INFLATION AND DEFINED CONTRIBUTION PENSION SCHEMES IN CENTRAL AND EASTERN EUROPEAN (CEE) COUNTRIES

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Abstract

Pension systems in most of the CEE countries were significantly reformed at the beginning of 21st century. The introduction of fully funded components in addition to the traditional pay-as-you-go ones marked the beginning of a completely new age in the development of the pension systems in the region. The basic goal of the current paper is to research the investment performance of the defined contribution pension schemes in several CEE countries – Estonia, Slovakia, Romania and Bulgaria. The thesis defended throughout the article is that conservative types of investment portfolios for long term investors such as pension funds are not appropriate especially under scenario of significant inflation rate. The results of the research show that those countries where pension fund managers were allowed to structure portfolios with different risk profile have much higher chance to protect the savings of insured individuals in real terms in prolong period.

Key words: *pension funds, CEE countries, investment results, inflation, risks*

JEL: *G11, G12, G22, G23*

Introduction

Following the recommendations of the World Bank (1994) a number of countries in CEE region reformed their pension systems by introducing second (mandatory) and third (voluntary) pillars in their pension insurance based on a fully funded principle. The main goal of the policymakers was to supplement the traditional pay-as-you-go pillars and in this way to support pension systems' sustainability and adequacy in the long term. The basic reasons behind the reforms were related to the ongoing unfavorable processes of population aging and deteriorating demographic structures in all of the countries in the region. Under certain normal assumptions it was expected that pay-as-you-go structures were going to put serious pressure on public finances in the long term and the predominant model of state financing would not be sustainable in the next couple of decades. Plenty of research in this field also suggested that fully funded pension schemes can effectively support pay-as-you-go insurance. For example, Davis (1995) shows that fully funded pension schemes could have certain advantages to the pay-as-you go ones mostly concerning the improved incentives to insure on "real" incomes, better expected return and raised saving rates that could mitigate the expected deficits in the

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pay-as-you-go pillars. Gochev and Manov (2003) are on a position that pension insurance based on a fully funded principle can have positive effects on the incentives of the insured individuals to contribute on their real wages especially in countries with significant "grey" sector in the economy which was a common feature of the CEE countries in the years after the collapse of the communist regimes. Bielawska (2015) and Pandurska (2018) demonstrate also that reforms made in the pension systems are trying to raise the sustainability of pension insurance in those countries in the long term. The ongoing processes of population aging were additionally fostered by significant emigration rates in CEE countries during the 1990's and early 2000's. Kirov (2010) and Daneva (2016) point out that private pension schemes can have positive effects on labor markets but also on capital markets in the region since pension funds are among the most important institutional investors in the World. So, there was a common notion during the 1990's that pension funds could have a positive influence not only on pension insurance itself but also on public finances, capital markets and the economy as a whole. On the other hand some authors such as Orszag and Stiglitz (1999) and Casey (2013) stress on some of the risks regarding pension reforms and the need of right regulation in order to avoid future problems. Antolin (2008) points out that population aging could have unfavorable consequences not only on pay-as-you-go pension systems but also on fully funded ones by affecting adversely financial markets and the realized yield.

The following table shows the countries that introduced fully funded mandatory pillar into their pension systems in the late 1990's and early 2000's.

Table 1. Pension reforms in CEE countries

N:	Country	Year of reform
1	Hungary	1998
2	Poland	1999
3	Latvia	2001
4	Bulgaria	2002
5	Estonia	2002
6	Croatia	2002
7	Lithuania	2004
8	Slovakia	2005
9	Romania	2008

