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Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

#### Empfohlene Zitierung / Suggested Citation:

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. <https://doi.org/10.1111/spol.12683>

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# Inequalities and poverty risks in old age across Europe: The double-edged income effect of pension systems

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## Abstract

While the sustainability of pension systems facing demographic ageing has been widely discussed, the adequacy of retirement income has often been neglected in current debate. However, considerable poverty and income inequality in old age exists across Europe. Using recent EU-SILC data (2017/18), the comparative analysis of poverty rates and income inequality in old age shows important cross-national variations that need to be seen in context of market-related inequalities but also the specific pension system. Beveridge basic security is not always capable of effectively reducing poverty despite the explicit goal to do so. In addition, private funded pensions may generate social inequality. Some contributory Bismarckian systems are better suited to reduce poverty, but given their focus on status maintenance also reproduce inequality. Poverty rates are low due to encompassing basic pensions in Dutch and some Nordic multipillar systems and in core Central and Eastern European countries. Bismarckian pensions such as in Germany are generating some inequality and medium level of poverty, while France and some Southern European countries perform better on poverty but reproduce larger inequalities. Beveridge systems such as in the United Kingdom and Switzerland with rather meagre basic

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multipillar systems have relatively medium to high poverty risks. In addition, the Baltic countries and new EU member states in the periphery have the highest poverty rates across Europe. The analysis shows that the minimum income provision of public pension systems matters most for poverty risks, while the overall pension architecture has an impact on reproducing inequality in old age acquired during working life.

**KEYWORDS**

Europe, inequality, old age, pension systems, poverty

## 1 | INTRODUCTION

While the financial sustainability of pension systems facing demographic ageing has been widely discussed, the adequacy of retirement income is largely neglected in the current debate. This is partly because poverty in old age seems no longer a pressing concern in advanced welfare states, partly because the Great Recession starting in 2008 had shifted attention to joblessness and poverty of the working age population. More recently, the Coronavirus pandemic of 2020 puts the headlights on the immediate economic problems caused by lockdowns while dealing with a public health emergency. Although the elderly face a higher Covid-19 mortality risk and health care confronts an unprecedented stress test, there is currently little consideration of the possible impact on retirement income other than acknowledging the role of pensions as “automatic stabilizers” of old age income benefitting a quarter of the population across Europe (Ebbinghaus, 2020). While unemployment has declined during the decade after the 2008 crash, old age poverty and inequality has increased more recently prior to the pandemic. Irrespective of the current pandemic, there are significant variations in old age poverty and income inequality that warrant attention, as pensions are not everywhere adequate for every older person. It is difficult to fine-tune pension systems to overcome poverty and reduce inequality simultaneously. Given their double-edged income effect the balancing between both these goals will determine which side they cut more.

Using cross-national comparison, this article studies variations in retirement income across Europe and relates these to the major features of their pension systems. This study uses key indicators from the European Union Survey of Income and Living Conditions (EU-SILC) to analyse poverty rates and income inequality across Europe for the most recently available data (2017/18).<sup>1</sup> The main question is to explore why the income situation for older people differs across Europe. My main goal is to map these cross-national differences in old age income and to explain these with the help of benefit indicators and institutional typologies of pension systems. The analysis utilizes the institutional variation between Bismarckian old age social insurance (SI) systems, which are still dominantly public pay-as-you-go, and Beveridgean multipillar systems, which rely on basic pensions and funded supplementary schemes. In addition, this study differentiates their (often complex) architecture in respect of income tiers and governance pillars, acknowledging the impact of past reforms to marketization and privatization of pension systems (Ebbinghaus, 2015).

In the following, I first review the main typology of Bismarckian versus Beveridge pension systems, between earnings-related SI with contributory income maintenance and minimum income protection to reduce poverty, acknowledging further differences in developing multipillar systems. In a first empirical step, the cross-national patterns of poverty and inequality in old age are compared with the current income situation of the working population. Bivariate analysis shows some association of poverty with the generosity of pension systems. Thereafter, the main variations with respect to old age poverty and inequality will be presented in a two-dimensional typology. First, poverty patterns are related to the main variations in public pension systems, in particular the minimum income provisions. Second, inequality patterns are related to the public-private pillars and the importance of contribution-related

and funded pensions. The conclusion discusses the main findings and their impact for future old age income given ongoing reform processes and the current economic crisis. The main results of the analysis demonstrate that the minimum income provision of public pension systems matters most for poverty risks, while the overall pension architecture has an impact on reproducing inequality in old age acquired during working life.

## 2 | ANALYSING INCOME EFFECTS OF MULTIPILLAR PENSION SYSTEMS

As this study seeks to explain differences in old age poverty and inequality, it is important to compare the cross-national variations in pension systems as the most important factor in shaping minimum income and mediating the impact of past earnings on retirement income. In contrast to welfare state analyses which assume three different regimes (Esping-Andersen, 1990), classifications of pension systems are commonly based on two ideal-typical models (Palier & Bonoli, 1995): the “Bismarckian” SI tradition (dating back to Imperial Germany), and the “Beveridgean” reforms of post-war welfare states (inspired by the British liberal reformer Lord Beveridge). This dichotomy (Meyer, 2013; Palier & Bonoli, 1995) has been used to describe the main institutional variations across Europe (Ebbinghaus, 2011): Bismarckian SI provides for earnings-related benefits (on a pay-as-you-go bases), while a flat-rate basic pension (Liberal and Nordic countries, but also the Netherlands and Switzerland) aims at poverty reduction but leaves some room for filling income gaps by private means. This typology was further amended in order to capture whether the systems come more or less close to the ideal-type (Hinrichs & Lynch, 2010). Over the post-war period, some Beveridge “plus” systems added mandatory earnings-related schemes, while some Bismarckian “lite” systems were rather lean in their benefits, thus resulting in a fourfold pension system typology (Ebbinghaus, 2011). Systemic changes are rare, but we can sometimes find the “elephant on the move” (Hinrichs, 2000), such as the Swedish reforms of the 1990s that have replaced the basic plus earnings-related state pensions into a multipillar system with an income-tested guaranteed pension and contributory pensions plus mandated funded personal and occupational pensions (Hinrichs & Lynch, 2010). In Central and Eastern Europe (CEE), following the transition to democratic market economies, most old age retirement income systems were transformed to SIs with additional mandatory funded pensions during the late 1990s (Müller, 2008; Orenstein, 2008). However, during the Great Recession, there had been turnarounds ranging from nationalizing funded pillars (as in Hungary) to scaling down defined contributions (Drahokoupil & Domonkos, 2012).

