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*Minimum pension as the instrument
for protecting the elderly against poverty in Poland*

Abstract

Poverty alleviation of the elderly is one of the purposes of the pension. Poland conducted a systemic pension reform in 1999, when the defined benefit pension formula was replaced by the defined contribution one while the minimum pension is still granted. The article puts forward the following research question: to what degree does the minimum pension in the new system contribute to limitation of male and female old age pensioners' poverty? Poverty has been operationalised as the level and depth and the assumed poverty line is an absolute one. The basis for the conclusions is the microsimulations of the benefit levels based on the real parameters of men and women born between 1974 and 1981 who will

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receive the pension according to the new rules. In accordance with the conducted analyses, the minimum pension in the present form mainly reduces women's poverty (both in terms of level and depth). Raising the women's retirement age by five years (thus equalising it with men's) changes this situation only to a limited extent. Shortening the waiting period to ten years at the most (instead of twenty) for women seems to be the key decision to be taken in order to prevent poverty more effectively.

Key words: women, men, pension system, minimum pension

Introduction

Protection of the elderly against poverty is treated as a relevant objective of the welfare state and the primary goal of pension system on the macro level both by researchers (Barr & Diamond, 2010, p. 10)³ and international entities such as the World Bank, OECD or ILO. Usually, the goal of protection against poverty is exclusively limited either to the first, i.e. the public, obligatory tier of the pension system (e.g. Clark et al., 2006, p. 21; Chybalski & Marcinkiewicz, 2016) or the zero (World Bank) (Holzmann, 2013, p. 11 ff.; Holzmann & Hinz, 2005, pp. 42–44) or the first (OECD) (OECD, 1998) pillar of the pension system.⁴ The data shows that redistribution via pension benefits contributes significantly to reducing poverty among older people (OECD, 2008; Van Vliet et al., 2019). However, in countries where pension reforms were aimed at strengthening the link between contributions and benefits (especially those where DC (defined contribution) pensions were introduced), the poverty alleviation function has been reduced (Grech, 2015).

The aim of this article is to examine the role of minimum pension in alleviating old people's poverty in Poland, which is one of the countries which conducted the systemic pension reform about two decades ago. The new DC pension formula will largely lead to a significant reduction in the (relative) level of the benefit, expressed as the shrinking individual replacement rate. This may result in, firstly, in the inability to maintain the living standards as they were before one terminated the vocational activity⁵. Secondly, reduction in the amount of the benefit may cause a collapse into income poverty, especially for

³ Some scholars (Chybalski, 2018a) believe that protection against poverty, aside maintaining the former living standards, constitutes an inherent element of another goal, i.e. adequacy of pension benefits.

⁴ This seems to be a justified approach especially in the countries where the second and third pillars are voluntary or quasi-voluntary. In this context, the notion of pension as such is the main problem (Schmähl, 1998, p. 61).

⁵ There is no agreement as for how much the individual replacement rate amount to in order should to guarantee maintaining the former living standard (however, e.g. ILO set down the minimum of the replacement rate at the level of 40% after 30 years of vesting period). This is caused, among other things, by old people's different consumption patterns who are vocationally inactive as well as changes in these patterns within the whole period of the old age. What is more, "technical" aspects also matter, e.g. the definition of the individual replacement rate.

persons with low earnings, including women⁶. This problem has already been discussed in the subject literature (Arza, 2015; Brimblecombe & McClanahan, 2019; Müller, 2007, p. 90). It was also the reason for adopting a gender perspective in evaluating antipoverty effects of the minimum pension in Poland. The purpose of this article is to answer the following research question: (1) to what extent does the minimum pension contribute to reducing poverty among men and women in Poland? As the right to minimum pension depends on meeting minimum retirement age and minimum vesting period⁷ (both different for women and men), also a question about (2) consequences of those criteria modification for reducing poverty for both sexes in Poland was raised.

Analysis of the importance of minimum pension for protection against poverty encompasses its two aspects: level and depth. The level is measured by poverty rate, while depth is calculated as the poverty gap for poor people (Panek & Zwierzchowski, 2014, pp. 27–28).

In this paper, the authors have used two types of data: the statistics published or shared by the ZUS (Social Insurance Institution) as well as the results of the independently conducted microsimulations referring to benefits of people whose pensions would be derived exclusively from the so-called “new” pension system.

The present article is structured as follows: firstly, minimum pension is analysed as a tool for protecting the elderly against poverty, consecutively followed by the presentation of the construction and evolution of this instrument in Poland. Next, the simulation methods of the old age benefits are discussed, which, in turn, leads to establishment of a diagnosis concerning the importance of the minimum pension in the new pension system. Finally, conclusions are offered.