All countries introduced models based on defined contributions thus transferring the investment risk towards the insured individuals. This type of pension schemes was much more popular in Latin America than in Western Europe at the time of reforms. However, in the following years defined contribution pension plans significantly increased in number in the Western part of the continent as well. The basic reason behind the observed trend was related to the difficulties in covering the deficits formed in the defined benefit pension schemes in many of the countries that applied such models. The decade after 2008 was a period of extremely low and even negative interest rates – quite unfavorable trend for all long-term savers whose accumulations were not able to increase substantially during these years. At the same time the average life expectancy gradually grew and made almost impossible the financing of the deficits appeared

within the defined benefit schemes. As a result, defined contribution pension models started to rise in popularity although the risks to which are exposed insured individuals are many both during the accumulation phase and the pay-out stage. According to Blake (2006) some of the important risks during the accumulation period are: interest rate risk, asset price risk, currency risk etc. During the distribution phase Blake (2006) and Rocha and Vittas (2010) pay attention on the following risks: interest rate risk, longevity risk, liquidity risk, bequest risk. James and Vittas (1999) also point out some of the risks concerning annuities markets and their right regulation for the success of any future pension reform. However, there is one specific risk that significantly affects the accrued resources into one's individual account in both periods – the inflation risk. It is well known that inflation rate erodes the real value of savings and it is quite important for long term investors such as pension funds to preserve purchasing power of accumulated resources towards the date of retirement. The current paper investigates to what extent pension funds in CEE countries were able to manage this risk for the period between 2013 and 2023 (10-year period). More specifically the pension funds situated in four different countries were analyzed: Bulgaria, Slovakia, Estonia and Romania. Two of the countries were able to introduce multifund system (Slovakia and Estonia) and the other two missed that opportunity. This means that insured individuals in Bulgaria and Romania do not have the option to choose the risk profile of their asset portfolio. For the purposes of the analysis the yield realized by some of the major pension funds situated in the above mentioned countries is estimated and presented. The assessment of the investment performance is based on the value change in one pension unit for the investigated period. The time weighted approach is considered as more appropriate since it correctly evaluates the managers' contribution in portfolio management. The money weighted methods (such as IRR, MIRR, etc.) in estimating the investment performance are not applicable in this case because they require specific knowledge concerning the exact arrangement and scale of the incoming cash flows. The realized yield is then compared to the inflation rate. The last is estimated by considering the change of the official consumer price indexes in each of the countries and then Fisher's equation is applied. The results undoubtedly show that for the researched period the performance of the most aggressive portfolios is the most impressive and the yield achieved by these portfolios is the only one that exceeds the inflation rate for the same period. The methods used throughout the paper are: descriptive analysis (concerning the normative rules about the investment regulations in the researched countries), data analysis regarding the performance results of the pension funds, some deductive and inductive approaches are also applied in presenting the ideas for future development of the second pilar pension funds in CEE countries. The first part of the research describes some of the specifics of the second pillar pension funds in each of the researched countries, the second part shows the investment performance of the funds for the last 10 year period. The paper concludes with some recommendations for future reforms concerning mostly the Bulgarian practice.

1. The pension reforms in Central and Eastern European (CEE) countries - specifics and implications

1.1 Bulgaria

Bulgarian pension system was reformed in the late 1990's with the introduction of second pillar mandatory pension funds. Two types of funds were introduced – universal pension funds and professional pension funds (Social insurance code 1999). Each of them followed the model proposed by the World Bank incorporating defined contribution pension schemes. The universal pension funds started their business effectively in 2002. According to the adopted legislation all individuals born after 31.12.1959 were obliged to choose and to contribute into a pension fund from the second pillar of the pension system. The initial contribution was fixed at 2% but few years later it reached 5% level. Part of it is due by the employer (2.8%) and the rest is paid by the employee (2.2%). The professional pension funds started in 2000. All insured individuals who work in hazardous environment (the so called I and II labor category, which include professions such as miners, metallurgists, public transport drivers, etc.) must contribute into a professional pension fund of their own choice. The professional pension funds were destined to pay pension benefits for early retirement, which means that individuals who work in those specific conditions have right to get retired a few years earlier than those who work in normal environments. The insurance contributions for the professional pension funds are paid only by the employer. Their amount is 12% for the professions that fall under I labor category and 7% for the ones which are under the II labor category. Professional pension funds were thought to pay pension benefits only for pre-defined period of time. The universal pension funds are considered as life-time payers since the insured individuals are expected to receive supplementary pension benefit in addition to the one received by the first pillar of the pension system. Bulgarian pension funds are allowed to manage only one portfolio of assets. The multifund system has been discussed for many years but currently it has not been introduced in practice (Daneva, 2018 and Milev, 2019). Pension companies are trying to find the right balance between the interests of those individuals whose retirement is close and those who have just started their first job. The result is a balanced portfolio of assets where government securities are the dominant asset class. The insured individuals both in universal and professional pension funds have an option to transfer their resources into the first pillar of the system and to receive pension benefit only from the state. Under this scenario they must pay the pension contribution in full amount towards the state pension system. In this way the state is trying to take care of those insured individuals who were not able to accumulate enough resources to fund a pension benefit. If insured individuals choose to pay pension contributions only towards the first pillar of the system, they receive state pension benefit in full amount. If they pay pension contributions toward the first and the second pillar of the system, they receive two types of pension benefits but the one received from the first pillar is in reduced amount.