In addition, the “public-private” divide has been noted as a consequence of the privatization and marketization of pension systems (Ebbinghaus, 2015; Sorsa, 2016), though the difference between public and private depends on the definition used and focus of analysis. An influential typology, first advanced by international organizations, is the distinction between “pillars” according to their responsibility (Leimgruber, 2012): the *first* public, the *second* private occupational and the *third* private personal pension pillars. While the state finances and regulates the first (public) pillar, it remains more in the backseat in respect of the governance of the second (occupational) or third (personal) pension pillars, though investment regulation and tax subsidies allow regulatory intervention (Leisering, 2011). It is reasonable to expect that the more pension systems have shifted from public responsibility to a multipillar system, the less redistributive they are and the less effective their poverty reduction. Marketization and privatization tend to excel inequality through unequal access, contribution-related benefits or investment risks (Ebbinghaus, 2015).

Given the increased flexibilization of employment, the access to contributory SI and private occupational or personal pensions is crucial (Hinrichs & Jessoula, 2012). In particular, coverage of private pensions matters in respect of inequalities: who has access to such pensions and what happens in case of job changes? State regulation could provide mandatory coverage (as in Switzerland, Sweden and some CEE countries), the ministry could extend (*erga omnes*) collective agreements between unions and employers (as in the Netherlands), it could provide opt-out of national insurance (Britain in the past) for employers or individuals, it could provide subsidies to low-income individuals or families (as for the Riester pension in Germany) or require employers to provide a pension plan with automatic enrolment (as in Britain more recently). These governance and regulatory differences shape the income

situation of current pensioners (Neugschwender, 2011), and they will matter even more in the future given the uneven coverage across sectors, occupational groups and gender (Meyer, Bridgen, & Riedmüller, 2007).

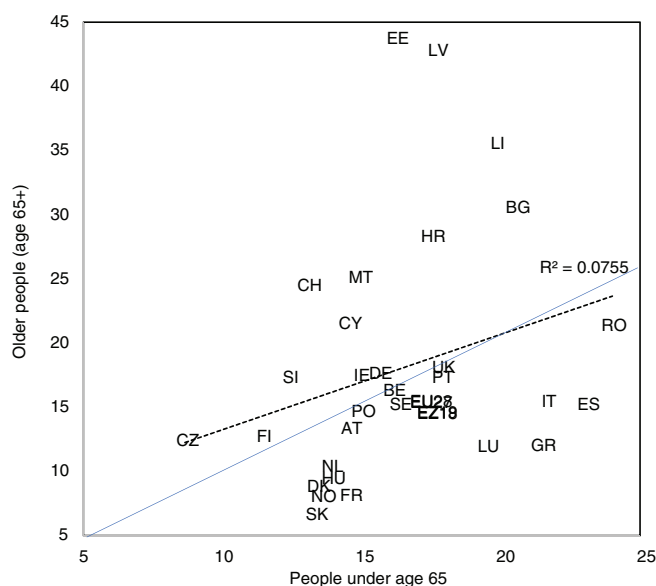
An important second dimension is the income function of pensions, that is, the “tiers”: the *first tier* (universal) redistributive public schemes versus the *second tier* (mandatory) insurance (OECD, 2005: chap. 1; Whitehouse, 2007). While the first-tier minimum income function is always part of the first (public) pillar, the second-tier income maintenance can be provided by one of the three pillars or a combination of them. These two analytical dimensions, the *pillars* (governance) and *tiers* (income function), have been also applied in research (Ebbinghaus, 2011; Goodin & Rein, 2001; Immergut, Anderson, & Schulze, 2007). We will apply here the enhanced Bismarck/Beveridge-typology based on the mix of pillars and their particular income tiers in order to classify pension systems. Only few studies have used quantitative analysis based on indicators to establish comparative typologies for pension systems (Hofäcker & Unt, 2013; Soede & Vrooman, 2008). We therefore rely also on international organizations, in particular the OECD, the EU Commission, and Eurostat, that provide comprehensive databases and comparative reports on pension indicators (Christensen, Doblhammer, Rau, & Vaupel, 2009; EU-SPC, 2015; EU-SPC(IG), 2009; OECD, 2014, 2017). Note that my empirical analysis focuses only on income indicators (poverty and income inequality), not on more broader concepts of social exclusion and insecurity that are very relevant when studying the well-being of the elderly (Ogg, 2005; Zaidi, 2011).

The overriding goals of pension systems have been *twofold*: first, guaranteeing a minimum income to avoid poverty in old age, and, second, maintaining the living standard during retirement and reproduce social inequalities acquired during working life. While the former goal had been the priority in the Beveridgean system, the latter has been more important in Bismarckian SI. Nevertheless, both goals are part and parcel of all pension systems; it is the balance of the two that matters. From a social inequality perspective, the public first-tier pension benefits are most important in reducing poverty, while many additional aspects of the multitier, multipillar pension architecture influence the reproduction of market inequality in old age.

### 3 | WORKING AND OLDER PEOPLE'S POVERTY AND INEQUALITIES

My analysis of the current income situation of older people (aged 65 and older) across Europe focuses on both the relative poverty risks and the inequalities between high- and low-income groups. I will assume a twofold impact of pension systems: on one hand, minimum income provisions have a stronger impact on poverty reduction, while inequality in old age income is shaped by the multipillar architecture. While poverty and inequality had increased for the working population during the Great Recession, 10 years after the 2008 crash, old age poverty and inequality is back on the agenda. Old age income may still be complemented by income from work; this might be the main source of income for those without appropriate pension or retirement savings, the working pensioners (Scherger, 2015). I will only consider the income situation of older people aged 65 or older to exclude those on early retirement. Nevertheless, employment for those aged 65 to 69 does vary across countries, but it exceeds 20% only in the United Kingdom, Sweden, Norway and the Baltic countries, thereby reducing poverty risks.