Minimum pension as the instrument serving protection against old people’s poverty

The issue of old people’s poverty is a broadly discussed subject in a variety of publications. It addresses both the diagnosis of the phenomenon and the means to achieve the poverty alleviation⁸. It is often discussed from the perspective of the broadly understood pension systems’ adequacy (Chybalski, 2018a; Hagemeyer & Woodall, 2014; Holzmann & Guven, 2009). The literature concerning old age minimum income contains analyses of the impact exerted because of existence and construction of minimum pension on poverty

⁶ In this case even a “decent” individual replacement rate may not suffice to protect against absolute poverty.

⁷ Following the reviewer’s suggestion we use the term ‘vesting period’ as a period (of employment or insurance or service) required for obtaining the pension provision.

⁸ Systematic data on old people’s poverty and the conducted pension reforms is delivered by the European Commission (in the annual Ageing Report compiled by the Committee of Economic Policy and the European Commission or a triannual Pension Adequacy Report produced by the Committee of Social Security and the European Commission), OECD (Pensions Outlook) or World Bank (pensions database).

or on the costs of the pension system (Atkinson et al., 2002; Dethier et al., 2011; Pérez-Salamero González et al., 2017; Smetters, 2002; with reference to Poland: Szczepański, 2015; Szybkie, 2018). Other authors focus on discussion regarding the introduction of the so-called “state pension” or guaranteed income as alternative to the existing solutions (Atkinson, 1996; Baecker, 2018; Meinhardt, 2014; von Weizsäcker, 2003)⁹. Also, other issues are touched upon concerning the impact of the minimum pension construction on various entities’ behaviour, including the labour market (e.g. Jiménez-Martín, 2014).

It has to be emphasised that the old age minimum income within the framework of a pension system can be accomplished in a variety of ways (Whiteford & Whitehouse, 2006, p. 84 ff.). Firstly, it may be guaranteed directly in a flat-rate pension system, as long as it amounts to more than the accepted poverty threshold (and poverty itself is confined to income poverty). In insurance-type pension systems, such benefit may be a minimum pension available under certain conditions (in particular, a minimum retirement age, a defined length of the vesting period). These conditions may be more lenient than for a pension in general, but it also may become quite the opposite (as it is in the case of Poland). Then, what is “strengthened” is the selectiveness in the insurance-type pension system. First of all, it is caused by the fact that the system *per se* does not cover all the citizens or all the earners. Secondly, not all the people covered by the system meet the eligibility criteria for obtaining the minimum pension. Insurance systems also use other solutions, e.g., subsidies to the contribution base, or including higher remunerations (especially in DB systems) in the pension calculation. Indirectly, compensatory rules or provisions (Ginn, 2004) can be used as tools for increasing the pension amount, e.g. including the periods of caring for dependants. The importance of these mechanisms for protection against poverty depends both on individual factors (such as moulding the personal and professional biographies) and on the construction of these mechanisms (length and amount of the compensation). In insurance-type systems, the survivor benefit also plays an important role, which especially in the case of women may contribute substantially to poverty reduction (OECD, 2018, pp. 233–254).

It must be stressed that accomplishment of effective protection against poverty within the public system bears particular consequences for (income) redistribution. If the guaranteed old age minimum income draws upon an insurance fund, we have to deal with the violation of the individual (mathematical) equivalence of the benefit. Such a situation, especially in the defined contribution systems, where the pension amount is directly proportional to the raised pension capital and inversely proportional to statistical life expectancy, may lead to weakening of the motivational function of work and individual prudence toward old age. Therefore, some proposals are being made for financing minimum benefits either from tax revenue, or a specific budget subsidy (e.g., in insurance-type systems) to the insurance pension system or alternatively, directly, in the form of a flat-rate pension.

⁹ A broad overview of literature on the subject of basic income in the context of social provision (Szarfenberg, 2018).

Table 1. Minimum income for the old age (EU solutions (2017))

	Flat-rate pension	Contributory minimum pension	Social assistance cash benefits for older people	Social assistance cash benefits for the whole society
BE		X	x	
BG		X	x	
CZ				x
DK	x		x	
DE			x	
EE			x	
IE		X	x	
EL		X		
ES		X	x	
FR		X	x	
HR		X		
IT		X	x	
CY		X	x	
LV		X	x	
LT			x	
LU		X		
HU		X	x	
MT		X	x	
NL	x			
AT			x	
PL		X		
PT		X	x	
RO			x	
SI		X	x	
SK		X		
FI	x		x	
SE	x		x	
UK	x		x	

Source: authors' own compilation based on (European Commission, 2018, pp. 55–58) and MISSOC database.

