Conference Proceedings

DOKBAT

14th Annual International Bata Conference

for Ph.D. Students and Young Researchers

DOKBAT

International Bata Conference

Tomas Bata University in Zlín
Faculty of Management and Economics
Mostní 5139 – Zlín, 760 01
Czech Republic

THE ROLE OF THE PENSION SYSTEM IN THE MODERN WORLD

Raman Herasimau

Abstract

On the base of previous researches and papers, this article shows importance of pension system. Were shown three different pension systems from Europe and Asia. Some systems are young and some are old with long history, but all of them unite strong relationship with other spheres of national economy. In this article, we look at historical improvement of different pension system, compare it and also find similarities. For the purpose of the article author uses historical method to show development of countries pension systems, graphical method to better view of current pension systems, analysis, analogy and comparison methods for understanding of the similarities of pension systems, there weaknesses and strengths, why we should use best elements from different systems to create or improve our. Results of the article are that pension system is the great source of investments, the political weapon and the source of social stability of a country, also we answered the question: how important pension system today and why policymakers should take into account best parts of different pension models and don't blindly copy systems, as it was in 80th. That's why government should create as autonomic system without "hand control" as it's possible.

Key words: Funded system, Kazakhstan, PAYG, pension models, pension system, scope of government, Slovakia, social security, Sweden, JEL Classification: H11, H55, H75, N33, N34, N35.

1. INTRODUCTION

Today most of countries faced with the problem of ageing population, and according to UN's report this process will continue in future 50 years UN World population ageing (2015), so decline of population, decline of fertility and growth of old people create a great challenge to future work productivity, unemployment rate, modern and future social security system and pension system as it part.

The obvious question is "How improve this situation?" Many countries tried to change their systems through the copy others, for example in the 80th of 20 century was very popular Chile's model. It is fully funded system without any basic part. But soon, countries went back to their systems or reformed new one because they didn't take into account specific of social and economic situation in every single country. Tendency of implementation should be treated with much more caution than policymakers think. Sudén (2004) says that it is a trend to introduce individual accounts as part of both public and occupational schemes, but it's not a trend it is necessity to have in system individual accounts, first of all it's easier to take into account person's contributions and second it's instrument for stimulating of work productivity.

Presently we can talk about how effectively build three-pillar pension system which component should prevail for this or that country as said Orszag and Stiglitz (1999) "The complexity of optimal pension policy should caution us against believing that a similar set of recommendations would be appropriate in countries ranging from Argentina to Azerbaijan, from China to Costa Rica, from Sierra Leone to Sweden. In response to the question "What should we do about our pension system?" we should be wary of offering a single answer across the globe". That's why in this article author tries to answer the following questions: why pension system is important, why the pension provision is state responsibility and analyze 3 model from 3 different countries Sweden, Slovakia and Kazakhstan.

2. IMPORTANCE OF PENSION SYSTEM

Many economists from all over the world agree, that pension system is important, e.g Rievajová (2004) says that reforms of pension system have a first place in political programs, because of market can't solve in the right way problems of some live needs or provide person on the retirement period. Fedotov (2007) highlight the importance in the framework of organizational structure. As any system pension has it financial mechanism, and how it works qualitatively depend the whole system. Cremer and Pestieau (2000) look at the importance of pension system from the side of political decision making. As we there are a lot of different opinions about pension system, but all of them highlight importance of it.

For the purpose of this article we should understand what does mean: "system", "scheme", "program", - because in many articles authors confused it. Today exist 3 models of pension system: Solidarity pension system (PAYG), Accumulative pension system (Funded) and mixed pension system (combination of first two systems). Based on Dahl's dictionary system is the order of the arrangement of parts of the whole, the predetermined structure, the course of something, in a sequential, coherent order. Focuse on mentioned definition pension system is a system of sequential and coherent elements (legislative acts, institutions, firms, households etc.) and it parts which work in the common social-economic environment and aimed to financing expenses of pension provision of citizens through pension schemes and programs. Therefore, for best understanding pension system say that scheme – is a set of parts which provide maximal contentment for individual or group of individuals, in turn, program detail scheme e.g. investment plans, investment strategy, funds etc.