1.2 Estonia

Estonian pension system was reformed in 2002. It was transformed into a three pillar structure with first pillar based on a pay-as-you-go principle and second and third pillar established on a fully funded principle. The approach applied in Estonia suggests obligatory participation into the second pillar only for those individuals who were born after 1 January 1983 and voluntary for all other age cohorts[2]. The contribution paid into the second pillar is 6%

[2] Leppic, L. and Vork, A (2006), Pension Reforms in the Baltic States

as the employer pays 4% and the employee 2%. It is interesting to note that Estonia is the only country in the CEE region where contribution paid by the employee comes as an additional contribution and not just redirected one from the first pillar of the system. Still from the very beginning of the reform, pension insurance companies in Estonia were allowed to establish portfolios with different risk profile. The legislation makes the construction of conservative type of asset portfolio as compulsory but at the same time gives the option for structuring balanced and aggressive portfolios as well. The basic difference among the portfolio types comes from the investments in variable income instruments. Initially, investment regulations were quite severe. Conservative funds were not allowed to invest in variable income instruments at all. Balanced or medium-risk funds were given the option to invest up to 25% of their assets in equities and aggressive or high-risk funds used to invest up to 50% in shares. So, in the very initial stage of the reform 15 different second pillar funds were established – 6 conservative, 3 balanced and 6 aggressive. The investment limits were gradually relaxed during the years and currently conservative pension portfolios may contain up to 10% of their assets in variable income instruments, balanced ones – up to 50% and the aggressive portfolios can be structured with a 100% investment in shares and similar instruments. In 2021 another reform was introduced trying to make second pillar insurance more flexible. Insured individuals were granted the option of the so called "pension investment account". The basic purpose of the account is to allow Estonians to save for their future pension benefit but at the same time to personally determine the way the accumulated resources are invested. At the same time insured individuals were given the option to withdraw their resources from the second pillar and even to stop contributing into the pension fund. By default, all young individuals who enter the labor market should join the second pillar funds but they could rethink and stop contributing at a certain stage of their professional career. The new pension legislation in the country allows insured individuals to decide what exactly to do with the accumulated resources at the date of retirement. Undoubtfully, the new laws bring more freedom to the insured individuals but at the same time they raise the responsibility of the Estonians as well.

1.3 Slovakia

The pension system in Slovakia was reformed in 2005. Following the model proposed by the World Bank, Slovakian government introduced second and third pillars that function on fully funded principle. Initially, the second pillar is mandatory for those individuals born after 1983 and voluntary for all individuals who were in the social security before 2005. The contribution rate was fixed at 9% which makes Slovakian contribution rate for the second pillar pension funds the highest one among the countries in CEE region. The multifund system was introduced in the very beginning as pension companies were allowed to structure three different portfolio of assets: conservative, balanced and aggressive. In 2012 a forth, different type of asset portfolio was established – index fund, which is supposed to be managed passively. Also, since 2012 pension companies have been obliged to structure and offer the insured individuals conservative and aggressive pension funds but also, have been allowed to structure as many funds as they wish. After the financial crisis of 2008 some important changes were made to the system concerning the fully funded components. First, the contribution rate was reduced to 4%