Protection against poverty at the old age may also be treated as a detailed element of the overall aim regarding protection of the whole population against poverty in general. Thus, such an aim may sometimes be accomplished beyond the pension system, either as a benefit directly addressed at the elderly or as a provision included in the system of social assistance for all citizens, where individual income or property value is taken into account. Such an approach has the following merits: first of all, it may consider all the incomes of old people, including the ones gained from other voluntary pension provision, vocational activity or other sources. Secondly, when determining the eligibility status of a person, the size and structure of their household is considered, with particular regard to whether or not it is a two-person household. Thirdly, the accepted poverty line is the absolute line referred to an estimated (average) basket of goods, while the level of the benefit may sometimes be adapted according to the individual needs. Fourthly, eligibility for a minimum income provision for the old age is inspected periodically and its amount is customised to the individual changing situation. Fifthly, shifting minimum benefits beyond the pension system, especially into the social assistance system, makes it possible to “consolidate” both administration outlays and expenses directed at protection against poverty. One downside may be the stigmatising character of this kind of aid and demotivation against individual prudence.

Regardless of the part of social security system in which the minimum income for the old age is generated, for the protection to remain permanent valorisation of this benefit is indispensable. Especially, there is a question about its frequency (*ad hoc* or periodical), type (amount or percentage) as well as its level (whether it will be dependent on the rate of wage growth, inflation, GDP).

Solutions regarding the minimum income at the old age in the EU countries (table 1) indicate that in most countries a minimum pension exists, often supplemented by social welfare benefits addressed exclusively at the elderly. In Poland, a solution involving a minimum pension has been functioning within the social insurance pension system. This instrument is not accompanied by social assistance solutions addressed exceptionally at old people. It might mean that the main role of protection against poverty is played by the public pension system.

Minimum pension — history and construction in Poland

While the 1954 Act introduced the notion of old age benefit as a separate provision (as opposed to the allowance on account of work inability due to old age) (Pławucka, 1991, p. 388), it was not before 1968 that the term “pension” appeared in the legislation (Pławucka, 1991, p. 397). One of the key problems regarding benefits for old people for many years after WWII was their small amount and differentiation of this amount amongst the subsequent generations of pensioners. These two phenomena resulted from abrupt changes in pension regulations. On the one hand, the changes led to modifications of the pension formula and on the other, increased the nominal levels of salary thresholds considered in benefit calculation. The new regulations, each time, did not encompass the

existing benefits, which inevitably led to establishment of the so called old and new benefit portfolio (Muszalski, 1988, p. 69; Pławucka, 1991, pp. 378–379 and 394–395; Makarzec, 2013, p. 107). Another problem referred to the benefits' valorisation. To address these problems, in 1956 a decree was issued which introduced a minimum amount of the old age allowance, and in 1968 the minimum amount of pension was established. At the same time, in 1954 the conditions for obtaining the minimum pension were changed by increasing the vesting period up to 25 years for men and 20 years for women (Muszalski, 1988, p. 68). The vesting period was considered to be identical to the period of employment; however, the term referring to the length of service was very broad, it also took into account the periods considered as employment, such as education (see: Szubert, 1987, pp. 163–165; Pławucka, 1991, p. 381).¹⁰ Another condition regarded reaching the minimum retirement age, which basically amounted to 65/60, although it was possible to finalise one's vocational activity before that age by using special regulations addressed at a particular vocational group or gender. Adapting the minimum amounts of these benefits was an attempt to limit poverty among old age pensioners on the one hand, and on the other, it was supposed to indirectly replace the valorisation of the pensions paid out (Szubert, 1987, p. 174 ff.). The contentious issue was how high the minimum pension should be as well as the dynamics of changes in that amount. One prevailing view was that the level of the minimum pension should be correlated to the level of the minimum wage and be equal at least to the social minimum¹¹ for a two-person (or possibly a single person) retiree household. In the end, in the early 1980s a rule was introduced that a minimum pension should be equal to at least 90% of the minimum wage (more: Muszalski, 1992, pp. 100–111)¹².

The paradigmatic reform of 1 January 1999 maintained the general corrective mechanism in the form of minimum pension. Eligibility terms were retained, i.e., reaching the minimum retirement age and presenting the required vesting period as well as their levels (65/60 and 25/20 respectively). Thus, eligibility for the minimum pension depends on meeting both requirements. Moreover, after 1 January 1999 access to pension in general was possible after reaching the statutory retirement age differentiated according to gender (and terminating the employment contract). Retaining the vesting period as the eligibility condition regarding minimum pension might be justified by a sufficiently long participation in financing a pension fund. Since 1999, however, minimum pensions have

¹⁰ The catalogue of these periods was modified with time; later on it was transformed into non-contributory periods.

