

Implementing non-financial defined contribution pensions in Poland

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Abstract:

The Polish population is ageing. This process will accelerate in the coming decades. Poland was also uniquely challenged (in contrast to the Western European countries) by mass labour market exit resulting from using retirement as a political sweetener (three times in last four decades), leading to the rise of economic dependency of the retired generation. The changes in the Polish pension system since the beginning of economic transition largely consists in counteracting the risk of long-term bankruptcy. Transition from the NDB to the actuarially balanced NDC+FDC system mitigated the risk of huge fiscal shortfall – in other words: unfair balance of interest of the working and the retired generations. The new public old age pension system was introduced in 1999 along with reduction in options for early withdrawal. In a transparent way, the system separates income allocation, redistribution and social functions. Those features contribute to its success. However, the Polish system should be perceived as a case study of misuse for current political goals, ad hoc tweaks, and lack of completion (retirement age, occupational systems, etc.). Despite those weaknesses, the 1999 pension reform met its goals.

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Introduction

The demographic, economic and social situation in Poland significantly altered in early 1990s. Until the early 1990s the fertility rate was around 2, with a high wave of the baby-boom generations born after the war and in early 1980s. At the same time, the life expectancy was gradually increasing, though it remained below the levels observed in the developed economies. Employment rates were high and the pension system was sustainable at relatively low contribution for social security 15.5% that covered old-age, disability, sickness and work injury risks. However, in the course of 1980s the group of workers eligible for early retirement rapidly widened. Politicians extensively used the pension system to ease some of the social tensions that emerged after introduction of the Martial Law in 1981, by granting pension privileges. As a result, the early retirement became a norm, rather than exception.

The systemic transition in early 1990s brought significant changes in demographic, social and economic situation in Poland. The labour market situation changed significantly. Many unproductive work places, typical for the socialist economy disappeared and the two-digit unemployment remained.¹ The excess bulge of laid-off workers was also offered early retirement understood as a social “pillow” to protect the shock transition to market economy. As a result, the effective retirement age of women fell below 55 years and men retired on average below the age of 59. Between 1990 and 1994, in mere 5 years, the number of new old-age pensioners was almost 1.3 million. Finally, yet importantly, in early 1990s all pensions in payment were re-valued to compensate for the loss of the real value caused by the high inflation. As a result, the average pension to average wage ratio between 1990 and 1994 increased sharply from 47.2% to 61.4%. The average old-age pension exceeded 70% of average wage.

The explosion of early retirement combined with rising generosity of the pension system led to a dramatic increase of the social insurance contribution rate up to 45% in early 1990s, as compared to 15.5% a decade before. Additionally, the post war baby boomers were to retire in late 1990s. These combined would lead to rapidly growing deficit of the pension of the pension system, which would worsen the already difficult situation of the working generation with further increases of the tax wedge.

The old pension (social security) system in Poland was also not trusted. Many changes introduced in 1990s created a feeling that the system was not sustainable and subject to many manipulations. For example, in 1993 the government proposed the change that led to reduction of all new pensions granted by 7%, which was later ruled as unconstitutional. With this ruling, the Constitutional Tribunal also called for a systemic reform of the pension system that would make the system financially sustainable in the long run.

At the same time, a general climate for reforms in the world was good. A growing number of countries introduced reforms or were elaborating reform options. Furthermore, international institutions promoted reforms. Poland was in course of economic and institutional transition, which meant a lot of changes institutions related to health care, education, social protection or state

¹ (Góra and Rutkowski 1990) estimated from 25 to 75 per cent disguised unemployment (depended on assumptions) in late 1980s.

administration, including central and local governments. All of that created conditions that were conducive to pension reform. After a couple of early attempts to start a reform of the system a window of opportunity was opened for a fundamental reform. The reform was designed in 1996-1997 and presented in a report “Security through Diversity” (Office of the Government Plenipotentiary for Social Security Reform 1997)².

The goal for the reform was protection of the working generation. The previous system protected interest of the retired generation. The new system was designed to balance interests of both generations.

The new pension system in Poland gradually reaches its maturity. Almost two decades passed since its implementation. Earlier experiences related to the implementation of the pension system, as well as the broader description of the pension system design are included in (Chłoń-Domińczak 2002; Chłoń-Domińczak, Franco, and Palmer 2012; Chłoń-Domińczak and Góra 2006; Chłoń, Góra, and Rutkowski 1999). From 2009, the pension benefits are paid out from the new system, it also weathered through the financial and economic crisis that hit Europe and the worldwide in 2008, which had an impact on the pension system design in Poland, which is discussed in the chapter.

1. The pension system in Poland

In this section, we present the main principles of the old-age (OA) pension system in Poland, including the development of the NDC accounts, benefit payments and management of the social insurance system, including the old-age part.

1.1. The main principles of the OA pension system

The new OA pension system based on the concept “Security through Diversity” was introduced on 1st January 1999. As a result, for all people covered by the new system, that is those born after 1948, were switched into the defined contribution system. Those born in 1948 or earlier stayed in the old non-financial defined-benefit scheme.

In fact, the implementation of the new OA system was not a reform. That was an exchange of the old system for a new one. The previous system ceased to exist for the vast majority of the people born after 1948.

Although in public debate the term “pillar” was widely used, the Polish old-age pension system does not follow the typical pillar approach used in the terminology of the World Bank or the European Commission.

One of the most important features of the new pension system was to introduce the close link (actually one-to-one) between contributions and pensions. The new system has been entirely based on individual accounts of two types, namely a Non-Financial Defined Contribution (NDC) account and a Financial Defined Contribution (FDC) account per worker.³ Both accounts play the same social role, which is income allocation over life-course. Contribution parts flowing through each of the account types create account values. However, they are managed differently, which can generate different

² Summary of the assumptions of the new system is also presented in (Góra and Rutkowski 1998).

³ Workers born between 1949 and 1968 could choose to use one or two accounts.

both positive as well as negative externalities.⁴ The initial split of the OA contribution (19.52%) was 12.22% flowing through NDC account and 7.3% flowing through FDC account.

Therefore, from the very beginning the NDC concept played the crucial role. NDC – being the generic old-age (OA) pension system arrangement – organised designing of the entire system. The OA system was separated from the other social insurance components – disability and survivor, sickness and maternity as well as work injury. Disability pensions are still based on the pre-reform DB formula. The attempt to harmonise benefit calculation in 2008 failed, due to the veto of the President that was not overruled. After reaching retirement age, disability pensioners are transferred to the old-age pension system. They receive their old-age benefits, topped up to the amount of the disability benefit they received before.

Individual accounts were introduced, comprising of the initial capital (i.e. pension rights accrued in the old system until the end of 1998 recalculated to the NDC account value) and new contributions paid from January 1999. Pension benefits depend on individual account value divided by unisex life expectancy at the age of retirement (for the cohort a worker belongs to).⁵ No other factors are taken into account. So, the entire OA pension system was turned into a pure income reallocation device. Income redistribution (apart from the one related to differences in life expectancy between men and women) was removed from the old-age pension system. Income redistribution became a part of tax-financed social security.

There is a minimum pension guarantee is a top up payment for those whose benefits from NDC+FDC are below a level perceived as the minimum. The top up payment is paid out of general revenues. Rationale for pushing redistribution out from the OA pension system is that the latter should be stable, while the former should flexibly respond to changing social needs. Mixing income allocation and redistribution leads to a loss of efficiency for both. In recent years, the minimum pension was increased at a faster rate compared to the indexation of old-age pensions, with the aim to protect the old-age pensioners from poverty.⁶

A “mirror” regulation helping to focus the OA system on income allocation is a cap on contributions. In the public system (NDC+FDC) they are due up to 30 times average monthly wage in the economy. Income above this threshold is contribution free. All benefits paid from the social insurance are taxed with the personal income tax as well as health-care contribution, according to general principles. Contributions in the Polish OA pension system ceased to be quasi-taxes, as there is a full link between contributions and benefits. The cap on contributions is not a privilege for the rich, it serves as a cap for the benefits they can expect from the mandatory system. Above this limit, they should manage their income allocation themselves and there is no need to involve the public system in further income replacement.

⁴ We use the concept of NDC and FDC as presented in (Góra and Palmer 2004).

⁵ As there was no information on the past individual wages in the system, the initial capital is claimed upon the relevant documents submitted to the Social Insurance Institution (ZUS). Calculation of the initial capital is still an on-going process, due to two main factors: (i) lack of awareness among workers on the necessity to claim their initial capital and (ii) difficulties in retrieving the salary documents from the companies that ceased to exist, which was quite frequent during the economy transformation.

⁶ In 2017 the minimum pension was increased to PLN 1000 (EUR 250) in gross value.

Although NDC was in the centre of the design of the system, at the time of the new OA system introduction, the FDC was the most visible part of the new OA system. It was in the centre of public debate, with a lot of attention drawn by the marketing campaigns of the pension fund managers (Chłoń 2000). Implementation of NDC was less visible and therefore attracted less attention of the public, politicians as well as experts and many economists. FDC is a part of the public system, which management was contracted out to the private sector. This does not change the nature of the system itself.⁷ Both flows of public system contributions generate liabilities in the same way. However, they are accounted differently. NDC remains in the cash accounting as it is managed by a public institution, while FDC is accounted as if it was a part of the private system, which from the view point of the public OA pension system is not logical (Góra 2014).

