Poverty Risk and Income Inequality for older people in a long-term perspective

Results from dynamic microsimulation models for Belgium, Hungary and Italy

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Introduction

In 2015, expert teams from Belgium, Hungary and Sweden produced a report on simulations of the possible developments of pension adequacy, making use of country-specific microsimulation models and taking into account demographic and macroeconomic projections developed by the Working Group on Ageing Populations and Sustainability (AWG)[1]. The results described in detail in that report were summarised in section 5.3.2. (Box 5.1) of the 2015 Pension Adequacy Report (PAR). In 2018, a similar exercise was carried out by Belgium, Italy and Sweden, and included in Section 5.1.2 of the 2018 PAR[2].

An attempt was made to make a similar contribution to the 2021 PAR, with projections for Belgium, Hungary and Italy. Due to delays in finalising the simulation results, contributors and the Commission have agreed upon redacting a separate analytical brief to be distributed jointly with the PAR.

Simulations are carried out for the period 2019-2060 and are based on demographic and macroeconomic assumptions underlying the 2021 Ageing Report from AWG. Results include: i) projections of the At-Risk-Of-Poverty rate (AROP) for older people, computed as the quota of individuals who live in households where the equivalised income is below a poverty threshold, calculated as 60 percent of the projected median equivalised income of the whole population; ii) projections of the income quintile share ratio (S80/S20) for older people, computed as the ratio between the total income of the top quintile and that of the bottom quintile of the distribution. Both indicators are computed by gender and on equivalised disposable income, i.e., total disposable household income corrected for the size and composition of the household using the modified OECD scale. As a consequence, it should not come as a surprise that indicators by gender are rather similar[3]. As age requirements for retirement are set to increase for all countries included in the Brief and in order to allow for a more coherent illustration of the results, older people are defined as at-or-above the Standard Pensionable Age.

Each country paragraph is introduced by a short description of the microsimulation model in use and the most relevant assumptions underlying the simulations; results are accompanied by a short commentary. A brief concluding section attempts to derive some comparisons between country results.

1 Dekkers, Gijs, Raphaël Desmet, Ádám Rézmovits, Olle Sundberg, and Krisztián Tóth, 2015, *On using dynamic microsimulation models to assess the consequences of the AWG projections and hypotheses on pension adequacy: Simulation results for Belgium, Sweden and Hungary.* Report Federal Planning Bureau, Central Administration of National Pension Insurance (ONYF), Hungary. https://www.plan.be/admin/uploaded/201506121351500.REP_SIMUBESEHU0515_11026.pdf.

2 Dekkers, Gijs, Riccardo Conti, Raphaël Desmet, Olle Sundberg, Karel Van den Bosch, 2018, *What are the consequences of the AWG 2018 projections and hypotheses on pension adequacy? Simulations for three EU member states*, Brussels: Federal Planning Bureau, https://www.plan.be/uploaded/documents/201807181105000.REP_AWG2018pension_11732.pdf.

3 Men and women often live together in one household and share disposable income.

1. Country results for Belgium

1.1. MIDAS: the dynamic microsimulation model for Belgium

MIDAS (Microsimulation for the Development of Adequacy and Sustainability) is a dynamic microsimulation model that simulates individuals and households between 2012 and 2070. The model is based on a compound administrative dataset of 553,722 individuals in 249,121 households, sampled in 2011[4].

MIDAS consists of various modules that can be grouped in five blocks: demographic, labour market, social security and pensions, taxation and output. These blocks contain the following processes (among other things):

- Demographic block: mortality, fertility, partner selection, marriage or cohabitation, separation or divorce, educational attainment level, being in education;
- Labour market block: continuing or starting to work, hours of work, earnings per hour, ceasing to work, unemployment, disability, unemployment with company allowance and retirement;
- Social security and pensions block: this block simulates the social security benefits depending on the state that the individual occupies: unemployment benefit, unemployment benefit with company allowance, disability benefit and retirement benefit. Other benefits simulated are independent of the state of the individual: means-tested minimum guaranteed income, means-tested Guaranteed Income for Older persons and child benefits;
- Fiscal block: gross-net trajectory, depending on the income source(s);
- Output: all kinds of tables, calculation of equivalised gross and net household income, poverty risks, Gini, Income quintile share ratio, etc.

MIDAS does not include private savings or pensions from the second or third pension pillars, wealth and housing. Immigration and emigration are not included either but are currently under development. These caveats should be kept in mind when considering the results.

Alignment techniques are extensively used to replicate exogenous (semi-)aggregate data. For results presented here, this feature is used to incorporate and replicate macro-economic and socio-demographic projections of the AWG for Belgium. Its purpose is to make the simulations pertaining to adequacy as consistent as possible with the budgetary results. The alignment refers in particular to labour market participation rates by age group and gender, and it also makes sure that the growth rate of the average earnings at the micro-level follows that of earnings at the macro-level.