¹¹ The social minimum is an amount which allows "a minimum decent living standard" which involves expenses on livelihood costs, having and raising children and maintaining social ties (Kurowski, 2003, p. 2).

¹² According to Barr and Rutkowski, socialist countries avoided establishment of an official poverty line (because poverty as a phenomenon was denied for doctrinal reasons) and the level of the minimum pension was tied to either an average salary or a minimum wage. The transition to market economy, which was accompanied by a drop in the purchasing power of an average salary led to a similar decline in benefits from the pension system. On the other hand, linking the minimum pension to the minimum wage caused the level of the latter to become a strictly political issue, also because of the shrinking social function of the state. (Barr & Rutkowski, 2005, p. 139).

been subsidised from the budget, i.e., from non-contributory sources. This is done through a subsidy to an individual benefit calculated based on a new DC pension formula. So, a rule is followed according to which those who have not generated a particular amount of benefit in the course of their employment despite a multiannual vesting period are backed by the state in the form of a guaranteed minimum pension. Those who remain, i.e., those who are not eligible for a pension from the public system at all or have been insured for a shorter time than the required minimum, may have access to social assistance benefits available for the entire society. It has to be said here that the varying terms for acquisition of minimum pension for the two genders result from a similar solution regarding pension in general. One should expect equalisation of the statutory retirement age of men and women to result in the suitable change in the required minimum vesting period (for women). This was the case in the years 2013–2017 when the process of raising and equalising the retirement age for both women and men was underway and cancelled in 2017. Still, a question can be asked about the particular length (and not a different one) of the minimum vesting period enabling one to obtain a minimum pension.

From the point of view of protection against poverty, the key issue remains to be the relation between minimum pension and various values characteristic for a) earnings received on the labour market (minimum wage and average wage in an economy), b) diagnosing poverty in the presence of absolute poverty lines (subsistence minimum and social minimum)¹³ (figure 1). The most significant drop can be observed in the past nineteen years in relation to the minimum wage (almost thirty per cent) and the average wage (fifteen per cent)¹⁴. This means that the income of the old people who receive a minimum pension was raised much more slowly than the minimum wage for the vocationally active generations, especially after 2007. The income situation of the retirees receiving the minimum pension also improved less speedily than that of the average earners, although this situation took place mainly in the early 2000s. Considering absolute poverty lines the relation of minimum pension to these numbers grew by approx. 5% for

¹³ In the European Union statistics, the relative poverty line is implemented (the threshold amounts to 60% of the national median equivalised disposable income after social transfers) to measure the at-risk-of-poverty rate. The latter, together with the severely materially deprived or living in households with exceptionally low work intensity, are used to identify people at risk of poverty or social exclusion. We refer to the absolute poverty lines which are calculated considering the basic needs' method (basket method): the subsistence minimum (extreme poverty line; determine the level of satisfying needs, below which there would be biological threat to life and mental-physical development of man and family) and social minimum (consumption pattern ensuring regeneration of vital powers, having and raising offspring and maintaining social bonds) (Deniszczuk et al., 2007, see: Wóycicka, 2009). Because the subsistence minimum is the lowest absolute poverty threshold, in order to assess needs in Poland we used it in the further simulations.

¹⁴ During the calculations gross values of both wages (minimum and average) and minimum pension were considered. Net relations would have given a different outcome due to the fact that persons who receive a pension (and do not earn a wage) do not pay contributions toward social insurance; they only pay for health insurance. Moreover, our state uses a progressive tax scale.

both lines¹⁵. It can be said that the level of the minimum pension is substantially above the minimum enabling biological survival and amounts to approx. 80% of the minimum required to participate in an ordinary social life. Therefore, the level of minimum pension basically guarantees protection against the so-called primary poverty and to a large extent against the so-called secondary poverty.

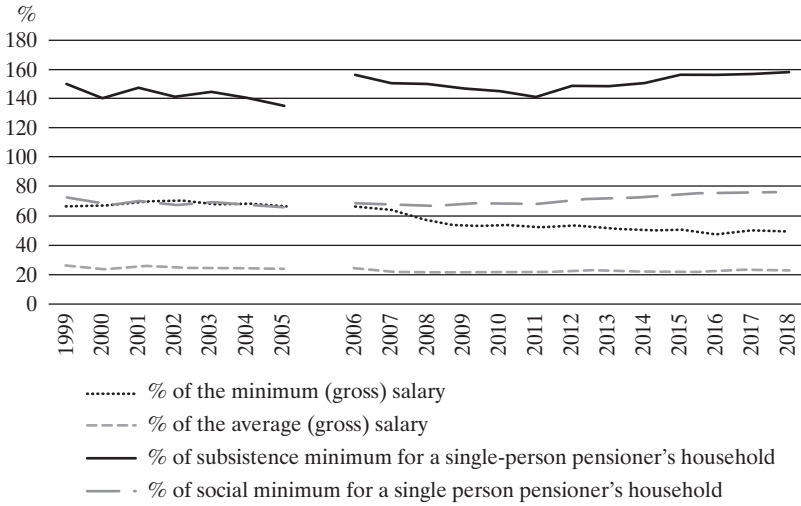


Fig. 1. Relation of the minimum pension to the minimum and average wage, subsistence and social minimum between 1999 and 2018*