The above-mentioned problem led to a perverse situation in which channelling public pensions via FDC increases explicit public debt, while the same amount of contributions going through NDC does not. For politicians that was a clear motivation to change proportions of both flows in favour of NDC. In the light of public finance crisis that started in 2008, politicians decided to decrease the proportion of the contribution part to the FDC accounts, redeeming the part of assets of the FDC in the government bonds and transferring part of the assets to the demographic reserve. While the future liabilities remain unchanged but it looks as the public debt is smaller⁸.

The change of the proportions was politically driven and clearly bad for public trust. However, that decision did not change the essence of the system, that is that present value of benefit flows equals to the present value of contribution flows. Discounting factor for NDC and FDC converges in the long horizon to the nominal GDP growth rate.⁹ Thanks to the NDC design, the change in the proportions of contributions did not reverse the main principles of the new system.

1.2. Individual accounts in the Polish pension system

The public old-age pension system in Poland collects the contribution rate of 19.52 percent of individual wage. Currently, it is divided between two or three accounts, that is: NDC-1 (12.22%), NDC-2 (4.38%) and FDC (2.92%) accounts for workers who decided to continue paying FDC contributions or two accounts: NDC-1 (12.22%) and NDC-2 (7.3%) for the rest. Following the change introduced in 2014, 10 years prior to legal retirement age, assets from the FDC account are gradually transferred to the Social Insurance Fund (FUS) and noted on the NDC-2 account. As a result, upon reaching the legal retirement age all pension wealth in the mandatory system is recorded on the NDC-1 and NDC-2 accounts. Annuities from the old-age system are therefore fully paid from the NDC system¹⁰.

The part of the contribution that was initially a part of FDC is recorded on the parallel NDC account. As a result, today the NDC consists of two elements (NDC-1 and NDC-2 accounts), that differ in two aspects. First is the rate of return. In the initial, unchanged NDC-1 account it is the covered wage bill growth, while in the part of FDC turned into NDC it is the nominal GDP growth rate, averaged over the 4-year period. Both can be justified. However, this generates problems in managing the accounts as well as informing the workers about their account values. The second difference is the fact that

⁷ Actually NDC could – and maybe should – be managed by a private firm.

⁸ These changes are further discussed in section 2.3.

⁹ FDC can yield higher rate of return than NDC only if a country is able to exploit the rest of the world.

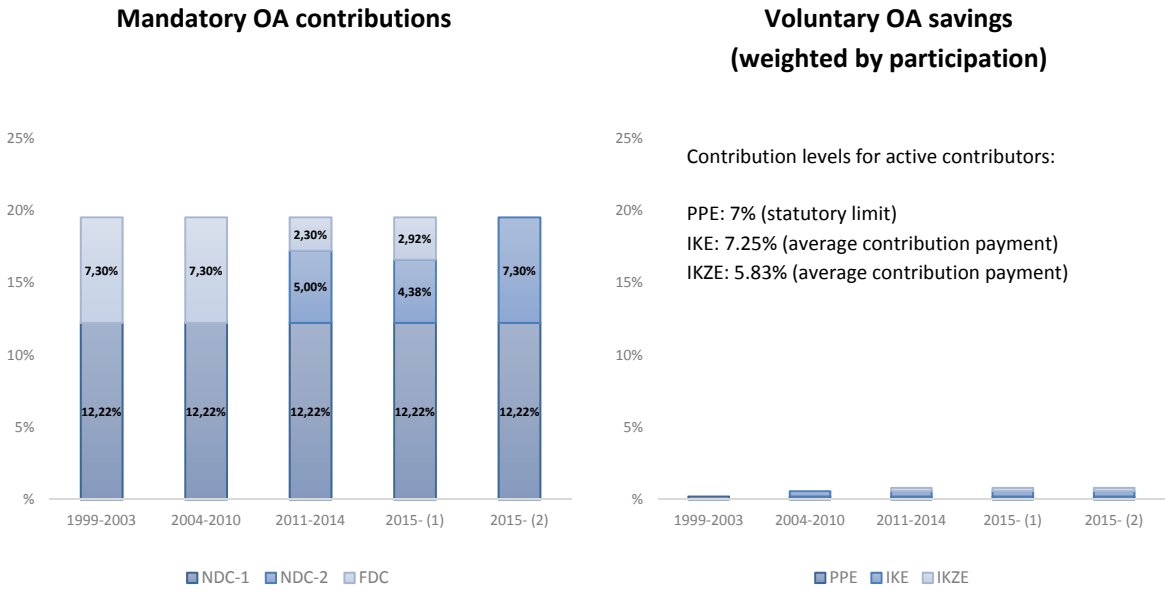
¹⁰ The government in 2017 announced new proposals of changes, that include converting the FDC account to the voluntary retirement account, which may change this rule, however details are not known yet.

amount on the initial NDC account is not inherited. The inheritance gain is implicitly used to finance liabilities from the old system that was actuarially imbalanced. The amount on the FDC account could be inherited. The same principle applies to the new NDC-2 accounts, which can hardly be justified on the basis of merits. That stem from legal constraints. Politicians were able to change the way contributions are accounted (from accrual to cash accounting) but they did not want to change the rights of system participants, as it would decrease the social acceptance for the change. Given the necessity to pay out liabilities of the old pension system, the inheritance gain is implicitly used for this purpose.

Additional voluntary private options to allocate more income for future pensions gradually developed. From 1999 workers could participate in employee pension plans (PPE). In 2004 and 2011 two forms of voluntary individual pension accounts: IKE (individual pension accounts) and IKZE (individual retirement protection accounts) were added. They are not very popular, less than 5% of workers have accounts in each of the forms. This is due to many reasons, mainly no tradition to save individually, limited options for long term investments and lack of trust towards financial institutions. The latter intensified, following the financial crisis combined with the manipulation in the pension system.

The overall composition of the mandatory and voluntary contributions for old-age and its evolution from the implementation of the new pension system is shown in the Figure 1 below.

Figure 1. Contributions to the mandatory and voluntary components of the old-age system in Poland, levels and changes in time.



Note:
 (i) 2015- (1) shows the split for people who chose to save in the FDC, the 2015- (2) for those who pay contributions only to the NDC scheme.
 (ii) Contribution levels for PPE show the weighted contributions by participation. Around 3% of workers in Poland are in PPE
 (iii) Contributions for IKE and IKZE accounts indicate average contributions paid to those accounts relative to average wages in 2015. Around 5% of workers contributes to IKE and around 4% contributes to IKZE.

One of the important principles of the new system was to increase the pension awareness of workers. One of the key tools to achieve this was the distribution of individual account statements. The statements, according to the initial assumptions, were to be sent annually. However, due to the changes in the split of contribution rates, there were breaks in the delivery of the statements.

Additionally, the language used in the account statements sent before 2017 was very difficult, which made the statements not understandable for almost everybody. In 2017 the account statements were significantly simplified. They include:

- the amount of contributions paid to NDC-1, NDC-2 and FDC accounts;
- the total value of NDC-1 account (including initial capital) and the NDC-2 account;
- the value of the hypothetical old-age pension, based on the current value of NDC accounts as well as projected value, assuming current level of contributions paid until retirement age.

Improving pension literacy is one of the most important challenges that the Polish pension system faces. According to ZUS assessment in 2017 some 82% of eligible workers plan to retire as soon as possible with lower retirement age (discussed later in the chapter), despite the fact that one additional year of work would increase their benefits by around 8%. Simpler and consistent communication is one of the key components to reach this goal.

1.3. Pension benefits and retirement age

Implementation of the NDC+FDC old age pension system required a change in the policy towards the early retirement, which was one of the key reasons for actuarial imbalance in the pension system. Given the pension formula, maintaining early retirement would lead to very low benefits. On the other hand, people were used to retire early. The average effective retirement age was around 55 years for women and 59 years for men. The first policy option was to remove any possibility of early retirement, as a result it would phase out with the gradual introduction of the new system. However, that was too dangerous for the system.¹¹

The so-called bridging pensions were designed instead of the sharp abolition of the early retirement. The bridging pensions were implemented in 2009, that is two years after the initial plan that envisaged their introduction in 2007. The postponement was due to political reasons as the initial timing would interfere with the Parliamentary election calendar. The bridging pension constitute an important part of pension arrangements remaining outside the OA system, financed from additional employers' contributions as well as taxes. Access to bridging pensions is limited to the work conditions that follow definitions developed on the basis of work medicine. According to the estimates, around 2.5% of workers are eligible for these benefits in the future. Furthermore, bridging pensions are limited only to those workers, who started their employment before 1999. Therefore, this regulation is temporal which means it will disappear automatically after all those that started work before 1999 retire.

