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MASTER'S THESIS (PROJECT)

«*Pension system in Kazakhstan: problems and prospective. Issues of Implementation of the Notional Defined Contribution component into the Pension System of Kazakhstan*»

specialty - «Finance»

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Pension system in Kazakhstan: problems and prospective

Issues of Implementation of the Notional Defined Contribution component into the Pension System of Kazakhstan

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Content

Abstract

The research work describes the current pension system of Kazakhstan, its main issues, performance, adequacy, and working environment. The main milestones of developing the pensions system are shown. The advantage and drawbacks of two type pension systems, such as Pay-as-you-go and cumulative components are analyzed and the current performance of the Unified accumulative pension fund is investigated. The main worldwide coefficients such as pension coverage, investment income of pension fund, government expenses amount, replacement ratio as well as a demographic tendency, and general economic development were analyzed, discussed, and summarized. The analysis of Kazakhstan's pension system allowed to reveal their problems. The result of such analysis transferred into the next step of evolution of the pension system, which already considered by our government – the introduction of the notional defined component into the pension system of Kazakhstan. Generally, it is a relatively recent form of development of the pension system. For the introduction this system the world's best practice on the example of Sweden was reviewed and compared with Kazakhstan's capabilities. Considering that each country in the world has its features of development in an economic and political context, our government should consider at least the following issues of implementation of the notional defined component into the pension system of Kazakhstan: nature of our economy, human welfare, level of social responsibility, and other main factors. The prospective development of the pension system is analyzed and recommendations for further development are designed.

Introduction

The pension system is one of the indicators of social states, the purpose of which is to create conditions for a decent life for all segments of the population. It becomes more and more important in the modern world with population growth and aging. It depends on the government's policy on retirement age, pension contributions, retirement-income system, etc. Also, it depends on the number of factors that vary from country to country. The pension systems of several countries are designed in such a way that they have a positive effect on the social situation of the population, while other countries are at the stage of their constant reform and improvement. The pension system of Kazakhstan at the present stage of development is also subject to changes. In this regard, there is a need to analyze and investigate the current situation of Kazakhstan's pension system for better understanding which changes are effective and which should be further improved. As for now, the pension system in Kazakhstan is presented by the «Unified accumulative pension fund» (hereinafter UAPF), therefore, this work will cover the effectiveness assessment of UAPF. It is obvious, that the pension system of any country is not in the interest only of retirees, but also other stakeholders, such as employers. Because the part of pension expense liabilities can lie on them, which will impact on the debt load of legal entities, and their economic and financial stability as a result.

The pension system of the country is largely determined by the current economic and financial situation both in the world and in the country. The last events in the finance and economy sphere of the Republic of Kazakhstan over the past few years, such as the transition from a "fixed" to a "floating" exchange rate of Tenge, merger and liquidation of Kazakhstan banks, have had an impact on the reduction of state reserves. In this regard, there is a need to study the liquidity of the pension fund, ways to manage depositors' contributions rationally, etc.

One of the main purposes of each pension system is the provision of retirees by the sufficient income in retirement age. This work challenges whether Kazakhstan's pension system can meet this purpose and which

problems exist in the current pension system. The system is the result of the economic crisis in the 1990s, when the need to transform the existing pension system has increased: a gradual transition from a social security distribution system based on generational solidarity PAYGO (Pay-As-You-Go) to an accumulative pension system. In 2018, the accumulative pension system of the Republic of Kazakhstan celebrated its 20th anniversary, which means it has passed exactly half the way of formation. It is generally accepted that the full cycle of the pension system is 40 years, so that at least one generation takes part in it.

Moreover, the Government of the Republic of Kazakhstan decided to introduce the Notional Defined Contribution (NDC) component into the pension system since 2023. This NDC component will help with the elimination of financial instability with continued financing of PAYGO, but using defined contribution (DC) characteristics. There are several features and barriers to the introduction of such an NDC component system in the Republic of Kazakhstan, which will be further discussed in detail.

1. Literature review

As per statistical data from the world bank [1], the world percentage of the population age 65 and above increased from 6.7% in 1997 to 8.7 % in 2017. This key indicator of the population aging effects on the economic, political, and social situation in the country. In this connection, there is a need for a broad understanding of the importance of pension systems for the economic stability of states and the social security of their aging populations. Thereby, more and more researchers, scientists investigate the issues of the pension system, pension reforms, and their implications.

Nowadays, the pension system has several different goals. The British economist Nicholas Barr and American economist Peter Diamond define the following 5 objectives of the pension system: consumption smoothing, poverty relief, insurance (or longevity risk), redistribution, and, possibly, economic growth promotion [2]. These goals should be included in one integrated way of building a pension system. Employees of World Bank and International currency fund argue this fact: the main goal of the pension system is to ensure sufficient, acceptable from the cost point of view, sustainable and reliable pension payments while simultaneously implementing welfare improvement programs, taking into account the specifics of the country [3]. I.e when considering the implementation of changes in the pension system, countries (or institutions) should consider the achievement of all objectives at the same time. Moreover, differences in countries' particular qualities demand for deep consideration of their characteristics, especially at the learning from the experience of other states. A comparison of the different pension systems in the world is not straightforward. As per OECD (Organisation for Economic Co-operation and Development) comments: "Retirement-income regimes are diverse and often involve several different programs. Classifying pension systems and different retirement-income schemes is consequentially difficult." [4] Theoretically, types of pension systems can be classified in various dimensions. Lindbeck&Persson identify three theoretical pension system dimensions:

- Defined contributions (DC) versus defined benefit (DB)
- Fully funded (FF) versus unfunded (UF or pay-as-you-go (PAYG))
- Actuarial versus non-actuarial [5]

The last discussed theme is the choice between a fully funded and PAYG system. PAYG system uses contributions from current workers to pay benefits to current retirees, giving current workers "promises" in return for contributions. This system was designed by Bismarck about 120 years ago. [6] It firstly introduced in Germany [7].

Kazakhstan's pension system transferred from the PAYG system to the Defined Contribution scheme in 1998 [8] on the base of the Chilean model and still valid today.

Most countries (186 out of 192 countries for which information is available) provide pensions in the form of a periodic cash benefit through at least one scheme and often through a combination of different types of contributory and non-contributory schemes. [9] In 72 countries (39 percent of the total number of countries with available information) there are only contributory schemes; The contributory scheme involves the contributions by employee and employer. Contribution rates are higher in the demographically “older” countries and lower in the “younger” countries [10]. As per the World Bank's Pension database, the higher contribution rates are observed in Europe and Central Asia (20-30%). [1]

The pension system in some countries was exposed to the structural reform with the support of the World Bank, performed in most countries in the period from 1990-2018. Kazakhstan was one of them. These reforms were related to the shift from public defined benefit to the defined contribution scheme with individual saving accounts and private administration model. In 1995, The International Labor Organization and International Social Security Association issued a report, criticizing the World Bank's privatization strategy, arguing that the strategy outlined in the report, replacing social security pension schemes with

mandatory individual savings schemes, will create an unacceptably high degree of risk for workers and retirees, which will make old-age protection more costly, and that the transition will place a heavy burden on the current generation of workers. The results of these reforms were different for all countries: 6 countries returned or strengthened their public and solidarity pension scheme, 9 countries reduced the size of their account schemes by lowering their contribution rates, and redirecting the financing to the public defined benefit systems. The expected result of these reforms was higher, countries expected the increase in coverage ratio, decrease inequalities, decrease of administrative cost due to the market competition, improvement of governance over pension management, development of the capital market through new investments, i.e. improvement both the pension system and economy in overall. [9] But the results were not justified, moreover, the situation worsened due to the global financial crisis in 2008. It was a confirmation of the fact, that the pension system and social security can not be fully transferred to the private sector, it is a government function.

There is a diversity of pension systems in the world, it can be a combination of different models and types. With the increase of pension systems and models, there is a need for proper evaluation and assessment of it, which helps to better understand the problems of the pension system. The experts of the international consulting Company Mercer and Melbourne Center for Financial Studies at Monash University issues the Melbourne Mercer Global Pension Index (MMGPI) for 37 countries, representing about 63% of the world population. The work divides countries into 4 groups, which depends on their pension system. In 2019 the best pension systems are in the Netherlands, Denmark, and Australia. When comparing pension systems of different countries, authors of the work considered about 40 different measures, subdivided into 3 sub-indexes: Adequacy (40%), Sustainability (35%), and Integrity (25%). Each sub-index includes some indicators, which help in calculating the overall index [11]. The division by 40/35/25 is based on world practice but can be different. As the main goal of a pension system is to provide adequate income in old age, therefore adequacy of a pension system is the core characteristic of a good pension system. As per World

Bank report on pension system reforms, the pension adequacy is defined as follows: "that, which provides benefits to the full breadth of the population that are sufficient to prevent old-age poverty on a country-specific absolute level, in addition to providing a reliable means to smooth lifetime consumption for the vast majority of the population" [3]**.** The measurement tools for pension adequacy are various. The three aspects of pension adequacy considered in the report of the European Commission on pension adequacy: poverty protection, income maintenance, and pension duration [12]. So, Filip Chybalski in their work “Measuring the multidimensional adequacy of pension systems in European countries” divided these measurement indicators into 3 groups: Pensioner Income Indicator, Pension Poverty indicator, Pensioner Gender difference Indicators [13]. One of the indicators of adequacy is the replacement rate. The replacement rate and their variations were an object of several international scientific studies. For example, Borella & Fornero [14] describe different types of replacement rates depending on dimension: Data used (theoretical, empirical or simulated replacement rates), time horizon (actual or prospective replacement rates), life stages (Cross-sectional or longitudinal replacement rates), aggregation (individual or average replacement rates), unit of analysis (individual or family-based replacement rates), income measure (pensions or disposable income), basis (net or gross replacement rates).

There is no precisely defined threshold for replacement rate in the world. But, as for benchmark, The Social Security (Minimum Standards) Convention, 1952 (No.102) and the Invalidity, Old-Age and Survivors' Benefits Convention, 1967 (No. 128) of International Labor organization prescribes, that earnings-related schemes need to provide periodic payments of at least 40 percent (Convention No. 102) or 45 percent (Convention No. 128) of the reference wage after 30 years of contribution or employment [25].

When assessing the pension system, the environmental factor is a key element defining it. The majority part of reports and publications on the pension system includes the analysis of demographic and labor market. There are different measures for analyzing both environmental factors, but the most popular are described in

the World Bank report on "International Patterns of Pension Provision": fertility rate, Life expectancy at birth, and at old age, Old-age dependency ratio, labor force participation rate.

Another consideration in the assessment of the pension system is the evaluation of pension system design and pension indicators. The measure depends on the pension scheme. The variety of pension indicators cover the main components and objectives of the pension system: coverage (active member, recipients), adequacy (replacement rate, investment income, regular adjustments, etc), financial sustainability, economic efficiency (effective retirement age, tax wedges), security (investment risk, the role of public and private pensions), etc.

Summarizing the overview of the literature on the pension system theme, especially their performance assessment and compliance with the objectives, it should be noted that in most scientific papers, reports the assessment made especially taking into account the country-specific characteristics. A large number of indicators and assessment tools used by foreign authors can be applied for the assessment of the Kazakhstan pension system, as the domestic authors don't fully describe and cover them.

