

Al-Farabi Kazakh National University
Institute of economics of the CS MES RK

UDC
364(100)
rights

On manuscript

AIGERIM YESSENTAY

**The world financial crisis and national pension systems: impact assessment
and development prospects**

6D051300 – World economy

Dissertation for the degree of
Doctor of Philosophy (PhD)

Scientific consultant
Doctor of economic sciences,
professor Khalitova M.M.

Foreign scientific consultant
Ph.D., Assoc. Professor
Ihsan Toga Medeni

Republic of Kazakhstan
Almaty, 2022

CONTENT

NORMATIVE REFERENCES	3
NOTATIONS AND ABBREVIATIONS.....	4
INTRODUCTION.....	5
1 THEORETICAL AND METHODOLOGICAL APPROACHES TO THE REFORM OF NATIONAL PENSION SYSTEMS IN THE CONTEXT OF THE GLOBAL FINANCIAL CRISIS.....	9
1.1 The global financial crisis: current trends and features	9
1.2 The evolution of the development of national pension systems in modern conditions.....	22
1.3 The essence and principles of reforming pension systems.....	30
2 THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON THE DEVELOPMENT OF NATIONAL PENSION SYSTEMS.....	55
2.1 The financial crisis and pension systems in developed countries: factors and consequences of the impact.....	55
2.2 Features of the development of pension systems in developing countries in the context of the global financial crisis.....	70
2.3 Trends in the development of the pension system of the Republic of Kazakhstan in the context of the destabilization of the global financial system...	81
3 THE WORLD FINANCIAL CRISIS AND PROSPECTS FOR THE MODERNIZATION OF THE NATIONAL PENSION SYSTEM	94
3.1 Programs of anti-crisis measures to improve the efficiency of pension systems.....	94
3.2 Directions of modernization of the pension system of Kazakhstan in the conditions of the new economic reality.....	114
CONCLUSION.....	119
REFERENCES.....	124
APPENDIX	129

NORMATIVE REFERENCES

References to the following standards are made in this dissertation:

Address of the President of the Republic of Kazakhstan Nazarbayev N.A. to the nation "The Kazakhstan way – 2050: common goal, common interests, common future". Astana, January 17, 2014.

Decree of the President of the Republic of Kazakhstan. On the Constitution of the Republic of Kazakhstan: approved on September 6, 1995, No. 2454.

Decree of the President of the Republic of Kazakhstan. On approval of the Concept of further modernization of the pension system of the Republic of Kazakhstan until 2030: approved on June 18, 2014, No. 841.

Decree of the President of the Republic of Kazakhstan. On the approval of the National Development Plan of the Republic of Kazakhstan until 2025: approved on February 15, 2018, No. 636.

The Law of the Republic of Kazakhstan. On pension provision in the Republic of Kazakhstan: adopted on June 21, 2013, No. 105-V SAM.

The Law of the Republic of Kazakhstan. On compulsory social insurance in the Republic of Kazakhstan: adopted on December 26, 2019, No286-VI ZRK.

Resolution of the Board of the National Bank of the Republic of Kazakhstan. On establishing the amount of the commission fee of the joint-stock company "Unified Accumulative Pension Fund for 2020: approved on November 11, 2019, No179.

NOTATIONS AND ABBREVIATIONS

PPP	Public-private partnership
MPCE	Mandatory pension contributions of employer
IRN	Individual registration number
COXON	Committee for quality assurance in the field of education and science
CSRS	Civil Service Retirement System
MES	Ministry of education and science
CSIS	Center for strategic and international studies
FERS	Federal employees retirement system
FPF	Federal pension fund
MEUZHKAM	State long-term savings treasury obligations with a maturity of more than 5 years
MEOKAM	State special medium-term treasury bonds with a maturity of 2, 3 years
EU	European union
OECD	Organisation for economic co-operation and development
IMF	International monetary fund
GDP	Gross domestic product
SERPS (UK)	State earnings-related pension scheme
IRA	Individual retirement account
IPC	Individual pension coefficient
CEE	Central and eastern Europe
RK	The Republic of Kazakhstan
USA	United States of America
LLP	Limited liability partnership
VPC	Voluntary pension contributions
MPC	Mandatory pension contributions
SWOT	Strengths, weaknesses, opportunities, threats
UAPF	Unified accumulative pension fund

INTRODUCTION

General description of work. The thesis is devoted to the research of pension provision in the Republic of Kazakhstan.

Relevance of the research topic. At all times and in all conditions, one of the most basic problems of organizing a person's life has been and remains financial stability at elderly age. Regarding the OECD the elderly is specified like people aged 65 and above. Dependency rate of the old people can be calculated as the ratio between the elderly and the people of working age (15-64 years). The assurance of guaranteed income after going to pension can be defined as the most important issue in the social sphere.

Some segments of the population do not even manage to have such incomes during their active life that would allow them to save and guarantee themselves acceptable income for a comfortable existence at the old age. The consequence of the existence of a pension system in the state is the need for pension provision and the possibility of its provision, i.e. the availability of financial resources.

Under the current conditions of payments and deduction rates, none of the existing pension systems in the world is truly balanced.

In this regard, countries, performing a socio-economic function – that is, reducing the level of poverty in the country, should take steps to prevent poverty among the elderly.

The degree of development of the problem.

1. Theoretical and empirical works on the mutual impact of the global financial crisis and the financial stability of pension systems have been published since the 1970's, and the problems of reforming pension systems, including the description of the main measures, plans and scenarios of reform, are widely represented in the economic literature.

2. The pension system is in the attention of government representatives of economic schools, and the problems of maintaining disabled members of society, as well as the solutions resulting from them well-known economists, such as: Smith A. Petty., Ricardo D., Marshall A., Friedman M., Samuelson P., etc. The works of Russian scientists are devoted to various aspects of pension provision: Pudovkin A. Volkova A., Golubeva S. Voloshina, Grishkevich N. Sokolov A. Razorenova and N. Silchuk A. Potapenko V., Dobromyslov K., Vilayat Ogly A. Makarova L., Matveev V., Degtyarev G. Kasparyants N. Antropov V., Belozerov S., Mikhalkina E. Gorokhov A. Terentyeva. Reforming the pension system and the processes problems and tendencies of development of such systems are within the range of scientific the interests of many foreign researchers: Kinder B., Lewis M., Barr N., Diamond P., K. Makarski, Hagemeyer J., Tyrowicz J., D. Blau, Werner E., Maarten G., Gerhard R., Michael J., Thomas C., Pukis M, Hinz R., Holtzman R., Morgan P., Long T., Roman M., Tuchilus G., Monteiro R., Stepanek M. On the approval of the main provisions of the pension system, the work of Kazakhstani scientists, such as Abieva Z., Alin T. D. Arzhanova., Baymuratova, is devoted to trends, the study of the problem of pension provision Bekisheva, A. Dubrovin N., Elshibekova S. Zhantaeva A., Izenkova A. Korzhova N. Mergenbayeva A. Moldakhmetov N. Despite the wide discussion of the issues of the

world crisis and pension assurance in general, separately, the problem of creating a unified methodology for analyzing the mutual influence and relationship "the global financial crisis- the financial stability of pension systems", combining the dynamics of the population structure and demographic changes taking place in the world, has not yet been considered in the literature.

Purpose and objectives of the study. Analysis of the impact of the global financial crisis on national pension systems and determination of the directions and prospects for the development of the pension system of Kazakhstan in the conditions of economic downturn.

To achieve this goal, the following tasks are solved in the dissertation research work:

1. To study the genesis of theoretical models of the relationship between the global financial crisis and the financial stability of pension systems.

2. To clarify the concepts of pension provision, to conduct a comparative analysis of the main currently existing concepts of reforming pension systems.

3. To highlight the features and differences for pension reforms in developed and developing countries.

4. Develop a methodology for forecasting the main parameters of the pension system of Kazakhstan until 2030 - depending on various scenarios of the demographic forecast.

A research hypothesis. The demographic crisis, when the number of employees is less than the number of pensioners, increases the pension burden on the working population and poses a threat to the financial security of state pension obligations.

The idea of the work. The demographic crisis forces not only Kazakhstan, but also all countries of the world to look for ways to optimize their pension systems aimed at protecting the elderly population and promoting economic growth under the influence of the world crisis and the COVID-19 pandemic.

The field of study. International economy, world economic relations

The object of research. The object of the study is the national pension system.

The subject of research. The subject of the study is the peculiarities of the development and reforming of pension systems in the context of global crisis.

Theoretical and methodological basis of the study. tabtable

STATA programs (SPSS, STATISTICA, MatLab, Eviews, Microsoft Power BI 2013, Microsoft Excel 2013, etc.) were used for processing statistical data.

The information base of the research. The information base of the dissertation research was the primary and secondary data.

Sources of primary data: data of expert assessments of experts on the profile of the dissertation. Secondary data sources: statistical data of the Bureau of National Statistics, the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, analytical reports of the Ministry of Economy of the Republic of Kazakhstan, the World Bank, the Organization for Economic Cooperation and Development, the United Nations, reports of the Unified Accumulative Pension Fund, etc.

Scientific novelty. The scientific novelty of the research consists in the development of models for analyzing the relationship between world financial crises

and the stability of pension provision, taking into account changes in demographic processes at the international level, and their impact on the stability of the system.

In terms of pension systems, the novelty of the study consists in the proposed approaches based on the use of methods for measuring and analyzing the level, components and factors of mortality and health of the population, and standardization of approaches that can be used to assess the state of the pension system in the Republic of Kazakhstan.

The features and differences, efficiency criteria, justification of pension reforms in developed and developing countries are shown, distinguished by the level and nature of economic development, taking into account the socio-political heterogeneity and uneven economic development of these states.

In developed countries, the birth rate is low, and in developing countries it is higher, investment opportunities for developed countries are better than for developing countries due to the development of financial systems themselves, as well as economies in general, etc.

The following are among the main results that determine scientific novelty and represent the subject of protection::

In the purpose of the dissertation research, the following scientific results were obtained, determining its scientific novelty:

1. Analysis of the opportunities for the introduction of a system of pension insurance services, with the participation of the state, on the territory of the Republic of Kazakhstan. It is shown that this system will not be financially stable, since the effect of unfavorable selection is expressed among those who are ready to join the state pension insurance program. Attracting all other groups of the population into the system which can be achieved through active campaigns explaining and presenting the basic conditions of pension insurance services is necessary for the financial stability of state pension insurance services.

2. The impact of the financial crisis on the levels of pension systems is characterized, as well as the common features of the pension systems of developed countries and the types of pension systems of developing countries are highlighted. The features of reforming pension systems in the conditions of crises in developed and developing countries, including Kazakhstan, are characterized; the analysis of the development of the pension system in Kazakhstan allowed us to identify factors of financial stability of the pension system: the macroeconomic environment, trends in the global economy, economic growth, development of the corporate sector;

3. A scenario for the development of the pension system of the Republic of Kazakhstan for 2020-2030 has been developed as a response to the challenges of the global financial crisis and pandemic. An innovative (or positive) scenario is complementary to a neutral scenario. It assumes a moderate increase in pension costs and the implementation of measures at the regional level. The script includes: 1) introduction of pension insurance on the territory of Kazakhstan; 2) active dissemination of public-private partnership mechanisms in pension provision. The innovative scenario contains models developed by the author to analyze the prospects and consequences of the implementation of the first three measures.

4. Analysis of world experience showed that the reforms mainly concerned systems with defined benefit formula and were concerned on reducing minimizing obligations paid to retirees by state. Increasing the retirement age, raising the minimum period of service needed to get a pension, limiting early retirement and encouraging late retirement (increasing pensions);

The main provisions submitted:

1. Features of pension reforms in developed and developing countries, taking into account the birth rate, the development of financial systems and economies in general.

2. Factors of financial stability of the pension system: macroeconomic environment, trends in the global economy, economic growth, development of the corporate sector.

3. Models for analyzing the relationship between global financial crises and the stability of pension provision, in particular, taking into account changes in demographic processes at the international level, and their impact on the financial stability of the pension system.

4. Suggestions and recommendations on the development of the pension system of Kazakhstan, taking into account the world experience.

The practical value of the research results. The practical value of the research results is that the developed proposals for the development of the pension system of the Republic of Kazakhstan can be used by the state to solve one of the most acute socio-economic issues - building an effective pension system.

Approbation. The main provisions of the dissertation were discussed at scientific and methodological seminars at the Institute of Economics of the Committee of Science of the Ministry of Science and Education.

1 THEORETICAL AND METHODOLOGICAL APPROACHES TO THE REFORM OF NATIONAL PENSION SYSTEMS IN THE CONTEXT OF THE GLOBAL FINANCIAL CRISIS

1.1 The world financial crisis: current trends and features

For many years, the topic of the financial crisis and ensuring and preserving financial stability has become increasingly acute problems of economic science. The reason for this is often the globalization of the world financial markets taking place in our time, the current epidemiological situation in the world, which in turn is the cause of a serious increase in financial instability, the so-called «geofinance economy" arises. Currently, the issue of the international financial crisis has become very relevant.

With the development of globalization, the scale of financial crises is expanding: the financial crisis that has engulfed most countries of the world is called a global or global financial crisis. From the point of view of the composition and structure of the financial system, we can distinguish the crisis of public finances and the crisis of financial markets. This classification is the most «vulnerable», because the concept of the financial system in the classical and the concept of the financial system in the neoclassical theory of finance are fundamentally different from each other.

Discrepancy between the interest of participants in maximum profit and the best possible funds redistribution manifests itself in some segments of the financial market, predominantly in the essence of financial capital, affecting all its forms. Buzgalin A.V. and Kolganov A.I. they emphasize the contradiction between financial capital as virtual capital, "capital-risk" [1].

At the same time, the redistribution of financial resources is carried out both through the system of state and municipal finance, and through the system of financial markets (money market, securities market, credit market, foreign exchange market, the market of derivative financial instruments).

This means that financial crises can be associated with individual elements of the financial system or cover the entire financial system.

The financial crisis in the field of state and municipal finance is usually called a debt crisis, because it is associated with problems of servicing the state and municipal loan. Since the main share of government debt is represented by debt securities, the financial crisis in this area simultaneously refers to the financial crisis of the securities market.