In a first step, I compare the working population (under age 65) with the older population (aged 65 and older) to understand to what degree pension systems amplify or reduce poverty and inequality. Such a cross-sectional comparison cannot claim to measure current pensioners' income with respect to their former earnings, but it allows the evaluation of the concurrent earnings inequality and poverty level present in the working population with the poverty risk and income inequality among older people in today's society. Although such an analysis is merely approximate given that today's pensioners have worked at earlier periods, it evaluates the current societal level of income inequality and poverty produced by the market economy and welfare/tax policies with the publicly accepted level of welfare/tax income among the older population. While labour relations, in particular collective bargaining between trade unions and employers, largely determine the earnings inequalities of the working population (aged 18–64), the poverty levels are particularly affected by minimum income benefits and tax systems (Bahle, Pfeifer, & Wendt,



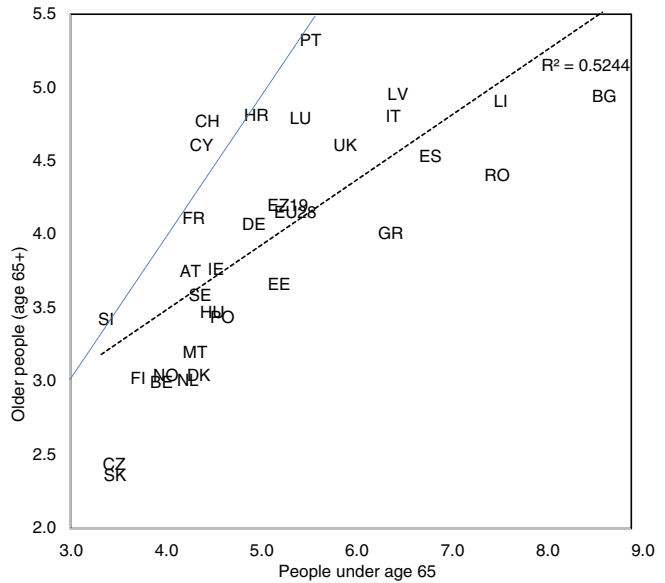
**FIGURE 1** At-risk-of-poverty rate by age group. Source: At-risk-of-poverty rate (ilc\_pnp1) in EU-SILC (2017/18) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]

2010). Whether these market-related primary income inequalities and poverty patterns are reproduced in old age also depends on the (re)distributive effects of pension systems.

Figure 1 presents the bivariate relationship of the at-risk-of-poverty rate (measured at 60% median equalized disposable income) of the working population under age 65 (horizontal axes) and those older people aged 65 and older (vertical axis) reported by EU-SILC (2017/18). The relationship between the poverty of working age people and that of older ones is rather weak, indicating that welfare states have very different approaches to and success in reducing poverty in old age in contrast to the working age population. In about half of the European countries, working-age poverty is higher than for the older population (countries below the diagonal). The Bismarckian systems in Southern Europe reduce the poverty level for older people compared to the working age population, though they are still recovering from the Great Recession and pensions function as an automatic stabilizer. Many pension systems are relatively close to the diagonal (including the British and Irish systems), indicating that their overall level of poverty is similar between both population groups. Finally, there are large country clusters with more significant levels of old age poverty diverting considerably from that of the working age population; this is the case for some new EU member-states (the Baltics, followed by Bulgaria, Croatia, Malta and Cyprus) but also Switzerland (with a three-pillar system of a basic pension, occupational pensions and individual savings). In these countries, minimum income provisions are not enough to raise older people above the risk of poverty threshold: this is particularly the case for those aged 75 or older, who face substantially higher poverty rates than the age group before (aged 65–74), which is partly still active.<sup>2</sup>

The second dimension of income distribution is income inequality. In order to study the impact of market-induced inequality during working age on inequality in old age, Figure 2 uses the gap between the top income quintile (the top 20%) and the lowest income group (the lowest 20%) according to the Eurostat definition (S80/20 inequality). The income spread is by far larger for the working population than for older people; it ranges 3–8 times between the top and low earners under age 65, while it varies only from 2 to <6 times among older people (aged 65 and older). While earnings inequality during working life is more unequal, most pension systems not only reduce poverty but also partially compress the income distribution for those in retirement. Only very few countries show a slightly higher income inequality in old age than for the working population (Switzerland and Cyprus), whereas most other European countries are below the diagonal as their market-induced inequality is higher. But note that some countries in Southern and (peripheral) Eastern Europe tend to have considerably elevated inequality during working

**FIGURE 2** Inequality by age group.  
 Source: Income quintile share ratio S80/20 for disposable income (ilc\_di11) in EU-SILC (2017/18) [Colour figure can be viewed at [wileyonlinelibrary.com](http://wileyonlinelibrary.com)]