Solidarity pension system (PAYG) means that person start to get pension from the moment of his/her retirement age, also it means that current working generation pays to current retirement generation. However, some authors understand PAYG system not as distribution mechanism but as public/ state accumulative fund, which accumulate money and then pay it to pensioners Orszag, Stiglitz (1999). That is why should say that PAYG is only distribution mechanism nothing more. The main advantage of this type is that all people have guarantee pension to the rest of their lives. It creates social stability and decrease worry about future life, at the same time that type of pension system has one great problem which is also today's tendency – growth of population, if population of the country decrease system becomes instability and usually this leads first to increasing of deductions to the system and then to deficit of state pension fund. From the first implementation of solidarity (Beveridge) pension system in 1942 it has undergone changes and include in itself some kind accumulative component – notional. All modern PAYG systems have this component which means that people have non-financial individual accounts Hagen (2016) where contribute their payments, but at the same time real money pays to current retirements. Notional component increase individuals' responsibility for future pension. Notional component is important especially for occupational pensions, because usually it indexed to wage growth and in contrast to funded pension more stable in long-run period. Today hardly find pure PAYG system in Europe it is only Republic of Belarus has pure PAYG system1 and in Asia it is Japan.

Fully funded (pure) pension system also exists in several countries and the most famous is Chili. Such type of system has several advantages: high level of income, commonly accumulated money invested in different instruments shares, companies' bonds, government bonds, securities, commodities what in the end gives good profit; every person responsible for it own future pension life, this is create a strong relationship between today work and future life, increase wish to work, decrease unemployment; attract citizens to investment process; pure funded system less influenced by political cycles in the country, etc.

But at the same time funded system has disadvantages such as high investment risks, which connected with crisis of world economy, and either people can lost all money; poverty for the reason of own irresponsibility or health problems; as we said system less influenced by political cycles, but no one can protect on 100% from political cycles in other countries, from nationalization for example, or wars, or other social upheaval.

As we see both systems have advantages and disadvantages, society can use one of this system and worry about future problems or use best features from both and worry much more less. Mixed pension system is the most used and less risky system. Official history of mixed pension system began from 1994 when was proclaimed three-pillar doctrine by World Bank M. Leimgruber (2012). Three-pillar doctrine take their roots from Switzerland system of 1960s, but we can find earlier mentions of such kind of system in Sweden where first pension system was discussed in 1907 and accepted in 1913. First system was funded after that it added solidarity component and then during whole period of reforms until the 1998 when pension system took modern look, it changed by ways of financing and strengthening or weakening of PAYG or funded component.

Lindbeck and Person (2003) give several arguments for introducing a mandatory system as necessity component of any system: to prevent free-riders; prevent myopic from ending up in poverty in old age; the market for annuities is rather undeveloped, due, for instance, to adverse selection; PAYG introduces a new type of "asset" a pension claim whose yield is tied to the growth in the country's tax base, and this provides an opportunity for better portfolio diversification; and also it a sort of gift to itself, because generation t fear discontinue finance generation t-1 since they would expect generation t+1 will do the same for them, another distributional argument that generation t would like to be a part of the best future live of generation t+1, because for the last century the quality of life seriously increased, hence, in future we can expect the same trend.

There are different methods for modeling pension system, e.g. Lindbeck and Person (2003) highlight some basic principles of pension reform base on generic overlapping generations. Such model focuses on real economic transactions (consumption and labor supply) and the distribution of income among generations. According to that they proved that system with notional component more financial stable then just PAYG or funded. We should mention that system is financial stable if capital value of expected pension payments more or equal to the capital value of the revenues to the system from contributions (in aggregate). For

