“The influence of populism on the budget balance of the Pension Fund of Ukraine”

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THE INFLUENCE OF POPULISM ON THE BUDGET BALANCE OF THE PENSION FUND OF UKRAINE

Abstract

The experience of states with limited democracy shows that populist manipulations often result in a collapse of the pension insurance system, and then – in an escalation of economic, political and social instability. Accordingly, the development of tools for identifying and preventing economic populism manifestations does not become irrelevant.

Through analyzing the changes in pension legislation, as well as studying economic indicators' dynamics, the article shows that pension insurance issues are widely used as tools for populist policy in Ukraine. This ultimately results in the formation of an abnormally low financial stability of the pension system. In particular, during the 2004 presidential election campaign and parliamentary election in 2007, there was a sharp short-term increase in the gap between growth rates of average pension and nominal GDP; significant deviation of replacement rate from its long-term average trajectory; and with some temporary lag, there emerged a substantial increase in transfers from the state budget.

It is noted that the main tools for economic populism in Ukraine are: (1) permanent procrastination of retirement age raising; (2) "manual" pensions indexation; (3) the existence of a VIP pensions and early retirement system for certain population categories; (4) transfer of burden to lower-income social contribution payers as a result of limiting the maximum value of unified social tax base.

The paper suggests a number of measures, the implementation of which could reduce the negative impact of populist decisions on budget balance of the Pension Fund of Ukraine.

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INTRODUCTION

In 1990–2000, due to a stable trend towards decrease in the birth rate, the vast majority of post-socialist European countries faced constant reduction in the number of employed and, accordingly, payers of pension taxes and contributions. The situation worsened by intensive external migration of the population and shadowing of the economy. At the same time, far from decreasing at a comparable pace, the number of pensioners even increased, which created an additional burden on public pension funds based on a solidarity pension system. As a result, governments faced the choice of either accepting a long-term reduction in the relative average pension and an increase in the deficit of pension funds or raising the level of taxation and expanding the list of social taxpayers, or reforming pension systems.

This choice is a sophisticated problem. On the one hand, usually, a political rating can be affected immediately because of the unpopular measures adopted to reform the pension system. On the other hand,

the procrastination of pension reform in the long-run perspective can lead to serious macroeconomic, social and political problems. Unfortunately, in this situation, the temptation among governments to apply economic populism increases significantly. They tend to focus on maximizing political dividends in the short run at the expense of the long-term financial stability of the pension system and the public finances system as a whole. According to McGuinn (2016), "…for political reasons, there is a strong temptation for legislators to look only at the short-term and make quick pension fixes that resolve that year's budget problem rather than address longer-term structural issues in the retirement system".

At the same time, such a decision is often politically justified, given that today populist discourse has become political mainstream worldwide as it promises simple solutions to complex problems and grave uncertainties (Müller, 2016). Mudde (2004) even talks about "populist Zeitgeist".

Ukraine is not an exception. While the average pension as of January 1, 2018 remained one of the smallest in the world (IMF, 2017), that is UAH 2,480.46 (USD 89 only) or just 32.2% of the average wage, the total amount of pension payments, according to the 2017 results, was 9.6% of GDP.

One of the manifestations of critically low financial sustainability of Ukraine's pension system was the substantial delays in the pension payments in July 2018. To finance deficit of the Pension Fund of Ukraine (hereinafter PFU), enterprises and organizations had to pay unified social tax (hereinafter UST) in advance, as well as it was necessary to rely on massive borrowings from a single treasury account (hereinafter STA). As a consequence, as of August 1, 2018, fund balance on the STA fell to a record low level since January 2014, namely UAH 1.995 bln (for comparison, as of August 1, 2017, it amounted to UAH 44.069 bln). In general, based on the results of the first half of 2018, out of UAH 204.4 bln, only UAH 112.5 bln (55%) were covered by own PFU revenue receipts. The deficit was covered by transfers from the state budget (UAH 83.4 bln or 40.1%), as well as by loans from STA (in aggregate for the 7 months of 2018, it accounted for UAH 50.1 bln, of which 40 bln were repaid). In fact, treasury borrowings to cover "temporary" cash gaps have become a way of masking the PFU deficit and its additional subsidization, not only through direct allocations of the state budget funds but from local budgets, whose funds are diverted for loans by the Treasury (Tkachenko, 2018).

The current situation is undoubtedly the result of the combined impact of a wide range of fundamental factors: negative demographic shocks, high level of informal employment, shadowing of salaries, etc. However, the scientific hypothesis of this study is that one of the key factors, which negatively affects the balance of the PFU income and expenditures, is the policy of populism in pension system as part of the election campaigns.

To test this hypothesis, a system of indicators has been developed that allows to identify facts and assess the impact of populist decisions in pension insurance on the formation of the PFU deficit.

The rest of the paper is organized as follows. Section 1 analyzes the results of theoretical and empirical research on the problems of reforming pension systems and the impact of economic populism on these processes. Section 2 describes the methodology of the study and its main assumptions. In section 3, the hypothesis is empirically tested on the use of populist policy tools in pension insurance as part of presidential and parliamentary election campaigns, as well as the negative impact of such policies on the financial sustainability of Ukraine's pension system is examined. The last section concludes the article.

1. LITERATURE REVIEW

Before 2008, most countries reformed their pension systems in accordance with the three-tier model (World Bank Report, 1994). Over the years, the World Bank has provided comprehensive financial, technical, analytical and advisory support to the reform processes of pension systems in various countries. The bank experts devoted more than 350 scientific works to the problem.