in 2012[3] and second, the new insured individuals were allowed to opt out of the second pillar of the system. In this way pension insurance in the second pillar became voluntary. The contribution rate started to increase by 0.25% per year from 1st of January 2017 and it is expected to reach 6% in 2024. The mandatory insurance into the second pillar was renewed in 2022 when some other important changes were made in the pension legislation. First, persons under 40 years of age who have started to work for the first time, mandatory join the second pillar funds with the option to leave the system within two years from the entry. Second, individuals who start working for the first time, by default, begin to pay their contributions into the index fund and not to the conservative one which was the default option until now. In addition, individuals under the age of 54 automatically are moved into the index fund from the conservative one. At the age of 54 they are gradually transferred into the lower risk portfolios. The basic reason is that conservative funds were not able to achieve satisfactory return for the insured individuals in the last decade. Investments in variable income instruments are expected to be more profitable for individuals with long investment horizon which is in line with the financial theory. Thus, after many reforms during the last two decades, the Slovakian pension system continues to rely on mixed pension insurance that combines pay-as-you-go and fully funded principle. The government is trying to ensure that the system is enough flexible to respond to the interests of the different groups of working individuals.

1.4 Romania

Romanian pension system was reformed in 2008. Similar to the other countries in CEE region, it was transformed from purely pay-as-you-go system into a three-pillar structure with second mandatory and third voluntary pillars that embrace fully funded principle. At the start of the reform the second pillar is compulsory only for individuals under 35 years and voluntary for those between 35 and 45 years. The contribution is 2% of the insurable income and it was carved out from the contribution due for the first pillar of the system. Then, it was raised to 6%. The operated schemes are defined contribution and pension insurance companies are allowed to structure just one portfolio of assets, so there is no multifund system and in this sense the system is similar to the one in Bulgaria.

The pension reforms in the CEE region have been quite dynamic in the last 20 years. Most of the countries followed the model proposed by the World Bank and transformed their pension systems into a multi-column model that combines pay-as-you-go and fully funded principles. However, the reforms undertaken were not straightforward. After the initial years of strong support towards the fully funded components, after 2008 many of the countries accomplished changes that expressed indecisiveness towards further development of pension insurance based on a capital accumulation. The strong inflation of 2022 put another issue of whether pension funds will succeed in supporting the pay-as-you-go structures in the long term. The researched pension systems in the current paper could be divided into two groups – Estonia and Slovakia from one hand and Bulgaria and Romania from the other. The first two countries were more active in the reforms made over the years and were able to change pension legislation

[3] OECD (2021), Pensions at a Glance – Slovak Republic

significantly during the last decade. They were able to introduce multifund system in pension insurance thus giving an important option for the insured individuals to choose the risk profile of their investment portfolio. The second group of countries (Bulgaria and Romania) were more conservative in adopting further changes after the initial reforms. They stick to the model assumed in the 2000's and didn't assume any significant transformation in the next years. The only exceptions concern the frozen contribution rate which was not raised in accordance with the initial plan and the possibility of the insured individuals to opt out of the second pillar (which concerns only Bulgarian pension system). In the following part of the paper, it is investigated which group of countries was able to protect the interests of the insured individuals to a greater extent. The research concerns the yield realized by the different pension funds and its comparison with the inflation rate for the last 10 years. The results could be used for some further reforms in the field of pension insurance.

2. Investment performance of the second pillar pension funds in Estonia, Slovakia, Romania and Bulgaria and the impact of the inflation rate

The realized yield by pension funds that operate defined contribution pension schemes directly affects the amount of the pension benefit received by the insured individuals. From this point of view, future retirees bear significant investment risk. It deserves mentioning that for those insured individuals that contribute into defined benefit pension plans, the situation is different since the investment risk there is born by the company-sponsor of the scheme, which in most of the cases is the employer of the insured individuals. The second pillar pension funds in Bulgaria, Estonia, Slovakia and Romania are structured in a similar way when it comes to their investment activity. The only significant difference is the availability of multifund system in Estonia and Slovakia. In theory, it is expected that individuals with a long investment horizon could benefit from portfolio of assets in which variable income instruments have predominant share. On the other side, those individuals whose retirement is coming close could take advantage of a portfolio of assets in which fixed income instruments dominate. So, the difference between the current age of an insured individual and the date of retirement is of particular significance when it comes to a proper investment of defined contribution pension schemes. It is interesting to investigate the behavior of the different portfolios in different time frames. The last ten-year period between 2013 and 2023 is very intriguing because it embraces years of extremely low interest rates and then a period of high inflation. How were pension funds in CEE countries able to manage this situation from an investment point of view is very important both for the insured individuals and for the policymakers who have the responsibility for all of the pillars of the pension system.