[1] There are funded component but it so small that cover no more than 1-2% of population of the country

intergeneration fairness and financial stability, Sinn (2000) suggested increasing the accumulation of physical capital to compensate the fall of human capital accumulation by the reason of low fertility of current generation. It’s some kind of payment for decision to have less children. As was said above like any system it has risks. There are can be not only fluctuations of growth rate of the tax base or market rate, but also political risks. Political risks is lower in the country with high decentralization of system and with strong property rights. At the same time decentralization connects with higher administrative costs of decentralize privet funds. That’s why for decreasing and diversification political risk better to have mixed system. If we have risks in the system, also we should have opportunity to reduce them. There are three dimensions of distribute pension systems’ risks: among generations, within generations and over an individual’s life cycle. Issues of intergenerational risk sharing are particularly apparent in the context of PAYG. In such a system of the defined-contribution type, hence with a fixed contribution rate, fluctuations in the real wage rate w influence the disposable income of both workers and contemporary retirees in the same direction Lindbeck and Person (2003).

While defined benefit systems (regardless of whether they are pay-as-you-go or fully funded) do not contribute directly to risk sharing among generations, they can certainly function as a risk-sharing device within generations. For instance, in the case of a basic pension, fluctuations in earnings do not result in corresponding fluctuations in pensions Storesletten, Telmer, Yaron (1999). The risks sharing properties of the pension system are then similar to those of a progressive income tax. Due to specific institutional arrangements, however, certain elements in defined benefit systems in the real world accentuate rather than mitigate intragenerational income risk. One example is when the pension is tied to earnings during the x last years of work, rather than to lifetime earnings. Individuals who turn out to have low incomes late in life will then suffer a low income when retired. Another type of intragenerational income risk is associated with family dissolution. Historically, non-actuarial pension systems have included simple rules for allotting incomes among family members after the breakup of a family, in the form of pensions to widows and their children. By contrast, in a (quasi-) actuarial system with individual accounts, the pension is closely tied to the individual income earner. Without special arrangements, income risk due to the dissolution of a family is therefore larger in systems with individual accounts than in many existing pension systems. The family member with the lower market income, usually the woman, would therefore be exposed to a higher risk in a pension system with individual accounts. One remedy might be to give each spouse a property right to the other's pension wealth. This is straightforward in the case of formal marriages, where similar arrangements are already in place for other types of property, but is more difficult to implement in the case of cohabitation Lindbeck and Person (2003).

Pension systems may redistribute not only income but also income risk over the life cycle. In a defined contribution system, there is uncertainty concerning wage rate ($\tilde{w}$), while the fixed contribution rate (τ) may be known. There is also uncertainty about the return on contributions, since real interest rate (R) and rate of change in the tax base (G) are not guaranteed in advance. By contrast, in a defined benefit system, there is uncertainty not only about wage rate ($\tilde{w}$) but also about fixed contribution rate (τ), since the latter has to be adjusted to achieve budget balance. On the other hand, the pension benefit may be known in advance. Indeed, with a fixed benefit, there is no uncertainty at all concerning the pension, while in a defined benefit system with a fixed replacement rate, there is uncertainty about the pension behind the veil of ignorance solely as a result of uncertainty about wage rate ($\tilde{w}$). All this means that a pension reform represented by a shift from a defined benefit system to a defined contribution system will remove one source of uncertainty from the first period of an individual's life (uncertainty about τ), but introduce a new source of uncertainty in the second period of life (uncertainty about R or G). It is difficult to say a priori whether such a shift in the distribution of risk elements over the life cycle is favorable or not. Presumably this depends not only on the assumed utility function, but also on the properties of the stochastic processes underlying the shocks. Lindbeck and Person (2003).

According to the above we can answer the question “Is pension system important” – yes. It is the most important mechanism of stable social and economic situation in the country for the next reasons: payments in pension system directly connected with level of inflation, growth rate of wage, market rate and government expenditures, for all this indicators state could influence, so any problem in one of them reflects on the pension system and at last on social stability. The second reason, as said above that pension system is a some kind of “asset” which can be expressed as risk/return, in this case state should decide how to share, diversify or grade it, between one or several generations, how to improve not only pensioners’ level of life but don’t hurt future generations.