However, despite the credibility and broad expert support for the pension system model proposed by the World Bank, some researchers (Barr, 2002; Barr & Diamond, 2009; Beattie & McGillibray, 1995; Sinn, 1999; Takayama, 2016 and others) criticize it and note that many developing countries have failed while attempting to implement the concept of this model. For example, Orszag and Stiglitz (1999) dispel a number of macro, micro and political economy myths on the introduction of a private, mandatory, defined contribution component of the pension system. Barr and Diamond (2009) discuss in detail the analytical errors in the model justification, in particular, tunnel vision, improper use of first-best analysis, improper use of steady-state analysis, incomplete analysis of implicit pension debt, incomplete analysis of the impact of funding (including excessive focus on financial flows, failure to consider how funding is generated, and improper focus on the type of asset in trust funds), and ignoring distributional effects. Andrews (2015) emphasizes three principal preconditions necessary for instituting a successful Pillar II (mandatory funded pension system): 1) sound macroeconomic policies; 2) an adequate financial system; and 3) implementation capacity in human resources and technology.

Specificity, problems of reforming, as well as practical aspects of building multi-level pension systems in the post-socialist states of Europe, have been studied in detail by Drahokoupil and Domonkos (2012), Fox (1998), and Müller (2003). At the same time, the researchers state that the economic and political context [of reforming] is of crucial importance" (Müller, 2003) and that precisely "…the interaction of fiscal constraints and political conditions shaped the variety of reform outcomes in different countries (Drahokoupil & Domonkos, 2012).

Barr and Diamond (2008) point out that "pension policies … concern a large part of the electorate, whereas pension systems are delicate long-term constructions, whose reforms need a lot of political and professional ingenuity". According to Barr (2002), political sustainability, while performing the pension reforms, has three ingredients: sufficient strength, duration and depth of political will and support.

Banyár (2017) also notes that pension system reforming "is a long process and is unpopular with policy-makers since it means accepting that we need to deal with far-off problems right now when nobody wishes to do so. The 'prize' for this will be that handling these problems now will be that it will be much cheaper than it is postponed, although such a 'gift' may be too remote and shadowy to lead to concrete action".

Boeri et al. (2006) state that "…reforms involving a higher retirement age and lower pension benefits face serious political obstacles". This is confirmed by the OECD experts (1997): "In recent reforms, even modest steps to hike the standard retirement age or tighten the eligibility criteria to raise the effective retirement age have proven extremely difficult politically".

According to many scientists (Boeri et al., 2006; Bovenberg, 2008; European Commission, 2016; Galasso, 2006; Galasso, 2008), the key problem is the negative demographic dynamics leading to the formation of the so-called "gerontocracy" (Bovenberg, 2008). In such a situation, political power of older voters (who depend on public transfers and are risk averse) blocks reforms needed by the younger, working generations (who control the major scarce resource that fuels the modern knowledge-intensive economy, namely human capital and entrepreneurship). In particular, Galasso (2006) points out that older people have different preferences (compared to younger workers/voters) regarding the acceptable or desirable parameters related to retirement (retirement age, the level of contributions and the level of income provided by the pensions). Using a quantitative approach, he finds that older voters pressure policy-makers to maintain or even increase pensions' generosity despite the adverse economic effects.

This confirms the influence of the economic populism on the processes of pension provision around the globe.

Many scientists devoted their fundamental works to study the essence of the populism. Gidron and Bonikowski (2013), Mény and Surel (2000), Mudde (2004), Mudde and Kaltwasser (2017), Müller (2016), Rooduijn (2013) and others are among them.

In this study, the authors will adhere to the definition of the economic populism proposed by Adam and Simonovits (2017): "…economic policies sheltering large sections of the population from market forces, typically associated with large social transfers for pensioners and other politically influential, economically inactive or vulnerable parts of society". Adam and Simonovits (2017) conducted a comparative empirical analysis of Hungary's pension system in periods that were called the periods of "democratic populism" (1998–2010) and "authoritarian populism" (2010–2017). The researchers pointed out that "…democratic populists are serving the demand of their core electorate, they can hardly afford to cut social transfers, including pensions, politically".

To increase the rating of a political party or an individual candidate, such tools of populist policies are usually used as increasing pensions on a permanent or temporary basis, reducing the tax rate (contributions), reducing the retirement age, improving the conditions for retirement for all pensioners or their individual groups. Those tools normally increase expenditures or reduce the revenues of the pension fund's budget.

Adam and Simonovits (2017) distinguish such basic manifestations of economic populism in pension insurance: (1) nationalization of the Pillar II (mandatory funded pension system); (2) difficulties with retirement age raising and punishing early retirement; (3) chaotic practice of pensions indexing; (4) manipulations with the scale of pensions to redistribute income through pensions to the benefit of the relatively poor; (5) manipulations with the rates of pension contributions.

Less obvious, but still populist, is the policy of manipulating with a timing of changes in pension legislation. For example, government officials, realizing the necessity of reforming, can deliberately postpone unpopular reforms, hoping not to lose voters and to win elections.

Significant fiscal imbalances arise from the populist blocking of pension reforms and from an increase in pensions' generosity. That often results in increasing debt and tax burdens, reduction of investments. Notably, that the state budget deficit is, in turn, a significant financial constraint in the pension reforms implementation. First, due to the inadequacy of funds to cover transition costs to a funded pension system and cost-of-living adjustments/inflation protection. Secondly, as Kay (2014) pointed out, examining the impact of political risk on pension reforms in Latin America and Central and Eastern Europe, in cases where, governments face a sudden or severe fiscal or financial crisis and seek out pension funds to alleviate the crisis, "…it is far more likely to lead to either a diminished or a dismantled private, mandatory, defined contribution component".