[4] The following discussion is largely based on Dekkers *et al.* (2018, section 2.1)

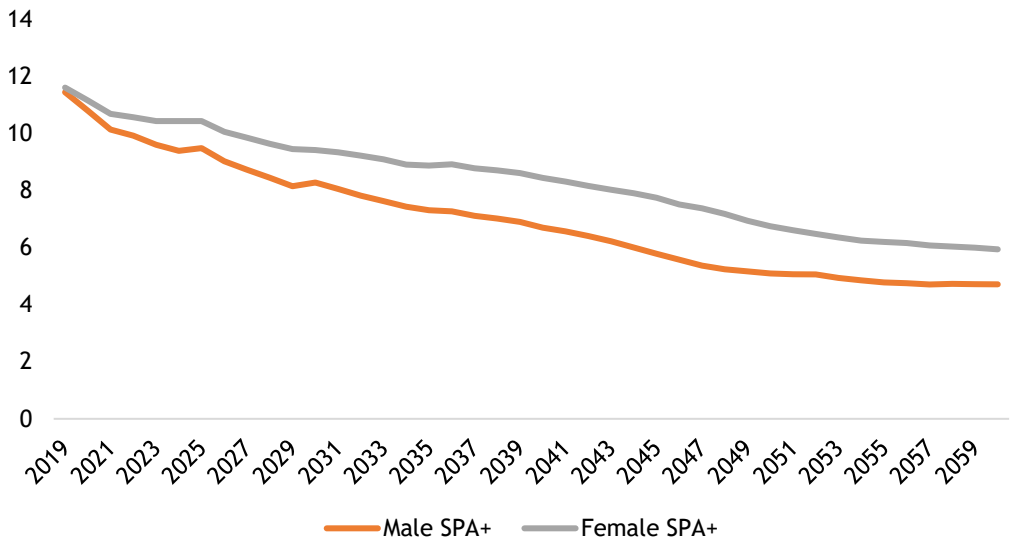
1.2. Results for Belgium under the reference scenario

In this section, we present and discuss projections, by gender, of the At-Risk-Of-Poverty (AROP) rates and the income quintile share ratio (S80/S20) for persons at retirement age or older. In Belgium, the retirement age is set to 65 until 2024; it will increase to 66 in 2025 and to 67 in 2030. Note that all indicators of poverty and inequality are based on equivalised disposable income.

1.2.1. The At-Risk-Of-Poverty rate (AROP)

Figure 1.1 presents the poverty risks by gender for those at the Standard Pensionable Age (SPA) or older (henceforth denoted as older people). It reflects the proportion of the relevant group who live in households where the equivalised income is below a poverty threshold, computed as 60 percent of the projected median equivalised income of the whole population. However, since some income sources are not simulated in MIDAS, the median income, and thus the poverty line, is lower than observed in EU-SILC, the data used by Eurostat to estimate the AROP and the AROP threshold. Consequently, the value of the AROP rate for the older population in 2019 is below the EU-SILC estimate. Therefore, the focus of the simulation results is on their evolution over time and the difference between women and men.

Figure 1.1: Poverty risk (AROP) by gender for older people (%), 2019-2060 – Belgium



The poverty risk of the population above the Standard Pensionable Age is nearly halved during the projection period, both for men and women. This is due to several factors. First, the growth rate of the minimum provisions exceeds that of earnings until the mid-2030s. This is the result of previous increases of the minimum provisions and the assumed indexation parameters, in combination with the low growth rate of earnings in the short- and medium-term, following the AWG simulations. The AWG budgetary projections take into account all measures decided by the government up to September 2020. From 2021 onwards, all social allowances are adjusted according to the parameters used for computing the budget that is devoted to the real indexation of social benefits, which itself is a political

decision (FPB, 2021[5], section 1.3). To calculate the budget, the following parameters are used. In the schemes for employees and self-employed persons, the wage ceiling and the minimum claim (a floor for the wage that is considered when the pension is calculated) grow in real terms by 1.25 percent per year, lump-sum benefits, including the minimum pension and the means-tested Guaranteed Minimum Income for older persons by 1 percent, and by 0.5 percent for other benefits. The civil servants' pension benefits follow the real growth rate of wages minus 0.4 percent. Thus, the indexation of most benefits, including first-pillar pensions, are independent of the development of wages. As the growth rate of earnings is well below one percent up to 2030, pensions increase faster than earnings and than the AROP threshold in the first half of the simulation period, which causes the AROP of older people to decrease. This decrease of the At-Risk-Of-Poverty rate is somewhat dampened by an increase in the proportion of single persons among the older population, who are at higher risk of poverty.

In the long run, a second effect kicks in, and that is the increasing labour market participation of women. Compared to their mothers, current active generations of women more often work, and the proportion of short careers among women decreases over time. These developments result progressively in higher pension benefits for women, thus the AROP of women and their male partners decreases.

Third, as explained in the AWG Country Fiche (FPB, 2021, section 1.2), the 2015 pension reform among other things raises the Standard Pensionable Age (SPA) from 65 to 66 years in 2025 and to 67 years in 2030. Furthermore, it increases the minimum early retirement age as well as the minimum career length for early retirement. Over time, this results in new cohorts of pensioners having longer careers and therefore slightly higher pension benefits, which will add to the decrease of the AROP rate of older people.

There are two main reasons why the decline in the poverty rate is slower for women than men. First, among women the proportion of widows, who are mostly well protected against poverty risks by relatively generous survivor pensions, will fall during the coming decades, as life expectancy increases more for men than for women, and the marriage rate will go down. Second, the proportion of retirees who are divorced or who have never married will increase both among women and men, but the impact of this development on the overall AROP rate for women is much larger than for men. Relatively short careers are much more common among divorced and never-married women than among men in the same civil states, and for this reason their incomes are lower, and their poverty risks are higher.