As one of the future perspectives for the Kazakhstan pension system, the introduction of notional defined contribution requires investigation of the available discussion of other academics' and experts' researches about it. According to Alan. J Auerbach [23], globally, PAYGO public pension programs face long-term financial problems due to aging and population growth, and many appear to be unproductive as currently structured.

Considering that in the analysis below there is a reference to Sweden's pension system, such research works to this country were reviewed. One of the reasons why Sweden's pension system was selected is that the Swedish pension scheme is financially stable and rests on a broad parliamentary majority [18]. The history of Sweden's pension system (or NDC model) reform and problems associated with its application are described in E. Palmer's paper [19]. According to Palmer's work "The Swedish Pension Reform Model – Framework and Issues", the basic idea of the PAYGO system based on defined contributions with individual

notional accounts (NDC) is that of underlying conventional defined contribution insurance schemes. A contribution based on a wage-based participation rate is displayed in different accounts. The bill value reflects future demand for retirement. No higher funding, unlike what we often say when it comes to spending. Also, Palmer's work describes the recent Swedish reform and available options on major issues within this reform framework. Moreover, according to Karl Gustaf Scherman [20], Sweden is in the process of building a new pension system that is sustainable and fair. However, according to Scherman, there were issues in the process of implementing the new NDC model in Sweden, such issues were described in his work and will be compared to the Kazakhstan pension system.

The issues of the influence of demographic factors and their uncertainty on the way to the stability of the pension system are considered in the publication by Alho, Lassila, and Valkonen (2005) [21]. The country analysis of the application of raising the retirement age and other demographic indicators is given in the report of the Consultant Group [11]. In Consultant's Group report they report on some important components of a social security reform that may probably have contributed to the creation of more resilient systems. There is no reform panacea which can be used in any situation, because each country has a unique history and characteristics, even when there is a political will to work for greater harmonization. In general, defined benefit (DB) pensions systems are usually less adaptable to changing demographics economic circumstances because promises of benefits are well established and financing as a rule, it should follow new economic benefits. In defined contributions (DC, also NDC)) schemes, contributions/ payment by definition determines the resources available and adjusts the benefits accordingly.

The future of implementation of the NDC model is shortly described in UAPF of the Republic of Kazakhstan [8].

2. The cumulative and PAYG pension scheme: advantages, drawbacks

The pension payments can be implemented based on a cumulative or PAYG mechanism.

In PAYG pension systems (unfunded/solidarity pension system) pension payments are financed by insurance premiums or taxes to the state pension fund, paid by current taxpayers. The system is based on the equality of receipts and payments in each period. The state pensions are paid based on the principle of "solidarity of generations", i.e. retirees receive money from insurance premiums (taxes) paid by working population. The burden of retirement benefits for older people bears the economically active population of the country. The money collected is not invested, they go to pay current pensions.

In a cumulative (funded) pension system pension contributions are saved and invested by representatives of each generation. As a result, pensions are paid at the expense of funds contributed by the employee to the pension fund, the amount of which is increases by investment income as a result of the investment policy of the fund.

Each of the systems has its advantages and disadvantages, which are more or less manifested in various periods of development of national economics and societies. The degree of their influence depends on economic, social, demographic, and other factors. In practice, there is no fully cumulative or fully PAYG pensions scheme, usually, it is a combination of them, with different level of concentration.

In the modern world of a market economy, the cumulative pension system seems to be fair for the working population. Thereby, each individual can influence the future retirement income, by earning and saving more funds, in case of other conditions, like contribution rates to be constant. In addition, such a scheme is an ability to decrease a gap between the salary and retirement income, i.e. provision the adequate replacement rate. But at the same time, the cumulative pension scheme requires the sustainability of economic and financial situation on the market. The PAYG system is highly subject to demographic changes: as the percentage of the working population decreases and the share of retires increases the more burden on the fund/state budget. The cumulative pension scheme is less subject to demographic changes, but it is more subject to economic factor, which is expressed in the risk of the inefficiency of the investment policy and the

risk of impairment of financial assets as a result of financial and economic crises. The accumulated pension funds are invested in the financial assets, to exchange these assets for retirement income in the future, while the PAYG scheme promises the retirement income, financed by current employers.

But for the vulnerable social group, the cumulative pension system is a problem, as they can't have the ability to work, etc. For this part of the population, the PAYG system seems to be effective. The PAYG system also can be a poverty prevention tool for the elderly. However, in the world aging of population, it becomes more difficult to keep the balance. As a result, most world countries increase the retirement age. However, there is also the third combined type of pensions system with the NDC component.

The pension system with the NDC component is similar to the classic solidarity pension system (PAYG). Working people contribute to the system and pay benefits to current pensioners. However, the amount of payments is different. For everyone, the amount entered into this system is added to a pool where the rate of its return is estimated. This rate is not only conditional - the state sets it according to a certain formula the money collected from contributions is used to finance current pension payments as in the solidarity schemes. Finally, employees receive a benefit based on the final financial value of their lifetime contribution, their lifetime, and the interest rate, as set out in the fixed contribution table.

The features of the NDC component can be summarized as follows:

Advantages: combines the principles of solidarity and cumulative components; social orientation: redistribution from rich to poor, setting the maximum payout; financially stable and does not require injections from the state budget.

Drawbacks: savings funds are not the property of the depositor and are subject to redistribution in the event of his death or departure to a permanent place of residence abroad (but generally it is an advantage for the entire pension system and the government); non-fixed payout (it can be treated as an advantage also, but we decided to put into drawbacks as conservative approach); dependence on the demographic situation and investment income, but to a lesser extent than the cumulative system.

Taking into account the advantages and disadvantages of each pension scheme, countries construct the pension system on the base of country characteristics.

3. Methodology and data used

The first objective of the work is to find the problems in the pension system of Kazakhstan. It will be achieved through the analysis of the design of the Kazakhstan Pension system and factors affecting them by using the world benchmarks, assessment tools, coefficients, etc. As the base for main measures the World Bank, Melbourne Pension Index, International Labor Organization methodology, and other foreign literature have been reviewed and used. Moreover, the core object for the work is the assessment of the adequacy of future pension payments.

The second objective of the work is the consideration of future prospective of Kazakhstan pension system by introducing the Notional Defined component, i.e. to identify the features and barriers of the introduction of such an NDC component system in Kazakhstan.

To achieve the above goals, the following steps should be done:

- to analyze the development of the pension system in Kazakhstan to collect data and subsequent analysis, as well as identifying the main problematic issues and developmental features;
- to explore the world practical experience in the application of the NDC component in pension systems to identify the applicable rates and proportions in the NDC model and to combine it with other models of pension systems;
- formulate a hypothesis;
- to find and analyze economic and demographic parameters and construct retirement income simulation model;
- substantiate the results and their presentation.

The statistical data on Kazakhstan metrics were derived from the official site of the Statistics Committee, Ministry of Finance of the Republic of Kazakhstan, Unified Accumulative Pension Fund, National Bank of the Republic of Kazakhstan.

The main question of the study is "**What are the problems and prospects of the pension system in Kazakhstan?"** has been divided to some fewer specific questions with the following hypothesis:

Q1: What is the problem of the pension system of Kazakhstan?

H1: The pension savings are not adequate.

Q2: Is it necessary for the introduction of NDC?

H2: The NDC components should be introduced partly.

As a response to the above questions, the following research methods have been used:

Analysis and Review: a large number of literature review sources about the pension system design, types, reforms, pension system effectiveness, and their assessment have been reviewed and analyzed. Moreover, the statistical information on pension system indicators, demographic situation, labor market have been analyzed.

Comparison: When assessing the pension system indicators, We have made the comparison with a prior period or world benchmarks or indicators. The statistical information has been compared over periods.

Mathematical methods: coefficient analysis, correlation analysis, modeling, data visualization.

The coefficient analysis has been used to assess the different measures of pension system indicators, labor market, and demographic situation. The correlation analysis has been used for finding relations between different factors of the pension system. We have constructed the simple model for calculating the future retirement income.

And as a tool for representing, describing, and finding the trends, we have used the data visualization tools.

4. Overview of Pension system in Kazakhstan

The current pension system of Kazakhstan is relatively young, in comparison with the pension system of other countries, and it is still in the process of continuous reformation. For a better understanding of the principles and processes of the current pension system, it is necessary to briefly analyze the stages which it already has passed.

4.1.History

With the independence declaration in 1991, Kazakhstan inherited the old pension system from the Former Soviet Union (FSU). The pension was calculated as a fixed component and variable component, depending on the service year. The fixed component was equal to 60% of the employee's highest wage. The variable component added to the pension as a 1% for each extra service year over 25 and 20 years for men and women, respectively. Service years can include years of employment, child care, or other special rights. The retirement age for men and women was 60 and 55, respectively.

As the former Soviet Union were collapsed, the Budget for pension payments decreased. It led to the necessary reforms in the Pension system. As a result, Kazakhstan introduced a mandatory financial defined contribution (DC) scheme starting from 1998, which is still valid today. Moreover, voluntary contributions can be made. The scheme was designed to completely replace the old pay as you go (PAYG) pension scheme, which was recognized as ineffective under the new market conditions. However, the PAYG component remains applicable to those who have service years before 1998. The DC scheme implies the contributions of 10% on the individual savings account of an employee, which will be accumulated until their retirement age. Moreover, from 1998 the retirement age of men and women started to increase by 6 months from 61 to 63, and from 56 to 58, respectively on a semi-annual basis.

At the early stage, the newly created «State Pension Savings Fund» was acted as a default accumulated center for all pension contributions from employee's salaries. Later, in 2003, the newly created pension fund

management companies and the regulations in the pension sphere allowed an employee to choose the allocation of their saving account. For example, as of 1 January 2004 there was already 16 registered Private Pension Fund [15]. Each pension Fund had a license oncarrying out activities for attracting pension contributions and making pension payments, given by the National Bank of the Republic of Kazakhstan. The assets of these Pension Fund were mainly invested in Government securities (53.64% as of 1 January 2004 [15]). In 2009, the average investment income of the assets of private Pension Funds was 11.9%, but in 2010 it decreased to 4.39%, and finally in 2013 fall to 2.2%. For comparison purposes, the interest rate on demand bank deposits in tenge in 2013 was 6.3% [15]. This fact led to the combination of 11 active Pension Fund to the single "Unified accumulative pension fund" (UAPF) on the base of «State Pension Savings Fund». All saving accounts, assets of pension Fund were transferred to UAPF. The creation of a single Fund was not treated as the reform of the Pension system, as it was just institutional conversion. It implies that all 3 pillars of the pension system remained unchanged: PAYG component, DC part, and voluntary contributions. Also, the main figures of the Pension system were kept: individualization of accounts, ownership of contributions, and their inheritance, as well as state guarantee for the safety of pension contributions. The goals for the creation of UAPF at that time were an increase of investment income and guarantee an income at least of the inflation rate, a decrease of administrative and institutional expenses, good quality of asset management held by the National Bank of Republic of Kazakhstan, one of Shareholder of UAPF. All these goals will be reassessed during the work.

In 2014 the employers started to contribute Professional pension contributions for workers on harmful productions. The period from 2014-2019 is a time of administrative changes, related to increasing retirement age for women, changes in the calculation of basic pension, etc.

As of today, the pension system of Kazakhstan is represented as follows:

Pillar 0 – Basic state pension for all retirees.

Pillar 1 – State PAYG pension (for those, with a service year before 1998)

Pillar 2 – Mandatory fully funded 10% + Mandatory 5% of professional

Pillar 3 – Voluntary contributions.