Dornbusch and Edwards (1990), using Latin America as an example, analyzed in detail the consequences of the implementation of the economic populism paradigm, by which the authors understand "an approach to economics that emphasizes growth and income redistribution and deemphasizes the risks of inflation and deficit finance, external constraints, and the reaction of economic agents to aggressive non-market policies". The researchers believe that after a short period of economic growth and recovery, bottlenecks develop provoking unsustainable macroeconomic pressures that, in the end, result in the plummeting of real wages and severe balance of payment difficulties. The final outcome of these experiments has generally been galloping inflation, crisis, and the collapse of the economic system ended, in many instances, in massive political instability, coups, and violence.

Based on the studies of Bovenberg (2008) and Boeri et al. (2006), among the negative consequences of populism in the pension sector are rapid depreciation of human capital, slow innovation and undermining the generation solidarity.

The specifics and problems of pension system reforming in Ukraine have been studied by Andrews (2015), Berezina (2017), Horbunova, Kartseva, Pedchenko, and Ostapenko (2018), Kozmenko and Mospanova (2016), ICPS (2017), IMF (2017), Tkachenko (2018) and others. The vast majority of researchers note the failure of pension reforms in Ukraine. For example, IMF (2017) concluded that without a major renovation, Ukraine's existing pension system would remain scarce and unable to provide ade-

quate and fair pensions for all pensioners. At the same time, Andrews (2015), IMF (2017), Berezina (2017) and other researchers note that the Pillar II introduction will not be enough to solve the main problems of the Ukrainian pension system. Moreover, they call for the postponement of such an introduction until a number of conditions are met. Among the latter, there is a need to achieve a stable balance of the solidarity pension system budget, ensure macroeconomic sustainability, develop the financial system and put in place all the necessary elements of the legal and regulatory infrastructure.

At the same time, the experts from the International Center for Policy Studies (ICPS, 2017) emphasize the factors complicating the pension reform implementation in Ukraine, namely a complex demographic situation, a high level of economic shadowing, budget imbalance and political populism.

Thus, studies of the influence of populism in the field of pension provision on the formation of the PFU deficit does not lose its relevance.

2. METHODOLOGY

According to the law, two systems of compulsory state pension insurance can be applied in Ukraine: solidarity (Pillar I) and funded (Pillar II). Moreover, the funded system under the most optimistic forecasts can be implemented only by 2019, with a delay of fifteen years since the relevant legislation adoption.

Thus, in Ukraine, as in most other post-socialist countries with limited democracy, it is the changes in the basic characteristics of a solidarity pension system that often are used in political manipulations.

With that, populist steps as part of electoral campaigns are primarily attributed to the use of tools that either lead to an immediate increase in pensions, despite the existence of fundamental prerequisites for this, or are clearly perceived by the majority of voters as increasing their welfare in the future (for example, drafting a bill on the lowering retirement age).

The first tool seems to be more effective, because in most post-socialist states with limited democracy, pensions are often the only source of income for the recipients, and they are traditionally regarded as the most disciplined voters. If a clear methodology for calculating pensions exists, their increase occurs institutionally through introducing changes in the methodology. If such a system is absent, changes in pensions are carried out in "manual mode". In both cases, pensions can be increased on a temporary or permanent basis. At the same time, the existence of a clear methodology for pensions calculating provides a kind of protection against populism as changes in such a methodology can only be made based on the legislative bodies' decision. Although, if the government agents have a stable majority in parliament, this problem could also be easily overcome.

With clear methodology in place, indexation of pensions most often occurs in accordance with the growth rates of GDP, average wages, consumer price index, and other fundamentals' dynamics. The lack of essential reasons for pension hikes represents certain attributes of economic populism.

Thus, significantly higher increase in pensions than the growth of nominal GDP can be one of the indicators of populism in the field of pension insurance.

The solidarity system (which forms the basis of pension insurance in Ukraine) is based on a balance of revenues and expenditures. But the main instruments for balancing are transfers from the state budget and other state-owned special purpose out-of-the-budget funds (hereinafter referred to as transfers). In such a case, the share of the pension fund's own income decreases, and the share of transfers, accordingly, increases.

In general, the balance of the state pension fund's budget $\left(PF_s\right)$ using a solidarity system can be calculated as the difference between its revenues $\left(PF_r\right)$ and expenditures $\left(PF_e\right)$. In the case when the state ensures a complete balance of the pension fund $\left(PF_s = 0\right)$ at the expense of transfers $\left(PF_{tr}\right)$ and, taking into account the fact that the budget revenues consist of their own revenues $\left(PF_{or}\right)$ and transfers, one can get:

$$PF_s = 0 = PF_r - PF_e = \left(PF_{or} + PF_{tr}\right) - PF_e, \quad (1)$$

from which, by simple transformations, one can obtain:

$$PF_e = PF_{or} \cdot \frac{1}{1 - \frac{PF_{tr}}{PF_r}}. \quad (2)$$

The general form of formula (2) is very similar to traditional multipliers, widely used both in theoretical analysis of economic problems and in applied research. The coefficient in the denominator is nothing more than an indicator of the proportion of transfers in the pension fund revenues, and is thus an important tool to analyze its balance. Because this coefficient is in the denominator with the "minus" sign, it forms a direct multiplication dependence with the pension fund expenses.

This coefficient is important enough to understand the reasons for the imbalance in the pension fund budget. It can significantly rise in the case of a targeted pension reform, within which one of the main parameters of the pension system changes drastically, or as a result of making populist decisions. Thus, the very fact of a sharp change in the proportion of transfers in the pension fund income is a necessary condition for identifying populism and subsequent studying its impact on the formation of the PFU deficit.

Main factors affecting PF_s when covering its planned deficit at the expense of transfers are: the tax rate or part of the UST, redistributed to the pension fund in the framework of the solidarity pension system $\left(t_p\right)$; number of tax payers $\left(M\right)$; tax base.