* Since 2006, a modified application of the basic needs' method for calculation of the subsistence and social minimum has been used; because of that the data till 2005 and after are not fully comparable (see Deniszczyk et al., 2006).

Source: authors' own compilation based on data from IPISS (Institute of Labour and Social Studies) and GUS (Statistics Poland).

The importance of minimum pension for protection of Polish male and female pensioners against poverty

The analysis of the significance of minimum pension in Poland was an element of comparative studies conducted on the basis of EUROMOD microsimulation model¹⁶ (Figari et al., 2011). As opposed to the model used in in this paper, the conducted analyses

¹⁵ A poverty line was assumed for a single-pensioner household. Due to the fact that these lines are published as net values, the minimum pension was also considered as a net value (by subtracting the contributions toward health insurance and tax revenue).

¹⁶ A micro-simulation tax and benefit model for the EU countries which enables a comparative analysis of the consequences of changes in the fiscal system and social benefits for the income levels and behaviour patterns on the population's labour market.

are characterised by a static approach and with an assumed a relative poverty threshold. F. Figari, M. Matsaganis, H. Sutherland also take the disposable income of a household into account while considering its structure (without a gender division), in this article, however, the individual gross income from the public pension system. K. Hagemeyer cites calculations referring to the minimum vesting period of service for men and women who obtain a minimum wage (born 1958–1994) required qualify for a minimum pension (Hagemeyer, 2018). On the other hand, A. Chłoń-Domińczak and P. Strzelecki (Chłoń-Domińczak & Strzelecki, 2013) studied — based on microsimulations — the percentage of the future male and female retirees would become eligible for a minimum pension, considering two variants of the minimum benefit valorisation. The common element of the analyses carried out by A. Chłoń-Domińczak and P. Strzelecki and the ones which this work is based on is the dynamic character of the research while the differences refer to the assumptions taken for the simulations¹⁷ and the assumed poverty threshold.

In the course of study of retirees' poverty in Poland, a decision was made to focus on income poverty and the absolute poverty line was assumed, being understood as an existence minimum for a single-person household. Due to the fact that the available data presented gross values, it was decided to calculate the poverty line in gross terms as well. For the coming years, the poverty line valorisation was assumed based on the inflation level. Poverty was operationalised in terms of its level and depth. The level is measured by poverty rate, while the depth is calculated as the poverty gap for poor people (Panek & Zwierzchowski, 2014, pp. 27–28).

The basis for the analysis is the existing data as well as the research findings based on original model and exploiting microsimulations. Microsimulation is a computational tool for modelling socio-demographic process in order to gain insights into life course transitions and to make projections.

Two important features distinguish microsimulation from other models. First, the unit of analysis is the individual. Second, the sequences of events that individuals experience over time are the result of stochastic experiments with predetermined probabilistic rules. Transitions between states are typically generated using computer algorithms and techniques also known as Monte Carlo methods (Zagheni, 2015, pp. 343–346). In other words, microsimulation mimics demographic processes on individual members of a population. The proposed model assumed the generation of as many as 100 K model biographies of people who entered the labour market in 1999 and were 18–25 years of age¹⁸. Age and gender are the random variables but its distribution is in accordance with

¹⁷ A. Chłoń-Domińczak and P. Strzelecki based their work on the data referring to the vesting period and salaries paid to female pensioners aged 55–59 and male pensioners aged 60–64 in 2008. The data also varied in terms of macroeconomic assumptions and further projected increase in life expectancy.