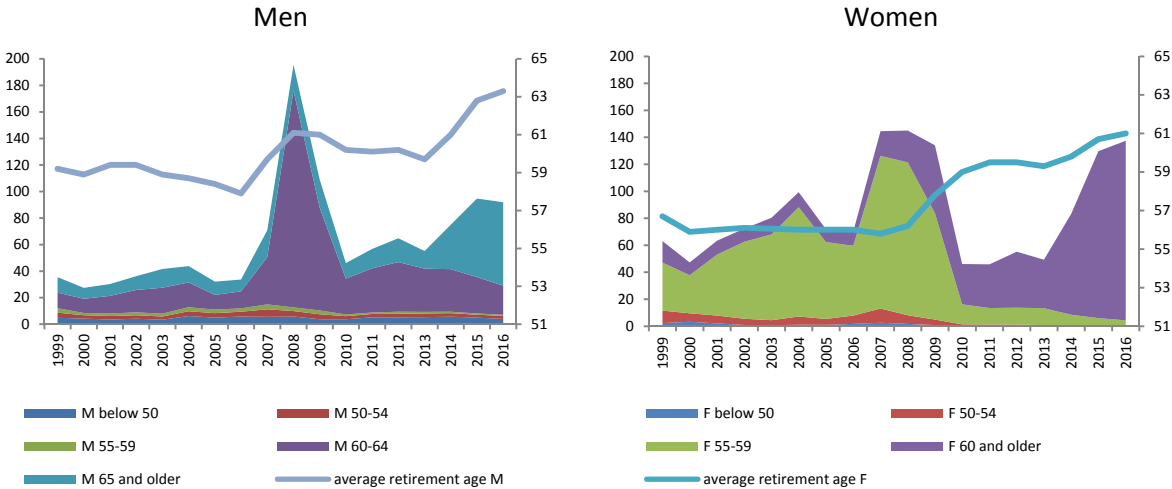
By the same regulation, coming into force in 2009, options for early retirement due to long service period at age 55 for women and 60 for men were removed from the OA system. The latter one was introduced only in 2006, following the sentence of the Constitutional Tribunal. The outcome of these changes is shown in Figure 2. First pensioners from the new system retire from 2009 (women) and 2014 (men). As one can see, starting from these years, the average retirement age increased both for men and for women. By the same token, the dominant age group of retirees shifted to 65-69 for men and 60-64 for women.

Delaying implementation of changes in the early retirement system, compared to the initial scenario, led to the higher level of pension expenditure and increased need for state budget subsidy to the

¹¹ Politicians were also afraid of this option.

pension system, that was one of the factors leading to changes in the pension system that were introduced between 2011 and 2015, discussed later in the chapter.

Figure 2. Inflow of new retirees by age and average retirement age

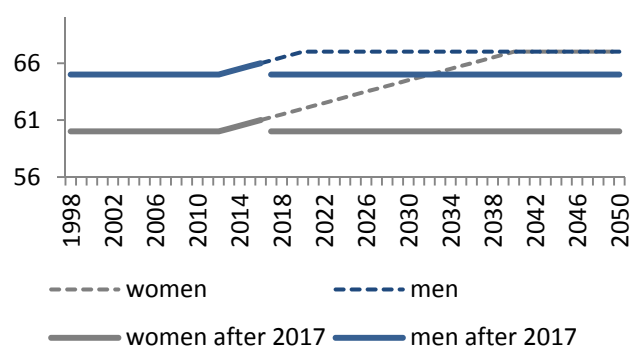


Source: Authors’ calculation based on the ZUS data

Old-age pensions in Poland are calculated by dividing the value of the sum of the NDC-1 and NDC-2 accounts by unisex life expectancy at retirement age. The life expectancy factor is announced annually by the Central Statistical Office, based on current cross-sectional data on mortality. This may lead to the underestimation of life expectancy (see Knell 2016), which is partially off-set by the inheritance gain that remains in the system.

One of the crucial factors, affecting the level of benefits is the retirement age. One of the assumptions of the new pension system was to equalise retirement ages between men and women in Poland. The initial “Security through Diversity” proposal included equalising retirement age at 62, which was not supported by the politicians. In 2012, the previous government initiated the gradual increase and equalisation of the retirement age at the level of 67 years (for a quarter of year every year). However, in 2016, the new government reversed this change. As a result, from October 2017, the retirement age will go back to the level of 60 years for women and 65 years for men, as shown in Figure 3. This change will have significant consequences for the adequacy of pensions, particularly for women (see also (Chłoń-Domińczak and Strzelecki 2013)).

Figure 3. Changes of retirement age regulations in Poland: to equal ages and back



Source: Authors' analysis based on the Law on Pensions from Social Insurance Fund

The minimum retirement age is crucial for pension systems. The increase to 67/67 would be the great achievement, particularly given the time that already passed. However, the retirement age around 60 for women and 65 for men is still much above the pre-reform actual ages of transition to (early) retirement at 55 in the case of women and 59 in the case of men. Removal of early retirement is a piece of success.¹²

The worst outcome of the lowering of the retirement age is a misleading signal sent to the working generation. In the future, the rise of retirement age is inevitable. Once it happens, the change will be much sharper, up to 67 or even higher. People have to prepare for such change, while politicians demotivate them.

1.4. Administration and financial organisation of the social insurance system in Poland.

All parts of the social insurance system in Poland are managed by the public Social Insurance Institution (Zakład Ubezpieczeń Społecznych – ZUS). ZUS is a public entity that is responsible for collection of all types of social insurance contributions and paying out all social insurance benefits. For that purpose, ZUS manages the following funds:

- The Social Insurance Fund (Fundusz Ubezpieczeń Społecznych - FUS), that is a state purpose fund, being a part of the public finance system in Poland. With the introduction of the pension reform, the FUS was divided into four parts: old-age pension fund, disability and survivor fund, sickness and maternity as well as work injury fund).
- The Demographic Reserve Fund (Fundusz Rezerwy Demograficznej – FRD), which is a buffer fund for the old-age system. Initially the FRD was established from a part of social insurance contributions paid to FUS (from 2008: 0.35%) and from 2009 it is also 40% of privatisation revenue. Between 2010 and 2014 the FRD assets were used to finance the deficit in FUS (see Figure 4 below). At the end of 2016 the total assets of FRD were PLN 21.8 bn (around EUR 5.4 bn, compared to PLN 201 bn of total FUS expenditure)
- The Bridging Pensions Fund (Fundusz Emerytur Pomostowych – FEP), from which bridging pensions are financed. The FEP was established in 2010. In 2016 total FEP outlays were at the

¹² In the new OA system regular retirement age is also the lowest possible actual age (with few exceptions).

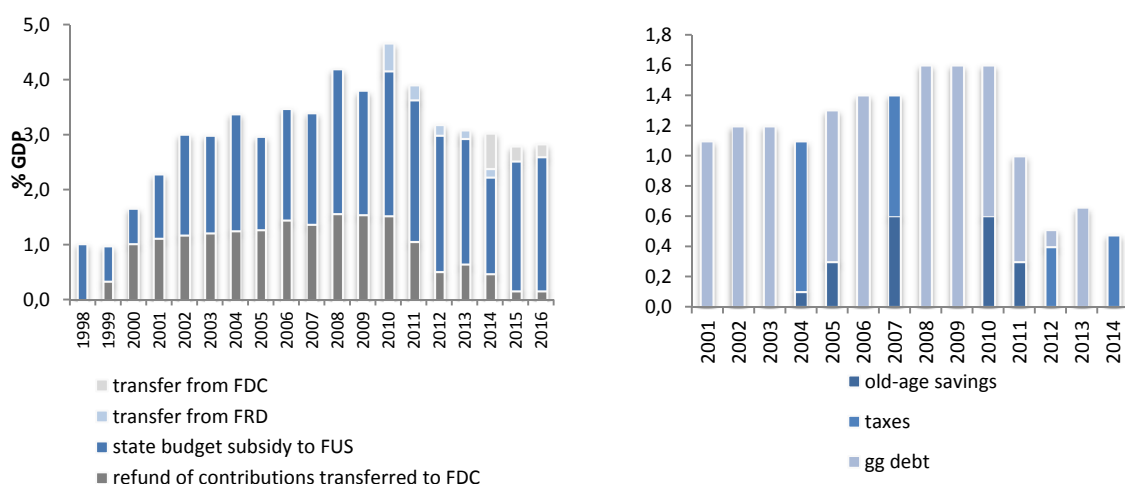
level of PLN 519.7 million. The contribution revenue was PLN 236.8 million and the state budget subsidy was PLN 249.6 million.

The financial management of FUS and other funds is subject to annual assessment. First, the funds are audited by the auditing companies, based on the premises of the Law on the Social Insurance System. ZUS and all the funds are also reviewed by the Supreme Audit Office. The Law on the Social Insurance System also obliges ZUS to prepare projections on the expenditure and revenue of all parts of FUS. These projections cover 5 years period and are prepared annually. Every 3 years ZUS prepares also a long-term (around 50 year) projection of the revenue and expenditure of the old-age part of the pension system.¹³ The reform project included also establishment of National Actuary Office to supervise long term liabilities created within the entire social security. That element of the system was not introduced and there is no political interest to do so.

Overall, since the introduction of the new pension system, FUS had a deficit ranging from 1% of GDP to over 4.5% of GDP in the peak 2010 year. As shown in Figure 4, most of this deficit is attributed to the overall imbalance between benefit expenditure and contribution revenue. From 2014, FUS also receives assets transferred from FDC. After 2010, due to the change in the proportion of OA contributions, but also reduction of pension expenditure related to the shift to the new pension system, the level of subsidy declined below 3% of GDP.

The financial projections prepared with the initial reform proposal assumed that a part of the transition costs, related to the channelling of the part of the contribution to the FDC system would be covered from savings in the old-age expenditure, mainly due to reduction of early retirement and the indexation of pensions that would be close to price level. However, in reality, the indexation was closer to wage growth and the early retirement changes were postponed. As a result, most of the transition costs were financed by the increase of the public debt (for details see (Bielawska, Chłoń-Domińczak, and Stańko 2017)).