Factors affecting the expenditure side of the pension fund are as follows: average pension (*AP*); methodology for pensions calculating (using the formula approach to determine it); number of pensioners (*K*); composition of pensioners; retirement conditions. In general, all these factors affect either the quantity or the cost parameters of the PFU budget.

Taking into account the described factors, an expanded version of formula (1) could be presented. But first it is necessary to make some comments that directly influence the author's methodology of the research and the conclusions drawn.

Comment 1. There is a lack of relevant data characterizing the dynamics of the number of pension contribution payers in Ukraine in the long run. Therefore, the number of employed (*E*) is taken as a basic quantitative indicator. This corresponds to the theoretical provisions according to which the employed are the payers in the framework of the solidarity pension system.

Comment 2. Due to the peculiarities of the Ukrainian labor market and the pension legislation norms, the actual number of pension contribution payers (*M*) is traditionally less than the number of employed (*E*). But the authors assume that the long-term relationship between these indicators $\left(k_e\right)$ is relatively stable, considered as a constant and takes a value less than "1": $M = E \cdot k_e$.

Comment 3. Wages are accepted as a tax base (including those for self-employed persons).

Comment 4. The t_p rate is the same for all payers.

Comment 5. Due to the peculiarities of statistical accounting of average wages (*AW*) and average pensions (*AP*) by the State Statistics Service of Ukraine and PFU, the data on the first are given on average for the year, and for the latter – as at the end of the year.

Given these comments, formula (1) can be written as follows:

$$\left(E \cdot k_e \cdot AW \cdot t_p + PF_{tr}\right) - K \cdot AP = 0 \ . \quad (3)$$

If it is postulated that the pension fund should be balanced in the framework of a solidarity pension system without transfers, that is, $PF_{tr} = 0$, then formula (3) is as follows:

$$\frac{AP}{AW} \Big/ \frac{E}{K} = k_e \cdot t_p. \quad (4)$$

Thus, taking into account the comments above, under the PFU balancing without transfers, the dynamics of the replacement factor AP / AW should repeat the dynamics of the employed to the pension recipients ratio E / K. And also the ratio of both coefficients should tend to a certain long-

term constant that is determined by the product on the right-hand side of formula (4). This is the long-term condition for the PFU balance without transfers. Such a provision is also true in case of stability of the proportion of transfers in the structure of pension fund income PF_{tr} / PF_r. The equation at left in formula (4) is also a special analytical indicator, which is the replacement rate, adapted to the employed and pension recipients ratio:

$$K_{sa} = \frac{AP}{AW} \Big/ \frac{E}{K}. \quad (5)$$

Sharp deviation of K_{sa} from its long-term trajectory within the period with unchanged t_p can be explained either by changes in the pension legislation, which was characterized by a strong short-term impact on the PFU balance, or by populist actions.

In general, the following research methodology is used in the paper:

1. Pension legislation changes are analyzed to detect economic populism attributes. In particular, those changes that potentially could have a significant impact on the balance of the PFU budget in the short term, taking into account their influence on the variables contained in formula (4).

2. Statistical analysis of the dynamics of the average pension size is carried out to identify its significant deviations from the growth rates of nominal GDP, the average wage, and the consumer price index.

In addition, using traditional statistical methods and tools of fractal analysis, the dynamics of main indicators of the solidarity state pension system development in Ukraine is studied. Special attention is paid to the analysis of the dynamics of coefficients AP / AW and E / K, as well as the author's indicator $\left(K_{sa}\right)$.

3. A statistical analysis of the transfer dynamics is conducted, with a focus on the proportion of transfers in the structure of PFU revenues as the third most important indicator of the populism impact on the PFU budget balance.

4. The impact of populism on the formation of imbalances in the PFU budget is determined by identifying potential temporal moments (timing) for its application within presidential and parliamentary election campaigns and by comparing them with previously identified periods that were characterized by significant deviations (1) in the growth rates of the average pension size from the growth rates of fundamental economic indicators; 2) in the indicator of the proportion of transfers in the structure of PFU revenues, not related to changes in pension legislation; 3) in K_{sa} – from its long-term trajectory.

The exploration period for the PFU budget covers seventeen years (2001–2017), which is due to two reasons: (1) the reform of the pension insurance system, which began in 2004, so the authors tried to use as much of the study period as possible; and (2) availability of data on the implementation of the PFU budget. The data sources for 2003–2017 calculations are reports of PFU, and for 2001–2002 – the report of the Accounting Chamber of Ukraine.

The study period of main indicators of the Ukraine's solidarity state pension system development covers an extended period from 1995 to 2017. It is explained, on the one hand, by the relevant data availability, and, on the other hand, by the changes in statistical methodological apparatus while studying the labor market and social protection of the population, according to which the updated data have been submitted since 1995. Since the main focus of statistical analysis is precisely on identifying long-term trends and studying the K_{sa} behavior, the extension of the study period is desirable in this case. The source of information is the data of the State Statistics Service of Ukraine and of the Ministry of Finance of Ukraine.

3. RESULTS

3.1. Analysis of changes in pension legislation for economic populism attributes

In this subsection, the key changes in the pension legislation, which had a direct long-term impact on the variables contained in formula (4), will be outlined. At the same time, the nature of this im-

pact on the PFU balance in terms of its income and expenses will be characterized.

1. The year 2004 is the starting point of the pension legislation reforming. Since this year, a three-pillar pension system has been fixed at the legislative level in Ukraine. A fairly clear and logical mechanism for pensions calculating and subsequent indexing has been introduced as well. In particular, there was a direct link between the future pension size, the insurance record duration and the relative wages of the insured. In the context of ensuring a long-term PFU balance, the possibility of public participation in the state and non-state cumulative pension insurance is an undoubted potential advantage of the reform. In addition, the institutionalization of the procedure for calculating and indexing pensions with the refusal of "manual management" is a real advantage as well.

