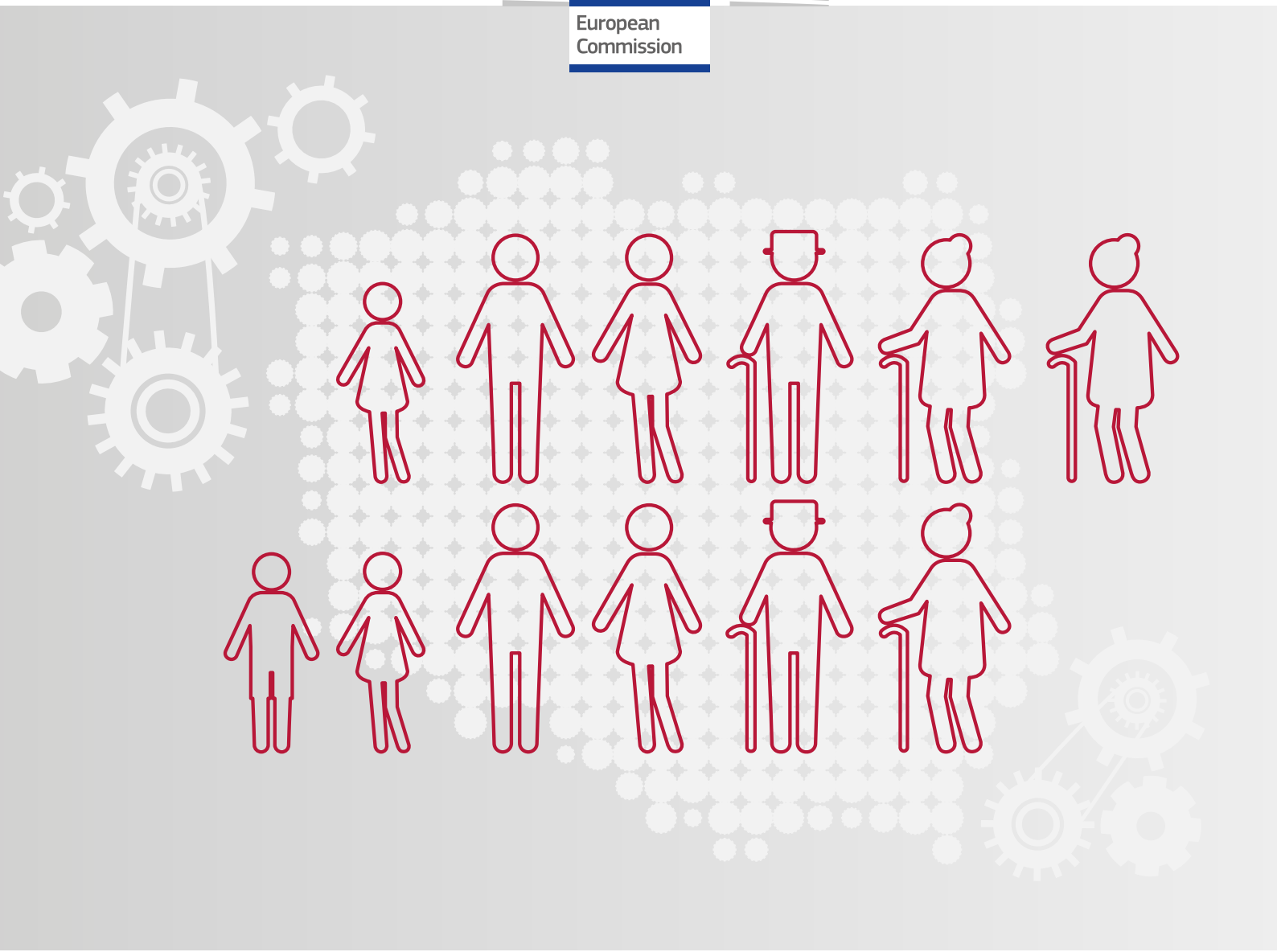

POPULATION AGEING, LABOUR MARKET AND PUBLIC FINANCE IN POLAND

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POPULATION AGEING, LABOUR MARKET AND PUBLIC FINANCE IN POLAND

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Introduction

Piotr Lewandowski, Jan Rutkowski

Poland risks getting old before getting rich. The share of working age population is going down, while that of older population is increasing rapidly. There are more and more older workers among the working age population. This volume shows that these trends are likely to have a negative impact on employment, and consequently on national income and social welfare. It argues that pro-active and radical policy measures need to be taken to mitigate the adverse effects of population ageing. Priority should be given to encouraging higher fertility, including through the development of child care services, promoting investment in skills and lifelong learning, developing a smart immigration policy that addresses the needs of the labour market, and gearing the health care system towards the needs of older people, including through the development of a long-term care system. Yet most importantly, this policy should aim to prolong working lives, in line with the growing life expectancy. People need to work longer, otherwise their retirement income will be low, as will be the income of the population at large.

Poland is on the brink of a period of rapid population ageing. The median age of the population is going to increase from 39 in 2015 to 45 in 2030. By the middle of the 21st century, it will reach 50 and is expected to be the fifth highest in the EU. In 2050, there will be one individual aged 65+ in Poland for every two individuals aged 15-64. The total size of the Polish population is expected to decline by 3% between 2015 and 2030, and by 10% between 2015 and 2050, but the number of people aged 15-64 will dwindle much more – by 11% between 2015 and 2030, and by 28% between 2015 and 2050. This collection of essays discusses the challenges resulting from population ageing in Poland and identifies the areas of intervention which should be prioritised by policy-makers if these challenges are to be met.

The acceleration of ageing in Poland results from rising longevity and very low fertility that has persisted since the early 1990s. Poland has recently increased public spending on family policy and introduced new programs, but it appears the latter have the side-effect of reducing the labour force participation of women, as shown by Kotowska and Magda in this volume. This in turn makes Poland even more vulnerable to the economic consequences of population ageing. Kiełczewska and Lewandowski demonstrate that if the current participation patterns persist, in 2050 the labour supply in Poland will be by 30% smaller than in 2015. This decline will mainly result from the increase in the population share of people aged over 50 who exhibit low labour force participation. Polish workers exit the labour market early. Consequently, the number of years over the life cycle when people earn labour income higher than their consumption, is one of the lowest in Europe, as demonstrated here by Chłoń-Domińczak. Therefore, population ageing in Poland will not only lead to lower employment, GDP and incomes, but it will also undermine the welfare state which finances the consumption of older people.

The labour market situation of older workers in Poland has improved in the wake of early retirement and retirement age reforms that were intended to prolong the working lives, as discussed here by Lewandowski. These reforms would also noticeably alleviate the impact of ageing on the labour market in the future. However, the reduction of the retirement age, enacted in 2016 and to be implemented on October 1, 2017, will erode these gains, and reduce employment and GDP. Malec and Tyrowicz prove that the lower retirement age will also slash future pension benefits, at the same time increasing the incidence of minimum pension and the related fiscal cost.

This volume shows that increasing the retirement age is necessary to mitigate the effects of demographic changes. It is, however, not sufficient. Population ageing in Poland is aggravated by the unprecedented emigration of young and prime-aged people that occurred after the 2004 EU accession. Fihel and Okólski argue that a mass return migration is unlikely, and that a substantial inflow of immigrants would be required in order to avoid depopulation in Poland. They also show that emigration disintegrates family nets supporting older dependants. At the same time, the long-term care system in Poland is underdeveloped and fragmented, as shown by Błędowski. Its establishment is essential if adequate care is to be provided for the increasing senior population of Poland.

Family policy and labour supply in Poland

Irena E. Kotowska, Iga Magda

Family policy changed substantially in Poland in the previous decade. Longer and more flexible maternity and parental leaves were introduced, the availability of crèches and kindergartens increased and financial support for families with children was made much more generous. Yet, the impact of these changes on fertility – which remains very low – is unknown. They appear however to have contributed to the decreasing labour force participation rates of women, further aggravating the forthcoming demography-driven challenges of labour shortages, pensions poverty and public finance strain. We stress the need for in depth analysis of the impact of the introduced changes on the family formation and labour market decisions. On the policy side, actions are needed in three major areas: (i) further increase in childcare coverage and after-school care (ii) measures promoting equal partnership and incentives for fathers to share more of the childcare burden and (iii) flexible and family -friendly working time arrangements.

During the 2000s, the number of births and low fertility became a concern addressed more and more in public debate. The period total fertility rate (TFR) remained below 1.5 since 1998. It reached the minimum in 2003 (1.22) (Figure 1). Then a slight recovery was observed until 2009 (1.40) and the number of births increased. In the next years the TFR went down again and remained close to 1.3 in the years 2014-2015 in parallel to the declining number of births.

Beside the fertility quantum decline the timing effect is observed as well. Both effects are pictured by changes in the age-fertility pattern (Figure 2). Postponing births to older ages of women is manifested in rise of both mean age at first birth and mean age at birth – the former increased from 24.5 years in 2000 to 27.0 years in 2015 while the latter from 27.3 years in 2000 to 29.2 years in 2015 (Kurkiewicz, 2016).

In parallel, the composition of births by birth order was undergoing remarkable shifts. Until 2009 the share of first births was on a steady rise from 47.8% till 50.9%, while later it declined to 47%. On the contrary, the share of second births increased continuously from 30.4% in 2000 to 37.6% in 2015. More remarkable change refers to the birth composition by mother's educational attainment. In early 2000s less than 20% of births were given by women with tertiary education, in 2015 - 51% of children were born by highly educated women. In addition, the percentage of out-of-marriage births changed from 12.1% in 2000 to 24.6% in 2015.

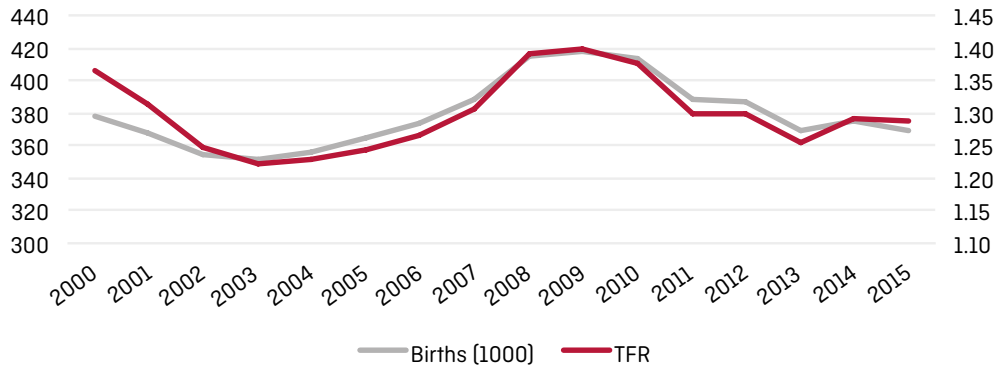
Policy response to these changes was weak. Despite growing understanding of relevance of fertility changes for population dynamics and population ageing there was no common political conception of how to respond to the ongoing fertility changes. In 2003 the general

reform of family benefits was implemented (in force since May 2004), simplifying the existing solutions. Despite its numerous amendments it remains the main regulatory framework. In subsequent years relevant revisions in the leave scheme, tax releases, regulations regarding care provision and other family policy measures were introduced. Policy changes after 2003 can be viewed as a gradual shift towards more generous financial support and towards helping dual-earner families.

The family policy in Poland has undergone major changes after 2008, improving parents' possibilities to combine work and care obligations. The considerable changes refer to the leave scheme. Firstly, since 2009 the maternity leave was extended from 18 to 20 weeks (if one child was born) and supplemented by the voluntary maternity leave of six additional weeks (with full maternity leave benefit granted). This additional leave could be combined with part-time employment (provided it did not exceed half-time). In 2013 a new leave was implemented - the parental leave (*urlop rodzicielski*) of 26 more weeks to be used after the maternity leave and paid at 60% of the monthly wage paid prior to childbirth. Both mothers and fathers could use the leave on the same terms, although only mothers can declare to take full 52 weeks of leave at the monthly benefit equal to 80% of her monthly wage. One week of a leave assigned solely to fathers was introduced in 2010 and extended to two weeks in 2011. The paternity leave is fully remunerated. Since January 2016 both the parental leave and the paternity leave were made more flexible, the six-week voluntary maternity leave was included into the parental leave, prolonging its duration to 32 weeks.

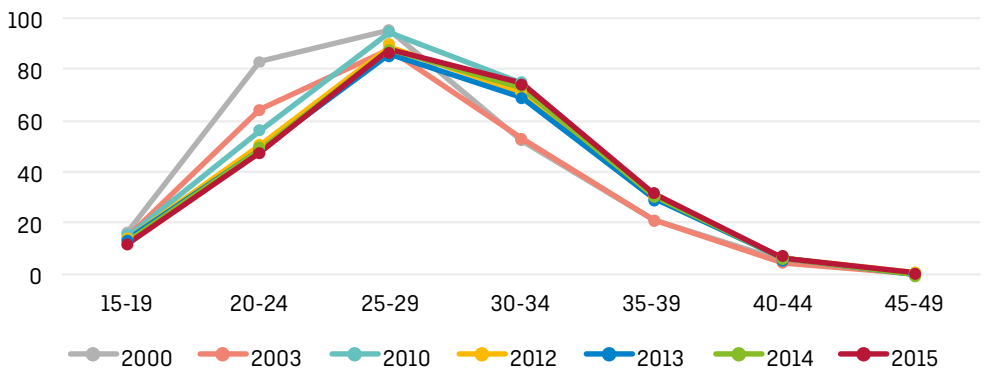
The institutional childcare framework was reformed in 2011. The 2011 law on early childcare shifted the management of crèches from the Minister of Health to the Minister of Social Affairs, easing their setup and operation. The law also introduced new forms of early childcare (such as child clubs, "daily caregivers", and babysitters), providing incentives for their development. The coverage of institutional childcare for children aged less than 3 doubled between 2011 and 2015 (reaching nearly 7%).

Figure 1. Births and fertility, 2000-2015.



Source: Demographic Yearbook of Poland.

Figure 2. Age-specific fertility rates, 2000-2015 (number of births per 1000 of women).



Source: Demographic Yearbook of Poland.

Finally, the coverage of institutional childcare for children aged 3-6 has increased (by almost a quarter between 2010 – 2015, GUS 2015).

Also financial support for families evolved. There were changes in the family benefits income thresholds and the amount of benefits levels and in the tax allowances for families with children, in 2013 and 2015, respectively. They increased the direct and indirect financial transfers to families and the number of their beneficiaries. Additionally, a new form of a maternity benefit (1000 PLN monthly i.e. around 230 EUR during 12 months)[1] was introduced in January 2016, targeting those who were not entitled to full maternity benefits[2]. Moreover, there was a "Large Family Charter" developed as a nation-wide programme of discounts and offers for families with at least three children. It started in June 2014 while the system of discounts at the national level was introduced in full from January 2015[3]. The Large Family Charter is not income-tested, so the principle of the equal access is fulfilled.

The largest change in family policy was the implementation of the Family 500+ Programme in April 2016. The Programme is aimed at increasing fertility rate, lowering child poverty, and improving the living conditions of families in Poland. It introduces an unconditional cash transfer of 500 PLN per month for every second and subsequent child under the age of 18. A benefit is also granted for the first child under 18, provided that the net monthly per capita income of family is lower than 800 PLN (or 1200 PLN in the case of a child with disability). Importantly, the Family 500+ Programme does not influence the eligibility to other family benefits (and any other benefits). It does not either count as income to other means tested benefits and allowances.

The introduction of the Family 500+ Programme has boosted the expenditure on family and child benefits in Poland. Before the introduction of the programme, the expenditure on family/children allowances and services in Poland was quite modest in comparison with other EU or OECD countries. In 2014 it stood at 24.3 billion PLN (Eurostat data, not accounting for the tax breaks for children). In relative terms it accounted for 1.4% of GDP, whereas the proportion in question averaged 2.4% in the EU28. Once tax breaks are taken into account, the share increases to 1.8% of GDP in Poland, which is visibly less than the OECD average of 2.4% GDP (2012, OECD data). The cost of the programme alone is estimated at approx. 17 billion PLN in 2016, and approx. 25 billion PLN per year in the following years (approx. 1.5% of GDP). This is twice as much as total family/children policy spending of the Polish government in 2014. It is likely that in the following years the public spending on family will reach 3% of GDP, making Poland a country with one of the highest shares of GDP spent on families. The generosity of the Family 500+ Programme can be also judged by comparing the value and population coverage of this allowance to those of previous family benefits. In 2015, a monthly family benefit per beneficiary averaged 320 PLN and covered approx. 1.8 million families (MPiPS, 2016), whereas the Family 500+ monthly allowance equals 500 PLN and so far has been granted to 2.74 million families (as of November 30, 2016; Ministry of Family, Labour and Social Protection data).