The question might be asked how the slower decline of the At-Risk-Of-Poverty rate for older women compared to men is compatible with the projected steep decline in the Gender Pension Gap in Belgium[6] . The Gender Pension Gap is defined as the difference between the average *individual* gross pensions received by men and women, as a percent of the average pension received by men. The At-Risk-Of-Poverty rate is derived from the *household* income. Much of the improvement in the individual pensions of women will occur among married women, most of whom are protected from poverty anyway by their husbands' pension. As described above, the slower decline of the AROP rate of women is due to shifts in their marital situation, which are independent of their individual retirement pension.

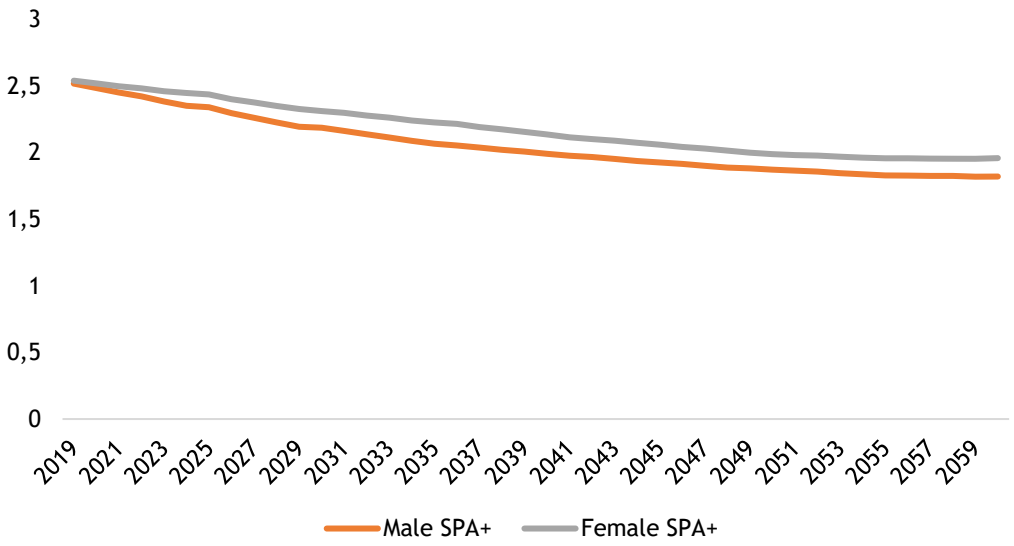
[5] Federal Planning Bureau (FPB), 2021, *Economic Policy Committee's Ageing Working Group. Belgium Country Fiche 2021*. Brussels: Federal Planning Bureau. Forthcoming.

[6] Dekkers, G. and Van den Bosch, K. (2021), Projections of the Gender Pension Gap in Belgium using MIDAS (project MIGAPE, Work Package 3), Brussels: Federal Planning Bureau , http://www.migape.eu/pubs/MIGAPE_WP3_GPG_projections_BE.pdf. See also the Pension Adequacy Report 2021, Chapter 4, Box 8, pp. 106-107.

1.2.2. The income quintile share ratio (S80/S20)

Figure 1.2 shows the income quintile share ratio (S80/S20) by gender for the older population.

Figure 1.2: Income quintile share ratio (S80/S20) by gender for older people, 2019-2060 – Belgium



The S80/S20 indicator of the older population shows a clear decrease over time. The main reasons for the decreasing inequality are the same as for the decreasing poverty risks among older people: the growth rate of the minimum provisions exceeding that of earnings until the mid-2030s; and the smaller number of retirees – among both women and men – with short or no careers.

2. Country results for Hungary

2.1. MIDAS-HU: the dynamic microsimulation model for Hungary[7]

The Hungarian MIDAS_HU model belongs to the MIDAS dynamic microsimulation model family developed by the Federal Planning Bureau of Belgium. It is a cross-sectional model of the whole population that simulates processes at the level of the individual and household, and then at the annual period level. The development of the population in this model is the result of birth and death processes only and does not include migration.

The starting data for the model consists of a 20 percent random sample of the 2012 population stratified by age, gender, work status (employed, unemployed) and type of provision (old-age pension, widow's pension and orphan's allowance) and, therefore, the first simulated time period is 2013. The simulated data are aligned according to the baseline scenario of the AWG macroeconomic projections for Hungary, e.g. employment rates, average gross income, inflation and mortality rates. When a particular AWG projection for alignment is not available, e.g. marriage or divorce rates, then the corresponding data from the Central Statistical Office in Hungary (hereinafter referred to as CSO) and Hungarian Demographic Research Institute, Population projection 2013, are used for model adjustment. The adjustment is always based solely on proportions and not on absolute numbers.

Main modules of the model include:

- Marriage market;
- Labour market;
- Pension register module with a pension calculator.

The original data consists of various socio-economic characteristics of the subjects. However, it does not include any information on the family relations between individuals. Therefore, in order to be able to simulate the marriage market, various family relationships, e.g. marriage, cohabitation, parent-child relationships are imputed using logistic regression models, whose coefficients have been estimated using the 2011 census data. If needed, adjustments are made using the corresponding CSO data.

The simulation of the labour market activity in the model is based on logistic regression models as well. Two characteristics play a central role in these models. The first is the lagged employment status (employed or unemployed) of the individual. The second key variable describes the so-called labour market profile, which reflects for each individual the long-term event history of the occupational changes since 1990, a period that includes large-scale political, societal and economic transformations in Hungary.