As a result of the reform, pensions of certain categories of retirees, who had significant insurance record duration and relatively high wages had been raised. However, due to the insignificant share of these pensioners, this did not have a strong impact on the increase in K_{sa} and in PFU expenditures.

2. The retirement age hike for women from 2011 due to a long-term tendency towards reducing the ratio of employed to the pension recipients. The mechanism for the long-term increase of the K_{sa} indicator is launched.

3. A significant reduction in the UST rate since 2016 from 36.76-49.7% (depending on risk class of production) down to 22%. The bulk of UST was directed to PFU (85.6% since 2017). This reform had an immediate effect and made a significant impact on the K_{sa} dynamics, leading to its decrease and transition to a new long-term equilibrium condition (formula (4)). It also contributed to a sharp increase in transfers to PFU.

4. The pension reform of autumn 2017 was quite complex. An automatic mechanism for pensions reassessment was launched, the procedure for calculating pensions was changed through a reduction in the coefficient of the insurance record duration, and the requirements for receiving a pension were tightened by increasing the minimum period of work to retirement.

The impact of this reform on the PFU balance is complex as well.

It is assumed that in 2019–2020, pensions indexation will be carried out in accordance with parliament's separate decisions (which may contain a populist component). However, from 2021, automatic indexation is planned to be introduced, based on 50% of inflation for the previous year, and 50% of the average salary growth rate during the previous three years. This institutionalization of pension indexation is an undeniable enhancement in protection from the populism impact on the fiscal imbalances development. The pension reassessment promotes a short-term increase in the average pension and, thus, a rise in the K_{sa} and in the share of transfers in the structure of PFU revenues. Other changes, in contrast, contribute to the formation of long-term trends towards a gradual decrease in K_{sa} and a reduction in the share of transfers in the revenue structure.

In general, according to A. Reva, the Minister of Social Policy of Ukraine, "... the pension fund [of Ukraine] has always been the object of all kinds of populist experiments". For illustrative purposes, the Minister mentions the increase in the assessment of one-year insurance record from 1% to 1.35% with coverage of the pension fund deficit at the expense of international borrowing and treasury loans. He also criticizes the UST reduction from 38% to 22%, resulted in a deficit hike from 80 to USD 145 bln (up to 6.3% of GDP, which was one of the highest levels in the world).

Analysis of changes in pension legislation allows also to find other manifestations of economic populism in pension insurance in Ukraine:

1) permanent procrastination of retirement age raising (the year 2011 is an only exception); the slogan of not exceeding the retirement age has become one of the main messages of the pre-election information campaigns (Tkachenko, 2018);

2) the practice of "manual" indexation of pensions (will continue, at least, until 2021);

3) the existence of a VIP-pension and early retirement system for certain population segments;

4) legislative limitation of the maximum value of the UST base (UAH 55,845), which results in a proportional shift of the burden on the lower-income contribution payers.

3.2. Statistical analysis of the dynamics of key indicators of pension system development in 1995–2017

As can be seen in Figure 1, the increase in pensions in Ukraine was often disproportional to the economic growth rate. The visible lack of fundamental reasons for such increases may carry certain attributes of economic populism. At the same time, the most indicative are the excess of the growth rate of the average pension (AP_{gr}) over the growth rates of nominal GDP (GDP_{gr}). The most significant deviations is observed during 2001 (26.46 pp), 2004 (44.6 pp), as well as for 2007 (29.27 pp).

Table 1 shows the dynamics of the main quantitative indicators of the state pension insurance system development in Ukraine in 1995–2017. It also provides information on different ratios calculated by the authors: (1) the number of pension recipients to the population K / N; (2) the number of employed E / N in the population; (3) the number of employed to the pension recipients E / K; (4) the average pension to average salary AP / AW, and (5) K_{sa} indicator.

Further, in order to identify stable trends and regularities, as well as to raise the level of the validity of the conclusions, five relative indicators presented in Table 1 were analyzed. Both traditional statistical instruments of time series analysis and individual instruments of fractal analysis were used. In particular, the coefficient of current volatility, proposed by Kussy (2017), was used for the preliminary identification of the trend variability.

The results of analysis allows for making the following intermediate conclusions characterizing the main tendencies of the development of the solidary pension insurance system in Ukraine:

1. The dynamics of the relative indicators characterizing the development of the state pension insurance system describes well-known trends, which are determined by simultaneous reduction in the population, increase in the proportion of older age groups and the reduction of younger ones. At the same time, the insurance system is subject to the impact

Source: State Statistics Service of Ukraine.