And the introduction of a mandatory 5% pension contribution is expected to be in 2023, by obliging employers to make contributions for all their employers. The issue will be covered later.

4.2.The structure of pension system

The structure and calculation of the pension will be discussed in more detail below. As introduced earlier, the pension includes the basic, PAYG, mandatory, and voluntary DC schemes.

Pillar 0. The basic and PAYG component are financed by tax payments from State Budget. The basic state pension is provided to all retirees, but their amount depends on the work experience year until 1998 and participation years in the DC scheme. So, with a total experience of 10 years or less, the basic pension will be 54% of the subsistence minimum wage (in 2019 - 16 037 tenge), for each year over 10 years of service, the size of the basic pension will increase by 2% until it reaches 100 %.

Pilar 1. The PAYG component is provided to those, who have at least 6 months of work experience until 1998. The amount depends on work experience years and salary amount. The pension is equal to 60% of the average income of any 3 years of work experience until 1998, but the basis for calculation should not be more than 46 MRP. And for any extra experience work until 1998, the % increased by one percent, but the overall percentage is limited by 75% of the average salary.

Pillar 2. The pension payments from the individual saving account should not be less than 54% from subsistence minimum wage (in 2019 - 16 037 tenge). But if the amount of saving is less than 12 minimal pensions, it repaid by a single payment. The payment amount of pension is defined by the Methodology for calculating the size of pension payments, approved by the decree of the Government of the Republic of

Kazakhstan (No. 1042 dated 10/02/2013, with amendments and additions as of 09/10/2018) [15]. The personal contributions on saving account can be inherited in case of death.

Pillar 3. The voluntary contributions are not popular, therefore there are no limits here.

By analyzing the calculation base of each pillar, the potential sources for increase in each of them have been identified:

Pillar 0 – Government social policy: payment amount (affected by the economic stability, as the economy is stable and growing, workers pay higher taxes, a budget allows an increase of basic pension payments, and it depends on the government decision how to spend it).

Pillar 1 - Government social policy: payment amount (the same as Pillar 0)

Pillar 2 - Government regulation: contribution rates and who will pay: employee or employer.

- Demographic and Labor market: number of real and potential contributors, salary wage as a base for calculation contribution payment.
- Institution holding saving account: investment income, asset management policy.

Pillar 3: - The voluntary payments depends on the individual ability and willingness to save extra fund for future needs. Therefore, it defined by the current overall wealth of people.

Above mentioned drivers will be considered during the work.

5. Environment of the pension system

The pension system is defined by the demographic situation in the country. In addition, it depends on the participants of the Labor market and Government regulation in this area.

5.1.Demographic situation

There is a world trend of increasing population related to the improvements in living conditions of people, and Kazakhstan is not an exemption. In 2019, the population of Kazakhstan was 18,6 million people. As you can see from figure 1 the population of Kazakhstan increased by 13% from 1991 to 2019. But the demographic situation of a country is also the result of migration processes, therefore the number of arriving and departing people should be also considered.

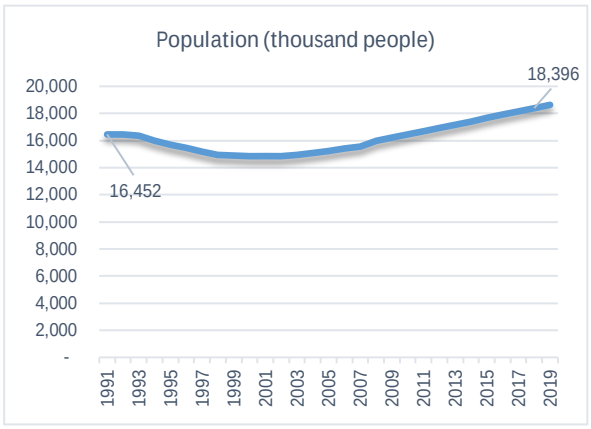


Figure 1 - population of Kazakhstan 1991-2019

The demographic statistics have s direct impact on the pension system by determining the number of current and potential contributors and pension beneficiaries. As the indicators of the demographic situation, the following indicators will be considered: *fertility rate, life expectancy at birth, old-age dependency ratio, mortality rate, and migration data*.

The *fertility rate* is the indicator of future pension contributors and beneficiaries. The fertility rate in Kazakhstan for 2019 equal to 21 per 1000 of the overall population, and it has an increasing trend. The *mortality rate* has a decreasing rate. (See figure 2) The difference between fertility and mortality rate is the natural population growth. On average, the population of Kazakhstan increased annually by 10 per 1000 people for 28 years.

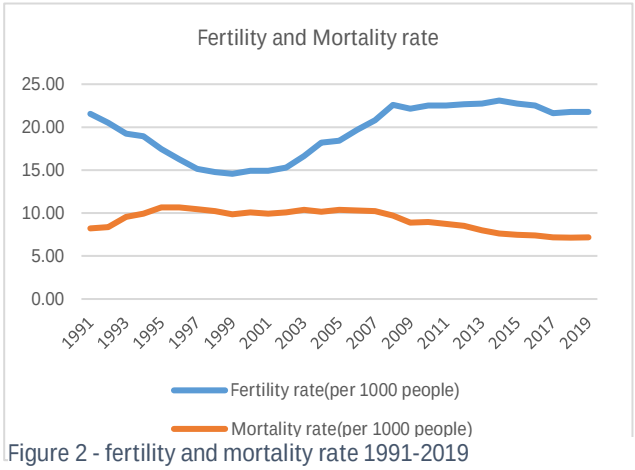
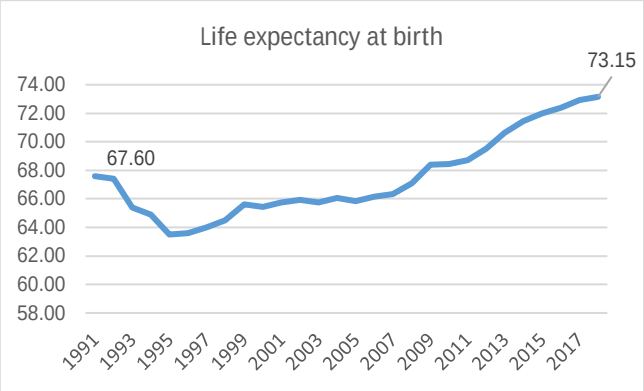


Figure 2 - fertility and mortality rate 1991-2019

Life expectancy at birth is an indicator, which shows how long, on average, a newborn can expect to live, if current mortality rates remain unchanged. As the indicators become higher, the longer the period of retirement. In Kazakhstan, the overall life expectancy at birth increased from 67 to 73 years from 1991 to 2018. In means that pension contributions accumulated on saving accounts will be spread on more years, i.e. decreasing the pension payments received, if the retirement age remains on the same level. If the analysis performed in the context of men and women, the situation is represented as follows: (see figure 4)



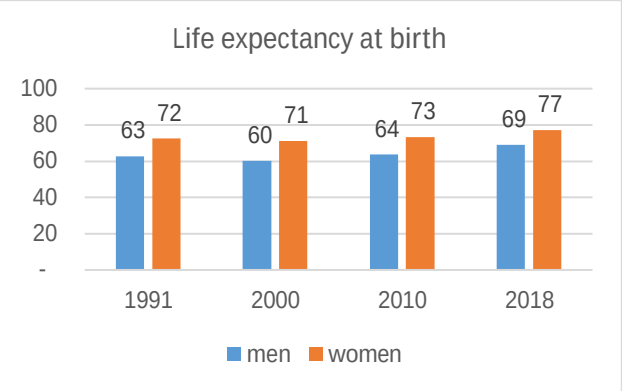


Figure 3 - life expectancy at birth 1991-2017

Figure 4 - life expectancy at birth by male

The life expectancy for women always was higher than for men, which is connected to the working conditions of men and the "home lifestyle" of women. But in the current world of gender equality rights, women occupy the same positions as men. Therefore, the Government constantly makes changes to the retirement age of women. In 2019 the retirement age is 63 for men and 59 for women and it will increase by 6 months on a semi-annual basis until reaching the level of men. As a result, the retirement period at average will continue 10 years (73-63). But, there are some problems with the social composition of such changes in retirement age. First of all, the medicine service level should allow the people to work until 63, without any dangerous implications for their health, and secondary the market demand for labor should not discrete the age difference.

The *old-age dependency ratio (or % of working-age population)* is the **ratio** between the number of persons **aged** 65 and over and the number of persons **aged** between 15 and 64. The value is expressed per 100 persons of working **age** (15-64). In 2018 the rate was equal to 11.52%. For comparison, the world rate was equal to 13.58% in 2018. Overall, historically the value fluctuated within the range of 10-12% as indicated on the table. The lower the value is better because the working population can be a driving force for economic improvement, better pension benefits, better health care. It would be a case in a fully PAYG system when the working-age population ensures the life of retirees, but in case of DC scheme in Kazakhstan, where pension benefit is more dependent on contributions made from personal income to saving account and asset management of this account, the rate losses its significance.

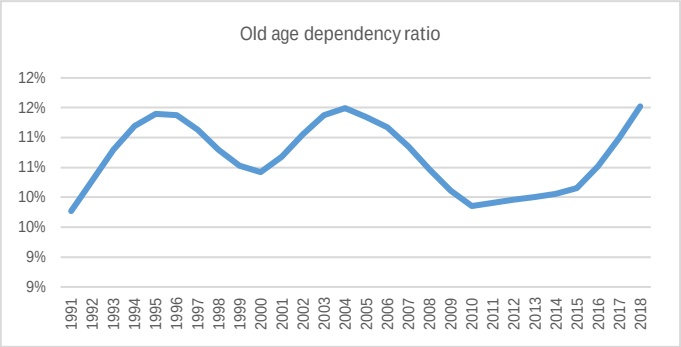


Figure 5 - old-age dependency ratio

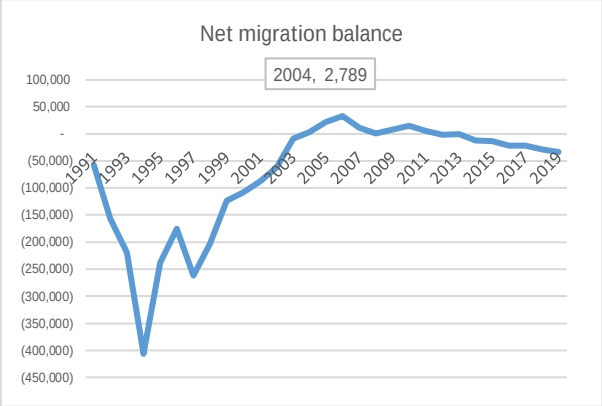


Figure 6 - net migration balance

The last indicator of demographic statistics to be analyzed is the migration data. As the migration data, the net migration balance has been used. As per the below graphic, we can see that a large departure of the population is observed during the period after the collapse of FSU. The balance started to be positive, only in the range 2004-2011, and starting from 2012 is increasing to negative sign each year. The negative balance of migration adversely affects pension saving in the pension Fund, because as the people receive right on permanent residence in another country they can withdraw their contributions, which affects the entire pension system and the economy as well.

Thereby, the demographic situation in Kazakhstan remains stable and slightly increasing, taking into account the positive natural growth rate and negative migration balance. But the effect on the pension system could

be adverse, as the increasing natural growth rate is the sign of an increasing number of the newly introduced working population. While departure, in most cases, is performed by wealthy people with already significant savings on pension accounts.