¹⁸ Despite this, the results concerning men's poverty, considering the relatively low poverty threshold i.e., the subsistence minimum, they are still quite unstable. It means that their interpretation requires caution, and the conclusions might be erroneous. Female pensioners' situation is different as the number of women who receive benefits below subsistence minimum is much higher.

the actual structure of age and gender in 1999 established on the basis of the GUS data (Statistics Poland, 2019). All the relevant events which mattered for the future pension provision such as employment, becoming self-employed, maternity leaves, caretaking leaves, long-term care, marriages and deaths were also randomly generated based on their probability identified on the basis of the genuine data from years 1999–2017 or shorter periods (if the data for other years was unavailable)¹⁹ and forecasts published by GUS, ZUS (Social Insurance Institution) and the OECD. When it comes to deaths, future life expectancy tables were generated on the basis of the Lee-Carter model (Lee & Carter, 1992), which were based on demographic data from the years 1958–2018 downloaded from the Human Mortality Database. The indicators for employment, increase in salaries and inflation were accepted according to *The 2018 Ageing Report Underlying Assumptions & Projection Methodologies* (European Commission, 2017, pp. 80, 92, 204). Based on the indicators mentioned above valorisation was also estimated for individual accounts, sub-accounts²⁰, minimum pensions²¹, paid out benefits and the contribution base for the non-earning period. The legal status was established for December 2018.

Analysis of the existing data shows that both level and depth of poverty are higher in the so-called new pension system than in the old one (Tab. 2).²² These phenomena occur in a much stronger manner amongst the newly granted pensions (Tab. 3): both the poverty rate and poverty gap of the poor people are higher in this case²³. Moreover, in 2018 they occurred much more intensely than six years earlier. Poverty mostly affects women who receive their pension from the so-called new pension system, although poverty among male pensioners benefitting from the “new” system is also growing substantially. This situation is caused by the changes in the pension system especially application of the DC formula on the one hand and by the vocational and non-vocational biography records, partly (primarily for benefits obtained from the new system) moulded during the years after the period of political and economic transformation. Higher level of poverty among women may also result from insufficiently long vesting period to acquire a minimum pension. Average number of years of insurance for people who were granted pension

¹⁹ In the case of gaps, the data was supplemented through assuming as follows: for the years before the year in which the data existed — the indicator level from the first available year; for the years after the last year in which genuine data was accessible — the indicator level from the last available year.

²⁰ In the simulation a division of the contribution was assumed between an individual account and an individual sub-account at ZUS. More on the subject: ([anonimizacja]).

²¹ For which valorisation was assumed as identical with all the old age and disability benefits i.e., the inflation rate raised by 20% of the real increase in salaries.

²² The timespan of the presented data is dictated by two premises. Firstly, pensions from the “new” pension system have been paid out since 2009. Secondly, the data disclosed by ZUS, divided into “old” and “new” pension systems, encompass just two observations: the years 2012 and 2018.

²³ Due to the fact that the data regarding the level of benefits is presented in brackets which do not “overlap” with the poverty line, the poverty rate is calculated as a percentage of people whose pensions are included in the bracket encompassing the poverty threshold and below it. The poverty gap is calculated according to the central values in brackets.

according to the so-called old system in 2012 was quite similar for both men and women (and amounted to 33.4 years and 34.7 years respectively) (Social Insurance Institution, 2013, p. 33). In 2014, this period was almost five years longer for women (and amounted to 37.5 years; Social Insurance Institution, 2015, p. 33)²⁴. Considering the range of poverty, it can be asserted that distribution of employment period is probably more symmetrical for women than for men.

Table 2. Old age pensioners' poverty in Poland divided according to the so called "old" and "new" pension system and gender in 2012 and 2018 — pensions paid out

Poverty rate (%)				
	old system		new system	
	men	women	men	Women
2012	0	0.1	n. o.	0.3
2018	0	0	1.3	3.2
Income gap of poor pensioners (%)				
	old system		new system	
	men	women	men	Women
2012	0	20.8	n. o.	5.3
2018	0	0	26.4	24.1

n. o. — the phenomenon does not occur

Source: authors' own calculations based on the ZUS data.

Table 3. Old age pensioners' poverty in Poland divided according to the so called "old" and "new" pension system and gender in 2012 and 2018 — pensions granted

Poverty rate (%)				
	old system		new system	
	men	women	men	women
2012	0.4	0.9	n. o.	4.0
2018	0	0.4	5.3	7.9
Income gap of poor pensioners (%)				
	old system		new system	
	men	women	men	women
2012	n.d.	n.d.	n. o.	10.1
2018	n. o.	36.6	34.9	28.1

n. o. — the phenomenon does not occur

n.d. — there is no data available

Source: authors' own calculations based on the ZUS data.

²⁴ In 2013, the process of raising the retirement age for women was initiated. Data for 2014 is the most recent available information about the vesting period of retirees who were granted pension in that year.

In the light of the above information, a question arises concerning the forecasts for the phenomenon of poverty in the future. They will be based on the simulation outcomes for individuals who have become eligible for a pension solely in the new pension system. The values are calculated for single-person households.