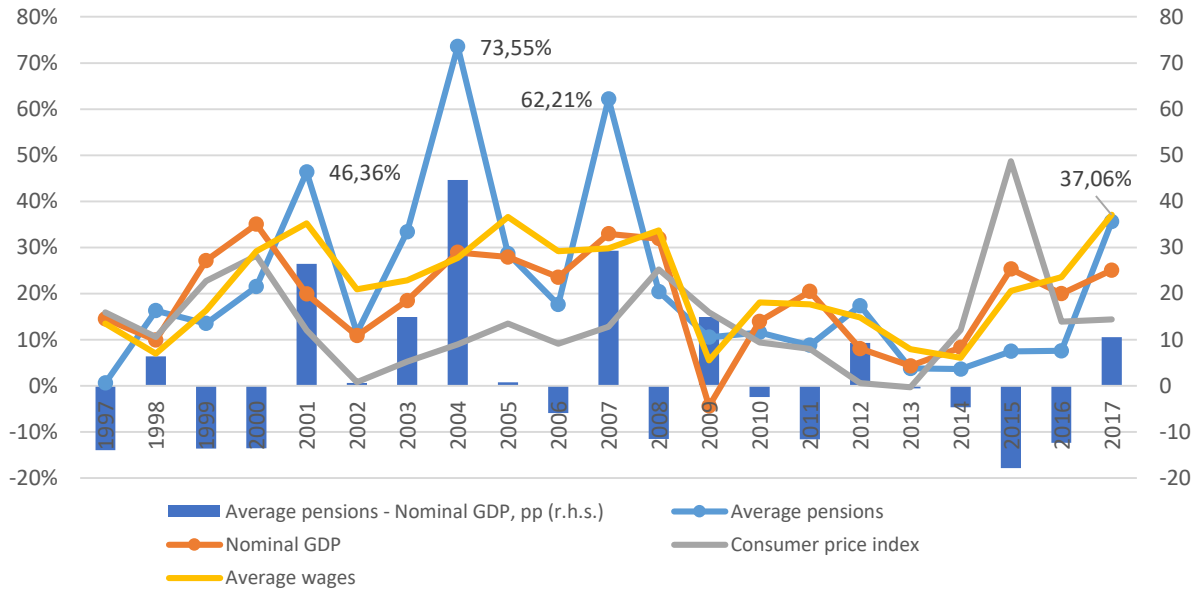

Figure 1. The growth rate of some macroeconomic indicators in Ukraine in 1997–2017

Table 1. Quantitative and relative indicators of Ukrainian pension system in 1995–2017

Source: State Statistics Service of Ukraine, authors' calculations.

Year	K, mln	N, mln	E, mln	$\left(\frac{K}{N}\right)$, %	$\left(\frac{E}{N}\right)$, %	$\left(\frac{E}{K}\right)$	$\left(\frac{AP}{AW}\right)$, %	K_{sa}, %
1995	14.49	51.51	24.13	28.1	46.8	1.665	53.0	31.8
1996	14.49	51.06	24.11	28.4	47.2	1.664	41.2	24.8
1997	14.53	50.59	23.76	28.7	47.0	1.635	36.5	22.3
1998	14.52	50.14	23.00	29.0	45.9	1.584	39.7	25.0
1999	14.53	49.67	19.95	29.3	40.2	1.373	38.7	28.2
2000	14.45	49.18	20.18	29.4	41.0	1.396	36.4	26.1
2001	14.42	48.66	19.97	29.6	41.0	1.385	39.4	28.4
2002	14.38	48.20	20.09	29.8	41.7	1.397	36.3	26.0
2003	14.35	47.81	20.16	30.0	42.2	1.405	39.4	28.1
2004	14.07	47.45	20.30	29.7	42.8	1.442	53.6	37.2
2005	14.05	47.11	20.68	29.8	43.9	1,472	50.5	34.3
2006	13.94	46.79	20.73	29.8	44.3	1.487	46.0	30.9
2007	13.82	46.51	20.90	29.7	44.9	1.513	57.4	38.0
2008	13.75	46.26	20.97	29.7	45.3	1.525	51.7	33.9
2009	13.72	46.05	20.19	29.8	43.8	1.472	54.2	36.8
2010	13.74	45.87	19.18	30.0	41.8	1.396	51.2	36.7
2011	13.82	45.71	19.23	30.2	42.1	1.392	47.3	34.0
2012	13.64	45.59	19.26	29.9	42.2	1.412	48.4	34.2
2013	13.53	45.49	19.31	29.7	42.5	1.428	46.5	32.6
2014	12.15	43.00	18.07	283	42.0	1.488	45.4	30.6
2015	12.30	42.84	16.44	28.7	38.4	1.337	40.5	30.3
2016	11.96	42.67	16.28	28.0	38.1	1.361	35.3	25.9
2017	11.73	42.32	16.16	27.7	38.2	1377	349	253

of institutional changes that resulted from attempts to reform it. Also it is important to mention the absence of a statistically significant relationship between the proportion of pension recipients and employed in the structure of population, which is characterized by a low correlation coefficient (0.11) between the values of K / N and E / N (see Table 1).

2. Contrary to the generally accepted opinion, the share of pension recipients in the population structure is not characterized by constant increase. Due to the impact of various factors, including the 2010 reform and the specifics of recording pension recipients living in the occupied territories, this indicator, having reached an absolute maximum of 30.2 pp in 2011, is gradually decreasing. During the last

Table 2. Statistical analysis of relative indicators of Ukrainian pension system in 1995–2017

Source: Authors' calculations.

Indicators of statistical analysis	$\left(\frac{K}{N}\right)$, %	$\left(\frac{E}{N}\right)$, %	$\left(\frac{E}{K}\right)$	$\left(\frac{AP}{AW}\right)$, %	K_{sa}, %
Max	30.2	47.2	1.7	57.4	38.0
Min	27.7	38.1	1.3	34.9	22.3
Max – Min	2.5	9.1	0.3	22.5	15.6
Close – Open	–0.4	–8.7	–0.3	–18.1	–6.5
Average	29.3	42.8	1.5	44.5	30.5
Standard deviation	0.75	2.68	0.10	7.03	4.62
Coefficient of variation (CV)	0.025	0.063	0.066	0.158	0.151
Coefficient of volatility: Abs ((Max–Min)/(Close–Open))	6.09	1.05	1.14	1.24	2.40

two years, it sets absolute minimums of 28.0 pp and 27.7 pp, respectively. The difference between the initial and final values is –0.4 pp, and the range of variation is 2.5 pp. There is a relatively low value of the variation coefficient (0.025) and, simultaneously, a high value of the volatility coefficient (6.09), much greater than 1.0. All this makes it possible to distinguish between stages of growth and decline in the long-term cycle, and to argue that the stage of recession can still continue with the changes in the pension legislation described earlier.

