

EUROMOD WORKING PAPER SERIES

EM 06/25

**Redistributive effects of non-
contributory pension schemes
in the European Union**

Francesco Cellino, Flavia Coda Moscarola, Francesco Figari

05/2025



Redistributive effects of non-contributory pension schemes in the European Union¹

Francesco Cellino ^a

Flavia Coda Moscarola ^b

Francesco Figari ^b

^a Polytechnic University of Milan

^b University of Eastern Piedmont and CeRP-Collegio Carlo Alberto

Abstract

This paper investigates the role of non-contributory pension schemes in alleviating poverty among the elderly in the European Union. Non-contributory pensions, which are not linked to previous earnings or contributions, are a key element of public pension systems aimed at reducing poverty in old age. Using EUROMOD, the European tax-benefit microsimulation model, this study covers pension schemes in place in 2021 in most EU countries. Our findings show that non-contributory pensions are a significant component of older individuals' income in nearly all EU countries, particularly in nations like Denmark, Ireland, and the Netherlands, where universal basic pensions exist. In most other countries, these pensions are targeted at the poorest elderly. Our simulations estimate that abolishing non-contributory pensions would lead to a heterogeneous increase in elderly poverty rates across countries up to 64 percentage points. We also find that countries with more generous non-contributory schemes tend to have stronger general social assistance instruments.

JEL codes: H55 I32 I38

Keywords: pension systems, non-contributory pensions, old-age poverty, EUROMOD

Corresponding author/Contact:

Francesco Cellino,

francesco.cellino@polimi.it

¹ F. Figari acknowledges the support from CARIPLO Foundation through the program Multi-LOCAL. The results presented here are based on EUROMOD model I6.39+, software version 3.7.5 and EM input file for 2021 and 2022, based on EU-SILC. Having been originally maintained, developed and managed by the Institute for Social and Economic Research (ISER), since 2021 EUROMOD is maintained, developed and managed by the Joint Research Centre (JRC) of the European Commission, in collaboration with Eurostat and national teams from the EU countries. We are indebted to the many people who have contributed to the development of EUROMOD. We make use of microdata from the EU Statistics on Incomes and Living Conditions (EU-SILC) made available by Eurostat. Depending on the country, these are drawn either from the 2021 or 2022 EU-SILC. The results and their interpretation are the authors' responsibility.

Redistributive effects of non-contributory pension schemes in the European Union

Francesco Cellino ^a, Flavia Coda Moscarola ^b, Francesco Figari ^b

^a Polytechnic University of Milan

^b University of Eastern Piedmont and CeRP-Collegio Carlo Alberto

1. Introduction

Poverty in old age has historically been a significant concern in many countries. Older individuals are generally at higher risk of income poverty compared to the general population due to their limited ability to work. European welfare systems have consequently developed specific income support mechanisms for this demographic group (Hinrichs and Lynch, 2010; Zaidi, 2010). Although recent trends suggest a relative improvement in the financial well-being of the elderly in several countries (Ebbinghaus et al., 2019), concerns persist, particularly regarding the future adequacy of pension benefits. In recent years, European pension systems have in fact faced numerous challenges, threatening their long-term sustainability. These challenges are primarily driven by population aging and the need for fiscal consolidation in government budgets. As a result, many countries have implemented reforms aimed at ensuring the sustainability of pension systems by strengthening the link between contributions and pension benefits received. This trend, alongside increasingly discontinuous career paths and changes in family structures (Hinrichs and Lynch, 2010), may lead to less generous pension benefits, raising concerns about the adequacy of future public pensions (European Commission, 2024).

While public pensions constitute the larger part of elderly individuals' disposable income in all EU countries (OECD, 2023), limited research has been conducted on the specific contributions of different components within public systems to the financial well-being of the elderly. Pension systems and income resources available to the elderly vary significantly across European countries, incorporating contributory public pensions, occupational and private schemes, tax-funded benefits, earnings, and other market incomes in varying proportions (OECD, 2023). Among these, non-contributory pensions,

i.e., components of public pension systems not linked to previous earnings, are particularly relevant for alleviating poverty in old age. Indeed, these pensions are the main redistributive element within public pension systems and are often explicitly designed to alleviate poverty in old age (Ebbinghaus, 2021). Evaluating their effectiveness is therefore of crucial importance from a policymaking perspective. However, to our knowledge, no recent study has specifically examined the redistributive effects of non-contributory pension schemes in the EU.

This paper aims to fill this gap by investigating the role of non-contributory pensions in the income composition of the elderly and their effectiveness in reducing poverty within the European Union. Specifically, we update and expand on a previous paper by Figari et al. (2013), which analyzed non-contributory pensions in place between 2001 and 2005. Our study provides a more up-to-date analysis, considering pension schemes in place through 2021, and includes a broader set of European countries. We use EUROMOD, the European tax-benefit microsimulation model, which enables the categorization of benefit payments by type in a consistent way across different countries. This approach helps navigate the diversity of policy instruments in place, facilitating cross-country comparisons and addressing key limitations inherent in the underlying survey data (Sutherland and Figari, 2013).

Our analysis provides several insights into the income condition of the elderly in the European Union and the role of non-contributory pensions. First, we find that non-contributory pensions are a significant component of elderly individuals' income in nearly all EU countries. However, only in a few countries (notably Denmark, Ireland and the Netherlands) they take the form of basic universal pensions and are therefore available to most pensioners. In most countries, they are instead specifically targeted at the poorest elderly, forming a significant portion of their disposable income only. Our microsimulation exercise also demonstrates that non-contributory pensions are effective in reducing poverty rates and abolishing them would result in an increase in poverty rates among the elderly up to 64 percentage points, with large heterogeneity across countries. Moreover, we find that non-contributory pensions tend to be more generous in countries with well-developed general social assistance schemes aimed at alleviating poverty across the population. Lastly, when comparing our findings with those of Figari et al. (2013), we observe that non-contributory pensions have remained largely unaffected by

austerity measures and pension reforms in most countries, retaining their effectiveness as instruments for alleviating old-age poverty.

Our results further highlight the gender disparity in the monetary conditions of the elderly. Older women face a higher risk of poverty compared to men, and non-contributory pensions constitute a larger share of their disposable income. This underscores the critical role of non-contributory pensions in supporting older women, who are more reliant on these benefits than men.

The rest of the paper is structured as follows. Section 2 provides a review of non-contributory pension schemes in place in the EU and their classification. Section 3 briefly describes the functioning of EUROMOD, and the main features of the microsimulations conducted in this study. In Section 4, we examine the main sources of the income for the elderly, while in the following Section 5 we assess the financial well-being of the elderly compared to the overall population. Section 6 analyses the effect of non-contributory schemes in reducing poverty, their cost, and their interaction with other general social assistance schemes. Section 7 investigates historical trends. Finally, section 8 concludes the paper.

2. Non-contributory pension schemes in the European Union

Pension schemes in place in the European Union countries show noteworthy differences. In order to classify them, we can refer to the taxonomy adopted by OECD (2023), based on three tiers and a main distinction between public and private pension schemes. The first tier includes components of the pension systems for which past earnings are irrelevant in the calculation of the retirement income. These instruments are meant to provide a safety net for the elderly, ensuring a minimum standard of living in retirement. They also represent the main redistributive component of most pension systems and are provided by public pension schemes only (OECD, 2023). The second tier is formed instead by mandatory earnings-related components, either in public or private pension schemes. It represents the bulk of the pension system for most European countries. The pension income from this tier is calculated on the basis of previous earnings or contributions, therefore it contributes to smoothing consumption and preserving the standard of living after retirement. Finally, the third tier is given by voluntary private schemes. Despite still being a marginal component in the pension schemes of European

countries, this tier is growing in relevance and is expected to achieve more importance in the future (Ebbinghaus, 2015).

In this paper, we focus on the non-contributory first tier pensions, meaning non-earnings-related components in public pension schemes not linked to any second or third tier pension. These instruments are independent of past earnings and contributions, and they all absolve the same objective of ensuring a minimum standard of living for the elderly. Despite this common purpose, these instruments vary significantly across countries in terms of generosity and eligibility criteria. According to the OECD's classification (OECD, 2023), these pensions can be further distinguished in two types: *basic* and *means-tested* (or *targeted*)². Table 1 summarizes the main first-tier schemes currently in place across the European Union, along with estimates of their coverage (i.e., the percentage of the population aged 65 or older receiving the benefit) and the average benefit amount (expressed as a percentage of equivalized disposable income). To build it, we collect information on old-age benefits and other social security instruments for the elderly from the MISSOC Comparative Tables database, which provide updated information on the social protection systems in the 27 EU member states (European Commission, 2024b). Overall, non-contributory pensions are present in all European Union countries except Austria, Romania, and Slovakia.

Basic pensions are first-tier instruments provided to the elderly as a right granted to all the pensioners or citizen over a certain age, without requiring – if not extremely mild – tests on personal or household income or wealth. Both eligibility criteria and benefit

² According to the OECD taxonomy first tier pensions also include *minimum* pensions, here not considered. Minimum pensions refer to a minimum guaranteed level in the II tier pension schemes, either in the form of a pension income top-up or in specific rules applied for the calculation of the benefit amount. These instruments differ from basic pensions since they are not available to the generality of the pensioners or elderly resident, but only to those who contributed to a pension scheme but would otherwise receive an extremely low pension due to their poor working career. They fall more within the framework of a longevity insurance scheme than that of a welfare intervention. They also differ from means-tested instruments, in particular from those structured as minimum income schemes, as they guarantee a minimum level of pension rather than a general income floor. A statutory minimum within public pensions is present in all EU countries, except for Czech Republic, Germany, Denmark, Greece, Lithuania, and the Netherlands. However, despite the formal absence of a minimum pensions in these countries, a minimum amount for all pensioners is guaranteed through basic pensions, present in all these countries but Germany. The identification of minimum pensions in EUROMOD is particularly challenging due to the lack of data on individual's contribution histories and minimum pension recipients, especially when they are provided within the general public pension scheme. For this reason, we are unable to include this category of first-tier pension in our analysis.

amounts can depend on the years of residence in the country (residence-based basic pension) and/or on the years of contribution (contribution-based basic pension), but not on the actual amount of contributions or past earnings. Basic pensions are generally provided as a flat amount, although in some countries the benefit is progressively reduced against a means test for higher incomes, while the access is granted to all the pensioners or citizens over a certain age. In the European Union countries, basic pensions constitute the main component of the public pension systems in Denmark, the Netherlands and Ireland. In these countries, respectively adopting a social democratic and an Anglo-Saxon welfare system according to the taxonomy of Esping-Andersen (1990), public pensions are provided as a citizen's right to all elderly individuals in the form of a flat-rate benefit (although in Denmark the benefit is reduced for higher-income individuals). Noteworthy, another European but not EU member country, Norway, has recently replaced residence-based basic pensions with a means-tested instrument. Similarly, Ireland has a broad basic pension schemes covering the vast majority of the elderly population, although the benefit amount is linked to period of individuals' contributions. In Malta and Poland, basic pensions are provided as supplements of limited value, targeting specific subgroups of the elderly: specifically, in Malta the benefit is available to residents aged 75 and over not living in nursing homes or other facilities, while in Poland, it is provided to all pensioners aged 75 or older or with severe disabilities. Finally, in a number of countries (Czech Republic, Estonia, Greece, Lithuania, and Luxembourg) basic pensions are included as a non-earnings-related component within the general public pension scheme, either in the form of flat-rate benefit or based on the length of the insurance period.

Means-tested instruments are present in all EU countries except Austria, Czech Republic, Luxembourg, the Netherlands, Romania, and Slovakia. These first-tier pensions are provided against a means test, aiming to assess the financial need of the elderly individual or their household. As such, these pensions can be considered social assistance instrument specifically targeted at poorest elderly individuals. The means test typically considers individual and household income and also includes some assets. However, in Cyprus, Estonia, Finland, Lithuania and Latvia, means testing is done on pension income only. Means-tested pensions are provided either as a flat-rate benefit, a minimum income guarantee scheme, or according to other criteria, resulting in significant variation in both the average benefit amount and the method used to calculate these benefits across countries.

A key difference between basic and means tested pensions is related to taxation. In general, basic pensions are subject to direct taxes, with the exceptions of the supplements for individuals over 75 in Poland and Malta and the Lithuanian public pension. In contrast, means-tested benefits are generally not subject to direct taxes, with exceptions in Denmark and Spain, where the means-tested component is provided as a supplement to the regular earnings-related public pension, and in Finland and Ireland, where the means-tested pension is provided similarly to a basic pension for those who do not receive other pensions. In contrast, both basic and means tested pensions are not subject to social insurance contributions (like health contributions), with the only exceptions of the cases of Greece, Finland, Luxembourg and the Netherlands.