The family policy changes in the labour institutional setting are expected to increase fertility, since they reduce both indirect and direct costs of child-rearing. Financial support to families, especially to the large families increased visibly. The financial situation of families with children, especially of large families, was improving in the years 2005 – 2015 in comparison with families without children, (Kotowska, Sączewska-Piotrowska, 2015). In the years 2009 – 2015, the families with heads aged 25-34 years experienced a visible progress in their welfare (Kośny, Sienniak-Szczepaniak, 2015). They were mostly families with one child. One should keep in mind, however, that the recent years brought also considerable positive changes on the labour market, which are manifested by better employment prospects.

However, one might expect also some impacts on the labour market behaviour, in particular among women. Here, contradictory incentives and disincentives exist. On the one hand, the increased access to childcare should lower the obstacles to labour market activity among parents, increasing participation rates. On the other hand, longer maternity and parental leaves, coupled with increased availability of direct financial transfers, are likely to weaken incentives for the labour market attachment, in particular among women with low (potential) incomes. In particular, the Family 500 + Programme creates a risk to contribute importantly to negative consequences for the labour market. The availability of direct, relatively high financial transfers is highly likely to lower labour participation rates of women, especially of those with lower education and job experience. They may be less willing to start work before giving birth and more willing to remain outside the labour market, effectively worsening their future situation mainly through very low pensions (which will, either way, probably have to be supported by government expenditures).

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1 The so-called "świadczenie rodzicielskie".

2 As they were not working prior to giving birth or working under non-standard working arrangements and not paying sickness contributions.

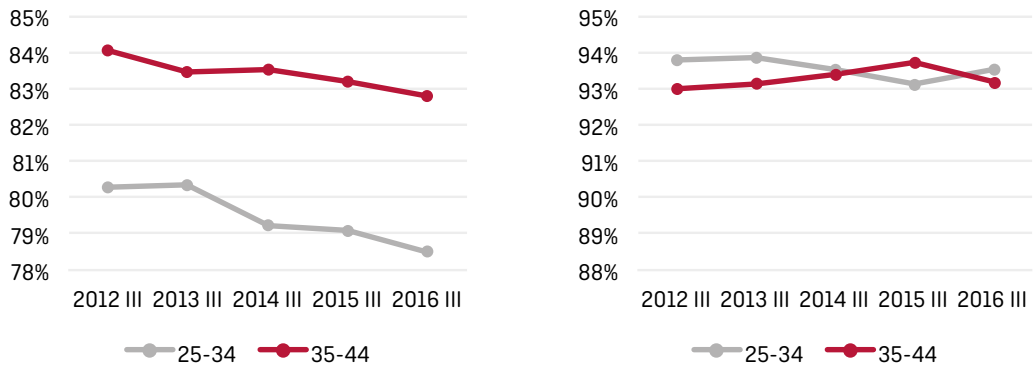
3 Resolution of Council of Ministers no. 85 on 27 May 2014 (Journal of Laws 2014, pos. 430) on establishing a governmental programme for big families; Since 23 December 2014 implemented on the basis of Act on Large Family Charter (Journal of Laws, position 1863).

Some worrying trends on the labour market are already observed. In particular, labour market activity rates of women in the prime age have been decreasing since 2012 – 2013 (Figure 3). The observed changes are small, though the downward trend of women's participation is stable. There is no evidence that the observed changes are linked (only) to changes in the family policy, yet there have been no other major changes in the institutional setting which could drive these developments. At the same time the available data suggests that the number of women who remain inactive due to childcare duties is on rise.

Do these family policy measures stimulate more births and higher fertility in Poland? Do they reduce labour supply and introduce more gender inequality? The measures implemented are expected to reduce obstacles of parenthood usually referred to, like difficulties to reconcile work and family duties due to shortages in early childhood education and care services for children aged 0-5, especially for children under 3. More financial transfers to families make it easier to meet parents aspirations about standard of living for children on one side, and reduce poverty threats among families with lower income. Increasing flexibility of leave schemes offers possibilities to adjust to job requirements. However, despite some progress in early care and education coverage there is still unfulfilled demand for these services. In addition, family unfriendly organisation of teaching in primary schools makes provision of education services adjusted to parent's needs a crucial family policy instrument. Mothers' employment remains dependent on support by other persons (grandparents) not only when children are under 6, but also when they are at school-age (Figure 4).

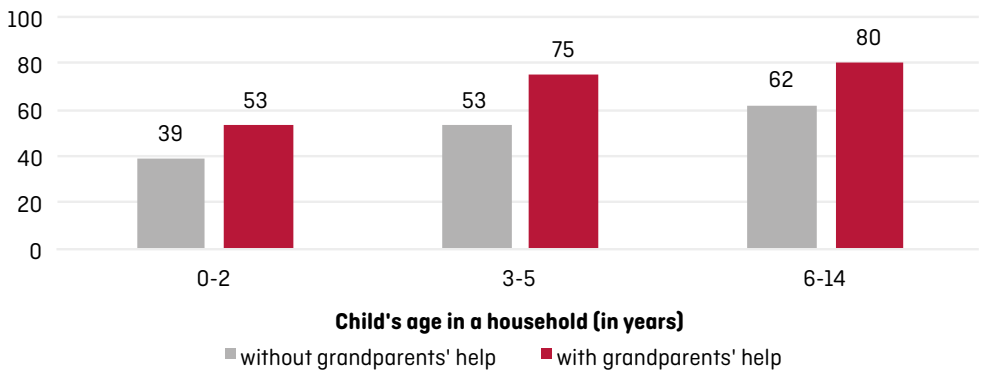
There is a growing need to understand the impact of the family policy institutional setting both on fertility and the labour market. At the micro level, policymakers need to know which elements of the family policy package encourage individuals to have children and which are less relevant? What obstacles remain? How do the childbearing decisions interact with the labour market status and

Figure 3. Labour market participation rates among women (left) and men (right) aged 25-34 and 35-44.



Source: LFS data.

Figure 4. Employment rate of mothers by the age of the youngest child and grandparents' help.



Source: Kotowska et al., 2016, p. 33.

behaviour of both mothers and fathers? Does the current framework make combining work and family easier and does it thus encourage starting or growing a family? For whom do the financial transfers act as a disincentive to enter, stay or return to the labour market? At the macro level, policymakers need to understand to what extent the observed changes in labour force participation of women are driven by work disincentives generated by remarkable direct financial transfers and what might be consequences for the long term labour market outcomes, public finance, pension system in light of the demographic challenges, i.e. intense shrinking and ageing of the working age population predicted for Poland.

In addition to the necessity of evaluation of the family policy changes of the previous decade, other policy recommendations remain in place. These include all the measures which facilitate both parents, their ability to combine work and family life and which ease equal sharing of opportunities and responsibilities. Childcare coverage, especially for children under 3, remains far below EU standards, in particular in rural areas, and more places need to be provided. There is a need to improve daily care for school children and after school support – its accessibility and quality. The current system of leaves (maternity, paternity, parental and family leaves) needs to be more coherent and flexible. The labour market policy is crucial as well: promoting equal partnership and incentives for the fathers to share more of the care burden will itself encourage more women to stay or return to the labour market, contribute to decreasing gender pay gaps, which itself will act as a strong incentive for both labour market participation of women and men's use of leaves. Finally, progressing in flexible working time patterns and improving job quality – both for men and women – will also contribute to meet the family and labour market policy objectives.

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Population ageing and the labour supply in Poland up to 2050

Aneta Kiełczewska, Piotr Lewandowski

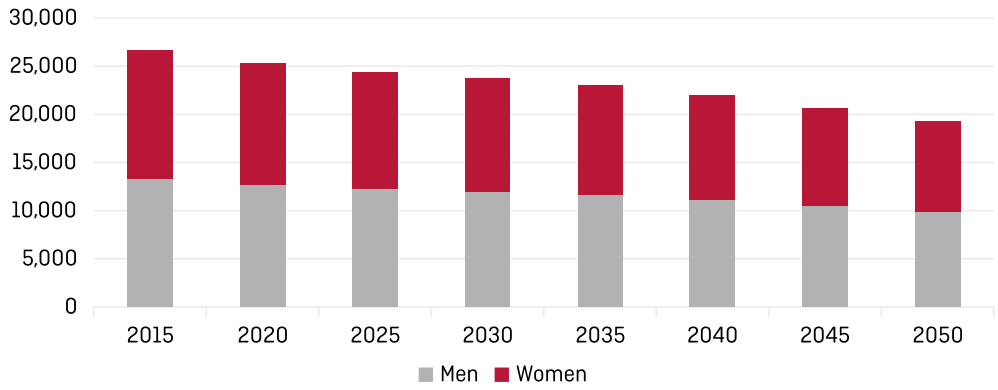
Rapid population ageing will lead to a reduction in the size of the Polish workforce. In this note we calculate the future labour supply in Poland in several policy scenarios. The effects of population ageing will be visible in the next five years and will increase over time. In 2050, the number of workers will be nearly 30% smaller than in 2015, mainly due to changes in the age structure of the population. This will have a profound negative impact on employment, income and consumption. The recently implemented lowering of the retirement age aggravates this decline. Increasing the retirement age of men and women to 67 and raising the labour force participation rates of prime-age women are much-needed policy responses to population ageing in Poland. However, these measures can be expected to reduce the demographically driven decline in the economically active population by only around 50%. A substantial increase in immigration would be needed in order to avoid this decline completely.

In the coming decades, the Polish population will become older and less numerous. Its total size is expected to decline by 3% between 2015 and 2030, and by 10% between 2015 and 2050. The number of people aged 15-64 will decline even more substantially, by 11% between 2015 and 2030, and by 28% between 2015 and 2050. At the same time, the number of people aged 65 or more will increase by 43% between 2015 and 2030, and by 83% between 2015 and 2050.

Substantial changes in the number and the age structure of the population will profoundly affect the size and the age structure of the Polish workforce. This will have important consequences for labour market, as lower number of potential workers will translate into lower employment, but also beyond, as lower number of workers can constrain future economic growth and can reduce incomes and consumption. It will also undermine financing of the welfare state as we know it today, requiring either a substantially higher redistribution from the working-age population to the older population, or a reduction of transfers to older population which would reduce standard of living of the latter.

Existing patterns of labour force participation in Poland do not bode well for the future. In the last 20 years, Poland has had rather low labour force participation rates, of between 63% and 68% among individuals aged 15-64 in the 1997-2015 period. These rates have been particularly low among older workers. They hit the bottom

Figure 1. The working age (15-64) population will be shrinking in the next few dozen years.
The projected size of the population aged 15-64 (in thousands).



Source: Own elaboration based on Polish Statistical Office population projections for 2014-2050.

in the 2001-2006 period when the participation rate of people aged 55-64 was an average 30% (and only 21% among women). Fortunately, the participation rates of older workers in Poland increased between 2008 and 2015, reaching 37% among women aged 55-64 and 58% among men aged 55-64 (or 47% of the total population aged 55-64). These recent shifts and cohort effects are discussed by Lewandowski in a separate piece in this volume. In order to account for these changes, we calculate the future labour supply in Poland using the methodology developed by Burniaux et al. (2004) and Polish Statistical Office population projections for 2014-2050. The methodology is outlined in the appendix. In the status quo scenario, we assume that the statutory retirement age remains at the 2015 level; namely, at 60.5 for women and 65.5 for men.[1]

Population ageing will lead to a sharp decline in the labour supply in Poland. Figure 2 shows that the size of the economically active population, which stood at 18.5 million in 2015, will decline by 1.4 million by 2030. The decline will accelerate after 2030, with the size of the active population decreasing to 13.6 million in 2050, which is 4.9 million fewer people than in 2015, representing a decline of 27%. In order to better understand the forces that are driving these changes, we decompose the changes in the size of active population into the contribution of three factors:

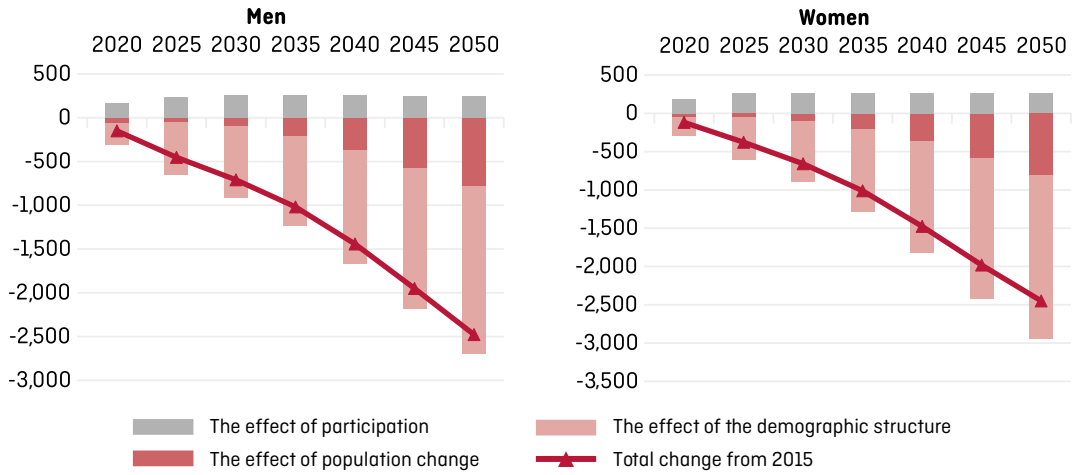
- Population size: the change in the labour supply that would occur if the population size changed as expected, but its age structure and participation rates by age remained constant after 2015.
- Age structure: the change in the labour supply that would occur if the age structure of the population changed as expected, but the size of the population and the participation rates by age remained constant after 2015.
- Activity: the change in the labour supply that would occur if the participation rates by age were to change as expected, but the size and the age structure of the population remained constant after 2015.

Most of the decline in the labour supply can be attributed to the effect of a shift in the age structure. Increasing shares of older age groups with lower participation rates and decreasing shares of prime-aged groups with higher participation rates explain 75% of the coming decline in the labour supply (Figure 2). In absolute terms, this factor contributes 4.0 million out of the 4.9 million reduction in the number of economically active individuals between 2015 and 2050. The effect of the shrinking population is noticeably smaller, contributing a decline of 1.6 million active people by 2050.

The positive effect of activity will counteract to some extent the negative consequences of population and demographic structure changes. Participation rates will increase due to cohort effects, as people who are currently prime-aged or young will have higher participation rates after reaching age 55 than the rates currently observed among individuals aged 55+. This pattern is likely to occur because the subsequent birth cohorts are better educated, and the early retirement options were limited in the 2000s. This secular improvement in the labour force participation of older people would translate into 0.5 million additional active individuals by 2050 – a noticeable figure, but not nearly enough to counterbalance the demographically driven reduction in the labour supply.

[1] Since 2013, the statutory retirement age has been gradually raised from 60 for women and 65 for men to the target age of 67, which was supposed to be reached in 2020 for men and in 2040 for women. This process was stopped and reversed by a law enacted on 16 November 2016, which reduced the retirement age to 60/65 from 1 October 2017 onwards.

Figure 2. Most of the decline in the labour supply can be attributed to the effect of changes in the age structure.
The decomposition of the projected changes in the size of the active population (in thousands), in relation to 2015, the reference (status quo) scenario.



Source: Own calculations based on Eurostat data and Polish Statistical Office population projections for 2014-2050.

Even if the participation rates of older workers increase modestly, the total participation rates will gradually decrease (see Figure 5) and the same would happen to employment rates. In the population aged 15-64, these declines will be moderate. But in the population aged 15 or older, which therefore includes individuals aged 65+, the declines will be large: whereas in 2015 65% of men and 49% of women were economically active, these rates are expected to fall to 53% and 38%, respectively, by 2050. After 2040, the majority of the population aged 15 or older will be economically inactive.