3. The share of employed in the population structure is characterized by a long-term downtrend. Despite the growth of this indicator in 2002–2008, its maximum values are at the beginning of the period, and the minimum values correspond to the end of the period. In general, within the analyzed period, this indicator decreased by 8.6 pp, which corresponds to the range of variation of 9.1 pp. The relatively high value of the variation coefficient (0.063), and the value of the volatility coefficient (1.05) which is close to the absolute minimum signal about the certain oscillations with a clear downtrend.

4. The ratio of the number of employed to the pension recipients as a whole repeats the dynamics of the share of employed in the population structure, which is confirmed by almost identical values of the variation coefficients (0.066) and volatility coefficients (1.14).

5. Since 2007, the average pension to the average wage ratio is also characterized by the long-term downtrend, but its variation coefficient is almost 2.38 times higher than the corresponding value of the E / K indicator. Later on, this fact will be considered as one of the signals of the populism impact on the PFU's financial balance.

6. K_{sa} is characterized by rather complex dynamics, although its values in 2016–2017 are fairly close to the medium-term average of 1996–2003, which is 26.2 pp. As a result of decisions taken in 2004 and 2007, the value of this coefficient increased sharply, by 9.1 pp. and 7.1 percentage points respectively, after which it gradually decreased. So these two years will be further considered as a consequence of populist decisions, if any, in those years.

3.3. Analysis of the transfers dynamics in 2001–2017

In order to ensure the study completeness, three more indicators will also be analyzed: transfers in relation to PFU revenues (PF_{tr}, % PF_r), to state budget expenditures (PF_{tr}, % CB_e), and to GDP (PF_{tr}, % GDP). Sharp changes in these indicators in certain years could be explained either by significant changes in pension legislation, resulting in a shortage of own revenues to finance costs within the framework of the solidarity pension system, or by objective reasons associated with the economic cycle stages, or by populist decisions of the executive and legislative authorities (Figure 2).

Figure 2 reveals three cycles in the dynamics of all the transfers' indicators. The characteristics of the cycles are described below:

1. 2004–2006: the peak of PF_{tr}, % PF_r was in 2005, and the bottom was related to 2006 compared to the lowest point of the previous cycle (8 pp). The peak value increased by 4.25 times and amounted to 34 pp. Transfers to GDP ratio at that time increased by 7 times and amounted to a record 4.9 pp.

2. 2007–2012: the peak of PF_{tr}, %PF_r could be attributed to 2009, and the bottom – to 2012 compared to the lowest point of the previous cycle (24 pp). The peak value increased by 1.63 times and amounted to 39 pp.

3. 2013–20??: it is already possible to say that the PF_{tr}, % PF_r peak corresponded to 2016, but the bottom may still be ahead. In the considered cycle, compared to the lowest point of the previous cycle (30 pp), the peak value was 56 pp with an increase of 1.87 times. The main reason for this growth, in contrast to previous peak values, is a sharp decrease in the UST rate described in item 3 (sub-section 3.1). This could be easily explained by the significant difference in the values of the transfers' rates

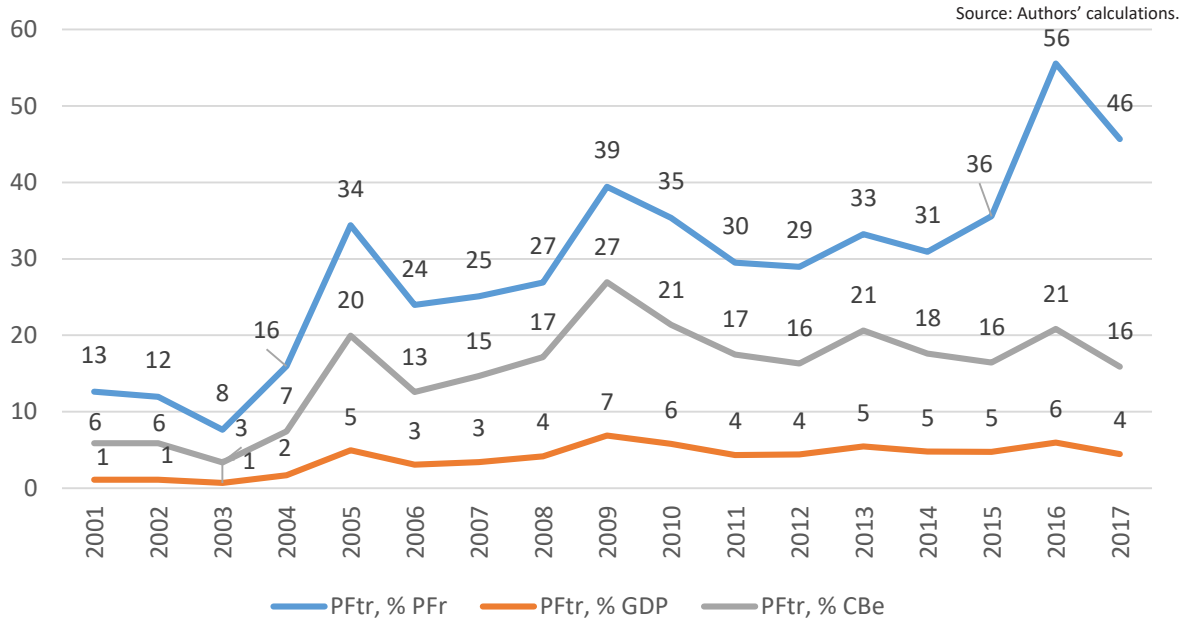

Figure 2. Indicators of transfers in 2001–2017

in relation to the PFU revenues, as well as to the state budget expenditures and to GDP. If for the first indicator they are characterized by an absolute maximum (56 pp), then for the second (21 pp) and the third (6.0 pp) ones, this is an ordinary peak within the cycle. Based on the fact that the dynamics of the three mentioned indicators is sufficiently synchronous, the ratio of transfers to PFU revenues (PF_{tr}, % PF_r) will be used as the most representative indicator of economic populism.

