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The Polish NDC Scheme: Success in the Face of Adversity

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ABSTRACT

The Polish NDC Scheme: Success in the Face of Adversity*

Poland's pension system faces multiple challenges, including accelerating population aging. Early retirement policy aimed at mitigating mass exit from the labor market led to the rise of pension system economic dependency. Transition to a nonfinancial and financial defined contribution (NDC+FDC) system in 1999 mitigated the fiscal risk and an unfair balance of interest between the working and retired generations. The new system separated the income allocation and redistribution. The retirement age was raised. However, the implementation of the new system is a case study of misuse for current political goals, ad hoc tweaks, and unfinished topics. Yet the 1999 pension reform met its goals.

KEYWORDS: Poland, Pensions, NDC, FDC, Retirement

JEL CODES: H55, J26

Abbreviations and Acronyms

EC	European Commission
EU	European Union
FDC	Financial Defined Contribution
FRD	<i>Fundusz Rezerwy Demograficznej</i> (Demographic Reserve Fund)
FUS	Social Insurance Fund
GDP	Gross Domestic Product
GUS	Central Statistical Office
NDB	Nonfinancial Defined Benefit
NDC	Nonfinancial Defined Contribution
OA	Old-Age
PAR	Pension Adequacy Report
TRR	Theoretical Replacement Rate
ZUS	<i>Zakład Ubezpieczeń Społecznych</i> (Social Insurance Institution)

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1. Introduction

Designing and implementing a nonfinancial defined contribution (NDC) system in parallel with a financial defined contribution (FDC) system in a particular country context is challenging. The process of implementing new arrangements takes many years and faces many obstacles that are difficult to foresee. This paper presents the Polish experience, particularly focusing on (i) implementation experiences, particularly during the 2008–2009 financial crisis; (ii) links with the labor market; and (iii) loose ends.

The implementation of an NDC+FDC pension system in Poland was a response to demographic, economic, and political developments facing the existing system, particularly in the late 1980s and early 1990s. In the period of only two decades, Poland's socioeconomic situation changed significantly. The Polish population went through a second demographic transition, with a sharp decline in fertility rates and increasing life expectancy. Population aging accelerated quickly, with projections indicating even faster changes in the coming decades. Employment rates dropped after the economic transition and high unemployment¹ became one of the most important issues for labor market policy.

The pension system inherited from the socialist era was not fit for the upcoming challenges. Many early retirement privileges (part of them granted to “cushion” the shock of the transition to a market economy), combined with the high level of pensions relative to wages, particularly after the revaluation in the early 1990s,² resulted in very high pension expenditures that were not sustainable, particularly given the retirement of the post-war baby boom generation. The explosion of early retirement combined with rising generosity of the pension system led to a dramatic increase in the social insurance contribution rate, up to

¹ Góra and Rutkowski (1990) estimated from 25–75 percent disguised unemployment (depending on assumptions) in the late 1980s.

² The revaluation of pensions was designed to compensate for the period of very high inflation. As a result of this process, between 1990 and 1994, the average pension to average wage ratio rose from 47.2 percent to 61.4 percent of average wage.

45.0 percent in the early 1990s compared to 15.5 percent a decade before. Attempts to introduce ad hoc changes deteriorated social trust in the pension system.

The need for a systemic reform of the pension system became obvious in the late 1990s. The global climate for reforms was good. Encouraged by international institutions, a growing number of countries introduced reforms or considered reform options. Poland's ongoing transition included a wide range of institutional reforms.

The new pension system was designed in 1996–1997 and presented in the “Security through Diversity” report (Office of the Government Plenipotentiary for Social Security Reform 1997).³

While the previous system fostered the interests of the retired generation, the new system was designed to balance the interests of the retired and working generations (Jabłonowski, Müller, and Raffelhüschen 2010). Poland's new pension system is gradually reaching maturity,⁴ with first benefits paid out from 2009. The system weathered the global financial crisis of 2008–2009, although it affected the pension system design.

2. Poland's NDC+FDC pension system

This section presents the main principles of the old-age (OA) pension system in Poland, including the development of NDC accounts, benefit payments, and management of the social insurance system, in particular its OA component.

2.1. The main principles of the OA pension system

The new OA pension system was introduced in 1999. All people born after 1948 were automatically switched into the defined contribution (NDC+FDC) system, while older people

³ A summary of the assumptions of the new system is also presented in Góra and Rutkowski (1998).

⁴ Earlier experiences related to implementation of the pension system, as well as a broader description of the pension system design, are included in Chłoń-Domińczak (2002); Chłoń-Domińczak, Franco, and Palmer (2012); Chłoń-Domińczak and Góra (2006); and Chłoń, Góra, and Rutkowski (1999).

stayed in the old nonfinancial defined benefit (NDB) scheme. The implementation of the new OA system was not a parametric reform, but an exchange of the old system for a new one.

One of the most important features of the new pension system is the one-to-one link between contributions and pensions. It is entirely based on individual accounts of two types: an NDC account and an FDC account for each worker.⁵ Both accounts play the same social role – income allocation over a lifetime. But the accounts are managed differently, which can generate different externalities, both positive and negative.⁶ The initial split of the OA contribution (19.52 percent) was 12.22 percent NDC and 7.3 percent FDC. The rest of the social insurance contribution was separated and included disability and survivors', sickness, and work injury contributions, resulting in a total level of contributions equal to the prereform contributions. One of the assumptions of the new system is that the OA contribution will remain unchanged in the future, preventing further labor costs increases.

From the very beginning the NDC concept, as the generic OA pension system, played a crucial role and organized the entire system. The OA system was separated from other social insurance components – disability and survivors', sickness, maternity, and work injury. Disability pensions are still based on the prereform defined benefits (NDB) formula. The attempt to harmonize benefit calculation in 2008 failed due to a presidential veto that was not overruled. After reaching retirement age, disability pensioners are transferred to the OA pension system. They receive OA benefits, topped up to the amount of the disability benefit they received before. Individual accounts were introduced, comprising initial capital (i.e., pension rights accrued in the previous system until the end of 1998, recalculated to the NDC account value) and new contributions paid since January 1999. Other income redistribution instruments are separated as a part of tax-financed social security, including the minimum pension guarantee, as well as financing the pension contribution for selected periods of labor market inactivity, such as maternity and child care periods or unemployment benefits. The

⁵ Workers born between 1949 and 1968 could choose to use one or two accounts.

⁶ The concepts of NDC and FDC as presented in Góra and Palmer (2004) are used in this paper.

rationale for pushing redistribution out of the OA pension system is that the latter should be stable, while the former should respond flexibly to changing social needs. For those whose benefits from NDC+FDC are below the statutory minimal level, a top-up payment is financed from general government revenues. In recent years, the minimum pension rose faster than OA pensions. Its aim was to protect OA pensioners from poverty.⁷ A “mirror” regulation helping to focus the OA system on income allocation is the cap on contributions up to 30 times average monthly wage.⁸ Incomes above this threshold are contribution-free. The cap serves as a limit for the benefits from the mandatory system. Above this limit, workers should manage their income allocation themselves and there is no need to involve the public system in further income replacement. In the payout phase, benefits are taxed with the personal income tax as well as health care contributions, according to general principles.