Table 4. Range and depth of poverty for pensioners born 1974–1981 depending on the minimum retirement age and the length of vesting period required to obtain minimum pension rights

Poverty rate						
	No minimum pension	IP = 25	IP = 20	IP = 15	IP = 10	IP = 5
M 65	1.87%	1.59%	1.89%	2.25%	1.82%	1.21%
F 60	16.96%	10.83%	9.51%	9.15%	7.37%	4.83%
F 65	10.83%	7.11%	7.19%	8.56%	7.06%	4.77%
Poverty gap						
	No minimum pension	IP = 25	IP = 20	IP = 15	IP = 10	IP = 5
M 65	62.60%	62.47%	57.47%	53.11%	37.76%	19.41%
F 60	67.60%	67.38%	56.44%	41.15%	26.97%	11.89%
F 65	67.04%	69.43%	58.27%	47.45%	32.33%	15.48%

M – males

F – females

IP – vesting period required to obtain minimum pension

Source: original compilation based on the outcomes of simulations.

If one considers the situation of two persons who will acquire their pensions exclusively in the new pension system and retirement age will remain as it is at present (60/65) the same as the terms for pension eligibility (20/25 insurance years), women's poverty rate will be almost five times higher than men's (table 4). Parallel to that, the median pensions of men and women will be similarly lower (ca. 60%) than the subsistence minimum.

Simulation outcomes suggest that the key role in limiting women's poverty is played by the minimum pension. The lack of a minimum benefit would lead to a rise in poverty rate of 80% for this group and would result in 17 out of 100 women receiving a pension which is insufficient for biological survival. The lack of minimum pension also exacerbates poverty depth by ca. 20%: the difference between the median benefit from the public system for poor women and the poverty line increases up to ca. 70%.

Due to the above one should ask whether and how mitigation of eligibility terms (by changing the required vesting period) may affect the poverty range and depth for this group. Simulation outcomes indicate that in the case of females it is a significant reduction of the vesting period that significantly contributes to limiting the elderly women's poverty. A decrease to 15 years in the vesting period results in a drop of less than 4%; should the

vesting period be halved, the poverty rate will decrease by 22%, while the reduction of the required vesting period to just 5 years will bring about a drop of 50% in poverty rate. One should add here that as the requirement regarding the qualifying years of employment is lowered, the poverty gap is also diminished: for five-year intervals, the difference between the median income of impoverished female retirees and the subsistence minimum was approx. 20% lower and fluctuated around 10% when the vesting period dropped to 5 years. The significance of a minimum pension and the terms for granting it for poverty rate regarding men is much smaller; it has to be stressed however, that alike women's, men's vesting period reduced to just 5 years generates an abrupt drop in the poverty rate — by approx. 20%. This looks very much the same in the case of poverty gap: when the vesting period amounts to 5 years, the indicator diminishes by approx. 40 percentage points²⁵.

Minimum retirement age is a vital building block of a pension system. Its significance is analysed from various points of view (Chybalski, 2018b). It is argued very often that equalising the statutory retirement age for men and women is crucial for reduction of poverty feminisation in the future (Jablonowski & Müller, 2013, p. 74 ff.). In the context of discussion and changes introduced to the minimum retirement age, most experts share the opinion that there is an urgent need to increase the genuine retirement age (Bielecki et al., 2017). The factor which immensely affects its actual level is the statutory retirement age (Bielawska, 2019; Sierdzińska-Ruzik, 2018). This is the reason why one of the goals of the simulations was to put forward a diagnosis concerning the way in which equalisation of the minimum retirement age regarding gender may affect both the poverty rate and gap of the future female retirees.

Raising the minimum retirement age leads to a reduction in the percentage of impoverished pension beneficiaries by approx. one quarter — every fourteenth (and not every eleventh) woman receives a pension which is below the subsistence minimum. The poverty gap would remain stable, which would mean that impoverished retirees are as penniless as they could be if their vocational activity were terminated earlier. When interpreting data, one has to take it into account that a five-year higher minimum retirement age is not synonymous to a five-year longer vesting period (and especially, the contributory period)²⁶. Poverty reduction caused by the higher minimum retirement age is also affected by the fact that the simulation took into consideration the possibility for pensioners to select a family pension after the spouse's death instead of the individual pension. Due to the fact that men's mortality becomes higher with age, a higher retirement age for women may mean a larger number of female pensioners choosing a more profitable survivor benefit.

²⁵ Results for men should, as it has already been said, be treated very carefully due to a low number of poor male pensioners in the group of 100K simulations.

²⁶ It should be stressed that vocational biography simulations were based on the authentic data (up to 2018) and therefore it was not assumed that raising the minimum retirement age would always involve lengthening the (full-time) employment period.