The investment performance of the pension funds in the above mentioned countries was examined by taking into account the realized yield by three of the funds that operate at the Estonian market, three of the funds that function on the Slovakian pension system and all of the funds that exist on the Romanian and Bulgarian market. The Estonian market is represented by the following funds: Luminor, SEB and LHV. Swedbank pension funds are excluded because they constantly change the risk profile of the managed portfolios following the change of the

age of the insured individuals. In this way the investment performance cannot be attributed to a portfolio structure with a certain risk level, which makes them unsuitable for the aims of the current research. The other pension company excluded from the research is Tulleva which have not operated for the whole investigated period. The Slovakian market is represented by NN, Allianz and VUB since these are funds that have been in operation for the whole researched period. Romanian pension funds are six and these are funds that have existed for the whole period between 2013 and 2023 and Bulgarian pension funds are nine. It is also important to note that each of the Estonian pension funds is represented by three separate portfolios with different risk profile – conservative, balanced and aggressive and Slovakian pension companies are represented by four different portfolios – conservative, balanced, aggressive and one that follows market index. Each of the Romanian and Bulgarian pension companies operate one portfolio of assets.

Table 1. Realized yield by Estonian pension funds for the period 06.2013 – 06.2023[4].

Pension fund[5]	Portfolio risk profile	Annual yield for the period 06.2013 – 06.2023	Annual inflation rate for the period 06.2013 – 06.2023	Real annual yield for the period 06.2013 – 06.2023
SEB	Conservative	-0.46%	4.20%	-4.48%
	Balanced	1.07%		-3.00%
	Aggressive	5.17%		0.93%
Luminor	Conservative	0.17%		-3.87%
	Balanced	1.41%		-2.68%
	Aggressive	5.46%		1.21%
LHV	Conservative	0.82%		-3.24%
	Balanced	2.85%		-1.29%
	Aggressive	4.53%		0.31%

Source: https://www.pensionikeskus.ee/en; own calculations

For the last decade Estonian second pillar pension funds have had similar performance in terms of realized yield. The results confirm the expectations that aggressive portfolios can achieve the highest rate of return in the long term. For the observed period the funds that invest the highest proportion of their assets in variable income instruments are not only leaders in terms of yield, but they are the only ones that were able to fully compensate insured individuals for the lost purchasing power of money. The positive real rate of return is a proof that long term investors should not stick to instruments whose yield is secure and not volatile in short term, because the inflation rate could easily exceed the achieved nominal yield and make insured individuals losers in prolong period of time.

Table 2. Realized yield by Slovakian pension funds for the period 06.2013 – 06.2023.

[4] The estimated real yield is achieved by Fisher formula (1 + nominal yield)/(1+ inflation rate) -1

[5] The investment performance of the following Estonian pension funds is shown:
conservative portfolio types – SEB Conservative pension fund; Luminor C pension fund; Pension fund LHV XS;
balanced portfolio types – SEB Optimal pension fund; Luminor B pension fund; Pension fund LHV M;
aggressive portfolio types – SEB Energetic pension fund; Luminor A plus pension fund; Pension fund LHV XL

Pension fund[6]	Portfolio risk profile	Annual yield for the period 06.2013 – 06.2023	Annual inflation rate for the period 06.2013 – 06.2023	Real annual yield for the period 06.2013 – 06.2023
Allianz	Conservative	0.30%	3.30%	-2.91%
	Aggressive	7.77%		4.32%
NN	Conservative	0.14%		-3.07%
	Balanced	2.96%		-0.33%
	Aggressive	4.55%		1.21%
	Index	9.06%		5.58%
VUB	Conservative	0.72%		-2.50%
	Balanced	3.67%		0.35%
	Aggressive	5.74%		2.36%
	Index	9.70%		6.20%

Source: https://nbs.sk/en/; own calculations

The investment performance of Slovakian pension funds is another confirmation in favour of variable income portfolios. Conservative portfolios in which dominant share takes fixed income instruments were not able to realize positive real yield for each of the funds investigated. Balanced portfolios reported real return at around zero and only the last two portfolio types – the aggressive ones and those which follow a certain market index achieved a positive real rate of return for the last ten years. It deserves to be noted that yield realized by indexed portfolios far exceeds the one announced by aggressive portfolios. For the observed period passive management techniques demonstrated superiority over active management. The last reforms made in the Slovakian pension system envisage those insured who enter the labour market for the first time to start to contribute into index portfolios by default. Another positive feature of passive management is its low costs, which additionally contribute to the amount accumulated into one's individual account.