Although the NDC was at the center of the system design, the FDC was the most visible part of the new OA system. The FDC is a part of the public system, the management of which was contracted to the private sector.⁹ Both NDC and FDC contributions generate liabilities in the same way, but they are treated differently in the public accounting system; this is not logical from the viewpoint of the public OA pension system (Góra 2014). As a result of the different treatment, channeling public pensions via the FDC increased explicit public debt, while the same amount of contributions going through the NDC did not. That was a clear motivation for politicians to change proportions of both flows in favor of the NDC. Following the worsening situation in public finances after the 2008 financial crisis and short-term public finance needs, politicians decreased the share of FDC contribution and redeemed government bonds comprising FDC assets, transferring pension rights to subaccounts in the NDC system. While pension liabilities remain unchanged, the explicit public debt seems smaller at the expense of rising implicit liabilities.

⁷ In 2017 the gross minimum pension was increased to PLN 1000 (€250).

⁸ In 2017 the government proposed to remove the cap from the pension system. This regulation is expected to come into force in 2019.

⁹ Actually, NDC could – and maybe should – be managed by a private firm.

However, this decision did not change the essence of the system, namely that the present value of benefit flows equals the present value of contribution flows. In the long run, the discount factor for both the NDC and the FDC converges to the nominal gross domestic product (GDP) growth rate.¹⁰ Given the NDC design, the change in proportions did not alter the main principles of the new system.

2.2. Individual accounts in the Polish pension system

The public OA pension system collects the contribution rate of 19.52 percent of individual wage. Currently, it is divided between either (i) three accounts – NDC-1 (12.22 percent), NDC-2 (4.38 percent), and FDC (2.92 percent) for workers who decided to continue paying FDC contributions; or (ii) two accounts – NDC-1 (12.22 percent) and NDC-2 (7.3 percent) for everyone else.

The part of the contribution that was initially a part of the FDC is recorded on the NDC-2 account, established in 2011, following the changes in the OA contribution split. In 2011, the contribution to the FDC account was reduced to 2.3 percent and the remaining 5 percent was transferred to the NDC-2 account. In 2015 the NDC-2 accounts were also credited with the value of redeemed government bonds from the FDC accounts. From this year the contribution to the NDC-2 accounts is also set at the current level – 4.38 percent or 7.3 percent – depending on the decision on savings in the FDC part or not. After the law changed in 2014, 10 years prior to legal retirement age, assets from the FDC account are gradually transferred to the Social Insurance Fund (FUS) and recorded 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 OA system are therefore fully paid from the NDC system.¹¹

¹⁰ The FDC can yield a higher rate of return than the NDC only if a country is able to exploit the rest of the world.

¹¹ The government in 2017 announced new proposals of changes that include converting FDC accounts to voluntary retirement accounts, which may change this rule; however, details are not known yet.

The NDC-1 and NDC-2 accounts differ in two aspects. First, the rate of return in NDC-1 is the covered wage bill growth in the previous year, while in NDC-2 it is the average nominal GDP growth rate over the five-year period. While both can be justified, this generates problems in managing the accounts as well as informing participants about their account values. Second, the amount in the NDC-1 is not inherited; the inheritance gain is implicitly used to finance liabilities from the actuarially imbalanced pre-1999 system. In contrast, the amount in NDC-2 is inherited. While this feature is not logical for the NDC scheme, it was introduced to maintain social acceptance for the change. Politicians were able to shift contributions from the FDC to the NDC-2 account, but they did not want to change the individual inheritance rights of participants.

Additional voluntary private options to allocate more income for future pensions gradually developed. Since 1999 workers can participate in employee pension plans (PPE). In 2004 and 2011 two forms of voluntary individual pension accounts were added: IKE (individual pension accounts) and IKZE (individual retirement protection accounts). However, less than 5 percent of workers participate in any of the instruments, for many reasons: no tradition of individual saving, limited long-term investment options, and lack of trust toward financial institutions. The financial crisis and changes in the pension system intensified the latter. In 2018 the government proposed new auto-enrollment-based employee capital plans (*Pracownicze Programy Kapitałowe – PPK*) to boost additional savings for retirement consumption, but it is difficult to predict their impact on the increase of voluntary pension saving, planned for introduction in 2019.

An important principle 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, which according to the initial assumptions were to be sent annually. However, due to the changes in the split of contributions, breaks in the delivery of statements occurred. Additionally, until 2017 the difficult language used in the statements made them incomprehensible. Since 2017 the statements have been significantly simplified and include: (i) the amount of contributions paid to NDC-1, NDC-2, and FDC; (ii) the total value of NDC-1 (including initial capital) and NDC-2; (iii) the value of the hypothetical OA pension based on

the current value of the NDC as well as their projected values, assuming the current level of contributions will be paid until retirement. Improving pension literacy is one of the most important challenges facing the Polish pension system. According to a Social Insurance Institution (*Zakład Ubezpieczeń Społecznych* [ZUS]) assessment from 2017, 82 percent of eligible workers plan to retire as soon as possible – despite the fact that one additional year of work would increase their benefits by around 8 percent. Simple and consistent communication is one of the key means of encouraging longer working lives and higher pension incomes in the future.

2.3. Pension benefits and the retirement age

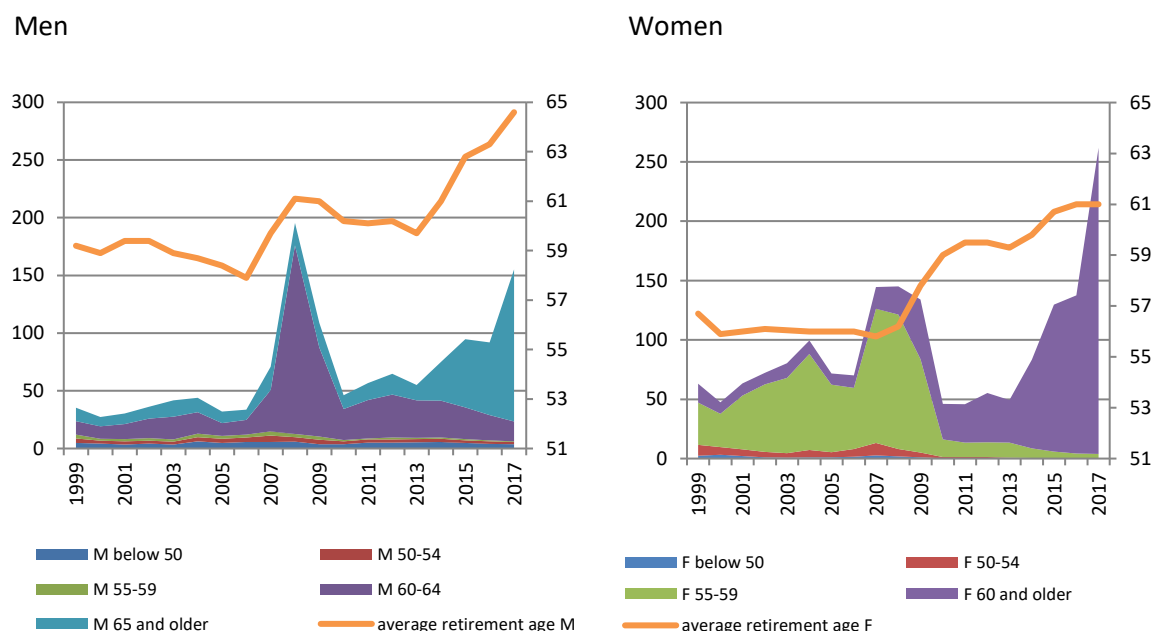
The implementation of the NDC+FDC OA pension system required a change in the policy toward early retirement, one of the key reasons for actuarial imbalance in the former pension system. Given the rules of NDC+FDC, maintaining early retirement would lead to very low benefits. On the other hand, people were used to retiring early. The average effective retirement age was around 55 years for women and 59 years for men. No options for early retirement exist in the NDC system after 2008.¹² Limited early retirement due to hazardous and arduous conditions (following definitions developed by occupational health specialists) for those employed before 1999 is available through so-called “bridging pensions” (for about 2.5 percent of workers). Bridging pensions will eventually disappear after all eligible workers retire. Bridging pensions are outside the universal OA system and are financed from additional employers’ contributions and taxes. Options for early retirement due to long service period at age 55 for women and 60 for men¹³ were also removed from the OA system as of 2009. The outcome of these changes is shown in Figure 2.1. The first pensioners from the new system retired in 2009 (women) and 2014 (men). This is also when the average retirement