In the context of the above discussion a question should also be asked how a simultaneous increase in statutory retirement age and the required vesting period for a minimum pension could affect old women's poverty. The conducted simulations indicate that a simultaneous increase of five years in both factors does not cause poverty rate to go down while raising (by 10 percentage points) its severity at the same time. Along with lowering the minimum vesting period and maintaining the condition of female retirement age as 65 poverty rate diminishes but its drop is much slower than for a lower retirement age. A substantial reduction of the percentage of impoverished female retirees takes place when vesting period amounts to five years, thus reaching the same level as for a minimum retirement age of 60. What is quite striking is that a higher statutory retirement age for women increases poverty gap and this is for all the options concerning the indispensable vesting period in order to obtain minimum pension rights.

Conclusions

The research seems to corroborate scholars' findings to date which point out future increase in poverty, especially among women. Detailed results vary depending on the acquired research method and assumptions. The simulations conducted for the sake of the article at hand are characterized by the fact that vocational biographies were formed on the basis of authentic data and not hypothetical scenarios and the assumed poverty threshold is the amount which enables biological survival.

Research shows that every eleventh woman receiving pension from the new system will receive a public pension below the minimum subsistence level. The increase in poverty (both in terms of its level and depth) seems to question the essential goal of the (public) pension system which is protection against this very phenomenon.

Minimum pension, granted under varying conditions between genders (65/60 years of age and the vesting period of 25/20 years) is an instrument which reduces poverty to a various degree for men and women. The study demonstrates that it contributes to a much larger degree to reducing poverty among women than men, both from the point of view of its level and its depth. What is more, raising the statutory retirement age and the conditions for obtaining a minimum pension right reduces women's poverty to a much lesser extent. This means that the period of additional five years in employment is only a potential earning period and in fact the work is done to a limited extent, just as the activities credited by the pension system (e.g., care²⁷).

One solution within the (public) pension system could be mitigation of the terms for acquiring minimum pension rights, especially with respect to women. In their case it would be absolutely essential to reduce the required vesting period down to 10 years at the most, which would enable poverty reduction by more than one fifth. What is more, a drop in poverty rate is always accompanied by easing down on its severity.

²⁷ Caretaking in the case of elderly women usually comes down to looking after other people's children (often performed on the informal market) or taking care of older people who are barely 'acknowledged' by the pension system.

Simulation outcomes suggest that pension distribution in the case of females will oscillate between the minimum benefit and slightly above the minimum. This means that the system, which is an insurance one, which guarantees individual equivalence of benefits, will in practice evolve towards a flat-rate pension system oscillating around a minimum pension. One might ask here about the consequences of such a situation. They can be analysed, first of all, in the context of the pension system itself, including the costs of guaranteed minimum pension within the public system, but also the importance of other parts of the pension system in delivering a (desired) pension amount. Secondly, there is the issue concerning the growing number of ageing people who will be forced to use the financial (and non-financial) benefits guaranteed within social assistance as they will not meet the criteria for minimum pension entitlement and their individual benefits will be lower than the statutory poverty line²⁸. Thirdly, if the vocational biographies, especially women's, do not guarantee the "earned" individual benefit above the minimum pension, a question arises about the motivation to do a legal, contribution-generating job in the labour market (an economically rational individual does work in the contribution-generating form until they become eligible for a minimum pension). This would be the argument against shortening the vesting period for a minimum pension and for a guarantee of a minimum income beyond the pension system. The latter recommendation concerning public DC systems is also put forward by M. Góra and E. Palmer (Góra & Palmer, 2019, p. 21).

Minimum pension is just one of the instruments available within the corrective mechanisms used in the public pension system. Relatively low benefits from the new system might be corrected by means of other instruments including increased contributions for the caretaking periods, especially if aimed at old people. This might require further research, although the initial simulations indicate that even if the caretaking periods are treated as equal to earning periods, this is not a sufficient instrument to protect (women) against poverty [anonimizacja]. Besides, the choice of the corrective mechanisms is not only contingent upon their effectiveness concerning poverty control, but also on significance and interpretation of other primary and secondary objectives of a pension system.

The article contributes to the debate on the effectiveness of the government activities in the area of reducing poverty among the elderly (Holzmann & Stiglitz, 2001, p. 16). A pension system is a complex one. Moreover, it constitutes merely a part of the financial security for the old age and security for the old age in general. Evaluating the importance of the income generated from the pension system for effective protection against old people's poverty, especially in its public part, should involve taking a broader context into consideration. In particular it concerns the scope, accessibility (understood as amount of necessary fees) and quality of public services (especially health care and long-term care) as well as housing conditions of the elderly. If poverty (albeit limited to income poverty) were to be examined individually, it would require considering separate factors such as health and family status.

²⁸ The poverty line of subsistence minimum assumed for this research equals approx. 90% of the statutory poverty line.

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