Table 1: Non-contributory pensions in EU, 2021

Country	Basic	Means-tested	Taxes	SICs	Coverage	Benefit value
Austria			-	-	-	-
Belgium		Income guarantee for the elderly (Garantie de revenus aux personnes âgées, GRAPA / inkomensgarantie voor ouderen, IGO) *	X		n.a.	n.a.
Bulgaria		<i>Social old-age pension (Социална пенсия за старост)</i>			0.13%	11.71%
Cyprus		Social pension (κοινωνική σύνταξη)			12.34%	21.34%
		<i>Low pension benefit (επίδομα χαμηλοσυνταξιούχων), Easter benefit (πασχαλινό επίδομα)</i>			20.48%	9.67%
Czechia	Basic pension (Základní výměra)		X		99.22%	12.58%
Germany		<i>Basic income in old age (Grundsicherung im Alter und bei Erwerbsminderung)</i>			3.81%	15.38%
Denmark	<i>Old-age pension (Folkepension)</i>		X		95.42%	26.14%
		<i>Old-age pension supplement (Pensionstillæg), Supplementary pension (Supplerende pensionsydelse)</i>	X		89.07%	24.70%
Estonia	Basic component in old-age pension (Vanaduspension)		X		99.39%	15.53%
		National pension (Rahvapension)			36.62%	0.67%
Greece	National pension (Εθνική σύνταξη)		X	X	65.24%	41.81%
		<i>Social solidarity allowance for uninsured elders (Επίδομα κοινωνικής αλληλεγγύης ανασφαλιστών υπερηλίκων)</i>			2.79%	33.13%
Spain		<i>Old-age pension complement benefit (Complemento a mínimos)</i>	X		11.89%	14.59%
		<i>Non-contributory old-age pension (Pensión de jubilación no contributiva)</i>	X		2.39%	30.16%
Finland		National pension (Kansaneläkelaki, KEL) *	X	X	n.a.	n.a.
France		<i>Solidarity allowance for the elderly (Allocation de solidarité aux personnes âgées, ASPA)</i>			3.40%	37.91%
Croatia		<i>National benefit for the elderly (Nacionalna naknada za starije osobe)</i>			0.61%	12.87%
Hungary		<i>Old age Allowance (Időskorúak járadéka)</i>			1.23%	8.78%
Ireland	Contributory State Pension		X		80.82%	82.84%
		Non-Contributory State Pension	X		13.00%	34.69%
Italy		<i>Social allowance (Assegno sociale)</i>			7.66%	19.58%
Lithuania	Basic component in old-age pension (Senatvės pensija) *	Social assistance pension (Šalpos pensija)*			n.a.	n.a.
Luxembourg	Flat-rate supplements in old-age pension (Majorations forfaitaires) *		X	X	n.a.	n.a.
Latvia		<i>State social security benefit (Valsts sociālā nodrošinājuma pabalsts)</i>			0.16%	11.41%
Malta	<i>Senior citizen grant (Għotja għal Ċittadin Anzjan)</i>				55.33%	1.51%
		<i>Age pension (Pensjoni tal-Eta')</i>			5.28%	20.53%
The Netherlands	<i>Old-age pension (Ouderdomspensioen)</i>		X	X	94.61%	40.15%
Poland	<i>Nursing supplement (Dodatek pielęgnacyjny)</i>				40.15%	6.77%
		<i>Permanent social assistance (zasilek stały)</i>			0.08%	10.25%
Portugal		<i>Old-age social pension (Pensão social de velhice)</i>			1.12%	24.80%
		<i>Solidarity supplement for the elderly (Complemento solidário para pessoas idosas)</i>			10.19%	7.81%
Romania			-	-	-	-
Sweden		Maintenance support for the elderly (Åldreförsörjningsstöd) *			n.a.	n.a.
Slovenia		<i>Supplementary Allowance (Varstveni dodatek)</i>			5.38%	8.24%
Slovakia			-	-	-	-

Notes: Non-contributory pension schemes in place in the European Union in 2021. The classification follows the one adopted in OECD (2023). * = benefit neither included in EUROMOD input data nor simulated. Benefits in italics: simulated in EUROMOD. Coverage expressed as percentage of the population aged 65 or more receiving the benefit. Benefit value expressed as average benefit value among beneficiaries as a percentage of the average disposable income in each country. Source: MISSOC Comparative Tables; EUROMOD country reports; for coverage and benefit value: own calculations using EUROMOD.

3. Methodology and data

This study is based on EUROMOD, the static microsimulation model covering the 27 member states of the European Union (Sutherland and Figari, 2013). This multi-country tax-benefit model simulates direct taxes, social insurance contributions and benefits in a comparable way across countries. Original income and other information relevant for the calculation of taxes and benefits are taken from survey data. Specifically, the input data of EUROMOD are the nationally representative data of the European Union Statistics of Income and Living Conditions (EU-SILC), a cross-sectional (and longitudinal) survey, coordinated by Eurostat, which provides individual microdata on income, poverty, social exclusion and living conditions (Wirth and Pforr, 2022). The components of the tax-benefit system which are not simulated (mainly due to a lack of information in the survey data) are taken directly from the data, if available. This is in particular the case of contributory pensions, since data on individual contributory histories are not available in most countries.

We use the most recent input data available at the time of our analysis, referring to the year 2021 for most countries³. The use of a microsimulation model enables us to identify more schemes than those typically captured in surveys, either simulating the benefits based on the policy rules or taking directly from input data. In particular, the use of EUROMOD enables the identification and isolation of the various components of elderly disposable income, including non-contributory pensions schemes. Overall, we were able to identify basic and means-tested schemes in place in all the EU countries where they exist except Belgium, Finland, Lithuania, Luxembourg, and Sweden. On the contrary, in the EU-SILC survey all public pension income sources for individuals over 65 years are usually recorded in a single variable. Moreover, the use of a tax-benefit microsimulation model allows for the estimation of these components at the individual level, as well as the estimation of their income redistributive effects through the simulation of alternative scenarios. For these features, the methodology used is particularly well-suited to investigate these policy instruments, expanding the scope of other studies based on aggregate data (see for example Ebbinghaus, 2021).

In our analysis, we primarily consider disposable income as a key indicator of elderly well-being. This is calculated for each individual by accounting for market income,

³ For Bulgaria, Finland, Latvia, and Poland data referring to the year 2020.

contributory public pensions, private pensions, other private income sources, and cash benefits (including first-tier pensions), while subtracting taxes and social insurance contributions. Disposable income is then summed up at household level and equivalized to consider household size and composition using the OECD-modified scale, which gives a value of 1 for the first adult, a value of 0.5 for each additional adult (individuals of 14 years old or older) and 0.3 for each child (individuals younger than 14 years old) (OECD, 2013).

In this analysis, we do not consider tax evasion and non-take-up of most benefits, including non-contributory pensions when they are simulated by the model ⁴. Consequently, we implicitly assume that rules in places are followed without exemptions and that there are no costs for compliance or claiming benefits, even though the actual implementation of tax-benefit policies may differ somewhat from this ideal scenario. Thus, our findings should be interpreted as reflecting the intended effects of tax-benefit systems.

4. Composition of the incomes of older people

The use of EUROMOD allows us to identify the different components that make up the disposable incomes of the elderly. This feature is particularly useful to assess the relative importance of specific policy instruments, such as non-contributory pensions, across different countries and, within each country, examine how they vary along the income distribution.

Figure 1 shows the average *non-contributory pension* for the population aged 65 or more expressed as percentage of the country's average disposable income (left-hand axis) and the proportion of the elderly population (right-hand axis) in each income quintile group of the overall disposable income distribution. If the distribution of income for the elderly was identical to the one of general population, we should observe a homogenous proportion of the elderly (i.e., 20%), across each quintile. Instead, we observe in most countries a greater concentration of the elderly in the first and second quintile group. Moreover, the share of the elderly declines as income increases, resulting in a lower proportion of old age individuals in the top quintile groups. Only a few countries deviate

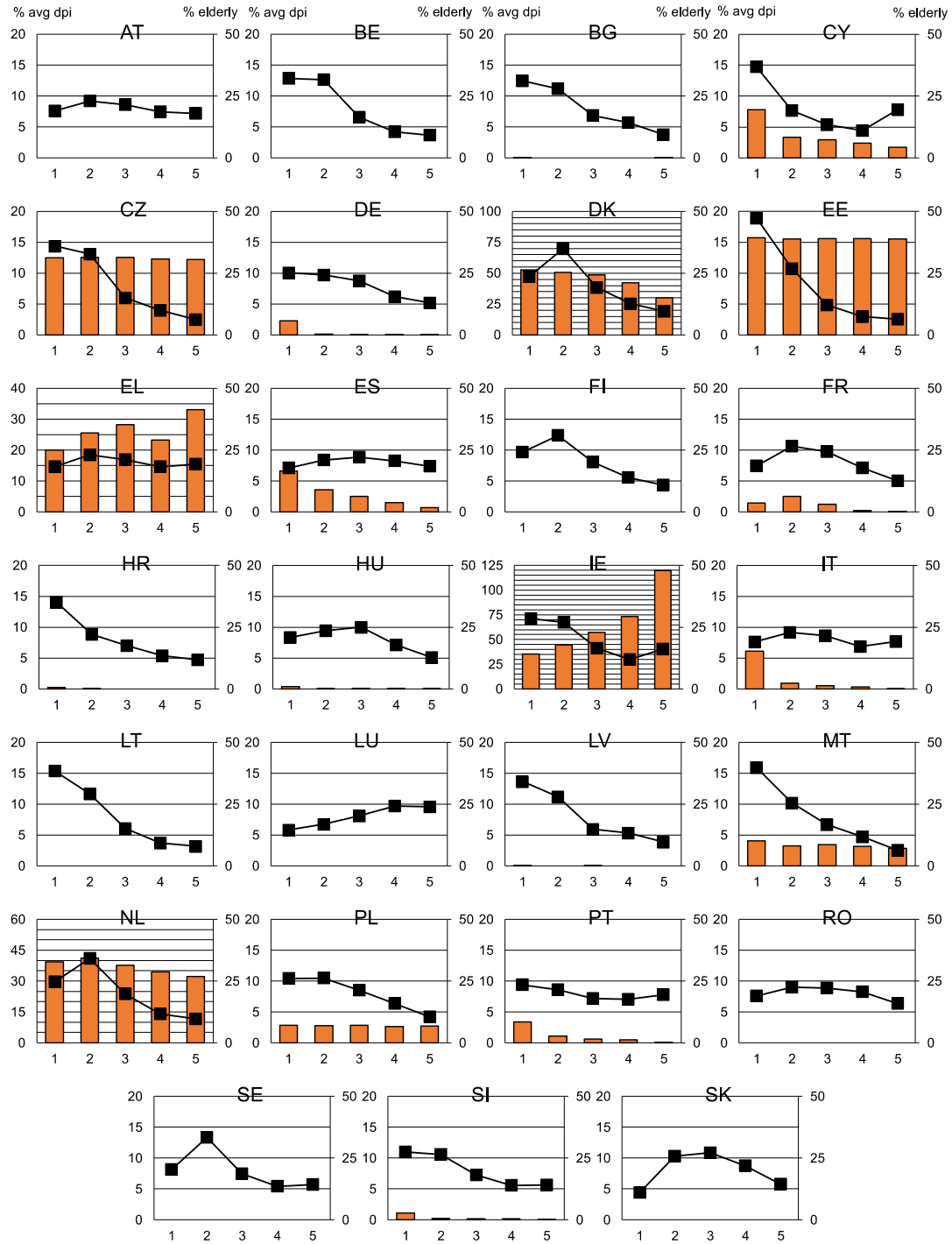
⁴ Tax evasion is partially taken into account in Italy, where the recorded self-employment income has been split in two components, assuming that only a part of the total income has been declared to the tax authorities. This approach allows to obtain an aggregate figure of the declaring income corresponding to that reported in the fiscal data (Fiorio & D'Amuri, 2006).

from this pattern. More in detail, Austria, Greece, Spain, Italy and Romania present a rather homogeneous distribution of the elderly across the income distribution, with a slightly higher share of the elderly in the central part of the distribution. This characteristic is even more pronounced in France, Hungary, and Slovakia, where the distribution of the elderly assumes a clear “inverted U” shape, with the lowest percentages observed in the bottom and upper quintiles. Finally, we observe an exception in Luxemburg, where old-age individuals appear to be better off compared to the general population and are concentrated in the higher quintiles of the distribution.

In Denmark, Ireland and in the Netherlands, countries with widely available basic schemes, non-contributory pensions make up a substantial part of income in old age. However, despite sharing a historically Beveridge pension system (Conde-Ruiz & González, 2018), these countries exhibit notable differences, particularly when examining the pension amounts. In the Netherlands and to some extent in Denmark, the average value of non-contributory pensions shows limited variation across different quintile groups. In contrast, in Ireland, the amount increases in the higher quintile groups, as the main component of the basic pension is calculated based on years of work, leading to greater variability in their levels. Non-contributory pensions represent a non-neglectable component of the income of the elderly across the distribution also in other countries with basic flat-rate schemes, such as Czech Republic, Estonia, Greece, Malta and Poland. In another group of countries (Cyprus, Spain, Italy, and to less extent in Portugal, Germany and France), non-contributory pensions are relevant in particular for low-income elderly, making up to more than 5% of the disposable income in the first quintile group and then decreasing in the upper part of the distribution. This observation is coherent with the existence of targeted schemes, specifically designed for old-age individuals with lower financial resources. In the remaining countries, non-contributory pensions are available only to a small group of individuals and consist relatively limited benefit amounts (Bulgaria, Croatia, Hungary, Latvia, Poland) or they are completely absent (Austria, Romania, Slovakia). Finally, for a limited number of countries (Belgium⁵, Finland, Lithuania, Luxemburg, Sweden) it is not possible to separate any specific non-contributory scheme from public pensions in EUROMOD.

⁵ In Belgium, the non-contributory pension (*Income guarantee for the elderly*) is available for simulation in EUROMOD. However, it is unclear whether this benefit is included in the SILC variable

Figure 1: Non-contributory pensions and share of elderly (65+) by quintile



Notes: See Table 1 for a classification of non-contributory pension schemes in each country. Bars show average non-contributed pensions for elderly persons (65+) as a proportion of overall per capita disposable income (left-hand side), by quintile, 2021. Quintiles have been constructed based on equivalized household disposable income of the entire population. In AT, RO, and SK, there are not non-contributory pension schemes in place; in BE, FI, LT, LU, and SE, it is not possible to consider them separately, but they are included in the disposable income. Share of elderly (65+) by quintile group on the right-hand axis. *Source:* own calculations using EUROMOD.

Moreover, to provide a comprehensive assessment of the different income sources for the elderly, we calculate the average components of the elderly income in each quintile group

for old-age pensions. Due to the inability to accurately disentangle the different components of the public pension scheme, we exclude Belgium from our analysis.

of the overall income distribution. In addition to non-contributory pensions, we consider other public pensions, social benefits, private pensions, income taxes and social insurance contributions, as well as market income. The full results of our analysis are reported in the appendix (Figure A1), separately for men and women.