The coming decline in the labour supply in Poland can be alleviated by policies aimed at increasing participation rates. The most promising option lies in targeting members of age groups who have so far have had relatively low participation levels, especially if their population shares are expected to increase. Therefore, raising the participation rates of older workers and women is critical.

To quantify the potential effects such changes could bring, we simulate three scenarios: two in which working lives are prolonged and female participation levels increase, and one in which working lives are shortened (see Methodology for details):

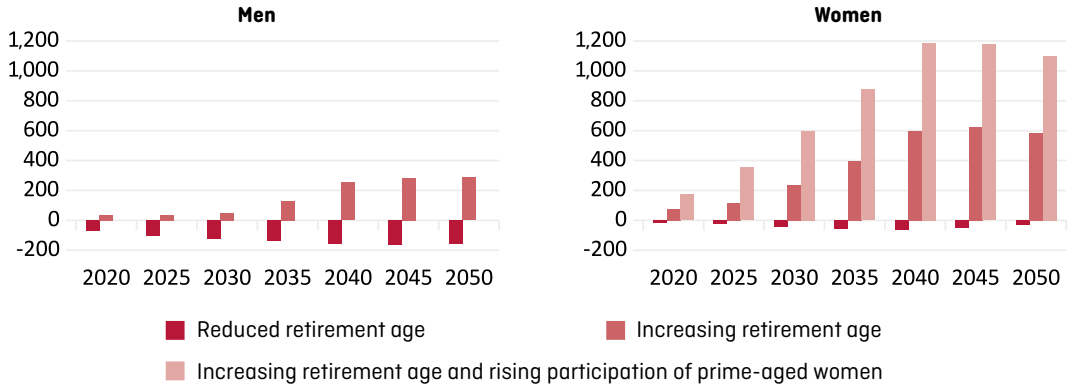
- Increasing the statutory retirement age to 67 for both men (in 2020) and women (in 2040).
- Increasing the statutory retirement age to 67 for both men (in 2020) and women (in 2040), and also gradually raising the participation rates of prime-aged women to achieve a 50% reduction in the gender gap in participation rates by 2040.
- Reducing the statutory retirement age to 65 for men and 60 for women from 2018 onwards.

The reduction in the retirement age will aggravate the demographically driven decline in the labour supply. In the short term, it will reduce the labour supply by around 100,000 people. The direct impact is moderate because the process of increasing the retirement age, which began in 2013, has only just started. However, compared to what would occur if the process of increasing the retirement age continued, the differences are substantial (see Figure 3). We see a difference of 200,000 workers as early as in 2020, and a difference of 450,000 workers by 2030. After 2040, the effect of reversing the retirement age increase would exceed one million active individuals, a figure that is equivalent to around one-third of the demographically driven decline.

The bulk of the "lost" labour supply will occur among women. NBP (2016) showed that the relatively low labour force participation of women in Poland can be largely attributed to women being expected to perform a disproportionate share of care after children and other dependants. Policies aimed at tackling this issue might include, for example, increasing the supply of care facilities and opportunities for part-time employment, promoting more flexible working arrangements (see Kotowska and Magda in this volume). On the demand side, the further development of the service sector would create jobs that women are often more likely to take.

Increasing the labour force participation of prime-aged women is almost as important as raising the retirement age. If the gap in labour force participation between prime-aged women and men was gradually halved by 2040 (in conjunction with increasing the retirement age), the labour supply would increase by an additional 250,000 workers within 10 years, and by an additional 500,000 workers after 20 years. Moreover, improving

Figure 3. Increasing the retirement age and raising the participation rates of prime-aged women are key responses to the effects of population ageing.
The projected effects of changes in the statutory retirement age and the participation of prime-aged women on the size of the economically active population, deviations from the reference (status quo) scenario (in thousands).

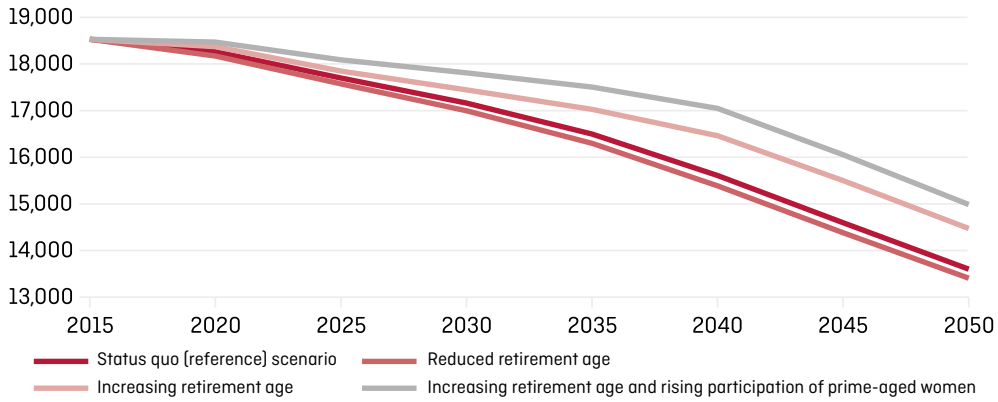


Source: Own calculations based on Eurostat data and Polish Statistical Office population projections for 2014-2050.

the participation rates among prime-aged women would reinforce the benefits of increasing the retirement age, because continuing employment is the easiest strategy for prolonging working lives. Thus, higher activity levels in prime age translate into higher activity levels after the members of a particular cohort reach older ages.

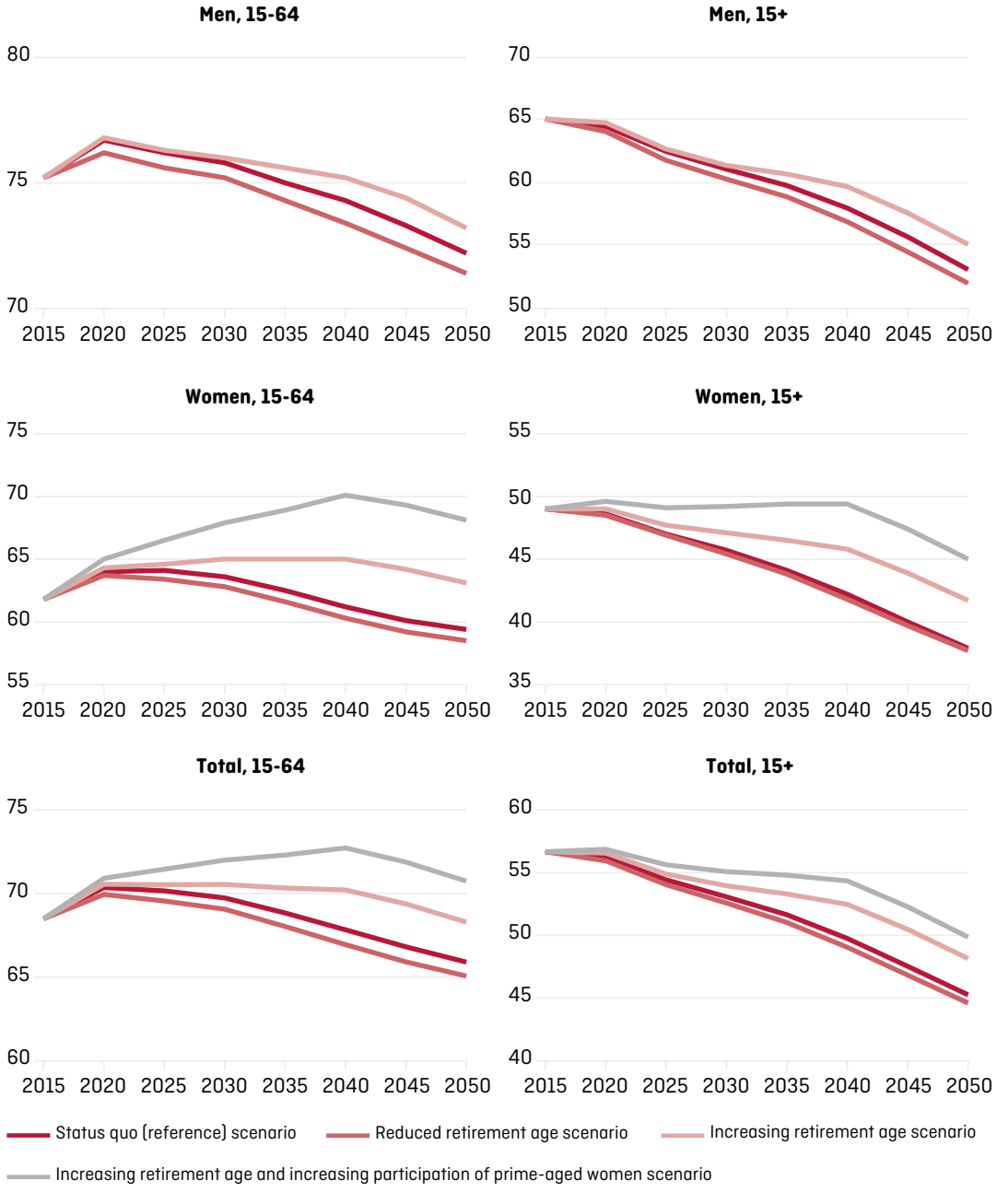
Increasing the retirement age and improving the labour force participation levels of prime-aged women are crucial for moderating the decline in the labour supply in Poland, but these measures alone will not stop the decline entirely. This set of policies would prevent 50% of the decline that is expected to occur by 2030 due to the population ageing, and 40% of the decline that is expected to occur by 2050. These interventions should be sufficient to stabilise the participation rate in the population aged 15-64 years but won't be sufficient to prevent the decline of participation rate in the population aged 15+ (Figure 5). The resulting challenges related to lower employment, GDP and incomes would be less severe than if the retirement age is reduced, but still would be substantial. Given the pace of population ageing, sizable inflows of young and prime-aged migrant workers will be needed to sustain the size of working-age population and employment in Poland; as discussed in this volume by Fihel and Okólski.

Figure 4. Increasing the retirement age and raising the labour force participation rates of women would prevent 50% of the decline in the labour force that would happen if retirement age is reduced.
The projected size of the population aged 15-64 (in thousands).



Source: Own calculations based on Eurostat data and Polish Statistical Office population projection for 2014-2050.

Figure 5. Increasing the retirement age and raising the labour force participation rates of women is not enough to stabilise participation and employment rates of the population aged 15+.
The projection of labour force participation rates in various retirement age and women's participation scenarios in Poland, 2015-2050 (in %).



Source: Own calculations based on Eurostat data and Polish Statistical Office population projections for 2014-2050.

Methodology

The labour supply projections were prepared using the methodology of Burniaux et al. (2004) and Loichinger (2015). Using data for the 1998-2015 period, we calculated the entry rates (for cohorts with increasing participation) and the exit rates (for cohorts with decreasing participation) for five-year age groups by gender:

$$EnR^{t}_{x,x+4} = \frac{PR^{t}_{x,x+4} - PR^{t-5}_{x-5,x-1}}{PR_{max} - PR^{t-5}_{x,-5,x-1}} \quad ;$$

$$ExR^{2015}_{x,x+4} = \frac{PR^{t-5}_{x-5,x-1} - PR^{t}_{x,x+4}}{PR^{t-5}_{x-5,x-1}} \quad ;$$

where:

$EnR^{t}_{x,x+4}$ – the entry rate between year t-5 and t, between age group (x-5,x-1) and (x,x+4);

$ExR^{t}_{x,x+4}$ – the exit rate between year t-5 and t, between age group (x-5,x-1) and (x,x+4);

$PR^{t}_{x,x+4}$ – the participation rate in year t of the age group (x,x+4);

PR_{max} – the maximum potential participation rate, 0.97 for men and 0.95 for women.

The projections of the participation rates are based on the assumption that the entry rates and the exit rates will remain constant for subsequent cohorts. The participation rates are then calculated with one of the following equations (depending on whether the entry rate or the exit rate applies):

$$PR^{t}_{x,x+4} = EnR^{2015}_{x,x+4} * \left(PR_{max} - PR^{t-5}_{x-5,x-1}\right) + PR^{t-5}_{x-5,x-1} \quad ;$$

$$PR^{t}_{x,x+4} = \left(1 - ExR^{2015}_{x,x+4}\right) * PR^{t-5}_{x-5,x-1} \quad .$$

In order to calculate the reference scenario, we used the average entry and exit rates calculated for the 2010-2015 period, and the participation rates from 2015. In order to calculate the scenario of a reduced retirement age, we used the exit rates among women aged 50+, and the exit rates among men aged 55+, calculated for the 2006-2011 period (the last period before the retirement age increase) and the participation rates from 2015. In order to calculate the scenario of an increased retirement age, we used the average entry and exit rates calculated for the 2010-2015 period, and the exit rates elasticities from Duval (2003) study, which were further parametrised on the 2008-2015 period, and the participation rates from 2015. In order to calculate the scenario of increased participation among prime-aged women, we assumed that the age-specific gap between women's and men's participation rates in the reference scenarios for 2040 can be halved among individuals aged 15-44. The resulting increase in the 2040 female participation rates was then interpolated for the 2016-2040 period. The entry and the exit rates were applied to calculate the participation rates for women aged 45+. The methodology of Burniaux et al. (2004) accounts for cohort effects. It implies that the projected participation rates become stable after 15-25 periods, or between 2030 and 2040 in our projections. We assume no changes in the age-specific participation rates after 2040. The projection of the employment rate can be calculated based on the projected participation rates, and on the assumption that gender and age-specific unemployment rates will remain constant. The projections for employment rates are highly correlated with the projections for participation rates and lead to the same findings, so we are not showing them here.

In order to calculate the numbers of active individuals, we used the most recent population projections for 2014-2050 prepared by the Polish Statistical Office (GUS, 2014).

The decomposition of the labour supply changes into to the contributions of the population, demographic structure, and activity effects follows IBS & MPiPS (2010).

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Generational distribution of consumption and income in Poland in the context of population ageing

Agnieszka Chłoń-Domińczak

Population ageing in Poland will lead to pronounced changes in the age structures affecting levels of consumption and labour income of future generations. National Transfer Accounts (NTA) is a new (developed in 2011) analytical approach that allows to identify the economic consequences of population ageing from a generational perspective. The NTA profiles for Poland show that Poles have one of the earliest ages at which labour income is insufficient to cover consumption. The economic dependency level, measuring the aggregate life-cycle deficit of those outside the productive age group, relative to the total labour income in Poland, is relatively high given the current demographic structure of the Polish population. If the current consumption and labour income patterns are maintained, population ageing will lead to a faster decline in labour income, compared to consumption, which would increase the aggregate life cycle deficit, particularly related to the older population[1].

One of the analytical approaches that allows analysing the economic consequences of population ageing is the National Transfer Accounts (NTA) approach. This method was developed by Lee and Mason (see Lee and Mason, 2011) and is currently applied in over 60 countries worldwide, including 26 EU member states[2]. The National Transfer Accounts are designed to provide a systematic and comprehensive approach to measuring and analysing economic flows from a generational perspective. It is based on the concept of general economy, as defined

[1] The research presented in this chapter is based on the preliminary results of the NTA profiles estimated for Poland in the project POLNTA "Narodowy Rachunek Transferów oraz Narodowy Rachunek Transferów Czasu dla Polski" financed by the National Science Centre (UMO-2013/10/M/HS4/00466) and implemented by the Institute of Statistics and Demography at Warsaw School of Economics (SGH). The age profiles were developed by the project team that includes the author and Wojciech Łątkowski.

[2] The harmonised NTA dataset for EU countries was developed in the AGENTA project, financed from the 7th Framework Programme (www.agenta-project.eu).

by Lee and Mason (2011). For each age, the total (public and private) consumption and labour income is assessed in accordance with the National Accounts system. Consequently, we can see whether particular cohort's consumption is financed from labour income or whether it requires additional transfers (public or private) or financing from savings or other asset reallocations[3]. The National Transfer Accounts profiles for Poland were estimated for 2012. The National Transfer Accounts profiles for Poland were estimated for 2012.