A unified approach to the concept of a financial crisis has not been developed by modern science. Furthermore, there is no indication of the specifics of the crisis in the world market. Most researchers consider the features of the crisis in certain segment: (currency, credit, stock, and insurance markets) or a combination of them: for example, M. Bordeaux and J. London Lane explained a banking crisis that occurs in several continents and countries, including developed and developing countries as an international financial crisis. [2].

From an institutional point of view, financial markets are divided into markets for banking services, insurance services and services of professional subjects of the securities market. Therefore, the types of financial crises can be defined in accordance with this classification of financial markets.

The main causes of the financial crisis:

- 1) untenable macroeconomic policy;
- 2) weak national financial system;
- 3) unfavorable external conditions (for example, a drop in prices for the main goods of national exports);
- 4) incorrect exchange rate (usually inflated);
- 5) political instability.

There are two more reasons of financial crises:

- financial leverage – that allows to run a business that, in case of a lack of borrowed funds, collapses automatically. This gives the effect of dice in dominoes, since even with a small lack of funds, it leads to the insolvency of a large number of business participants;

- the crowd effect is associated with the operations of speculators who massively sell or buy assets and, thereby, turn a weak decline and increase in prices into a collapse and rapid growth, which destabilizes market.

The reasons for the crisis phenomena listed above are recognized as a consequence of economic development. Experts are sure that where there is stability, there is always an imbalance. In capitalist times, it was caused by under-production, in modern times-by overproduction.

The imbalance occurs against the background of inept management of available resources, the desire to get more without improving or correcting process. This is the main problem of the global economic crisis or imbalance. The traditional explanation of the causes and trends of financial crises is that financial market participants, due to irrational behaviors, inflate «bubbles», that is, they contribute to a significant deviation of market prices from their fair values.

If the financial crisis is really a «bubble», then the best way to deal with them is to transfer responsibility for inflating «bubbles» to those investors who «inflated» them. However, the problem is that there is the chain, as a result of which the losses of some investors generate losses of other investors, and the whole system becomes interconnected. Mistakes (losses) of one investor are accompanied by errors (losses) of other investors. Thus, the «bubble» becomes a threat to the entire financial system.

The famous economist Hyman Minsky identified five development trends of the bubble:

- change;
- boom;
- euphoria;
- getting a profit;
- panic.

In addition to these stages, economists distinguish the process of bubble formation into seven more stages.

1) Shift. Every financial crisis begins with a specific market change. A change of this nature could be the emergence of a new technology, such as the Internet, or a shift in economic policy. For instance, an unexpected decrease in loan rates.

In any case, this is a global shift in a specific sector of the economy, as a result of which market participants are beginning to count it as profitable for investment.

2) Price increases. Prices begin to rise gradually after the shift. This is not yet speculative growth, because growth is usually determined by a qualitative improvement in a specific area of the economy. However, as prices rise, more market participants become aware of this.

3) Low-cost lending. Rising prices alone are not enough to cause a bubble to form. Impulse is required for any financial shock, and such fuel is always cheap credit. Large-scale speculation is impossible without this. Lack of cheap loans does not allow new participants to connect to the sector. Cheap credit becomes the so-called «entrance ticket», for everyone who wants to join the «game». For example, there has been a steady increase in the price of gasoline. While the loan is not available to a person, he, of course, can fill his garage with cans, in the hope that in the coming months, the price will double. But, if at the same time banks begin to lend at a low interest rate and, without requiring special guarantees, a person can rent or build an entire storage facility. In turn, the available credit is the result of certain financial innovations, which are often developed specifically for new market conditions.

4) Boom. The market begins to "warm up" as a result of the availability of affordable and low-cost loans. Debt trading stimulates sales growth, and then the scarcity of the subject of sales begins to affect.

Prices are rising at an increasing rate, creating a fertile ground for quick income. Prices are completely out of control as an increasing number of "new players" connect. Long-term forecasting is rendered impossible. The rise in prices prompts the appearance of speculators eager to maximize their profits.

5) Euphoria stage. The bubble then enters its most "dramatic" phase. According to some analysts, the process cannot continue in this manner. They base their arguments on experience, extensive research, and logic.

6) Income withdrawal. Each participant believes that his or her profit will only rise, that is why the bubble continues to expand. However, while euphoria attracts an increasing number of new participants, long-term market participants are beginning to recognize the unreliability of this creation. They recognize that the final stage of the financial bubble is approaching, and they begin to look for the best ways out of the crisis with the least amount of loss. Finally, they decide to withdraw their funds.

7) Panic stage. The causes of the explosion may differ, but the bubble will eventually burst. Panic always replaces euphoria. The realization that bankruptcy is unavoidable occurs. Attempts to sell one's own products are failing because there are no more buyers. Panic is spreading, prices are falling uncontrollably, credit money flows are drying up, and losses are being counted.

The following are the general trends of the financial crisis:

- The cyclical dynamics of the world and national economies of developed countries, as well as the increased synchronization of these processes in the world's major economic centers (the "Great Triad");

- The globalization of the world economy and world finance against a backdrop of growing political insecurity and the threat of armed conflict in various parts of the world — this increases the instability of the global economy and the global movement of capital flows;

- The impact of high oil prices on the movement of loan capital, the "separation" of pricing for this product from "classical" price formation, and the "pressure" of massive amounts of "free money" on world financial centers, the creation of "soap bubbles," and, as a result, an extraordinary increase in the scale of fictitious capital;

- The emergence of processes that lead to the destruction of competition in the field of large financial capital, as well as the expansion of global monopolies that suppress competition;

- Reduction in management efficiency and quality in the United States, the European Union, and Japan, as a result of unjustified risks taken in pursuit of superprofits;

- The Bretton Woods financial institutions, established at the end of WWII to regulate the global financial system, are in crisis, as is the lack of supranational institutions adequate to the current situation to regulate the movement of financial flows;

- Oil and its pricing are especially important for all of these reasons. As a result of the dynamic growth of the economy in the developed segment of the global economic system (North America – Western Europe-Japan), as well as China, India and some other rapidly growing economies, the demand for oil that ensures their growth has been continuously increasing. This circumstance was a constant factor for the speculative increase in prices for liquid fuel.

Various motives were used to artificially inflate prices (constant instability in the Middle East, where international communications for the delivery of oil to developed regions take place, guerrilla raids on oil fields in Nigeria, cyclones in the south of America, in the Gulf of Mexico, increased needs of the Chinese economy, etc.), and all this served as an excuse for raising oil prices. And as a result, the cost of a barrel of oil «broke away» from oil pricing, respectively, the profit of oil companies is, according to various calculations, from 250 to 450%. And what is important, there was a undermining of free pricing and, accordingly, the competitive basis in that particular sphere of the economy. As a result, the following happened: on the one hand, oil companies and financial institutions that accumulate their funds have become owners of massive amounts of «easy cash»; on the other hand, this «easy money» flows into other, profitable areas of the economy. On the third hand, huge profits generate various kinds of " financial pyramids and «financial bubbles», destroy the stability of individual parts of the financial system, corrupt the management of dividends (including for poor management). All this undermines the principles of competitive mechanisms in general and in business. The formation of large amounts of «free money», in turn, generates a powerful inflationary trend on a global scale, which is spreading around the world. Because of the close relationship between various parts of the world economy and finance, this has both a direct and indirect impact on the economies of countries.

The crisis referred to as the «black swan». The concept of «black swan» entered the lexicon of risk management specialists in 2007, when the book by Nassim Taleb was published. As the author interprets, an event is called a «black swan» if it appeared suddenly, had a great effect and became a huge surprise for experts. Today, the «black swan» has definitely become a coronavirus. The pandemic has demonstrated the

fragility of globalization and the complete lack of international management of global crises.

The heterogeneity of crises focuses a lot of attention on itself from experts and economists. In modern conditions, there are various methodologies for classifying crises. Let's look at some of them:

1. Crises are divided into general and local. General crises in terms of coverage are characterized by their impact on the entire economic system as a whole, and the greatest global consequences, in contrast to local crises, which involve an impact only on a part of the economic system;

2. Another division of crises is based on their problems and level of coverage. There are macro-crisis and micro-crisis. These types are characterized by the scale of problems: a macro-crisis covers problems on a global and especially large scale, while a micro-crisis is characterized by the inclusion of a single problem or a group of problems that has a relatively small scale of its kind;

3. Also, there are regular (periodic, cyclical) and irregular crises. Regular crises are characterized by strict cyclicity, which implies a transition through all the known four phases of the cycle. Such a crisis is the beginning of a certain cycle, it has a certain periodicity, during which the economy functions at various stages with the emergence of another crisis.

Irregular crises, in turn, are characterized by less globality in general terms and contain intermediate, partial, local, structural crises, the occurrence of which can be a relatively spontaneous phenomenon that does not have in its basic premise the passage of all phases of the cycle.

According to the regularity, as one of the classification factors, the following types of crises are noted:

– The crisis as a result of an «external shock». Here, a crisis means a situation when the economic development of any geographical community is isolated due to a lack of resources associated with natural or economic disasters;

– Cyclical crises. They are characterized by periodic and regular recessions of economic activity with the passage of the main phases, as well as give rise to a new cycle;

– Intermediate crises. Such crises reflect recessions of economic activity and industrial turnover of an irregular, even spontaneous nature. These crises, as a rule, do not reflect in the cycle, do not give it a start, have a short-term character, as well as a local orientation;

– Structural crises. These crises are characterized by a discrepancy between the existing structure of social production and the changed conditions for the effective use of resources and are associated with a gradual increase in intersectoral imbalances in social production. They cause serious consequences, are very long-lasting, and require some adaptation to the consequences that are of a serious nature;

– Partial crises. As a rule, they appear based on a reduction in the economic potential and activity of large sectors of the economy;

– Industry crises. These crises are determined by a sharp decline in production activity in some industries or a certain industry, more often they are short-lived;

– Seasonal crises. Such crises are characterized by the emergence of climate problems and conditions that significantly affect economic activity. As a rule, they are local in nature;

– World crises are global crises that involve both individual spheres and the global economy in a whole.

It is also impossible not to mention the existence of pseudo-crises, which include crisis processes that manifest themselves in a normal economy. In most cases, this type of crisis occurs in the economy "artificially", i.e. it is provoked for a specific purpose.

The cheap money policy and the reduction in the cost of credit lead to erroneous investments in the means of production and the lengthening of the production structure, which does not correspond to consumers' temporary preferences and, in the long run, causes an increase in interest rates and inflation, causing a crisis. [3].

There are also divisions of crises into predictable and unexpected; latent and explicit; deep and superficial.

In more detail, crises can also be divided into the following types:

1. The monetary crisis, which is characterized by a sharp reduction in the issuance of loans, mass cashing of various bonds and withdrawal of deposits. Such a crisis, largely, is directed by negative consequences for the banking sector.

2. Budget crisis – a crisis of state financial reserves, called a budget deficit.

3. The currency crisis is an actual type of crisis today, characterized by the depreciation of the currency on the world market and the fall of the exchange rate.

4. Stock market crisis – a sharp decline in the exchange rates of securities, a reduction in their issuance.

The Asian crisis of 1997-1998 can serve as the best confirmation of the plurality of equilibria. The financial panic contributed to the emergence of such a crisis and the establishment of a much "weaker" equilibrium.; Large capital inflows, growth of short-term debt, current account deficits, which were undoubtedly one of the causes of the 1997 crisis, were observed in Malaysia, Thailand and the Philippines in 1994, however, the "tequila effect" is not strong affected their economy.

The Asian crisis that engulfed Thailand, Indonesia, Malaysia, South Korea and the Philippines in 1997-1998 is of great interest. It, along with the Mexican crisis of 1994, is often called a crisis of growth, a crisis of success and a crisis of a new type; The novelty is found in the fact that these crises occurred from the inability of these countries to cope with globalization, in particular, with the entry into the world financial system with its huge maneuverability of capital," As rightly noted by A.V. Anikin, describing the Asian crisis: "the burden of globalization has proved unbearable for the countries of the region; integration into the global system with its dynamics, first of all with colossal flows of capital across the borders of countries and regions, capable of undermining the previously financial status of the country in a short time" [4].

To summarize, there are many different types of crises today because of their heterogeneity. The definition of the type of crisis, its belonging to any class contributes to the choice of the right direction of anti-crisis regulation.

Ofcourse, crisis has impact on all spheres. Having studied the classification of crises in more detail, we would like to propose a concept as a classification of the impact of the crisis on the pension system (figure 1).

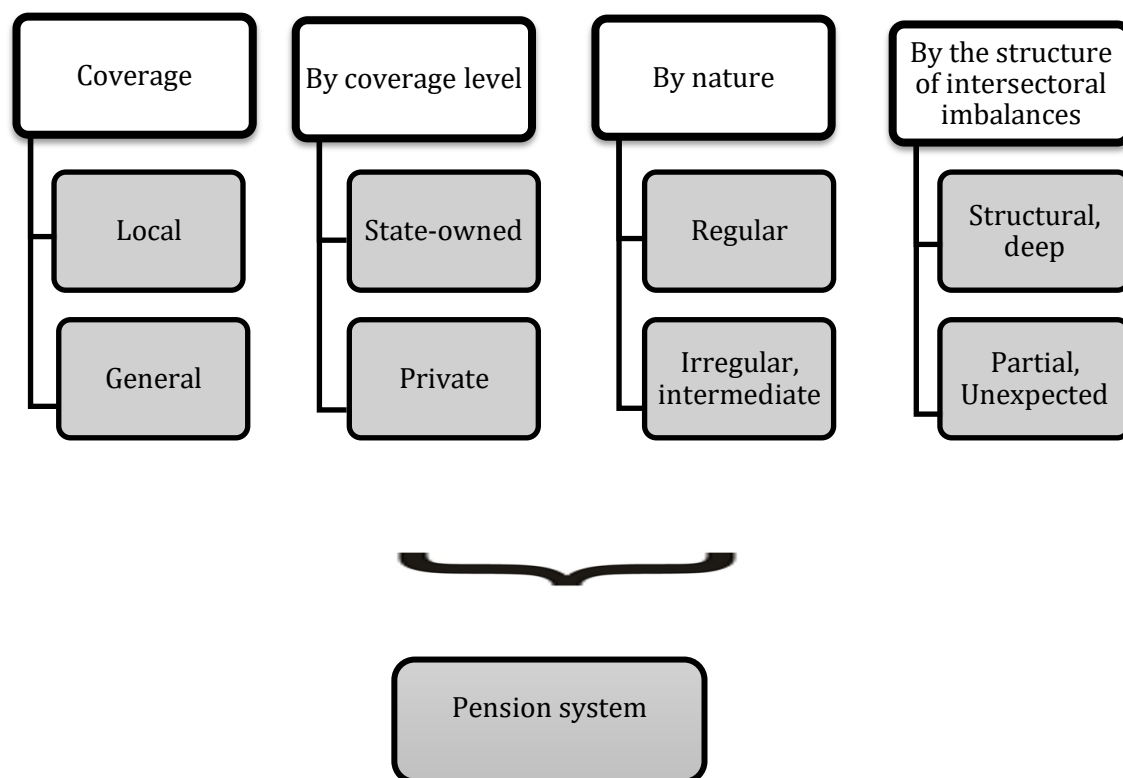


Figure 1 – Classification of the impact of crises by coverage, structure, level of impact on the pension system

Note – Compiled by author

The US mortgage crisis caused consequences, the scale of which grew to a global level by 2008. This happened in the following stages:

- rapid decline in stock market quotations;
- reduction of the possibility of making a profit from the placement of securities;
- widespread decline in production volumes;
- depreciation and falling demand for raw materials;
- rising unemployment.