Earnings-related public pensions constitute the primary component of disposable income for the elderly in all countries except Denmark, Ireland and the Netherlands. These pensions tend to be lower in the lower quintile groups and increase towards the higher end of the income distribution. Since they are based on previous contributions or earnings, they are generally higher for men than women. However, there are significant variations between countries both in terms of the generosity of these pensions and their variability across quintile groups. Specifically, we observe modest pension benefits and limited variability between quintile groups in countries such as Czech Republic, Slovakia, Bulgaria, Estonia, Lithuania, Latvia and Malta. In contrast, in the remaining countries, the disparity between the average pension in the lowest and highest quintile groups appears to be more pronounced.

Original income (i.e. earnings, self-employment income, capital income and private transfers) contributes significantly to the total income of the elderly in the top quintile of the distribution. We observe that the relative importance of original income appears greater in Belgium, Bulgaria, Czech Republic, Denmark, Estonia, Finland, France, Ireland, Lithuania, Latvia, Malta, Netherlands, and Sweden, where the market income component in the top quintile group is above 60% of average disposable income. Notably, in a smaller group of countries – Bulgaria, Czech Republic, Denmark, Estonia, and Malta - for old age individuals in the fifth quintile group market income is even higher than pension income on average. However, it must be emphasized that the share of the elderly in the upper quintile is modest, an aspect that could lead to possible problems of statistical significance in the smallest countries. Not surprisingly, the relative importance of the original income component is higher for men than for women given the higher male labor market participation even among the elderly.

Private pensions still play a minor role in the makeup of the income of older people. Despite their relative importance is expected to increase in the next years (Ebbinghaus, 2015), on average they are still close to zero along the income distribution in almost all the countries considered. There are two notable exceptions, Denmark and the

Netherlands, where private pensions represent a significant share of the disposable income of the elderly. As previously pointed out, in these two countries only an almost universally provided non-contributory basic pension is the bulk of the public system, which for most pensioners is complemented by private occupational or individual retirement plans. Moreover, we observe a modest while non-neglectable presence of private pensions in Estonia, Spain, Finland and Sweden, even though limited to the top quintile and representing only a modest share of the average disposable income. However, it cannot be completely excluded that some private pensions have been mistakenly recorded as market income in the input data, and therefore classified as such in the analysis.

Social benefits other than pensions make up only a slight share of the income of the elderly. This category mainly consists of housing benefits, child benefits and general social assistance instruments, including general minimum income schemes, a common policy in place in most European countries (Coady et al., 2021). However, old-age individuals are typically excluded by these policies, either because the rules in place explicitly exclude individuals over a certain age or because they do not usually meet other eligibility conditions - for example, having dependent children to receive family allowances or having an income below a certain threshold to access to general social assistance. In particular, in most countries the existence of policy instruments specifically targeted to the elderly, such as non-contributory pensions, guarantees a relevant source of income in old age, easing the need for additional social assistance.

Finally, we investigate the relative importance of *income taxes* and *social insurance contributions* paid by those aged 65 years or over. In regards of both public and private pensions, most European countries adopt, despite some exceptions, an Exempted-Exempted-Taxed (EET) approach, meaning that contributions and investment returns are exempted, while pensions benefits are taxed (Barrios et al. 2020). As a result, taxes and SICs generally have a significant impact on the disposable income of the elderly, especially of those in the upper quintiles of the income distribution. However, in many countries incomes from pension are taxed differently from other incomes or can benefit of tax expenditures (especially in the lower quintiles) and exemptions from contributions, resulting in a lower tax burden for the elderly (Jousten & Feher, 2018): the average taxation for old-age individuals appears almost negligible in Bulgaria, Cyprus, Czech Republic, Croatia, Ireland, Lithuania, Malta, Romania, and Slovakia – except for those in

the upper part of the income distribution. Moreover, means-tested non-contributory pensions deviate from this scheme, as they are generally exempt from taxation (see Table 1), thereby further reducing the fiscal burden on poorer elderly individuals.

Overall, the differences in income between elderly men and women are worth attention. We observe that in all countries the average disposable income reported by women is significantly lower than that of men. The decomposition of the income of older women provides further insights. Specifically, we observe a smaller contribution of market income in the top quintiles, as well as a generally lower contribution of earning-related pensions compared to men. Conversely, non-contributory pensions play a relatively more significant role in the make-up of older women's income. In fact, we observe that the coverage of non-contributory pensions (i.e., the percentage of individuals aged 65 or more receiving the benefit) is greater for women in all the analyzed countries but Greece, France, Ireland, Latvia, and Malta (see Figure A2 in the appendix). Countries with means-tested schemes display the greatest gender gaps. In contrast, the difference is less noticeable in countries with universal basic pensions (except Denmark). Only in two countries (Greece and Ireland) the coverage is higher for men. Moreover, average non-contributory benefits are higher for women in most countries (see Figure A3), although overall, the gender differences in the benefit generosity are less pronounced. These results highlight the importance of non-contributory pensions as crucial instruments for poverty alleviation and income redistribution in favor of women.

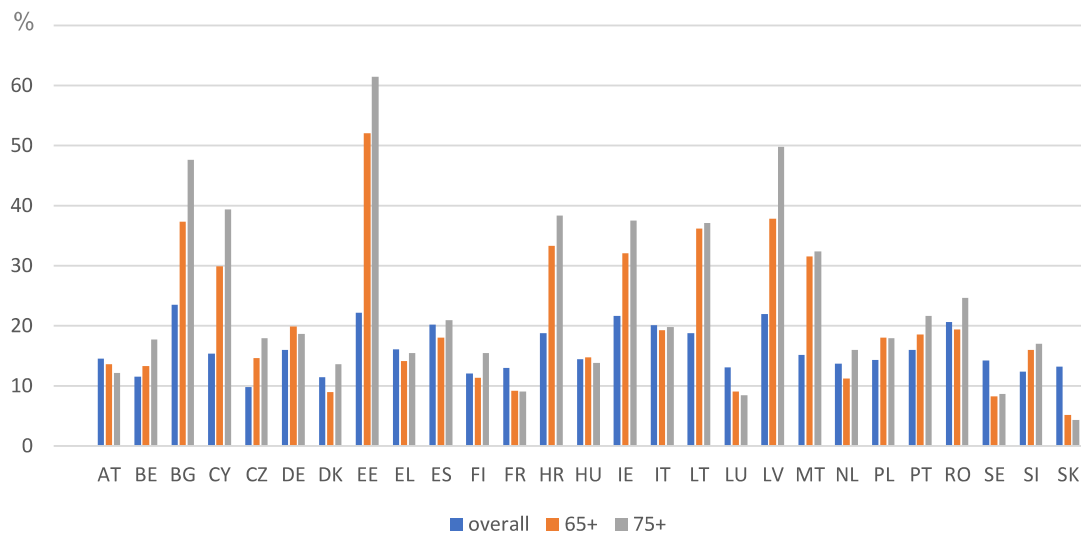
5. Financial well-being of the elderly

In order to assess the financial well-being of the elderly we consider two main indicators based on the household equivalized income of the elderly: the percentage of elderly below the poverty line (i.e., the headcount ratio) and the poverty gap.

The headcount ratio measures the percentage of elderly living in households with equivalized disposable income below the threshold of 60% of national equalized median income, generally referred to as the risk-of-poverty rate. As shown in Figure 2, the proportion of the individuals aged at least 65 at risk of poverty varies from 5.13% in Slovakia to 52.03% in Estonia. We observe that in most countries the poverty rate for individuals aged 65 and over is higher than that of the overall population. The difference is particularly striking in Estonia (+29.86 percentage points) and still greater than 10 percentage points in Bulgaria, Cyprus, Hungary, Ireland, Lithuania, Latvia, and Malta,

while below 5 points in the other countries. By contrast, in a smaller group of countries, the elderly experience lower poverty rates compared to the overall population. This is the case of Austria, Denmark, Greece, Spain, France, Italy, Luxemburg, the Netherlands, Romania, Sweden, and Slovakia. However, the gap is rather limited, suggesting the absence of a significant difference in the percentage of individuals at risk of poverty between the elderly and the overall population in these countries, with the notable exceptions of Slovakia (-8.11 percentage points) and Sweden (-6.06).

Figure 2: Poverty rate, overall population and elderly

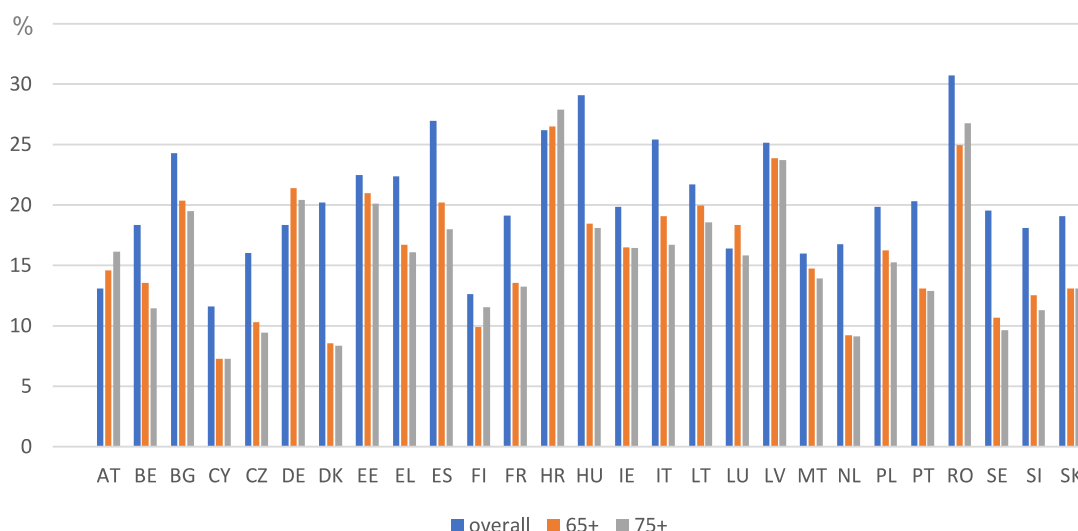


Notes: poverty line 60% of median equivalized disposable income, 2021. Source: own calculations using EUROMOD.

As a second indicator of the financial condition of the elderly we consider the poverty gap, defined as the average difference between the poverty line (60% of the median disposable income) and the income of the individuals at risk of poverty. Therefore, the poverty gap is a useful complementary measure to the headcount ratio, showing the depth of poverty. Figure 3 shows the estimated poverty gap for the entire population and older individuals in each country. We find that in most countries the poor elderly are less likely than younger poor individuals to have income significantly below the poverty line. The largest differences are observed in Denmark (11.70 percentage points) and Hungary (10.61). Nonetheless, the poverty gap is lower among the elderly in all the countries analyzed but Austria, Germany, Croatia, and Luxemburg, where the average income of poor elderly are only slightly lower. This pattern suggests that despite being generally more likely at risk of poverty, old age individuals are less likely to have an income far

below the poverty line. A possible explanation may be that, in many countries, a large proportion of the elderly receive pensions that are only slightly below the poverty line.

Figure 3: Poverty gap, overall population and elderly



Notes: poverty line 60% of median equivalized disposable income, 2021. Source: own calculations using EUROMOD.

This pattern is confirmed by looking at the poverty rates and poverty gaps among individuals aged 75 or over, which are even more unlikely to receive any income but their pensions and more likely to live alone without sharing their resources with other individuals. As shown in Figure 2, the poverty rates among this subgroup are in fact higher than for the over-65 population in all the countries but Austria, Germany, France, Hungary, Luxemburg, Poland and Slovakia, where they are substantially unchanged. On the contrary, the poverty gaps in Figure 3 appear slightly lower for individual aged 75 or more compared to the generality of the elderly in all countries except for Austria, Croatia, Romania, and Slovakia.

Overall, our analysis shows that the elderly are at a higher risk of poverty compared to the general population. However, poor older individuals tend to have a disposable income closer to the poverty line than the rest of the population, in some cases because the non-contributory pension schemes provide an income support very close to the poverty line (Ebbinghaus, 2021). Therefore, our findings are particularly sensitive to the chosen poverty threshold and useful to understand the anti-poverty effect of the policy instruments.

Moreover, we observe significantly higher poverty rates among older women compared to men across all the countries analyzed (see Figure A4 in the appendix). In most of these countries, also the poverty gap is wider for women than for men, with the exceptions of Belgium, Greece, Spain, Finland, Luxembourg, Malta, the Netherlands, Poland, Sweden, Slovenia and Slovakia, where the gap remains relatively unchanged (see Figure A5). Overall, these findings indicate that older woman are more vulnerable to poverty than men. This disparity may be attributed to women's generally lower level of labor market participation and lower earnings, which ultimately result in reduced pension benefits after retirement. Demographic trends, particularly those related to population aging, may also play a significant role (European Commission, 2014). On average, in fact women live longer than men and as a result are more likely to outlive other family members, becoming the sole household member. This might lead to lower disposable income, due to survivor pensions not able to guarantee the original load of benefits.

6. The effect of non-contributory pensions on public budget and old-age poverty

In order to assess the fiscal and redistributive effects of non-contributory schemes in Europe, we exploit EUROMOD by comparing a baseline scenario, with current policy rules regularly in place, with alternative counterfactual scenarios in which non-contributory pensions are abolished.