The potential impact of changing age structures on consumption and labour income in Poland

The NTA-based consumption and labour income profiles estimated for Poland indicate that the borders of productive age in Poland are between 26 and 56. These borders are set as the age levels when labour income exceeds consumption. For younger cohorts (up to 26) and older ones (above 56) the deficit between consumption and labour income requires additional financing from public or private transfers or from savings.

These NTA labour income and consumption profiles allow the aggregate level of consumption and labour income to be estimated, as shown in Figure 3 (panel a). In 2012, the aggregate life cycle deficit for the population below 26 (PLN 201 bn.) was higher than for the population above 56 (PLN 182 bn.).

If we apply constant per capita age profiles to demographic projection, we can estimate the impact of the changing age structure of the population on the level of potential aggregate life cycle deficit in the future, when the ageing process becomes more pronounced. With this assumption, **the amount of the aggregate life cycle deficit would increase to 128 per cent of the base 2012 level by 2030, and reach 166.6 per cent in 2050.**

While this assumption is, of course, unrealistic, it allows an assessment of the impact of changing age structures on aggregate income, consumption and the resulting life cycle deficit. The results of the simulation are shown in Figure 3 (panels b and c). If the current consumption and labour income per capital profiles remain constant, this means that both the aggregate labour income and aggregate consumption will shrinks due to the declining size of the total and working age populations. In 2030 the aggregate labour income would be below 91 per cent of the 2012 level, and in 2050 it would drop further to less than 74 per cent, i.e. by more than a quarter. Aggregate consumption would drop moderately to 98.4 per cent in 2030 (compared to 2012) and 92.4 per cent in 2050. Additionally, the level of the aggregate life cycle deficit for the population over 56 would exceed the aggregate life cycle deficit for the population under 26.

The rising lifecycle deficit means that the **current levels of consumption would be impossible to maintain with the current level of labour income.** Reducing the aggregate life cycle deficit would require either an increase in labour income or a decrease in consumption levels (or both). One of the potential directions is to shift the per capita labour income by extending working lives and increasing the age limit from which the life cycle deficit becomes positive. Another potential direction is to increase labour productivity and, as a result, per capita and aggregate labour income.

Figure 1. Per capita age profiles of labour income and consumption, 2012.

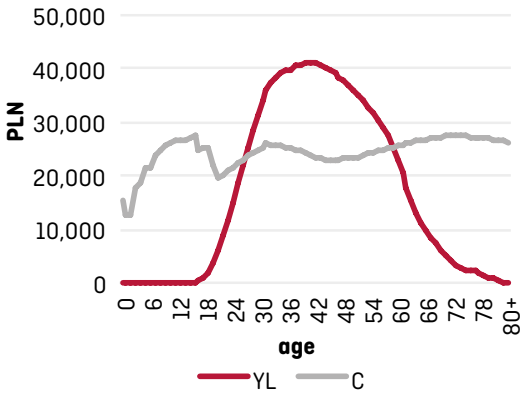
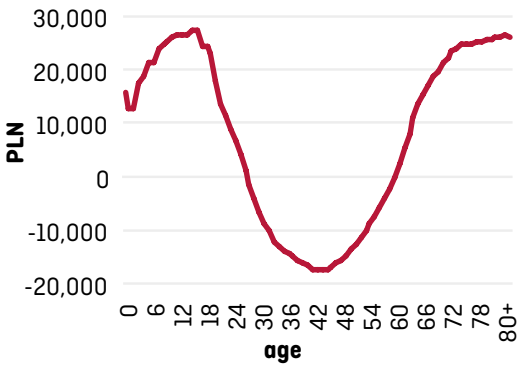


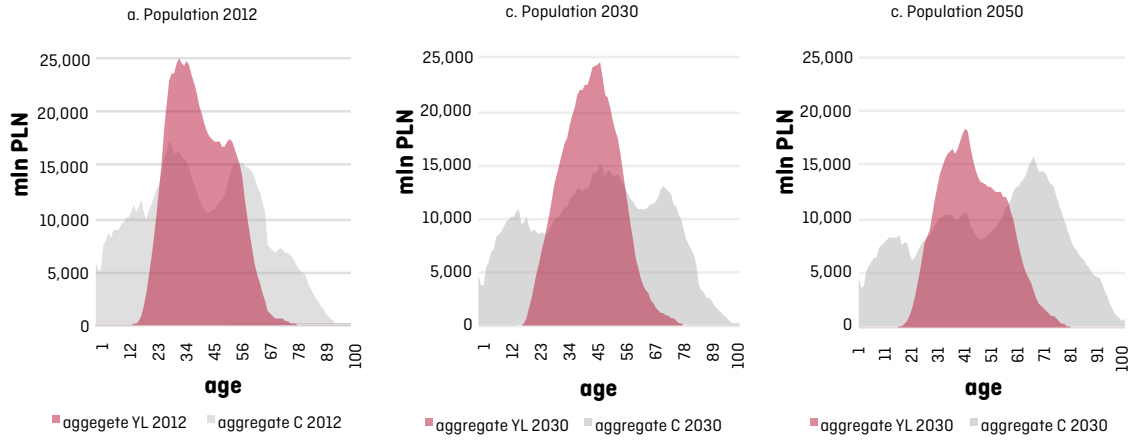
Figure 2. Per capita age profiles of lifecycle deficit, 2012.



Source: Initial estimates in the POLNTA project, SGH

[3] A short methodological note on the NTA is presented in the annex.

Figure 3. Aggregate labour income and consumption based on 2012 NTA profiles



Source: Author's calculations based on the initial estimates in the POLNTA project, SGH, GUS demographic data (2012) and Eurostat population projection (data for 2030 and 2050).

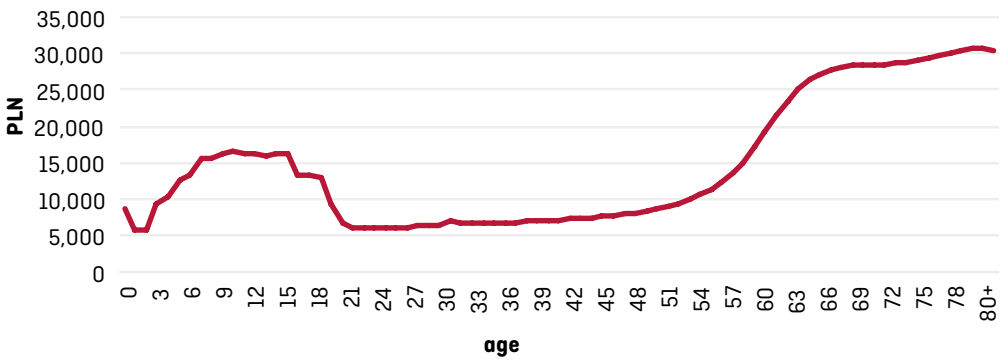
The contribution of the population above 56 to the aggregate life cycle deficit will increase with time (Figure 3). This has important implications from the policy perspective as the public transfers needed to cover this deficit are expected to increase. This is because the life cycle deficit of the older population is financed almost fully from public transfers, which include pension cash transfers as well as public consumption, such as health benefits. Furthermore, as the labour income of the population over 60 is declining with each age cohort, the financing of private consumption at older ages comes mainly from public transfers, predominantly pensions (see Figure 4). On the other hand, the life cycle deficit of the younger population is, to a large extent, financed from private transfers (namely parents financing the consumption of their children). In the future, because less children are being born, the level of the aggregate transfers needed from parents to children will be lower.

The level of per-capita public transfers received by people in the age group of over 60 rises very quickly, as people retire and claim old-age benefits. Again, with the ageing population this would increase the risk of rising public expenditure. However, this risk is mitigated by the pension reform introduced in 1999. The pension reform affects the age profiles of pension transfers received, reducing the amount of transfers received by consecutive generations, which can already be observed (see for example Chłoń-Domińczak, Strzelecki, and Łątkowski 2016).

Measuring economic dependency

In comparison to other EU countries, the range of productive age groups which exhibit a negative lifecycle deficit is narrow in Poland (i.e. age groups where labour income exceeds consumption) and covers only 31 cohorts. In other countries, for which the NTA databases were estimated, this deficit ranges from 31 cohorts (in the UK) to 38 cohorts in Sweden (see Figure 5). Compared to other countries, Poland is characterised by having a relatively late age until which the life cycle deficit is positive, and the earliest age from which it becomes positive again.

Figure 4. Per capita age profile of public transfers (cash transfers and public consumption), 2012



Source: Initial estimates in the POLNTA project, SGH

Due to the narrow productive age range, the level of economic dependency of younger and older cohorts in Poland is relatively high compared to the demographic dependency.

Given the differences in the productive age limits as well as differences in the level of consumption and labour income between countries, the traditional demographic dependency does not reflect the actual level of transfers needed to finance the aggregate life cycle deficit. The NTA profiles can be used to assess economic dependency that takes into account flexible productive age borders and the level of consumption and labour income age profiles.

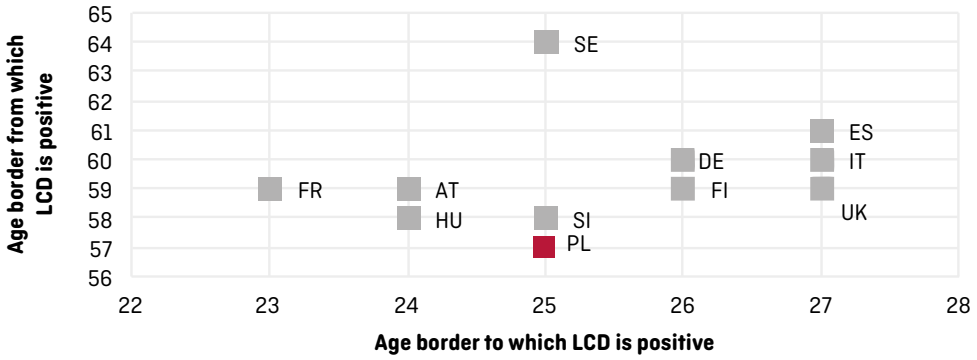
A comparison of the two dependency ratios - demographic[4] and NTA-based economic dependency proposed by (Loichinger et al. 2017) - for selected EU countries and for Poland is shown in the Table 1. Poland has an economic dependency level comparable to the levels noted in Hungary, Germany or Finland, which have higher demographic dependency ratios, particularly due to larger relative size of the older part of the population. At the same time, in Sweden a high level of demographic dependency is combined with lower level of economic dependency[5].

Conclusions

The generational economy provides more insight into the economic consequences of population ageing. **The changing age structure of the Polish population leads to numerous challenges that can be identified and, more importantly, quantified using the National Transfer Accounts method.** Based on the projected demographic change, the potential level of aggregate life cycle deficit, i.e. the gap between aggregate consumption and aggregate labour income, may increase. This is due to the faster decline of the potential aggregate labour income compared to aggregate consumption.

This means that one of the most important policy recommendations for Poland is **to introduce policies to increase the aggregate labour income.** There are several ways to achieve this goal. Firstly, by prolonging the working life and shifting the per capita age profile to the right. As a result, the age border when the life cycle deficit becomes positive would increase. A comparison with other European countries indicates that there is room for such change. However, the recent decision on the reduction of the retirement age in Poland will have the opposite effect (Chłoń-Domińczak 2016). The second possibility is **speeding up transition to the productive age.** As already stated, young Poles start their productive lives relatively late. School should start at the age of 6, although unfortunately the age was recently increased again to 7 by the government. Speeding up the school-to-work transition is also important. The third potential policy direction is **to increase the level of productivity that would increase the labour income per capita profile.** This would require a national skills development strategy, including the promotion of lifelong learning. While in recent years the share of young people with tertiary education in Poland has increased significantly to 43.4% (2015), exceeding the EU average, at the same time, however, the share of the adult population participating in education and training remains, at 3.5% (2015), one of the lowest in the EU. Some

Figure 5. Age borders until and from which the life cycle deficit is positive, selected EU countries (2010/2011) and Poland (2012).



Source: Loichinger et al. (2017) and initial estimates in the POLNTA project for Poland

[4] Relating the ratio of populations in age groups 0-19 and 65 and over to the population at working age, i.e. 20-64.

[5] The NTA method also allows other measures of economic dependency to be assessed, based on the relationship between labour income and asset-based reallocations and consumption, or fiscal dependency that takes into account public transfers that are paid or received (see for example Chłoń-Domińczak, Abramowska-Kmon, et al. 2016; Chłoń-Domińczak, Kotowska, et al. 2016; Lee and Edwards 2002; Loichinger et al. 2017; Prskawetz and Sambt 2014).

Table 1. Demographic dependency ratio (DDR) and NTA dependency ratio (NtaDR) for young age, old age and total population (2012 for Poland and 2010 for all other countries).

Country	Demographic Dependency Ratio			NTA Dependency Ratio		
	Young	Old	Total	Young	Old	Total
Austria	0,33	0,28	0,61	0,20	0,26	0,46
Finland	0,38	0,29	0,67	0,26	0,26	0,52
France	0,42	0,29	0,71	0,26	0,29	0,55
Germany	0,31	0,34	0,65	0,19	0,31	0,50
Hungary	0,33	0,27	0,60	0,24	0,26	0,50
Italy	0,31	0,34	0,65	0,26	0,34	0,60
Slovenia	0,30	0,26	0,56	0,24	0,24	0,48
Spain	0,31	0,27	0,58	0,25	0,21	0,46
Sweden	0,40	0,32	0,72	0,26	0,22	0,48
UK	0,40	0,28	0,68	0,27	0,26	0,53
Poland	0,32	0,22	0,54	0,27	0,24	0,51

Source: Loichinger et al. (2017) and initial estimates in the POLNTA project for Poland

improvements could be also sought by reducing the skills mismatch on the labour market. However, according to the assessment of Mcgowan and Andrews 2015, this could contribute to an increase of around 2% in productivity gains. Productivity increases can be also achieved by introducing technological changes.

Population ageing also represents a challenge when it comes to **financing the increasing life cycle deficit of the population in the post-productive age group.** This deficit in Poland is currently financed almost exclusively from public transfers, as the level of pension savings remains at a very low level. As discussed earlier, **the implementation of the pension reform will lead to gradual improvements in the balance in the old-age pension system. It is important to monitor the level of other public transfers to the elderly, including public health care consumption, which is rising quickly in this age group.** In particular, greater focus on health prevention to support longer and healthier lives, can be seen as an important contribution to maintaining this expenditure at a sustainable level in the context of population ageing.

In more general terms, **it is important to monitor the generational dependency, focusing not only on the demographic age structure, but also economic flows.** Using these measures to assess the implications of population ageing across the EU could complement the existing practices included in the Ageing Reports (European Commission DG ECFIN 2015 and earlier). This would provide an opportunity for the policy makers to gain more insight into policy challenges in the context of the national developments that shape the labour income, consumption and public transfers.

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Annex – Methodological notes

National Transfer Accounts in brief

At each stage in their life, generations have different patterns of consumption and labour income that result in the lifecycle deficit. This can be denoted as:

$$C(x) - Y^l(x) = \tau^+(x) - \tau^-(x) + Y^A(x) - S(x) \quad (1)$$

where:

$C(x)$ – consumption
$Y^l(x)$ – labour income
$\tau^+(x)$ – transfers received
$\tau^-(x)$ – transfers paid
$Y^A(x)$ – income from assets
$S(x)$ – savings

The left-hand side of the equation (1) denotes the lifecycle deficit, while the right-hand side is is comprised of net transfers ($\tau^+(x) - \tau^-(x)$) and the reallocation of resources ($Y^A(x) - S(x)$). The NTA method is designed to assess these flows, divided into public and private parts, taking into account cross-sectional age profiles for each of the parts in the equation (1). The assessment is based on existing administrative, demographic and survey data, including income and household budget surveys. Age profiles are estimated in nominal currency values as well as in relative terms, as a percentage of the labour income of cohorts in the age groups 30-49.

Measuring economic dependency

The NTA-based measure of economic dependency is proposed by Loichinger et al. 2017. To obtain a measure for the dependency across individual ages in childhood and old age respectively, they calculate the average measure of economic dependency at each age, multiply it by the corresponding population size and then add them up over the age groups where the difference between consumption and labour income is positive (also referred to as positive life cycle deficit).