¹² Early retirement in the transition period was possible initially until the end of 2006, but due to political reasons it was delayed until the end of 2008.

¹³ Introduced only in 2006, following the ruling of the Constitutional Tribunal, it covered men born between 1946–1948.

age for both sexes started to rise. Concurrently, the dominant age group of retirees shifted to 65–69 for men and 60–64 for women.

Figure 2.1: Inflow of new retirees by age and average retirement age, by sex, 1999–2017



Source: Authors' calculations based on ZUS data.

Delaying the implementation of changes in the early retirement system, compared to the initial scenario, led to higher pension expenditures and state budget subsidy to the pension system. It contributed to the changes in the system introduced between 2011 and 2015, discussed in section 3.2.

One of the crucial factors affecting the level of benefits is the retirement age. Equal retirement age of men and women was among the key assumptions of the new pension system. The initial "Security through Diversity" proposal that equalized the retirement age at 62 was not supported by politicians. In 2012, the government initiated a gradual increase and equalization of the retirement age at 67 (at the pace of three months per year). However, in 2016, the new government reversed this change. As a result, in October 2017 the retirement age returned to 60 years for women and 65 years for men. The reversal of the retirement age increase resulted in an increased number of new pensions granted in 2017. Specifically,

417,000 people (of whom 62.8 percent were women) claimed benefits, a figure not observed in the past two decades (Figure 2.1).

The change will lead to a likely decline of the effective retirement age of women to around 60 years. This change should have significant consequences for the adequacy of pensions, particularly for women (Chłoń-Domińczak and Strzelecki 2013). While this is a step back, removal of early retirement is still a success.¹⁴

OA pensions are calculated by dividing the value of the sum of the NDC-1 and NDC-2 accounts by unisex life expectancy at retirement age.¹⁵ The entire OA pension system focuses on income reallocation over a lifetime. Using universal unisex life tables implicitly reallocates between those living shorter lives and those living longer lives (i.e., between men and women, and between those less educated and more educated), which is difficult to avoid in the public pension system. The life expectancy factor is announced annually by the Central Statistical Office (GUS), based on current cross-sectional data on mortality. This may lead to underestimation of life expectancy and overestimation of pension benefits (Knell 2016; Więckowska and Bijak 2009), which is partially offset by inheritance gains remaining in the system. Given this way of calculating benefits, the lower retirement age of women will lead to a rising gender pension gap and lower pensions for women.

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

¹⁴ In the new OA system, the statutory retirement age is also the lowest possible actual age (with few exceptions).

¹⁵ As no information exists on past individual wages in the system, initial capital is computed on the basis of relevant documents submitted to ZUS. Calculation of the initial capital is an ongoing process, due to two main factors: (i) lack of awareness among workers of the necessity to claim their initial capital; and (ii) difficulties in retrieving the salary documents from companies that ceased to exist, which was quite frequent during the transformation.

2.4. Administration and financial organization of the social insurance system in Poland.

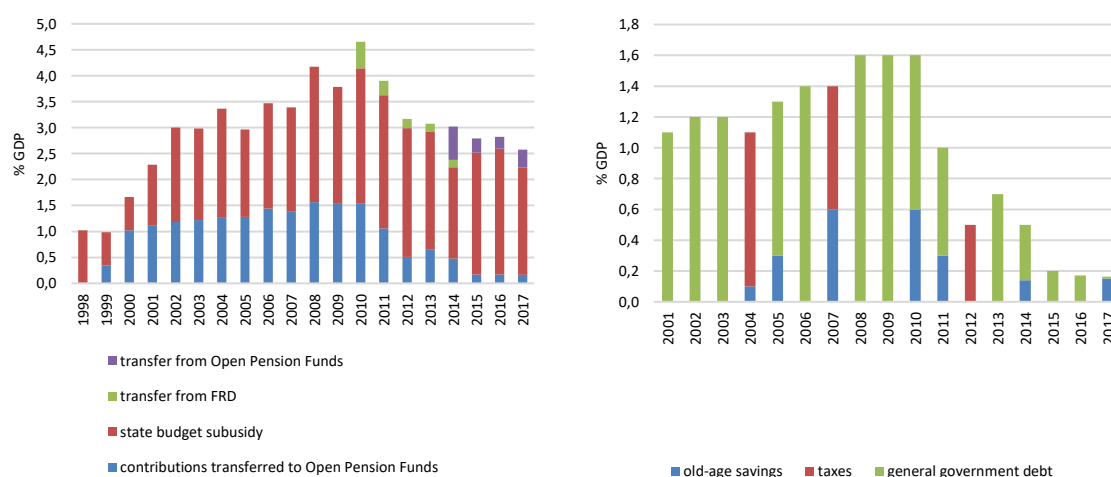
All parts of the social insurance system in Poland are managed by ZUS, a public entity responsible for collection of all types of social insurance contributions and for paying out all social insurance benefits. For that purpose, ZUS manages the following funds:

- The Social Insurance Fund (*Fundusz Ubezpieczeń Społecznych* – FUS), a state target fund and a part of the public finance system. The pension reform divided FUS into four parts: the OA pension fund, a disability and survivors' fund; sickness and maternity funds; and a work injury fund.
- The Demographic Reserve Fund (*Fundusz Rezerwy Demograficznej* – FRD), a buffer fund for the OA system. Initially, FRD was established from a part of social insurance contributions paid to FUS (since 2008, 0.35 percent), and since 2009 40 percent of privatization revenues have been paid into the fund. Between 2010 and 2014 FRD assets were used to finance the deficit in FUS (Figure 2.2). At the end of 2016, FRD assets totaled PLN 21.8 billion (approximately €5.4 billion), compared to PLN 201 billion (approximately €48 billion) of total FUS expenditures.
- The Bridging Pensions Fund (*Fundusz Emerytur Pomostowych* – FEP), from which bridging pensions are financed. FEP was established in 2010. In 2016 total FEP outlays were PLN 519.7 million (approximately €123.7 million). Revenues from contributions were PLN 236.8 million (approximately €56.3 million) and the state budget subsidy was PLN 249.6 million (approximately €59.4 million).