In particular, we consider two counterfactual scenarios. In the first one, we assume that non-contributory pensions are abolished and simply deducted from the disposable income of the recipients. We refer to it as “*static*” scenario. This simulation primarily allows to establish the current total expenditure on non-contributory pensions and to estimate the reduction in poverty rate directly attributable to these schemes, therefore referred to as *anti-poverty effect*. In the second scenario, we simulate the abolition of non-contributory pensions while allowing other taxes and benefits to compensate for the withdrawal of non-contributory pension schemes according to the rules currently in place. We refer to this as “*interactive*” scenario. It is worth noting that general social assistance schemes in some cases cover the entire population, including the elderly. As such, they can act as a last safety net and can play a critical role in alleviating poverty in old age too, being complements rather than substitutes of the non-contributory pension schemes. Consequently, the interactive scenario provides a more realistic counterfactual to evaluate the redistributive and fiscal effects of non-contributory pensions. Notably, in a group of

countries (Bulgaria, France, Croatia, Hungary, Latvia, Poland, Portugal and Slovenia), the two scenarios lead to identical results, indicating that there are no additional benefits available to the elderly in case non-contributory pensions were abolished, and that their tax burden is unchanged.

Table 2: Public budget expenditure related to pensions

Country	All public pensions (%GDP)	Non-contributory pensions		
		Type	Static scenario (%GDP)	Interactive scenario (%GDP)
AT	13.50%	-	-	-
BE	13.24%	MT	n.a.	n.a.
BG	9.49%	MT	0.00%	0.00%
CY	10.28%	MT	0.55%	0.47%
CZ	8.55%	B	1.65%	1.59%
DE	11.44%	MT	0.08%	0.01%
DK	8.42%	B, MT	6.58%	4.06%
EE	6.64%	B, MT	2.52%	2.23%
EL	14.48%	B, MT	4.85%	3.82%
ES	13.33%	MT	0.42%	0.37%
FI	13.26%	MT	n.a.	n.a.
FR	13.62%	MT	0.20%	0.20%
HR	10.21%	MT	0.01%	0.01%
HU	7.67%	MT	0.01%	0.01%
IE	3.95%	B, MT	3.66%	3.59%
IT	16.30%	MT	0.27%	0.22%
LT	7.13%	B, MT	n.a.	n.a.
LU	8.11%	B	n.a.	n.a.
LV	7.82%	MT	0.00%	0.00%
MT	7.25%	B, MT	0.59%	0.49%
NL	4.68%	B	4.68%	2.86%
PL	11.08%	B, MT	0.46%	0.45%
PT	15.03%	MT	0.19%	0.17%
RO	9.88%	-	-	-
SE	8.78%	MT	n.a.	n.a.
SI	10.72%	MT	0.09%	0.09%
SK	7.95%	-	-	-

Notes: Type: B = basic. MT = means-tested. Source: own calculations using EUROMOD.

Table 3: Abolition of non-contributory pensions: effect on elderly (65+) poverty rate and poverty gap

A) Static scenario

Country	Type	Poverty rate (65+)			Poverty gap (65+)		
		Baseline (A)	Static scenario (B)	Diff. (B-A)	Baseline (C)	Static scenario (D)	Diff. (C-D)
AT	-	13.57%	-	-	14.60%	-	-
BE	MT	13.33%	n.a.	n.a.	13.58%	n.a.	n.a.
BG	MT	37.30%	37.30%	0.00	20.37%	20.37%	0.00
CY	MT	29.88%	34.44%	4.56	7.28%	23.25%	15.97
CZ	B	14.66%	44.66%	30.00	10.29%	17.23%	6.93
DE	MT	19.88%	19.99%	0.12	21.42%	21.92%	0.5
DK	B, MT	8.95%	79.17%	70.21	8.53%	79.65%	71.12
EE	B, MT	52.03%	69.99%	17.96	21.00%	48.12%	27.13
EL	B, MT	14.09%	43.68%	29.59	16.72%	41.16%	24.44
ES	MT	18.03%	21.30%	3.27	20.23%	27.94%	7.71
FI	MT	11.34%	n.a.	n.a.	9.88%	n.a.	n.a.
FR	MT	9.18%	12.51%	3.33	13.54%	19.99%	6.45
HR	MT	33.28%	33.28%	0.00	26.48%	26.93%	0.46
HU	MT	14.76%	14.78%	0.02	18.48%	19.01%	0.54
IE	B, MT	32.07%	83.29%	51.22	16.48%	93.98%	77.5
IT	MT	19.28%	20.20%	0.91	19.06%	24.68%	5.62
LT	B, MT	36.20%	n.a.	n.a.	19.94%	n.a.	n.a.
LU	B	9.09%	n.a.	n.a.	18.33%	n.a.	n.a.
LV	MT	37.82%	37.82%	0.00	23.88%	23.88%	0.00
MT	B, MT	31.59%	36.65%	5.06	14.75%	19.41%	4.66
NL	B	11.25%	74.82%	63.56	9.23%	61.38%	52.14
PL	B, MT	18.07%	21.58%	3.51	16.24%	17.90%	1.66
PT	MT	18.60%	19.65%	1.06	13.10%	18.64%	5.55
RO	-	19.40%	-	-	24.97%	-	-
SE	MT	8.21%	n.a.	n.a.	10.68%	10.68%	0.00
SI	MT	15.96%	16.38%	0.42	12.54%	15.98%	3.43
SK	-	5.13%	-	-	13.11%	-	-

B) Interactive scenario

Country	Type	Poverty rate (65+)			Poverty gap (65+)		
		Baseline (A)	Interactive scenario (B)	Diff. (B-A)	Baseline (C)	Interactive scenario (D)	Diff. (C-D)
AT	-	13.57%	-	-	14.60%	-	-
BE	MT	13.33%	n.a.	n.a.	13.58%	n.a.	n.a.
BG	MT	37.30%	37.30%	0.00	20.37%	20.37%	0
CY	MT	29.88%	34.33%	4.45	7.28%	23.20%	15.92
CZ	B	14.66%	40.06%	25.4	10.29%	15.98%	5.69
DE	MT	19.88%	19.89%	0.01	21.42%	21.66%	0.24
DK	B, MT	8.95%	65.87%	56.92	8.53%	42.38%	33.84
EE	B, MT	52.03%	67.50%	15.47	21.00%	45.15%	24.15
EL	B, MT	14.09%	34.17%	20.08	16.72%	35.79%	19.07
ES	MT	18.03%	21.20%	3.17	20.23%	27.83%	7.6
FI	MT	11.34%	n.a.	n.a.	9.88%	n.a.	n.a.
FR	MT	9.18%	12.51%	3.33	13.54%	19.99%	6.45
HR	MT	33.28%	33.28%	0	26.48%	26.93%	0.46
HU	MT	14.76%	14.78%	0.02	18.48%	19.01%	0.54
IE	B, MT	32.07%	82.67%	50.6	16.48%	97.81%	81.33
IT	MT	19.28%	20.17%	0.89	19.06%	23.70%	4.65
LT	B, MT	36.20%	n.a.	n.a.	19.94%	n.a.	n.a.
LU	B	9.09%	n.a.	n.a.	18.33%	n.a.	n.a.
LV	MT	37.82%	37.82%	0	23.88%	23.88%	0
MT	B, MT	31.59%	36.44%	4.85	14.75%	18.20%	3.45
NL	B	11.25%	56.59%	45.34	9.23%	24.57%	15.33
PL	B, MT	18.07%	21.57%	3.51	16.24%	17.78%	1.54
PT	MT	18.60%	19.65%	1.06	13.10%	18.64%	5.55
RO	-	19.40%	-	-	24.97%	-	-
SE	MT	8.21%	n.a.	n.a.	10.68%	n.a.	n.a.
SI	MT	15.96%	16.38%	0.42	12.54%	15.98%	3.43
SK	-	5.13%	-	-	13.11%	-	-

Notes: Type: B = basic. MT = means-tested. Poverty line 60% of median equivalized disposable income in the baseline. Source: own calculations using EUROMOD.

The public budget expenditure related to the non-contributory pensions varies significantly across countries. Table 2 displays the estimated public expenditure (expressed as percentage of gross domestic product) related to all public pensions and the non-contributory ones, as calculated in the “static” and “interactive” scenarios. We observe the greatest expenditure in the countries with universalistic basic pensions: in the static scenario, 6.58% of the gross domestic product in Denmark, 4.85% in Greece, 4.68% in the Netherlands and 3.66% in Ireland. However, the savings from their abolition would

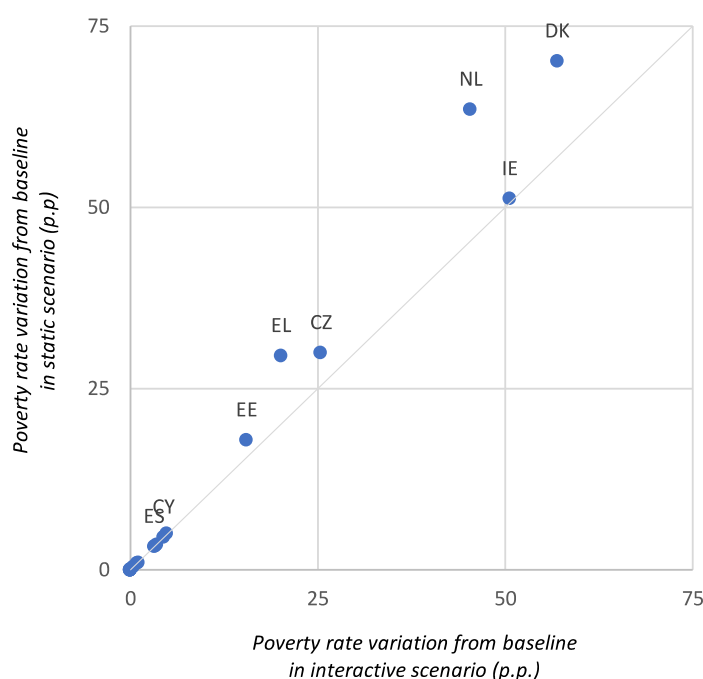
be sharply reduced under the more realistic interactive scenario, where other benefits would compensate the lack of non-contributory pensions (around 4% in Greece and Denmark, below 3% in the Netherlands). Significant savings in the interactive scenario are also observed in Estonia (2.23%) and Czech Republic (1.59%), as well as Cyprus, Spain, Malta and Poland (around 0.5%), while they appear smaller in the other countries.

We then analyze the effect of the abolition of non-contributory pensions on the financial well-being of the elderly. Table 3a presents a comparison of poverty rates (defined as the percentage of individuals living in households with an equivalized income below 60% of national median income in the baseline) between the baseline and the “static” scenario for individuals aged 65 and over. In the static scenario (i.e., without considering the mitigating effect of social assistance and taxes and SICs) abolishing non-contributory pensions would result in substantial increases of the elderly poverty rate, although with heterogeneous magnitude among countries. In particular, the higher increase is observed in countries with universal basic pensions (Denmark +70.21 percentage points, the Netherlands +63.56, Ireland +51.22), where the elimination of non-contributory pensions would coincide with an almost complete dismantling of the public pension system. Nonetheless, large differences in the poverty rates are also observed in the other countries with basic pensions, such as Greece (+29.59), Czech Republic (+30), Estonia (+17.96), Malta (+5.06), Cyprus (+4.56) and Poland (+3.51). Smaller increases below 3.5 percentage points are also observed in Spain, France, Portugal, Italy, Slovenia, and Germany, where means-tested schemes represent the main non-contributory pension. In the remaining countries (Bulgaria, Croatia, Hungary, and Latvia) the poverty rate variation is neglectable

Moreover, non-contributory pensions play a significant role in reducing the gap between the elderly incomes and the poverty line in many countries. In the last columns of Table 3, we report the estimated increase in the elderly poverty gap in the “static” scenario. In addition to the substantial rise in countries with basic pensions, we observe significant increases in some countries with means-tested instruments: Spain (+7.71 percentage points), France (+6.45), Italy (+5.62), Portugal (+5.55), and Slovenia (+3.43). This result underscores the important role of means-tested non-contributory pensions in alleviating old-age poverty, even when they do not lift individuals above the poverty threshold.

We now consider the “interactive” scenario (i.e., we take into account the recalculation of social assistance, taxes, and social contributions when non-contributory pensions are eliminated). Estimates of the poverty rates and poverty gaps under this scenario are reported in Table 3b. As expected, we observe that in all the countries the poverty rate and poverty gap increases are smaller or equal to the ones observed in the static scenario. Overall, we observe a pattern across countries analogous to the static scenario, with the highest increases observed in the countries with broad basic schemes.

Figure 4: Variation of elderly (65+) poverty rate in static and interactive scenario



Notes: variations in the elderly (65+) poverty rate in percentage points from the baseline, 2021. Poverty line 60% of median equivalized disposable income in the baseline. Source: own calculations using EUROMOD.

To provide a more comprehensive picture of income support instruments for the elderly in the EU countries, we further explore the interaction between non-contributory pensions and other social assistance schemes. The difference in the elderly poverty rate between the two scenarios provides in fact a measure of the capacity of other public policies to alleviate the condition of poor individuals, partially absorbing the shock provoked by the abolition of non-contributory pensions. Figure 4 shows the estimated variation of the poverty rates (compared to baseline) in the two scenarios. The greatest difference between scenarios is observed in the Netherlands, where the poverty rate for those aged 65 or more compared to the baseline increases by 45.34 percentage points instead of 63.57, Denmark

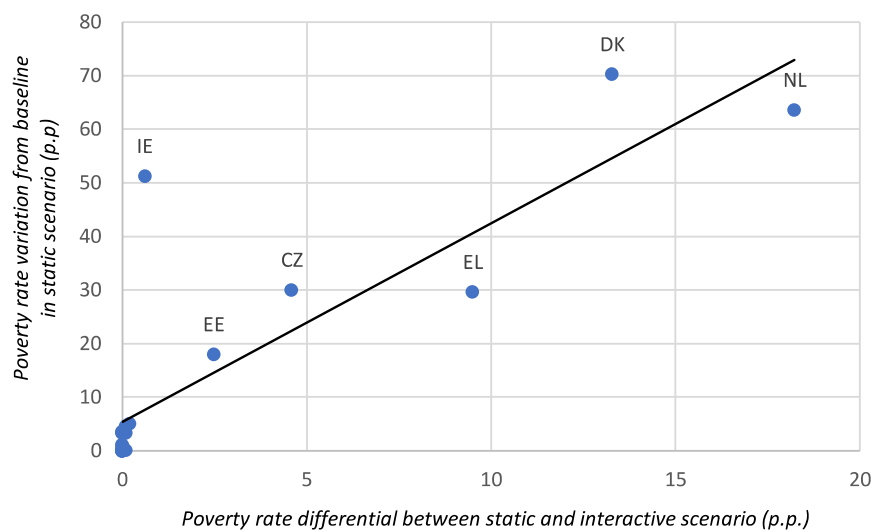
(56.92 instead of 70.21) and Greece (20.08 instead of 29.59). Smaller but noteworthy differences between the two scenarios are also observed in Estonia (15.47 instead of 17.96) and Czech Republic (25.45 instead of 30.00). Minimum variations, below one percentage point, are observed also in Cyprus, Germany, Ireland, Italy, Malta and Poland. We do not observe sizeable differences between the two scenarios in the remaining countries.