We took a view on the importance of pension system but we have another question “Should government provide it, or send it into “free swimming” in the sea of financial market?”

3. IS PENSION PROVISION A STATE RESPONSIBILITY?

As Suden (2004), Lindbeck and Person (2003) mentioned that today there is a strong trend for individualization of pension system through the individual accounts, different investment programs etc. In 2003 journal The Economist published a picture of state pensions in Europe which called “The crumbling pillars of old age” this picture shows that first and second pillars non-stable and only the third pillar respectively individual is stable, but in a five years we got financial crisis of 2008-2009 years. Because of that only in USA pension funds lost 200 billion dollars only from credit crisis and got great lost from fall of prices on share market. In this case, who should compensated lost for pensioners especially if person would went on retirement in near future? Even for this purpose, countries should have diversified pension system and give guarantees to people to help in the case of crisis.

As we said above there are three systems and many different models, so let us look at the most interesting.

Modigliani and Ceprini (2000) suggested the model for risk solving problem, according to author’s opinion this model is the most fair. The main idea that this model is partly funded, actuarially fair, that is mean that marginal return on contributions is equal to market interest rate, and with only one fund with wide investing portfolio (securities, stock-market index, bonds etc.). Inasmuch as there is only one fund the risk of many different funds, with different returns is avoided – at the cost of abolishing portfolio choice according to individual preferences. Intergenerational risk is excluded by the guaranteed real rate of return, for the Modiliani and Ceprini suggestion it is five percent per year. The annuitization risk of retirees (indeed, inter-cohort risk) is thereby also removed. The rate of return is achieved through a swap between the fund and the Treasury; in exchange for the return derived from the fund's portfolio, the Treasury pays a fixed real return.

This type of model used by the Republic of Kazakhstan. Unified National Pension Fund (Figure 1).

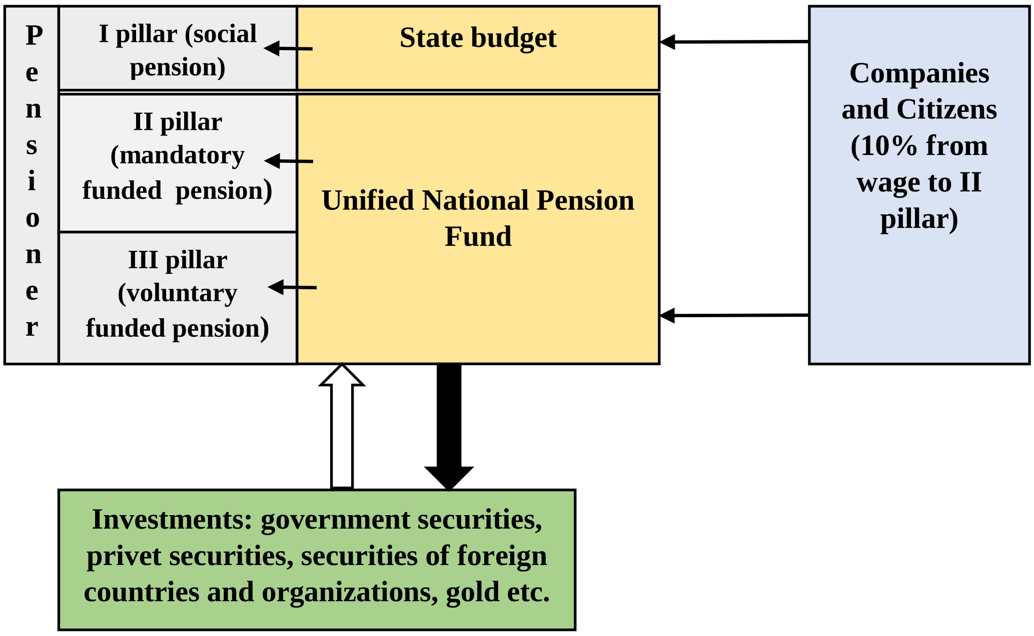

Figure 1. Model of Kazakhstan pension system. Source: Author. Based on [17].