Statistics show that credit and banking crises have serious consequences for the economy, leading to a decline in production, trade, exports, imports, and the value of real assets. K. Reinhart and K. Rogoff studied 18 postwar systemic banking crises and found that they tended to follow a common pattern [5]:

Banking crises have a strong and consistent impact on real GDP and unemployment, with an average annual increase in unemployment for 4.8 years. In addition, the fall in asset prices is deep and prolonged. The stock prices are down by 55% and the downtrend is expected to last about three and a half years. The average residential property price falls by 35%, but starts to recover after 6 years. The stock market has declined by an average of 45% globally since the crisis began, but index

growth has begun in the first quarter of 2009, indicating that this downturn was much longer than the average. From a peak in June 2006 to a low in April 2009, the S&P/Case-Shiller residential real estate price index fell by a third. Compared to the 1997 Hong Kong crisis, which saw prices fall by more than 50% and last for about 6 years, the modern crisis's consequences are much smaller and milder [6].

The serious consequences that the economic crisis of 2008 brought with it are different and their scale has a rather large gradation along with the timing of the end of this crisis. Therefore, the United States was able to get out of such a crisis among the first – within a year and a half. The consequences affected the automotive industry, the banking sector and the purchasing power of the population [7]. At the same time, the unique feature of that crisis is the increase in bank deposits, which increased by 9% globally in 2008 (\$ 5 trillion) [8].

Greece suffered the most significant blow – this crisis led to a large-scale budget deficit and there has been an increase in public debt in recent years, which, as a result, in 2010 caused the emergence of a debt crisis that, does not retreat from the economy of this country to this day.

Cyprus also received the most powerful impact of the 2008 crisis. In 2013, because of the 2008 crisis, the economy of Cyprus faced the collapse of the banking system and its complete restructuring. The economy of this country has not coped with the consequences to date.

Russia received a decrease in the capitalization of companies by 3/4, the reserves of gold and foreign exchange reserves by 25%; the fall of the banking system, the recession, the depreciation of oil. Experts opinions on the time frame of this crisis for Russia differ: some experts conclude that the Russian economy overcame the crisis of 2008 in 2012, and in 2014 Russia suffered a new crisis due to the tense political situation; other economists believe that the crisis of 2008 did not leave Russia. But stability in the Russian economy has not become a natural phenomenon. We can say that 2014 was a turning point in the political and economic life of Russia. The events in Ukraine and the annexation of Crimea to Russia caused a number of political indignations, which very clearly affected economic relations in the form of sanctions against Russia, a sharp drop in prices for energy resources, the supplier of which is Russia. A number of sanctions were put forward by the United States and supported by the EU countries, respectively; it is possible to draw conclusions about the scale of the situation. The list of sanctions is almost regularly updated, and has more than 20 types. These included bans on entry to the EU countries for a large number of individuals; a ban on carrying out commercial activities within the United States and EU countries for a large number of Russian companies, especially banks; a ban on private and public investments in the Russian economy, a ban on export-import relations with Russia, etc. A detailed analysis of existing articles, works and monographs on the global crisis allowed us to name many reasons for the crisis. For a complete understanding, all the causes of the current global crisis, with a specific reason being linked to the aspect within which this reason was formalized.

The following characteristics of the global financial crisis can be distinguished:

- the depletion of the dominant world paradigm or the crisis of capitalism (the civilizational aspect);

- the traditional crisis of overproduction (the aspect of the physical economy);
- the decay of world monopolies (institutional and evolutionary aspect);
- global instabilities (aspect of globalization);
- the exhaustion of the world monetary and financial system built on loan interest (civilizational aspect).
- Structural crisis;
- Excessive growth of the financial sphere (financial aspect);
- The gap between the global financial and economic spheres (financial and economic aspect);
- Over-accumulation of capital and excess liquidity (financial and economic aspect);
- Falling capital efficiency and falling aggregate demand (structural aspect);
- Overproduction of financial products: futures, options, derivatives, credit default swaps (innovative aspect);
- Insufficient control over the financial sphere (control aspect);
- Disorienting activity of rating agencies (the aspect of trust and competence);
- The crisis of the regularity of global markets (an aspect of globalization);
- The consequence of the globalization process (the aspect of globalization);
- The inconsistency of the US status with new global challenges (the aspect of globalization);
- The exhaustion of the dollar as a world reserve currency (monetary and financial aspect and the aspect of trust);
- Overproduction of debt (the innovative aspect);
- The fault of US legislators (the aspect of trust and competence);
- The archaism of generally recognized economic theories and knowledge (an aspect of science and knowledge).

During this time period, the most destructive crisis can be considered is associated with the coronavirus pandemic. The current crisis is associated with the realization of a world – class epidemiological risk-the sudden appearance and sharp spread of a new type of infection of the coronavirus family. The virus was labeled 2019-nCoV, the disease-COVID-19.

It is already obvious that the current problems associated with the new coronavirus pandemic will turn into many times more significant large-scale shocks than the financial crisis of 2008-2009, and trade conflicts and sanctions are exacerbating the recession. The implementation of quarantine measures taken to reduce the spread of COVID-19 reduces economic activity very sharply. Interaction between people is minimized, the demand for tourist and transport services is falling, and the construction sector is suffering. To date, the loss of the global air transportation sector due to COVID is estimated at \$252 billion USA. The crisis effects affect, among other things, the branches of the real sector. Production stops, and, it will take additional time to reach at least the output level available before the quarantine. The decline in business activity leads to a contraction of the labor market and increases the burden on the state budget. For example, in the United States, on March 26, 2021, a record level of unemployment applications was recorded for the entire history of the indicator- 3 million 283 thousand applications. Previously, the maximum level of 668 thousand

applications was recorded only in October 1982 and 667 thousand in February 2009. The global economic shocks from COVID-19 have an impact on financial markets. There has been a drastic fall in the value of assets will cause a chain reaction, which can lead to a series of bankruptcies and the collapse of the global financial system. Economic activity in China has declined first time over 50 years. The European Union has not seen such a fall in its entire existence. Unemployment among Americans has broken all records since the Great Depression between the two world Wars of the last century.

The coronavirus interrupted the recovery of the world economy after the previous crisis-the recession of 2008-2009. Its scale now seems to economists small and ridiculous compared to what is shining on the planet after the Great Quarantine, as the current depression is already called. This means that the return to the previous rates of increasing wealth and reducing inequality on the planet risks being longer. Last time it took a whole decade.

Then the world got off mainly by easing monetary policy - by printing money and eased the financial crisis. This time everything is more serious, because the problem is not a lack of capital, but the virus and the associated costs and restrictions.

The anti-crisis economic regulation implemented by various countries from 2008 to 2011 stands out against the historical backdrop, but its scale and forms are not exceptional. The unprecedented nature of anti-crisis measures in the current crisis is due to the emergence of a new trend in the global economy - the transformation of anti-crisis measures, which expresses itself in their similarity, serendipity, mutual influence, and increased integration of different countries' authorities [9].

The financial crisis is also having a significant influence on pension provision. Pension provision has been to the center of scientific and public debate in recent years. The major factor was demographic changes in population structure driven by lower birth rates and higher average life expectancy. Since the beginning of the twenty-first century, most developed countries around the world have been in the process of constant evolution of pension systems, the need for which and the direction of which are predetermined, first and foremost, by changing demographic conditions, most notably the aging of the population. At the same time, in recent years, the world economy has faced the problem of low growth rates. The layering of these global processes has led to an unprecedented crisis of pension systems in developed countries, in connection with which the issues of stable functioning of the pension system are becoming particularly relevant and are included in the problems of ensuring economic security and competitiveness of the national economy.

According to the World Economic Forum's approach, one of the elements determining a state's competitiveness is the level of health care (including the growth in life expectancy) [10]. According to projections, the percentage of the youthful population under 20 and individuals of working age would steadily decline over the next 40 years, while the number of elderlies will rise by 10%. Pension systems had been constructed in practically all industrialized nations before the start of the Second Pestilence War, but they did not cover all sectors of the population. The decades following World War II saw a remarkable development of pension with functional

pension systems, with most industrialized nations having 138 provisions by 1990. There were only 33 countries in the globe by 1940 [11].

The original pension schemes were mostly distributive in character. Distributive pension systems were established at a time when the proportion of the population at retirement age was modest. In this case, relatively minimal fees from employees and employers were enough to give a few seniors with an income level comparable to the old one.

However, demographic changes, shown as an increase in life expectancy and a drop in the birth rate, significantly altered the situation and resulted in an increase in the percentage of retirees in a country's demographic structure. As a result, the demographic load factor has decreased [12]. The demographic load factor is defined by the OECD methodology as the ratio of persons aged 65 and above to people aged 20-64 years. We believe that the World Bank and OECD definitions show the theoretical ratio of contributors and beneficiaries, but the actual ratio of contributors and receivers is a more realistic measure.

Recent demographic trends imply that their development will have an increasing influence on the funding of pension systems in the near future. So, while there were five individuals of working age for every retiree in the EU nations in 1986, there were just over four in 1996.

The aging of the population and a decline in the total number of employees causes a rise in public spending in the structure of the state budget, increasing the burden on able-bodied members of society. Between 1960 and 1985, OECD member nations' public pension expenditure rose twice as fast as their GDP.

According to projections, the demographic load (measured as the ratio of the population at retirement age and older to the working-age population) would more than double by 2050.

It is apparent that the existing financial challenges associated with state pension systems will worsen in the future. This is because most European pension systems are dependent on contributions from employees' earnings and are thus extremely sensitive to changes in the ratio of economically active, contributing population to receivers of pension benefits. Because the current pension systems in the EU nations are characterized by a current payment deficit, the exacerbated difficulties of the financial efficiency of the existing pension systems have resulted in the objective necessity for their reform.

Pension provision issues in EU nations are driven not just by demographic changes, but also by changing socioeconomic situations. First and foremost, this is due to a growth in unemployment, which causes workers to retire before reaching retirement age, and, if their responsibilities become too heavy for them, the necessity to file for disability payments. In this circumstance, it has been normal practice to implement a system for flexible retirement or to tighten the criteria giving the right to disability benefits while also taking efforts to limit such payments.

The changes in the structure of society over the last few decades, primarily related to the changing role of women in society, have resulted in an increase in the number of women participating in labor activities, a rise in the divorce rate, and, as a result, the need for a number of reforms in the system of survivor's benefits. Many countries have modified the widely held idea that a man is the breadwinner and a woman is the mother and housewife. As a consequence, benefits for widowers were developed, and as a

prerequisite for obtaining them, the necessity to assess the applicant's need was acknowledged.

Pension systems in most wealthy nations in Europe have gained maturity after more than 40 years of its existence. This implies that the vast majority of employees are covered by pension plans and are allowed to claim benefits; the population is aging, and the proportion of persons contributing to required pension insurance schemes is declining. Many pension plans have a current payment shortfall, and according to some estimates, the social security system's cumulative debt ranges from 100 to 250 percent of a nation's GDP.

Naturally, an event of such a global scale could not but affect society. The main negative moment was the sharp increase in unemployment, which continues to this day. In Europe and the United States, the unemployment rate exceeds 10% (although the acceptable level is only 4%). According to the crisis's outcomes, this statistic was more than 11% in Russia.

The analysis of the processes on the labor market during the crisis allows us to draw the following conclusions, including those applicable in the process of building economic policy in Kazakhstan:

1. Severe financial crises have a significant negative impact on the labor market, which determines the low rates of post-crisis recovery of the world's economies, especially developed post-industrial economies, since in such economies the majority of jobs are concentrated in non-productive industries. While in industrial sectors, production can quickly recover along with the growth of world prices for industrial products, in industries focused on personal consumption (services), the recovery is slower due to the slow recovery of demand from households.

2. Because population consumption expenditures are one of the most crucial factors of economic growth, particularly in the face of a downturn in external demand during the crisis, national economic policy throughout this period could also focus on maintaining the internal labor market and keeping (and, if possible, increasing) the capacity of public expenditures. To do this, it is necessary to adopt programs that stimulate consumption and increase the volume of disposable monetary income through both income increases and tax cuts.

Summing up, we can say that the global economic crisis is a crisis that has engulfed most countries of the world, as a result of which there has been a decrease in production; unemployment has reached critical proportions; a wave of bank failures, mortgage companies and other organizations has swept; stock indexes of most major stock exchanges of the world have sharply declined; in general, the standard of living has seriously decreased.

Thus, the current crisis can be qualified as a crisis of overproduction of financial assets, which resulted in a deep recession of the entire world economy. Therefore, States are called upon to constantly monitor the internal state of the economic and financial system and take proactive measures to prevent its destabilization. This will allow the development of an appropriate management program based on preliminary warning of threats to the financial and economic system and the prevention of associated hazards. In particular, those countries that are implementing a modernization strategy should necessarily provide for measures to improve the

efficiency of public administration. Significant progress in this direction can be achieved only in the long term.