The absence of significant differences between the poverty rates in the two scenarios in many countries emphasizes the role of non-contributory pensions as a primary tool to alleviate poverty in old age, given the lack of other effective policy instruments. Conversely, in countries where the difference between the two scenarios is more pronounced, there are policy instruments already in place that fulfil a similar function to non-contributory pensions, alleviating also old-age poverty, although they can only partially substitute for them. Overall, we observe that countries with more effective non-contributory schemes tend to have more effective substitute instruments, capable of mitigating the impact of the elimination of non-contributory pensions. This observation is confirmed by the strong correlation (0.85, p-value 0.000) between the estimated variation in poverty rates under the static scenario (reflecting the direct anti-poverty effect of non-contributory pensions) and the difference in poverty rate variations between the two scenarios (measuring the capacity of other policy instruments to replace first-tier pensions), shown in Figure 5. These findings suggest that countries with more effective non-contributory pensions (Denmark and The Netherlands in particular) have also developed robust pro-poor policies, such as guaranteed minimum income schemes.

In general, our findings suggest that non-contributory pensions have an important role in reducing poverty in old age. This is particularly evident for those countries with the more generous schemes. Figure 6 shows the correlation between the aggregate expenditure in non-contributory pensions schemes (expressed as percentage of the country's gross domestic product) and the estimated reduction in poverty under the "static" scenario in each country, measuring the anti-poverty effect of non-contributory pensions. We observe a strong positive correlation (0.94, p-value 0.000), indicating that countries with more generous non-contributory pension schemes present a larger relative reduction in the elderly poverty rates. In particular, we observe the largest effect in countries with broad basic schemes. Among these countries, Denmark, Ireland and the Netherlands stand out, with particularly costly basic pensions associated with a significant anti-

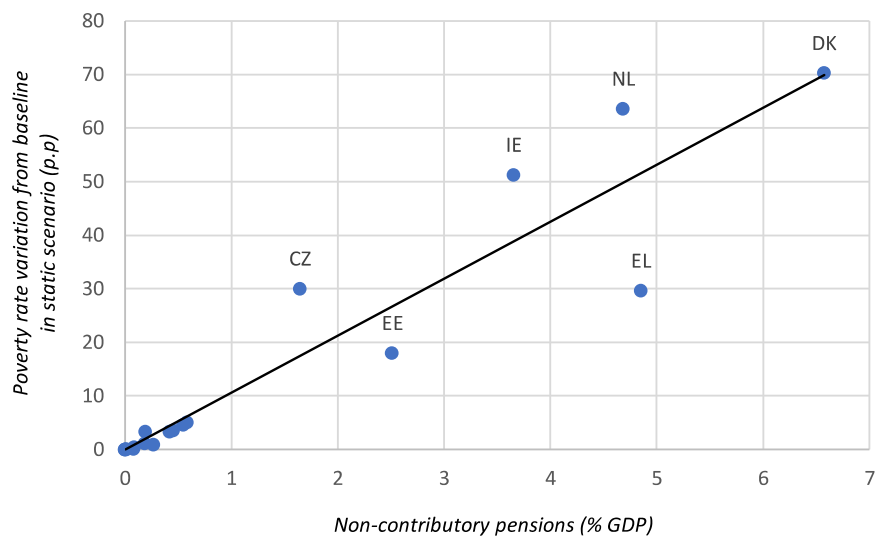
poverty effect. Despite having a comparable cost in terms of the country’s GDP, the non-contributory component of the Greek pension system, by contrast, appear less effective in alleviating poverty.

Figure 5: Anti-poverty effect of non-contributory pensions and substitute instruments



Notes: variations in the elderly (65+) poverty rate in percentage points from the baseline, 2021. Poverty line 60% of median equivalized disposable income in the baseline. Correlation 0.850, p-value 0.000. Source: own calculations using EUROMOD.

Figure 6: Anti-poverty effect and generosity of non-contributory pensions



Notes: effect on elderly (65+) poverty rate measured as variation in percentage point from baseline in the static scenario, 2021. Poverty line 60% of median equivalized disposable income. Correlation 0.940 (p-value 0.000). Source: own calculations using EUROMOD.

To validate our results, we replicate the analysis in this section by focusing exclusively on individuals aged 75 or older (instead of 65). This subgroup of the elderly population is particularly relevant from a policymaking perspective, since they face on average a higher risk of poverty in most countries, as discussed in Section 5. This higher risk may be due to the fact that this group is almost exclusively composed by retirees, and older individuals are more likely to live alone, therefore having a lower equivalized disposable income. Thus, it is particularly valuable to examine the anti-poverty effects of non-contributory pensions for this population segment. The full results of our analysis are presented in the appendix (Table A1, Figure A6). Overall, we observe patterns in the variations of poverty rate similar to those seen in the 65+ population, both in the static (with an average poverty rate increase of 17.01 percentage points) and in the interactive scenario (+14.47 percentage points).

The higher poverty rates in the counterfactual scenarios (compared to the 65+ group) proportionally reflect the higher baseline poverty rate for the 75+ subgroup, with no significant deviation from the pattern previously described: in both scenarios, we observe the most substantial increases in the countries with broad basic pensions. Moreover, we again find a strong positive correlation between the estimated anti-poverty effect and the poverty rate differential between the two scenarios (corr. 0.855, p-value 0.000), as well as between the anti-poverty effect and total expenditure on non-contributory pensions (corr. 0.937, p-value 0.000), thus confirming the previously discussed results.

Finally, we investigate the effect of non-contributory pensions on *extreme* poverty. As shown in Figure 1, in most countries a higher proportion of older individuals is found in the lower end of the income distribution. Thus, it is insightful to assess the impact of non-contributory pensions considering a lower poverty line. We replicate the analyses of this section by considering the poverty line of 40% of the median equivalized household income of the overall population (instead of 60%): the results are reported in the appendix (Table A2, Figure A7). The share of individuals aged 65 or more living below the extreme poverty line varies significantly across countries, ranging from 12.93% in Croatia to below 0.5% in Denmark and the Netherlands. In the static scenario, we observe an average increase of 16.22 percentage points in the extreme poverty rate, which is higher than the increase observed with the previous poverty line. This suggests that non-contributory pensions have a particularly important anti-poverty effect for the segment of the elderly population most at risk of poverty. However, we also observe substantial

heterogeneity across countries, reflecting the different schemes in place. In particular, the anti-poverty effect is higher, compared to the previous threshold, in countries where the main component of the non-contributory pensions are means-tested instruments, targeted at the poorest elderly (Cyprus, Germany, Spain, Croatia, Hungary, Italy, Portugal, Slovenia), as well as in Estonia and Ireland. In the interactive scenario, the average increase in the poverty rate is lower than in the scenario with the 60% poverty line (11.78 percentage points compared to 12.40). This result suggests that, on average, European countries provide general social assistance programs for the elderly—other from non-contributory pensions—that are more effective in lifting elderly individuals out of extreme poverty. This observation is confirmed by the difference in extreme poverty rates between the interactive and static scenarios, which is bigger in all countries when using this poverty line. Once again, we find strong evidence of a positive correlation between the anti-poverty effect and total expenditure on non-contributory pensions (correlation coefficient 0.877, p-value 0.000), as well as a less strong but still significant correlation between the anti-poverty effect and the differential in poverty rates between the two scenarios (correlation coefficient 0.699, p-value 0.000). These findings are further validated by replicating the analysis on extreme poverty for individuals aged 75 or older (see Table A3 and Figure A8 in the appendix). Overall, these results highlight the critical role of non-contributory pensions as a last “safety net” and indicates that they often provide income levels that are close to the poverty line, making cross-country comparisons of poverty rates highly sensitive to the chosen threshold.

7. Historical trends

The results of our analysis indicate that non-contributory pensions have a significant redistributive effect across most European countries, despite substantial difference in the design and scope of these policy instruments. However, the scope of our analysis is limited to the tax-benefit systems in place in 2021, and thus does not capture past or ongoing trends in non-contributory pension schemes. Pension systems across Europe have encountered significant challenges over the last two decades, including an aging population, a more flexible labor market characterized by increasingly irregular careers, and evolving family structures (Hinrichs and Lynch, 2010). To ensure the sustainability of public pension systems, many countries have implemented reforms that have strengthened the link between contributions and benefits. This has generally led to less generous and less redistributive pensions, alongside an attempted shift toward multi-pillar

systems, where public pensions are increasingly complemented by occupational and private schemes. These trends have accelerated, particularly following the sovereign debt crisis in the early 2010s (Ebbinghaus, 2015; Goedemé & Marchal, 2016). However, some studies suggest that non-contributory pensions have shown resilience, remaining a critical instrument for protecting the poorest elderly, a function especially vital as other public pension schemes have been scaled back (Goedemé, 2013; Goedemé & Marchal, 2016).

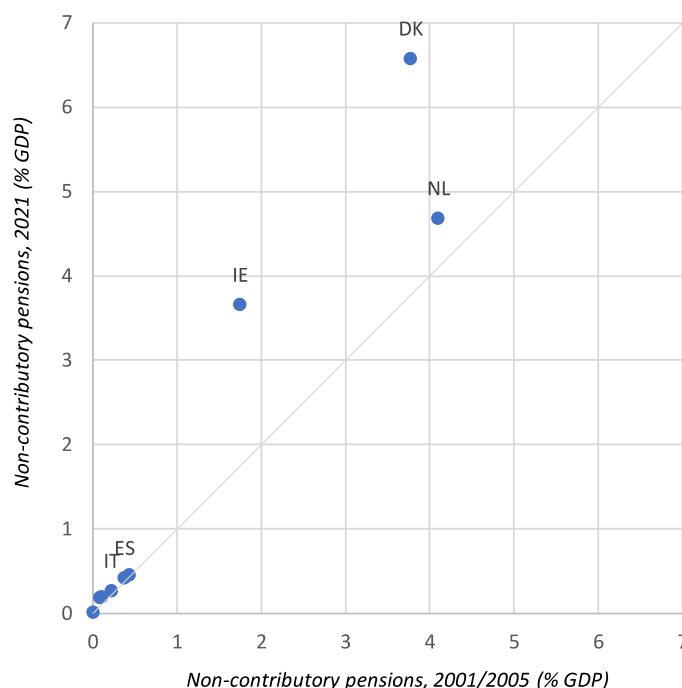
We validate this point by comparing our results with those of Figari et al. (2013). To the best of our knowledge, this is the only published study offering a comprehensive assessment of the anti-poverty effect of non-contributory pension schemes in Europe. This comparison is particularly straightforward for several reasons. First, the 2013 study employs the same classification of public pension schemes as ours, clearly distinguishing between non-contributory pensions, other public pensions, and private pensions. Moreover, it utilizes the same methodology, using EUROMOD to conduct microsimulations. Additionally, it examines non-contributory pensions at the beginning of the 2000s—approximately 20 years ago—providing a sufficiently long period to observe potential differences.

We therefore compare the expenditure for and anti-poverty effect of non-contributory pensions in our study, which is based on policy rules and input data from 2021, with those in the original analysis, which examined systems in place between 2001 and 2005 using input data from 1994 to 2005, depending on availability. A full comparison across all countries is not possible, as the original paper covered only 15 European countries. Of these, we were unable to include six countries in our comparative analysis due to the lack of input data for the United Kingdom and the inability to correctly identify the same non-contributory pension schemes in Austria, Belgium, Greece, Finland and Luxemburg. Consequently, we were able to conduct a consistent comparison for only 9 countries. While this represents a limited sample, it nonetheless offers valuable insights into the ongoing trends in non-contributory pensions across Europe.

Figure 7 presents estimates of non-contributory pension aggregates, expressed as a percentage of GDP, from both studies. Overall, government spending commitment for non-contributory pensions has proven stable over the last twenty years, maintaining its aggregate size in most countries despite several pension reforms. In Denmark and in Ireland it has been even expanded. These findings suggest that non-contributory pensions

have largely been immune to austerity reforms that have affected other public pensions over the past years. This is consistent with existing literature and may indicate a political commitment to maintaining these instruments as a safety net to alleviate old-age poverty, especially in the face of less generous pension benefits.