Figure 4. State budget transfers to the Social Insurance Fund, 1998-2016 (left panel) and sources of financing the transition cost 2001-2014 (right panel)



Source: Authors' calculation based on the ZUS data (right panel) (Bielawska et al. 2017) with authors' update (left panel)

¹³ Recent projection, covering the period until 2060 was published in 2016.

Both short-term and long-term projections, published by ZUS, indicate that the old-age pension fund will remain in deficit. In the base scenario of the long-term projection (ZUS 2016) the decline of old-age pension fund expenditure is expected from 7.14% of GDP in 2017 to 6.12% of GDP in 2060, while the contribution revenue is projected to fall from 5.01% of GDP to 4.73% of GDP and resulting deficit would drop from 2.13% of GDP to 1.40% of GDP. These developments are mainly due to long term trends in demographic and economic developments, which are discussed in the next section.

2. Demographic and economic short-run volatility and long-run sustainability

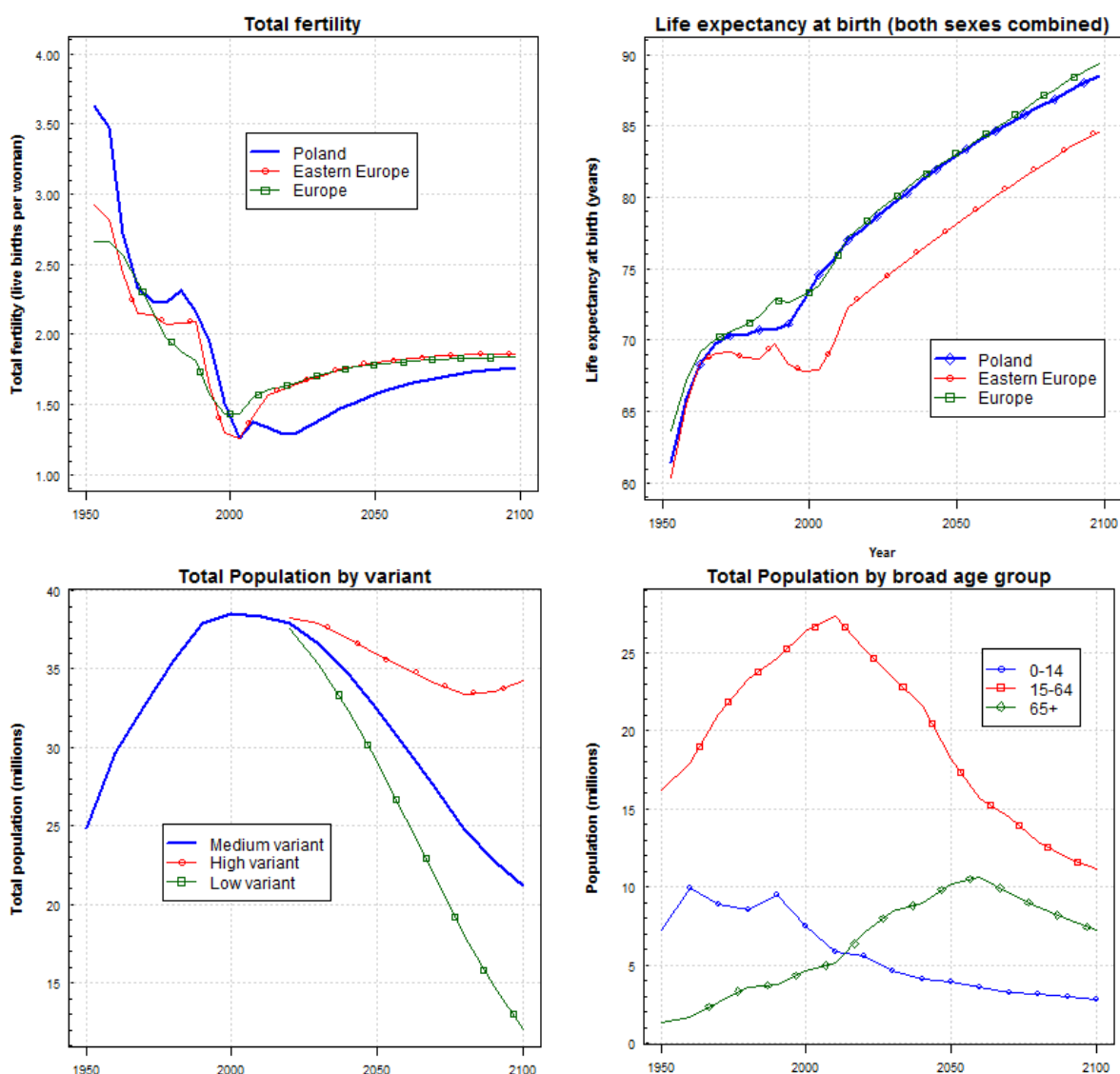
Poland faces significant demographic and economic changes that affect the short-term and long-term sustainability of the pension system. As explained in the previous section, the NDC design ensures that the present value of benefits is equal to the present value of contributions that are paid. This is ensured mainly by the assumption on the NDC account rate of return, that is related to the covered wage bill growth (in the NDC-1 accounts) and GDP growth in the NDC-2 accounts. As a result, the changes in gross productivity, caused by the changes in the size of the labour force and the quality of human capital, have both impact on the wage bill and therefore contribution revenues. It also affects the GDP growth potential. In this section, we present the developments affecting the human capital changes in Poland. We also discuss the short-run volatility of the pension system, related to the consequences of the financial and economic crisis. Finally, we discuss the long-term stability of the Polish pension system.

2.1. Human capital in Poland

Population ageing is one of the most important long-term challenges for the pension system in Poland. From early 1990s Poland experiences very low fertility levels, which reached the lowest-low levels. According to the projections, it will remain below 1.5 for the next couple of decades. At the same time, the life expectancy is gradually rising, reaching average level in Europe. This means that Poland faces twofold challenge. First, the level of fertility remains lower than European average, similarly as in Eastern European countries. Second, the life expectancy is at the average European level and increases further in similar pace.

As a result, the total population in Poland started to decline already and this trend is projected to remain for the next decades, the total population is expected to decline, as shown in Figure 5. The demographic developments also affect the age structure of the population. The working age population in Poland is already declining, while at the same time, the population above the age 65 is growing. The growth in this age group is accelerating as the post-war baby boom generation is reaches this age threshold.

Figure 5. Fertility, life expectancy, total population overall and by age groups in Poland: 1950-2100.



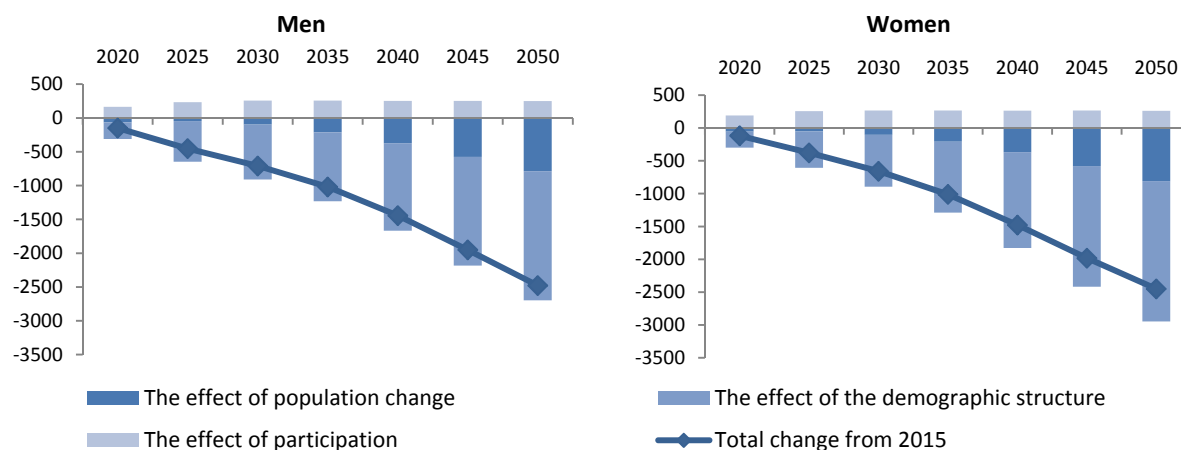
Note: Eastern European countries include: Belarus, Bulgaria, Czechia, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia and Ukraine.

Source: UN Population Division, 2017 revision of World Population Prospects, medium variant (if not stated otherwise).

The projected trends are accentuated with the external migrations. After the EU accession the level of emigration from Poland increased significantly. Central Statistical Office estimated that at the end of 2016 almost 2.5 million Poles lived abroad (Główny Urząd Statystyczny 2016). According to (Kaczmarczyk and Okólski 2008), the post-accession migration contributed to the 3.3% loss of the working-age population. This includes in particular the migration of men in working age (4.4%), those in younger age groups as well as people with higher education levels. The total estimated loss in the age group 25-29 was 9.3% and in the group 20-24 is was lost 8.8%. The share of migrants was also higher among those with tertiary education, at 5%. Despite the increased flow of migrants from Eastern Europe (particularly Ukraine) to Poland, which is assessed at more than 1 million workers, the net effect remains negative.

According to the estimates of (Kiełczewska and Lewandowski 2017), changes in the age structure of the population are the driving force of the decline of the projected labour force (Figure 6). By 2050, the total active population is projected to decline by almost 5 million people.

Figure 6. The decomposition of the projected changes in the size of the active population [in thousands] in relation to 2015.