5.2.Labor market

The salary is the base for calculation contribution and established future pension benefits. The wage of people is defined by market conditions, financial stability of the economy, but it is under the impact of Labor regulation, and Government policy. As key indicators of the labor market, the following has been used: *average(median/mode) salary, labor force participation.*

The *average salary* shows how much each individual earns in the average term. It applies to the population where there is a normally distributed income, and there is no high fluctuation between average and median. Because, the larger the gap between the average and median wages, the greater the inequality in wages and the higher the proportion of workers with low wages. It is the case of Kazakhstan, for example, in 2019 the average income was 185 thousand tenge, the median and mode income was 112 and 58 thousand tenge respectively. As per the below table, we can see, that in 2019 the average salary increased, while the median and mode income decreased.

	2013	2014	2015	2016	2017	2018	2019
Average Salary rate	109,141	121,021	126,021	142,898	150,827	162,673	185,487
Median Salary rate	63,688	N/a	68,308	N/a	82,977	106,253	112,195
Mode salary rate	N/a	N/a	N/a	N/a	N/a	80 021	58 034
Median/average in %	58%	N/a	54%	N/a	55%	65%	60%
Mode/average in %	N/a	N/a	N/a	N/a	N/a	49%	31%

N/a- not avalilabe data. The data hasn't been published on ***stat.gov.kz***

Table 1 - Average, mode and median salary 2013-2019

The average wage amount is the result of the high income of directors and heads, while the majority part of people receives (mode) income slightly higher than the minimum wage (42,5 thousand tenge). As a result of

current income, future pension payments are identified. With a wage of 112 thousand tenge, it will be difficult to provide adequate income in the future.

Moreover, the salary is different within the regions, industry, and male. By analyzing the average and median salary by regions, we can see that the highest average and median salary rate is observed in Atyrau, Mangystau Region, Nur-Sultan and Almaty, which will lead to higher pension contributions, while the lowest salary rate in North Kazakhstan, Jambyl and Turkistan Region will have resulted in the low level of contributions. As we can note from the table below only 3 regions and 2 city has the salary above average across the country in 2019. Moreover, in the table below we can see the relation between the average and median salary, as the average salary lower, the less gap between the average and median salary rate.

The average and median salary by regions in Kazakhstan(tenge)								
	Average			Median			Median/average	
# Region	2018	2019		2018	2019		2018	2019
1 Atyrau Region	293,572	338,613		148,003	155,336		50%	46%
2 Mangystau Region	275,679	295,958		142,771	148,012		52%	50%
3 Nur-Sultan	240,320	284,337		155,713	157,367		65%	55%
4 Almaty	200,919	225,849		135,427	141,442		67%	63%
5 West Kazakhstan Region	153,782	183,780		98,395	97,332		64%	53%
6 Karaganda Region	149,916	172,196		111,588	116,282		74%	68%
7 East Kazakhstan Region	140,126	160,830		100,491	106,402		72%	66%
8 Pavlodar Region	141,915	160,400		106,883	119,542		75%	75%
9 Aktobe Region	137,039	157,088		100,566	110,611		73%	70%
10 Kyzylorda Region	130,391	150,451		92,625	97,811		71%	65%
11 Kostanay Region	125,995	145,530		93,776	104,889		74%	72%
12 Akmola Region	121,361	140,862		93,658	99,815		77%	71%
13 Almaty Region	115,101	136,089		90,984	96,414		79%	71%
14 North Kazakhstan Region	110,686	130,552		90,997	94,262		82%	72%
15 Jambyl Region	109,720	126,642		85,423	94,344		78%	74%
16 Turkistan Region (formerly South Kazakhstan)	104,136	124,485		88,758	90,102		85%	72%

Figure 7 - average and median salary by regions

The high salary rates in the above mentioned regions are due to the concentration of industrial enterprises, large companies, etc. The table below shows the median salary by industries and male:

The median salary by industry and male in Kazakhstan(tenge)								
	2,018			2,019				
	total	female	male	total	female	male	Difference male and female	Total Increase for the year
Total	106,253	95,364	118,735	112 195	101 476	127 907	21%	6%
1 Mining and quarry development	250,033	194,579	270,310	251 004	191 607	277 878	31%	0%
2 Financial and insurance activities	207,381	182,593	222,639	211 733	184 755	250 646	26%	2%
3 Construction	158,332	156,938	158,587	188 419	181 917	189 830	4%	19%
4 Transport and storage	147,621	130,162	152,453	152 956	136 610	157 396	13%	4%
5 Information and Communication	146,706	143,893	148,936	159 594	157 774	160 871	2%	9%
6 Production sector	138,551	121,462	145,743	155 853	139 195	161 109	14%	12%
7 Manufacturing industry	135,341	121,222	142,060	149 599	134 741	154 035	13%	11%
8 Professional, scientific and technical activities	133,744	132,155	135,043	156 816	147 657	162 814	9%	17%
9 The provision of other types of services	128,412	135,939	122,281	158 363	158 471	158 238	0%	23%
10 Accommodation and food services	124,213	112,246	147,563	135 689	125 062	153 112	18%	9%
11 Electricity, gas, steam and air conditioning	119,128	111,687	122,917	134 077	122 065	140 925	13%	13%
12 Wholesale and retail trade; car and motorcycle re	111,311	107,999	114,185	126 755	119 330	132 167	10%	14%
13 Real estate operations	111,293	104,692	116,132	143 372	141 838	144 493	2%	29%
14 Public Administration and Defense; compulsory s	99,896	89,828	107,301	101 775	91 715	109 554	16%	2%
15 Water supply; sewer system, control over the coll	97,893	87,779	101,508	111 339	100 775	115 557	13%	14%
16 Health and social services	88,809	87,822	92,889	95 189	93 717	100 386	7%	7%
17 Administrative and support activities	83,575	91,348	81,911	93 486	106 289	90 197	-18%	12%
18 Education	79,703	80,878	75,834	91 908	93 654	87 171	-7%	15%
19 Agriculture, forestry and fisheries	76,305	70,028	79,035	86 134	80 571	88 075	9%	13%
20 Arts, entertainment and recreation	74,538	74,541	74,534	78 544	75 731	81 588	7%	5%

Figure 8 - median salary by industry and male

As we can see from the above table the highest median salary is in mining and quarry development, financial and insurance activities, and construction industry, and in these industries the highest gap between male and female salary rate. It is explained by the fact that the share of the male is more in these sectors. If we look at the change in median salary, we can see that the highest increase was observed in real estate, service, and construction industries.

The consideration only the average income is not a true view for investigation of the labor market, as it doesn't depict the overall picture of real income which is received by people. Also, tax and other burdens should be considered. As of 2020, employee-related deductions are represented as follows:

- Paid by employee: 10% - pension contributions, 10% - individual income tax, 1% - social health insurance contributions.
- Paid by employer: 3.5% - social contributions, 9.5% - social tax

Thereby, an employee incurs 21% of expenses, employer – 13%. The introduction of new 5% pension contributions, which will be paid by the employer increases the employer payroll expenses, which can impact on the salary rate and pension contributions as well. It can not be the direct decrease in salary, but it affects the annual adjustments to the salary due to the indexation on price inflation. If we compare the inflation rate and changes in the average monthly salary rate (see table), we can see that the change in salary rate is not always higher than the inflation rate.

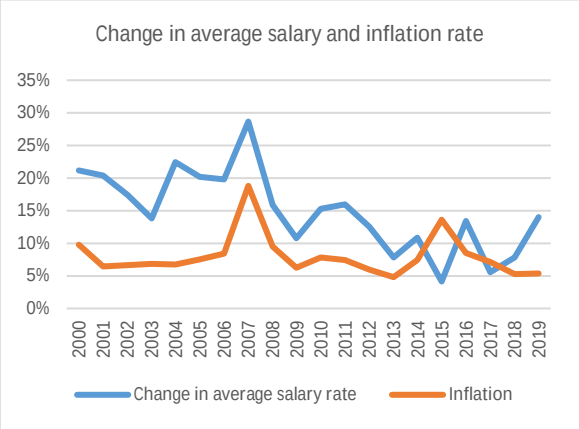


Figure 9 - Change in average salary and inflation rate

The *labor force participation rate* is an indicator of an economically active population, i.e treated as a potential contributor to a pension scheme. The labor force participation rate is calculated as the labor force divided by the total working-age population (people aged 15 to 64). According to the data published by world bank [1], the force participation rate in Kazakhstan in 2002-2017 was on the level of 69-72%. Thereby, on average 70% of the working-age population is on the stage of accumulating funds for future retirement.

In the case of Kazakhstan, where the difference between salary in industries is big (70% difference between mining and quarry development and art, entertainment, and recreation industry), it will be sound to investigate in what industry do most people work in. As we can see from the chart below, the main areas where people work are wholesale and retail trade; car and motorcycle repair, Agriculture, forestry and fisheries, education, production sector, which totaled 55%. If we back to the table with median salaries by industry, we can note that education and agriculture, forestry, and fisheries have almost the lowest salaries, which confirm the fact, that the majority part of Kazakhstan have low salary rates.

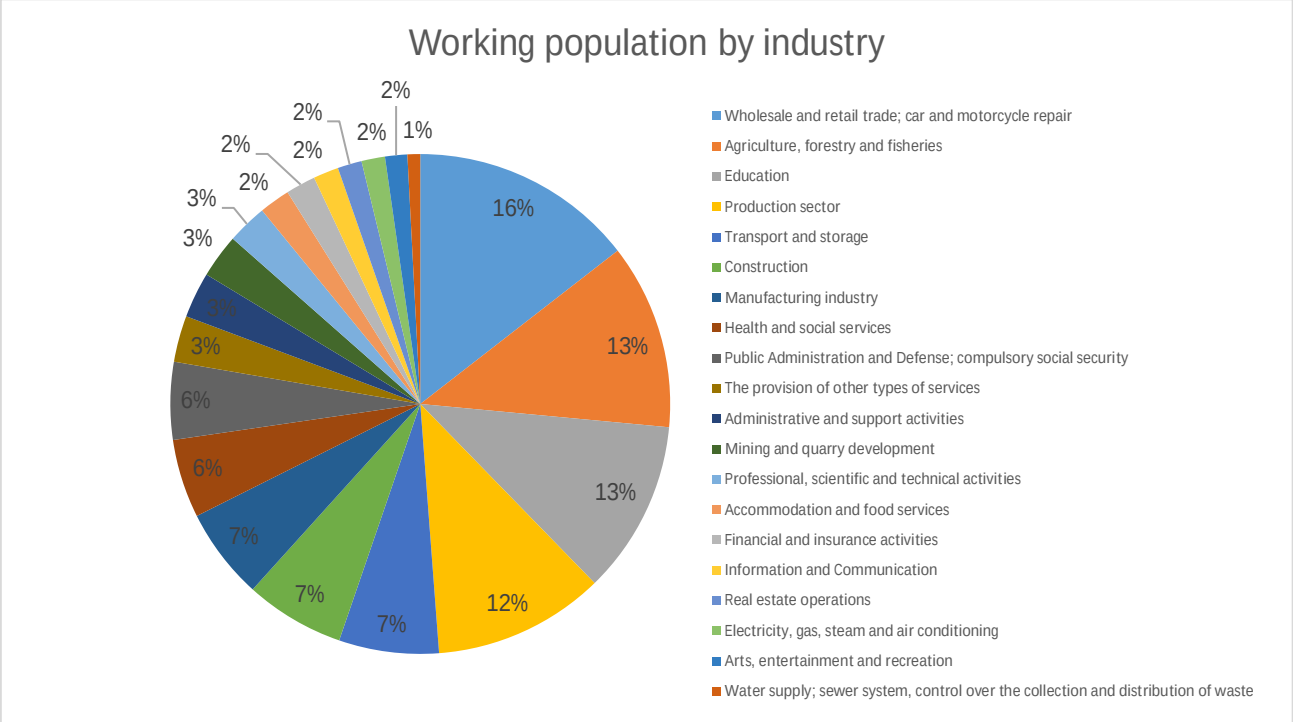


Figure 10 - working population by industry

Summarizing the overview of the labor market in Kazakhstan, it should be noted that the value of the labor force in Kazakhstan is low. The regional and industry difference in salary rate is huge. Almost half of all population receive a median income of 112 thousand tenge. Moreover, the additional tax burden on employee salary prevents their increase.