As we see, the role of single fund is performed by the Unified national pension fund, in this model three pillars belong to state. State guarantee security and return of money. State budget pay social pension for every one, and UNPF accumulated part. The second pillar is mandatory and funded, the third pillar is voluntary and funded too, so this model looks like Modiliani and Ceprini's. If we look at the structure of investment we can see that around 50% invested into government securities, 28% into domestic commercial companies, and 22% invested into other actives like foreign countries securities, gold and other Shayakhmetova and Elshibekova (2014). This model except removing mentioned risks also gives to economy cheap and long money for developing, social stability and remove the problem of choosing fund, plus additional taxes to the budget because, citizens should pay income tax from pension.

Another model used by Slovak Republic. This type of model belong to classical three-pillar doctrine with some specific. The first pillar is PAYG with notional accounts, the second pillar is mandatory but person can choose the fund, if he would like to have higher rate of return then he can choose so-called non-guarantee fund, this funds invest into shares, indexes, bonds, commodities and so on, also depositor can lose all money during the financial crisis. In this fund marginal interest rate equal to market interest rate so it's actuarially fair Škrovánková and Simonka (2015). At the same time person can choose guarantee fund, in this case depositor protected by the law from losing money also he has guarantee interest rate level. And finally, the third pillar is voluntary and non-guarantee fund. Person can open additional pension account and choose a big varies of investment programs (Figure 2).

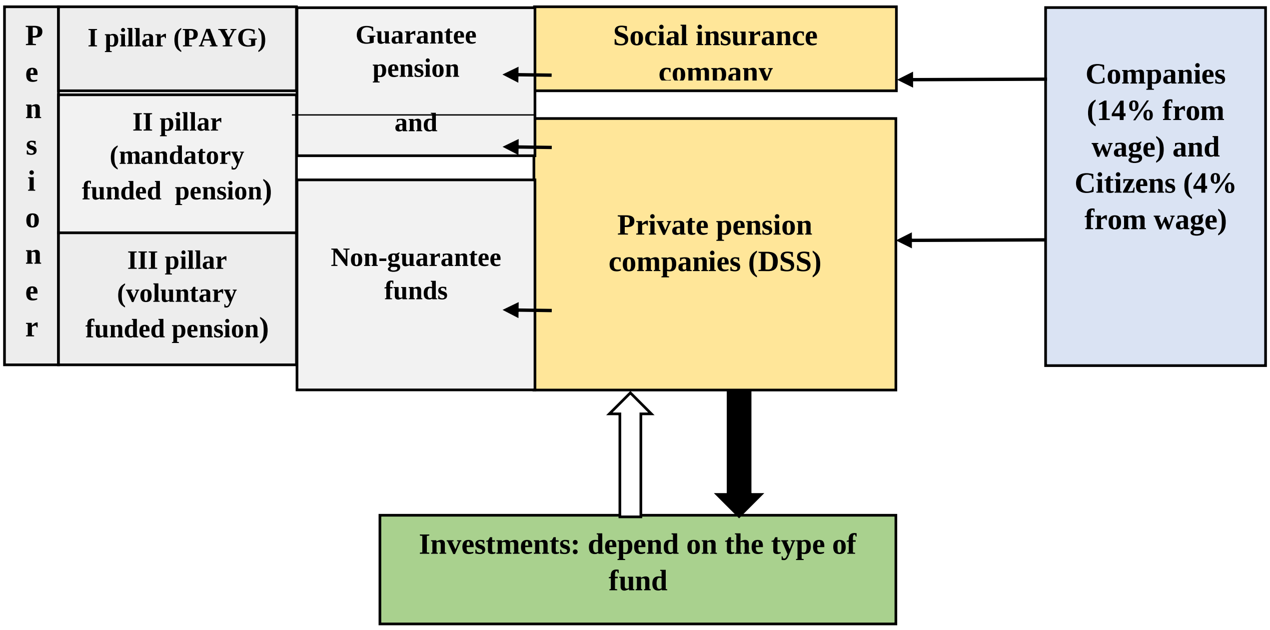

Figure 2. Model of Slovak pension system. Source: Author. Based on [15,18].