The financial management of FUS and other funds is subject to annual assessment. First, the funds are reviewed by auditing companies, based on the premise of the Law on the Social Insurance System. ZUS and all the funds are also reviewed by the Supreme Audit Office. The same act also obliges ZUS to prepare projections on the expenditures and revenues of all parts of FUS. These projections cover a five-year period and are prepared annually. Every three years, ZUS also prepares a long-term (around 50 years) projection of the revenues and expenditures of the OA part of the pension system. The reform project also included establishment of the National Actuary Office to supervise long-term liabilities created within the entire social security system. This element of the system has not yet been introduced and there is no political interest to do so. Overall, since the introduction of the new pension

system, FUS has had a deficit ranging from 1.0 percent to over 4.5 percent of GDP (in 2010). Most of this deficit is attributed to the overall imbalance between benefit expenditures and contribution revenues (Figure 3.1). Since 2014, FUS has also received assets transferred from FDC. From 2010 on, due to the change in the proportion in OA contributions as well as the reduction of pension expenditures related to the shift to the new pension system, the subsidy declined to below 3 percent of GDP. The financial projections prepared with the initial reform proposal assumed that the part of the transition costs related to the transfer of a portion of the contribution to the FDC system would be covered by the savings in the OA expenditures, namely by reducing early retirement and lowering the pension indexation toward inflation. However, in reality, indexation was closer to wage growth and changes to early retirement were postponed. This means that in the past decades, annual pension expenditures usually increased in relation to GDP. Only in seven years between 2001 and 2017 did pension expenditures decline on a year-on-year basis. As a result, most of the transition costs were financed by an increase in the public debt (Bielawska, Chłóń-Domińczak, and Stańko 2017).

Figure 2.2: State budget transfers to the Social Insurance Fund, 1998–2017 (left panel) and level and sources of financing for the FDC transition cost, 2001–2017 (right panel)



Source: Authors' calculation based on ZUS data (right panel) (Bielawska, Chłóń-Domińczak, and Stańko 2017) with authors' update (left panel).

Projections published by ZUS indicate that the OA pension fund will remain in deficit. In the baseline scenario of the long-term projection, OA pension fund expenditures are expected to decline from 7.14 percent of GDP in 2017 to 6.12 percent in 2060, while revenues from

contributions are projected to fall from 5.01 percent of GDP to 4.73 percent (Zakład Ubezpieczeń Społecznych 2016). The resulting deficit will drop from 2.13 percent of GDP to 1.40 percent. These developments are mainly due to long-term demographic and economic trends, discussed in section 3.

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

Poland faces significant demographic and economic changes that will affect the short- 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 paid. This is guaranteed mainly by the NDC rate of return, which is related to either the covered wage bill growth (in NDC-1) or GDP growth (in NDC-2). As a result, changes in gross productivity, driven by labor force size and human capital quality, affect both the wage bill and contribution revenues. Employment level and human capital also impact the potential GDP growth rate. This section presents recent developments in human capital formation. It also discusses the short-run volatility of the pension system, which is associated with the consequences of the financial crisis. Finally, it considers the long-term stability of the Polish pension system.

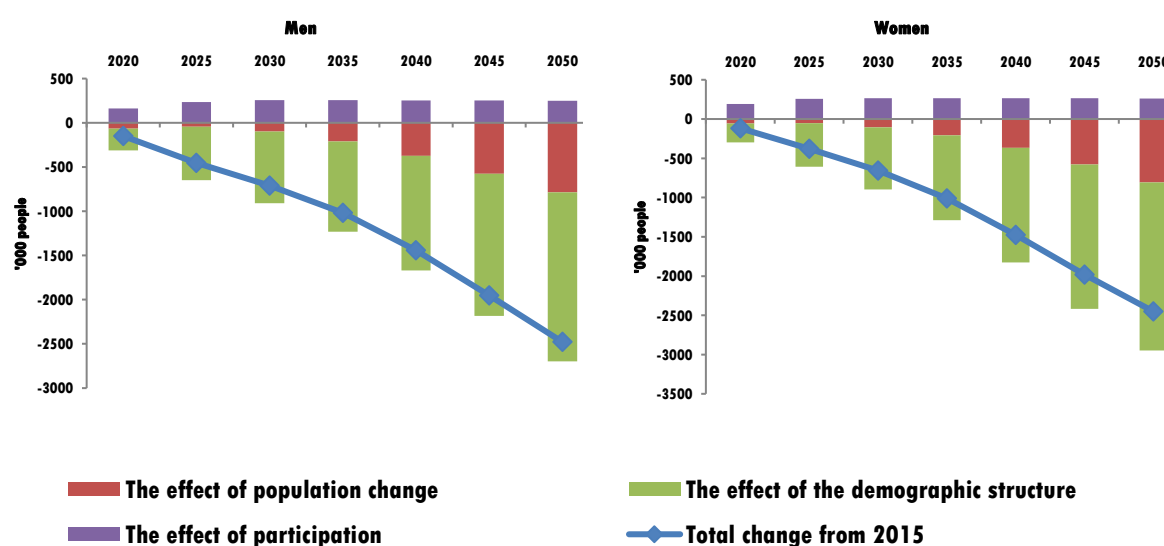
3.1. Human capital in Poland

Poland is facing a twofold challenge. First, since the early 1990s, Poland has experienced very low fertility rates, which have reached their lowest levels. The current rate is lower than European average, similar to other Eastern European countries. According to projections, the rate will remain below 1.5 for the next couple of decades. Second, at the same time, life expectancy is gradually rising; it is currently at the European average and increasing at a similar pace. As a result, total population as well as the working-age population are already declining and this trend is projected to continue for the next decades. Concurrently, the population above age 65, including post-war baby boomers, is growing.

The projected trends have been intensified by migration. Since Poland's accession to the European Union (EU), emigration from Poland has increased significantly. GUS estimated that

at the end of 2016 almost 2.5 million Poles lived abroad (Główny Urząd Statystyczny 2016). Post-accession migration amounted to a 3.3 percent loss in the working age population (Kaczmarczyk and Okólski 2008). This includes in particular working-age men (4.4 percent), younger age groups, and individuals with higher education. The total estimated loss was 9.3 percent in the 25–29 age group and 8.8 percent in the 20–24 age group. The share of migrants was also higher among those with tertiary education (5 percent). Despite the increased flow of migrants from Eastern Europe (particularly Ukraine), the net effect remains negative. According to other estimates, changes in the age structure of the population are driving the projected decline in the labor force (Figure 3.1) (Kiełczewska and Lewandowski 2017). By 2050, the total active population is projected to decline by almost 5 million people.

Figure 3.1: Decomposition of projected changes in the size of the active population ('000s), 2020–2050 relative to 2015



Source: Kiełczewska and Lewandowski 2017.

To some extent, changes in the labor force size will be offset by projected changes in individual labor productivity. Since the economic transition, participation of young people in tertiary education has increased significantly (Marciniak et al. 2013). According to Eurostat, between 1997 and 2015 the share of 30–34-year-olds with tertiary education more than tripled, rising from 13.5 percent to 43.4 percent.

This share is expected to increase more in the coming years. This qualitative change will contribute to the steady increase in human capital in Poland until the 2030s (Stonawski 2014). Afterward, the quantitative impact will prevail and human capital will start to fall. Before 2050 it will go back to early 2000s levels.