6. The UAPF: performance assessment

The Unified Accumulative Pension Fund was formed in 2013. The Sole Shareholder of UAPF is the Government of the Republic of Kazakhstan. UAPF transferred the right on asset management over pension Funds to the National Bank of RK.

6.1.Coverage

As of today, there are about 10,69 million contributors to mandatory pension contributions. Starting from 2014, their number increased by 5.6%. The drop in 2016 relates to the return of funds for military personnel, previously transferred from the budget, as they were switched to the full state pension provision. As of 1 January 2019, the 10,108 million contributors represented 93 % of the population aged 16-62. This fact means that almost all working-age population has a pension saving account. In 2019 the amount of pension saving reached 10,800,539,394 thousand tenge. Annual pension contributions vary from year to year but overall has the increasing trend ignoring 2016 year case. The pension payments from personal savings accounts are low as the DC scheme is only the result of 22 years. The gap between the pension contributions and pension payment will decrease, as the full pension cycle (usually 40 years) will be reached. In 2019, the number of retirees is accounted to 2,2 million people. It means that for each retiree, there are 5 contributors, which makes not only contributions on personal saving account, but also pays the social tax, social contributions, income taxes, which is the base of the Government budget, from which the basic and PAYG component of pension is repaid. If we calculate the

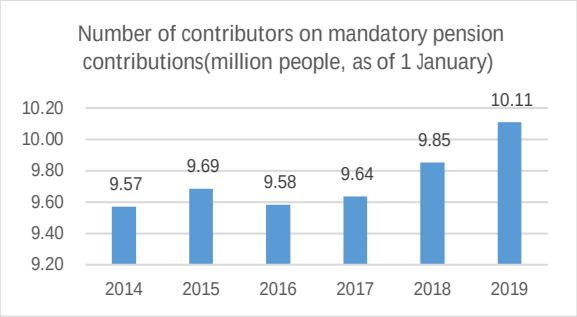


Figure 11 - Number of contributors

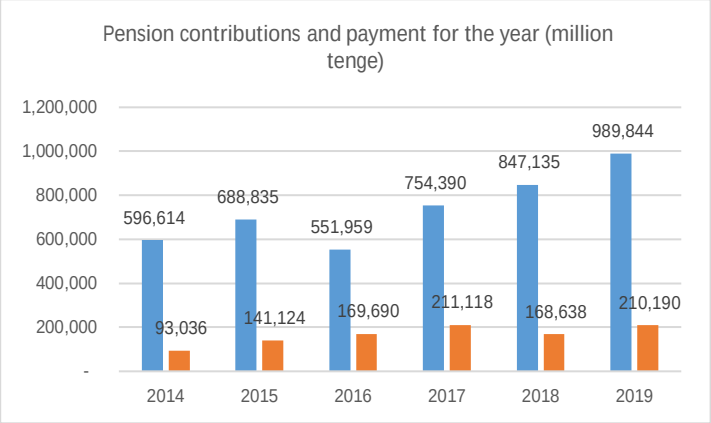


Figure 12 - Pension contributions and payments

average contribution amount per contributor, we receive the same case as with the average income. Taking into account, the mode salary wage, we can argue than the pension savings are not normally distributed. Moreover, the program recently proposed by the president for the purchase of housing by using pension savings, analyzed by the Ministry of Labor and Social Protection says that this opportunity can be used only by 1,2% of all current contributors, as they have enough sources on their accounts [16].

As for now, the pension payments to current retirees, mainly, repaid by the fund from the state budget. For example, as per the annual report replaced on state budget execution on the official site of Ministry of Finance of RK [17], the payment of solidarity (1,432) and state basic (531) pension accounted to 1,963 billion tenge in 2018. Which is 12 times more than payments from a pension fund (168 billion tenge). As the DC scheme reaches the full pension cycle, the more payments should be made from the pension fund, and the main issue will be the amount of contributions and investment income.

According to the latest annual report of UAPF, replaced on their official site, the number of recipients of pension from UAPF accounts accounted for 0.5 million retirees in 2018, which is 23% of all retirees. By dividing the annual payment for 2018 into these 0.5 million people, we get the average monthly pension payment from UAPF in the amount of 28,106 tenge. It means that 0.5 million retirees have more pension amount on average by 28,106 tenge than others.

6.2.Investment income and Asset management

The asset management over pension assets was transferred to the National Bank of Republic of Kazakhstan (NBRK), justifying the fact by their expertise in the field. The pension savings funds are invested in different financial instruments. As per the latest available audited report of UAPF, their assets equal to 9,554,859,827 thousand tenge as of 31 December 2018. But these savings are allocated and invested in different assets. As of 31 December 2018, they represented as follows:

As per the structure of pension fund assets as of 1 March 2020 (See Appendix 1), we can note that a large part of them is invested in government securities of RK (36.08%), bonds of quasi-state organizations of the RK (14.73%), government securities of other countries (12.94%) like the US, Russia, etc., Notes of NBRK (5.39%). The credit rating of companies where investments are invested is not lower than B2/B-/B+ according to International rating agencies Moody's Investors Service/Fitch Ratings/Standard & Poor's. By analyzing the investment with the place of investments, the 80% investments are the local financial assets, while 20% are outside of Kazakhstan. The analysis by currency shows that investment in tenge equals to 71.64%, in USD 28.13% and 0.23% in other currencies. Thereby the investment policy of UAPF is to secure risks, by investing more in risk-free government securities, and concentrate investments in a country. The increasing amount of pension contributions (on average by 22% for the last 3 years from 2017-2019) requires investing in new financial assets.

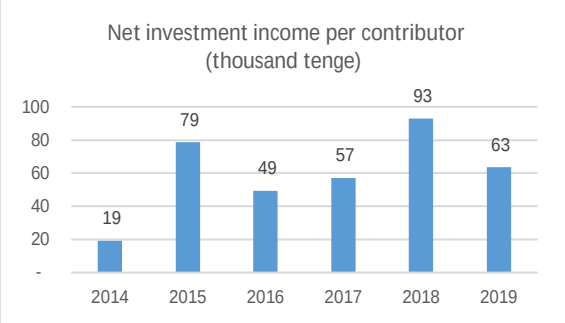


Figure 13 - Net investment income per contributor

The net investment income earned from these assets is proportionally allocated between all pension accounts. The annual net investment income per the number of contributors increased from 2014, but the changes are variable. In 2019 the amount decreased from 93 to 63 thousand tenge.

One of the investment income guarantee by the UAPF is the income on the level not lower than inflation. Despite on the fact that accumulated investment income is higher than accumulated inflation (See Appendix 2), the indicator is not compliant every year according to the table below. Moreover, when people reach retirement age, they calculate the yield on his pension saving account with the inflation rate for the entire period spent in the funded pension system. If the profitability of the depositor's pension savings during the involvement period in the pension system is lower

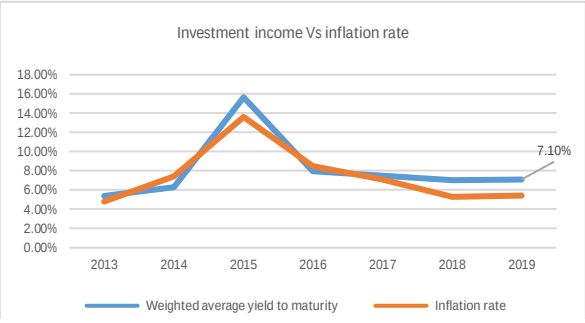


Figure 14 - Investment income & inflation rate

than the inflation rate, the state will compensate for this difference. This norm appeared in the law of the Republic of Kazakhstan in 2003 and since then the state has committed itself to the preservation of funds in individual pension accounts. As a result, the new line in the State budget is appeared as "Payment of obligations under the state guarantee of safety of compulsory pension contributions and compulsory professional pension contributions in a unified accumulative pension fund". In the annual report for the fulfillment State budget for 2018, this amount was 11,292 million tenge or 7% of pension payments from UAPF (in 2017 – 6%). The amount can be a result of combinations of different factors and events that lead to the income lower than the inflation rate: market fluctuations, currency instability, crisis, poor asset management of pension funds, etc. But the fact is that reimbursement is performed from State Budget, which is the funds of current workers.

7. Pension system adequacy assessment

Among a variety of pension system indicators, the most important and applicable to the Kazakhstan Pension system design has been chosen. As the current pension payment mostly repaid from the State budget (2018-92%), the analysis of government expenses and state pension should be considered. In addition, as the tool for assessment main objective of pensions system the replacement rate has been analyzed.

7.1.State pension

The Government establishes the minimal pension amount which was equal to 36,108 tenge in 2019.

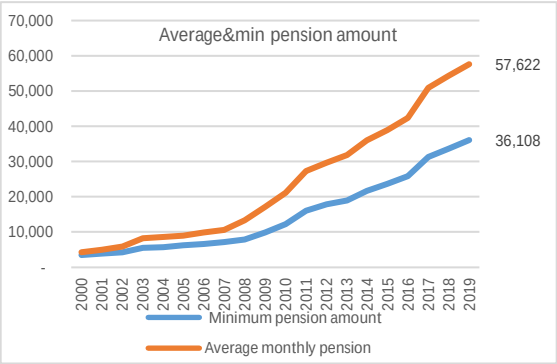


Figure 15 - average and minimal pension amount

According to the statistics Ministry, the average pension amount in 2019 was 57,622 tenge, without the pension payment from UAPF, which applies only to 23% of retirees. As the base for calculation, the minimum pension amount Government uses the minimum living wage to guarantee the minimum poverty alleviating income in old age. As the current pension payment

is mainly repaid from State budget funds (92% in 2018), the issue is in the adequacy of these payments. According to the Social Security (Minimum Standards) Convention, 1952 (No.102) and the Invalidity, Old-Age and Survivors' Benefits Convention, 1967 (No. 128) of International Labor organization pensions need to be periodically adjusted following substantial changes in the cost of living and/or the general level of earnings. The world practice of indexation brings out the following types: price indexation, wage indexation, mixed price/wage, ad hoc adjustments. By analyzing the changes in average pension amount during the period from 2000-2019, we can see the positive correlation with minimal pension amount, i.e Kazakhstan applies regular adjustments, but only to the extent of minimal subsistence level, used as a base for minimal pension amount.