Table 3. Realized yield by Romania pension funds for the period 06.2013 – 06.2023.

Pension Fund	Annual yield for the period 06.2013 – 06.2023	Annual inflation rate for the period 06.2013 – 06.2023	Real annual yield for the period 06.2013 – 06.2023
ARIPI	5.83%	3.92%	1.84%
AZT VIITORUL TAU	4.89%		0.94%
BCR	5.73%		1.74%
BRD	5.45%		1.47%
METROPOLITAN LIFE	5.89%		1.89%
NN	5.68%		1.69%
VITAL	5.94%		1.95%

Source: https://asfromania.ro/en/; own calculations

[6] The investment performance of the following pension funds is shown:
conservative portfolio types – GARANT Allianz - Slovenská d.s.s., a.s.; Solid –NN a.s.; KLASIK - VÚB Generali a.s.;
balanced portfolio types – Harmonia –NN a.s.; SMART - VÚB Generali a.s.;
aggressive portfolio types – Progres Allianz - Slovenská d.s.s., a.s.; Dynamika –NN a.s.; Profit - VÚB Generali a.s.;
index portfolio types – Index Global –NN a.s.; INDEX - VÚB Generali a.s.;

Romanian pension funds are allowed to manage only one portfolio of assets. Towards the end of the observed period the structured portfolios contain mostly government securities (at around 60%) and corporate equities (at around 20%). The yield estimated as a change in one pension unit is positive and exceeds the inflation rate for the whole period. To a certain extent this is a surprising result, bearing in mind the proportion of government bonds in the managed portfolios and the significant drop in the market evaluation of all government securities for the last year. However, Romanian pension funds were able to compensate the negative performance in 2022 with the yield realized previous years and, in this way, to preserve the value of savings even in real terms. It deserves noting that in some cases long term investors can use discounted cash flow method if bonds are held until maturity. In this way they can present a more just picture of their assets. However, if pension funds need to liquidate part of their holdings in bonds by selling them at a market price, they surely mislead the public by using discounted cash flows as an evaluation technique.

Table 4. Realized yield by Bulgarian pension funds for the period 06.2013 – 06.2023.

Universal Pension Fund	Annual yield for the period 06.2013 – 06.2023	Annual inflation rate for the period 06.2013 – 06.2023	Real annual yield for the period 06.2013 – 06.2023
Doverie	1.78%	2.67%	-0.86%
Saglasie	2.94%		0.26%
DSK Rodina	1.98%		-0.67%
Allianz-Bulgaria	1.87%		-0.78%
OBB	1.96%		-0.69%
CCB Sila	3.30%		0.61%
Budeshte	1.43%		-1.21%
Toplina	2.04%		-0.61%
POI	1.99%		-0.66%

Source: www.fsc.bg; own calculations

Bulgarian pension funds achieved real rate of return at around zero for the period between 06.2013 – 06.2023. Two of the funds (Saglasie and CCB Sila) realized a positive yield (a little higher than 0) and the other seven funds – negative one (between 0 and -1% annually). The multifund system is not introduced in Bulgarian practice and second pillar pension funds are allowed to structure and manage only one portfolio of assets. The managed portfolios can be classified as balanced since they contain at around 50% government securities but also a significant share of corporate bonds and equities. The basic reason for the negative real yield is the loss realized by all of the funds in 2022. The unfavorable results in the last year are due to the significant drop in the market prices of all government securities held in the pension funds. The assumed approach of marked to market evaluation resulted in current devaluation of these securities. However, universal pension funds in Bulgaria are not forced to sell their holdings in government bonds and the reported losses currently are only in accounting terms due to the assumed methods of evaluation. That's why it is expected the negative results to be compensated relatively easily in the next few years.