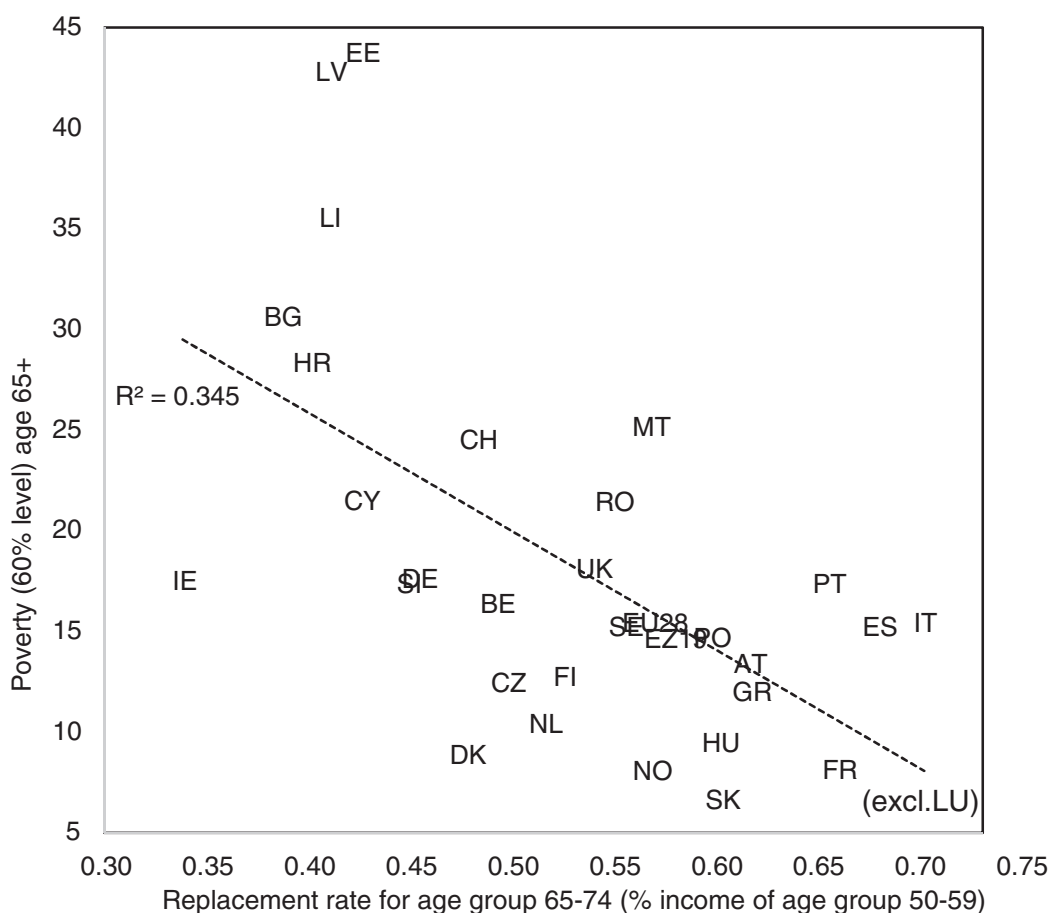
life (horizontal) which is largely reproduced in old age, albeit slightly less pronounced (vertical axes). Social inequalities are more compressed among the retired population thanks to their pensions, though many countries still have considerable income spread. While this comparison is contemporary, it is important to keep in mind that the poverty and inequality of income among older people are the outcome of past levels of poverty and inequality experienced during their past working lives.

Whether these differences in old age income in respect to poverty and inequality reproduce market inequality or soften their impact depends on the redistributive logic of pension systems. One pension system indicator is the overall social adequacy of pensions: Are the average level of old age benefits in line with the earning level of the working population? Eurostat's aggregate replacement rate is a synthetic indicator that relates the median individual gross pension (aged 65–74) to the median individual gross earnings of the senior career age group with peak earnings (aged 50–59), excluding the group of those in transition to retirement (aged 60–64). Figure 3 provides this aggregate replacement level in comparison to the at-risk-of-poverty rate 2017/18 (without outlier Luxembourg due to its very high benefits).

There is a relatively strong cross-national association between generosity of replacement level and poverty reduction: the higher the overall replacement level, the lower the share of older people at risk of poverty. The countries with low old age poverty also tend to have higher retirement benefits, maintaining a good standard of living (at least 80% of the median earnings), while the countries with high old age poverty risks live in societies with less generous benefits (below the 80% mark). The relationship between replacement rate and old age income inequality is much less clear (data not shown), indicating that the replacement rate level is a less powerful predictor for inequality than for poverty. Other features of the pension system in addition to market-induced earnings inequalities during working life matter for pension inequality more than the overall replacement rate, in particular uneven access and contributions in voluntary private systems matter.

#### 4 | CROSS-NATIONAL VARIATIONS IN OLD AGE POVERTY AND INCOME INEQUALITY

Having shown these cross-national variations in the income situation among older people across Europe, I will explore the particular clusters of countries with distinct patterns of old age poverty and inequality. Table 1 maps the



**FIGURE 3** Old age poverty and replacement rate. Source: Old age poverty (see Figure 1). Aggregate replacement ratio for pensions (tespn070) in EU-SILC (2017/18)

two main income dimensions among older people (aged 65 and older): inequality measured by the top quintile in relation to lowest quintile pension (vertical axis), and the risk of poverty rate (share of those with less than 60% median equalized income, horizontal axis). Classifying countries according to their relative position compared to the overall European average (18% in old age poverty and 3.9 times in inequality spread), that is, the medium rank, Table 1 groups countries into five categories on each dimension from low to high. The top performers (one *SD* below the average) are Norway and Slovakia (below 8.4 and 3.1%), followed by three Nordic welfare states (Ireland, Denmark and Finland) as well as the Netherlands, but also two CEE countries: the Czech Republic and Hungary. Relatively low inequality but medium poverty is found in Belgium, Poland and Slovenia today.

Among the middle field, three countries are slightly below the European average: Austria, Ireland and Sweden; this indicates a significant improvement for Ireland (traditionally with high poverty) but a decline for the “model” welfare state Sweden. Given the high benefit generosity in some Bismarckian systems, poverty is relatively low, yet inequality is higher than the average for France, Greece and Luxembourg. The reverse trade-off is found in three EU enlargement countries with higher poverty but medium level inequality: Malta, Romania and Estonia. A group with average poverty but higher level of inequality consists of both the Bismarckian name-giver Germany and “the” Beveridge welfare state, the United Kingdom. Also in the South, Italy, Spain and Portugal have medium level poverty but higher than average inequality. Finally, Switzerland, with its three-pillar system, and several new EU member states