7.2.Replacement rate

By calculating the net replacement rate using the gross average salary and gross average pension payments, we see that replacement rate during the period from 2000-2019 fluctuated in the range from 20-35%, the current level – 31%. heal But, there are some issues to discuss. First of all, the average income is not a perfect reflection of real income, as mentioned earlier the median salary is the better indicator. But in that case, the replacement rate will be almost 100%. But, if the average pension takes into account the higher pensions as well, therefore it will be consistent to use the same approach to the denominator – average salary wage. The information about the median pension amount is not available. Moreover, the average salary is the gross amount, without any tax deductions, while pension is not taxable. By adjusting the average salary on Individual income tax and pension contributions only, we get another replacement rate in the range of 25-43%. Thereby, it will be assumed that these replacement rates are more reliable.

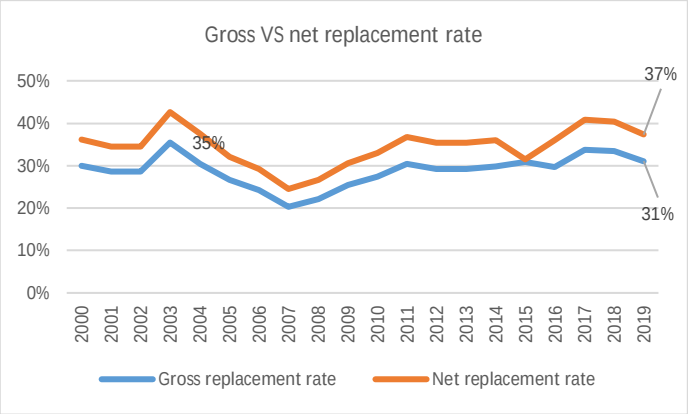


Figure 16 – Gross & net replacement rate

7.3.Adequacy of funds on retirement saving accounts

The future main base for pension will be the individual pension saving in UAPF. The latest available information about a number and amount of accumulated saving on personal pension accounts by age is as of October-November 2019 (see table below):

	Quantity of individual pension saving accounts by age,units							
Retirement savings	**up to 20 years**	**up to 30 years**	**up to 40 years**	**up to 50 years**	**up to 60 years**	**over 60 years**	**Total**	**Share**
up to 1 million	232,293	1,996,280	1,648,962	1,302,143	1,039,191	416,094	6,634,963	69%
up to 3 million	63	248,671	772,830	599,071	497,901	76,966	2,195,502	23%
up to 5 million	3	18,388	138,057	156,288	152,045	26,297	491,078	5%
up to 10 million	1	6,304	70,381	72,914	65,379	11,851	226,830	2%
over 10 million	-	506	21,534	30,634	13,484	1,431	67,589	1%
Total	232,360	2,270,149	2,651,764	2,161,050	1,768,000	532,639	9,615,962	100%
Source:https://www.enpf.kz								

Table 2 - pension savings

According to the table above, 69% of all pension account have less than 1 million tenge of savings. It is not critical for people aged 50+ and above, because their participation in the DC scheme limited by 21 years and less, and they have up to 13 years to accumulate funds, in addition, they will have solidarity component in total pension amount. While, almost all people aged up to 50 years will have not solidarity component, and they already passed half of pension accumulation lifecycle.

The contributors of pension in UAPF can acquire the pension annuity and receive payments from UAPF before reaching the approved retirement age. According to “law on pension provision”, the early retirement is allowed in the case if the period for making contributions is more than 60 months, men and women reached the 55 and 51.5 years old, respectively, and they have sufficient amount of accumulated savings to receive at least the minimal amount of pension. In order to receive the minimal pension the accumulated amount of saving in 2019 should be accounted to 10,809,889 tenge for men and 14,485,100 tenge for women. In 2019, about 1-2% of all contributors have the target amount. People up to 50 years already should have half of these savings, but the situation is deplorable. As almost 95% of people aged up to 50 have not accumulated half of the target amount.

8. Prospective of the pension system

8.1.Review of best practice

Based on the materials indicated on the official UAPF website, we understand that one of the prospects for the development of the Kazakhstan pension system is an example of the Sweden pension system.

The Swedish pension system takes 5th place in the ranking of the Melbourne Mercer Global Pension Index 2019, according to which the pension systems of the countries of the world are compared according to the criteria of adequacy, sustainability, and integrity. The adequacy criterion includes such parameters as pension payments, system architecture, savings, tax deductions, the availability of housing in the property, asset growth. The sustainability criterion covers such parameters as pension coverage (replacement), total assets, contributions, demographics, government debt, economic growth. The criterion of impeccability includes the parameters of regulation, management, social protection/welfare, communications, and system costs.

Sweden's pension system ranked third in the Allianze Pension Sustainability Index 2016. Unfortunately, this index has not been published in subsequent years.

The pension system in Sweden has a three-tier structure. The main component of the Swedish pension system is the state pension system. It includes conditional pension, premium pension, and a guaranteed pension. The second level is represented by professional plans from employers and the third level is a voluntary individual pension.

1.Contributions

The state pension system implies the mandatory participation of all, regardless of whether the person is an employee, self-employed, or civil servant. The employer and employee deduct a pension contribution of 18.5% (11% employer + 7.5% employee) to the state pension system. Of these, 16% are distributed in the conditionally cumulative part (or NDC part) and 2.5% in the premium part.

The main component of the state pension is a conditional pension (income pension). In the conditional savings system (NDC), each participant in the system has an individual account, where a conditional amount is indicated, which is the result of his contributions during his working life.

Contributions in the amount of 16% are registered in the individual pension account of a citizen. Individual retirement accounts are used exclusively for accounting the balance of savings, since money is not received and invested in the financial market, but rather is used to pay pensions to current pensioners. Therefore, the term "conditional" is used.

After retirement, conditional capital is converted into annuity pension payments, which are annually indexed to change the statistical average income (income index). The amount of pension payments is determined by dividing the conditional capital by the annuity factor, which is calculated based on average life expectancy and a discount rate of 1.6%.

To ensure the financial stability of the entire system, a balancing mechanism has also been introduced, the essence of which is as follows: if the ratio between pension assets (buffer fund and estimated contributions) and liabilities is less than one, then the level of indexation of pension payments decreases. The balancing of savings in conditional accounts ceases when the financial balance is reached.

Contributions to the state pension system

Of the total contribution of 18.5% paid by the employer and employee (11% employer + 7.5% employee) to the state pension system, 16% are allocated to the NDC part and 2.5% to the bonus part. Also, there is a maximum salary limit from which contributions are made.

When reforming the pension system, it was stipulated that during one's life a person may face various situations and pension contributions should still be transferred for him, even if he does not work. Therefore, for such categories of persons as persons with disabilities, persons on maternity leave, students, and serving in the army, the state subsidizes pension contributions to the state pension system. The state transfers the pension contributions for these citizens through the relevant state agencies.

Contributions of 2.5% to the premium pension are not transferred directly to private funds but are accumulated and invested by the investment division of the Swedish Pension Agency in fixed income instruments for 18-24 months (average 18 months). The return on these investments is low, lower than in private funds.

Sweden Pension Reserve System

On the financial side, there are buffer funds that are used to create stability in the pension system. The Swedish Pension Reserve System consists of five buffer funds known as AP1, AP2, AP3, AP4, and AP6.

Pension contributions in the amount of 16% are evenly distributed among the first four buffer funds (1/4 contributions for each fund), which subsequently make pension payments (each fund is responsible for a quarter of pension payments), as well as invest the amounts remaining after payments in various financial instruments

In the event of an imbalance in terms of contributions and payments, buffer funds regulate all surpluses and deficits in the state pension system. If the payments exceed the incoming contributions, “buffer funds” will be used to cover such a deficit. They exist to stabilize the pension system in the long run.

The Sixth Buffer Fund is also part of Sweden's pension reserve system. However, it is a closed fund, since contributions are not received, and payments are not made from it. He invests exclusively in unlisted companies.

2. Premium pension

Another part of the state pension is a premium pension, to which 2.5% of the total contribution is allocated. Premium pension is a classic defined contribution (DC) accumulative pension system. Participants for their savings can independently choose any fund registered with the Swedish Pension Agency with various investment strategies. The default fund is the seventh state-managed AP7 Buffer Fund.

The premium pension was created to use the opportunities of financial markets by each individual investor. Since the participants make their own decisions on the allocation of investments and risks, and accordingly,

all responsibility lies with the investor himself. The political and ideological meaning of introducing a premium pension was that participants were more interested in their pension and that they had a sense of control over their pension. The right to individually choose a private fund has appeared in people since 2000 (the system has existed since 1995)

The right to choose an investment strategy in the framework of the premium pension

At the financial site of the Swedish Pension Agency, the investor is given the choice of a private fund from a list of nearly 850 private funds. The number of management companies is 109.

The participant visits the website of the Pension Agency of Sweden via login and password and selects from 1 to 5 funds on his own, and also independently distributes the share of savings in different funds or distributes 100% of the savings in one fund. The participant can change funds at least every day at his discretion. For convenience, funds can be sorted alphabetically, by geography, or by risk level. Bonus accumulations of participants are not guaranteed by anyone if a certain fund shows a poor result, respectively, this is reflected in the accumulations of the investor who chose this fund.

Under an agreement signed by the Swedish Pension Agency with managing funds, 2/3 of the management fee is returned to the participant. This return procedure has a political justification to show investors that managers do not charge the entire amount of the fee, but save participants' money. The amount of the fee depends on the amount of assets.

3. Guaranteed pension

The guaranteed pension is designed for those who did not work at all, or for those who have long work experience with low wages and, based on this, the amount of their pension from the NDC savings component (income pension) is insufficient based on the cost of living (t. e. less than a living wage). This is a basic social pension - the so-called guaranteed pension, which is linked to the size of the pension from the NDC component, i.e. the higher the pension from the NDC component, the lower the level of guaranteed pension.

The guaranteed pension is financed from the state budget and to receive a guaranteed pension, a person must live in Sweden for 40 years. In the whole country, 700,000 pensioners receive this pension. Most pensioners do not receive this pension.

8.2.Sweden and Kazakhstan: a comparative analysis

Generally, according to Saunders, Lewis, and Thornwill (2012), a quantitative analysis includes making simple diagrams and tables, that show the periodicity of occasion and using statistics to facilitate comparisons, through creating statistical relationships between variables to complex statistical modeling. In this dissertation project, the quantitative data was obtained by using the UAPF official site, S&P data, World Bank, National Committee of Statistics, etc.

Firstly, the comparison between two economics (Kazakhstan and Sweden) was made. There is a comparison of GDP per capita, comparison of population, and average monthly salary.

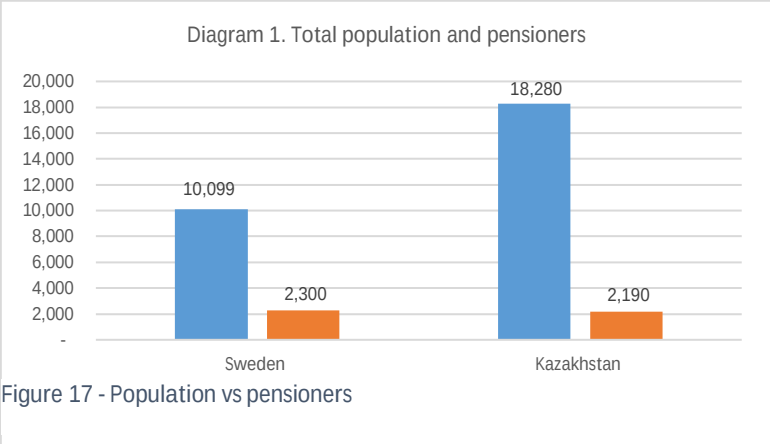


Figure 17 - Population vs pensioners

According to the above Diagram 1, the number of pensioners in both Kazakhstan and Sweden is equal, while the total population of Kazakhstan almost two times higher than Sweden's. In other words, pensioners in Kazakhstan make up 12% of the population, while in Sweden 23%. This demographic comparison shows that the population of Sweden is older than Kazakhstan's.