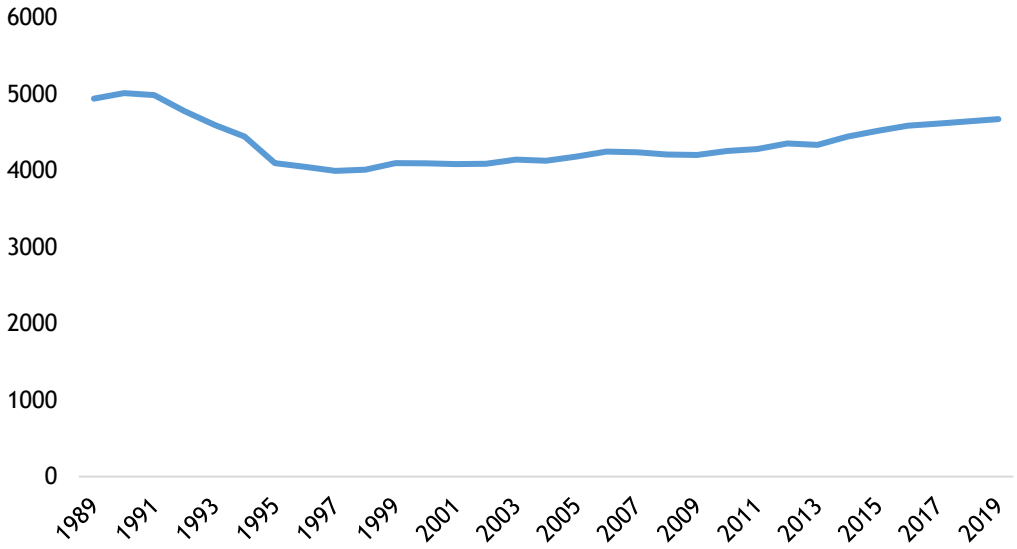
Within this module, the amount of pension is calculated in several steps according to law. During the pension payment period the amount paid is indexed until the end of provision.

[7] The following discussion is largely based on Dekkers *et al.* (2015, section 4.1).

For model checking and cross-calibration, the validation sample of 2013-2019 was used against the development sample of 2012 within the framework of microsimulation modelling with alignments.

After 1990, there was a major transformation in the Hungarian labour market and generally in the economy and society. The size of the Hungarian labour market decreased by 18.8 per cent between 1991 and 1996. These processes had and still have a big impact on income distribution, social exclusion and future pension rights as well. The past development of the Hungarian labour market is illustrated in the following figure. While past transitions could be taken into account in the construction of the model, possible future processes could not.

Figure 2.1. Economically active population aged 15-74 (thousand individuals), 1989-2019* - Hungary



* For the period 1989-1991, data refer to the entire economically active population.

2.2. Results for Hungary under the reference scenario

In this section, we present and discuss projections, by gender, of the At-Risk-Of-Poverty (AROP) rate and the income quintile share ratio (S80/S20) for persons at retirement age or older. We note that the standard retirement age in Hungary was 64 in 2019, 64.5 in 2020-2021, and will be 65 from 2022. To allow for comparison, indicators referring to the whole population are also shown. Indicators are computed on equivalised disposable income.

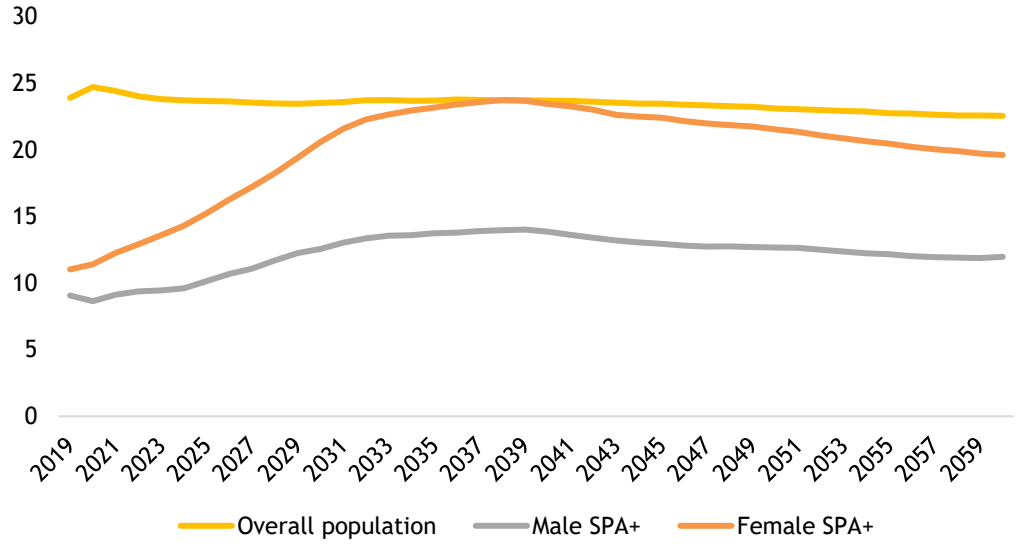
2.2.1. The At-Risk-Of-Poverty rate (AROP)

The AROP indicator for the overall population is relatively stable during the simulation period. Poverty risks for older people will increase in the one and a half decade from 2019. This growth is due to the decreasing contributions in the years after the great transition of the labour market in Hungary in the 1990s. The long-lasting increase results from the transition's significant unfavourable effects for all generations who were active at the time. This effect is reflected in pension amounts decades later. From the 2040s onwards, the majority of older people will be new pensioners, who have acquired their pension rights in

a significantly more favourable labour market situation. Because of this, the indicator will be slightly decreasing in the second part of the simulation period.

