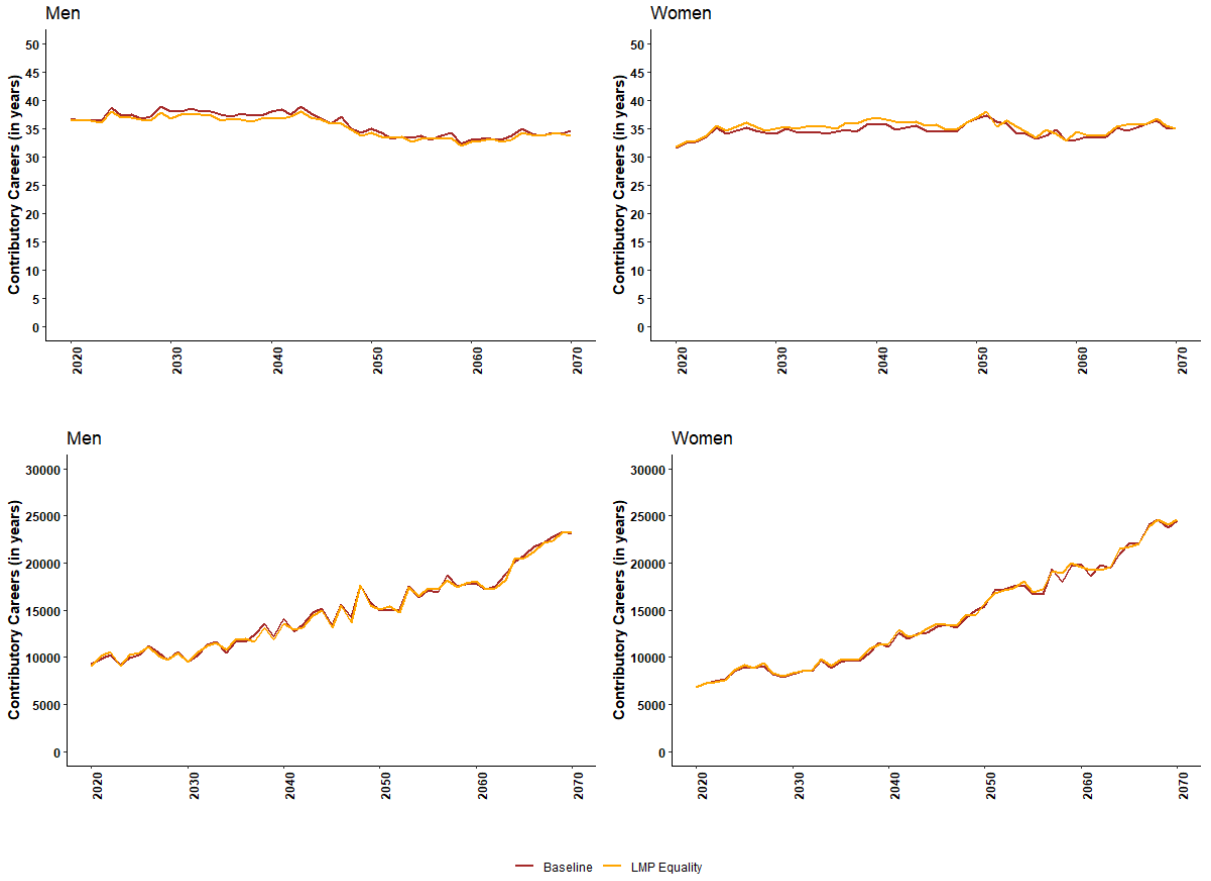
Source: DYNAPOR

[6] Given its specificty, public employment rates were kept in line with the baseline scenario.

As to be expected, given what we know about the gender differences in projected labour market participation trends (see Section 4.1) the adoption of this alternative scenario would lead to an increase in the employment rates of women. However, it would also produce an increase in the unemployment rate among women during the initial part of the projection. As also expected, the effect on the labour market participation of men in this scenario are symmetrical (see Graph 16).