**TABLE 1** At-risk-of-poverty rate and income inequality (S20/80) among older people (65+), EU-SILC, 2017/18

Inequality (65+)	At-risk-of-poverty rate (60% of median income)				
	Low L (-8.4)	Low-medium LM (8.4–13.2)		Medium-high MH (18–27.6)	
			Medium (13.2–18.0)*		High H (27.6–)
Low (-3.1)	<b>SK*</b> (6.7, 2.4) <b>NO#</b> (8.1, 3.0)	<b>CZ*</b> (12.5, 2.4) <b>DK#</b> (8.9, 3.0) <b>NL#</b> (10.4, 3.0) <b>FI#</b> (12.8, 3.0)	<b>BE~</b> (16.4, 3.0)		
Low-medium (3.1–3.5)	<b>IS#</b> (6.1, 3.4)	<b>HU*</b> (9.5, 3.5)	<b>PO*</b> (14.7, 3.4) <b>SI*</b> (17.4, 3.4)	<b>MT+</b> (25.2, 3.2)	
Medium (3.5–3.9)*			<b>AT~</b> (13.4, 3.8) <b>SE#</b> (15.2, 3.6) <b>IE~</b> (17.5, 3.8) <b>Ø</b> (18.0, 3.9)	<b>RO*</b> (21.4, 4.4)	<b>EE*</b> (43.8, 3.7)
Medium-high (3.9–4.7)	<b>FR~</b> (8.1, 4.1)	<b>GR+</b> (12.0, 4.0)	<b>ES+</b> (15.2, 4.5) <b>EU</b> (15.5, 4.2) <b>DE~</b> (17.6, 4.1) <b>UK~</b> (18.1, 4.6)	<b>CY+</b> (21.5, 4.6)	
High (4.8-)		<b>LU~</b> (12.0, 4.8)	<b>IT+</b> (15.5, 4.8) <b>PT+</b> (17.4, 5.3)	<b>CH~</b> (24.5, 4.8)	<b>BG*</b> (30.6, 4.9) <b>HR*</b> (28.4, 4.8) <b>LV*</b> (42.8, 5.0) <b>LT*</b> (35.6, 4.9)

Note: \* Medium: average (Ø) across all countries (EU28, incl. UK, plus CH, IS, NO); Low/High: one SD ± the average (poverty: 9.6, inequality: 0.8); pension systems with basic security underlined; Regime: ~Liberal, ~Centre, \*Eastern (CEE), +Southern, #Nordic.

Source: First number, horizontally: at risk of poverty rate (60% level) for older people (age 65+); second number, vertically: disposable income inequality (S8/S2) and based on EU-SILC (TESPN050/...080), average for 2017 and 2018.

(Croatia, Cyprus, Bulgaria, Lithuania and Latvia) have the double challenge of high poverty (above 20%) and large inequality (4–5 times between lowest and highest quintile).

This comparative analysis of poverty and inequality across Europe shows considerable cross-national variation in the income situation of older people. Neither all Bismarckian nor all Beveridgean systems are capable of preventing poverty and reducing inequality in old age. However, the Dutch and Nordic universal multipillar systems (except Sweden) and the *Visegrád* countries (except Poland) are performing very well with respect to both policy-aims: low poverty and low inequality. However, these are only 8 out of 32 European countries, and they tend to be rather small to medium-sized economies with either well-developed welfare states or rather low post-transition market inequality (see Figures 1 and 2). The largest economies such as Britain, Germany, France and Italy are all facing the double challenge of old age poverty and inequality. In Eastern Europe, beyond the *Visegrád* countries and Slovenia, in particular, the Baltic liberal pension system countries and the peripheral newest EU member countries, have reproduced high poverty and inequality, failing to expand social protection and curb market inequalities. This also applies to Switzerland with its multipillar system, the only Western country (albeit outside the EU) severely failing on both dimensions.

## 5 | PUBLIC FIRST-TIER INCOME PROTECTION AND POVERTY REDUCTION

How can we explain the found patterns of old age poverty? While the bivariate analysis of indicators (see Figure 3) helped us to account for some association between poverty and pension generosity (replacement rate), there are

more subtle institutional features of pension systems that matter for the reduction of old age poverty. Public pensions differ in respect of their first-tier *minimum* income protection (Goedemé, 2013; Goedemé & Marchal, 2016): Beveridgean basic pensions provide flat-rate benefits to all residents (based on contribution years or residence period) with some means-tested targeted benefits, whereas Bismarckian pensions often provide a minimum “social pension” (for those with enough contribution years) or rely on targeted welfare, be it income-tested guaranteed benefits or means-tested social assistance. For a minimum pension (or social pension, if existent), the number of required contributory years is relevant. This might be particularly problematic for women with very few working years (due to care-related breaks), the long-term unemployed or first-generation migrants who arrived late in their career in their host country (see Möhring in this issue). Public systems differ in respect of accrediting care-giving years and years of unemployment (Möhring, 2016).

Among the Beveridgean systems with basic pensions, the benefit level (% average earnings) is important to reduce poverty risks: British (16%), Danish (17%) and Icelandic (7%) pensions are particularly low, while Irish (37%) and Dutch (30%) public pensions are today among the highest in the OCED (see Table 2, based on OECD, 2017). In many cases, income-tested guarantees or means-tested targeted benefits are needed to lift them out of severe poverty: 17% of British and Irish pensioners receive such targeted benefits (35% of average earnings) most and nearly 9 out of 10 Danish pensioners (18%) and many Icelandic pensioners (20%). Three Nordic countries have changed from basic pensions to (income-tested) guarantees: 47% of retired Finns receive such form of minimum benefits (with a maximum of 21% of average earnings), 22% of Norwegians (32%) and 42% of Swedes (24%, plus targeted 15% benefit). The Swiss pension insurance provides basic security with rather limited contribution-related benefits (minimum: 16%) and a targeted supplement for every tenth pensioner (12%). Nowhere are the basic, targeted or minimum benefits enough to lift pensioners completely above the OECD's poverty line, that is, half of the net disposable income of the median earner.

Given the patterns in respect of poverty, only the Nordic and Dutch universal pension systems provide a good protection against the risk of poverty, based on a combination of basic or targeted minimum income provision (or a guaranteed minimum provision) that reaches the most in need. Among the eight countries with low poverty and low inequality, the Netherlands and all Nordic countries except one are represented. Sweden only figures today among the group with average poverty and inequality levels, having switched from basic-plus-earnings-related to a mainly earnings-related system. In the case of Ireland, a country with traditionally higher poverty, improvements in its basic pension provide today a slightly better performance than Britain, which has somewhat higher poverty rates despite recent improvements. At-risk-of-poverty rates vary across these Beveridgean systems from low to medium levels despite their explicit goal of poverty reduction. Following Korpi and Palme's (1998) “paradox of redistribution”, we find that it is not the targeted systems that are best to reduce poverty but the more encompassing universal plus supplementary ones, though the irony is that Sweden after its reforms is no longer the best performer. Generally, we can conclude that the first-tier Beveridgean pension system is a necessary but not sufficient condition for reducing poverty across Western Europe: second-tier supplementary pensions also matter.