Considering some development in the global economy, the global financial system's stability remains under doubt. The main problems are related to the weakness and even almost bankruptcy of the public finances of some countries and the uncertainty of credit activity in developed countries, which makes world markets exposed to risks of debt sustainability and excess liquidity. Despite the active anti-crisis policy of recent years, the Kazakh financial sector remains sensitive to these risks, since the main part of external financial flows to the country is provided by developed European countries.

Pension funds were more affected by the difficult situation in the financial markets and the fall in the value of their assets, as they invested more in stocks, real estate, and less in bonds and deposits. At the same time, I would like to note that the functioning of pension systems has a stable causal relationship with economic growth. The most important function in the implementation of this relationship is performed by the financial market.

The financial markets in which investment companies, pension funds, banks and other financial organizations operate, as they develop historically, generate an ever-growing superstructure in the form of derivatives markets, super-risk speculative operations.

The financial superstructure has a great destabilizing potential, since it unites huge and very unstable currency markets, debt markets, and derivatives markets. Thus, among the macroeconomic reasons for possible financial and banking crises, we can note: credit «booms» that lead to a decrease in the quality of bank assets and capital; problems with the balance of payments that can lead to a default on government debt; sharp changes in exchange rates and interest rates; the emergence of «bubbles» in the securities and real estate market; the underdevelopment of financial markets and financial legislation, and others.

Countries use their unique set of procedures and ways to stabilize their finances and overcome the crisis. In addition, the fundamental directions that might impact the crisis's growth can be strengthened:

- state financial management of the economy and the resolution of social and economic problems;
- use of state financial tools for the expansion of commercial activity and the creation of a suitable environment for the activation of investments and entrepreneurial activity;
- the use of different tools of the state economy to regulate direct and indirect effects based on socioeconomic circumstances;
- adaptable economic process regulation [13].

So, we can sum up that the functioning of pension systems is closely related to trends in financial markets. It follows from this that the development of the financial system sectors has a close connection with the problems of general economic stability. We share this position.

1.2 Evolution of the development of national pension systems

At all times and in all conditions, one of the most basic problems of organizing a person's life has been and remains financial stability at an incapacitated age. The means of support for older persons have varied throughout history as a result of transformative processes in the structure of society and the degree of its development: from self-support to communal aid and mutual assistance. Therefore, the institutional structure of society, forms of labor organization and the level of production development, national and cultural traditions of peoples, the influence of religious trends, etc determine the evolution of the development of social protection of elderly people.

The history of pension provision has been considered since the beginning of the 18th century. Meanwhile, this social institution originates from the times of the Roman Empire, when legionnaires were supposed to be endowed with a part of the property obtained because of conquests, including land. Then-it was a reward for merit. Allotments were also given to those who were seriously injured. Roman Emperor Yu. Caesar introduced a system of military pensions. Gaidar, E. Rich and poor [14, 15]. Under the Roman emperor Augustus, pensions were established for veteran soldiers, who were allocated from a special military fund [16]. By 130-200 AD, shelters for the elderly were organized in ancient Rome with the support of citizens, where minimal medical support was also provided [17].

The first mention of pensions as a form of material support for certain categories of citizens from the state dates back to the times of antiquity. For example, even in ancient Greece, benefits were paid to elderly citizens who had services to the state. In the Roman Empire, military pensions were also established in the form of lifelong maintenance of military personnel. However, comprehensive pension provision appeared much later - at the end of the 19th century. It was during this period that the first examples of the transition from selective pension provision categories of citizens to universal systemic pension provision appeared. In ancient Greece, the state also kept soldiers mutilated in war. The amount of the allowance was approximately 1-2 obols per day. The treaty of Eumenes I, the ruler of the Hellenic state of Pergamum E. with hired soldiers is the oldest chronologically and most important source of the right to pension provision: «...Those who have served a set number of years and have become free from service should receive a pension for the time they have served; it should be received by the soldiers' next of kin or to whom the soldiers will leave. Soldiers receiving a pension are free from paying taxes» [18].

In the Middle Ages, it was also customary to endow with land plots and other property for certain merits, thereby providing them with a certain level of income for the rest of their lives. Later, in the XVI-XVIII centuries, elements of mutual assistance were present in the activities of workshops and guilds, where there was mutual assistance for guild members and shop workers in case of injury or death at work. The benefits were received by the employees themselves or family members in cases of death. On this basis, there was material support in old age.

Thus, it was professional associations that formed the basis for the formation of modern methods and types of material support for people in old age. Mutual support and mutual assistance within the framework of professional associations have become a strong impetus for the socialization of society, the manifestation of charity, the

unification of people and the formation of their responsibility for fellow citizens, the manifestation of sympathy.

But this form of assistance was of a non-permanent nature, and the size of donations was not so significant and therefore not sufficient. Only in the XVI-XIX centuries. European countries adopted laws on the poor. This process made it possible to form an organizational and legal form of social protection of the population who are unable to work due to old age.

Assistance for the elderly and disabled due to the injuries of the population was provided through the organization of care homes or workhouses. The first workhouses appeared in 1610 in England and France. By the end of the XVII century their number has reached 126 in England alone.

In the XIX century in the countries of Europe, mutual assistance systems for employees continue to develop, but already in the form of pension funds or lifetime annuity funds to ensure old age. In fact, they were a kind of savings funds, but they were few in number. Employee support funds were also organized at large enterprises.

Workers' pensions were adopted for the first time in Germany during this period, in 1889, at the initiative of Bismarck. Similar sorts of pension provision are emerging in several Western European nations, including Italy (1919), the United Kingdom (1908), Sweden (1913), and France (1905). Pension plans were established in Canada (1927) and the United States a little later (1935). The percentage of old persons in society was tiny during the end of the nineteenth and beginning of the twentieth centuries, and the state had no difficulty providing them with financial assistance. Because the primary goal of pension assistance was to prevent poverty, the pension amount was only 15-20% of the wage [19].

In modern literature, a complex of economic, demographic and social prerequisites is identified as the main factors of the emergence of a system of material security of old age. However, we must not ignore the moral and political implications. In her essay "European everyday culture of the nineteenth century," T.S. Kolesnikova states, "In the XIX century, the life of the people of Europe began to change extremely swiftly." The breakdown of old customs and foundations, as well as the fast changes in all aspects of life, were perceived as evidence of the birth of a completely new way of life, a new social structure. Scientific and technological advances in the nineteenth century resulted in a shift in people's lifestyles. Mankind faced wholly new challenges as a result of industrial civilisation [20].

There is a certain transformation of consciousness which helps the development of financing of socially significant spheres in society and sets the state the task of forming an integral system of social protection of certain segments of the population.

China has remained an agrarian state for a long time. Back in the 4th-6th centuries, the emperor determined the rate of allocation of land plots depending on age, gender and social status in society. For example, if the whole family consists of old people, minors, disabled people, and no one has received land, then someone who has reached the age of 11 or more years, as well as a hunchback, should be given land, but half as much as an adult man. An old man who has reached 70 years of age or more does not need to return the allotment of land he received [21]. And in the 7th century, the land was measured according to the Tang system and each old man, seriously ill or disabled

person was entitled to 40 mu (Mu (Chinese) – this is the Chinese unit of area measurement. Translation of the mu unit: 1 mu = 666.7 square meters). Each widow was entitled to 30 mu, while a draft man over 18 years old was given 1 tsin of land. Of these, 80 mu were considered the land of kaufen (a poll allotment for plowing), and 20 mu were considered the land of yunye – (a compline fishing allotment) [22].

Thus, in Asian countries, the system of ensuring old age as such was absent and in the Middle Ages also did not have such rapid development as in Western countries. Only in the twentieth century, with the development of industry and the change of the social system in the countries of Southeast, Central and Central Asia, social insurance systems, including pension provision, began to be developed [23].

The development of social security for old age was associated with trends in the country's economy. Therefore, the social and legal provision of old age originates precisely as a pension system from the beginning of the XVIII century. Even then, on the basis of legislation, the state provided military personnel of various levels of ranks at the expense of the treasury. For this purpose, a Table of Ranks was developed, according to which payments were differentiated. The length of service for retirement for the military was on average 20-25 years, and for military prison officers, 5 years of service were counted as 7 years. The table of ranks had its force almost before the October Revolution.

Officials of the Russian Empire were provided with pension payments according to the «General Charter on Pensions and lump-sum benefits for Civil Departments». The charter established the length of service up to 35 years. In general, it turned out that a person had to be in a public position until about the age of 60. But this exceeded the average life expectancy in the country. If the official served for 25 years, then the payments were 50% of the pension salary. Lowering the retirement age was possible with an incurable disease. In this case, the pension was calculated as for 20-30 years of service.

The incomes of the working strata of the population of the Russian Empire during this period were very modest. Pension payments were provided only on the condition of voluntary contributions to pension funds or entitlements, which were actively created for railway workers and in the industrial sphere.

It is worth noting that according to the 27th President of the United States, the system of labor legislation and social insurance of workers of the Russian Empire was considered one of the best in the world [24].

The formation of the legislative and legal framework has a positive impact on the economic, social and demographic development of countries, has made it possible to eliminate poverty in cases of illness, industrial accidents, unemployment and old age. Their formation marked an important stage in the history of mankind. Since that time, the elderly, disabled people who have lost their ability to work at work, and their family members become socially protected and cease to suffer from material need, and old age ceases to be synonymous with poverty and material deprivation.

The most significant role in the formation of the methodology for financing social insurance was played by the works of D.Graunt, V.Leibniz and E.Halley, who proposed methods for calculating the average mortality and survival of people [25]. In 1662, they built tables of life expectancy, based on which calculations were made on

the average life expectancy and the probability of living to a certain age. On the basis of these tables, the main elements, methods and economic mechanisms of life and old age insurance that are used to this day were worked out.

The level of people's survival, that is, life expectancy, has had a crucial role in the formation of social protection systems for old age. The average human life expectancy in prehistoric times was extremely low. People occasionally lived to be 26-30 years old.

The situation changed somewhat during the Middle Ages. This period was characterized by many incurable diseases, poor and terrible nutrition, strife, wars and crusades claimed hundreds of thousands of human lives. The average life expectancy did not exceed 30-33 years. Forty-year-old men were already called "mature husband", and a man of fifty – «elderly».

In ancient Greece, people lived for an average of 29 years. This was considered an advanced age. Although even then the first «hospitals» were formed in the country. The average life expectancy of a Roman reached 23 years, and the average duration throughout the Roman Empire was only 32 years.

The average life expectancy in the countries of Europe in the 17th century reached only 30-31 years, and in the 19th century, life expectancy began to slowly increase. In England, they lived up to 32 years, in Russia – up to 34 years. In the XX century, the inhabitants of Europe lived up to 55 years [26].

By the 20th century, it became clear that social insurance has a rather serious financial potential and makes it possible to improve the forms of social support for the population, provide an acceptable level of protection for workers and at the same time allows solving the problems of industrialization in the field of social and labor relations. Social protection is based on social public-legal relations and an employment contract [27]. Two factors had a significant impact on the formation of new views on the social protection of the elderly population. Firstly, the current stage of the second demographic transition has led to the need for material support for employees who are at social risk of disability due to old age and disability. Secondly, the emerging social and labor relations associated with industrial labor required new forms of social protection for employees, and therefore began to include in their circle the costs of insuring employees against the loss of their wages.

As a result of the study, the following prerequisites and factors for the development of the social provision of old age can be identified (table 1).

Table 1 – The main stages of the formation of pension systems in the countries of the world

Periods of the history	Countries	Lifetime	Background and factors	The form of ensuring old age
1	2	3	4	5
The Ancient World	Rome, the Roman Empire, Ancient Greece	23-30	The need to maintain veteran soldiers and their families	Military cash register, trophies, land plots, shelters for the elderly, pension for time served (Eumenes ' contract)

	India China		Early marriages, the influence of religious dogmas,	Maintenance by the family, based on the patriarchal model of family relations, temples, maintenance by the family, allotment of the land of the empire
--	--------------------	--	---	--

1 - Table continuation

1	2	3	4	5
Middle Ages	European countries, the Russian Empire	30-33	The need to maintain veteran soldiers and their families	land plots and other property, shelters at monasteries and churches, charity houses, almshouses, pensions, collective mutual assistance within the peasant community
	India			atmarams, charity at mosques
New time	European countries, America, Chile, The Russian Empire	32-55	Increasing life expectancy, improving health, reducing the mortality rate, expanding access to education and work, industrialization, social conflicts, the development of science and technology, increased complexity of work, increasing the qualifications of workers, state economic policy	Payments from the state treasury according to the legislation, the federal insurance system(USA), voluntary contributions to pension funds, lifetime annuity funds, emeritures on the basis of legally established norms and rules
	Canada			pension provision based on the need criterion
Modern times**	European countries, the USSR Asian countries, Countries of the American continent	57-70	Development of science, technology, medicine, education, social policy, integration processes, crises, development of financial systems, increase in life expectancy, quality of life, state economic policy, etc.	Pension provision should include all aspects of the economy. Pay-as-you-go and accumulative pension systems

*Average life expectancy

** More information about the development of pension systems in modern times will be described in the second chapter of the dissertation

Note – compiled by the author

After the Second World War, high rates of economic growth and a favorable demographic situation made it possible to expand the role of pension provision. Pension provision has acquired the features of a redistributive mechanism. The tasks of such a mechanism were to:

- supporting the income of pensioners above the poverty line,
- the formation of the «welfare state».

During this period, the ratio of the average pension to the average salary increased sharply and gradually almost the entire population of Europe and the United States was covered by pension provision. Since that time, a constant search for new forms, types and methods of pension provision begins. This is due to the need for effective use of funds accumulated in pension funds or state sources and maximum provision for the elderly in society. In addition, in recent times, the demographic problem of population aging, an increase in life expectancy and a decrease in the birth rate is manifested in most countries of the world. In the twentieth century, fundamentally new economic, organizational and legal mechanisms were formed in the field of pension provision, which allowed saving for a long time.

In 1927, a pension system was introduced in Canada, based on a need check and not involving insurance contributions. In the United States, some state governments began to introduce pension systems based on the criteria of need, starting in the 20s of the twentieth century. By 1934, they already existed in 28 states, and in 1935, the US federal pension insurance system was introduced [28].