In terms of Diagram 2, Kazakhstan has lower GDP in both gross and per capita. Moreover, the total GDP of Sweden is almost three times higher than Kazakhstan's total GDP, while Sweden's GDP per capita is 5 times higher than Kazakhstan's. In other words, Sweden shows better results in economic terms than Kazakhstan. It can be supported by additional numbers in average monthly salary (**AMS**). In Kazakhstan, AMS equals 430$, while in Sweden 4,000$ (After all the required deductions, the employee has about 3000$). Considering the above statistic,

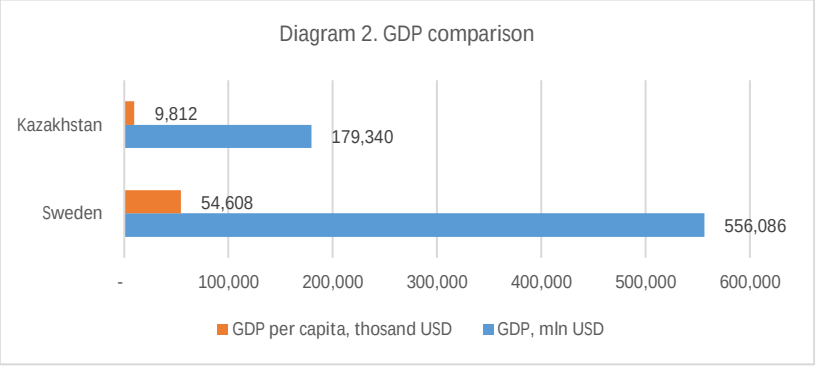


Figure 18 - GDP comparison

there is no doubt that the material component is several times higher in Sweden. Hence, there is an answered question of whether our corporate companies will be ready for such an additional deduction of income after tax.

Furthermore, Diagram 3 shows the potential additional contributions based on the currently available data. Expected additional accumulation from the introduction of the NDC model equal to 50% (comparison between 10% obligatory contribution and 5% potential NDC contribution to be implemented in 2023). There is an assumption that the workforce will not change in the next three years, i.e. pension contributions will have the same level. In such a situation, this will lead to additional accumulation for the state in the amount of 2,000 billion tenge over 3 years (sum of orange graphs).

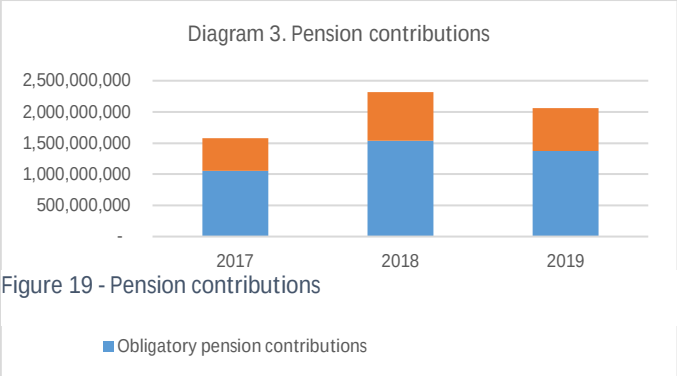


Figure 19 - Pension contributions

According to UAPF, beginning on 01.01.2023 a new NDC component of the pension system will be introduced 5% mandatory employer pension contributions of employee's monthly income. Mandatory employer pension contributions are designed to provide increased levels of pension benefits by sharing responsibility for pension provision between State, employee, and employer *(Appendix 3. NDC component scheme).*

As is well known, the NDC component system implementation process should be supported by a competitive environment among funds where accumulations of people will go (as described in Sweden pension system overview). It is questionable whether Kazakhstan can provide such rights to citizens, i.e. to select the appropriate fund and change the investment at least one time per week (in Sweden, citizens can change the investment portfolio every day). Also, it should be noted that such funds must ensure the stability and reliability of their investment portfolios. However, in the worst-case scenario, when one of the five funds will default, there should be approved governmental measures to protect people's savings and provide them with pensions as expected (taking into account the growth of their savings and investment income).

8.3.Issues for implementation of NDC in Kazakhstan Pension system

Trust to the country's management

According to S&P 500 Sovereign government's rating (which is published quarterly), Kazakhstan has scored 5 out of 6 points in relation to Institutional assessment (where 1 is best and 6 is worse). This Institutional assessment is consisting of primary and secondary factors. Primary factors include: effectiveness, stability, and predictability of policymaking and political institutions, while secondary factors include transparency and accountability of institutions, data, and processes. As a result, there is following characteristics of Kazakhstan's Institutional assessment: Unassured enforcement of contracts and respect for the rule of law; impaired transparency, owing to at least one of the following factors: moderate-to-high levels of perceived corruption, material data gaps, or significant interference by political institutions in the free dissemination of information. Hence, there is a high risk that the introduction of new norms (such as NC model) will not be perceived by the population and the entrepreneurs as necessary, but will seem to be futile.

Contributions issue

The contributions issue is the general issue related to all working people in Kazakhstan. The economically active population in Kazakhstan was equal to 9,1 million in 2017. But if we look at pension system contributions, no nine million people are contributing to UAPF. It is additionally proved that there is no trust to the system and government's decisions as well.

Benefits of NDC model

The NDC benefit is a life annuity. It can be claimed at any time from the minimum retirement age. Generally, it embodies a rate of return based, among the other factors, on the cohort life expectancy at the time the annuity is claimed. Since newly granted annuities reflect life expectancy, in principle, NDC is an actuarially fair pension system. The DB benefit is calculated depending upon a series of factors like average wage, service duration, contribution frequency, etc. NDC is more stable than DB since the former provides sufficient funds with much fewer government interventions even for negative scenarios. On the contrary, DB

in case of a negative real interest rate in the economy requires considerable government subsidies to maintain the sufficiency of assets.

It should be noted that the introduction of NDC mode in Kazakhstan contradicts the 1998 reforms, namely, then the state planned to move away from the joint (solidarity) system. While now this model is a symbiotic of accumulative and joint (solidarity) system.

Juridical law

Another additional advantage of the NDC model is the fact that legally these accumulations belong to the state since the employee did not pay them (employer makes such contributions to the pension system). There is no doubt that it helps the pension system be stronger, in this case, the system cannot be affected by the demographic outflow of the population. The advantages are that the payment is carried out for life (provided that the experience of participation is 5 years or more), even if the funds on the conditional pension account are exhausted.

The system is most beneficial for people with low wages. In other words, an employer provides the old age of its employees.

Also, in case of death (approximately 65 age old, where contributions fully do not pay to the citizen) or migration for permanent residence, the contributions under the NDC model will stay in the state and will be distributed among others. The mechanism of distribution is not developed yet, but preliminary it can depend on the duration of participation in the NDC system or from the level of received pension.

Social tax discussion

In 2019, social tax payments resulted in an increase of governmental budget by 700 billion tenge (while pension payments made off from the current accumulative pension system is 210 billion tenge). As a result of such a simple comparison, there is an unanswered question, where this annual generation of money is used. According to our official news, social tax is spent on the maintenance of schools, kindergartens, hospitals, law enforcement agencies; financing of state programs, subsidies, grants and loans; state security, army maintenance; maintenance of the state administration apparatus (payment of salaries to civil servants);

construction and improvement of social facilities and territories; pension provision (basic and solidarity pensions); the provision of free assistance in medical institutions.

Generally, as described in section Coverage, pension contributions are much higher than pension payments. Hence it is unnecessary to fund basic and joint parts of pension systems by the social tax.

9. Future retirement income

By using the simplified projection model for men with the average salary and maximum experience years (40) we have calculated future pension amount (See Appendix 4).

The assumptions of the model are as follows:

- Men started their career at the commencement of Defined contribution pension scheme, i.e. in 1998
- Retirement age – 63, experience year – 40, the retirement age starting in 2038
- The salary is equal to the average salary of the market: from 1998-2019 statistical actual data on average salary, 2020-2037 – forecast, by adjusting average salary on 1.5% (GDP increase forecast) [24]
- The contribution rate – 10% with a frequency of contributions 8 times per year
- Investment income – at the inflation rate: from 1998-2019 actual, from 2020-2037 – forecast amount 4.9%. [24]

The accumulated pension amount at the end of 2037 was calculated as the sum of a 10% contribution and accumulated investment income at the level of inflation. By applying the Methodology for calculating the size of pension payments, approved by the decree of the Government of the Republic of Kazakhstan, the pension payment from UAPF will be equal to 92,246 tenge at the retirement age of 63. By dividing it to the forecasted average salary for 2038 we get the forecasted replacement rate – 38%. The simplified approach allows to make the sensitivity analysis, we can see how the future pension amount will change, if we change the inputs for the model: average salary, investment income on the base of inflation. If the annual increase in average salary changes by 1% the future retirement income changes by 4%. If the annual inflation rate changes by 1%, the future retirement income changes by 15%, and change in contribution rate by 1%, will result in a 5% change in future retirement income. The reason for such changes lies in the calculation. The investment income is accrued on the total accumulated savings, while the increase in salary rate will result

in an additional 10% savings. Therefore, it becomes harder for people to make a significant influence on future retirement income. The better effect will be reached by increasing investment income on pension savings, but the history of UAPF shows that investment income is on the same base as inflation. The effect of change in contribution rate, justified the fact, that Government plans to introduce the 5% notional defined contribution plans, which will have a significant effect on future retirement income.

The model has been projected using the average salary rate, but, as mentioned earlier, less than 50% of the population earns the average salary. Moreover, the period of contributions made equaled to the full pension lifecycle, while in practice, there is an unemployment period. The projected amount of this model is the average standardized case scenario. The above mentioned factors lead to lower future pension income.

The introduction of an additional 5% pension contribution can adversely affect the salary fund. In this connection, by using the simulation results described above, we calculated that the introduction of the NDC component should be equal to 3%. The introduction of an additional 3% contributions will increase the replacement rate above the targeted level (42%).

Moreover, the introduction of the NDC component can be partly carried out by the social tax payments made to the state budget. The social tax in Kazakhstan is introduced in 1999. The funds are used for the following purposes: provision of schools, kindergartens, hospitals; state security, army maintenance; pension payment (basic and solidarity pension); construction and improvement of social objects and territories; etc. The social tax rate in 2019 is 9.5%.

Conclusion

The analysis of the pension system and its environment allowed to identify the following problems of the current pension system: low level of labor rate, which led to an insufficient pension saving on pension accounts, low level of investment income (usually not exceeding annual inflation rate). In addition, the replacement rate doesn't fit the world requirement of the International Labor Organization. These problems potentially undermine the purposes of the pension system about the provision of adequate retirement income. Analysis of current pension payments showed that as of today the most pensions are paid from the state budget (basic and solidarity component), and as the accumulative pension component reaches their full cycle (40 years), the more pension payments should be made from UAPF. But the analysis of pension savings showed that it can be not enough for the future adequate retirement income of the elderly.