This type of model have as intragenerational risks and intergenerational risks, but at the same time much smaller political risk as Kazakhstan's model has.

Both discussed models is quit young, because reforms started in 1990th and new system toughed only one generation, but more interesting the swedish pension system which was formed in 1913 and has been improving until the 1990th. The Sweden pension system consist of three „pillars" in reality it's pillars inside the pillars. In authors oppinion this system could formed only in scandinavic country in the result of long negotiating process between different parties, trade unions and labor unions Kangas, Lundberg and Ploug (2010). The first pillar is the most ineresting it divides on three parts: the minimum guarantee pension, the NDC component and premium pension.

The minimum guarantee pension is a basic protection for everyone and that pension indexed to prices, but in case of Sweden, the role of the it decrease in times of economic growth in contrast to many other countries where basic pension is very small in all periods of economic development. There are some discussions that it disregards income from the occupational pension and low-paid workers becomes disincentive to work around the retirement. Should to add that this part financed from taxes to budget.

Novation of new pension system of Sweden is non-financial defined contribution (NDC) this the main part of pension. This notional component paid by employer and employee and finance current pensioners. The rate of return in the NDC plan is determined by the per capita wage growth. The NDC was designed to bring stability into the pension system. There are several mechanisms for that. The first one links with life expectancy through dividing the person's balance of notional account by an annuity divisor. If life expectancy continues to increase, future cohorts will receive less monthly pension, because earned rights will distributed across more years. The second mechanism is automatic stabilizer that abandons indexation when financial stability of the system under threat. It activates when ratio of the system's assets to its liabilities falls below a certain threshold. Because of automatic work the system doesn't need political intervention, which minimizes the risk of political manipulations.

Finally, the third part of the first pillar is premium pension. It is a fully funded mandatory part formed from 2.5% from earnings on individual accounts. The accumulated money can be invested in five funds or choose default fund suggested by government. The role of administrator performs clearinghouse. The clearinghouse model was chosen to keep administrative costs down by drawing on economies of scale in administration Suden (2004). Main aims of premium pension part are increase overall savings, the policy-makers wanted to allow participants to take account of the higher return in the capital markets as well as to tailor part of their pension to their risk preferences and avoiding instability in other parts of pension system, as an individual benefit's are directly financed by own accumulated contributions. The second pillar is occupational pensions. In the past, these pensions were DB, but now they are DC or mixed. This type of pension financed by employer according to agreements with labor union. Occupational pension linked and depend on the level of wage and typically rises with income. Occupational pension increase if the rate of return in funded part exceeds the rate of return in the NDC. And finally third pillar is private pension. It is savings in commercial pension funds which limited only by contract conditions between person and fund. Thereby, whole pension consist of next parts: I pillar ≈55%, II pillar ≈30% and III pillar ≈15% Hagen (2016).