$NtaDR_{young}$ and $NtaDR_{old}$ by relating the total dependency of young and old, i.e. the part of consumption that is not financed from the labour income, to total labour income. This measure reflects both the population structure (as the traditional demographic dependency rate) and the design of the economic life course.

$$NtaDR_{young} = \frac{\sum_{i=0}^{L}(C_i - YL_i)}{\sum_{i=0}^{80+}(YL_i)} \quad (2)$$

$$NtaDR_{old} = \frac{\sum_{i=O}^{80+}(C_i - YL_i)}{\sum_{i=0}^{80+}(YL_i)} \quad (3)$$

where the index L stands for the age when the life cycle deficit at young age is still positive and where index O stands for the lowest old age at which the life cycle deficit turns positive again. By adding up these two values, the total NTA-based dependency is calculated, relating the total positive lifecycle deficit of the two generations to total labour income.

Employment in Poland – old is the new young

Piotr Lewandowski

I collect stylised facts on employment trends among older people in Poland, particularly in the wake of the implementation of early retirement and retirement age reforms that were intended to prolong the working lives. The average age of exit from the labour force has recently rebounded after years of decline. At the same ages, the cohorts who were affected by these retirement reforms had higher labour force participation rates than the cohorts who were not affected by these reforms. Around half of the rise in the total employment rate between 2006 and 2015 can be attributed to the increase in employment probabilities among workers aged 55-64. The unemployment rate of older workers increased temporarily during the Great Recession, but it remained below the total unemployment rate, and declined to as low as 5.4% in 2015. Retirement age, skills, health, and age management are crucial areas for policy-makers to consider when crafting policies aimed at further increasing the employment rates of older people in Poland.

Over the past 25 years, the labour force participation and employment rates of older workers in Poland have been relatively low. In the early 2000s, the participation rates of people aged 55-64 were among the lowest in Europe (an average of 30% in the 2001-2006 period), and were especially low among women (an average 21% in the 2001-2006 period). The total labour force participation rates in Poland have also been relatively low in recent decades: in the 1992-2015 period, the participation rates among individuals aged 15-64 ranged from 64% (2005-2009) to 68% (1992-1994 and 2014-2015).

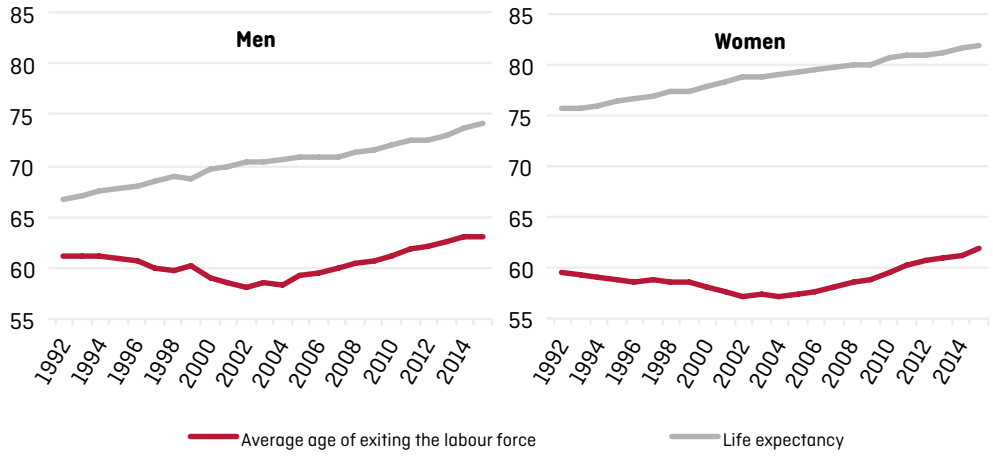
The average age of exit from the labour force was declining between the early 1990s and mid-2000s despite the fact that life expectancy was steadily increasing. It declined to 57 years among women and 58 years among men (Figure 1). Much has been written about how passive labour market policy and early retirement system have contributed to early labour market exits and low labour force participation rates among older workers in Poland (Bukowski et al., 2005).

The labour force participation rates of older workers and the average age of exit from the labour market in Poland have rebounded in the last few years. As a result, in 2015 the participation and employment rates among workers aged between 50 and 64 were the highest on record[1]. This improvement in older workers' situations was a crucial factor in the overall employment growth observed in Poland.

Half of the total employment rate growth between 2006 and 2015 can be attributed to the increase in employment probabilities among workers aged 55-64.

[1] Since the Labour Force Survey was introduced in 1992.

Figure 1. The average age of exit from the labour force followed a U-shaped pattern in Poland, and has only recently returned to the levels of the early 1990s.
The average age of exit from the labour force and life expectancy (at birth) by gender in Poland, 1992-2015.



Source: Own calculations based on LFS data.

The employment rate of the population aged 15-64 (15-74) rose 8.2 pp. (6.5 pp.) in that period, and 5.4 pp. (4.7 pp.) of this increase can be attributed to the population aged 55-64. These statistics can be further decomposed into the contributions of three factors (see Lewandowski et al., 2013, for the methodology of decomposition):

- Population size: the change in the total employment rate that would have occurred if the population size of a given age group had changed as observed, but the educational structure and the education-specific employment rates of a given age group had remained constant.
- Education: the change in the total employment rate that would have occurred if the educational structure of a given age group had changed as observed, but the population size and the education-specific employment rates of a given age group had remained constant.
- Employment probability: the change in the total employment rate that would have occurred if the education-specific employment rates of a given age group had changed as observed, but the population size and education structure of a given age group had remained constant.

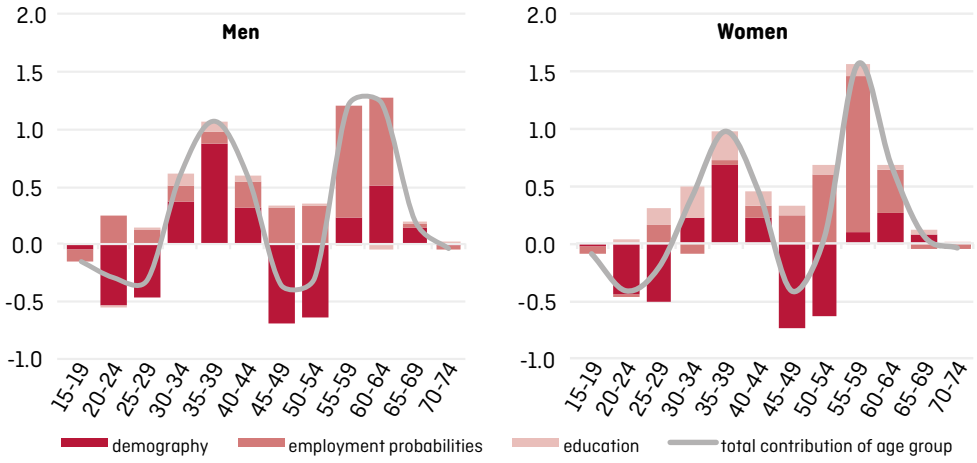
The increase in the employment probabilities of older workers, regardless of their educational levels, was the most important driver of the growth in the total employment rate between 2006 and 2015 in Poland (Figure 2). Moreover, this effect was more powerful among women than among men, even though women continued to lag behind men in terms of participation and employment rates. The improvement in educational attainment among young and prime-aged workers was another key factor in the growth in the total employment rate. The contribution of improving education was, however, less than half as large as the contribution of the increase in the employment probabilities of older workers. This comparison lends support to the claim that the latter was the key driver of the recent growth in employment in Poland.

In recent years, two major reforms aimed at extending the working lives of older people were introduced in Poland (Chłoń-Domińczak, 2016). The first reform, which was implemented in 2009, eliminated the early retirement system (introduced in 1983) that had made it possible for workers in a wide range of professions to retire before reaching the statutory retirement age[2]. The 2009 reform replaced the early retirement system with the so-called bridging pension system, which covered a much narrower range of professions, and established much more restrictive conditions for accessing early retirement. The 2009 reform mainly affected men born after 1948 and women born after 1953. The second important reform was implemented in 2013. Since 2013, the statutory retirement age has been gradually raised by four months per year, starting with men born in 1948 and women born in 1953. However, this reform was repealed by a law enacted on 16

[2] In most cases, a worker could take early retirement up to five years before reaching the statutory retirement age. Thus, a woman could retire at age 55 and a man could retire at age 60. In some professions, however, workers could retire at even lower ages.

Figure 2. The increase in the employment probabilities of workers aged 55-64 contributed half of the total employment rate growth between 2006 and 2015 in Poland.

The contributions of particular age groups by gender to the change in the employment rate of the total population aged 15-74, between 2006 and 2015 in Poland.



Source: Own calculations based on Eurostat data.

November 2016, which reduced the retirement age to 60 for women and 65 for men from 1 October 2017 onwards[3].

In the wake of the reforms of the early retirement age and the statutory retirement age, the labour force participation rates of the affected cohorts increased. Figure 3 shows that individuals born in the 1930s and the 1940s followed almost identical patterns of economic activity at older ages; i.e., the labour force participation rates of these cohorts declined steeply after they reached age 50. Individuals born in the 1950s behaved differently, and had visibly higher participation rates after the age of 50 than workers born in the 1930s and the 1940s. Although the overall improvement in labour market conditions may have also been a factor in this difference between the cohorts, a comparison of men and women born in the 1951-1955 period suggests that retirement reforms played a crucial role. Women born between 1951 and 1955 faced a policy setting that was very similar to the policy setting experienced by women born between 1946 and 1950, and the participation rates of women born in the 1951-1955 period were also very similar to those of the older cohorts. However, men born between 1951 and 1955 faced a different policy setting than the men born between 1946 and 1950 because the former group were affected by both the early retirement reform and the statutory retirement age reform. Thus, men born in the 1951-1955 period had much higher participation rates after age 55 than men born in the 1946-1950 period. The gap was even larger after age 60. In the case of women, such an effect can be seen in the cohorts born between 1955 and 1960, as these women were fully affected by both retirement reforms. In 2015, these upwards shifts in the activity levels of cohorts affected by the retirement reforms translated into 692,000 additional workers.

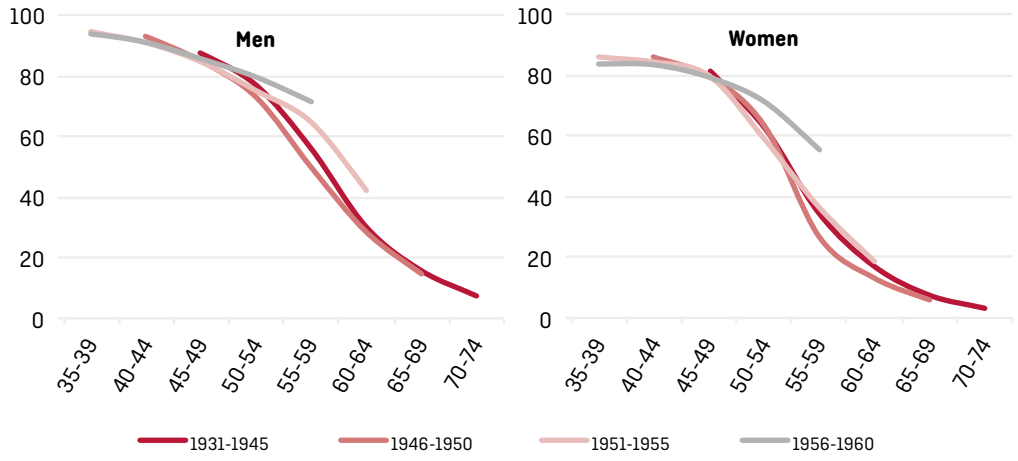
Higher labour force participation rates translated into higher employment rates mainly because older people stayed in their jobs. The retention rate – or the share of workers aged 55-59 who remained employed in the same job after 60 – doubled between 2003 and 2013. The increase in job retention was the main driver of employment growth among older workers in Poland (Figure 4). Compared to other countries in the region, Poland has experienced much larger improvements in job retention rates among older workers (Hardy et al., 2016). To some extent, these improvements occurred because younger cohorts had better education and were more likely to be in an occupation or sector in which it was possible to continue working after reaching age 60. Nevertheless, half of the total increase in job retention chances could be attributed to a general increase in job retention probabilities, regardless of the worker's gender, education, or occupation (Hardy et al., 2016). This again shows that the situations of older workers in Poland has improved recently.

The unemployment rate of older workers in Poland remained lower than the total unemployment rate after the retirement reforms. Figure 5 shows that the

[3] By the end of 2016, the statutory retirement age was 61 for women and 66 for men. The target age of 67 was supposed to be reached in 2020 for men and in 2040 for women.

Figure 3. At the same ages, the cohorts who were affected by retirement reforms had higher participation rates than the cohorts who were not affected by reforms.

Labour force participation rates over the life-cycle of successive birth cohorts in Poland.



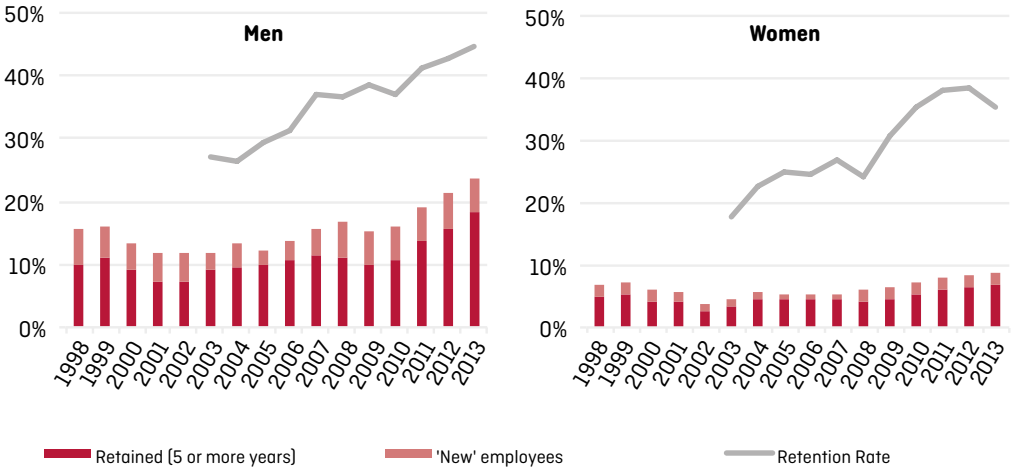
Source: Own elaboration based on LFS data.

rate increased during the Great Recession, but declined after 2013, and had returned to the low level recorded in 2008 by 2015 (5.4%). In absolute terms, the number of unemployed people aged 55 and older increased between 2008 and 2015, but this increase was proportional to the increase in the number of people in the labour force. Meanwhile, the risk of unemployment did not increase. Moreover, in 2015, the share of people aged 55+ among all unemployed people was 11%, a figure that was slightly below the EU28 average (11.8%). Fears that higher participation rates among older workers would lead to higher unemployment risks were, for example, evident in the passage of the law that reduced the retirement age to 60/65 (Chancellery of the President, 2015), but find no support in the data.

Unemployment is, of course, a serious challenge for older individuals. Although they are no longer more likely than prime-aged workers to lose their job, older people still find it harder to get a new job if they are unemployed (Magda

Figure 4. Most of the employment growth among older workers occurred because workers remained in their job after reaching age 60.

Decomposition of employment rates into retained and new workers, and the job retention rates of men and women aged 60-64 in Poland, 1998-2013 (in %).



Source: Hardy et al. (2016).

Figure 5. Unemployment rate of older workers remained below the total unemployment rate even after the retirement reforms.

Unemployment rate of the population aged 55-64, by short- and long-term unemployment, and the unemployment rate of the population aged 15-64 in Poland, 2006-2015 (in %).

Source: Own elaboration based on LFS data.

and Ruzik-Sierdzińska, 2012). Between 2006 and 2015, around 50% of the unemployed people aged 55-64 were jobless for at least a year (see Figure 5), a share that was higher than the corresponding share among unemployed people under age 55. During this period, older long-term unemployed people were more likely to leave the labour force than they were to find employment. However, these are secular features of the Polish labour market that affect all workers. Since 2008, the average length of an unemployment spell in Poland did not fall below 12 months, and outflows to inactivity were higher than outflows to employment among the prime-aged long-term unemployed as well (Lewandowski and Magda, 2016). These issues need to be tackled by overarching labour market policy, rather than by lowering the retirement age or by implementing passive labour market policies targeted at older workers.