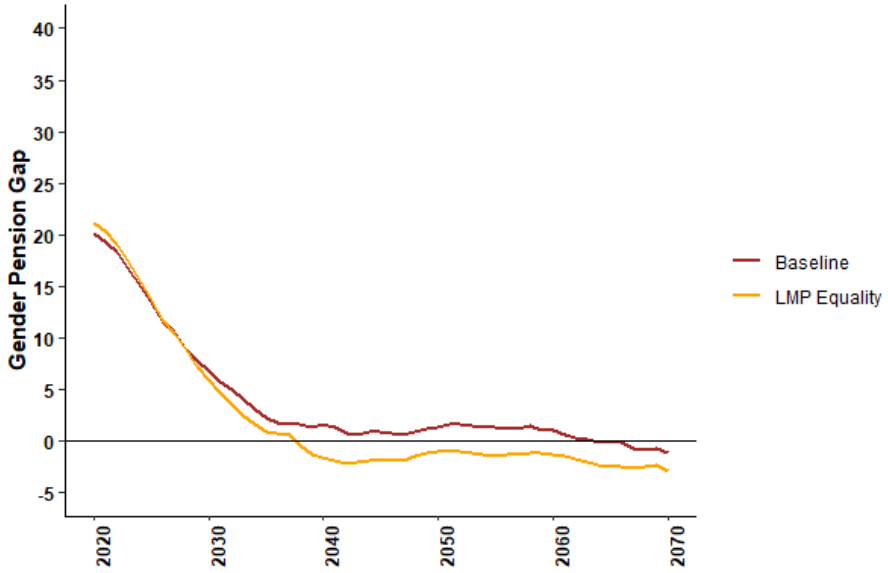
In line with this, we find that the equalization of (private) employment-to-population and unemployment-to-population rates would lead to a small increase – of up to 12 months in some years - in the contributory careers of women (of (see Graph 17), namely during the period between 2030 and 2050. Again, as to be expected, the impact on the contributory careers of men was relatively symmetrical. As to be expected, the adoption of this alternative scenario did not have a significant impact on the reference remuneration of men and women.

Graph 16 Contributory Careers and Reference Remunerations, by gender: Baseline and 'labour market participation equality' Scenario



Source: DYNAPOR

Graph 17 Gender Pension Gap, Baseline and in 'labour market participation equality' scenario



Although the size of the changes in the contributory careers of men and women were relatively small, equalization of (private) employment-to-population and unemployment-to-population rates is expected to have a sizable impact on the Gender Pension Gap. In fact, our findings would suggest that – under the current institutional design - the equalization of the labour market participation of men and women is likely to create a situation where men become the new focus about wage disparities in the pension system.

7. Summary and Preliminary Conclusions

As mentioned in the introduction, this report has three critical aims:

a) To put forward a likely scenario for the evolution of the Gender Pension Gap in the period between 2020 and 2070, for Portugal:

b) To discuss the factors that shape the development of the Gender Pension Gap;

c) To provide an assessment of the potential impact of policies to reduce gender gaps in the labour market in the development of the Gender Pension Gap in Portugal.

With this in mind, we can identify a number of key findings:

I. Gender Pension Gap is expected to decrease sharply in the period up to 2040 – to the point of being almost eliminated. From that point onwards, the Gender Pension Gap is likely to remain relatively stable at around 1-2%;

II. The projected reduction of gender pension disparities is much weaker for low income groups (p10 and p25);

III. For the period between 2020 and 2040, gender differences in pension coverage do not significantly impact on the Gender Pension Gap;

IV. The design of the Portuguese pension system, name the design of the rules for determining the eligibility and value of Survivors Pensions, play a decisive role in explaining the projected reduction of the Gender Pension Gap in the coming decades;

V. Policies that are designed to promote a convergence in the labour market participation of men and women are likely to further accelerate the decrease in the Gender Pension Gap;

VI. We have encountered a number of instances (see Sections 4.3.2 and 6) that suggest that, under the current architecture, gains in gender equality in the labour market might lead to a situation where men might become the focus of future concerns about gender disparities in the field of pensions.

Whilst important per se, these findings do raise several questions that merit further research. First and foremost, it is important to investigate how policies to promote equal pay/equal wages in the labour market would impact on the Gender Pay Gap in Portugal. It would also be worth to investigate in more detail how the design of pension benefits in Portugal shapes the gender disparities in the system – and to what degree current rules will be adjusted to a context where labour market opportunities are more evenly distributed. Acknowledging that our report only covered 1st pillar pensions, it would be worth

to investigate how the inclusion of pension benefits from 2nd and 3rd pillar benefits would impact on the future development of the Gender Pension Gap in Portugal.

8. References

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