Figure 7: Non-contributory pensions (% GDP), 2021 vs 2001-05



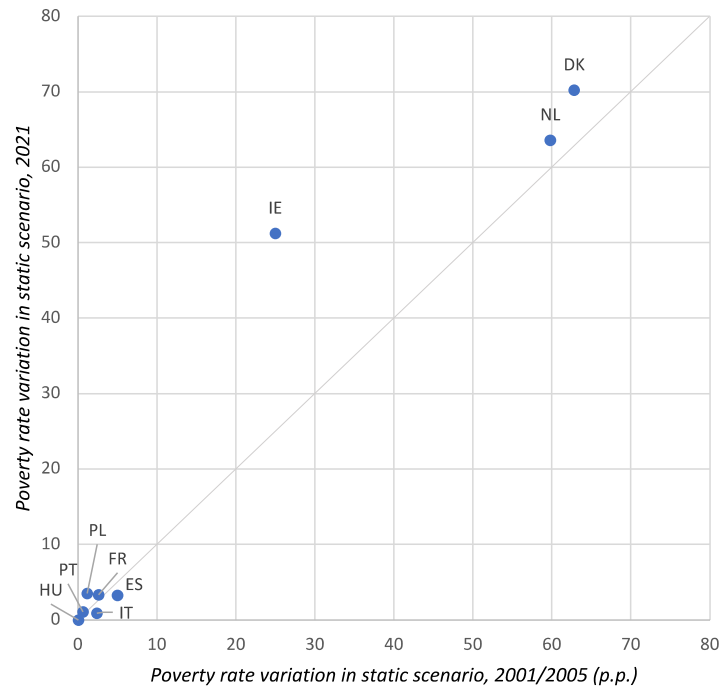
Source: Figari et al. (2013), own calculations using EUROMOD.

For this reason, we consider it important to assess whether, and to what extent, the effectiveness of non-contributory pensions in preventing poverty among the elderly has changed over the past two decades. To this purpose, we compare the 2021 impact on poverty reduction of the non-contributory pensions (reported in Section 6) with the one reported in Figari et al. (2013). The results are presented in Figure 8. Overall, the anti-poverty effect in the countries considered has remained significant and of a comparable magnitude to that observed at the beginning of the century.

In particular, we observe that in a cluster of countries with basic universalist schemes—where the anti-poverty effect was already high in the early 2000s—this effect has further increased. This is especially the case in Ireland, and to a lesser extent in Denmark and the Netherlands. By contrast, in other countries with predominantly targeted schemes, the situation appears more variable: the estimated effect has declined in Italy and Spain, remained broadly unchanged in Hungary, and increased slightly in France, Poland and

Portugal. Overall, our historical comparison suggests that non-contributory pensions have remained an important policy instrument in several European Union countries, largely unaffected by substantial cutbacks and capable of preserving their effectiveness over the past two decades.

Figure 8: Anti-poverty effect of non-contributory pensions, 2021 vs 2001-05



Notes: variation in the elderly (65+) poverty rate from the baseline. Poverty line 60% of median equivalized disposable income in the baseline. Source: Figari et al. (2013), own calculations using EUROMOD.

8. Conclusions

In this study, we analyzed the role of non-contributory pension schemes in reducing poverty among the elderly in Europe. Our findings show that non-contributory pensions are a significant component of the disposable income of older individuals, effectively contributing to poverty alleviation in old age, although they do not completely eliminate it. Additionally, our comparative analysis reveals significant differences in pension systems across EU countries. Notably, countries like Denmark, Ireland and the Netherlands, which have broad basic public pension schemes, exhibit a distinct income structure for the elderly compared to the majority of EU nations, where public pensions are largely linked to past earnings and contributions.

Our analysis indicates that abolishing non-contributory pensions would result in a substantial increase in poverty rates among individuals over 65, particularly in countries

where these pensions form a significant part of elderly income. In other countries, the impact would be relatively minor. Without non-contributory pensions, poverty rates (with poverty line at 60% of the median equivalized disposable income) for the elderly would be 57 percentage points higher in Denmark, 51 in Ireland, 45 in the Netherlands, 25 in Czech Republic, 20 in Greece, 15 in Estonia, 5 in Malta, 4 in Cyprus, more than 3 in Poland, in Spain, France, and around 1 in Portugal and Italy. In the other countries, the effect would be neglectable. At the same time, eliminating non-contributory pensions would reduce public expenditure by approximately 4% of gross domestic product in Greece, Denmark, and Ireland, 3% in the Netherlands, 2% in Estonia and Czech Republic, and below 1% in Cyprus, Spain, Malta, Poland, Italy and Portugal. These figures are smaller than the total cost of non-contributory pensions, indicating that other social assistance instruments in place and a lowered tax burden would partially absorb the shock due to the elimination of non-contributory pensions.

Our analysis also reveals a strong correlation between the resources allocated to non-contributory pension schemes and the reduction in elderly poverty. Moreover, countries with more effective non-contributory schemes tend to have well-developed general social assistance programs, thereby establishing a broader pro-poor policy framework. Overall, our results are robust to different elderly age groups and poverty lines. Additionally, for a limited number of countries, we compared our results with those from Figari et al. (2013), which allowed us to identify trends in non-contributory pensions since the early 2000s. Consistent with other studies, we found that non-contributory pensions have remained resilient to cuts and have largely been preserved from austerity measures; moreover, they have retained their effectiveness in reducing old-age poverty in most countries.

Despite providing valuable insights into the role of non-contributory pensions, our analysis has some limitations that should be considered when interpreting the results. Firstly, we were unable to identify all the first-tier pension schemes currently in place across Europe. This limitation arises from the lack of available data or the inability to calculate pension benefits in EUROMOD for certain countries. This is particularly true for minimum components within public pension systems, where a minimum benefit threshold is determined by the pension formula. As a result, and given the diversity of public pension systems, the first-tier components we were able to analyze vary by country, making the comparative analysis incomplete. Nonetheless, the use of

EUROMOD enables us to identify and compare more pension schemes than would be possible using only survey data.

Furthermore, it is important to note that disposable income does not encompass all factors needed to fully understand the economic resources of elderly households. By considering disposable income, we do not account for non-cash benefits (such as publicly provided healthcare and imputed rents from owner-occupied homes) or expenditure needs. Due to the high rate of homeownership among the elderly, their relative economic standing might appear less favorable compared to a broader income measure that includes non-cash components (Frick et al., 2010). At the same time, older individuals typically have greater healthcare needs, which are not always entirely covered by publicly funded healthcare (OECD 2023a). Whether reduced income during retirement is balanced by lower expenditure needs remains unclear in the literature, and investigating this topic lies beyond the scope of this paper.

Another methodological limitation is the assumption of a 100% take-up rate for the benefits simulated by the model. Non-take-up rates vary across countries due to several factors, such as the administration of benefits and the relative size of entitlements compared to other income sources. By assuming full take-up of means-tested non-contributory pensions and social assistance benefits, we may have overestimated their actual effectiveness. Consequently, the results should be seen as reflecting an optimistic scenario.

Finally, our study focuses solely on non-contributory pensions and does not account for other factors that may have redistributive effects. For instance, the role of direct taxes and social insurance contributions should be considered when assessing the overall redistributive impact of pension systems (Assal et al., 2023), as pension benefits often receive favourable treatment, functioning as a form of social protection for the elderly and constituting part of the "hidden welfare state" (Howard, 1999). Future research should address these aspects to provide a more comprehensive assessment of the redistributive effects of pension systems across the European Union.

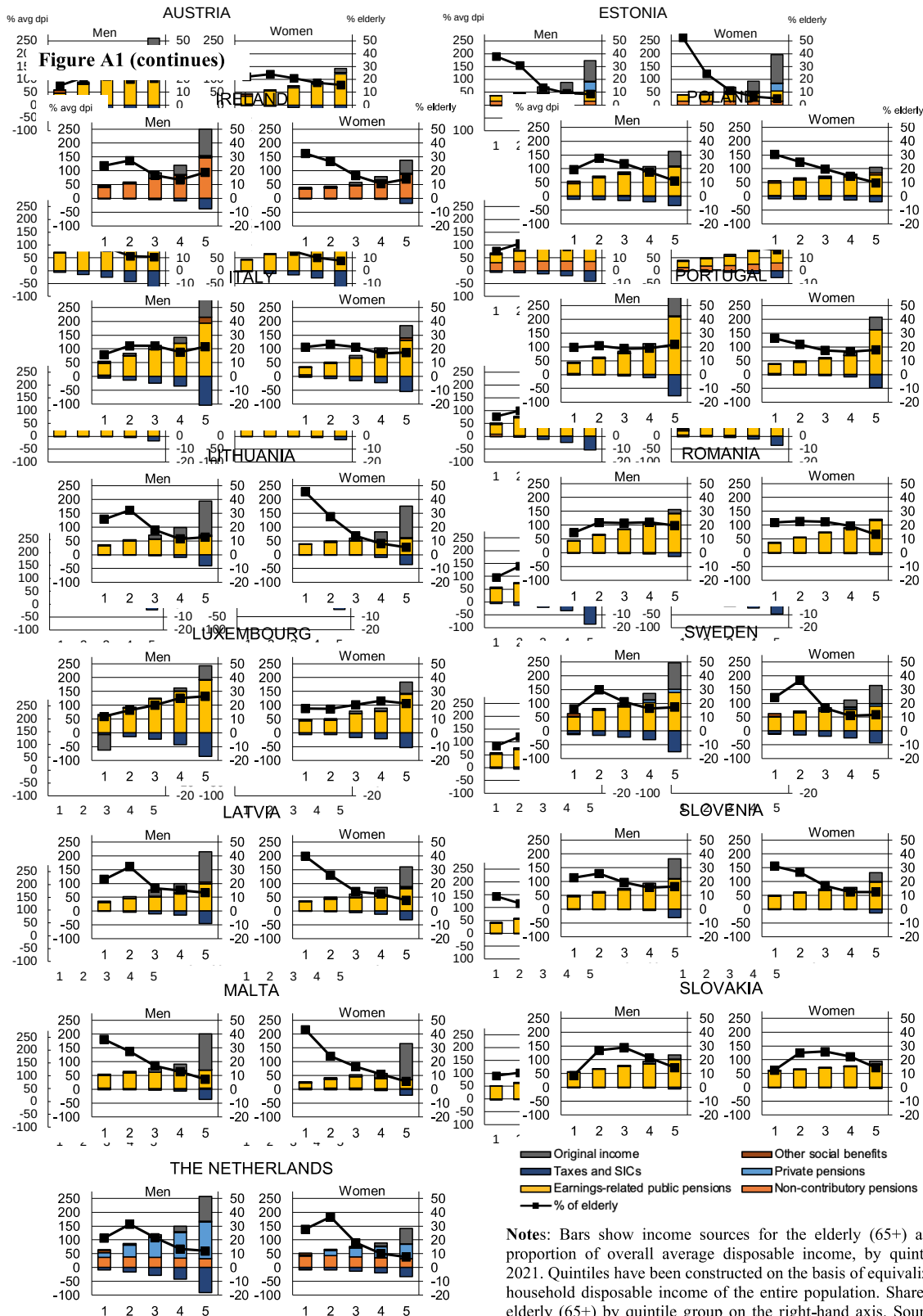
References

- Assal, E. M., Panagamuwa Gamage, S., & Verbist, G. (2023). *Social protection in old age through taxes? An empirical analysis of the equity impact of taxes on pensions in the EU* (No. EM 04/23). EUROMOD Working Paper.
- Barrios, S., Coda Moscarola, F., Figari, F., & Gandullia, L. (2020). Size and distributional pattern of pension-related tax expenditures in European countries. *International Tax and Public Finance*, 27, 1287-1320.
- Coady, D., Jahan, S., Shang, B., & Matsumoto, R. (2021). *Guaranteed minimum income schemes in Europe: Landscape and design*. International Monetary Fund.
- Conde-Ruiz, J. I., & González, C. I. (2018). *European pension system: Bismarck or Beveridge?* (No. 2018-01).
- Ebbinghaus, B. (2015). The privatization and marketization of pensions in Europe: A double transformation facing the crisis. *European Policy Analysis*, 1(1), 56-73.
- Ebbinghaus, B., Nelson, K., & Nieuwenhuis, R. (2019). Poverty in old age. In *Routledge international handbook of poverty* (pp. 256-267). Routledge.
- Ebbinghaus, B. (2021). Inequalities and poverty risks in old age across Europe: The double-edged income effect of pension systems. *Social Policy & Administration*, 55(3), 440-455.
- Esping-Andersen, G. (1990). *The three worlds of welfare capitalism*. Princeton University Press.
- European Commission: Directorate-General for Research and Innovation. (2014). *Population ageing in Europe : facts, implications and policies : outcomes of EU-funded research*. Publications Office.
- European Commission: Directorate-General for Employment, Social Affairs and Inclusion & Social Protection Committee (SPC). (2024). *The 2024 pension adequacy report : current and future income adequacy in old age in the EU. Volume I*. Publications Office of the European Union.
- European Commission: Directorate-General for Employment, Social Affairs and Inclusion. (2024b). MISSOC Comparative Tables database.
- Jousten, A., & Feher, C. (2018). Taxation and Pensions – An Overview of Interplay. In R. Holzmann & J. Piggott, *The Taxation of Pensions*. MIT Press.
- Figari, F., Matsaganis, M., & Sutherland, H. (2013). The financial well-being of elderly people in Europe and the redistributive effects of minimum pension schemes. *Rivista italiana degli economisti*, 18(2), 149-174.
- Fiorio, C. V., & D'Amuri, F. (2006). Tax evasion in Italy: an analysis using a tax-benefit microsimulation model. *The IUP Journal of Public Finance*, 4(2), 19-37.
- Frick, J. R., Grabka, M. M., Smeeding, T. M., & Tsakloglou, P. (2010). Distributional effects of imputed rents in five European countries. *Journal of Housing economics*, 19(3), 167-179.
- Goedemé, T. (2013). Minimum Income Protection for Europe's Elderly: What and How Much has been Guaranteed during the 2000s?. In *Minimum income protection in flux* (pp. 108-136). London: Palgrave Macmillan UK.
- Goedemé, T., & Marchal, S. (2016). Exploring a blind spot in comparative pension reform research: Long-term trends in non-contributory pensions in Europe. *International Journal of Social Welfare*, 25(2), 161-175.