Source: (Kiełczewska and Lewandowski 2017)

The change in the size of the labour force will be to certain extent off-set by the projected changes in the individual labour productivity. After the economic transition, the participation of the young people in tertiary education increased significantly, leading to the massification of tertiary education (Marciniak et al. 2013). As a result, according to Eurostat, between 1997 and 2015 the share of 30-34 year olds with tertiary education more than tripled from 13.5% to 43.4%. This share is expected to further increase in the coming years. This qualitative change, according to the estimates of (Stonawski 2014) will contribute to the continuing increase in the human capital in Poland until 2030s. Afterwards, the quantitative impact will prevail and the human capital will start to fall. Before 2050 it will go back to the level of observed in the early 2000s.

2.2. The impact of short-run disturbances on the pension system in Poland: learning from the economic crisis

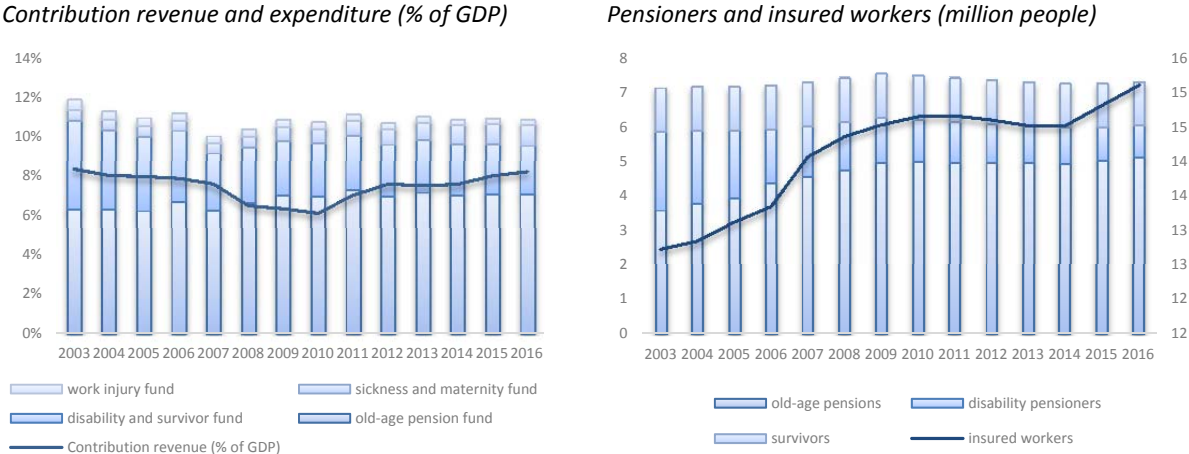
The economic growth remained positive in Poland during the period of the economic crisis. However, the economic slowdown had an impact on the pension system, which was additionally affected by the legislative changes.

Between 2008 and 2010 the contribution revenue to the social insurance system relative to GDP declined and then increased. This was a combination of the reduction in the contribution rate for disability (no reduction of expenditure), that was proposed by the government prior to elections in 2007 and the decline in the growth of wages during the period of the economic slowdown. At the same time, the growth in the number of insured workers also slowed down, however it remained positive. Figure 7 (third panel) shows the breakdown of contribution revenue by different contribution types. Slow decline of contribution revenue for OA up to 2010 is due to the increasing share of contributors covered by the new system with NDC+FDC accounts. Between 2010 and 2016 it increased from 3.5% to 5.1% of GDP, in line with increase of the part of OA contribution to the NDC scheme. The income from disability contribution dropped from 3.0% in 2007 to 1.7% in 2008, due to the reduction of the contribution rate and increased again in 2012, after the increase of the contribution rate. This shows that a significant part of the FUS deficit in years 2008-2010 was due to

the decision to reduce contribution, despite the non-balanced fund. The OA pension system has been made autonomous within the social security. However, government still tends to treat the OA as just a part of the social security finance. As a result, the decision to cover the deficit due to lower disability contribution included changes in the OA system.

During the economic slowdown, the expenditure on benefits relative to GDP increased. The increase was related to the growth in the number of beneficiaries, which resulted from larger inflow of early retirement pensioners. This inflow was caused by the changes in the access to early retirement that caused an increased inflow of old-age pensioners, particularly in 2007-2008.

Figure 7. Pensioners and contributors, expenditure and revenue of the social insurance system in Poland, 2003-2016



Source: Authors' estimates based on the ZUS data

As a result of these changes, the deficit in the Social Insurance Fund between 2007 and 2010 widened significantly. This was also combined with the worsening situation of the public finance system. The general government deficit between 2007 and 2010 increased from 1.9% of GDP to 7.9% of GDP, way above the limit set in the Stability and Growth Pact. At the same time, the general government increased from 45% of GDP to 54.9% of GDP.

Given the worsening public finance situation, combined with the upcoming Parliamentary elections in 2011, the government decided to introduce changes in the financing of the pension system, that would lead to reduction of the overall level of government subsidy to the social insurance system. As already mentioned before, among others, the demographic reserve was used to finance some of the pension expenditure in years 2010-2014. Additionally, in 2010, the contribution rate for disability and survivor insurance was increased slightly, partially reversing the decline from 2008. These measures were, however, not sufficient to avoid the risk of increasing public debt level, that would cross the limit of 55% of GDP.

Facing the difficult fiscal situation, the governments in 2011 and 2014 introduced significant changes to the pension system, changing the initial division of contributions between the NDC and FDC parts (as highlighted in the first part of the chapter). The first change, implemented from May 2011 included the reduction of the contribution to FDC to 2.3% of wages, while the 5.0% of wages were recorded on the newly established NDC-2 accounts, indexed to the nominal GDP growth, averaged for the period of 4 consecutive calendar years. Initially, the contribution to FDC was planned to be

gradually increased back to 3.5% of wages, which never happened. As the situation of the public finance was still bad, further changes were implemented in 2014. These included:

- Transfer of the assets from the FDC part, invested in the government bonds (more than half of total assets) to the Demographic Reserve Fund and redeeming them;
- Permanent reduction of FDC contribution to 2.92% and making this part of system voluntary. All workers contributing to FDC had a choice whether to have their contribution still paid to open pension funds or to the NDC-2 account. The default option was to divert the contribution to the NDC-2 account. As a result, less than 2 million workers have their contributions split between NDC and FDC accounts;
- Introduction of the so-called slider mechanism: 10 years prior to retirement a fraction of assets is transferred to the FUS and their value is recorded on the NDC-2 account.

The permanent reduction of contribution to FDC since May of 2011, brought a fiscal effect of 0.6% GDP in 2011. The one-off measure: sequestration of T-bonds held by pension funds accounted for 5 pp drop in public debt to GDP ratio in 2014 and changes in contribution level diverted to FDC complemented with voluntary character of participation accounted for further reduction of transition cost to 0.3 – 0.4% of GDP (Bielawska et al. 2017).

Overall, the long-term AWG projections in the subsequent Ageing Reports from 2009, 2012 and 2015 (European Commission DG ECFIN 2009, 2012, 2015) consequently indicate that the new pension system leads to the reduction of pension expenditure, compared to the base level, despite sharp increase of projected dependency rate. In the 2015 AWG report, the projected decline of public pension expenditure is smallest, however if we take into account the fact that full pension expenditure is attributed to the public part, the total 2060 pension expenditure projection remains stable, as shown in Table 1. This is achieved mainly by two effects: benefit ratio contribution that shows that the level of individual benefits is linked to lifetime contributions and the coverage ratio indicating the overall rise of the effective retirement age. The former also means that in the long run, one of the challenges that the Polish system faces is the adequacy of pension benefits (discussed later in the chapter).

Table 1. Long-term pension expenditure in Poland: summary of AWG projections

<i>in % GDP</i>	2009	2012	2015
base year pension expenditure	11.6	11.8	11.5
base year:	2007	2010	2013
2060 public pension expenditure	8.8	9.6	10.7
2060 FDC expenditure	1.9	1.3	0
Total 2060 expenditure	10.7	10.9	10.7
	2007-2060	2010-2060	2013-2060
Change of pension expenditure (% GDP)	-2.8	-2.2	-0.8
<i>Dependency ratio contribution</i>	13.4	14.0	12.4
<i>Benefit ratio contribution</i>	-7.1	-8.7	-5.2
<i>Coverage ratio contribution</i>	-6.3	-5.0	-5.2

Source: (European Commission DG ECFIN 2009, 2012, 2015) after (Bielawska et al. 2017)

The main lesson stemming from the economic slowdown in Poland is that for predominantly political reasons the short-term perspective of poor fiscal situation prevails over the long-term perspective typical for the pension system. Furthermore, any deterioration from the initial reform agenda,

leading to worsening fiscal outcomes increases the risk of fiscal adjustments done in the area of pension system.

3. Labour market challenges

The NDC based OA pension system is to balance the interests of the working and the retired generation. That is achieved by the on-to-one link between contributions and benefits. For the working generation, this means that in general the contribution rate remains stable irrespective to demographic developments. In other words, everyone receives old-age pension equivalent to what they paid in. Keeping constant contributions and not increasing them stimulates job creation and/or better remuneration of production factors supplied by the working generation. NDC is the automatic and neutral way to achieve the balance of interests.