The outlook for older workers in Poland has improved in the last few years, but further increasing the employment levels of older workers faces some challenges. They are especially acute in the areas of skills, health, and age management.

The need for life-long learning is intensifying, as technical progress may leave older workers behind. In general, older workers are less skilled than younger workers in modern information and communication technologies. According to the PIAAC survey, the shares of adults aged 55-64 who are among the best performers (Level 2 or 3) in assessments of problem-solving in technology-rich environments are very low in all of the countries surveyed[4], and are the lowest in Poland (OECD, 2013).

Occupational health and safety, workplace ergonomics, and the mid-career identification of health obstacles and risks related to particular jobs are issues that need to be prioritised. In Poland, the number of expected healthy life years, expressed as the percentage of life expectancy at the age of 65, is slightly below the EU28 average. At the same time, the share of people aged 55-64 who report having a work-related health problem is one of the highest in the EU (23% in 2013, EU-OSHA, 2016), and is noticeably higher than the share among people aged 35-54. Worker capabilities deteriorate with age. A study for Poland recommended that mid-career assessments of individual workers' capabilities to perform physically demanding tasks should be done for workers as young as 40 years old (Bugajska et al., 2011). Although such tasks will be less common in the future because of the on-going shift from manual to cognitive work, this shift will likely change the nature of age-related risks rather than reduce them, because cognitive, sensory, and psychological capabilities also evolve with age (Kucharska, 2013).

Expanding part-time and flexible working arrangements is a key strategy for helping older workers prolong their career. The availability of part-time work and partial retirement options can encourage workers to postpone their labour force exit (Eurofound. 2016). Unfortunately, the Polish partial retirement system, which was enacted

[4] OECD countries plus selected non-OECD countries or areas (OECD, 2013).

in 2012 and introduced in 2014, so far has covered only men born in 1949-1950[5]. In 2015, the share of part-time workers in Poland among all workers aged 50+ was just 11%, noticeably below the EU28 average of 23%. Among women, who are generally more likely to work part-time, the gap was even larger (14% vs. 35%). The share of older workers who are in a part-time job has been declining in Poland as the employment rate of older workers has been rising. An increase in the availability of reduced hours and flexible working arrangements is essential for prolonging working life and improving work-life balance among workers aged 50+.

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[5] The conditions for partial retirement are as follows: men have to be at least 65 years old and have at least 40 years of contributory periods, while women have to be at least 62 years old and have at least 35 years of contributory periods. Women were supposed to be covered from 2021 onwards, after the retirement age for women would exceed 62. The lowering of the retirement age to 60/65 on 1 October 2017 will invalidate the partial retirement system.

Low retirement age, high price

Magda Malec, Joanna Tyrowicz

Lower retirement age (60 for women and 65 for men) will decrease future pension benefits because of lower accumulated contributions and longer pension disbursement periods. The reduction of pensions will be the highest for high-earning workers, whereas others will experience a smaller reduction mainly due to the minimum pension benefit entitlement. As a result, the share of minimum pensions benefits is expected to double, in comparison to the baseline scenario of pension eligibility age of 67. Consequently, public pension expenditure will increase, while fiscal revenues will fall. To rebalance fiscal situation, the government will need to provide a substantial fiscal adjustment. A lower retirement age will also reduce GDP per capita by 7% compared to the baseline scenario when retirement eligibility is at 67 years for both men and women. The main reason for impoverishment is the lower labour supply, higher private savings are estimated to exert only a small mitigating impact[1].

Lower retirement age implies lower pensions. In a defined contribution system, those of us who are professionally active regularly set aside a portion of their remuneration. Once we retire, our accumulated pension contributions are divided by life expectancy at retirement. The quotient of the division is paid out as life annuity pension. Setting a lower eligibility age for the pension benefit (60 for women and 65 for men) does not introduce any changes to this feature of the pension system. Compared to the previous legal regulations (equal retirement age for women and men set at 67), all the pension benefits will be lower. A shorter contribution payment period not only yields a lower sum of accumulated contributions, but it also translates into this reduced sum being spread over a longer period of pension disbursement. Lower pension benefits for each and every citizen will be only one of the consequences of introducing the lower pension benefit eligibility age. The reform will also trigger a myriad of other consequences. Economists use simulation models to evaluate the impact of such effects, and we present the results of such evaluations below.

All the pensions will drop – the only question is 'by how much for whom?'. The magnitude of future pension decrease will depend on current salary and employment period. Highest earners, whose pensions will drop by more than 40%, will be most gravely hit by the reform. The reason for this is that high-earning individuals do not transfer a full 19% of their income to Poland's Social Insurance

[1] In this paper, we summarise the results of the research carried out at the Faculty of the Economic Sciences of the University of Warsaw by Marcin Bielecki, Krzysztof Makarski and Joanna Tyrowicz of the GRAPE (Group for Research in Applied Economics) team. For more on this research and GRAPE, please visit the website http://grape.org.pl/blog/co-dokladnie-oznacza-obnizanie-wieku-emerytalnego-w-polsce/ and read the report available at http://grape.org.pl/emeryt/obnizanie-wieku/.
The authors would like to thank Krzysztof Makarski, Piotr Lewandowski, Beata Kwiatkowska and Jan Rutkowski, who provided valuable input and feedback to improve this paper.

Institution (ZUS). In line with Polish law, ZUS does not collect contributions from wages exceeding a certain limit (250% of annual average wage). As high earners were forced to contribute to ZUS pro rata of their salaries, accumulating contributions over longer periods was their method of obtaining a reasonable replacement rate. An individual earning the national average salary (ca. PLN 4 thousand), who retires at the age of 67, would be entitled to a pension benefit of ca. 30% of his or her last salary. If the retirement age is lowered, this benefit will suffice for no more than the minimum pension which is currently short of PLN 1 thousand. A lower retirement age will not cause considerable changes in pensions among the lowest-earning individuals, as this group would be receiving the minimum benefits even prior to the reduction in the retirement age.

Lower retirement age will be particularly detrimental to women. They will experience a much higher decrease in benefits than men. This is determined by two factors: shorter contribution period and longer benefit disbursement period (in both cases, 7-year difference in comparison to men). Therefore, the poverty risk will be especially high in this group. All the more so, since women pay contributions on wages that are on average lower than those awarded to men. With the retirement age at 67 years, about 20% of women were to receive minimum benefits. The lower retirement age will double this figure. It will further escalate income inequality among senior citizens, especially between women and men.

With a lower retirement age, it will prove necessary to disburse a higher number of minimum pensions. The number of contributors who will fail to reach the minimum pension threshold will be more than twice as high relative to the scenario with the retirement age at 67 years. Starting from 2040, half of all senior citizens will receive minimum benefits, and their number will continue to grow. Approx. 70% of the people born at the end of the 80s and at the beginning of the 90s can expect only the lowest pension. The state budget, or – in other words – all tax payers, will bear the financial burden of providing for these senior citizens.

Lower retirement age is tantamount to a substantial fiscal burden. A tax increase is inevitable. Not only will public spending go up due to the fiscal effort needed to pay minimum benefits, but the state budget revenue will go down at the same time. Fewer employees mean lower income tax revenues. It may also be expected that people will engage in private voluntary saving, for fear that pension benefits will drop in the future. This will lead to a downward trend in current consumption, triggering a decrease in corresponding tax revenues. It will be necessary to compensate for the decreasing revenues of the state budget.

There are several possibilities of coping with the growing fiscal burden resulting from lowered retirement age:

- Decrease public expenditure in other areas;
- Increase labour taxation;
- Increase consumption taxation;
- Increase public debt.

One possibility of financing an increasingly expensive pension system is to lower public expenditure currently allocated to other areas. This would require tightening the state's belt by not one, but several notches: public expenditure would have to be reduced by ca. 1.20% of current GDP, i.e. approx. 6% of the whole current government spending. This figure corresponds to more or less one fourth of our current healthcare spending. It is difficult to single out expenditure categories where lower spending would win social approval. Therefore, this solution is hardly realistic.

Another possibility would be to increase labour taxation. Since higher taxation translates into fewer incentives to hire and take up jobs, raising labour taxes would cause the employment rate to fall. Stunted labour supply further contributes to lower revenues from personal income tax and personal household income would also drop.

Figure 1. Pensions of women and highest earners will suffer the most significant drop. Changes of pension benefits.

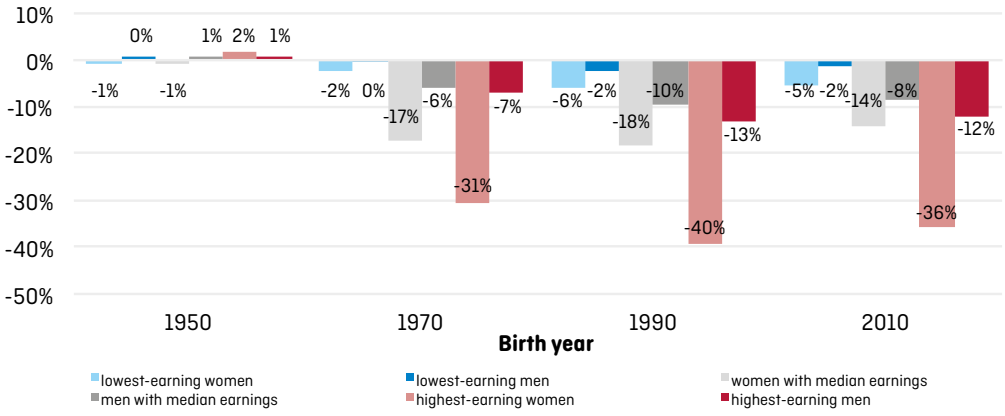
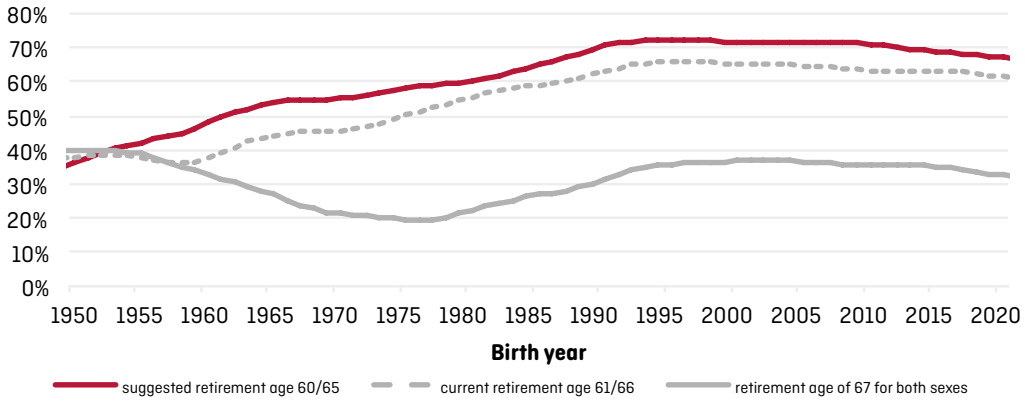


Figure 2. After the pension benefit eligibility age is reduced, more than 70% of today's twenty-year-olds will receive only the minimum pension.
Share of pensioners with a minimum pension benefit.

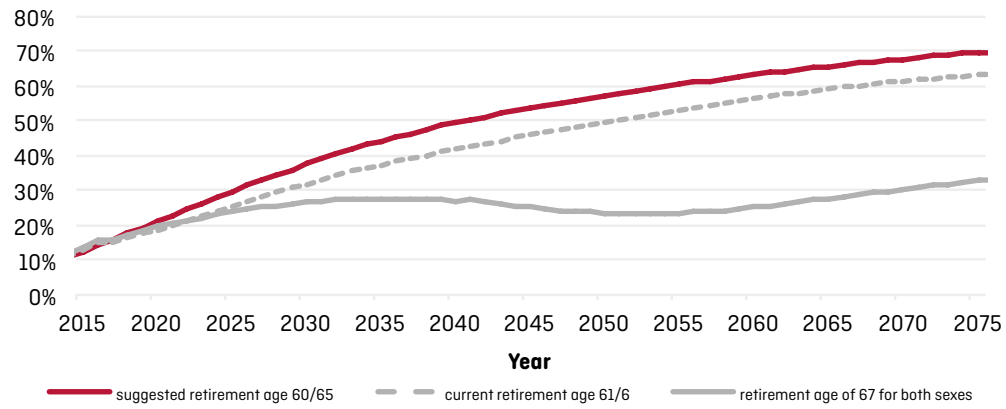


A growing fiscal burden may be financially offset by increasing consumption taxes, i.e. a higher VAT rate. In order to finance the minimum benefits after lowering the retirement age, it would be necessary to raise the VAT rate by 2 percentage points (pp). VAT increased by 2 pp may also be considered as a convenient indicator of the public finance sector gap caused by the lower retirement age. Higher VAT would cause the consumption cost to grow: products and services would become more expensive. This would further decrease the consumption level and real income of citizens.

It is not possible to finance higher pension system costs through public debt. Poland's indebtedness has already reached the level at which there is only few degrees of freedom left. The current debt stands at approximately 51% of GDP, while exceeding the level of 55% of GDP will trigger off the prudential procedure.

The minimum pension is an exception from the rule of calculating the pension amount on the basis of the sum of contributions paid. For those pension-eligible employees whose volume of contributions accumulated during their professional activity period is too low to qualify for minimum benefits, ZUS bridges the gap. Shorter employment periods will result in lower funds on our retirement accounts. This will lead to an increase in the number of cases where the state will have to bridge the gap between accumulated contributions and disbursed minimum benefits. State budgetary aid is not available to individuals with insufficient job tenure, i.e. those ineligible for the minimum pension benefit. Such pensioners will be awarded benefits corresponding to the simple quotient of a division of their accumulated contributions by further life expectancy. It might be reasonably expected that those who fail to save up enough for old age over their professional activity period will turn to social welfare for help.

Figure 3. In 15 years, in order to keep the promise of the minimum benefits, the state budget will have to co-finance half of all disbursed pensions.
Share of pensioners with a minimum pension benefit.



A lower retirement age will lead to an increase in savings, however this increase will not suffice to outweigh the negative effects of lowering the pension benefit eligibility age. Private savings lead to the accumulation of capital in the economy. When people start to save more in order to secure funds for their old age, the base of the capital tax will increase. However, estimates indicate that this increase is not sufficient to cover losses caused by the fall in consumption and labour supply. It is true that the increase in savings will mitigate the effect of decreasing labour supply, but will not fully compensate it. Moreover, empirical research conducted in Poland[2] suggests that in practice the increase in private savings tends to be much smaller than indicated by simulation models. This is because such models assume fully rational behaviour and a perfect foresight by the people. People are aware that with a lower retirement age, benefits will be lower and that they must therefore save more in order to maintain a similar standard of living. However, empirical estimates suggest that behavioural patterns may in reality differ: the increase in savings is small and the decisions to accumulate savings are frequently postponed.

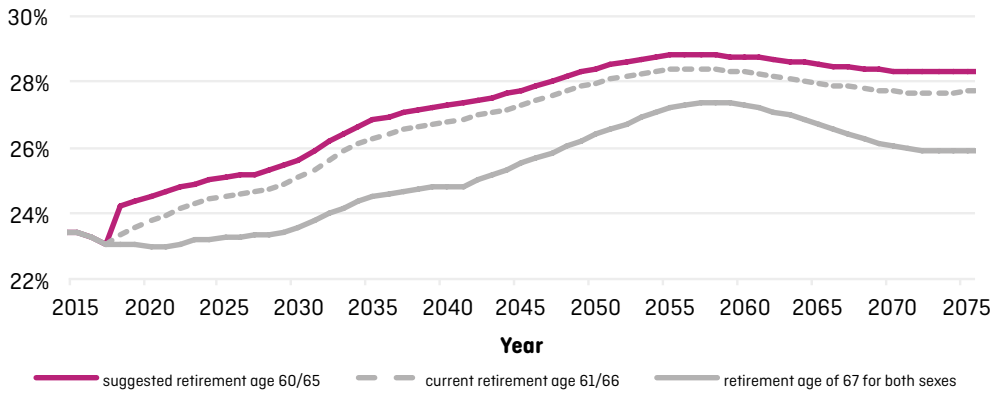
The ageing of Poland's population will exacerbate the negative consequences of lower retirement age. Even if the 67-year retirement age were to be maintained, taxes would have to be increased, mainly due to the minimum pension benefits and so-called widows' pensions, which are not taken into account in Social Insurance Fund (ZUS) and Ministry of Finance (MoF) estimates. Moreover, demographic forecasts forming the basis for pension benefit calculations are not actuarial, i.e. they do not take into account the risk of a further increase in life expectancy. As time goes by, the amount corresponding to these two benefits will increase, whilst the lacking amount is covered by ZUS, i.e. by the state budget.