- Hinrichs, K., & Lynch, J. F. (2010). Old-age pensions. In F. G. Castles, S. Leibfried, J. Lewis, et al. (Eds.), *The Oxford Handbook of the Welfare State*. Oxford University Press.
- Howard, C. (1999). *The hidden welfare state: Tax expenditures and social policy in the United States*. Princeton University Press.
- OECD. (2013). *OECD framework for statistics on the distribution of household income, consumption and wealth*. OECD Publishing.
- OECD. (2023). *Pensions at a glance 2023: OECD and G20 indicators*. OECD Publishing.
- OECD. (2023a). *Health at a glance 2023: OECD indicators*. OECD Publishing.
- Sutherland, H., & Figari, F. (2013). EUROMOD: The European Union tax-benefit microsimulation model. *International Journal of Microsimulation*, 6(1), 4-26.
- Wirth, H., & Pforr, K. (2022). The European Union statistics on income and living conditions after 15 years. *European Sociological Review*, 38(5), 832-848
- Zaidi, A. (2010). Poverty risks for older people in EU countries—an update. Retrieved from Vienna. Vienna: European Centre for social Welfare policy and research.

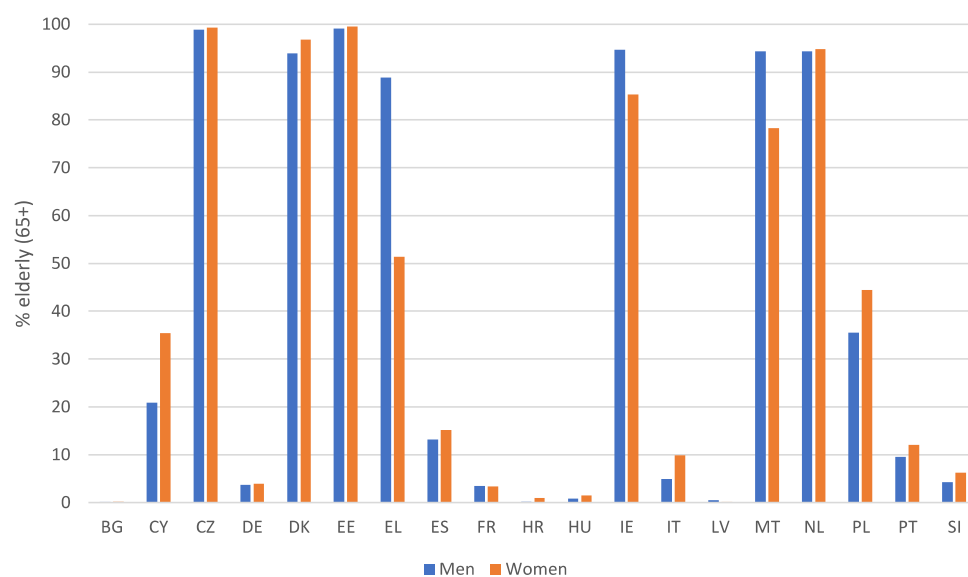
Appendix

Figure A1: Disposable income components and share of elderly (65+) by quintile and gender



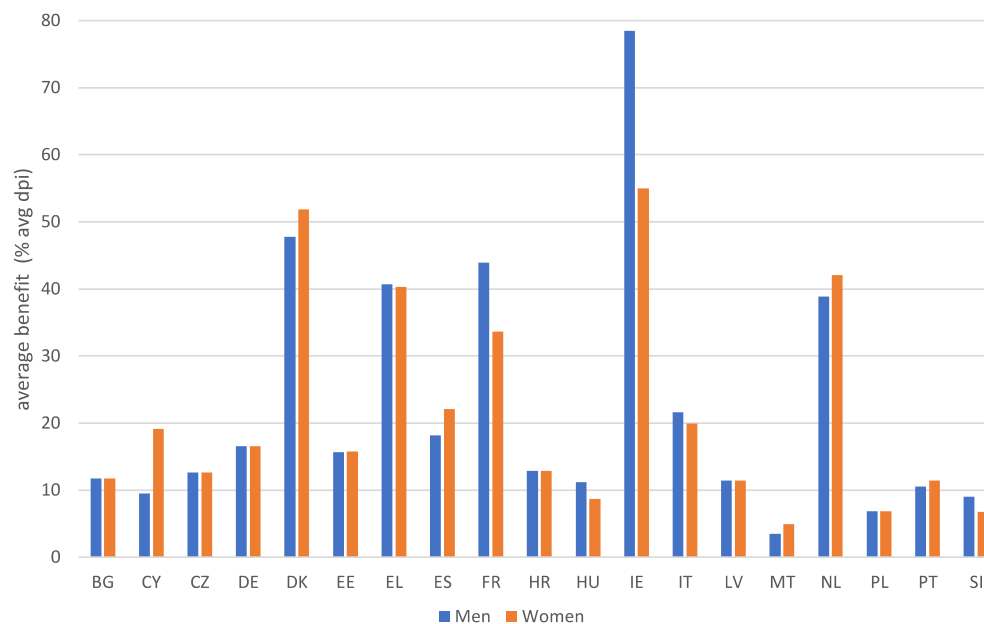
Notes: Bars show income sources for the elderly (65+) as a proportion of overall average disposable income, by quintile, 2021. Quintiles have been constructed on the basis of equalized household disposable income of the entire population. Share of elderly (65+) by quintile group on the right-hand axis. Source: own calculations using EUROMOD.

Figure A2: Non-contributory pensions, coverage by gender



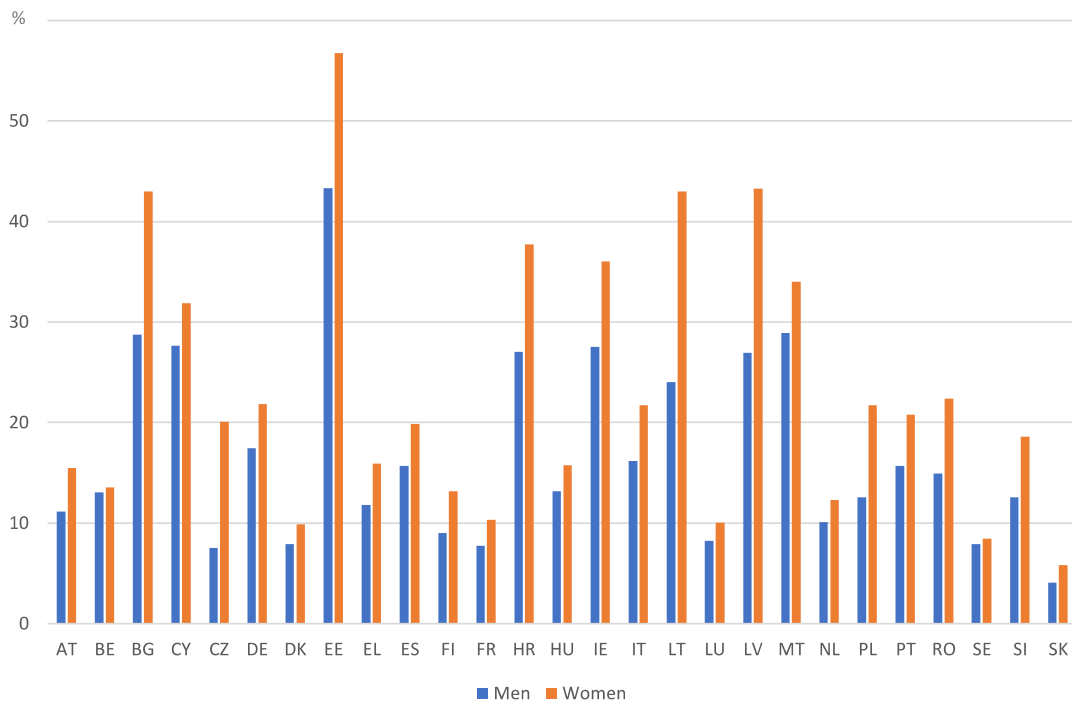
Note: percentage of individuals aged 65 or more receiving a non-contributory pension, 2021. Source: own calculations using EUROMOD.

Figure A3: Non-contributory pensions, average benefit value by gender



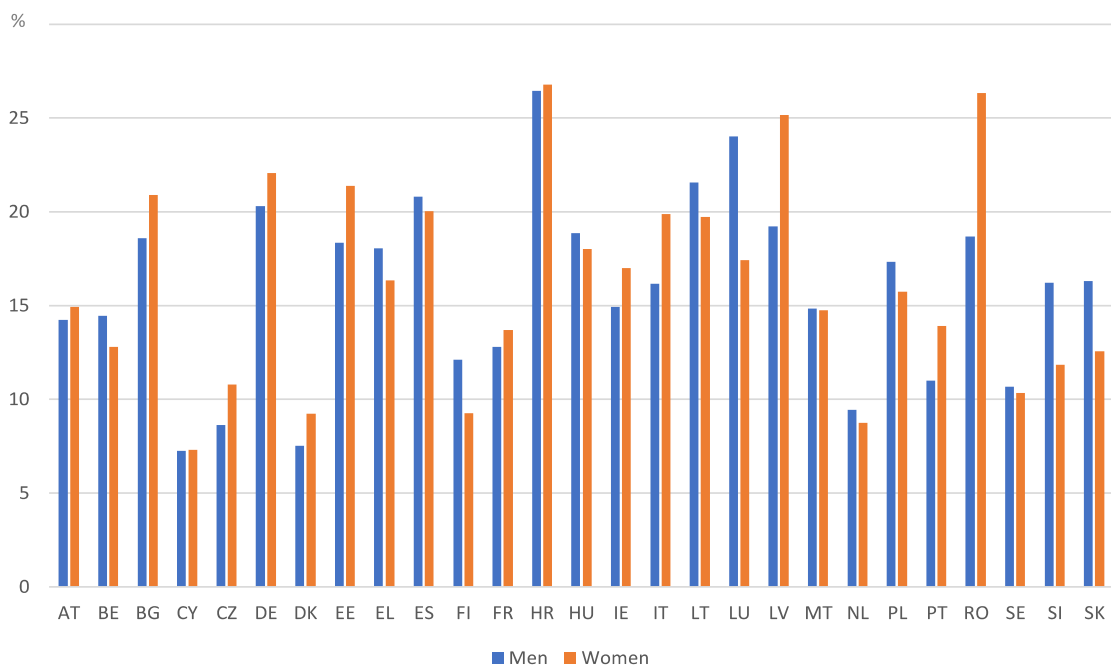
Notes: Note: average amount of non-contributory pensions as percentage of the country's average disposable income, 2021. Source: own calculations using EUROMOD.

Figure A4: Elderly (65+) poverty rate by gender



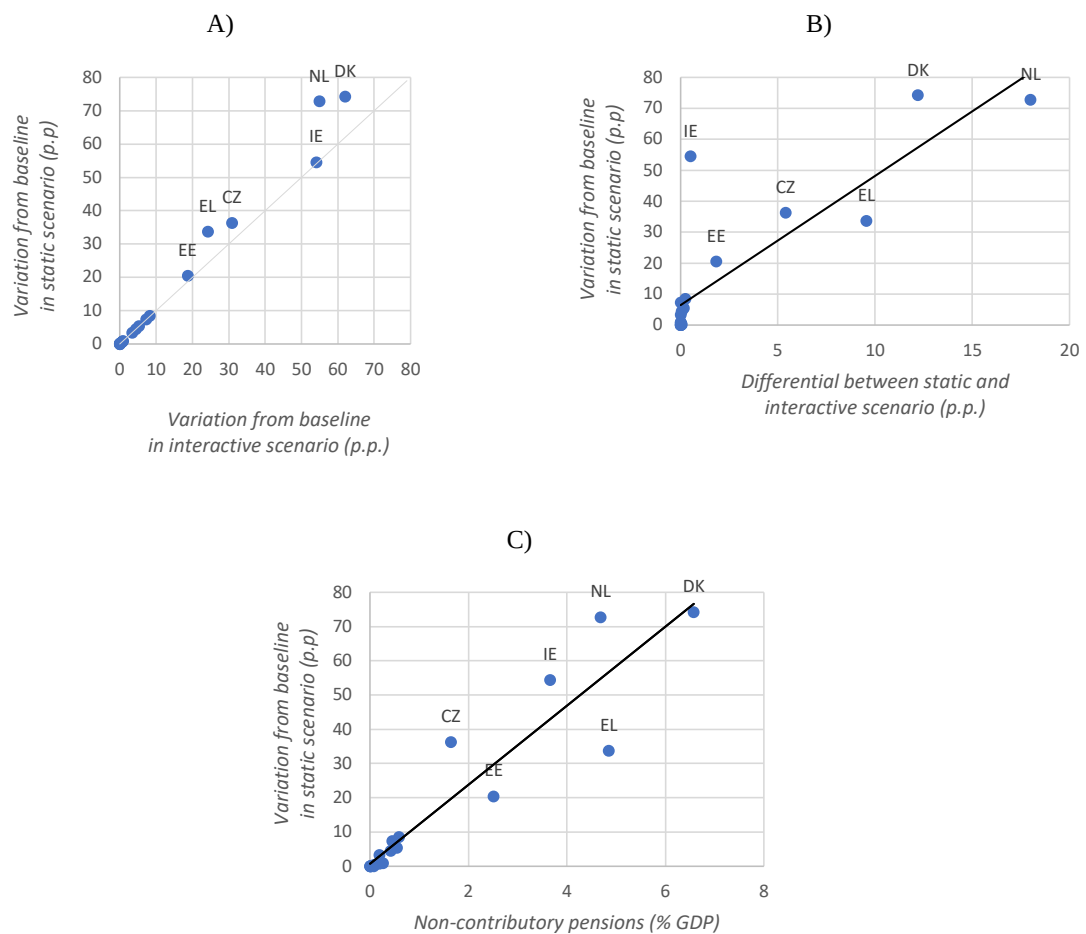
Notes: poverty line 60% of median equivalized disposable income, 2021. Source: own calculations using EUROMOD.