The investment performance of the pension funds in all researched countries demonstrates once again the significance of inflation risk for fully funded pension schemes. These types of schemes were introduced in most of the CEE countries two decades ago and they have always been seen as a supportive mechanism for the traditional pay-as-you-go pillars. The negative trends of population aging and the expected strong pressure on public finances in the near future continue to justify their presence in the pension practice. However, accumulating resources in the long term faces the severe risk of continuous loss of purchasing power of the accrued funds. The extremely loose monetary policy stance followed by the major central banks in the last decade seriously threatens the sustainability of the capital pension schemes. One of the basic aims of pension funds is to achieve yield that exceeds inflation rate in the long term. The combination of extremely low interest rates (typical for the last decade) and inflation rate considerably higher than the one targeted by the central banks (seen in 2022) is devastating for the incentives of the insured individuals to support the existence of second pillar pension funds. The investment results of the pension funds in Estonia, Slovakia, Romania and Bulgaria confirm the unreliability of investments in government bonds for securing adequate pension benefit in more distant future. Pension funds around the World are recognized mostly as conservative investors and government securities have always been a significant part of their managed portfolios. However, the last decade undoubtedly shows that investments in low volatile instruments in the short term almost surely lose the battle with inflation in the long term. Those countries that were able to establish flexible investment rules (Estonia and Slovakia) protected more efficiently the resources of future retirees. By investing in corporate equities and bonds (aggressive or index portfolios in Estonia and Slovakia), pension funds were able to achieve real positive yield. Those countries that stick to the rule: one portfolio of assets for all insured individuals have been in a far worse position for the last ten years. However, investment in equities brings significant risk in terms of price volatility and insured individuals need to have knowledge and be prepared about it (Pandurska, 2020). Assuming the probability of short-term losses they could raise the chance of protecting the purchasing power of their accumulated funds in the long term. Bulgarian and Romanian pension funds currently lack the opportunity to structure and manage portfolios with different risk profile and this could be detrimental for the savings of the insured individuals in more distant future. The introduction of multifund system could have positive effects especially for those individuals who enter the labor market now. For the people whose investment horizon is short, investments in low volatile instruments should be a prerogative. The stability of the investment must be guaranteed as much as possible during the years just before retirement. In this case, the possibility of structuring portfolio of assets whose duration is short could allow pension managers to better protect the interests of the insured individuals and to avoid the grim scenario of 2022, when the abruptly changed monetary policy of the central banks destroyed significant part of the value of the possessed long term government bonds. The last decade brought another proof that one portfolio of assets cannot suit adequately the interests of the different groups of insured individuals. Investments in the long and in the short term need different tools and policymakers must find the right balance between them. The wish to further develop a fully funded system and its use as a supportive element of the pay-as-you-go pension systems needs an effective change in investment rules

that allows insured individuals to benefit efficiently from their savings regardless of the years left until retirement.

Conclusion

The last decade was quite turbulent for the development of the second pillar pension funds in CEE countries. The extremely low interest rates for almost all of the period put a significant strain on pension managers in their efforts to find suitable investment instruments for the managed portfolios. Traditional instruments like government bonds and bank deposits brought almost no yield. Corporate shares and more risky bonds were an alternative but the existed investment regulations limited the possibility to effectively restructure the asset portfolios. 2022 was the year of the change of the monetary policy followed by the major central banks. The rising inflation rate needed a fast response, and the monetary authorities started a process of interest rate increases. The widely adopted approach of evaluation of government securities - marked to market, resulted in a significant drop of the possessed securities and reported losses for the pension funds. At the same time the observed high inflation rate contributed additionally to the poor results for that year. The basic lessons of the last decade for the pension fund industry are: 1. flexibility in investments is of utmost priority; 2. government bonds are not secure instrument even in short term if the adopted approach of their evaluation is marked to market; 3. pension funds with long duration of their liabilities and no pressure of selling fixed income securities must use alternative approach of evaluation.

All these implications from the last decade are important signs that must be considered from the policymakers in their efforts to build strong and robust second pillar into the pension systems.

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