In the older group, there are significant differences between the AROP indicators for males and females. While the poverty risk for males is growing slightly until the mid-2040s, the increasing trend of the AROP for females is more significant in the same period. Afterwards, the declining trend is nearly the same for both genders. As a result, the AROP indicator is significantly higher for females. This is the combined effect of a slightly decreasing gender gap and of growing disparities within the female sub-group, which will appear and will be getting stronger among older people in the future, especially in the next two decades.

Figure 2.2: Poverty risk (AROP) by gender for older people (%), 2019-2060 – Hungary

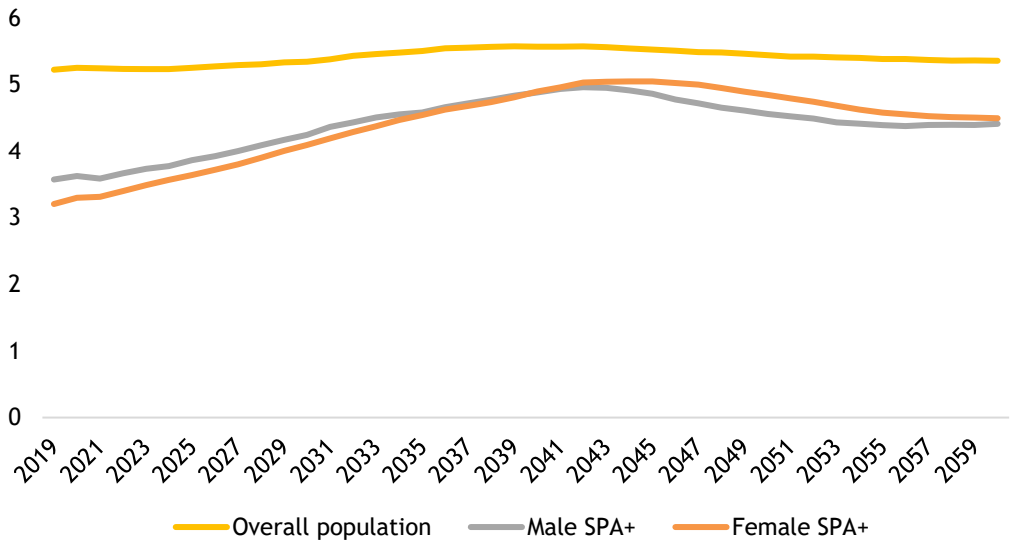


2.2.2. The income quintile share ratio (S80/S20)

The S80/S20 indicator for the overall population will be relatively stable in the simulation period, like the AROP ratio. This is because of the assumed labour market evolution, which does not contain any substantial crisis. The indicator for older people is gradually increasing until the early 2040s. This trend can be explained by the transition processes of the Hungarian labour market, which has taken place in the early 1990s. Those who have been affected unfavourably by said transition have acquired significantly lower pension entitlements; the effect of this will gradually show in the income of older people, then disappear again after the first half of the 2040s, when older people affected by the aforementioned process become a minority.

There are also no significant differences between genders in the older population. The S80/S20 indicator for females will also have reached the value of the indicator for males in the early 2040s and will even be slightly higher thereafter.

Figure 2.3: Income quintile share ratio (S80/S20) by gender for older people, 2019-2060 – Hungary



3. Country results for Italy

3.1. T-DYMM: the dynamic microsimulation model for Italy

The Treasury Dynamic Microsimulation Model (T-DYMM) is a microsimulation model owned by the Treasury Department of the Italian Ministry of Economy and Finance (MEF). It has been developed within two EU-funded projects which involved MEF, the Giacomo Brodolini Foundation, the National Institute of Social Security (INPS) and the Italian National Institute of Statistics (ISTAT)[8]: i) 'Innovative Datasets and Models for Improving Welfare Policies' (2009-2011); ii) 'IESS - Improving Effectiveness in Social Security' (2014-2016). The primary objective of both projects was to provide suitable tools to assess the social sustainability of the Italian pension system in the medium and long term.

In order to carry out these projects, the following have been implemented: i) an original database, called AD-SILC, which integrates the administrative archives (on workers and pensioners) from INPS with the EU-SILC sample survey on Italian households (hereinafter SILC), carried out by ISTAT. AD-SILC is used to estimate wages and transition probabilities between states, as well as a starting sample for the simulations; ii) a dynamic micro-simulation model, called T-DYMM, which simulates the transitions during the life cycle of individuals (births, deaths, marriages, transitions in the labour market, retirement, etc.) and allows to evaluate the adequacy of the welfare system.

As a follow-up to the previous projects, MEF, with the Giacomo Brodolini Foundation and the National Institute for Public Policy Analysis (INAPP), successfully participated in the EaSI-PROGRESS research project, call for proposals 'Social innovation and national reforms - Access to Social Protection and National Reform Support' (VP / 2018/003). The project, titled MOSPI, covers the 2019-2021 period and aims at giving support to the modernization of the social protection system, favouring the formulation of appropriate responses to the challenges of digitalization, the ongoing changes in the labour market and the ageing of the population[9].

In compliance with the objectives of the MOSPI project, the dataset on which T-DYMM is based, AD-SILC, has been updated: it now includes the 2004-2017 SILC waves and the relative INPS data for workers and retirees. In addition, information relating to the Tax Returns and the Cadastre for the 2010, 2012, 2014 and 2016 SILC waves have been added. Furthermore, by means of a statistical matching procedure, the information contained in the Survey on Household Income and Wealth (SHIW) from the Bank of Italy[10] was also merged with the database.