Figure A5: Elderly (65+) poverty gap by gender



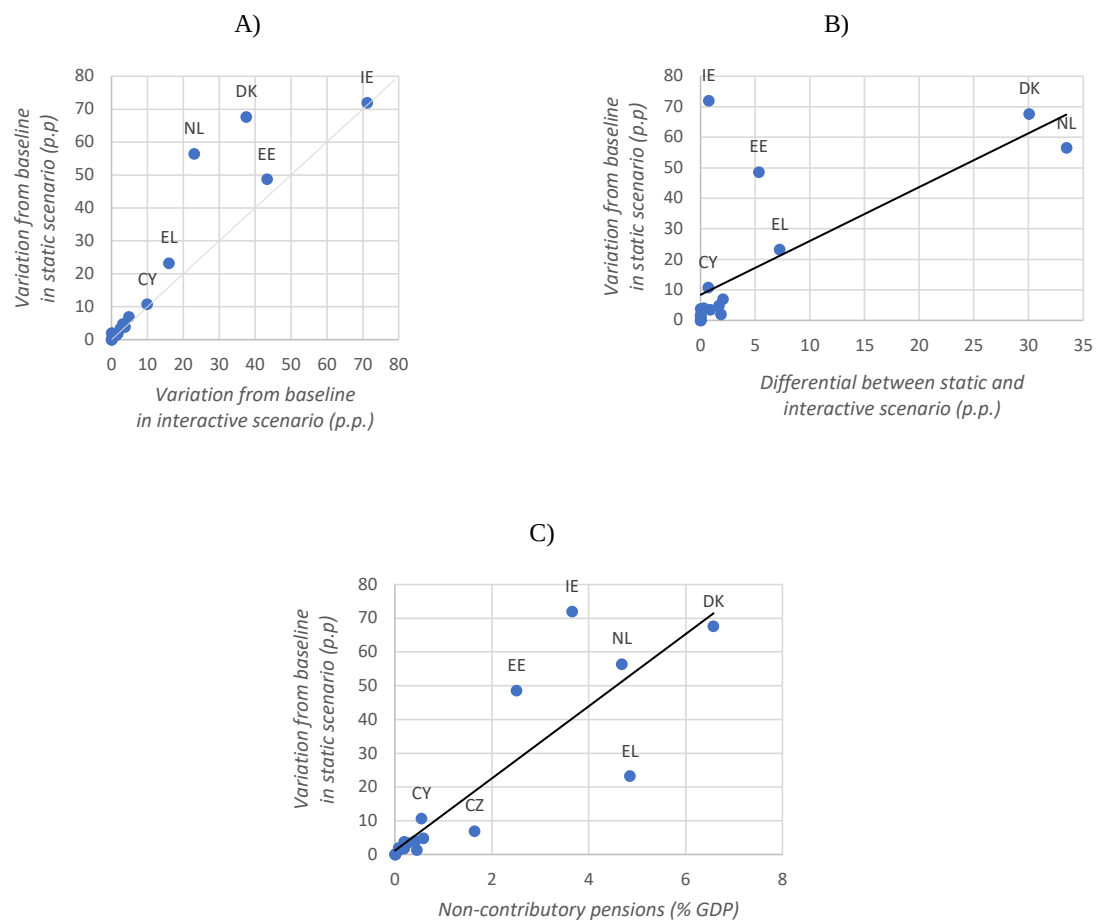
Notes: poverty line 60% of median equivalized disposable income, 2021. Source: own calculations using EUROMOD.

Figure A6: Effect of non-contributory pensions on poverty rate (75+)



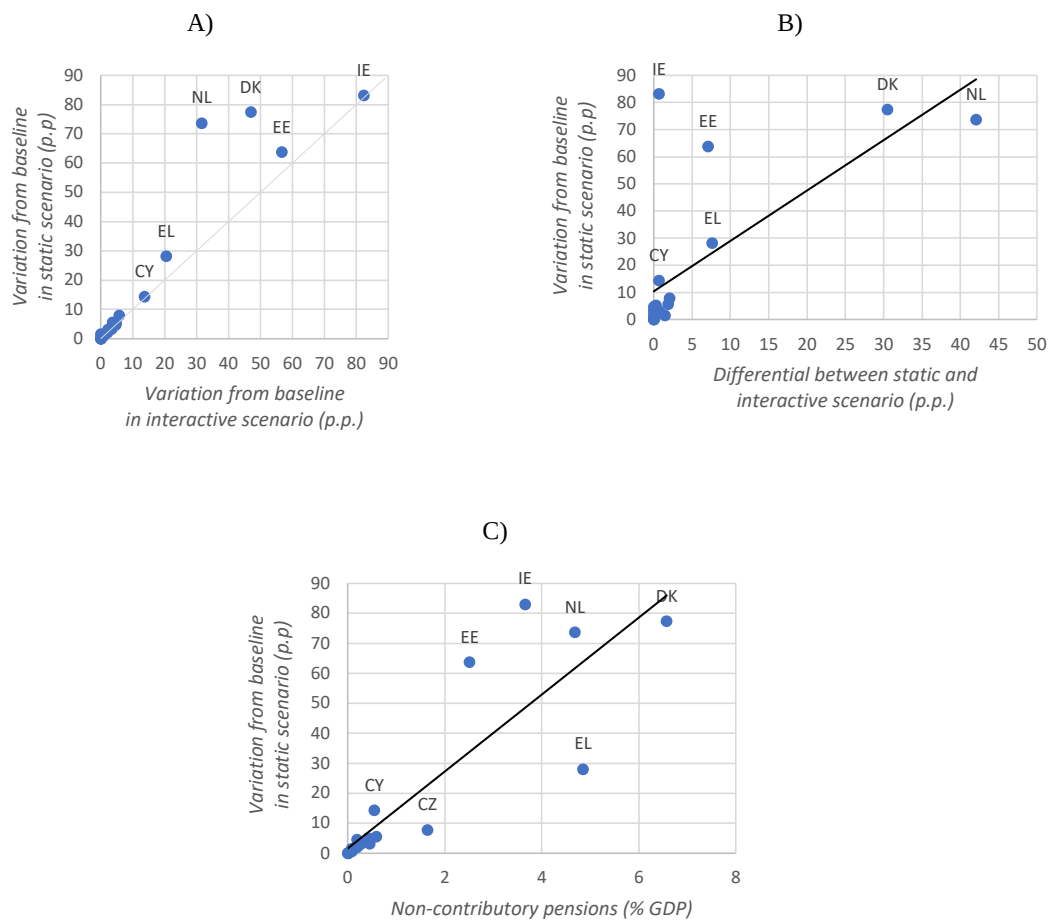
Notes: Poverty line 60% of median equivalized disposable income, 2021. B) Correlation coefficient 0.855, p-value 0.000. C) Correlation coefficient 0.937, p-value 0.000. Source: own calculations using EUROMOD.

Figure A7: Effect of non-contributory pensions on extreme poverty rate (65+)



Notes: Poverty line 40% of median equivalized disposable income, 2021. B) Correlation coefficient 0.699, p-value 0.000 C) Correlation coefficient 0.877, p-value 0.000 Source: own calculations using EUROMOD.

Figure A8: Effect of non-contributory pensions on extreme poverty rate (75+)



Notes: Poverty line 40% of median equivalized disposable income, 2021. B) Correlation coefficient 0.707, p-value 0.000. C) Correlation coefficient 0.871, p-value 0.000 Source: own calculations using EUROMOD.

Table A1: Abolition of non-contributory pensions: effect on poverty rate (75+)

Country	Type*	Baseline (A)	Static Scenario		Interactive Scenario	
			poverty rate (B)	diff. (B - A)	poverty rate (C)	diff. (C - A)
AT	-	12.21%	-	-	-	-
BE	MT	17.69%	n.a.	n.a.	n.a.	n.a.
BG	MT	47.60%	47.60%	0	47.60%	0
CY	MT	39.42%	44.83%	5.41	44.67%	5.24
CZ	B	17.96%	54.19%	36.23	48.79%	30.83
DE	MT	18.62%	18.69%	0.07	18.63%	0.01
DK	B, MT	13.63%	87.79%	74.17	75.58%	61.96
EE	B, MT	61.47%	81.92%	20.45	80.08%	18.61
EL	B, MT	15.46%	49.14%	33.68	39.58%	24.12
ES	MT	20.90%	25.37%	4.46	25.30%	4.4
FI	MT	15.49%	n.a.	n.a.	n.a.	n.a.
FR	MT	9.09%	12.45%	3.36	12.45%	3.36
HR	MT	38.35%	38.35%	0	38.35%	0
HU	MT	13.76%	13.81%	0.05	13.81%	0.05
IE	B, MT	37.52%	92.03%	54.51	91.52%	54
IT	MT	19.78%	20.66%	0.88	20.64%	0.86
LT	B, MT	37.13%	n.a.	n.a.	n.a.	n.a.
LU	B	8.45%	n.a.	n.a.	n.a.	n.a.
LV	MT	49.81%	49.81%	0	49.81%	0
MT	B, MT	32.42%	40.91%	8.49	40.66%	8.24
NL	B	15.93%	88.73%	72.8	70.74%	54.8
PL	B, MT	17.94%	25.22%	7.28	25.22%	7.28
PT	MT	21.64%	22.39%	0.74	22.39%	0.74
RO	-	24.59%	-	-	-	-
SE	MT	8.61%	n.a.	n.a.	n.a.	n.a.
SI	MT	17.05%	17.57%	0.52	17.57%	0.52
SK	-	4.34%	-	-	-	-

Notes: Type: B = basic, MT = means-tested. Poverty line 60% of median equivalized disposable income in the baseline. Source: own calculations using EUROMOD.

Table A2: Abolition of non-contributory pensions: effect on extreme poverty rate (65+)

Country	Type*	Baseline (A)	Static Scenario		Interactive Scenario	
			poverty rate (B)	diff. (B - A)	poverty rate (C)	diff. (C - A)
AT	-	0.00%	-	-	-	-
BE	MT	2.56%	n.a.	n.a.	n.a.	n.a.
BG	MT	5.15%	5.15%	0	5.15%	0
CY	MT	0.77%	11.45%	10.68	10.76%	9.98
CZ	B	0.93%	7.87%	6.94	5.81%	4.87
DE	MT	4.38%	6.38%	2	4.49%	0.11
DK	B, MT	0.41%	68.03%	67.62	37.97%	37.55
EE	B, MT	6.76%	55.37%	48.61	50.03%	43.27
EL	B, MT	2.48%	25.71%	23.23	18.47%	15.99
ES	MT	5.30%	9.33%	4.03	9.03%	3.74
FI	MT	0.20%	n.a.	n.a.	n.a.	n.a.
FR	MT	1.52%	3.29%	1.77	3.29%	1.77
HR	MT	12.93%	13.15%	0.22	13.15%	0.22
HU	MT	3.72%	3.74%	0.02	3.74%	0.02
IE	B, MT	2.97%	74.91%	71.94	74.16%	71.19
IT	MT	4.09%	7.50%	3.41	6.60%	2.51
LT	B, MT	8.18%	8.18%	n.a.	n.a.	n.a.
LU	B	2.96%	2.96%	n.a.	n.a.	n.a.
LV	MT	10.70%	10.70%	0	10.70%	0
MT	B, MT	2.71%	7.50%	4.79	5.82%	3.11
NL	B	0.33%	56.76%	56.43	23.31%	22.98
PL	B, MT	3.69%	5.07%	1.38	5.06%	1.36
PT	MT	2.00%	5.74%	3.74	5.74%	3.74
RO	-	5.96%	5.96%	-	-	-
SE	MT	1.34%	1.34%	n.a.	n.a.	n.a.
SI	MT	1.64%	2.98%	1.34	2.98%	1.34
SK	-	0.34%	0.34%	-	-	-

Notes: Type: B = basic. MT = means-tested. Poverty line 40% of median equivalized disposable income in the baseline. Source: own calculations using EUROMOD.

Table A3: Abolition of non-contributory pensions: effect on extreme poverty rate (75+)

Country	Type*	Baseline (A)	Static Scenario		Interactive Scenario	
			poverty rate (B)	diff. (B - A)	poverty rate (C)	diff. (C - A)
AT	-	0.00%	-	-	-	-
BE	MT	2.45%	n.a.	n.a.	n.a.	n.a.
BG	MT	3.35%	3.35%	0	3.35%	0
CY	MT	0.49%	14.82%	14.33	14.14%	13.65
CZ	B	0.72%	8.56%	7.85	6.46%	5.74
DE	MT	4.22%	5.72%	1.5	4.22%	0
DK	B, MT	0.39%	77.75%	77.36	47.25%	46.86
EE	B, MT	3.58%	67.31%	63.73	60.21%	56.63
EL	B, MT	2.26%	30.35%	28.1	22.70%	20.45
ES	MT	4.83%	9.94%	5.11	9.64%	4.8
FI	MT	0.07%	n.a.	n.a.	n.a.	n.a.
FR	MT	1.38%	3.40%	2.01	3.40%	2.01
HR	MT	15.75%	15.93%	0.18	15.93%	0.18
HU	MT	3.60%	3.60%	0	3.60%	0
IE	B, MT	4.12%	87.16%	83.04	86.46%	82.33
IT	MT	3.69%	6.72%	3.03	5.95%	2.26
LT	B, MT	5.26%	n.a.	n.a.	n.a.	n.a.
LU	B	1.42%	n.a.	n.a.	n.a.	n.a.
LV	MT	11.73%	11.73%	0	11.73%	0
MT	B, MT	2.47%	8.03%	5.56	6.12%	3.66
NL	B	0.28%	73.93%	73.66	31.88%	31.6
PL	B, MT	2.67%	5.95%	3.28	5.95%	3.28
PT	MT	1.44%	6.00%	4.56	6.00%	4.56
RO	-	8.02%	-	-	-	-
SE	MT	1.55%	n.a.	n.a.	n.a.	n.a.
SI	MT	1.76%	2.50%	0.75	2.50%	0.75
SK	-	0.11%	-	-	-	-

Notes: Type: B = basic. MT = means-tested. Poverty line 40% of median equivalized disposable income in the baseline. Source: own calculations using EUROMOD.