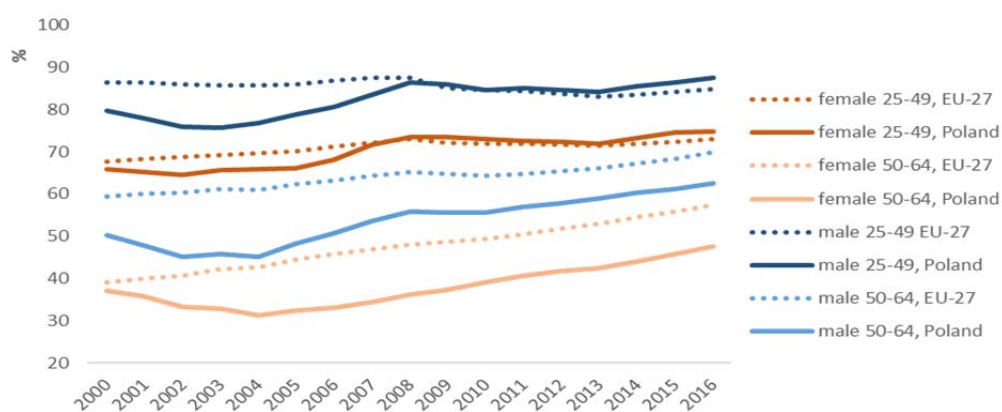
3.1. Labour market in Poland: main challenges for the NDC pension system

Strong link between benefits and lifetime contributions means that the labour market performance is crucial, both for the sustainability of the pension system and adequacy of individual benefits. Labour market policy should focus on longer working lives and higher productivity and wage levels. There are four challenges that Polish labour market faces in the context of the pension system: low labour market participation, low employment security, short working careers, informal employment.

- (i) **Low labour market participation:** the most obvious reason for non-accumulation of the contributions.

While prime-age workers in Poland have similar employment rate, compared to the EU average, workers above 50 (men and women) are less frequently employed. In 2016 the gaps in the age group 50-64 in employment rates were: 9.9 pp (women) and 7.3 pp (men). The employment gap for women remains around 10pp since 2003, while for men it has decreased substantially since 2004 (from 15.8 to 7.3pp).

Figure 8. Employment rate by gender and age group, 2000-2016: Poland vs EU average



Source: Authors' based on LFS data.

There are numerous reasons for lower levels of employment rate in Poland. According to the assessment of the National Bank of Poland (Gradzewicz et al. 2016), inactivity among the youngest age groups is related to the participation in the education. In Poland, combining studying and work is still not popular, compared to the other EU countries. The second reason is lower participation of

women. Almost 75% of inactive women between 25 and 44 years old indicates that their inactivity is related to the care responsibilities or other family obligations. In the oldest age groups, the inactivity is related to the bad status of health or receiving a pension.

The Polish labour market statistics largely reflect the availability of early exit options that were available. The downward trend in activity observed in the early 2000s resulted from pre-retirement allowances and benefits introduced to alleviate the consequences of structural changes in the economy. The rebound after 2004 is attributed to the reduction of these options. Rise in employment rates from 2008, resulted from reduction of access to early retirement.

The increase in labour market participation in age group 50-64 was robust even during the global economic slowdown, not only in Poland but also on average in the EU, which makes the gap persistent. The reversal of the legal retirement age back to the level of 65 (men) and 60 (women) is likely to cause further widening of the gap, particularly for women.

According to the LFS almost a fifth of people inactive on the labour market declares that they would like to work. (Gradzewicz et al. 2016) estimate that around a third of them could start working. Activation of this group could contribute to increasing the labour supply by 3.2%.

High economic dependency rate in Poland is an acute challenge for Poland. National Transfer Accounts¹⁴ estimates of consumption and labour income age profiles 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 (Chłoń-Domińczak 2017). The upper threshold is lowest among European countries for which NTA profiles were estimated. Maintaining sustainability of the pension system requires reducing the economic dependency at upper age boundary.

- (i) **Excessive use of fixed-term contracts** where paid work is reflected in accumulated contributions partially or not at all, and quality of jobs are lower.

According to the (GUS 2016a) in 2014 6.9% of all workers were working on the basis of fixed-term contracts, of which for 4.4 pp. it was a main job. Similar level (4.2%) was estimated by the NBP in 2016 (Saczuk, Strzelecki, and Wyszński 2016). Both sources indicate that for the latter group, the decision on the type of contract was mainly involuntary (GUS: 80.2%, NBP: 59.9%) and they would have preferred a regular labour-code contract. This was particularly the case for those working on a commission contract (84.3%). Among the self-employed, 51.3% declared that employers had forced them to designate themselves as self-employed (that is, they were bogus self-employed). This situation refers mainly to youngest and eldest age groups, individuals with general secondary education, regardless of sex. The quality of fixed-term jobs is significantly lower in terms of earnings, development opportunities, job security, job strain or incidence of long working hours (Lewandowski, Góra, and Lis 2017). Those working in atypical forms have limited access to the social security coverage, either because their contributions are lower or, in the case of some civil code contract, they are not covered by the social insurance (Chłoń-Domińczak, Sowa, and Topińska 2017).

¹⁴ For the methodology see: (Lee and Mason 2011).

Since 2002, the popularity of fixed-term contracts has significantly increased. The main reason for this state of things is not only the modestly high labour tax wedge, but also a significant difference between privileges of regular and fixed-term contract workers, as well as the possibility to omit legal labour standards (minimum wage, overtime, safety standards, etc.) and other costs (Lewandowski et al. 2017). Those employers who downgraded contracts, benefited much, and unfair competition fuelled the market. Changes in legislation implemented in 2016, that regulate the minimum social insurance contribution base on multiple contracts to minimum wage (for details see Chłóń-Domińczak et al. (2017), reduced the marginal benefit from using dominating contract of mandate (however, this form still has some strengths, such as ease of contract resolving), and is seen to increase the share of regular contracts (Saczuk et al. 2016).

- (ii) **Interruptions in working career** contribute twofold: through non-accumulation of contributions and through penalty for workers.

Interruptions in working careers usually happen when working arrangements are difficult to reconcile with personal commitments, flexibility in working arrangement is perceived as a desired solution.

One of the arrangements in this respect is the part-time work. The part-time work is rare in Poland, compared to the EU average, and with exception for prime-age women, there is a significant downward trend in this area during last two decades (from 16.3 to 5.5 and from 23.0 to 11.3 among men and women in the age group 50-64, respectively). Poland struggles with the unsolved issue of increasing the labour market flexibility without escalating the insider-outsider problem. On the one hand, in the last decades there was no tradition of part-time work, and no incentives have been introduced to increase extensive labour market supply. On the other hand, employers are reluctant to create part-time jobs due to high fixed cost of recruitment and training as well as non-trivial management. It would seem that tight labour market should change this segmentation.

- (iii) **Informal employment:** this part of economic activity is not reflected in contributions (unless individuals save on their own), while jobs are insecure and the ability to litigate own rights is extremely difficult.

Informal employment is a part of the labour market in Poland. However, here is no consensus regarding its scale or even the direction of changes. Schneider (2016) estimates the shadow economy slowly declining in Poland to the level of 23% in 2016. Other sources (Ernst&Young 2016; GUS 2016b; Łapiński, Peterlik, and Wyżnikiewicz 2016) suggest the size of the informal economy ranges between 12.4 and 19.7%. While estimates on the shadow economy in Poland are scarce, more is known about unregistered employment. According to the estimates between 2004 and 2014 it has decreased by more than half (from 9.6% to 4.5%). Unregistered employment is higher among men and individuals with vocational education and is concentrated in several branches of the economy: agriculture, trade and repair, hotels and restaurants, neighbourhood services, and manufacturing (GUS 2016b).

As far as main reasons of taking up unregistered employment are concerned, individuals doing so in 2014 declared: inability to find a job (more than 60%), insufficient income (more than 30%), employer's offer of higher pay without formal contract (more than 30%) and too high social insurance rate (more than 10%). Many of For 60% of them it was a main job (GUS 2016b). Also according to (Schneider 2012), more than half of the grey economy in Poland can be explained by

labour related factors. Given the relatively low tax morale, and low efficiency of law enforcement, the propensity to move from informal to regular economy may be low.

3.2. Labour market segmentation and pension sub-systems in Poland

The NDC system in Poland covers employees and self-employed outside agriculture. There are other sub-systems in Poland that include selected segments of the labour market. Namely, farmers are covered by the separate regime: Farmers Social Insurance Fund (KRUS), armed forces: soldiers, police, border guards etc. are covered by the non-contributory armed forces pension regime, similarly judges and prosecutors are covered by the non-contributory pension scheme. Furthermore, after the reversal legislated in 2005, miners insured in ZUS are covered by the defined-benefit scheme, according to the old system formula. These systems are unbalanced actuarially, which is a source of further long-term stability. Furthermore, as they are more beneficial for those covered by them, they hamper labour market mobility. This was underlined, among others, by the European Commission in the European Semester Country Report in 2017 (European Commission 2017a). The EC underlines that special pension regime for farmers (KRUS) continues to benefit compared to the general pension regime (ZUS). This not only constitutes a fiscal burden (currently, the KRUS subsidy amounts to around 1 % of GDP), but may also hamper labour mobility. The special social insurance system for farmers (KRUS) is seen as one of the reasons for low labour mobility and hidden unemployment in agriculture. Some KRUS design features, e.g. the conditions of transitioning from KRUS to the general pension system, discourages farmers working on low-productivity farms to take up registered employment in other sectors.