As of April 2021, a first baseline version of “T-DYMM 3.0” has been released. The present model consists of five basic modules, connected to one another by recursive feedback: i) a Demographic Module (comprehensive of a sub-module on international migration); ii) a Labour Market Module (comprehensive of a sub-module on working pensioners); iii) a

[8] T-DYMM shares its ancestry with MIDAS-Belgium, though the two models have been developed independently from each other (see Caretta et al. (2013), T-DYMM: the Treasury Dynamic Microsimulation Model of the Italian Pension System. Government of the Italian Republic (Italy), Ministry of Economy and Finance, Department of the Treasury Working Paper No. 11, 41 pages. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2362775 [14/2/2018]; Dekkers and Van den Bosch (2016), Prospective microsimulation of pensions in European Member States. In: Dekkers, Gijs, and József Mészáros (Eds), 2016, *Applications of microsimulation modelling*, Budapest: Társadalombiztosítási Könyvtár. 13-33, ISBN 978 963 693 766 9.

[9] For more information: www.inapp.org/it/ProgettiCompetitivi/MOSPI.

[10] For more information: www.bancaditalia.it/statistiche/tematiche/indagini-famiglie-imprese/bilanci-famiglie/index.html?com.dotmarketing.htmlpage.language=1.

Pension Module (comprehensive of a sub-module on inability pensions); iv) a Wealth Module (which accounts for real-estate, financial and private-pension wealth) and v) a Tax-Benefit Module (simulating taxation and social assistance).

In T-DYMM, the statuses of individuals and households are updated annually. Demographic and macroeconomic patterns follow the projections of the Economic Policy Committee's Ageing Working Group (here, the assumptions for the 2021 Ageing Report are employed).

Before turning to the simulation results, a few caveats underlying the present version of the model should be discussed briefly:

(a) All workers are expected to access retirement as soon as they are eligible[11]. Such assumption may seem reasonable at present times (as age requirements have rapidly risen in the past few years, especially for women). However, as Notional Defined Contribution (NDC) rules phase in and replace the previous Defined Benefit (DB) system, a strong economic incentive to postpone retirement and increase benefits will kick in. As of now, we assume that all workers will keep favouring longer time spent in retirement over higher benefits;

(b) We assume a 100 percent take-up rate for all social assistance benefits and allowances, i.e. all individuals who satisfy requirements will receive benefits. As a result, we are overestimating the impact of social welfare, albeit keeping in line with the pertinent legislation;

(c) Due to lack of data, immigrants that enter the simulation do not carry over any pension rights from their previous country of residence. Although a considerable portion of migrants is not expected to spend their later years in Italy, this simplification somewhat overestimates poverty for older migrants;

(d) Benefits paid out at the local (regional and municipal level) are not simulated in T-DYMM (local entities are not simulated). The model still accounts for the vast majority of all social assistance monetary measures;

(e) As it is based on administrative data, T-DYMM only accounts for dynamics and incomes pertaining to the formal labour market.

As the MOSPI project is still underway, further improvements to the baseline version of T-DYMM are set to occur by the end of 2021, e.g. points (a) and (b) will be addressed in the coming months.

3.2. Results for Italy under the reference scenario

In this section, we present and discuss projections, by gender, of the At-Risk-Of-Poverty (AROP) rates and the income quintile share ratio (S80/S20) for persons at Standard Pensionable Age (SPA) or older, grouped by gender. To allow for comparison, indicators computed on the overall sample are also shown. In Italy, the SPA (as for other age requirements to retirement) is aligned to changes in life expectancy at 65: it was set at 67 (for both genders) in 2019; according to T-DYMM's assumption, derived from the 2021

[11] An exception is made for workers who meet criteria for early retirement under *Quota 100* and *lavoratori precoci* ("young workers") rules, who are assigned to retirement with 40 per cent probability. For *Quota 100*, a temporary measure for the 2019-2021 period, this is in line with observed administrative data. Since both *Quota 100* and *lavoratori precoci* pensioners are not allowed to cumulate labour and pension income, the same probability employed for the former is extended to the latter group.

Ageing Report assumptions, it will increase to 68 in 2027, to 69 in 2037 and to 70 in 2049[12]. Both indicators are computed on equivalised disposable income.

3.2.1. The At-Risk-Of-Poverty rate (AROP)

Figure 3.1 illustrates the evolution of the AROP indicator. At the start of the simulation, T-DYMM's figures are lower than the official Eurostat statistics, especially for older people[13]. That can be explained by three main reasons: i) Eurostat figures concern individuals over 65, while in the present Note we compute figures for individuals above SPA (67 in 2019); ii) Eurostat estimates are based on survey data, while for T-DYMM we essentially use administrative sources; iii) by assuming a 100 percent take-up rate for social benefits, we are bound to underestimate poverty.