3.4. Assessment of the impact of the populist decisions on the PFU budget balance

In this section, all the facts revealed in the previous paragraphs will be brought together and compared with the election campaigns (both presidential and parliamentary) that took place in 2001–2017 (Table 3).

The year 2004 was the first case when pension issues were actively used in the election campaign, and this affected the dynamics of several indicators. At the same time, this was the first year, in which a new procedure for calculating pensions was applied. As part of the pre-election campaign, the authorities decided to temporarily (by the end of 2004) pay pension supplements to pensioners at the expense of the state budget, if their pension is lower than the subsistence minimum for persons unable to work. Since 2005, this norm has been confirmed by the Resolution of the Cabinet of Ministers of Ukraine. The 2005 constitutional changes somehow modified the power priorities, and, therefore, the problems of the solidarity pension system became one of the key theses of various political forces within the framework of parliamentary election campaigns. The main tools of political populism were manipulation with the subsistence minimum and indexation of pensions, which ultimately led to a short-term sharp increase in $AP_{gr} - GDP_{gr}$ and K_{sa} and their subsequent decline. It was this situation that took place in 2004 and 2007, when populism became the most important instrument of political struggle within the framework of the presidential and parliamentary campaigns, respectively.

These populist actions also resulted (but with some time lag) in a sharp increase in transfers relative to PFU incomes. So from 2003 to 2005, this indicator grew more than 4.5 times (by 26.8 pp) to 34.4%, and in 2009 reached its maximum of 39.4%.

In addition, one can note that until 2004 transfers accounted for about 1% of GDP, but then increased 7 times during two years by 2005, and in 2009 also reached their maximum of 6.9% of GDP.

Since the excess of PFU expenditures over its own revenues is covered mainly by transfers from the state budget, the imbalance of the pension fund

Table 3. Election campaigns, significant changes in pension legislation and economic populism indicators in 2001–2017

Source: Authors' calculations.

Year	Election campaign	Pension reform	APgr – GDPgr, pp.	Ksa, %	PFtr, % PFr
2001	–	–	26.5	28.4	12.6
2002	Parliament	–	0.64	26.0	12.0
2003	–	–	14.9	28.1	7.6
2004	President	+	44.6	37.2	16.0
2005	–	–	0.8	34.3	34.4
2006	Parliament	–	–5.9	30.9	24.0
2007	Parliament	–	29.3	38.0	25.1
2008	–	–	–11.5	33.9	26.9
2009	–	–	14.9	36.8	39.4
2010	President	–	-2.4	36.7	35.3
2011	–	+	–11.6	34.0	29.5
2012	Parliament	–	9.3	34.2	29.0
2013	–	–	–0.5	32.6	33.2
2014	President, Parliament	–	–4.68	30.6	30.9
2015	–	–	–17.85	30.3	35.6
2016	–	+	–12.38	25.9	55.6
2017	–	+	10.55	25.3	45.7

budget creates prerequisites for the formation of the state budget deficit. As a result, the role of transfers from the state budget in financing PFU increases. Their share in the structure of state budget expenditures was 5% by the beginning of the investigated period but reached a maximum of 27% by 2009. In some years, transfers to PFU from the state budget exceed its deficit.

The lack of PFU balance leads not only to the formation of a consolidated budget deficit but also to a reduction in funding (or to underfunding) of certain budget items that are no less important than financing pension supplements to people having little insurance record length or who received an official salary below the average. After an instantaneous sharp increase in PFU expenditures in the following years, there was a significant increase in inflationary pressures (see Figure 1). To eliminate imbalances, pensions indexation for inflationwas incomplete or totally canceled. As a consequence, conditions were created for the pensions aligning, regardless of the insurance record duration and the size of monthly contributions, which at the same time slightly differed from the subsistence level for the persons unable to work. Also, due to rising prices, higher pensions lost their real purchasing power at an ever faster pace.

CONCLUSION

The paper results show that within the framework of the 2004 presidential and 2007 parliamentary election campaigns in Ukraine, pension insurance issues were widely used as tools for populist policy. In particular, the dynamics of a number of "populism indicators" proposed by the authors show this. In these periods, there was a sharp short-term increase in the excess of the average pension growth rate over the nominal GDP growth ($AP_{gr} - GDP_{gr}$), as well as the deviation of the replacement coefficient (K_{sa}), adapted by the authors, from its long-term average trajectory. Also, with a certain time lag, there was a sharp increase in transfers from the state budget, which over time became not only the most important source of income for the Pension Fund of Ukraine, but also one of the main items of the state budget expenditures, cutting expenses on other items and creating an additional deficit of the state budget.

To reduce the impact of populist decisions in the field of pension insurance on the emergence or strengthening of the PFU budget imbalance, the following measures must be taken:

- mandatory introduction and continuous expansion of the accumulative pension insurance system, which will lead to a gradual increase in the accumulative part of pension payments, and, therefore, to reduction of the pension fund deficit in relation to GDP, and as a consequence, reducing the PFU transfers, both in the structure of state budget expenditures, and in relation to GDP;

- legal prohibition of nationalization or of temporary freezing of funds in the cumulative system;

- actual (but not declarative) use of an unconditional permanent (annually or quarterly) automatic procedure for indexing pensions as part of a solidarity pension system with a complete refusal from "manual" discrete decisions of authorities in this area;

- avoiding a populist increase in the subsistence rate within the framework of the election campaign by introducing a clear and understandable procedure for determining its value based on a clearly established minimum consumer basket adjusted for the nominal prices of goods and services included.

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