Among the Bismarckian systems, it is also the second-tier pension that matters for poverty reduction, not only the first tier. Given the contributory SI, these systems have no universal basic pension, yet often a means-tested social assistance or further minimum provisions. For instance, Germany introduced an income-tested targeted benefit (only 2% of pensioners receive benefits of 19% average earnings) relatively late in 2003. The other Bismarckian system that has only targeted (means-tested) benefits is Austria (11% receive a benefit at 28%). Among the French-speaking countries, minimum pensions for those with enough social contributions are provided to 11% of Belgians, 29% of Luxembourgers and even 37% of French pensioners with medium level benefits (28%, 40% and 23% benefits, respectively). Indeed, as discussed, Germany has only a medium level of poverty (17.6%) similar to Belgium (16.4%), while Austria (13.4%), Luxembourg (12.0%) and France (8.1%) have somewhat lower levels. Thus among the traditional Bismarckian countries in Western Europe, particularly those with a social pension have done better, otherwise poverty levels are only at a medium European level.

**TABLE 2** Comparison of pension systems in Europe: First tier and multipillar structure (OECD, 2017)

Type*	Poverty	Inequality	Code	Country	Public first tier (cov. × %AW)	Public/Private second tier
Low/Low	6.7	2.4	SK*	Slovakia	Target (22%)	Soc. ins. (DB/LP; DC)
	8.1	3.0	NO#	Norway	Min. (22×32%)	Soc. ins. (NDC2014-; DC c:2%)
	6.1	3.4	IS#	Iceland	Basic (7%), target (20%)	Mand. occ. (DB/L, c:12 + %)
	8.9	3.0	DK#	Denmark	Basic (17%), target (88×18%)	Private DC (c:11%)
	10.4	3.0	NL#	Netherlands	Basic (30%)	QM and.occ. (DB*/L)
	12.8	3.0	FI#	Finland	Min. (47×21%)	Soc. ins. (DB/L)
	12.5	2.4	CZ*	Czechia	Basic (9%), min. (12%)	Soc. ins. (DB/L)
	9.5	3.5	HU*	Hungary	Min. (12%)	Soc. ins. (DB/L)
	Low/High	8.1	4.1	FR~	France	Min. (37×23%), target (25%)
12.0		4.8	LU~	Luxembourg	Basic (10%), min (29×40%), target (1×30%)	Soc.ins. (DB/L)
12.0		4.0	EL+	Greece	Min. (69×14%), target (36%)	Soc. ins. (DB/L)
Medium/Low	14.7	3.4	PL*	Poland	Target (12×15%), min (25%)	Soc.ins. (NDC; DC c:3.8%)
	16.4	3.0	BE~	Belgium	Min. (11×28%), target (5×25%)	Soc. ins. (DB/L)
	17.4	3.4	SI*	Slovenia	Target (17×31%), min. (2×13%)	Soc.ins. (DB/b24y)
Medium/Medium	13.4	3.8	AT~	Austria	Target (11×28%)	Soc. ins. (DB/40y)
	15.2	3.6	SE#	Sweden	Min. (42×24%), target (15%)	Soc.ins. (NDC/L; DC c:2.5), CA
	17.5	3.8	IE~	Ireland	Basic (37%), target (17×35%)	Vol.private
Medium/High	15.2	4.5	ES+	Spain	Min. (28×34%), target (6×20%)	Soc.ins. (DB/f25y)
	15.5	4.8	IT+	Italy	Min. (32×19%), target (22%)	Soc. ins. (NDC)
	17.4	5.3	PT+	Portugal	Min. (60×34%), target (17×17%)	Soc.ins. (DB/L)
	17.6	4.1	DE~	Germany	Target (2×19%)	Soc. ins. (DB/LP)
	18.1	4.6	UK~	United Kingdom	Basic (16%), target (27×20%), min. (10%)	Soc.ins (DB/L) or opt-out (DB/DC)
High/Medium	21.4	4.4	RO*	Romania	Min.	Soc.ins. (DB/L)
	25.2	3.2	MT+	Malta	Basic	Soc.ins. (DB/L)
	43.8	3.7	EE*	Estonia	Basic (13%), target (6×15%)	Soc. ins. (DB/LP), private DC
High/High	21.5	4.6	CY+	Cyprus	Basic	Soc. ins. (DB/L)
	24.5	4.8	CH~	Switzerland	Target (12×22%), min. (16%)	Mand.occ. (DB/L)
	30.6	4.9	BG*	Bulgaria	Min.	Soc.ins. (DB/L)

(Continues)

TABLE 2 (Continued)

Type*	Poverty	Inequality	Code	Country	Public first tier (cov. × %AW)	Public/Private second tier
	35.6	4.9	LT*	Lithuania	Basic, target	Soc. ins. (NDC), MDC
	42.8	5.0	LV*	Latvia	Basic, target	Soc. ins. (NDC), MDC

Note: \*Type: poverty/inequality; cov(verage) rate × benefit% (%AW: average wage); c, contribution rate (%); CA, collective agreement; DB, defined benefit; DC, defined contribution; L, lifetime; LP, lifetime points; y, years. Regime: ~Liberal, ~Centre, \*Eastern (CEE), +Southern, #Nordic.

Source: OECD (2017) and EU-SILC (2017/18).