A lower retirement age will lead to a fall in national income. Lowering the retirement age leads to a decrease in GDP per capita by 7% in relation to the 67 retirement age scenario. The level of the potential GDP primarily hinges on three factors: labour supply, capital (savings) and technological progress. Only the third factor does not change as a result of the retirement age being lowered. Hence, GDP per capita will change in the aftermath of the changes in labour supply and capital. The decrease in labour supply will be decisive. It will lead to a lower output – fewer goods and services will be produced in the economy. If private savings grow only slightly (less than the simulation model assumes), then GDP per capita will fall by more than 7%. If the gap resulting from minimum pension benefits were to be financed from savings in the capital system (e.g. elimination of the funded pillars), then the decrease in capital will be exacerbated and drive GDP further down.

Methodological information

The conclusions presented above have been formulated on the basis of a model aimed at reflecting main features of the analysed complex economy. It is a fair and transparent tool, as the model was built on the basis of a fully overt set of assumptions and is a commonly used method in economic studies. This model is deterministic both in micro and in macro terms. The rate of economic growth is determined jointly by: labour supply, availability of capital (savings) and technological progress. Technological progress is exogenous (and is the same in both the baseline and reform scenario). In the model, labour supply and capital

Figure 4. Reduction of the retirement age necessitates an increase of VAT rates by 2 pp to finance the minimum pension benefit surge.
VAT forecast.



[2] *inter alia* Lachowska, M. and Myck, M. 2015. "The Effect of Public Pension Wealth on Saving and Expenditure," Upjohn Working Papers and Journal Articles 15-223, W.E. Upjohn Institute for Employment Research.

depend on decisions made by people. They may accrue any number of years of service before retirement age, with a preference for free time. However, if they do not work, they cannot consume. At reaching retirement age, people may cease to work and collect pension benefits.

Demographic assumptions are derived from Central Statistical Office forecasts until 2060. After that date, we have assumed a stationary population, i.e. a very optimistic scenario of a stable birth rate and life expectancy. In our model, the government does not exercise an autonomous policy in the context of the retirement age reform, as it spends 20% of GDP on public consumption, while the ratio between public debt and GDP, as well as tax rates, are stable over time. Obviously, this does not concern the VAT rate, which is adjusted in order to balance the state budget and to fill the gap in the pension system caused by the increase in minimum benefits. We have assumed an endogenous interest rate, i.e. a rate that is calculated within the model in order to clear the capital markets. It adapts to the economy, accounting for household savings and the public finance sector debt.

The estimates provided by ZUS and the MoF are insufficient to suggest any effects on inequality, because their estimates are based on a strong assumption that the whole economy is populated by average Poles (i.e. each agent is average). Hence, in ZUS and MoF modes, people work average number of hours per week for an average number of years, earning the average wage all their life. Hence, the pension contributions they model are average as well. In reality, people differ in their approaches to savings, in their talent and in their approach to professional activity. For this reason, in our model we differentiate between members within each birth cohort in terms of activity on the labour market (which determines how much we work), patience (which determines how much we save) and productivity (which determines how much we earn). This helps us replicate the income and wealth characteristics (inequality) observed in the Polish society in the years AD 2010 - 2015. For more technical details concerning the model, please refer to publications of the GRAPE team (see: literature). Hence, our model may address the question of heterogeneous impact of retirement age on population and thus capture the scale of the minimum pension benefits coverage.

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Ageing in Poland in the conditions of intensive international migration

Agnieszka Fihel, Marek Okólski

In contrast to most European countries, in recent decades Poland experienced massive emigration of young adults. Intensive migration contributes to the process of depopulation and ageing, and deepens the decrease in number of births. The outflow of Polish nationals is expected to diminish in the near future and to be counterbalanced by increasing inflow of foreigners. Consequently, the switch from the net emigration regime to the net immigration regime is expected to occur in Poland around 2025–29. By 2060, the number of immigrants living in Poland may rise considerably, and their role on the labour market may become significant.

Population ageing means, among other things, a higher demand for care of the elderly. Coincidence of extremely low fertility and emigration of young adults leads to 'shrinking families', in which the potential of future providers of care for old persons diminishes. Institutional care arrangements are not accessible or affordable for all persons requiring care. Relatives, even those willing to participate in providing care, need support from a well-coordinated social policy linking public and private institutions, NGOs and family members.

Introduction

The process of ageing in all available demographic projections for Poland is perceived as one of the fastest and deepest in the European Union. The present paper reports some preliminary results of the on-going research project known as Mig/Ageing[1]. The principal objective of Mig/Ageing has been to identify long-term demographic changes in Poland and assess their impact on social institutions. While the analyses were comprehensive and inquired into all components of population change, and a wide range of its direct and indirect consequences, they, however, specially focused on the effects of migration from and to Poland a factor largely underestimated in the long-term population studies thus far. A special attention was also paid to the ensuing challenge to a predominant mode of the care for elderly, especially for ageing relatives of Polish emigrants.

[1] A full title of the project behind this acronym is: Unfinished migration transition and ageing population in Poland. Asynchronous population changes and the transformation of formal and informal care institutions. The project, financed by the National Science Centre (grant no. 2013/08/A/HS4/00602) within its prestigious "Maestro" programme, has been carried out at the Centre of Migration Research, University of Warsaw since October 1, 2013, and it has involved extensive interdisciplinary studies conducted by a team of a dozen scholars led by Professor Marek Okólski. For more information, consult http://migageing.uw.edu.pl/.

International migration intensifies population ageing in Poland

In contrast to what is observed in most European countries, in Poland large emigration exceeds quantitatively the immigration, thus intensifying the process of ageing. According to a stylized course of the demographic transition, the ageing sets in motion when mortality is already very low and a decline in fertility gets a momentum. Usually, during that phase of the demographic transition emigration decreases and – with some time-lag – immigration starts to grow. This phenomenon, which constitutes a part of the so-called migration transition, i.e. a shift in international migration balance from negative to positive, mitigates the scale of population ageing in most European countries. In Poland, a huge migratory potential which occurred due to enormously high number of people born during the post-war baby-boom, was almost totally contained within the Polish population. The reason of this was the lack of opportunities for emigration until at least the early 1990s or – which is probably more accurate – until May 1st, 2004, the day of Polish accession into EU. The massive outflow from Poland started when the Poles acquired the freedom of residence in the countries of European Union (and access to their labour markets).

Accounting for real trends in international migration, whether captured by official statistics or not, changes prospects of the population ageing in Poland. So far, the effects of migration on ageing have not been fully explored in Poland because large part of emigration is neither recorded, nor officially recognized. For instance, in the period 2004–2014 more than 300 thousand persons deregistered from Polish statistics due to emigration, but additionally, the number of Polish residents staying abroad (without deregistering) increased from approximately 1 to 2.4 million. Therefore, it seems essential to duly adjust demographic projections for real trends in international migration and explore the outcomes of such adjustment. The Mig/Ageing project – opposite to the public statistics and studies based on the official data – in its analyses adheres to the concept of resident population and allows for actual and long-term (lasting more than 1 year) international mobility.

Poland experiences the decline in number of population due to the coincidence of extremely low fertility and massive emigration. While the official estimates indicate stabilization in the number of Polish population, the Mig/Ageing project demonstrates that the process of depopulation started as early as at the beginning of the 2000s. Since the end of the 1980s Poland has been undergoing a sharp decrease in the number of births and its total fertility rate hit one of the lowest levels in the European history. In the aftermath of enlargement of the European Union in 2004, every fifth person aged 25-34 left Poland on a long term, and the stock of all Polish emigrants is estimated at 2.4 million at the end of 2015. Consequently, the resident population of Poland may be as low as 36.5 million persons, that is, by 2 million lower that according to the official statistics.

The emergence and prevalence of the lowest-low fertility remains the main and fundamental determinant of the process of population ageing in Poland. Our demographic simulations show that if the fertility remained at the level registered in 1985–89, the share of young persons (aged below 20) in the population would stabilize at around 30% and would not change importantly due to the outflow abroad or increasing longevity. In reality, however, the share of young persons was as low as 23% in 2010, and will continue to decrease in the long-term because the generations of newborns are less numerous than these of their parents.

Contemporary emigration of young adults intensifies the process of ageing. The largest population losses caused by the recent outflow were observed in the cohorts born at the turn of the 1970s and the 1980s, that is, persons in their twenties and thirties at the time of their departure from Poland. Consequently, the share of persons at the age of economic activity (20-64) decreased and the share of old persons (age 65 and over) increased solely due to the massive outflow taking place in the 1990s and 2000s. Although the quantitative effects amount to 1 percentage point only, that is, the above-mentioned shares in the population decreased / increased by 1 p.p., the measure of old-age dependency ratio increased to 20.5% in 2010 instead of 19.3% (in conditions of no international migration since 1990).

Emigrants set up families and raise their children abroad, which deepens the 'birth depression' in Poland. The number of births 'missing' due to emigration was estimated at 672 thousands (4% of 'real' births in Poland since 1990 till 2010), therein 315 thousands (1.9%) in 2005–2009. Most migrants have been staying abroad for several years now and official statistics of the main receiving countries indicate an important increase in number of children born from Polish parent(s) abroad. Thus, emigrants set up families abroad and their returns to Poland are low probable and not expected.

Macro level: immigration to Poland will increase in the near future

Poland is expected to switch from a 'net-emigration' to a 'net-immigration' country in the years to come. The Mig/Ageing population projection for years 2015-2060 (Box 1) demonstrates a progressive decrease in emigration of Polish nationals and a significant increase in the immigration of foreign citizens (Fig. 1). The latter

exceeds the former already around 2025–2029 and peaks around 2035–44. The remaining flows: inflow of Polish return migrants and outflow of foreign citizens remain stable and visibly less important as compared to the previously quoted flows. The net result of four flows (inflow and outflow of Polish nationals and foreigners) becomes positive around 2025–29 and the migration transition is expected to occur in Poland. The net inflow reaches its peak of over 120 thousand in the period 2040-44 and declines gradually afterwards.

Immigration will to some extent postpone the process of depopulation and of population ageing in Poland. In the future the number of foreigners (not including the second generation) will increase to more than 3.8 millions and their share in the population – to 11% by 2060 (Fig. 2). The Mig/Ageing demonstrates that the population will be probably younger than other demographic projections for Poland (by the Central Statistical Office of Poland or by Eurostat) indicate. This conclusion stems from two factors: first, most today's emigrants will probably not return to the country of origin in the future and, second, immigrants are supposed to reinforce young segments of population. The number and share of persons aged 55-79, as well as the old-age dependency ratio will be significantly lower in 2050 than according to other population forecasts.

Foreigners will play an increasingly important role at the Polish labour market. Given the results of demographic projection, foreigners will constitute almost 16% of the group aged 15-64 by 2060. Present rates of economic activity for foreigners living in Poland are comparable to those registered for the Polish nationals; however, they remain importantly higher for elder segments of the labour force (aged 60 and above). If this tendency continues and the process of population ageing advances, by 2060 the share of persons of foreign origin will increase to 18% for those economically active aged 15-64 and 24% for those economically active aged 15-74.

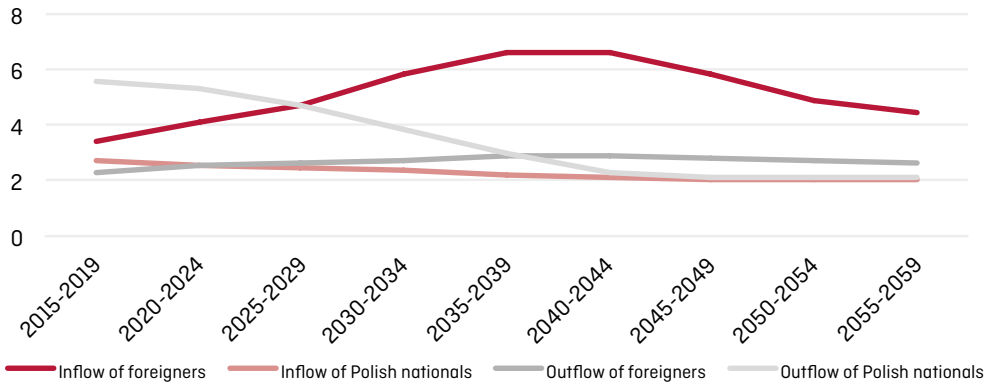
Box 1. Methodology of the Mig/Ageing demographic projection, 2015–2060.

- Resident population (de facto living in Poland) remains the main category of analysis. This means that long-term emigration, whether captured in the official statistics or not, is considered as a real outflow.
- Assumptions concerning fertility and mortality trends in the future are probabilistic. No specific 'target values' are proposed for the life expectancy at birth or the Total Fertility Ratio. Consequently, results of future fertility and mortality developments are linked to the level of uncertainty.
- Assumptions concerning future trends in international migration were proposed on the basis of econometric model estimated on the hitherto experiences of over thirty European countries, most of which already experienced the switch from the net emigration regime to the net immigration regime (the so-called migration transition). Projected demographic and economic conditions were also included into the econometric model, which inter alia means that population ageing is considered as a possible determinant of future inflow to Poland.
- Last, but not least, this is the first demographic projection for Poland that distinguishes four international flows: outflow and inflow of Polish nationals and of foreigners. Net migration, an artificial statistical measure that is not linked to any real demographic event, is not a subject of analysis.

Mezzo level: deficiencies in the provision of care over old persons

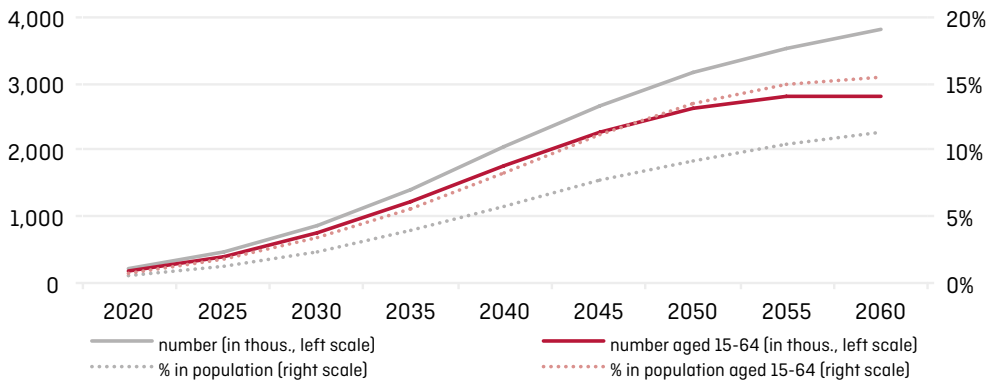
There are important deficiencies in institutional care arrangements over old persons even now, at the eve of the process of population ageing. Despite the existence of institutional network comprising senior clubs, day care centers, public and private nursing homes and medical centers, social assistance centers providing in-home care, non-governmental organizations, the demand for care arrangements remains to large extent unmet.

Figure 1. Annual rates of international flows (per 1,000 population), as forecasted in the Mig/Ageing project.



Source: Own elaboration based on Polish Statistical Office population projections for 2014-2050.

Figure 2. Number of foreigners and their share in population, as forecasted in the Mig/Ageing project.



Source: Own calculations based on Eurostat data and Polish Statistical Office population projection for 2014-2050.