Chile's pension reform marked the start of many years of debate about the feasibility and potential of transitioning to a funded pension insurance system. In the 1970s, contribution rates to the distributive pension insurance system hit an all-time high, encouraging tax avoidance. Chile has been using a paid pension insurance scheme since 1981. Every employee contributed 10% of his wages to a saving account in his preferred fund. In addition, it was essential to pay around 3% of wages for disability and survivor's insurance, as well as fund administration charges. An individual account accumulates enough money at the time of retirement to provide income in old life.

During this period, there is a tendency in developed countries to reduce the birth rate, increase life expectancy and, as a result, the aging of the population. In this connection, in countries where the solidary pension scheme prevailed, there is an issue of growing public spending on pension maintenance while cutting contributions and rising the burden on the countries' able-bodied population. Thus, spending on public pensions in OECD member countries expanded twice as fast as GDP between 1960 and 1985. Their growth rate has slowed during the second part of the 1980s, owing to measures to reduce social spending. Currently, OECD nations spend an average of 9% of GDP on pensions, with figures varying somewhat among countries. Spending on state pensions is around 15% in Austria, 14% in Italy, 13% in France, 6.5 percent in the United States, 5% in Japan, and 5% in Canada [29].

In 1994 The World Bank has prepared a report «Preventing the aging crisis: policies to protect the elderly and promote economic growth». According to the report, effective financial provision of old-age pensions is possible under the conditions that:

- the distributive pension system will be subject to state management and will assume the mandatory participation of the entire working-age population in it;

- there will be accumulative and voluntary-accumulative pension contributions in the economy.

It was assumed that the presence of such schemes in the economy would help to differentiate the sources of old-age payments and minimize the risks of reducing pension provision.

The World Bank has proposed ways to transition to such a structure of the pension system for countries at different levels of development and with different economic volumes. The scope of coverage of state pensions and the age characteristics of the population were also taken into account. Thus, it was recommended to initiate large-scale reforms in the field of pension provision, starting from raising the retirement age and reducing the conditions of pension contributions. Since then, active changes have been implemented in developed economies as well as former Soviet republics such as Kazakhstan and Latvia. Furthermore, the government began to actively intervene in the operation of non-state pension funds, controlling their operations.

In recent times, Asian countries have been characterized by rapid economic development. They gradually caught up with Europe's industrialized economies. As a result, by the end of the twentieth century, Japan had become one of the world's greatest economies. The creation of the Japanese pension system takes place in the 1950s. The pension was calculated from the amount established by the state, paid from the country's budget, and the funded part paid from the pension insurance fund. Only for 10% of pensioners, the state pension was the source of life, and most of the elderly people lived with their children and enjoyed their financial support [30].

With the increase in life expectancy observed throughout the XX century, the financial and insurance potential of pension systems increases significantly, the institutions of which have a positive impact on the development of the economies of industrialized countries and on the stabilization of their financial and budgetary systems. From this period, the payment of pensions becomes mandatory, and several subjects become the source: the state, the employer and the employee himself. Thus, mechanisms for accumulating significant financial resources and ensuring old age were built up. In the sphere of pension provision, the state becomes the primary controller of social policy, setting the parties' duties through legislation. In an industrial society, a new paradigm of social protection for the elderly is evolving. Social pension insurance has become the main institution for compensating the risks of disabled segments of the population. Some countries are completely switching to a system of private pension funds. Others combine the functioning of public and private funds, but recently there has been a tendency to increase the number of people who have entrusted their pension savings to non-state funds [31]. Many European countries have formed pension systems based on the German and Anglo-Saxon models. Their fundamental difference consisted in solving different tasks: the German one is aimed at preserving the social status of an employee after retirement, and the Danish one is aimed at limiting poverty among the population. Over time, these two models have transformed, absorbing elements of each other. Minimum pension guarantees were adopted in systems based on insurance premiums (Germany), regardless of previously paid insurance payments. In countries where the pension system was focused on equal pension benefits financed from common incomes and budgets, need control was

abolished. A system of compulsory social insurance was introduced in addition to fixed minimum pensions (Great Britain) [32].

There is another classification of pension systems based on the typology of socially oriented states by G. Esping-Anderson. In his work «Three Worlds of Welfare Capitalism», he identifies the following groups of countries: liberal (for example, Great Britain), «corporatist» (for example, Germany, France), social-democratic (for example, Sweden, Denmark). Based on the typology of countries presented above Sede and K. Froman developed an empirical classification of pension systems depending on the level of pensions and the ratio of public and private in the structure of the pension system [33]. In accordance with this classification, the following four clusters of pension systems can be distinguished:

- «corporatist» cluster (The state distribution subsystem prevails in the country's pension system, a high ratio of pensions and salaries is provided. Non-state pension provision does not play a significant role. Examples are Germany, Austria, France, Luxembourg);

- liberal cluster (characterized by average level of state pensions, which is provided within the framework of the state distribution subsystem, and a higher retirement age, compared with the countries of the «corporatist» cluster. Non-state pension provision has developed quite strongly in such countries. These countries include the United States, Great Britain, Ireland, Canada);

- the cluster of «moderate pensions» (characterized by an even more modest level of pensions provided by the state and a higher retirement age. The role of non-state pension provision in these countries is also high. Among the countries with this type of pension system, Belgium, the Czech Republic, Norway, and Slovakia can be distinguished);

- cluster of «mandatory private pensions» (characterized by the presence of a mandatory private funded subsystem. At the same time, the high role of non-state pension provision remains. Among the countries with this type of pension system, Australia, Sweden, Denmark, the Netherlands can be distinguished).

In this regard, we can sum up that each national system has its own individual historical path of development. A large number of factors, which, with a certain conditionality, can be divided into three categories, determines its specificity: social, economic and demographic factors. These categories, in our opinion, are the most significant, although their list is not exhaustive.

1.3 The essence and principles of reforming pension systems

An «efficient pension system» is one that offers a satisfactory quality of living for retirees at a level acceptable to the economics of public expenditure on pension payments while taking into consideration the real circumstances of the country's demographic evolution. The bottom limit of a reasonable quality of life should be considered a worldwide norm defined by the International Labor Organization and corresponds to a pension-to-average-salary ratio of at least 40%.

An acceptable level of government spending means that such a system is financially stable in the long term. The measurement of the effectiveness of the pension system is based on a coefficient analysis, and the efficiency coefficient itself shows the

amount of pension (expressed as a percentage of wages) that is created within the entire national pension system per unit of state pension expenditures, taking into account the demographic situation in the country [34].

The following factors have a significant negative impact on the activities of modern pension systems:

- demographic crisis (increased longevity, low birth rate, reinforcement of regressive positions in labor force reproduction);
- structural shifts in the labor market (a decrease in the share of hired labor in the overall employment structure, an increase in the employment of the self-employed population, a later entry of young people into the labor market).

The effect and impact of demographic transitions and contemporary labor market transition on the financial viability of pension systems occurs whether their models are based on distributive concepts or defined benefit schemes.

The economic crisis and its outcomes have resulted in a decrease, and in some cases a fall, in economic growth, an increase in the number of unemployed, an increase in the inflation rate, and, as a result, rising tensions in the formation of income that ensures national pension system expenditure obligations. Long term, pension spending is likely to rise relative to GDP, putting additional strain on government spending.

Additional actions have been made in a number of industrialized nations to mitigate the impact of the aforementioned negative aspects and strengthen the financial viability of pension systems, the most important of which are:

- increasing the retirement age;
- promoting later retirement;
- pension indexation adjustments are applied;
- early retirement laws are being tightened.

It should be underlined that no direct reduction in nominal pensions has been suggested anywhere. Many governments have raised taxes or insurance contribution rates, along with reduced the expenses of managing pension systems, in order to boost the sustainability of pension systems. For instance, in Germany, which has suffered the same challenges as other developed nations' pension systems, the option of implementing such reforms exists, as:

- increase in the rate of premiums for pension insurance (now 18.7 percent, with contributions paid on a parity basis by both the employer and the employee);
- increase in the pension insurance budget reserve;
- attracting the self-employed population to the mandatory pension system;
- additional enhancement of the length of the period of employment and full payment of insurance premiums for pension insurance.

As previously stated, the primary risks of socioeconomic growth in the future are attributable to the demographic component, which is generally connected with a drop in the number of people of working age and may lead to a significant loss in labor resources in the future.

In most nations, the level of maximum employment driven by demographic shifts will be reached within the next 50 years. This limit has already been reached in Germany, Italy, Japan, and the Russian Federation, and the volume of labor resources in these countries may be decreased by one-third between now and 2064. The growth

in the number of disabled individuals will add to the strain on the social sector of the economy, particularly in the areas of healthcare and pension provision, as well as a decline in the pension-to-salary ratio.

Caution is required so that progress toward enhancing the sustainability of pension provision is not compromised.

The need to maintain appropriate and financially viable pension levels remains as the population aging in most OECD nations accelerates. In 1980, there were two adults over the age of 65 for every ten working-age people. This figure is expected to rise to little over three by 2020, and almost six by 2060. The increase in the number of disabled citizens will contribute to an increase in the burden on the social segment of the economy, primarily in the field of healthcare and pension provision, as well as a decrease in the ratio of pension and salary.

Cautiousness is needed not to threaten the progress made aimed at improving the sustainability of pension provision.

The pressure associated with maintaining adequate and financially stable pension levels persists, as the aging of the population in most OECD countries is accelerating. In 1980, there were 2 people over 65 for every 10 people of working age. This number will increase to just over 3 in 2020 and is projected to reach almost 6 by 2060. The working-age population, measured using fixed age thresholds, is projected to decline by more than a third by 2060 in several countries.

Some measures adopted in the legislative order since September 2017 can be said to have crossed out the previous reforms. Recent reforms have relaxed the age requirements for receiving a pension, increased benefits and expanded coverage. The contribution rates were changed in Hungary, Iceland and Lithuania. There was an increase in old-age social protection and minimum pensions in Austria, France, Italy, Mexico and Slovenia, as well as benefits for the low-income in Germany, while Spain suspended measures (the sustainability multiplier and the revalorization coefficient) to cope with the financial pressure associated with the aging of the population. Only Estonia has raised the retirement age. In contrast, Italy, the Netherlands and the Slovak Republic have expanded the possibilities of early retirement or limited the previously announced increase in the retirement age.

With the improvement of economic conditions, the financial pressure pushing for the reform of pension systems has eased, and it is clear that some countries want to soften the unpopular measures introduced during the crisis. However, despite the fact that the financial pressure on pension systems was exacerbated by the crisis, it often also reflected structural shortcomings. The rejection of reforms aimed at meeting long-term needs may make pension systems less resistant to economic shocks in the future and unprepared for the aging of the population. The rejection of reforms aimed at meeting long-term needs may make pension systems less resistant to economic shocks in the future and unprepared for the aging of the population.

According to the existing legislative measures, just over half of the OECD countries are increasing the retirement age from 63.8 years currently to 65.9 years on average by about 2060. This represents half of the expected increase in life expectancy at the age of 65 over the same period, which implies that these changes alone will not be sufficient to stabilize the balance between working life and retirement.

Taking into account the recent reforms, the future net replacement rates in mandatory programs for full-time employees and average wages are on average 59%, ranging from almost 30% in Lithuania, Mexico and the United Kingdom and up to 90% or more in Austria, Italy, Luxembourg, Portugal and Turkey. According to forecasts, in most OECD countries, replacement rates based on full-time experience are expected to decrease over the next decades [35].

Non-standard categories of workers are a very diverse group, including part-time and temporary workers, as well as the self-employed, who account for more than one third of employment in the OECD countries as a whole. The development of new forms of employment may weaken the income prospects of future generations of pensioners.

International studies show that two-thirds of the self-employed work without hiring, while the other third are small business owners using hired labor. According to the OECD, there are gender differences in the ranks of the self-employed: 18% of the male population and only 10% of women are self-employed. OECD experts explain this by the fact that women have more limited access to start-up capital and entrepreneurship training [36].

The self-employed usually pay lower pension contributions than employees with the same taxable income. Only in ten OECD countries, their contribution is similar to that of employees. A high degree of discretion in determining the contribution base, the absence of a requirement to participate in pension programs for calculating pensions depending on income, reduced incentives for contributing to voluntary programs and lower nominal contribution rates are the leading factors explaining lower pension contributions. This could have serious implications for retirement benefits for the self-employed today and in the future, as well as for the overall funding potential for adequate pensions.

After retirement, former self-employed workers, as a rule, receive lower state pensions than former employees do, and non-standard categories of employees, in general, have more limited access to a funded pension. If we take as a basis the mandatory deductions throughout the OECD area, it turns out that self-employed workers will receive an old-age pension 20 percent lower than the benefits of former employees who had the same taxable income during their working life.

Pension system reforms aimed at reducing the differences between standard and non-standard categories of employees, both in coverage and in contributions and payments, can provide protection that is more equitable, reduce inequality, combine risks in the widest possible way and promote labor mobility between different categories of employment.

Establishing a sufficiently low level of minimum income-related requirements for pensions would help to eliminate some of the barriers that temporary and part-time workers face to meet the conditions necessary to receive a pension. The need for equal treatment of all labor income implies that temporary employment contracts should not be excluded from mandatory pension protection, regardless of their duration, and that any minimum terms of office or periods of granting the right to receive pension rights should be abolished.

The full inclusion of all non-standard categories of employees in the mandatory pension provision in the same way as standard categories of employees limits the

financial incentives that employers and employees can use for improper use of non-standard employment. Ensuring the portability of pension rights and assets helps people who change jobs to keep their savings in the same order or transfer their legal rights. Limiting leaks from the funded pension system that arise as a result of changing jobs and opportunities for early withdrawal of funds will improve the coverage and security of old-age security. In addition, voluntary occupational pension schemes and automatic registration schemes should be available for all types of contracts through default plans in countries where they are available to employees.

Equalization of pension rules for all forms of employment means equalization of the total amount (the amount of the employee and the employer) of the contribution rate for all employees. In particular, a greater degree of flexibility in determining the contribution base for the self-employed tends to lead to low contributions. However, formally limiting such flexibility may not be sufficient to prevent low levels of contributions, and appropriate compliance measures may be required. If lower mandatory pension contributions for self-employed persons are used as a tool to encourage self-employment or support those who are engaged in low-paid activities, then in order to avoid lower benefits as a result, lower implied contributions should be supplemented by subsidies, at least for those with low earnings.