While pension systems for armed forces, judges and miners are smaller and are not a source of hidden unemployment, they still constitute the barrier for labour market mobility. Given the above reasons, the European Council and the European Commission in Country Specific Recommendations continuously recommend aligning all pension systems in Poland to the general (i.e. NDC) framework (European Commission 2017b).

3.3. Labour force participation – long term outlook

Extending working lives and increasing participation on the labour market is one of the most important challenges for Poland – both for the NDC pension system as well as for the economy in general. The future level of the labour force will be driven mainly by the demographic trends. Sharp reduction of the working-age population is not possible to be fully off-set by the rising labour force participation. (Kielczewska and Lewandowski 2017) estimate that 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 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.

These estimations are in line with the Ageing Report 2015 (European Commission 2015), which projects the decline of the Polish labour force between 2013 and 2060 from 16.4 million to 11.6 million, that is by 4.8 million. The AWG projection assumes the rise of retirement age to 67 for both men and women, that is the scenario before the reversal of the retirement age increase. According

to the estimates of (Kiełczewska and Lewandowski 2017) the change in the retirement age leads to the reduction of the projected number of workers by more than one million after 2040.

One of the potential sources of partial compensating for the lost supply is the low participation of women on the labour market. Increasing their employment level should be one of the important areas in the labour market policy. (Kiełczewska and Lewandowski 2017) underline that increasing the labour force participation of prime-aged women is almost as important as raising the retirement age. According to their estimates, 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. This would also translate into longer working lives of women and, in turn, higher pension benefits.

3.4. Policies to enhance labour force participation

Given the long-term demographic trends, the crucial policies needed to slow down the decline of the level of employment in Poland is increasing the effective retirement age as well as raising labour force participation, particularly of prime-aged women. Kiełczewska and Lewandowski (2017) assessed that such policies could contribute to halving the reduction of the employment that is expected by 2030 and reduce by 40% reduction foreseen by 2050.

Achieving this goal would require a set of co-ordinated policies. Extending working lives in Poland would need the return to the gradual increases of legal retirement age, but also improving the quality of labour market for older workers in Poland. Results of the SHARE survey from 2015 (Chłóń-Domińczak, Holzer-Żelażewska, and Maliszewska 2017) show that Polish workers in age group 50 and over are very frequently unsatisfied or tired with their jobs, either physically or due to routine tasks and they would like to retire as soon as it is possible. Last but not least, lifelong learning policy is needed encouraging higher participation of adults in various forms of lifelong learning, so that their skills are updated to meet the changing needs of the labour market. Participation in education and training of adults, particularly in the older age groups as well as those with lower levels of education attainment is very low. Extending working lives could be also achieved by introducing flexible retirement options for those who reach the minimum retirement age. Partial retirement that was introduced for women with the increase of retirement age in 2014, was removed from the legislation, once the retirement age was lowered again to 60.

Raising the labour market participation of prime-aged women requires introducing a set of coordinated family policies. (Kotowska and Magda 2017) formulate a series of recommendations towards such goal. 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. Reconciling work and family life requires improved access to childcare facilities, especially for children under 3, as its level is very low. Another recommended measure is to improve accessibility and quality of daily care for school children and after school support. They also call for more coherent and flexible system of leaves (maternity, paternity, parental and family leaves).

Improving labour participation of women also requires labour market policy that facilitates equal partnership and incentives for the fathers to share more of the care burden. It should 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.

However, recent policies introduced by the government, that is decline of the retirement age as well as increasing cash transfers to families, raising school entry age to 7 years, combined with removing mandatory pre-school participation of 5-year-old children have the opposite impact.

Another potential policy direction is the improvement of social insurance coverage of workers on non-standard contracts (see: Chłóń-Domińczak et al. 2017). Estimates of the number of workers that work only on the civil contract in 2014 were about 1.4 million (which is by 7% lower compared to 2013)¹⁵. Estimates of other groups of non-standard workers, such as temporary agency workers and ICT mobile workers are around 100 thousand people (Sienkiewicz 2016). This means that almost half of temporary employed are employed on the civil code or temporary agency contract. Majority of those working in the non-standard form (80.2%) would have preferred a regular labour code contract. Among the self-employed, 51.3% declared that employers forced on them a self-employed relationship (that is, they are “bogus” self-employment). In 2016, new legal provisions came into force that were aimed to reduce the share of non-standard work contracts. Among the most important legislative amendments are the new rules entering into fixed-term contracts¹⁶. The aim of the new statutory provisions was to limit the abuse of atypical employment by reducing the asymmetry in terms of hiring and firing workers employed on permanent contracts and other types of contracts. Also at the beginning of 2016, rules of social insurance coverage of workers under civil law commission contracts were aligned with the rules applicable in the provision of employment under contracts of employment based on the Labour code¹⁷. The new principle of the minimum base for social insurance equal to minimum wage was introduced. Initial estimates of the National Bank of Poland (Saczuk et al. 2016) indicate that about 300 thousand people working on commission contracts may have converted into employment contracts. Further policies aiming at streamlining social security coverage for different types of contracts are recommended. These measures could also contribute to reducing the incidence of the shadow employment in Poland, leading to improved pension levels in the future.

Some of the employment gap can be also filled with migrations. Indeed, in recent years we observe and increased inflow of migrants to Poland. (Gradzewicz et al. 2016) highlight that the share of companies that declared employment of at least one foreigner increased from 5% in 2010 to 13% in 2016. The increase was largest among the large companies, 4 out of 5 foreign workers are employed in this type of companies. However, the share of migrants in total employment on labour contracts remains low, that is 0.4% of the total employment. A new phenomenon on the Polish labour market is the inflow of migrants from Ukraine after 2014. Majority of this flow has a short-term or circulatory character, judging from the statements on planned employment of migrants up to 6 months (800 thousand in 2016), while long-term employment based on the work permits is less frequent (70 thousand in 2016).

¹⁵ There are also practices that workers employed on the basis of labour code contract have civil contract with other employers, which are excluded from this estimate. It also does not cover pensioners, who have temporary civil code-based contracts.

¹⁶ The Act of 22 June 2016 r. amending the Act – Labour code and other Acts (Dz U. from 2016 item 1053).

¹⁷ The Act of 23 October 2014 amending the Act on the social insurance system and other Acts (Dz. U. from 2014 item 1831)

Summarising, the Polish labour market still needs policies that would encourage more stable and longer working patterns that could contribute to slowing down the expected employment decline. In that context, the NDC system remains neutral and financially stable.

However, the level of pensions for those with shorter careers and lower contributions will be low, as discussed in the next section. The solution to this challenge remains at its source, that is labour market policy. The outcomes observed in the old-age pension system are the consequences, that are very difficult to be solved at the end of the life course of individuals.

4. Adequacy and solidarity

Adequacy of the NDC pension system is by definition related to lifetime contributions. These depend on the level of wages and the length of the working careers as well as the level of contributions. As discussed earlier, the contribution rate in Poland should not be increased and the main policy measure to improve adequacy of benefits is promoting longer working lives.

Benefits paid out from the OA system based on NDC reach the upper bound of the available average level of the expected value of benefits, given the contribution rate, the employment rate and public sector expenditure. The NDC benefits reflect the real demographic and economic situation of a country and as such should not be compared with partially promises-based other types of OA pension arrangements.

4.1. Current and future pensions in Poland

The NDC system in Poland, as it was highlighted at the beginning of this paper, covers people born in 1949 or later. Additionally, given the transitory arrangements, women born between 1949 and 1953 could still retire according the old defined-benefit system rules. Therefore, the first pensions based on the NDC formula (with initial capital) are granted from 2013. Table 2 shows the average level of NDC pensions granted in the past three years, which are close to the level of average OA benefit paid in the social insurance system and slightly below 60% of average wage in the economy (net of social insurance contributions).

Table 2. Number and level of NDC pensions granted in years 2014-2016

		2014	2015	2016
Number of NDC pensions granted	<i>(thousand people)</i>	132.1	208.2	216.2
	<i>(PLN)</i>	1975.53	2037.29	2055.99
Level of NDC pension granted	<i>(% of average pension)</i>	96.7	97.2	96.5
	<i>(% of average wage)</i>	59.8	59.8	58.2

Source: (Zakład Ubezpieczeń Społecznych 2017)

According to the projections of the theoretical replacement rates (TRR) in the 2015 Pension Adequacy Report (European Commission 2015), the net replacement rate for average wage earner who started career in 2013 at the age of 20 and will be retiring at the age of 67, assuming the average career length case assumed in the AWG scenario will be 47.9% in the case of men and 40.8% in the case of women. For a person with a career length of 40 years, retiring at age 65 (that is after the reduction of the retirement age in Poland) a net replacement rate is projected at 37.7%. This shows, that the new pension system rewards postponing retirement decisions, which is an inherent feature of the NDC systems. Thus, the PAR projections bear two important messages: first, the level

of benefit that is affordable for the pension system, given the projected career length, will decrease in relation to average wage, if we look at the legal retirement age. However, at individual level workers can increase their expected pensions, by postponing retirement decisions.

While the NDC average level of benefits results from the abovementioned processes, their distribution needs further discussion. Table 3 shows the level of future TRRs depending on the wage level. Low wage earners (i.e. those with income equal to 2/3 of the average income) can expect slightly higher levels of pension relative to their wages, due to the minimum pension guarantee. Those with high incomes (i.e. income rising from 100% to 200% of average income during the life course) can expect replacement level that is around 30% of their final wage, which is related to the assumed wage profile, with peak earnings at the end of the working careers. Those with earnings above 250% of average wage will also have lower OA pensions, due to the cap on the benefit levels.