The review of world pension systems shows that multicomponent pension systems are more effective than a single component, as the multicomponent pension system allows the diversification of risks. As the pension assets are mainly invested in Kazakhstan's market, there is a high dependence on Kazakhstan's economy, and last events, such as a decrease in oil prices, coronavirus outbreak, or currency fluctuation can adversely affect on the economy as a whole and pension assets as well. By summarizing the analysis of the pension system, we can conclude that it is ineffective (from sections of UAPF performance and pension system adequacy assessment), and it needs some improvements. As a result, the first hypothesis was confirmed that pension savings are not adequate. Consequently, the improvements in the pensions system analyzed (NDC component). The introduction of the NDC component is a complicated decision for the government and should be deeply investigated. Based on our high-level analysis of the NDC component, the advantages of this component can be taken into the current pension system of Kazakhstan, such as annuity scheme of calculation which indexed on some rates (not only on inflation but at least on interest free rate) and legal right to savings. In other words, the NDC component can be introduced in the pension system of Kazakhstan partially (i.e. 5% implementation undesirable). It allows us to diversify the risks of fluctuations on the market and smooth the effect of economic crises, and events of this kind.

Based on this, recommendations on the development of the pension system, are as follows: the calculation of pension benefits should be revised (the income on the level of inflation is not enough, at least it should be on the level of interest free rate). The legal right for savings should be reassessed to reduce the risk of migration and increase pensions for low-income pensioners, in case of death of those who did not fully use their savings. And the third, the distribution of social tax earnings from the entrepreneurs should be revised. It can be revised in half, e.g. 3% of social tax contributions can be used as an NDC component. This approach will not result in an additional tax charge for the taxpayers and will help the pension system to upgrade.

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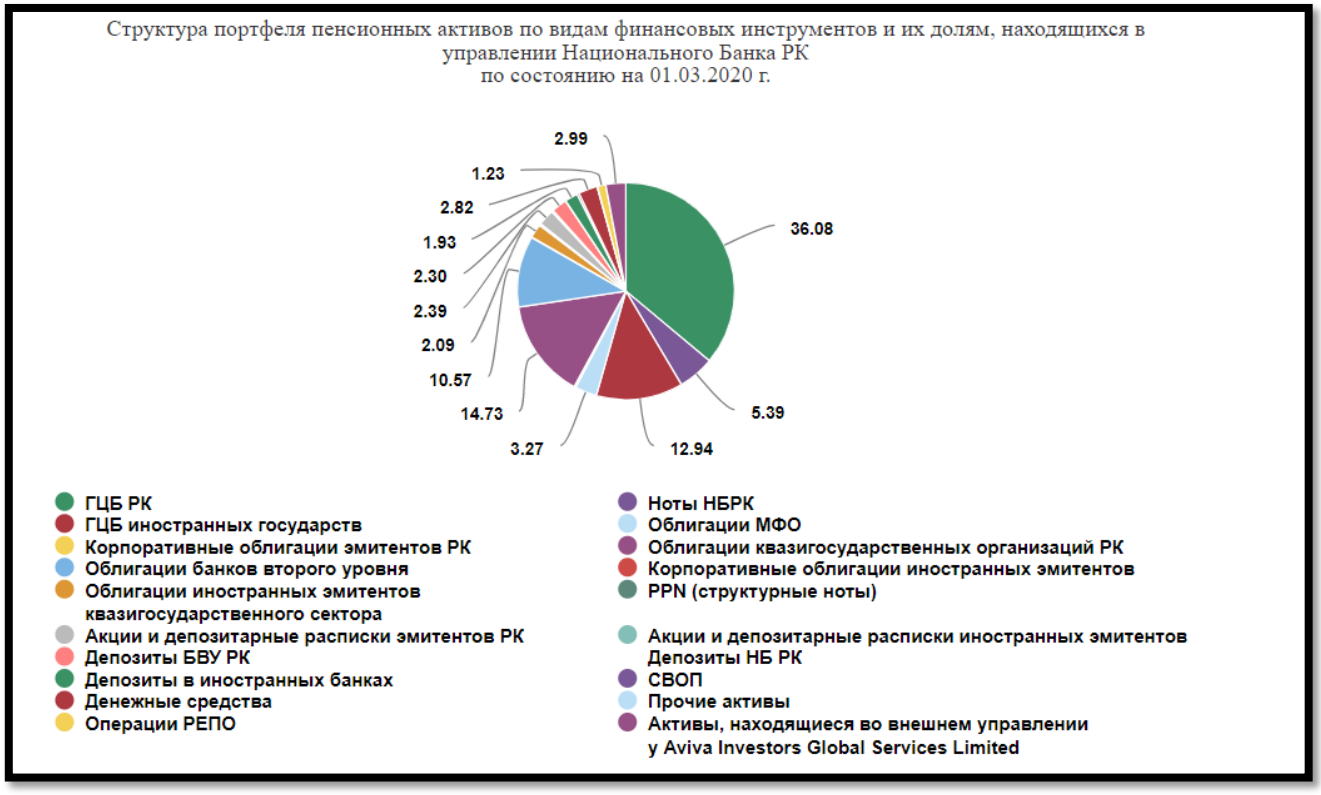
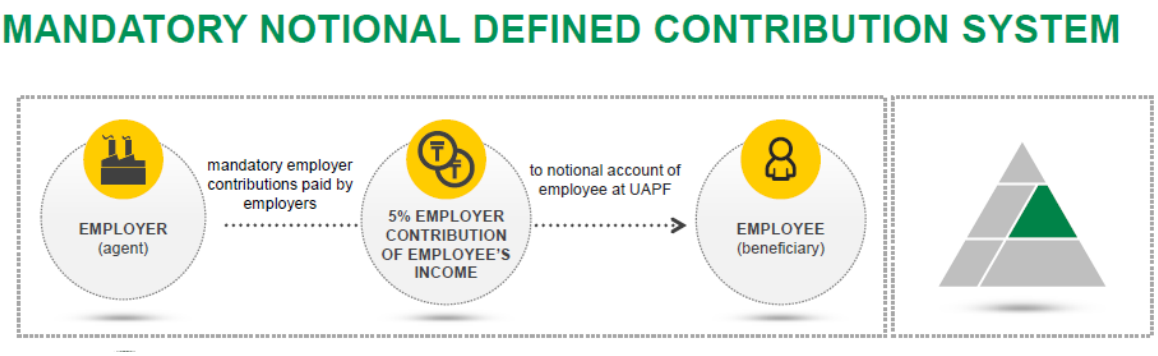
Appendix

Appendix 1: the structure of UAPF portfolio as of 1 March 2020



Appendix 2: Accumulated investment income and inflation

Appendix 3: *NDC component scheme*



Appendix 4: Future retirement income simulation

Inflation rate	2%	18%	10%	6%	7%	7%	7%	8%	8%	19%	10%	6%	8%	7%	6%	5%	7%	14%	9%	7%	5%	5%
										Fact												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Average monthly salary	9,683	11,864	14,374	17,303	20,323	23,128	28,329	34,060	40,790	52,479	60,805	67,333	77,611	90,028	101,263	109,141	121,021	126,021	142,898	150,827	162,673	185,487
Salary for 12 m(taking into account the average frequency)	77,464	94,912	114,992	138,424	162,584	185,024	226,632	272,480	326,320	419,832	486,440	538,664	620,888	720,224	810,104	873,128	968,168	1,008,168	1,143,184	1,206,616	1,301,384	1,483,896
Contribution(10%) for 12 month	7,746	9,491	11,499	13,842	16,258	18,502	22,663	27,248	32,632	41,983	48,644	53,866	62,089	72,022	81,010	87,313	96,817	100,817	114,318	120,662	130,138	148,390
Investment income at the level of inflation	147	3,094	3,134	3,133	4,511	6,212	8,056	11,665	16,786	48,618	33,807	27,500	41,584	47,858	46,536	43,654	77,694	167,067	128,335	124,876	106,733	122,524
Accumulated pension amount at the end of year	7,894	20,479	35,112	52,088	72,857	97,572	128,291	167,204	216,623	307,224	389,675	471,041	574,714	694,595	822,142	953,108	1,127,620	1,395,504	1,638,157	1,883,695	2,120,566	2,391,479

Inflation rate	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%	4.90%
	Forecast																			
	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037		
Average monthly salary	188,269	191,093	193,960	196,869	199,822	202,820	205,862	208,950	212,084	215,265	218,494	221,772	225,098	228,475	231,902	235,380	238,911	242,495		
Salary for 12 m(taking into account the average frequency)	1,506,154	1,528,747	1,551,678	1,574,953	1,598,577	1,622,556	1,646,894	1,671,598	1,696,672	1,722,122	1,747,954	1,774,173	1,800,786	1,827,797	1,855,214	1,883,043	1,911,288	1,939,958		
Contribution(10%) for 12 month	150,615	152,875	155,168	157,495	159,858	162,256	164,689	167,160	169,667	172,212	174,795	177,417	180,079	182,780	185,521	188,304	191,129	193,996		
Investment income at the level of inflation	124,563	138,157	152,530	167,721	183,773	200,728	218,633	237,537	257,490	278,546	300,759	324,190	348,899	374,952	402,415	431,360	461,862	493,999		
Accumulated pension amount at the end of year	2,666,657	2,957,689	3,265,387	3,590,604	3,934,234	4,297,218	4,680,540	5,085,237	5,512,395	5,963,153	6,438,708	6,940,315	7,469,293	8,027,024	8,614,961	9,234,625	9,887,616	10,575,610		
NDC=3%				47,249	47,957	48,677	49,407	50,148	50,900	51,664	52,439	53,225	54,024	54,834	55,656	56,491	57,339	58,199		
Investment income on NDC				49,564	102,300	158,374	217,962	281,248	348,423	419,691	495,264	575,365	660,229	750,101	845,239	945,915	1,052,413	1,165,032		

Without NDC				
		Experience=40 years		
Pension saving		10,575,610		
	38%	Replacement rate		
			Annual pension income	Monthly
2037	63	0.10467	1,106,949	92,246
2038	64	0.10771	1,019,869	84,989
2039	65	0.11121	939,590	78,299
2040	66	0.11528	865,661	72,138
2041	67	0.12005	797,557	66,463
2042	68	0.1257	734,840	61,237
2043	69	0.13246	677,022	56,419
2044	70	0.14067	623,748	51,979
2045	71	0.15081	574,642	47,887
2046	72	0.16362	529,430	44,119
2047	73	0.18024	487,784	40,649
2048	74	0.20257	449,405	37,450
2049	75	0.23404	414,043	34,504
2050	76	0.28152	381,479	31,790
2051	77	0.36099	351,456	29,288
2052	78	0.52048	323,808	26,984
2053	79	1	298,326	24,860

With NDC				
		Experience=40 years		
Pension saving		11,740,642		
	42%	Replacement rate		
			Annual pension inc	Monthly
63		0.10467	1,228,893	102,408
64		0.10771	1,145,355	95,446
65		0.11121	1,041,637	86,803
66		0.11528	959,678	79,973
67		0.12005	884,178	73,681
68		0.1257	814,649	67,887
69		0.13246	750,552	62,546
70		0.14067	691,492	57,624
71		0.15081	637,053	53,088
72		0.16362	586,930	48,911
73		0.18024	540,761	45,063
74		0.20257	498,214	41,518
75		0.23404	459,011	38,251
76		0.28152	422,911	35,243
77		0.36099	389,627	32,469
78		0.52048	358,976	29,915
79		1	330,726	27,561