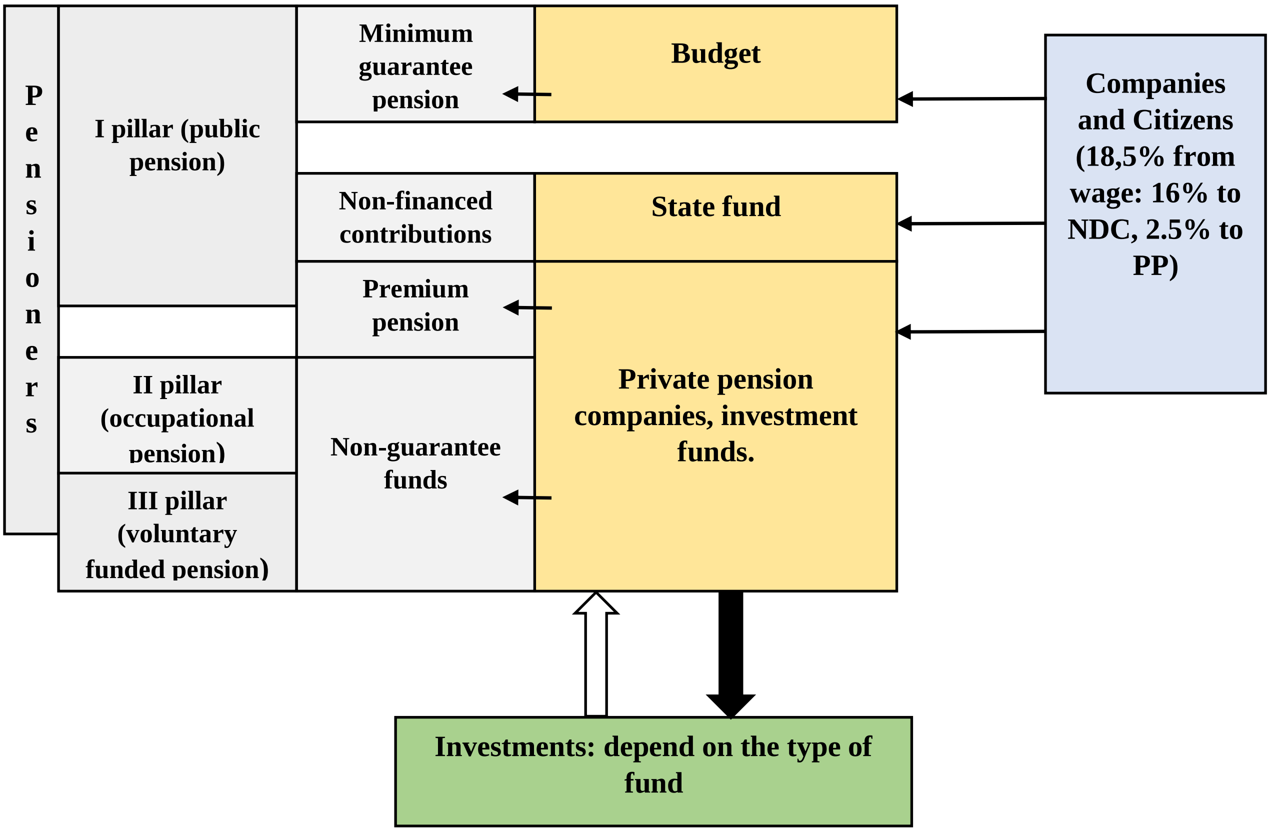

Figure 3. Model of Swedish pension system. Source: Author. Based on [2,4].

4. CONCLUSION

In the framework of the article we show that pension system is on of the most important component of social politic, it could a political weapon due to the growth of old population, it keeps a lot of risks and in case of mismanagement it could hurt several generations. At the same time pension is a source of great investment resources for economy of the country, it is mechanism of stimulating people to work and economy to growth.

Pension provision is the responsibility of state, as we see state regulate and guarantee pensions through different mechanism: guarantee minimum pensions, guarantee funds, non-financed contributions or to privatization whole system and control all three pillars, in any case more than 50% of pension fall on state.

If Kazakhstan took onus for pension provision of citizens Slovakia and Sweden do not work in this way.

We should mentioned that Slovak pension system is young and results we can see only in 10-15 years, but it will has the same questions about individuals making active investment decisions and heuristic choice. Every pension system should take into account individualism of country if Kazakhstan has big share of state companies in GDP then it preferable to have pension system under the control of state, because state knows better where it could invest, and at the same time can give investment projects to society. If Slovakia attracts international companies than it should be sure that citizens will be protected in the future. Sweden integrate inside their system as strong social defense as profitable additional part. For authors opinion Sweden pension system is unique not only the structure but mostly of the process of reforming and improvement during last century.

As a result policymakers mustn't blindly copy experience of other country, even in a framework of EU where there are common indicators of development region, where exist deeply penetration economics into each other, we still can't fully implement e.g. Swedish model into Slovakia as cann't implement Slovakian model into Kazakhstan. But we should to take best parts of different models and create something new.