Table 3. Theoretical Replacement Rates in 2053 by earnings level (% of last wage)

	Wage		
	Low	Average	High
TRR: career length 40 years to 65	38.1%	37.7%	29.0%
TRR: career length 40 years to 67	41.1%	40.7%	32.2%

Source: (European Commission 2015)

OA pensions are affected by different career breaks. The NDC system in Poland is based on the notion that all participants share the same risks and there is no room for politically driven redistribution within the system in the pension formula. The redistribution is transparent and financed from politically controlled (by nature) state budget. This takes the form of the top-up to the minimum pension benefit or the contribution payments for chosen periods of career breaks. In the Polish NDC system, pension contributions are paid from public funds for periods of maternity and childcare, as well as unemployment (during the time of receipt of unemployment benefit), for details see for example (Chłoń-Domińczak et al. 2012).

Pension Adequacy Report also provides projections of expected benefit levels, taking into account career breaks due to unemployment and maternity periods. The TRR projections show a reduction in expected pension level, as the contributions for selected periods paid from the state budget are below the earnings level for the base case.

Table 4. Theoretical Replacement Rates in 2053 by earnings level (% of last wage)

	Wage	
	Low	Average
TRR: no career break (from age 25 to 67)	43.7%	43.4%
TRR: career break unemployment 1 year	42.6%	42.3%
TRR: career break unemployment 2 years	41.5%	41.1%
TRR: career length childcare 1 year	43.5%	43.2%
TRR: career length childcare 2 years	43.2%	42.8%
TRR: career length childcare 3 years	43.0%	42.6%

Source: (European Commission 2015)

However, as shown in Table 4, the reductions for the career breaks up to 3 years are not significant, compared to the no career break scenario, which indicates that the mechanisms of redistribution allow for the adequate compensation of career breaks.

4.2. Old-age poverty in Poland

Given the long-term transition from the old system to the new NDC system in Poland, current level of the old-age poverty is an outcome of the generosity of the previous pension system, as most of the current pensioners receive benefits according to former defined benefit formula.

Table 5 shows the levels of poverty rates in Poland and EU-27 countries between 2005 and 2015.

As one can see, people above 65 in Poland currently have lower poverty rates compared to the total population.

This shows the relative generosity of previous pension system, combined with highly redistributive pension formula (more in (Góra 2013)). However, as already discussed, high pensions combined with early retirement age are one of the reasons for the persistent deficit in the social insurance system, despite high contribution rates. Relative poverty among the elderly increased in 2010, compared to 2005, mainly due to the high increase in the median income, fuelled by the high growth of wages until 2008. As a result, the total poverty rate declined with the growth of income from labour, while the poverty rate among pensioners increased, as the indexation of pensions was below the level of wage growth, and subsequently, median income growth. As a result, the difference between total poverty rate and the poverty rate for the elderly. Women are at higher risk of poverty, compared to men, as their pensions are lower.

Table 5. At-risk-of-poverty rate in PL and EU-27, age and sex - EU-SILC survey (threshold: 60% of median income)

		Total		
		2005	2010	2015
Total	EU 27	16.5	16.5	17.3
	PL	20.5	17.6	17.6
From 65 to 74 years	EU 27	n/a	14.2	12.8
	PL	8.2	15.7	13.1
75 years or over	EU 27	21.7	18.1	15.4
	PL	6.0	12.4	10.9
		Males		
		2005	2010	2015
Total	EU 27	15.7	15.7	16.9
	PL	21.3	17.4	18.1
From 65 to 74 years	EU 27	n/a	11.8	11.3
	PL	5.5	11.9	10.2
75 years or over	EU 27	18.7	14.5	12.0
	PL	3.9	7.0	7.7
		Females		
		2005	2010	2015
Total	EU 27	17.1	17.2	17.7
	PL	19.9	17.7	17.2
From 65 to 74 years	EU 27	n/a	16.2	14.0
	PL	10.1	18.5	15.3
75 years or over	EU 27	23.6	20.5	17.8
	PL	7.0	15.1	12.5

Source: Eurostat

5. Discussion of open ends

The Polish NDC system is currently close to reaching adulthood, with more than 18 years passing since its implementation in 1999. When the new system was introduced, some of the issues remained open. The implementation agenda assumed that these issues will be solved, as the initial solutions settle into the framework of the social protection in Poland. Today, some of these issues still are open and, in our belief, sooner rather than later, will require attention.

One of the important issues is the retirement age. The minimum retirement age for men and women remains different and the gap is as high as five years. This will have consequences for the future pension levels and perceptions of the pension system. Chłoń-Domińczak and Strzelecki (2013) assess that such difference in retirement age increases the risk of receiving minimum pension by women by more than 40%. Lower retirement age of women will lead to the increasing gender pension gap.

Furthermore, the system remains rigid. There are no flexible retirement options for people who reach the minimum retirement age. This can encourage earlier retirement of those people, who would like to continue working part-time and supplement their (reduced) labour income with partial pension. In principle NDC system gives such flexible possibilities. They just need to be implemented.

Lower retirement ages and lack of flexible solutions are also combined with low pension literacy in the Polish population. Gradual shift to the new pension system means that many of the workers are still not aware how the new pensions are calculated and what is the impact of their life course contributions and retirement age to the final value of the pension to be received. This also translates to very low levels of savings in the voluntary pension accounts, despite existing fiscal incentives. Improving of the information policy and pension education should be one of the important points in the pension policy agenda.

NDC is automatically sustainable with any minimum retirement age. However, if the age is low then benefits are also low. Even if people accept that retiring in their sixties they underestimate needs they will face in their eighties. Increasing the minimum retirement age in NDC is not a fiscal goal, as it was in NDB. Instead, increasing the age in NDC is just a social goal. This maybe the key reason why politicians in Poland so easily reduced that age.

Another open end is the current complex structure of the NDC accounts, resulting from political manipulation in FDC. Streamlining and simplifying the account structure could improve the transparency of the pension system, that was to a large extent lost through the amendments that were made in the course of the past decade.

Finally, in the area of the benefits, the co-ordination between the old-age and non-old-age part (particularly disability pensions) is unfinished. Disability pensions are still calculated according to the old defined-benefit formula, which with time may lead to the increased pressure to claim disability pensions prior to reaching retirement age. An attempt to co-ordinate the two benefits was made in 2008, but the proposed law was effectively vetoed by the President.

The system is not fully universal. Some groups of active workers (miners, framers, army, police and other uniformed services, judges and prosecutors) are covered by different systems. As highlighted by the European Commission (European Commission 2017b), this is an obstacle for the labour market mobility as well as the coverage. This also applies to workers with non-standard employment

contracts, who have limited or no access to social insurance. Extending the coverage to those groups is one of important policy areas that should be pursued.

Last but not least, the system should be strengthened, through the recognition of the pension liabilities in the form of the NDC bonds. Given the changes in the split between NDC and FDC accounts, adequate recognition of the pension liabilities could improve the credibility of the pension system and proper recognition of the liabilities towards future pensioners. NDC account values are rather abstract for OA pension system participants. Moreover, many economists and politicians publicly state the amounts on the accounts do not reflect any real value. Indeed, property rights related to NDC accounts are not well defined. Assets backing the accounts are not traded in financial markets. Therefore, it is quite natural people think of the accounts with a lot of reserve. That opens the door for political manipulation and unfair political as well as business tricks.

The real economic meaning of the pension system is buying a share in future GDP paying for that with a corresponding share of the current GDP (Góra 2013). NDC reflects that deep nature (free of administrative details and ideological biases) the best among all types of OA pension systems (Góra and Palmer 2017). Issuing NDC bonds, the best bonds yielding the rate of return equal the nominal GDP growth would not change anything in the real economy. However, if the bonds are formally issued they would be a part of participants property. The bonds will not to be perceived as politically dependent NDB promises. That would strongly contribute to pension education, which in turn will strengthen OA systems thanks to public awareness. It particularly matters in current times, when politics and business are tempted to manipulate the pension systems even more than they tried in times when the demographic dividend was still available.

6. Summary and main conclusions

NDC in Poland is the success. The NDC, together with FDC, entirely replaced the previous actuarially bankrupt NDB system. Moreover, thanks to NDC the political manipulation around FDC that started in 2009 and still continues, did not ruin the stability of the OA pension system. The NDC system in Poland is designed in the way that balances interests of the current the working generation and the retired one. The system automatically adjusts to population changes and allows absorbing different kind of risks that pension systems are facing. The changes that were introduced in the course of the past years did not change the foundations of the system, but have an impact on the perception of the system among the general public, as well as the future adequacy levels.

The NDC pension system in Poland faces many challenges. First and foremost, the pace of population ageing in Poland will be accelerating, as the bulk of people born in the post-war baby boom cohorts retire and the number of births, and subsequently young people reaching adulthood remains very low. This means that the employment levels are most likely to decline, which will affect the contribution revenue. Gradual adjustment of pension levels due to the implementation of the NDC scheme will not be sufficient to eliminate this effect.

Improving both sustainability and adequacy of the NDC pensions in Poland depends on the labour market performance. Increasing coverage and participation levels are the key challenges, not only for the pension system, but for the Polish economy as a whole. The retirement age remains the key challenge for the OA system. Participants will have to retire later. Otherwise the system will meet ends but the social outcome of its functioning will not be satisfactory.

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