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

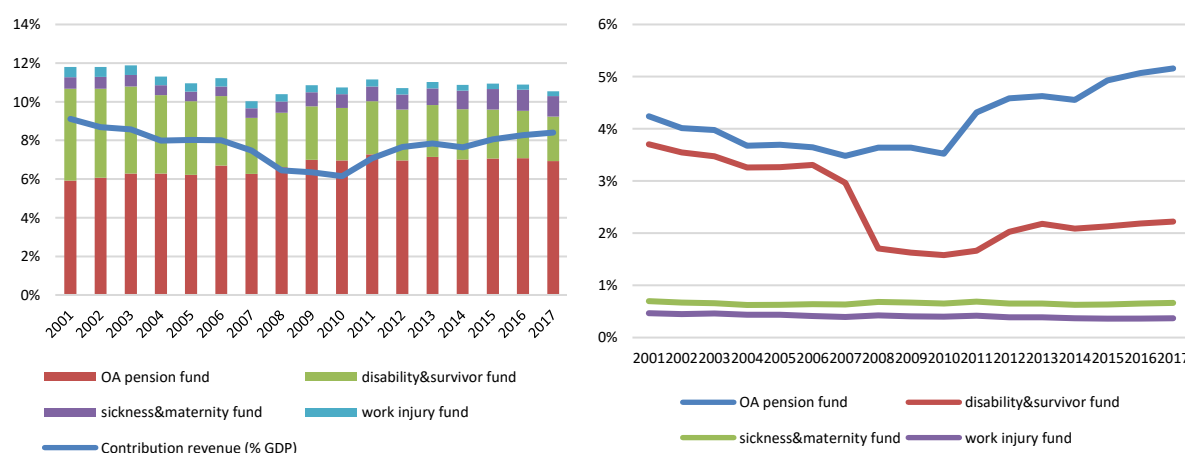
Economic growth remained positive during the 2008–2009 crisis. However, the economic slowdown had an impact on the pension system, which was additionally affected by legislative changes.

Between 2008 and 2010, contribution revenues to the social insurance system relative to GDP first declined and then increased. This was a combination of the reduction in the contribution rate for disability insurance (without a reduction in expenditures) proposed by the government prior to elections in 2007, and the decline in wage growth during the slowdown. At the same time, the number of insured workers also slowed down. Figure 3.2 (right panel) shows contribution revenues and expenditures by subfund. The decline in old-age contribution revenues up to 2010 was driven by both the declining wage fund-to-GDP ratio and the increase in the share of contributors covered by the new system with NDC+FDC accounts. After the change in 2010, old-age contributions increased from 3.5 percent to 5.2 percent of GDP, in line with the increase in the part of OA contributions to the NDC scheme. The income from disability contributions dropped from 3.0 percent in 2007 to 1.7 percent in 2008 due to the reduction in the contribution rate, and increased again in 2012 and after, when it was raised again. Thus a significant part of the FUS deficit in the period of economic slowdown (2008–2010) resulted from the decision to reduce contributions regardless of the nonbalanced fund. Even though the OA pension system was an autonomous part of the social security system, the government treated it as a part of the entire social insurance system. In consequence, the OA system bore the burden of covering the deficit resulting from lower disability fund contributions.

During the economic slowdown, expenditures on benefits rose in relation to GDP. The increase resulted from the growth in the number of beneficiaries due to the larger inflow of early retirees and the regular indexation of benefits related to prices and part of wage growth. The former can be traced back to the early retirement reform described in the previous section.

Figure 3.2: Expenditures and revenues of the social insurance system in Poland, 2001–2017

Contribution revenues and expenditures by subfund (% of GDP)



Source: Authors' estimates based on ZUS data.

The FUS deficit widened significantly between 2007 and 2010. It coincided with the overall deterioration in public finances. Over the same period, the general government deficit increased from 1.9 percent of GDP to 7.9 percent, way above the Stability and Growth Pact limit of 3 percent. At the same time, general government debt jumped from 45 percent of GDP to 54.9 percent.

Given this situation, combined with the upcoming parliamentary elections in 2011, the government introduced 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 mentioned before, FRD was used to finance some pension expenditures in 2010–2014. Additionally, in 2010, the contribution rate for disability and survivors' insurance was

increased slightly, partially reversing the decline from 2008. These measures were, however, not sufficient to avoid the risk of public debt exceeding the threshold of 55 percent of GDP. In comparison with other EU countries – especially those experiencing recession after the crisis in 2009 – Poland's public finance situation was not very bad. The real problem was that the threshold of 60 percent debt established in the Polish Constitution, which would trigger the balancing of the government budget, was approaching relatively fast. In response to this threat, the government decided that changes in the OA system were easier than cutting expenditures or rising taxes. Another problem was the constant demand for bonds created by institutions that managed the FDC.

The changes were done in two steps. The first step, from May 2011, included the reduction of the contribution to the FDC to 2.3 percent of wage, while 5.0 percent of wage was recorded on the newly established NDC-2 accounts, indexed to nominal GDP growth, averaged for the period of four consecutive calendar years. Initially, the contribution to the FDC was planned to be gradually increased back to 3.5 percent, but this never happened. The second step, made in 2014, included:

- Transfer of FDC assets invested in government bonds (more than one-half of the total) to FRD and their redemption.
- Permanent reduction of FDC contributions to 2.92 percent and making this part of the system voluntary. All workers contributing to FDC had a choice to contribute either to private pension funds or to NDC-2. The latter was the default option. As a result, less than 2 million workers still have their contributions split between the NDC and the FDC.
- Introduction of the so-called “slider mechanism”: 10 years prior to retirement a fraction of one's assets is transferred to FUS and the value recorded on NDC-2.

The permanent reduction of contributions to the FDC since May 2011 brought a decline of the general government debt by 0.6 percent of GDP in 2011. The one-off measure – transfer of T-bonds held by pension funds – accounted for a 5-percentage point drop in the debt-to-GDP ratio in 2014. Changes in the FDC contribution rate complemented with the voluntary

character of participation led to a further reduction in transition costs to 0.3–0.4 percent of GDP (Bielawska et al. 2017).

Overall, the long-term Ageing Working Group (AWG) projections in the subsequent Ageing Reports from 2009, 2012, and 2015 indicated that the key features of the new pension system led to the reduction in pension expenditures, compared to the baseline, despite a sharp increase in the projected dependency rate (European Commission DG ECFIN 2015, 2012, 2009). In the 2015 AWG report, the forecasted decline in public pension expenditures is the smallest. However, if one takes into account the fact that full pension expenditures are attributed to the public part, the total 2060 pension expenditures projection remains stable (Table 3.1).

Table 3.1: Long-term pension expenditures in Poland: Summary of AWG projections

In % GDP	2009	2012	2015	2018
Base year pension expenditures	11.6	11.8	11.5	11.2
Base year:	2007	2010	2013	2016
2060 public pension expenditures	8.8	9.6	10.7	11.1
2060 FDC expenditures	1.9	1.3	0	0
Total 2060 expenditures	10.7	10.9	10.7	11.1
	2007–2060	2010–2060	2013–2060	2016–2060
Change in pension expenditures (% GDP)	-2.8	-2.2	-0.8	-0.1
Dependency ratio contribution	13.4	14.0	12.4	12.1
Benefit ratio contribution	-7.1	-8.7	-5.2	-7.3
Coverage ratio contribution	-6.3	-5.0	-5.2	-3.1

Source: European Commission DG ECFIN 2015, 2012, 2009, 2018.