Most Southern and Eastern European countries have also minimum pensions in addition to targeted ones. Among the Southern European countries, these are particularly widespread in Greece (69% pensioners at only 14% average earnings) and Portugal (60% at 34%), while only one-third of Italian and Spanish pensioners receive these minimum pensions (19% and 34%, respectively). Nevertheless, poverty is also only at a medium level, though Greece has slightly lower poverty (12.0%) but this has to be seen in the context of the crisis-related depression of median earnings. Quite in contrast, the *Visegrád* countries are doing particularly well in respect to poverty, particular Slovakia (6.7%) thanks to its relative high targeted pension (22% average earnings), followed by Hungary (9.5%), Czech Republic (12.5%) and Poland (14.7%), which have a mixture of low minimum or basic pension provisions (Poland has a targeted benefit for 12% pensioners at 15%). Also, the other Eastern countries have relatively meagre basic or minimum pensions: the Baltic countries have the highest level of poverty (Lithuania 35.6%, Latvia 42.8, Estonia 43.8%), but also the last new EU member states, Bulgaria (30.6%), Croatia (28.4%) and Romania (21.4), as well as Cyprus (21.5%) and Malta (25.2%). In general, the minimum or targeted benefits in these countries are too low to prevent poverty, and there are notable differences in recipient rates: these mirror the varying needs posed by the contributory SI. In these countries, the analysis needs to consider both tiers in order to understand the relationship between income protection and material social exclusion.

## 6 | MULTIPILLAR PENSION SYSTEMS AND OLD AGE INCOME INEQUALITY

In order to explore the impact of pension systems on income inequality in old age across Europe, the analysis needs to consider the multipillar architecture, particular the role of second-tier benefits in reproducing (or reducing) inequalities acquired during working life in old age. While privatization has led to a shift in responsibility for retirement income from the state to public actors (employers, unions and individuals), marketization reinforced employment-related public benefits and private contributory retirement savings (Ebbinghaus, 2015). Moreover, there has been a substantial increase in financialization, and the share of funded pensions has increased and with it the dependence of pension fund capitalism (Ebbinghaus & Wiß, 2011). Great Britain, the Netherlands and Switzerland are known for their pension fund capitalism, followed by several Nordic countries with substantial private and public pension fund assets. A more recent development in Eastern Europe created mandatory funded pensions, while some of the Continental countries, including Germany, added voluntary funded personal pensions to their mix. Table 2 provides an overview of the multipillar structure of second-tier pensions, indicating whether countries still have a dominant SI logic or whether they have considerable occupational (OP) or private personal pensions (PP) that are either mandatory or voluntary.

In respect to public schemes, the link between contributions and benefits depends on rules about necessary contribution years for a standard public pension (in addition to the minimum rules). In SI schemes, the necessary number

of years for early and standard pensions is an important factor in determining pension benefits (Ebbinghaus & Hofäcker, 2013; Hofäcker & Unt, 2013). The longer the period, the more it is a problem for those with interrupted or shorter working lives; they will otherwise receive benefit reductions. Thus the number of years for a standard pension is crucial in many pension systems (Frericks, Knijn, & Maier, 2009), though detailed information is not always available. According to the OECD, a few countries stipulate a relatively low number of years for a standard pension: Spain and Slovenia 15 years, Italy and Hungary 20 years and Poland 25 years for full minimum benefit, though in most other Bismarckian systems with defined benefits (DB) these range around 30–35 years (Portugal, France, Czech Republic). Standard pensions provide full benefits from 35 years (Greece, Spain, Danish ATP), 40 years (Luxembourg, Italy, France 42.5) and 45 years (Austria, Belgium, Germany). Basic pensions also provide full benefits only with similarly long residence (Finland: 40) or contribution records (UK: 44 years). There is no clear relationship between the length of contribution years required for full DB and both income indicators. Slovenia, Hungary and Poland with low inequality and poverty are among those with rather short contribution periods, but also Southern European pensions have relatively brief periods, yet they have relatively high inequality. In general, there might be more complex interaction effects or compensation measures (for instance, unemployment and child credit, which increase nominal contribution years).

In respect to second-tier (i.e., earnings-related or supplementary) pensions (see Table 2, last column), the main differences are between public earnings-related pensions with pay-as-you go financing and funded supplementary schemes (whether public or privately governed). Pay-as-you go systems provide some form of DB, though recently *notional* defined contribution (NDC) principles (Weaver, 2016) have been introduced in public pensions (Sweden, Italy). Several public pensions have been amended by benefit adjustments based on economic and demographic development, making them closer to defined contribution (DC) systems. Among the *funded* pensions, both DB and DC principles are common, though there is a trend towards DC schemes as underfunding of liabilities of DB schemes has become more common (Bridgen & Meyer, 2005, 2009). In DC schemes, benefits cannot be predicted as they depend on the future returns of the investment portfolio, whereas DB schemes promise a particular benefit relative to former earnings, thus demographic or financial funding risks have to be shouldered by adjustments to contributions and benefits.

DB systems differ in their link between contribution and benefits: final salary DB (or those with best average years) work in favour of white-collar employees with steeper age-related earnings and more likely grade promotions, while benefits based on working-life contribution records (i.e., point systems) put more emphasis on longer working life and average earnings. DB systems still exist in nearly all Bismarckian systems in Continental, Southern and Central and Eastern European countries. The exceptions are Italy, Poland and Latvia, which have changed towards NDC in their mandatory public second-tier schemes since the late 1990s (Greece followed in 2015). German public pensions have a variant of a point system (and also the French private sector second-tier schemes), while similar contribution-related schemes exist in Cyprus, Romania and Slovak Republic. Inequality is particularly low (as with respect to poverty) in the *Visegrád* countries due to the relatively egalitarian SI and not yet fully developed funded pensions: Slovak and Czech Republics are the most equal (both with 2.4 as S80/20 spread), followed by Hungary (3.4) and Poland (3.5). Belgium (3.0) and Slovenia (3.4) have also relatively low inequality for similar reasons. Other Bismarckian countries do have medium levels of inequality in old age; these include Austria (3.8), Germany and France (4.1), and at a higher level, Luxembourg and Italy (4.8) as well as Portugal (5.3).