Acknowledgements

For helpful comments and suggestions, I thank professor Erika Pastoraková from Economic university of Bratislava.

Disclosure statement

No potential conflict of interest was reported by the author.

References

Cremer H, Pestieau P. (2000). Reforming our pension system: Is it a demographic, financial or political problem? *European economic review, 44, 974-983.* Amsterdam: Elsevier B.V. https://doi.org/10.1016/S0014-2921(99)00054-9

Engstrom S., Westerberg A. (2003). Which individuals make active investment decisions in the new Swedish pension system. *Journal of Pension Economics and Finance, 2(03).* Cambridge: Cambridge University Press.

Fedotov D.Y. (2007). Structure of financial mechanism of Russian pension system. *Bulletin of Baikal State University, 1(51), 5-8.* Irkutsk: Baikal State University.

Hagen J. (2016) Pension principles in the Swedish pension system. *Scandinavian economic history review, 2017, 1–23.*

Hedesstrom T.M., Svedsater H. Garling T. (2007). Determinants of the Use of Heuristic Choice Rules in the Swedish Premium Pension Scheme an Internet-Based Survey. *Journal of Economic Psychology, 28, 113-126.*Amsterdam: Elsevier B.V. https://doi.org/10.1016/j.joep.2006.04.002

Leimgruber M. (2012). The historical roots of a diffusion process The three-pillar doctrine and European pension debates (1972-1994). *Global Social Police, 12(1), 24-44.* London: SAGE Publications Ltd.

Lindbeck, A., Persson, M. (2003). The gains from pension reform. *Journal of Economic Literature, 41(1), 74–112.* NY: JSTOR. https://doi.org/10.1257/.41.1.74

Modigliani F., Ceprini M.L. (2002). A Common European Pension System. Capitalization: Privatization or Risk Sharing Through a Common Portfolio? *Wirtschaftspolitische Blätter, 49.2002,4, 385-417.* Wien: Manz.

Orszag P.R., Stiglitz J.E. (1999). Rethinking Pension Reform: Ten myths about social security system. *Working paper.*

Rievajova E. 2004. Sociálne zabezpečenie. Bratislava: Ekonóm.

Shayakhmetova K., Elshibekova K. (2015) Modernization of pension system of the Republic of Kazakhstan. *Herald of International Institute of Economics and Law, 4(21), 20-26.* Kazakhstan: IIEL.

Storesletten, Kjetil, Chris I. Telmer, Amir Yaron. (1999). The Risk-Sharing Implications of Alternative Social Security Arrangements. *Carnegie-Rochester Conf Ser Public Policy 50, pp. 213-59*. Amsterdam: Elsevier B.V. https://doi.org/10.1016/S0167-2231(99)00028-7

Suden A. (2004). How do individual accounts work in the Swedish pension? *Issue in brief, 22, 1–9.* Boston: Boston College.

Sinn Hans-Werner. (1997). The Value of Children and Immigrants in a Pay-As-You-Go Pension System: A Proposal for a Partial Transition to a Funded System. *NBER Work. Paper 6229.* MA: NBER

Škrovánková L., Simonka Z. (2015) Analýza dôchodkového systému v súčasnosti. *Economic review, 44, 205-221.* Bratislava: EUBA.

UN. (2015). World populating ageing. *Report.*

Internet resource. Access data [01.03.2017]. https://www.enpf.kz/ru/o-pensionnoy-sisteme/prosto-o-pensionnoy-sisteme/bazovyy-kurs/index.php?ELEMENT_ID=1907#

Internet resource. Access data [01.03.2017]. http://www.socpoist.sk/tabulka-platenia-poistneho-od-1-januara-2017/55433s

Contact information

Mgr. Raman Herasimau
University of Economics in Bratislava, Faculty of National Economy, Department of Insurance
Address: Dolnozemská cesta 1, Bratislava, Slovakia
Telephone number: +421919220932
E-mail: raman.herasimau@euba.sk
ORCID: 0000-0001-7698-5844

DOI ID: https://www.doi.org/10.7441/dokbat.2018.11