In industrialized nations, demographic shifts are dictated not only by a rise in life expectancy, but also by a drop in child mortality and, as a result, a fall in the birth rate. In wealthy nations, the new family model consists of two working parents and 1-2 children. As a result, children no longer function as a source of life support in old age. Today's demographic scenario in developing nations is different: life expectancy is improving, the birth rate remains high, child mortality is reducing, and the total mortality rate remains high with a downward trend.

The family model varies from industrialized nations in that multiple generations live together/at the same time, males provide the majority of the money, and women are frequently involved in household duties. The demographic situation in emerging nations is unique. On the African continent, for example, many older individuals are the main providers for children whose parents have died as a result of AIDS and other illnesses.

It should be noted that certain countries are in the process of shifting from one demographic model to another. Thus, in Southern Europe, the fall in the quantity of children in the family and the division of generations did not occur until the 1970s and 1980s.

The demographic situation in most highly developed nations is defined by the following feature: a slowing or even a contraction in the growth of the working-age population. At the same time, there is a trend toward a strong growth in the population over the age of 60, and even more than 80 years, which inevitably leads to an increase in the number of impaired members of society and the crippled, i.e., an increase in the elderly. In 2000, for example, there were 419 million persons over the age of 65 globally. According to the UN, the number of older persons in the globe grew by 750,000 each month in 2000, and by 2020, this rise is expected to be over 2,000,000 individuals per month.

So, if just 30 states had a retirement age population of more than 2 million people in 1995, by 2030, more than 60 states will have reached this level, according to predictions.

The level of mortality and fertility changed so dramatically in the twentieth century that we can predict with a high degree of accuracy that the population will age even faster in the twenty-first. Three major elements influence the rate and extent of ageing. The first, and most historically significant, is the fall in the birth rate, which results in a gradual but continuous increase in the ratio of elderly to young people.

The second factor is the recent decrease in mortality rates in most countries, which is the result of the combined impact of the following factors: enhancing lifestyle conditions (e.g., water purification, anti-smoking campaigns), taking into consideration medical technology advancements (e.g., diagnosis of heart diseases), and raising standard of living (e.g. better nutrition). The final important factor influencing population ageing in the twenty-first century is the officially acknowledged spike in the birth rate following WWII, which was witnessed with variable severity in most industrialised nations.

The population's ageing is, in reality, a sign of development. One of the most significant social accomplishments of most industrialised countries throughout the twentieth century may be categorised as the provision of a guaranteed income after retirement and a rise in the time of survival (the period that a person lives after retirement). At the same time, this accomplishment has unknowingly become the source of the major concern of demographic policy — population ageing. As money and technology gathered, life expectancy climbed and the standard of living improved. There are predictions of the impending collapse of many pension systems that will not be able to sustain the strain associated with a growth in the number of retirees, as well as the necessity to rate the medical services offered [37].

Another demographic condition that threatens to become a severe economic burden in industrialised nations is a reduction in the working term and early retirement. Pension systems in certain nations, although giving a guarantee of income after retirement, also encourage people to retire early. Improving people's lives, on the one hand, and the demand for competent labour, on the other, have resulted in the majority of young people starting work later than the legally set working age limitations. This is reflected in a decline in the number of self-employed people at any given time, which raises the dependence ratio and complicates pension payments under a solidary pension system. At the same time, under the accumulative system, reducing the working term implies reducing the period of fund accumulation, which may lead to a reduction in the pension or the need to raise the size of pension payments in the future. People are leaving work ahead of schedule due to a rise in their standard of living, social security, positive social and economic conditions in the country, and the ability to live properly on current wages and savings. There are two major pension system indicators that have a substantial influence on a person's retirement decision. First, it is the age at which pension payments begin to accrue, referred to as the "early retirement age" - the early retirement limit, or the legal threshold, is lower than the "normal" retirement age, from which you can receive a pension in full (for certain professional groups) or in a smaller («reduced») size. Second, it is a method of calculating pension payouts and earning

money. It is up to him how long people would continue to work after reaching the early retirement age. The key feature of the payment mechanism is how it changes based on how many "extra" years a person works. In some countries, there is a practice of actuarial calculations, when pension payments are increased to compensate for the fact that they are paid for a smaller number of years (if the person retired later). However, this practice does not exist in other countries. Thus, if the pension system does not provide for such compensations, or if their amount is insufficient, people have no incentive to continue working at an older age. Another reason for early retirement is partly related to the tax benefit system. Thus, tax payments strengthen individual decisions about retirement at an earlier age. Professional schemes that exist in enterprises also contribute to premature retirement. The entrepreneur is interested in updating the workforce, hiring young workers with modern theoretical knowledge. In this regard, the owners of companies provide benefits and better conditions for the young, which contributes to an earlier retirement. However, in recent years, characterized by the demographic trends outlined above, there is a shortage of labor, and this cannot but affect the behavior of the entrepreneur, who will have to listen more to the needs of older workers. The change in the age structure of society forces the governments of countries to revise their policies in various areas.

First of all, this applies to the pension system and other social programs. For example, in Japan, back in 2000, a majority of votes in the parliament decided to increase the retirement age, which was a consequence of the previous reduction in the size of private pensions announced by the country's largest employers.

Almost all over Europe, the low birth rate, which is insufficient for simple reproduction and has led to a strong decrease in the population, has forced many countries to change their strict immigration policies. It is obvious that European countries are already experiencing a shortage of labor, especially unskilled, and the population of retirement age is growing. There are several scenarios under which demographic changes may take place in the future. For example, it is likely that new technologies will appear that can increase life expectancy. Perhaps, the recently observed low birth rate, insufficient for the reproduction of the population, will force states to change the direction of immigration policy. Thus, with a proper understanding and assessment of the ongoing demographic processes, the governments of the countries have ample opportunities to develop programs to prevent serious consequences of changes in the age structure of the population and adapt their pension systems to the changed conditions. To present, the following are the primary concepts for modernizing the pension system:

1. Providing individuals with a guaranteed income upon retirement, so that the end of job involvement does not inherently imply a drop in standard of life;
2. Providing handicapped people of society with a basic level of living;
3. Protection of retirees against rising hazards linked with multiple social, economic, ethical, and physical elements.

From a political point of view, in order to fulfill these tasks, the following factors must be taken into account: the health and economic status of pensioners (income and savings), the relationship between state pension policy and the behavior of individuals (to what extent state pension payments reduce incentives for personal savings), as well

as the relationship between the demographic situation and the securities market. The latter factor is especially important for countries where the state pension system is less developed and private ones are more developed.

The term «pension provision» includes various forms of social protection of the population from the risks associated with the onset of disability due to old age and disability, as well as with the loss of a breadwinner.

The pension system, or pension system, is an orderly and systematized set of legal institutions and mechanisms aimed at providing material support in old age, in case of disability, as well as in case of loss of the breadwinner. In social terms, the pension system reflects the role assigned to pensioners by the current generation, because the higher the degree of respect for the older generation, the more attention is paid to the welfare and ensuring a decent lifestyle of pensioners.


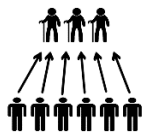
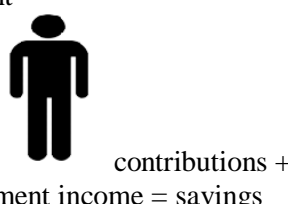
Pension provision of the population in any state is a complex socio-economic system. As a rule, the national pension system consists of mutually complementary elements. One of the most important features of such a complex education as a pension system is that each of the elements of the system, in turn, represents a relatively separate system consisting of lower-level elements that also form a system that has its own internal organization. Based on this, the elements of the national pension system can be called its subsystems.

We will highlight the factors that determine the specifics of the national pension system in a particular state:

- mainly the state system (the predominance of state pension provision)
- a mixed system (a combination of public and private pension provision)
- predominantly private system (predominance of private pension provision)

(table 2) .

Table 2 – Classification of pension systems

Combined	Defined benefit plan	Defined Contributions plan
	Financing	
	Due to tax revenues 	At the expense of individual contributions to an individual account 
	Payouts	
	Lifetime benefits	According to the schedule until the savings ends
Note – Compiled by author		

The next criterion for the systematization of pension systems can be the principle of financing. According to this criterion, the following pension system types (models) are distinguished:

- distributive (current pension payments are funded by current, typically tax-exempt, earnings, and payments are paid from budget or extra-budgetary sources)
- accumulative (salary deductions accumulate capital on the participant's account in a specialised fund, which is invested, and the accumulated amount with investment income is paid in the form of a pension)
- combined (a combination of elements of distribution and storage systems).

The national pension system is a complex socio-economic system consisting of mutually complementary elements, or subsystems. The pension system can be combined, but it is also not stationary, it develops and can switch from one type to another.

The distributive model of the pension system (pay-as-you-go system) is based on the principle of generational solidarity, therefore it is also called solidarity. The essence of this principle is that the responsibility for the pension provision of the older generation (pensioners) lies with the younger generation (economically active population). Most often, distribution systems are state-owned. In the distributive model, as a rule, a guaranteed pension level is established, which depends on the length of service and the amount of salary (the level of pensions is usually low, since the fundamental task is to protect against poverty). The main disadvantage of this model is its vulnerability to demographic changes. Financing of payments becomes more expensive for the budget, the lower the share of the economically active population (the population that actually performs labor activity) and the higher the share of pensioners in the age structure of society.

The funded system is based on the principle of insurance - pension payments are made from a fund formed from the contributions of participants during their working life (although many researchers believe that the funded system necessarily involves accounting for personal accounts, the examples of Sweden, Singapore and Malaysia suggest that the accumulation and placement of funds within the funded pension system can be carried out in a centralized fund without using personal accounts). This model allows employees with medium and high salary levels to actively influence the level of their future pension (expect to receive a pension comparable to the previous salary level). However, it assumes a high degree of development of the national financial market (the availability of the necessary infrastructure, the market capacity, the level of competition, the quality of regulation and supervision, the level of professionalism of senior management and the quality of risk management). In addition, compared to the distribution system, it is less susceptible to the demographic factor, but it is highly susceptible to the economic factor, which is expressed in the risk of inefficiency of the investment process and the risk of depreciation of financial assets because of financial and economic crises. The fact is that within the framework of the accumulative system, pension funds invest the attracted pension contributions in financial assets, the value of which depends on the conjuncture in the financial markets.

While the accumulative pension system provides an opportunity to form a certain portfolio of assets during the working life in order to later exchange it for the consumption of goods and services at retirement age, the distributive pension system provides a promise (mainly state) that the pensioner will receive a part of the goods and services produced by the younger generation . Thus, both types of pension systems

represent different mechanisms for the exchange of current funds (taxes/purchase of financial assets) for claims in the form of a part of the future total output of goods and services. When carrying out pension security reforms in the 21st century, it is important to take into account that the basis for creating a pension system is far from state or corporate charity, which is manifested as caring for older people and such a mechanism, the functioning of which allows financing pensions that guarantee maintaining a decent standard of living in old age and ensuring social justice in changing economic and demographic conditions. Based on the above-mentioned goal, the system should be built in such a way that the pension provision could perform the functions assigned to it. The question of the functions of pension provision is practically not considered in the economic literature, but only two functions are distinguished: distributive and reproductive.

Certain groups of the population cannot even have such incomes during their entire active life that would allow them to form savings and provide an acceptable income for a comfortable existence in old age. In this regard, the state, fulfilling the socio-economic function assigned to it - reducing the level of poverty in the country, is obliged to take any steps to prevent poverty among older members of society. One of such significant steps taken by the state was the introduction of pension provision, designed to carry out a continuous flow of funds to categories of the population who have the right to receive a pension. However, the above functions – distributive and reproductive-characterize only the general features of the «pension provision» category, but do not reflect its specifics. In its political and economic essence, pension provision expresses the coordination of the economic interests of disabled members of society with the rest of its part, which creates material benefits. Based on the above goals and functions, as well as on national, economic and demographic characteristics, it is necessary to build a state policy in the field of pension provision, adopt legislative acts that establish the grounds for assigning various types of pensions, and form an economic mechanism for pension provision. To this day, many countries are just beginning to adapt to the changing age structures of their societies. It is obvious that in order to form a proper state policy in the field of pension provision, it is necessary to take into account all social, economic and demographic factors that affect changes in the structure of society. Changes in the demographic situation in countries with different levels of economic development have become the main reason for large-scale changes in the structure of pension systems and sources of pension income. In developed countries, the situation is characterized by a decrease in mortality and, as a result, an increase in the share of the disabled population, as well as a decrease in the birth rate. At the same time, the situation in developing countries is still different: the birth rate remains high, and the share of the disabled population is small due to the rather high mortality rate, which is decreasing extremely slowly. However, as it is noted, in most countries with economies in transition, as well as in developing countries of the first echelon, the features characteristic of the demography of developed countries are increasingly manifested. The most successful method for studying these changes is the method of comparative analysis. The analysis is based on the observation that countries in similar economic and demographic situations have completely different models of the pension system. For example, one of the main

demographic features observed in most developed countries over the past three decades is a general decrease in the participation of the elderly population in the labor process (that is, earlier retirement) and an increase in the participation of women. At the same time, this trend is practically absent among developing countries. However, as already mentioned earlier, even among developed countries, i.e. countries with approximately the same economic level, there are significant differences in the structure of pension systems. The type of pension system is characterized primarily by the socio-economic and political state of the country. The priority use of a particular pension system by a country and the possibility of its reform is determined by the predominant influence of a number of factors. Among such factors, there are several groups that characterize the economic situation of the country, in particular, the size of GDP, state budget revenues, the level of wages and inflation, the standard of living of citizens, demographic factors and the state of the capital market (the securities market and the credit system). It is obvious that the basis for the existence of a particular pension system in the country is the need for pension provision and the possibility of its provision, i.e. the availability of financial sources. This is determined primarily by socio-economic factors, such as the level and quality of life, state opportunities, state and population incomes, the level of GDP per capita, tax policy, inflation, and a number of others. It is obvious that pension reforms become possible only if the state and citizens have sufficient resources that can be spent for these purposes [38].

World today pension systems emerged in the latter two decades of the twentieth century as a result of major pension changes based on two concepts. The first method is based on each member of society's commitment to participate in collective insurance based on solidarity principles carried out by the state (in other words, a distributive pension system). Similarly, throughout the life cycle, the corporation avoids market risks and failures by relying on a legally defined system of obligatory insurance. Collective (mass) types of insurance became common in industrial and post-industrial cultures when Otto Bismarck's social reforms based on these principles were implemented in the 1980s and 1990s.