This is achieved mainly twofold: the benefit ratio contribution 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 the adequacy of pension benefits (discussed later in the paper) is a challenge that the Polish system faces in the long run, particularly after the reversal of the retirement age increase. The results of the 2018 AWG indicate that projected pension expenditures by 2060 will be slightly higher compared to earlier projections. A significant shift also occurs in the decomposition of effects,

leading to stabilization of pension expenditures. The impact of the benefit ratio contribution increases, while the coverage ratio contribution declines. This is a result of the reversal of the retirement age increase.

The main lesson from the economic slowdown is that for predominantly political reasons, the short-term perspective of the poor fiscal situation prevailed over the long-term perspective typical for the pension system. Furthermore, any deviation from the initial reform agenda leading to worsening fiscal outcomes increases the risk of fiscal adjustments to pension systems.

4. Labor market challenges

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

4.1. Labor market in Poland: Main challenges for the NDC pension system

A strong link between benefits and lifetime contributions means that labor market performance is crucial, both for the sustainability of the pension system and adequacy of individual benefits. Labor market policy should focus on longer working lives and higher productivity and wage levels. Four challenges the Polish labor market faces in the context of the pension system are described below.

- (i) Low labor market participation is the reason for nonaccumulation of pension contributions.

While prime-age workers in Poland have employment rates similar to the EU average, workers above 50 (men and women) are less frequently employed. In 2016 the gap in the 50–64 age group in employment rates exceeded 7 percentage points for men and reached 10 percentage points for women. Women’s employment gap has remained stable since 2003, while for men it has decreased by one-half since 2004. Almost 75 percent of inactive women between 25 and 44 years old indicates that their inactivity is related to care responsibilities or other family obligations. In the oldest age groups, inactivity is related to poor health or receiving a pension.

According to a National Bank of Poland assessment, high inactivity exists among the 18–24 age group due to high participation in higher education (Gradzewicz et al. 2016). Combining studying and work is not as popular in Poland compared to other EU countries.

The downward trend in activity among those 50+ observed in the early 2000s resulted from preretirement allowances and benefits introduced to alleviate the consequences of structural changes in the economy. The rebound after 2004 and further after 2008 is attributed to the reduction of these options. The increase in labor market participation in the age group 50–64 was robust even during the global economic slowdown, not only in Poland. The reversal of the legal retirement age back to 65 (men) and 60 (women) is likely stop this trend, particularly for women.

According to the Labor Force Survey (LFS), almost one-fifth of the economically inactive declare that they would like to work. Gradzewicz et al. (2016) estimate that around one-third of them could start working. Boosting participation in this group could raise labor supply by 3.2 percent.

- (ii) There is excessive use of fixed-term contracts where paid work is reflected in accumulated contributions partially or not at all, and quality of jobs is lower.

According to GUS (2016a), in 2014 6.9 percent of all workers were working on the basis of fixed-term contracts, for 4.4 percentage points of whom it was a main job. A similar level (4.2 percent) was estimated by the National Bank of Poland (NBP) in 2016 (Saczuk, Strzelecki, and Wyszynski 2016). Both sources indicate that for the latter group, the decision on the type of

contract was mainly involuntary (GUS: 80.2 percent, NBP: 59.9 percent) and they would have preferred a regular labor-code contract, particularly those on commission contracts. Among the self-employed, 51.3 percent declared that employers forced them to designate themselves as self-employed. 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 social security coverage, either because their contributions are lower or, in the case of some civil code contracts, they are not covered at all (Chłoń-Domińczak, Sowa, and Topińska 2017).

Since 2002, the popularity of fixed-term contracts has increased significantly. This happened due to: a modestly high labor tax wedge; a significant difference in privilege between regular and fixed-term contract workers; the possibility of omitting legal labor standards (minimum wage, overtime, safety standards, etc.); and other costs (Lewandowski et al. 2017). Legislative changes implemented in 2016 benchmarked the minimum social insurance contribution base (in the case of multiple contracts) to the minimum wage (Chłoń-Domińczak, Sowa, and Topińska 2017), and reduced the marginal benefit from using this type of contract. However, this form still has some strengths, such as ease of contract resolution. The legislation is believed to have raised the share of regular contracts (Saczuk et al. 2016).

- (iii) Interruptions in the working career contribute twofold: through nonaccumulation of pension contributions and through penalty on workers.

Interruptions in working careers usually happen when working arrangements are not flexible enough to reconcile with personal commitments. One of the possibilities in this respect is part-time work, which is a rare phenomenon in Poland compared to the EU average. With the exception of prime-age women, the trend was significantly downward for the last two decades (from 16.3 percent to 5.5 percent among men and from 23.0 percent to 11.3 percent among women in the 50–64 age group). Increasing the flexibility of the labor market without escalating the insider–outsider problem is difficult. There is no tradition of part-time work in the last decades, and no incentives have been introduced to increase labor market supply. Employers are reluctant to create part-time jobs due to the high fixed cost of recruitment and

training as well as nontrivial management. It would seem that a tight labor market should change this segmentation.

- (iv) Informal employment 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.

No consensus exists regarding the scale and dynamics of informal employment in Poland. Schneider (2016) estimates its slow decline to 23 percent in 2016. Other sources (Ernst&Young 2016; GUS 2016b; Łapiński, Peterlik, and Wyżnikiewicz 2016) suggest its size ranges between 12.4 percent and 19.7 percent. While estimates of the shadow economy are scarce, more is known about unregistered employment – between 2004 and 2014 it decreased by more than one-half (from 9.6 percent to 4.5 percent). Unregistered employment is higher among men and individuals with vocational education and is concentrated in several branches of the economy: agriculture, trade, hotels and restaurants, neighborhood services, and manufacturing (GUS 2016b). Reasons for taking up unregistered employment are inability to find a job (over 60 percent), insufficient income, higher pay without a formal contract (more than 30 percent each), and a too-high social insurance rate (more than 10 percent). For 60 percent of respondents it was a main job (GUS 2016b). According to Schneider (2012), more than one-half of the grey economy in Poland can be explained by labor-related factors. Given the relatively low tax compliance and the low efficiency of law enforcement, the propensity to move from an informal to a regular economy may be low.

4.2. Labor market segmentation and pension subsystems in Poland

The NDC system covers employees and the self-employed outside agriculture. Other subsystems in Poland include selected labor market segments. Those include: farmers (Farmers Social Insurance Fund – KRUS – the largest subsystem), policemen and members of the armed forces (a noncontributory armed forces pension regime), and judges and prosecutors (a noncontributory pension scheme). Furthermore, since 2005, miners insured in ZUS have been covered by an NDB scheme based on the old system formula. These schemes

are unbalanced actuarially, another source of long-term instability. Furthermore, their generosity hampers labor market mobility. In particular, as the European Commission (EC) stressed in 2017 in its European Semester Country Report, the existence of a separate pension regime for farmers is a fiscal burden (the subsidy to KRUS amounts approximately to 1 percent of GDP), a drag on labor mobility, and one of the causes of hidden unemployment in agriculture (European Commission 2017a). In light of these issues, the European Council and the EC in Country Specific Recommendations continue to recommend aligning all pension systems with the general (i.e., NDC) framework (European Commission 2017b).