In the first 20 years of the simulation, the indicator increases by about 4.9 p.p. for older males and 1.6 p.p. for older females, while figures for the overall population stay roughly constant (1 p.p. increase). The prolonged poor performance of the labour market in the past 15 years, especially for younger cohorts, whose entry into the labour market has been significantly delayed, is bound to affect future pension benefits; on top of this, the sequence of reforms in the '90s and early 2000s have generally tightened access to retirement. The effect of this is visible for older males, as the quota of individuals who receive a pension derived from labour contribution decreases slightly in the first years of the simulation. While these elements hold true for female workers as well, the increasing trend in participation rates for women somewhat balances the outcome: the number of older females receiving a work pension is stable in the first half of the simulation, than rises steadily. On the other hand, throughout the simulation period, the quota of older females receiving a survivor pension decreases, especially in the first half of the simulation. That is attributable on one side to a decreasing propensity for younger cohorts to marry and on the other to a reduction of the gap in life expectancy by gender, both factors reducing the possibility of becoming a widow. As fewer older people can access pensions, more apply for the social allowance (*assegno sociale*), which does not (nor is it designed to) surpass the relative poverty threshold computed for the AROP.

By 2035, the transition from the old DB system is completed and the vast majority of new pensions are entirely computed according to NDC rules. Average pensions are expected to decrease, but NDC rules lower pension benefits for richer workers more than they do for poorer workers, provided that the latter can enjoy long (albeit flat) careers[14]. On top of that, AWG alignments do not envision any shock to the labour market in the simulation period; hence, weaker groups are not exposed to crisis-related risks, as they have been in the past. Furthermore, as by 2040 the old-age dependency ratio is expected to hit 58 percent, the fact that such a large portion of the sample belongs to the SPA+ category drives down median income, hence lowering the indicator for the category (and for the overall population, as evidenced in Figure 3.1). As a result, AROP stabilises for the 2035-2045 period, then slightly decreases.

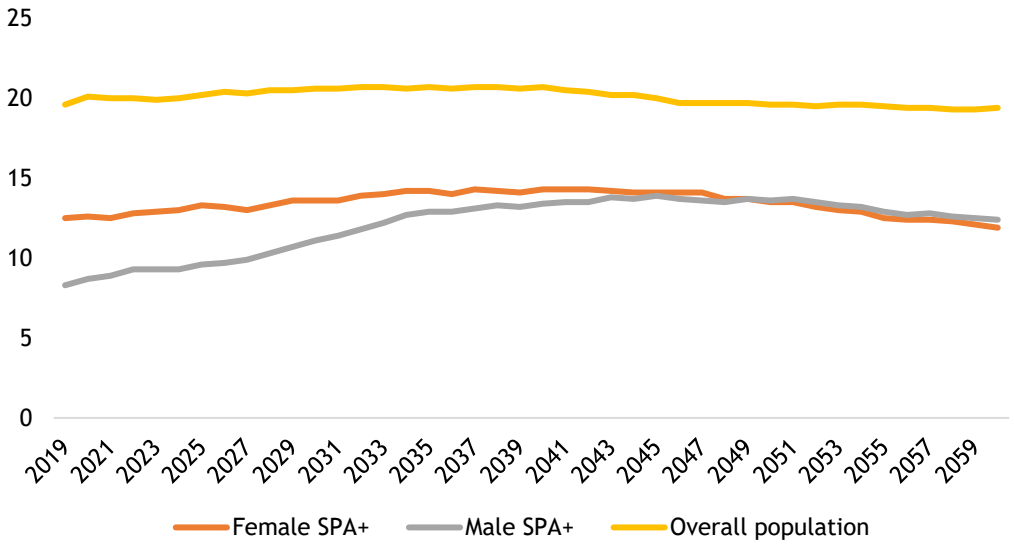
[12] T-DYMM operates on an annual basis; therefore, changes in pensionable ages are rounded to the nearest unit.

[13] AROP in 2019. Eurostat: 20.1% (overall), 18.7 % (females over 65), 13% (males over 65). T-DYMM: 19.6% (overall), 12.5% (females over SPA), 8.3% (males over SPA). It is relevant to note that, while levels differ, differentials by gender are close.

[14] DB computation rules favour short and "exponential careers" (i.e., where wages grow at an exponential rate). Both are rewarded with higher Internal Rates of Return on accrued contribution, while NDC rules apply the same IRR to all participants to the pension system. While "exponential careers" are generally correlated to wealthy working positions, the same cannot be said for workers with short/intermittent careers, who may have had trouble entering the labour force and/or keeping a steady job and, under NDC rules, are then subject to higher poverty risks once they reach pensionable age.

By the end of the simulation period, the gender differential in terms of poverty risk for older people is null, although older males fare visibly worse than they did in the beginning.

Figure 3.1: Poverty risk (AROP) by gender for older people (%), 2019-2060 – Italy