The second strategy involves the deliberate insertion of obligatory accumulative features and the arranging of distribution systems. This strategy is common in nations with developed, universal distribution systems that cover the whole population and are complemented by primarily voluntary systems based on personal insurance. However, owing to the particular of socioeconomic and political development, there is a need to execute changes in pension systems in such a way that the population's faith in the long-term viability of pension systems is maintained. Pension reform in industrialised nations began in the early 1980s and focused on the following major categories [39]:

- raising the retirement age (Germany, Great Britain, Italy, Portugal, Greece);
- increase in the minimum period of work required to receive a pension (Germany, Greece, Italy);
- tightening the conditions for earlier retirement (Germany, France);
- tightening of pension indexation mechanisms (Germany, France, Austria, Holland, Finland, Greece);
- reduction of pension privileges of civil servants (Italy, Portugal, Greece, Finland);

- transition to a wider use of the funded element in the pension system (Chile, Peru, and Argentina).

It turned out that, despite local successes, the reforms carried out did not lead to an effective solution of the social tasks assigned to pension systems.

Despite the active recommendations on the implementation of accumulative pension systems of such international organizations as the IMF and the World Bank, it cannot be unequivocally stated that the accumulative pension system is better than the distributive one. Most of these conclusions are based on the common misconception that the profitability of the financial market exceeds the growth of wages in the long term.

However, the issue of the costs of transition from a distributive to a mandatory accumulative system is still poorly studied in the scientific literature. As shown by N. Barr and P. Diamond, when switching from a distributive to a mandatory funded system, the first generation of pensioners will receive an extremely low pension, or will not receive it at all [40]. The first generation of pensioners will already be outside the distributive pension system, but, at the same time, they will not yet have time to form a sufficient amount of contributions in the accumulative system to receive an acceptable pension. The next generations, in turn, will already receive higher pensions, since they will have enough time to form the necessary deductions, but they will stop paying contributions to the distribution part and the state will be forced to look for another source for paying pensions to current pensioners. The costs of such a transition can be, according to various estimates, from 120 to 160% of GDP [41].

Thus, the transition described above is carried out at the expense of a whole generation of pensioners (or at the expense of increased taxation of current employees), which does not allow us to judge the accumulative system as a source of increasing well-being. The lack of proper attention to the problem of financing the transition from a distributive to a funded pension system can lead to serious financial problems. One example is the problem of «empty accounts» that has arisen in the pension system of China. Local governments often used employee contributions to the savings system to cover the deficit of the distribution system, exchanging them for state obligations [42].

We should also not forget that the effective functioning of the accumulative system presupposes the development of the necessary prerequisites in the country, which include: high capacity of financial markets, developed infrastructure of financial markets, high quality of regulation of financial markets, high quality of management personnel with experience in managing financial institutions throughout the entire economic cycle, an active position of the population in relation to financial markets, and others.

N. Barr and P. Diamond believe that the decision to switch from a distributive to a funded pension system should be justified by the peculiarities of managing and building a pension system in a particular state (its social, economic and demographic characteristics), but not by the instability of the state distribution system. In the event of a shortage of the state distribution system, the right solution is to increase its financial stability by increasing pension contributions, reducing pension payments, or a combination of them [43].

Thus, we can conclude that the results of the pension system strongly depend on how the architecture of the pension system corresponds to the socio-economic, demographic and cultural characteristics of the development of a particular state. Another confirmation of this is the study of A. Chernulich, in which, based on the analysis of the pension systems of 46 countries in the period from 2002 to 2011, he comes to the conclusion that in countries focused on the use and export of natural resources, the distribution system is relatively more preferable [44]. It is worth noting that countries focused on the use and export of natural resources include countries whose share of rent from natural resources exceeds 10% of GDP [45]. In the table 3 below, we present the reforms in 33 countries:

Table 3 – Pension reforms

Country	Reform
1	2
Australia	Gradual raising of the retirement age from 65 to 67 by 2023. Additional incentives for late retirement are being introduced. Employer deductions to the required accumulative subsystem increased from 9 percent to 9.5 percent of the pay fund.
Austria	A gradual increase in the retirement age for women from 60 to 65 years by 2033, the period of pregnancy and raising children is included in the work experience. There are restrictions on the payment of pensions to working pensioners.
Belgium	Since 2008, a system has been introduced to review the level of pensions every 2 years. The bonus for work experience (longer than 44 years) was canceled for new pensioners. Raising the minimum requirements for age (from 60.5 to 63 years) and work experience (from 38 to 42 years) from 2019 for the possibility of early retirement. Restrictions are being introduced on pension payments to working pensioners.
Canada	Tightening the conditions for early retirement, encouraging late retirement.
Chile	Introduction of additional payments to pensioners who had a low income level during their working life.
Czech	A gradual increase in the retirement age and minimum work experience, in 2013 a mandatory funded pension was introduced in the amount of 5% of salary, while contributions to the distribution part were reduced by 3 p. p., increasing the total salary burden by 2 p.p., but already in 2014 it was decided to cancel it. Encouraging late retirement.
Denmark	Gradual increase of the retirement age to 67 years by 2022, tightening of the conditions for early retirement.
Estonia	Gradual increase of the retirement age to 65 years by 2026, from 2009 to 2012, a temporary suspension of contributions to the mandatory funded system was implemented.

3 - Table continuation

1	2
Finland	Pension contributions depend on the age (5.55% of the salary for employees under the age of 53 and 7.05% for employees over the age of 53). Since 2010,

	the amount of newly accrued pensions has been inversely dependent on the dynamics of average life expectancy after retirement over the past 5 years. A guaranteed minimum pension has been established. There is an incentive for late retirement.
France	Beginning 2014, a gradual rise in the required work experience to 43 years has been implemented, as has a planned increase in the retirement age to 63 years, however the age at which the right to a full pension will be 67 years by 2022. Early retirement rules have been tightened, while late retirement has been encouraged.
Germany	Gradual increase of the retirement age to 67 years. Tightening the conditions for early retirement, encouraging late retirement.
Greece	The retirement age has been raised to 67 years, but it is possible to retire at 62 years, if the work experience is 40 years. The maximum pension level is set.
Hungary	Gradual increase of the retirement age to 65 years by 2022. In 2010, the formation of contributions to the mandatory funded system was suspended, which led to its cancellation in 2012. The contributions were sent to the state distribution system.
Iceland	Tightening the conditions for early retirement, encouraging late retirement.
Irish	Gradual increase of the retirement age to 68 years by 2028. Changing the principles of calculating pensions.
Israel	Women's retirement age will be gradually raised from 62 to 64 years old by 2017. The payment percentage to the required financed system was raised to 17.5 percent in 2014. Early retirement is forbidden, while late retirement is encouraged.
Japan	Gradual raising of the retirement age for all sorts of pensions to 65 years for males by 2025 and 2030 for women. Early retirement requirements are being tightened, while late retirement is being encouraged.
Korea	Steady raising of the retirement age to 65 by 2033. Improving early retirement circumstances and fostering late retirement.
Luxembourg	Automatic indexation of pensions has been introduced in accordance with the cost of living indicator and the level of growth of real wages. Since 2013, the adjustment of pensions to the level of real salary growth is possible only in the case of a surplus of the pension system (pension contributions exceed payments). The minimum and maximum levels of pensions are established.
Mexico	If the work experience at the time of retirement is insufficient (less than 1250 weeks), then in return for the right to a pension, the employee receives a single payment in the amount of the funds accumulated on his account. If the work experience exceeds 1250 weeks, but the accumulated contributions are not enough to calculate the minimum pension by the fund, the contributions are transferred to the state, which then pays the pension.
Netherlands	Gradual increase of the retirement age to 67 years from 2021.
New Zealand	The system of voluntary pension savings introduced in 2007 with state support (in the form of tax benefits) already includes 67% of the economically active population of New Zealand. Early retirement before the retirement age established by law is impossible, and pensions are also not paid when continuing to work after retirement age.

3 - Table continuation

1	2
---	---

Norway	In 2011, within the framework of the state distribution system, a flexible retirement mechanism was introduced at the age of 62-75 years, which also allowed combining work with receiving a pension. Also, a system of adjusting pensions depending on the actual level of life expectancy for a specific age group was introduced (mainly, we are talking about life expectancy after retirement).
Poland	Steady raising of the retirement age to 67 years for males in 2020 and 2040 for women. Increase in the minimum necessary work experience to 25 years for males in 2020 and 2022 for women
Portugal	Private pension fund assets have been handed to governmental control from 2014.
Slovakia	Gradual increase of the retirement age in accordance with the growth of life expectancy over the age of 65. Since 2012, the possibility of early retirement has been temporarily suspended. There is an incentive for late retirement.
Slovenia	Since 2017, a phased increase in the retirement age is being introduced in accordance with the increase in life expectancy over the age of 65. A gradual increase in the role of the inflation factor and a decrease in the salary growth factor in determining the level of pension indexation from 40: 60 in 2014 to 0:100 in 2018, respectively (since 2018, indexation is carried out solely on the basis of inflation rates). The mandatory funded system, which has been in effect since 2005, has become voluntary for new participants since 2013. Tightening the conditions for early retirement, encouraging late retirement.
Spain	Gradual increase of the retirement age to 60 years in 2018 for men and 2020 for women with a minimum work experience of 40 years. In the absence of the minimum required work experience, the retirement age is raised to 65 years from 2020. Tightening the conditions for early retirement, encouraging late retirement.
Sweden	A gradual increase in the retirement age to 67 years by 2027, however, if the work experience exceeds 38.5 years, retirement is possible at 65. Since 2014, the pension amount depends on the ratio of employees and pensioners and the ratio of income and expenses of the pension system. Since 2019, the pension amount takes into account the increase in the life expectancy of pensioners at the retirement age. There is an incentive for late retirement.
Switzerland	The level of indexation of pensions and pensions themselves depends on the balance of the pension system (indexation depends on the ratio of assets and liabilities). Tightening the conditions for early retirement, encouraging late retirement
Turkey	Tightening the conditions for early retirement, encouraging late retirement. The indexation of pensions depends on inflation by 50% and on the growth of nominal wages by 50%. The mandatory accumulative system
United Kingdom	A gradual increase in the retirement age to 67 years by 2028, it is proposed to link the increase in the retirement age to an increase in life expectancy. Since 2016, the minimum work experience has been increased from 30 to 35 years. From 2012 to 2018, there is a change in the principles of pension formation for employees with medium and high income levels. The incentive for late retirement is increasing.

3 - Table continuation

1	2
---	---

USA	For late retirement – at the age of 70-monthly payments increase by 24%. But if the pensioner leaves even later, he must start withdrawing the funds accumulated in the pension account. This applies to both the state part of the pension and the funded one. Otherwise, a tax will be levied on these funds. Preferential Medicare health insurance is provided to a pensioner from the age of 66. Low-income pensioners are entitled to additional benefits under the Medicaid program.
Note – Compiled by author	

As can be seen from the data presented in the table, despite the diversity of pension systems in the OECD countries, the reforms mainly related to distributive pension systems were aimed at reducing state obligations to pensioners. These include raising the retirement age, increasing the minimum length of service required to receive a pension, limiting early retirement (banning or reducing pensions) and encouraging late retirement (increasing pensions).

The world practice of building pension systems includes a huge experience from only distributive to purely accumulative pension systems. However, there is no optimal structure of the pension system, because the macroeconomic and socio-cultural environment of the functioning of the national pension system is also changing. The optimal structure of the pension system makes its maximum compliance with the demographic, economic and socio-cultural characteristics of this particular state at this particular time, as well as with the goals and objectives that this state sets for itself.

Pension systems are becoming more, more individualized, the connection of benefits with the level, and duration of insurance premiums is becoming stronger. Many analysts believe that the transition to a funded pension system will have the following significant consequences:

- enhancing the economy's efficiency;
- boosting the share of legal business;
- increasing economic growth;
- developing financial markets;
- developing the economy's infrastructure.

The World Bank study «Preventing the Global Aging Crisis: Policies to Protect Old Age and Promote Economic Growth», issued in 1994, was one of the initial moves toward a global shift from a distributive to a financed pension system. The research outlined the issues confronting pension distribution systems and presented legislative proposals for improvement. This study was endorsed by the vast majority of pension experts worldwide, and it served as a guide for many governments when they began to overhaul their nations' pension systems (table 4).

Table 4 – Transition to a accumulative (funded) pension system

Country	Year of the transition to a accumulative(funded) pension system	Mandatory participation
---------	---	-------------------------

Chile	1981	For beginners, it is mandatory, already working people can choose between the old and new systems
Switzerland	1985	Yes
Great Britain	1986	No
Denmark	1990	Yes
Australia	1992	Yes
Colombia	1993	No, employees can switch from one system to another every 3 years
Peru	1993	No
Argentina	1994	No
China	1995	Yes
Uruguay	1996	Citizens over the age of 40 can choose, those who are younger-a new system is mandatory
Bolivia	1997	Yes
Mexico	1997	Yes
El Salvador		For new employees-it is mandatory, citizens after 35 years can choose between the old and new systems
Hungary	1998	Yes
Kazakhstan	1998	Yes
Sweden		Those born before 1938 remain in the old system, after 1953 - in the new one, a gradual transition for everyone else
Costa Rica	1999	-
Poland	1999	No
Hong Kong	2000	Yes
Nicaragua	2000	-
Dominican Republic	2001	-
Croatia	2002	No
Note – Compiled by author		

The European Economic Community's official papers provide explicit targets for the realisation of the outlined transition, spanning the years 1998 to 2020. It was supposed that the state distribution system's share of pension payments would fall from 84 percent to 64 percent, the role of the accumulative element would rise substantially (from 12 percent to 29 percent), and the currently insignificant share of voluntary pension provision would triple (from 1.5 percent to 4.5 percent) [46].

If the broad direction of changes is evident, the issue becomes more difficult when it comes to particular strategies to attain the intended goals. Based on their extensive expertise, European experts have identified four alternative "wide approaches."

The first way to limiting the state's mounting commitments entails decreasing the too generous nature of pension payments within the distribution system and raising the retirement age (the most effective, but also the most painful measure). This is the road that France and Germany have taken.