Public institutional care entails cost that for some beneficiaries and their families remain too expensive. Private institutions of care over the elderly cannot constitute the remedy for institutional deficiencies in the public sector as, in general, they maintain the costs of subsistence at a relatively low level and do not provide advanced and high-quality medical care.

Contemporary international migrations of local care personnel deepen deficiencies in care arrangements. The personnel employed in the public and private sector of care is in particular susceptible to undertake labour migration to Germany, Italy and other countries of the European Union. Research conducted in the medium-sized towns (Box 2) showed that low levels of wages offered locally are the main reason for outward mobility of nurses and care providers. The lack of economic incentives inhibits the inflow of foreign care personnel and restrains the development of migration networks in place.

Increasing demand for care arrangements calls for a well-coordinated social policy linking public and private institutions, NGOs and family members. Bearing in mind that in Poland the care rests to a large degree within familial system of intergenerational transfers and support, the recent emigration, which above all embraced mobile-age people, may substantially undermine this mode of elderly care. Indeed, such demographic phenomena as massive outflow of young adults and persistence of the low fertility entail the phenomenon of 'shrinking families', with lower and lower number of potential providers of care. This leads to the questions how to provide the care arrangements to the growing number of old persons, diversify the financial means and involve and coordinate all potential carers. Indeed, counteracting the drain of care personnel, intensifying immigration of foreign nurses and, what seems to be the most important, supporting family members – in regions where families are large enough – in the provision of care requires an extended and well-coordinated policy.

Box 2. Studies conducted in the medium-sized towns.

The consequences of population ageing were studied within the project Mig/Ageing in two medium-sized towns, that is, of 20-30 thousands inhabitants, in Central and Southern Poland. In both locations surveys and in-depth interviews were conducted with various groups of persons: students, adults, old persons (aged 60 and over), members of migrant families, personnel providing care and other services for the elderly, and local authorities' representatives (over 130 interviewees altogether). In case of 50 families, in-depth interviews were conducted with old parents living in Poland and their adult children living permanently abroad.

Micro level: emigrants contribute to care arrangements over ageing family members

Due to institutional deficiencies and lack of financial resources, families resort to provisional care arrangements. In case of many elderly persons requiring daily help and care, provisional and improvisatorial arrangements were identified in the research conducted in the middle-sized towns (Box 2). Such arrangements consist of services provided by several institutional and non-institutional actors on a part-time: social assistants, nurses, neighbours, relatives, friends etc. Such dense multi-actors networks may serve as a low-cost substitute of care arrangements, but at the same time they remain volatile as each modification, for instance departure of a nurse abroad, destroys the organization of provision of care.

Adult children living abroad contribute to the care arrangements over ageing members of family. In most migrant families relatives who remained in Poland overtake the care over the elderly, whereas emigrants

contribute financially, materially, emotionally. In some cases emigrants manage the organization of care provided by several actors locally. Emigrants often declare their involvement in the future arrangements of care, either at distance, or by hosting an old person abroad.

Provision of care adds to a complex system of interdependencies and intergenerational transfers within a family. Although elderly persons are often beneficiaries of care within a family, some of them, who still remain physically active, provide extensively care over grandchildren. In migrant families, too, grandparents often take care of grandchildren living abroad. Such a complex system of interdependencies and intergenerational transfers yields the problem of so-called moral equations of care, in which every relative calculates the equivalent of non-financial assistance provided and received from other family members in the past, present and – predictably – in the future. Interestingly, the elderly persons are often excluded from such bargain relations undertaken by adult siblings who, on the basis of received help, decide to contribute or not to the future care arrangements over the elderly, thus disempowering the latter in this regard.

Conclusions

The population ageing in Poland is supposed to become the most advanced in the near future in the European Union. This process, propelled by extremely low fertility, massive emigration of young adults and increasing longevity, will exert crucial and most probably irreversible impact on family systems and arrangements of care over the elderly. Provision of care over the elderly is a domain in which important institutional deficiencies are observed now, at the eve of the process of population ageing. The phenomenon of 'shrinking families', indicating a decline in the potential of future providers of care, will affect kinship relations and intergenerational transfers within families. An effective social policy in this regard needs to coordinate actions and financial means provided by various actors – institutional and non-institutional, from public, private sector, NGOs and family members.

Long-term care in Poland in view of the ageing of society

Piotr Błędowski

Though long-term care may relate to people in all age groups, the elderly constitute the majority of beneficiaries. Research carried out both in Poland and abroad confirms that individuals aged 80 years and more are by far the largest group of patients (Błędowski 2011, 33; Błędowski 2012, 454). In this paper I enlist the socio-demographic determinants of long-term care development. Following a discussion of the main characteristics and conditions of long-term care in Poland, I outline the possible directions of its reorganisation which would contribute to establishing a comprehensive long-term care system for dependants.

Demographic change as a rationale for establishing the long-term care system

Considering the projected rapid increase in the number and the share of individuals aged 80 years and more (the so-called double ageing) and the limited capabilities of families regarding the provision of long-term care over dependent individuals, it should be expected that demand for long-term care will grow. This requires establishing a long-term care system that meets both health, social and living needs.

Therefore, it is crucial to organise a new support system for dependants - a group naturally dominated by the elderly and, in particular, by individuals aged 80 years and more. There are a number of reasons for which the system requires reorganisation. These include:

- Growing incidence of one-person households and households consisting of retirees and pensioners. Consequently, **the demand for support** that the immediate family is unable to provide is increased and the family function weakens. As a result, even a family living with a dependent person is not always capable of providing adequate care and help.
- General increase in life expectancy of dependent persons. This results in an increased burden for families and informal care providers; at times, it also causes **an overlap of workload if there is more than one dependant person in a family**.
- Improving the level of care, for instance through the use of special equipment facilitating the provision of services with due care. The costs of using such equipment and the skills required to operate it make **external support indispensable**.

The change of the family life model in parallel to socio-economic developments and the weakened care function of the family pose a significant challenge for social policy institutions, especially at the local level. Increasingly, the latter should be entrusted with organising care for dependent individuals, of which many are widows and single women.

Among the socio-economic changes associated with old age, the singularisation process and the growth of the number and share of one-person households of those aged 65 and more have the greatest impact on the demand for long-term care.

The above facts will significantly impact social policy. Firstly, well over one third of households will derive income mainly or solely from pension benefits. It is widely recognized that the level of income from pensions will be relatively low, therefore incomes of retiree households may turn out insufficient to meet the potential costs of care services for dependant persons. Secondly, an increasing number of two-person households will be composed of a couple of retirees. This means that ageing spouses may find it difficult or even impossible to fulfil numerous household's needs by themselves. Finally, one-person households will constitute an ever-increasing share of retiree households. This in turn will increase demand for services provided by specialised institutions.

In 2030, over half of all one-person households will be headed by a persons aged 65 and more and **every sixth household will be headed by a person aged 80 or more**. This indicates the possible scope of demand for key services and other benefits such as provision of care. Since by 2030 the growth rate of one-person households in the oldest age groups will be relatively fastest, it is necessary that the organisational programme of institutions providing services for the elderly take these changes into account.

Additionally, it should be expected that **the higher proportion of women compared to men in older age groups** will very slowly decrease. This phenomenon is typical of the elderly all over the world and is mainly the result of higher mortality rates of men in lower age groups. The last few years brought about a decrease of feminisation ratio and demographic forecasts project further rise in the percentage of men in the population over 65 years of age. However, those who shape the social policy will need to focus on the problem of feminisation of ageing for many years to come. The following constitute the most important aspects of this problem:

- lower level of women's pension benefits making it difficult to satisfy the need for access to healthcare services and long-term care;
- intensified feeling of solitude and lack of possibility to receive help from a family member if any needs arise;
- generally poorer health and lower level of capabilities among elderly women in comparison to men of the same age.

Diagnosis of the long-term care in Poland

Long-term care, which, due to the ageing population, is an integral and increasingly important element of the healthcare system, is being developed in Poland in a poorly coordinated fashion, with little attention paid to actual needs. For instance, this is reflected in the fact that there more individuals receive institutional benefits than community benefits.

Problems with organising long-term care in Poland start as early as the diagnosis phase of the phenomenon. Although **the exact number of dependent persons is unknown**, based on the data from institutions financing social benefits and the results of empirical research, it may be estimated at approximately 1.2 million. No method exists to determine the share of individuals who, among this group, are entirely dependent (requiring full assistance), but it might be assumed that the number is close to 300 thousand. These estimates are based on nationwide research conducted in Poland and on data obtained from Social Security Institution ZUS, which pays out benefits to entirely dependent individuals. When relying solely on self-evaluation of capability level among the elderly, one needs to bear in mind that it is generally understated, as according to surveys almost 2/3 of individuals aged 75 years or more consider themselves as being entirely or partially dependent. In reality, the situation is probably better, but the deficiencies of the disability and dependence assessment system in Poland are worth mentioning at this point. Generally speaking, there are five different assessment systems dedicated to various groups of population and which assume varying criteria. As a result, at least 500 thousand individuals are assessed as disabled within two systems and, more importantly, it is likely that they receive benefits from both of these systems, which is excessive squandering of resources (bad management of public resources).

The lack of systematically updated diagnosis and monitoring of dependent elderly individuals cause difficulties in formulating the concept of long-term care development and lead to the petrification of its present structure.

Currently, in Poland there are two most important sectors where disabled persons obtain their benefits:

- Medical, including institutional and community care benefits. The former ones are mostly provided in

medical and care facilities and in nursing and care facilities. The main difference between these institutions is the fact that medical and care facilities also provide medical services and hospitalisation stays there are limited in time. Community care includes benefits provided at the place of residence by community nurses or nurses from long-term care facilities.

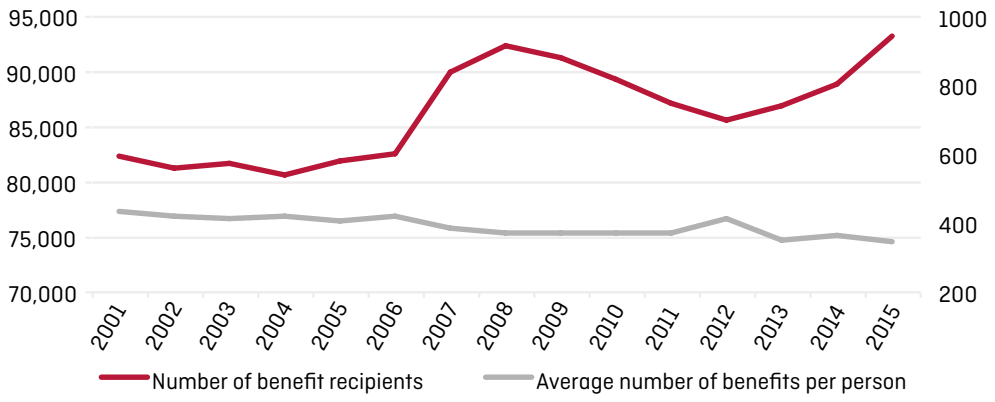
- Social, including institutional benefits (provided at different types of public nursing homes), semi-institutional (day care homes) and community benefits (aid provided by care providers and social workers at a dependent person's place of residence).

In the case of general and psychiatric long-term care provided by medical and care facilities as well as nursing and care facilities, approximately 3/4 of the patients are aged 65 years or more. At the end of 2014, 30.6% of patients of 685 long-term care facilities were aged 65–79 and 44.5% of them - over 80. The long-term care institutions had 32.6 thousand beds in total (*Zdrowie*, 2015, p. 162). Although the number of beds in long-term care institutions displays a slight upward trend, it still remains at a very low level. Due to the progressing demographic and social changes, it is necessary to work out a strategy of developing an institutional base of long-term care. The development of such a base should follow the development of community long-term care. Here, the access to special long-term benefits is even more limited.

The scope of services provided in nursing and care facilities and public nursing homes is in fact very similar, although these institutions are financed differently. As the functioning of this type of facilities is not coordinated and financial contribution of a dependent individual in his/her stay varies, waiting times for a place are different. Similar differences in the scope of financing and accessibility are also present in the case of community services. They are not coordinated between each other either, so none of them can guarantee that the needs of a dependent individual are met so that he or she can function at a satisfactory level.

In the case of care provided to dependent persons by social welfare facilities, the situation is similar to the one in the medical sector: institutions are mostly inhabited by elderly persons requiring constant care and assistance in basic daily activities. In 2014, the number of public nursing homes was 1676, offering 111.7 thousand places. Public nursing homes include, among others, old people's homes (in 2014 there were 490 such homes), homes for persons with chronic somatic illnesses, homes for persons with chronic mental illnesses and homes for mentally disabled adults. The number of these facilities was 298, 230 and 195, respectively (*Zdrowie* (Health), 2015, p. 162). Most inhabitants of those homes were elderly people (53,6%). Moreover, in 2015 in Poland a total of approximately 93.3 thousand persons (*MiPiPS 03*, 2016) received care benefits, which were part of municipalities' own tasks (i.e. excluding specialist benefits provided to persons with mental disorders). Of course not all of them were elderly persons. This means that in practice fewer people are covered by benefits organised by social assistance centres than those that find support in public nursing homes. This calls into question the recently stressed goal of deinstitutionalising care for persons requiring assistance, because **community care is at present no real alternative for institutional care**. As presented on graph 1, the changes in the number of individuals provided with care benefits, as shown on the scale on the left side, are not regular and despite a slight rise the average number of benefits provided to recipients (scale on the right) marks a decreasing trend. Although in 2015 benefits were provided to nearly 11 thousand more persons than in 2001, the total number of benefits provided decreased by over 36 thousand during those years! This means that community care is becoming less accessible, even for persons without any other support.

Figure 1. Number of beneficiaries and amounts of care benefits provided by social assistance centres in Poland, 2001–2015.



Source: Own calculations based on MPiPS-03 available on the website of the Ministry for Family, Labour and Social Policy www.mpips.gov.pl.

Problems and policy challenges – possible solutions

As a matter of fact, Poland faces the issue of a **non-existent long-term care system**. The activities of both sectors – the medical and the social sector – are not sufficiently coordinated, there are no clear rules concerning the financing of similar benefits provided by each sector. Private entities have to be regularly involved due to the lack of stable and long-term solutions concerning financing of low level benefits. Apart from the costs borne by the National Health Fund and those of running public nursing homes, the expenses for long-term care covered out of public funds are difficult to identify and it is not possible to analyse them globally. The insufficiently developed long-term care infrastructure and its uneven distribution across regions generate additional costs for other entities, particularly for the healthcare sector. It often happens that a patient remains in hospital much longer than required for medical reasons only because it is impossible to provide a patient with the possibility, permanent or temporary, to enter institutional care while he or she cannot stay in his or her dwelling due to insufficient abilities.

Establishing a long-term benefit system would require the duties of public administration bodies to be accurately defined, determining the scope of beneficiaries and benefits, beneficiaries' rights, the principles of verifying such rights and quality control of the services provided, as well as the principles and level of long-term care financing from public funds and principles of cooperation with informal carers. For the time being, these topics have not become a subject of public debate.

In Poland, the discussion concerning the long-term care model has been going on for about a dozen years, but policy makers are barely involved and the outcomes hardly get through to the public debate. A draft bill on social long-term care insurance and a draft bill on care benefits were drawn up. Unfortunately, the government did not work on any of them and they were not presented to the parliament.

Apart from the lack of systemic solutions, attention must be drawn to another specific trait of long-term care in Poland, which requires reaction on the part of policy makers. This is **the lack of consistent action to support families in care functions** with regard to dependant persons. A part of the existing rights of family carers were gained by them through protest movements, but there are still no clearly specified principles of how the state shall support individuals combining professional work with providing care to a family member. Financial aid is not easily available and the social security of carers can be seriously threatened if they exercise care function for a long period of time. This points to a lack of a definite concept of organising long-term care in Poland. Resigning from informal care, in particular provided by the family, is virtually impossible, especially considering the expected increase in the demand for long-term care services. Family should be treated as the most important partner in providing care. It should be granted comprehensive support and be granted the right to social benefits.

Irrespective of whether (mandatory) social long-term care insurance is introduced in the future or whether some benefits will be financed from state budget funds, closer and more distant relatives will play an important role in providing a sense of dignity and security to people requiring assistance.

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