3.2.2. The income quintile share ratio (S80/S20)

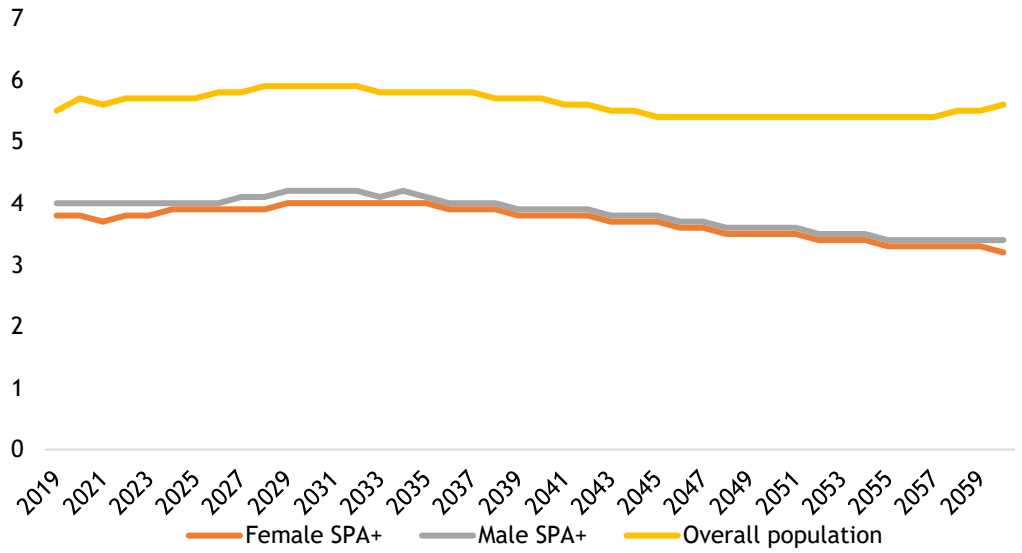
Figure 3.2 illustrates the evolution of the income quintile share ratio in the simulation period. The commentary falls in line with what has been discussed concerning the AROP (Par. 3.2.1). At the start of the simulation, T-DYMM's figures are lower than official Eurostat statistics for people over 65 years of age[15]. The same line of reasoning reported for the AROP applies here.

In the first years of the simulation, the coexistence of DB and NDC pensioners, together with the increased reliance on social allowances, generates a slight increase in inequality. From 2035 on, as the vast majority of new pensions are computed entirely according to NDC rules, inequalities are bound to become smaller. NDC computation rules are expected to reduce average pensions, but the larger effect will be on "exponential careers", typical of higher-remunerated workers. Therefore, in the second half of the simulation, the numerator of the S80/S20 indicator decreases and drives down the ratio.

The slight gender differential in the first years of the simulation is absorbed by 2035, as the two groups become more similar in terms of working histories.

[15] S80/S20 in 2019. Eurostat: 6 (overall), 5 (females over 65), 5.1 (males over 65). T-DYMM: 5.5 (overall), 3.8 (females over SPA), 4 (males over SPA).

Figure 3.2: Income quintile share ratio (S80/S20) by gender for older people, 2019-2060 – Italy



4. Comparing simulations and common trends

The present Note has reported the evolution of poverty risks (as measured by the At-Risk-Of-Poverty rate) and of income inequality (as measured by the income quintile share ratio) for older people, stemming from the use of microsimulation models for Belgium, Hungary and Italy, under the demographic and macroeconomic assumptions underlying the 2021 Ageing Report. While Italy is still absorbing the full impact of fundamental pension reforms (from a Defined Benefit to a Notional Defined Contribution system), pension systems in the other countries have experienced more limited changes in the recent past.

Because of differences in underlying income definitions, values for AROP and S80/S20 in 2019 are not directly comparable to the estimates reported in the 2021 Pension Adequacy Report. However, the evolutions in time are telling.

The three countries will see SPA increase in the projection period (albeit very slightly in the case of Hungary), and so will average labour market exit ages. This, in combination with the evolution in participation rates envisioned in the AWG projections, generally increases the percentage of people, especially women, who have had a longer career upon reaching retirement.

The first two decades (2019-39) are dominated by country-specific mechanisms of past legacy. In Belgium, poverty decreases from the beginning, thanks to increases in minimum income benefits. In Italy poverty increases in the first period as poorer cohorts of workers (who have experienced worse conditions in the labour market compared to senior cohorts) access retirement; in addition, the tightening of pension requirements means that more retirees will have to rely on social allowances, which fall short of the AROP threshold. In the longer term (2039-59), longer careers lower relative poverty (AROP) rates across the three countries. In Hungary, the contrast between the first two decades and the latter two is starker, especially among older women; here, drastic societal changes in the 1990s reduced young retirees' contribution years (and thus, benefits) whereas, from 2040, longer working lives make their impact felt.

Figures for Belgium indicate higher AROP rates for women compared to men, in spite of increased employment. This is because these projections take into account marital status, and in particular falling marriage and increased divorce rates. Thus, while the gender pension gap may continue decreasing and more women have higher own pensions, fewer single women will be shielded from poverty risks by relatively generous survivor pensions. While these dynamics hold true for Italy as well, the increase in participation rates for women seems to offer a counterbalance, and the gender differential in terms of poverty risk is expected to decrease markedly.

When results for the overall population are shown in combination with those for older people (Hungary and Italy), one can appreciate that welfare systems protect older people better than they do active individuals, but according to our simulations this gap is expected to somewhat decrease over the next years.

Old-age income inequality decreases in Belgium and Italy, although for different reasons. In Belgium, as a result of a reduction of the proportion of retirees with short or no careers, fewer older people will receive no or rather small pensions. Furthermore, minimum benefits in the pension schemes will increase. In Italy, the push towards higher equality in the second half of the simulation period is due to the completed transition from the old DB to NDC computation rules: average pensions are expected to decrease, but NDC rules lower pension benefits for richer workers more than they do for poorer workers, provided that the latter can enjoy long (albeit flat) careers. In Hungary, inequality will increase in the first period (2019-2039) as the pension-lowering impact of the 1990 transition will strongly affect

only part of the older population; thereafter, inequality will be decreasing similarly to the other two countries.

A word of caution applies to all socio-economic modelling, with microsimulation being no exception. The past two decades have witnessed labour market shocks that have particularly impacted weaker workers and lower pensions. As is true for most (if not all) projections, including those from the AWG, the microsimulations exercises presented in this study assume that there will be no shocks in the future, as their nature, extent and timing are hard to predict.

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