Among the Beveridge multipillar systems, many funded second-tier schemes have been changed from DB to DC or mixed systems (Ebbinghaus & Gronwald, 2011; Holzmann, 2013). Switzerland has mixed DB occupational pensions (mandatory for employees since 1980s) and the Dutch pension funds (provided by employers or collective schemes) have been DB-funded, though these are becoming mixed schemes following the underfunding problems after the 2008 crash. In the United Kingdom, the public state second pension was recently abolished, and DB occupational pensions have increasingly shifted to DC, while personal DC plans with opt-out option were introduced in the 1980s (Bridgen & Meyer, 2005) and automatic enrolment of firm-based pensions more recently. Sweden introduced NDC for its public second-tier pension in the 1994 pension reform, and added a mandatory DC personal

pension (Norway followed in 2014) in addition to negotiated occupational pensions. Finland has a partially funded but mandatory DB scheme (also Iceland). Denmark has negotiated DC plans as second tier above the basic pension, and Ireland has only voluntary schemes (mainly DC plans). While inequality is much higher in British and Swiss multipillar systems (4.6 and 4.8), similar to the German earnings-related pension mix (4.1), in contrast, the Netherlands and the Nordic countries have been able to maintain relatively egalitarian income in old age. This is remarkable given that these top performers have considerable funded pensions, yet a wide coverage of supplementary pensions, be it through mandated or collectively negotiated funded pensions (Pavolini & Seeleib-Kaiser, 2018).

## 7 | CONCLUSION: THE FUTURE OF RETIREMENT INCOME PROVISION

My comparative analysis demonstrated the double-edged effect of multipillar pension systems, cutting in both directions: poverty and inequality in old age. While the public pension pillar provides the main factor in reducing old age poverty, the multipillar architecture shapes the reproduction of social inequalities. Public pension generosity of minimum income provision still plays an important role with respect to old age poverty. To reduce severe poverty among the retired population, minimum income security, in particular sufficient basic, guaranteed or minimum pensions, is needed. This will become even more crucial given the interrupted and non-standard employment careers of the current and future workforce (Hinrichs & Jessoula, 2012). The effect of privatization on inequality depends not merely on the public-private mix but also on its particular design, including the marketization of contributory pension whether public or private. These earnings-related pensions are essential for maintaining living standards for most income groups, yet they reproduce social inequalities from working life into retirement.

For the comparison of pension systems, we used the classification of Bismarckian SI versus Beveridgean multipillar systems, noting however also intra-regime differences in the extent of protection (lite or plus). The Beveridge multipillar systems rely alternatively on second-tier state pensions and/or on private occupational and personal pensions. The Bismarckian systems, designed to maintain status, have reproduced inequalities from their early days, and recent reforms will reduce public benefits, leaving room for market-induced inequalities through voluntary private pensions, unless state or collective regulation succeeds in increasing coverage and socially redistributive elements. Income inequality is shaped by the overall architecture of second-tier pensions, in particular whether these are public or private, (quasi)mandatory or voluntary, and DB or DC systems. While state pensions provide some redistributive features, in particular through social credits for caring activities or unemployment, private pensions rarely achieve social redistributive goals, unless tax subsidies, state regulation or collective agreements intervene.

My analysis has focused on two income indicators: relative old age poverty (60% level) and income inequality (measured by top 20% to lower 20% earners). These have also their limitations in measuring the income situation of older people by ignoring non-material deprivation and special needs. Moreover, the analysis presented here was cross-national; it could thus explore only the association between income patterns in old age and pension features at the system level. In order to understand the interaction between the socio-economic changes and changing pension systems for the income situation in old age, longitudinal studies of past developments as well as prospective simulations of future developments would be needed. In particular, while increased education and labour force participation has led to improvements through uprated pensions, the particular pension system also has an impact on reducing poverty as well as reproducing inequality in old age acquired during working lives. Thus, further analysis is needed to link these pension features to particular poverty and inequality outcomes over time. Moreover, the analysis of income inequality needs to be more fine-grained by looking at gender, age, cohort and household composition in order to evaluate pension outcomes. This would also require linking labour market developments, in particular increased flexibilization over time, with particular outcomes in old age, not least postponement of retirement and the share of working pensioners.

The potential future increase in old age poverty and income inequality, particularly for precarious social risk groups, could result from past and ongoing reform efforts (see Hinrichs this issue). Trends include cut-backs of public

benefits, insecurity of funded savings and potential threat of unemployment among older workers. Hence, the public system (including social assistance) remains the main protector against old age poverty not only today but also in the future. Well-developed Beveridgean and generous Bismarckian systems have been able to lower old age poverty thus far, but this may be more challenging in the future. However, increased old age poverty might augment political pressures to raise basic pension levels or provide guaranteed minimum income in earnings-related systems. Moreover, inequality is more likely due to labour market flexibilization but also increased marketization of pensions. Thus the tightening of benefit links to employment or contribution records in both public and private pensions will further lead to inequalities between those who have had long-term full employment and those with precarious jobs and new social risks. Most pension reforms have not addressed these challenges by compensating for such risks through effective minimum income provision. Moreover, collective negotiations of occupational pensions and regulatory intervention by the state are necessary to compress the in-built inequality-reproducing effects of private occupational and personal pensions. The current economic crisis and financial burden triggered by the Coronavirus pandemic will augment the fiscal sustainability pressures, and it will also lead to largely unintended repercussions for the old age income situation of current and future pensioners.

## ACKNOWLEDGEMENT

An earlier version of this paper has been presented at the ETK Seminar, Finnish Centre for Pensions, Helsinki, on 4 February 2020. The author thanks the two anonymous reviewers and special issue editors for their comments.

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## ENDNOTES

<sup>1</sup> Using EU-SILC (2017/18) indicators, I map the cross-national patterns of “at-risk-of-poverty” (60% of median equalized disposable income) and the spread between top and bottom quintile income groups (S80/20 indicator) for the most recent available figures (an average of 2017 and 2018 if available).

<sup>2</sup> A comparison of EU-SILC (2017) at-risk-of-poverty rates (aged 65–74/75+) shows the largest age group differences in Bulgaria (21.4/36.8), Cyprus (14.7/28.6), Estonia (18.4/51.2), Latvia (19.7/50.4), Lithuania (21.2/39.9), Malta (16.3/24.4) and Switzerland (13.7/30.2).

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**How to cite this article:** Ebbinghaus B. Inequalities and poverty risks in old age across Europe: The double-edged income effect of pension systems. *Soc Policy Adm*. 2021;55:440–455. <https://doi.org/10.1111/spol.12683>