4.3. Labor force participation – long-term outlook

These estimates are in line with the 2018 Ageing Report, which forecasts employment in the age group 20–74 to decline from 17.1 million in 2016 to 11.8 million in 2060 (European Commission DG ECFIN 2018).

Extending working lives and increasing labor participation are two of the most important challenges the Polish NDC pension system and economy are facing. Future changes in the labor force will be driven mainly by demographic trends. Kiełczewska and Lewandowski (2017) estimate that participation rates will increase due to cohort effects, as people who are currently prime-age or young will have higher participation rates after reaching 55 than their counterparts today. This pattern is likely to occur because subsequent cohorts are better educated, and early retirement options were limited in the 2000s.

The improvement in the labor force participation of older people will translate into 500,000 additional active individuals by 2050 – a noticeable figure, but not nearly enough to offset the demographically driven reduction in the labor supply. Increasing prime-age women's labor participation is also important and should be targeted by labor market policies. If the gap in labor force participation between prime-age women and men was gradually halved by 2040 (in conjunction with an increase in the retirement age), labor supply would increase by 250,000 after 10 years, and by 500,000 after 20 years (Kiełczewska and Lewandowski 2017). This would also translate into longer working lives of women and, in turn, higher pension benefits.

4.4. Policies to enhance labor force participation

A set of coordinated policies is required to significantly offset the demographically driven decline in the labor force. Extending working lives demands a return to the gradual increases in legal retirement age, but also improvements in the quality of the labor market for older workers. Results of the 2015 Survey on Health, Aging and Retirement in Europe (SHARE) show that Polish workers in the 50+ age group are very frequently tired (either physically or due to routine tasks) or unsatisfied with their jobs, and they would like to retire as soon as it is possible (Chłoń-Domińczak, Holzer-Żelażewska, and Maliszewska 2017). Moreover, a lifelong learning policy is needed to increase the very low participation of adults in various forms of lifelong training, so that their skills are updated to meet the changing needs of the labor market. Working lives could also be extended by offering flexible retirement options for those who reach the minimum retirement age; e.g., partial retirement, which was introduced for women with the increase in retirement age in 2014 but removed once the retirement age was lowered again to 60.

Raising the labor market participation of prime-age women requires introducing a set of coordinated family policies (Kotowska and Magda 2017). These include all the measures that assist both parents, facilitate their ability to combine work and family life, and allow for equal sharing of opportunities and responsibilities. Reconciling work and family life requires improved access to child care facilities, especially for children under three, whose coverage is very low. Another recommended measure is to improve accessibility and quality of daycare for school children and after-school support. A more coherent and flexible system of leave (maternity, paternity, parental, and family leave) is also recommended. Improving women's labor participation also requires labor market policy that facilitates equal partnership and incentives for fathers to share more of the care burden. Such policy should encourage more women to stay or return to the labor market, contributing to decreasing the gender pay gap, which itself will act as a strong incentive for both women's labor market participation and men's use of leave. Finally, progress in flexible working time patterns and improving job quality –for both men and women – will contribute to meeting family and labor market policy objectives. However, recent policies introduced by the government have the opposite impact:

e.g., the decline of the retirement age, increased cash transfers to families, and a raise in school entry age to seven years, combined with removing mandatory preschool participation of five-year-old children.

The employment gap could also be partly filled by migration. Indeed, recent years observed an 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 percent in 2010 to 13 percent in 2016 and to 30 percent in 2018 (Narodowy Bank Polski 2018).

The increase was the largest among big companies, where four out of five foreign workers are employed. The share of migrants in total employment also increased. According to ZUS data, in the first quarter of 2018 foreigners amounted to some 3 percent of insured people. This feature stems from the quickly increasing inflow of migrants from Ukraine, particularly after 2014.

The majority of this flow has a short-term or circulatory character, judging from the statements on planned employment of migrants up to six months (1.824 million in 2017), while employment based on the work permits is less frequent (235,600 in 2017).

To summarize, the Polish labor market still needs policies that encourage more stable and longer working patterns that could contribute to slowing down the expected employment decline and resulting low benefit levels. The NDC system remains neutral and financially stable, while the adequacy of benefits depends on long and productive employment careers over a lifetime.

5. Adequacy and solidarity

Benefits paid out from the OA system based on the 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 expenditures. NDC benefits reflect the real demographic and economic situation, while NDB pensions are a result of a formula that might not be adjusted to this situation.

5.1. Current and future pensions in Poland

Changes in the pension level are gradually observed with the increase in the number of NDC pensions in payment. The average level of NDC pensions granted in the past three years is close to the average OA benefit paid in the social insurance system and slightly below 60 percent of the average wage in the economy (net of social insurance contributions) (Table 5.1). The ratio between pensions and wages is gradually declining, as expected with the introduction of the new pension system.

Table 5.1: Number and level of NDC pensions granted in 2014–2017

		2014	2015	2016	2017
Number of NDC pensions granted	(‘000 people)	132.1	208.2	216.2	404.3
	(PLN)	1975.5	2037.2	2055.9	2097.0
		3	9	9	8
Level of NDC pensions granted	(% of average pension)	96.7	97.2	96.5	96.1
	(% of average wage)	59.8	59.8	58.2	56.2

Source: Zakład Ubezpieczeń Społecznych 2017, 2018.

The level of pension benefits in relation to wages will be lower for new entrants on the labor market, who will contribute through their entire careers to the new pension system. Reduction of the retirement age will further deepen this decline. According to projections of the theoretical replacement rates (TRR) in the 2018 Pension Adequacy Report (PAR), the net replacement rate for the average wage earner who started his/her career in 2016 at the age of 20 and will retire at the standard pensionable age (SPA) (that is, 65 years for men and 60 for women with a career length of 40 years) is 44.7 percent for men and 37.8 percent for women (European Commission 2018).

Therefore, due to their lower retirement age, women can expect pensions that will be around one-fifth lower than those of men. With deferred exit at the age of 67 with 42-year career length, the net TRR increases to 47 percent. The pension system rewards postponing retirement decisions, an inherent feature of NDC systems.

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 relative to the average wage, if the legal retirement age is considered. Second, at the individual level workers can increase their expected pensions by postponing retirement.

While the average NDC benefits result from the abovementioned processes, their distribution needs further discussion. Table 5.2 shows future TRR levels depending on the wage. Low wage earners (i.e., those with income equal to two-thirds of the average) can expect a slightly higher pension relative to their wage due to the minimum pension guarantee.

Those with high incomes (i.e., income rising from 100 percent to 200 percent of average over a lifetime) can expect replacement of around 30 percent of their final wage, which is related to the assumed wage profile, with peak earnings at the end of the working career. Those earning more than 250 percent of the average will also have relatively lower OA pensions due to the cap on contributions.

Table 5.2: Theoretical replacement rates (net) in 2056 by earnings level (% of last wage)

	Wage		
	Low	Average	High
40-year career ending at 65 (men)	44.9%	44.7%	33.2%
40-year career ending at 60 (women)	38.0%	37.8%	28.1%

Source: European Commission 2018.

However, the projections are based on the unlikely assumption that the retirement age will remain at the 65/60 level. The inevitable increase of that age will contribute to higher benefits. In an NDC+FDC system, that increase will be sharper than in traditional systems.

OA pensions are affected by career breaks. PAR provides projections of expected benefit levels for those with 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 those implied by earnings in the base case.

Table 5.3: Theoretical replacement rates (net) in 2056 by earnings level (% of last wage)

	Men's wage level		Women's wage level	
	Low	Average	Low	Average
No career breaks (from age 25 to SPA)	44.9%	44.7%	38.0%	37.8%
Career break: 3 years of unemployment	41.8%	41.4%	35.4%	35.1%
Career break: 3 years of child care	44.3%	43.8%	37.6%	37.0%
Short career (20-year)	23.6%	23.1%	20.1%	19.7%

Source: European Commission 2018.

Note: SPA = standard pensionable age.

However, reductions for career breaks up to three years are not significant compared to the no career break scenario, which indicates that the mechanisms of redistribution allow for adequate compensation of career breaks (Table 5.3). A short career (one-half of the base case) leads to pension levels that are around one-half of those of full career workers.

5.2. OA poverty in Poland

Given the long-term transition from the old to the new NDC system, current OA poverty incidence is an outcome of the generosity of the previous pension system, as most current pensioners receive benefits according to the former NDB formula.

Table 5.4 shows poverty rates in Poland and the EU-27 between 2005 and 2015. Poles aged 65+ exhibit lower poverty rates than the total population. This shows the relative generosity of the previous pension system, combined with the highly redistributive pension formula (Góra 2013).

Relative poverty among the elderly increased in 2010 compared to 2005, mainly due to the high increase in the median income, fueled by the high growth of wages until 2008. As a result, the total poverty rate declined with the growth of income from labor, while the poverty rate among pensioners increased, as the indexation of pensions was below the level of wage growth, and subsequently, median income growth. Women are at higher risk of poverty compared to men, as their pensions are lower.

Table 5.4: At-risk-of-poverty rate in Poland and EU-27 by age and sex, EU-SILC survey
(threshold: 60% of median income)

		EU 27			Poland		
		2005	2010	2015	2005	2010	2015
Men	Total	15.7	15.7	16.9	21.3	17.4	18.1
	65–74	n/a	11.8	11.3	5.5	11.9	10.2
	75 or over	18.7	14.5	12.0	3.9	7.0	7.7
Women	Total	17.1	17.2	17.7	19.9	17.7	17.2
	65–74	n/a	16.2	14.0	10.1	18.5	15.3
	75 or over	23.6	20.5	17.8	7.0	15.1	12.5

Source: Eurostat database.

6. Discussion of loose ends

The Polish NDC system is currently close to reaching maturity – more than 18 years have passed since its implementation in 1999. When the current system was introduced, some issues remained unresolved. The implementation agenda foresaw gradual finalization of these outstanding issues. Today, some are still open and will require attention sooner rather than later.

One issue is the retirement age. The minimum retirement age for men and women remains different (a five-year difference). This will have consequences for future pensions and perception of the pension system. Chłoń-Domińczak and Strzelecki (2013) assess that such difference in retirement age increases women's risk of receiving the minimum pension by more than 40 percent. Women's lower retirement age will exacerbate the gender pension gap.

Furthermore, the system remains rigid. No flexible retirement options exist for people above retirement age, such as partial pension. This can encourage retirement decisions that lower the age of those people who would like to continue working part-time and supplement their (reduced) labor income with partial pension. In principle, the NDC system allows for such arrangements, but they need to be implemented.

Lower retirement ages and lack of flexible solutions are also combined with low pension literacy. The gradual shift to the new system means that many workers are still unaware of how the new pensions are calculated and of the impact of their lifetime contributions and retirement age on the final pension value. This also translates into very low levels of savings in voluntary pension accounts, despite existing fiscal incentives. Improving the pension education should be an important point in the pension policy agenda. In particular, the government should increase efforts to inform about the benefits of postponing retirement decisions, particularly if people plan to retire and continue working. The latter increases the risk of low benefits when pensioners finish their labor market activity.

The NDC scheme is automatically sustainable at any minimum retirement age. However, if the age is low, benefits are also low. Even if people accept retirement in their 60s, they underestimate the needs they will face in their 80s. Increasing the minimum retirement age in the NDC is not a fiscal goal, as it was in the NDB. Instead, it is just a social goal. Perhaps this is also why it was so easily reduced.

Another open end is the current complex structure of the NDC accounts, the result of political manipulation in the FDC account. Streamlining and simplifying their structure could improve system transparency, which to a large extent was lost through amendments made over the past decade.

In the area of the benefits, coordination between the OA and non-OA components (particularly disability pensions) is unfinished. Disability pensions are still calculated according to the old NDB formula, which over time may lead to increased pressure to claim disability pensions prior to retirement age. An attempt to coordinate 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, farmers, army, police and other uniformed services, and judges and prosecutors) are covered by different systems. As highlighted by the EC, this is an obstacle for labor mobility as well as coverage (European Commission 2017b). This also applies to workers with nonstandard employment contracts,

who have limited or no access to social insurance. Extending coverage to those groups is another important policy areas to pursue.

Last but not least, the system should be strengthened through recognition of pension liabilities in the form of NDC bonds. Given the changes in the NDC–FDC split, adequate recognition of pension liabilities could improve the credibility of the pension system. NDC account values are rather abstract for OA pension system participants. Moreover, many economists and politicians publicly state that 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 that people have reservations about the accounts. That opens the door for political manipulation and unfair political as well as business tricks, such as introducing flat citizens' pensions not linked to lifetime earnings. Such ideas focus on potential short-term gains at the expense of long-term stability.

The real economic meaning of the pension system is the purchase of a share in future GDP financed by a corresponding share of current GDP (Góra 2013). The NDC reflects that deep nature (free of administrative details and ideological biases) and is the best among all types of OA pension systems (Góra and Palmer 2019). Issuing NDC bonds, the best bonds yielding the rate of return equal to 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. Such bonds would not be perceived as politically dependent NDB promises. That would strongly contribute to pension education, which in turn would strengthen the OA system via public awareness. This particularly matters in current times, when political and business actors are tempted to manipulate the pension system even more than they tried in times when the demographic dividend was still available.

7. Summary and main conclusions

Poland's NDC system is a success. Together with the FDC, it entirely replaced the previous, actuarially bankrupt NDB system. Moreover, the NDC system prevented the political manipulations around the FDC that started in 2009, and still continue, from ruining the

stability of the OA pension system. The NDC system is designed to balance the interests of the working and retired generations. The system automatically adjusts to population changes and allows for absorbing different kinds of risks that pension systems face. The changes introduced over the past years did not change the foundation of the system but do impact the perception of the system among the general public, as well as future adequacy levels.

Many challenges remain. First and foremost, population aging in Poland will accelerate as the bulk of people born in the post-war baby boom cohorts retire, while both the number of births and subsequently the number of young people reaching adulthood remain very low. This means that total employment is likely to decline, which will affect contribution revenues. Gradual adjustment of pension levels due to implementation of the NDC scheme will not be sufficient to eliminate this effect.

Improving both the sustainability and adequacy of NDC pensions in Poland depends on labor 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. Retirement age remains the key challenge for the OA system. Participants will have to retire later, otherwise the system will be balanced, but the social outcome of its functioning will not be satisfactory.

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