The second option is to undermine the Social Contract by gradually shifting responsibility for pension provision from the state to citizens and creating tax breaks for voluntary pension contributions (Sweden). The major issue here is the extent to

which mandated pension payments are made to private pension schemes. Without a clear duty to make such payments, as in Switzerland, or without significant tax breaks, as in the United States, new pension systems emerge slowly (Spain, Italy).

The third strategy, known as "asset release," tries to boost the profitability of pension savings by lifting limits on investing within the pension system's accumulative and voluntary levels. For example, in 1999, the obligation to invest 15% of assets in government securities was abolished in Belgium, and it is now permissible to attract organisations – including banks – to any EU country for depository services; perhaps as a result of this policy, Belgium is leading in terms of the profitability of pension assets. Since 1998, the chances for stock investment in Denmark and Portugal have grown dramatically. Pension funds in Spain are permitted to transfer up to 20% of their assets to foreign corporations for management.

Finally, the fourth strategy, known as full-scale pension reform, comprises augmenting the distribution mechanism with market-financed schemes (Hungary, Poland, Italy, Sweden, a number of Latin American countries). The benefits of this strategy are consistency and clarity about the cost of transformation.

For such countries, an opportunity opens up to start the reform «from scratch». Any variants of the new system, as a rule, are associated with the deduction of employees of part of their salary to private pension funds. The degree of mandatory deductions may be different. For example, in Hungary, for those who have a working experience, the transfer of funds to a private pension fund is carried out on mandatory conditions. In the Czech Republic and Slovakia, such deductions are voluntary, and in Sweden, Australia and Chile, they are mandatory [47].

Most scientists believe that the distribution system is still have place in nations such as France, Germany, Luxembourg, Spain, and Austria. The shift to a funded pension system was accomplished gradually in Belgium, the United Kingdom, Holland, Denmark, Italy, Norway, Portugal, and many more nations in Central and Eastern Europe, Russia, and elsewhere. By the turn of the century, only five countries — Chile, Bolivia, El Salvador, Mexico, and Kazakhstan – had abandoned the wholly distributive system in favour of a financed one. As previously said, most nations require a long time to migrate; at the first stage, mixed, multi-level systems with accumulative and distributive aspects are adopted.

By Western European standards, the most major pension changes were adopted in the United Kingdom and Sweden. These countries have rebuilt a large portion of their pension systems using accumulative principles. Other nations, notably the United States, Germany, Japan, and Italy, have attempted to improve pension system income by raising contributions. However, this sparked vigorous criticism from both employees and businesspeople, necessitating a revision of the continuing changes.

The following are the primary reasons why a growing number of nations are shifting from a distribution system to a cumulative one:

- 1) In a funded pension system, there is a direct link between a person's earnings and the quantity of his pension. The money in pension accounts belongs to citizens, not the state, thus the reliability of pension provision under the accumulative system is relatively high;

2) the current demographic situation is such that there are an increasing number of employees per senior person.

3) The accumulative system raises the country's savings rate, which is critical for increasing economic growth.

The state faces the following problems at the start of the pension system reform in the context of global demographic changes:

- How does the shift in the ratio of employees and retirees influence society's ability to develop and fund social security institutions, such as the pension system?

- Is a rise in life expectancy associated with a longer and better life, or do these extra years merely bring disability and health issues?

- How can the pension system's structure and methods of providing social support to retirees be more successfully suited to the requirements of older people?

- Whether changes in family structure impact the need for society to share money, time, and living space.

- Whether the aging of the population will lead to a decrease in the level of savings, investments and changes in economic indicators (e.g., production volumes).

Despite the consistency of the demographic situation in most industrialised nations and the growing need for reforms, methods to system reform and the extent of pension reforms vary substantially among countries.

Pension reform in industrialised nations began in the early 1980s, with the following major goals in mind:

- raising the retirement age (Germany, Great Britain, Italy, Portugal, Greece);

- increasing the minimum time of work necessary to earn a pension (Germany, Greece, Italy);

- strengthening the rules for early retirement (Germany, France);

- pension indexation methods are being tightened in Germany, France, Austria, Holland, Finland, and Greece.

- reduced pension benefits for government servants (Italy, Portugal, Greece, and Finland);

Disney and Johnson, two American academics, recommend categorising all pension reforms implemented in industrialised nations based on the nature of the changes [48]. These changes are presented in the table below, using the example of some OECD countries (table 5).

Table 5 – The changes in pension systems

Country	Changes in the retirement age	Pension indexation	Changes in the calculation of pension payments
1	2	3	4
Australia	Steady increase of the pension age for women from 60 to 65 years by 2013	Indexing to the salary level	The standards for determining neediness are continually being revised

New Zealand	Increase from 60 to 65 in 2001	Indexation to the price level since 1993, but not less than 65% of the average wage	The introduction of additional taxation, which was then abolished
Canada	Not planned	The pensions paid are already indexed to the level of it	Reimbursement of state expenses for increasing benefits by means of a corresponding increase in taxes on basic pensions. Numerous minor changes in the order of financing and payment of second-level pensions
France	An increase in the period of minimum work experience from 37.5 to 40 years, a decrease in the chances of retirement at 60 years	Indexation to the price level since 1987.	Changing the procedure for calculating pensions: from the best salary of 10 years to 25 years. at the same time, the salary amount is indexed to the flails
Germany	Increase in the retirement age for women from 60 to 65 years in 2004 Introduction of a reduced amount of insurance when retiring before the age of 65.	Indexation to net wages (after deduction of all taxes) since 1992	In 1999, a reform was launched to reduce the level of replacement of wages with a pension after a 40-year period of work experience from 72% to 64%, it is carried out in stages, directly depending on the life expectancy
Italy	Comprehensive reforms to increase the retirement age and the period of minimum work experience	The transition from indexation to the price level to indexation to the salary level in 1992	The transition from the traditional state scheme with defined benefits to a scheme with conditionally defined contributions, which are calculated according to salaries for each individual year

5 - Table continuation

1	2	3	4
Japan	Increasing the age for receiving a basic pension from 60 to 65 years from 2001 to 2013.	The transition to the indexation of pensions to net wages. Before that - indexation to the full salary (before taxes)	In 1985, an act was adopted that limited the pension amount to 68% of the average salary for the entire period of work experience
United Kingdom	Raising the retirement age for women from 60	The basic pension is indexed only to the	State pensions, which depend on the size of wages,

	to 65 years from 2010 to 2020	price level of 1980, before that-to the level of prices and salaries	are calculated according to the average salary, and not according to the best 20 years, and cover 20% of earnings, not 25% as before. Reduced benefits for widows.
USA	Increase in the retirement age from 65 to 66 in 2009 And up to 67 by 2027.	Indexing to the price level	No information available
Note – Compiled by author based on [49]			

Table 4 shows that most nations opted to carry out the projected rise in the retirement age or the minimum contribution time necessary to obtain a full pension, at least for women. The major goal of the latest pension changes is to make the pension amount dependent on job history and tax contributions throughout life. As a result of demographic trends, there is also more freedom to determine one's retirement age. Private pension funds are also experiencing reform: in most countries, changes in their operations are being brought about by the fact that the foundation for calculating a pension in a non-state fund is not the final wage (which is generally large), but the average pay.

Therefore, modern pension system reforms in many nations are generally intended to equalise or, if necessary, minimize the negative impact of the demographic issue and accompanying economic and social difficulties.

State distributive pension systems are beginning to experience increasing economic difficulties. Serious financial problems are pushing the governments of the countries to reform the existing pension systems. The declining level of participation in the labor process of the older population leads to a financial imbalance in pension programs and increases the number of relatives of retirement age per employee (i.e., the dependency ratio). As the analysis shows, while maintaining the current conditions for pension payments and deduction rates, none of the existing pension systems in the world is balanced.

At the same time, in a number of countries, the difference between liabilities and income exceeds the value of annual GDP (table 6).

Table 6 – Approximate values of liabilities and receipts («Contributions» - «Payments» = «Net deficit») for pension systems of developed countries for the period 1995-2070. (Forecast) are shown in the table below (according to the OECD)

Country	Contributions	Payments	Net-deficit
Belgium	147	300	-153
Sweden	219	367	-150
Portugal	168	277	-109
Spain	214	323	-109
France	216	318	-109
Finland	294	384	-90

Germany	286	348	-62
Italy	341	401	-60
Netherlands	161	214	-53
USA	134	163	-29
Great Britain	118	-142	-24
Irish	88	107	-19
Note – Source [50]			

The IMF experts made alternative estimates of the imbalance between payments and receipts of pension systems (the discount rate was assumed to be 3.5% per year, the economic growth rate was 1.5%, the period 1995-2050). The net deficit is: Italy - 157%; Sweden -156%; USA -103%; Germany - 87%; France - 83%; Great Britain - 75%. Thus, the problem of huge accumulated liabilities of pension systems is noted in most developed countries.

An obvious way out of this situation, which many countries have followed or are going to follow in order to maintain a balance between contributions and payments in pension systems in an aging society, is to increase the rates of pension contributions or reduce payments by reducing the size of pensions or increasing the retirement age. For example, Belgium is moving towards a gradual increase in pension contributions, France and Italy are trying to reduce the size of state pensions and the number of their recipients, in most countries it is planned to increase the retirement age.

The transition to a funded pension system is designed to solve these problems. In the funded system, the size of the pension depends to a lesser extent on the ratio of pensioners and employees, since there is no generational solidarity, i.e. there is no obvious redistribution of funds, and the employees themselves and their employers in the form of accumulation of a certain amount of money form the pension.

Many innovations at the initial stage can cause a negative reaction in society. For example, the result of increasing the retirement age, at least in developed countries where the standard of living is quite high, if nothing is done to counterbalance it, will be an even more massive retirement before the deadline.

The increase in pension contributions in some countries also faces the problem of non-payment, concealment of income, etc.

In addition, when carrying out reforms, it is necessary to take into account that in the conditions of transition to a new one, there are always difficulties in the first years of mastering the updated system, during which outdated and newly introduced elements coexist. In this case, a double burden falls on the able-bodied population.

So, speaking about the current situation in the world in the field of pension provision, when the reform is still ongoing, it should be noted that until now, even in most developed countries, the main source of pension payments are state pension programs (Western European countries). However, in some States, they represent only one of the sources. In the UK, the Netherlands, the USA, Canada and Japan, as a result of multi-stage reforms, a system of pension plans was built in which pensions are guaranteed by the employer. Today, these professional pension systems serve as the main source of payments for a large number of citizens. Sometimes pensioners receive fixed payments from the employer in the form of annuities, in addition to payments

from the state pension system. At the same time, in some countries, for example, in the United States, occupational pension payments are an addition to state ones. This practice is quite common in countries with developed economies, where there is already sufficient experience that can be used by states that are reforming their pension systems.

In some European countries, such as France, Germany and Italy, there are now developed state distributive pension systems with some accumulative elements, in which the amount of the pension received depends on the level of earnings. In these countries, State pension provision is usually the main source of payments for most pensioners. At the same time, these systems operate on the principle of universal social insurance. In the United States, Great Britain, Japan and Canada, there are also pension schemes that take into account the amount of earnings, but in the United States and Canada they are clearly redistributive in nature and provide a lower degree of replacement for people with high earnings than for people with low earnings. In the UK, there is also a pension system that depends on the level of earnings, but, it was introduced relatively recently and its coverage is small, but compared to the system of fixed payments. In Japan, for example, a mixed system combines both sources of payments. New Zealand and the Netherlands have established pension systems with fixed payments, while in both countries the pension is paid based on the period of residence in the country, and not the amount of contributions to the pension system. In addition, finally, Australia is almost the only developed country in which the amount of payments from the state pension system is determined by determining the degree of need of pensioners.

In total, how many countries have chosen a strategy for the transition to private old-age care systems based on full accumulation of funds. In this case, we are not talking about voluntary private security, but about mandatory, normalized and regulated security established by the state. A number of Latin American countries are among the countries that have switched to such systems. Initially, the transition to such a system was carried out in Chile, where in 1981 a new system of privately managed and state-regulated pension funds was introduced. Later, other countries followed the example of Chile, for example Argentina [51].

Thus, speaking about the reform of pension systems in the context of demographic changes taking place in the world, we can say that these processes are still ongoing in most countries today and are characterized by the gradual introduction of new elements. In some countries, this process will last for several decades. Countries with developing economies are guided by the experience of developed countries when implementing pension reforms, especially since the demographic problems that gave rise to social reforms are becoming more and more noticeable in developing countries.

Thus, from the moment of the formation of the first pension system in Germany in 1889 to the present day, there is a continuous process of evolution of pension systems.

There are several classifications of pension systems, but most often they are divided according to the method of financing into distributive (current contributions are used to pay current pensions) and accumulative (current contributions are formed in separate accounts, invested during their working life and paid at retirement). World

practice suggests that, today, most pension systems are complex multicomponent systems. The architecture of national pension systems in different countries is a certain combination of distributive and accumulative systems, each of which is a separate element (subsystem). Some countries mainly rely on public distribution subsystems (Germany, France, Italy), other private and public storage subsystems (Austria, Chile, Iceland, the Netherlands). Still others strive for an even distribution of the load by sources, forms and methods of financing (Sweden, Canada, the USA, the UK).

The structure of the national pension system also reflects its main goal, which can be expressed in protection from poverty, in an effort to ensure an acceptable standard of living after retirement, or in a combination of them.

The original pension systems were designed on a distributive premise, but a dramatic worsening in demographic conditions (a fall in birth rate and a rise in life expectancy) resulted in an ageing population in the majority of the world's leading countries. This resulted in an increase in retirees and a drop in working citizens in the age structure of these nations' populations. The simultaneous drop in pension system income and increase in costs caused a distribution system problem. The World Bank actively supported the accumulative model of the pension system as the major alternative. However, the move to a financed system does not necessarily result in an increase in population welfare. A variety of criteria are required for a successful transition to a cumulative system, and it cannot solve the distribution system's issues on its own. Australia, Estonia, Hungary, Israel, Poland, Slovakia, Russia, and China have all had similar experiences.

The main feature of the reform of pension systems at the present stage is the unique macroeconomic and demographic environment. The financial and economic crisis of 2008-2009 for the first time simultaneously aggravated the problems of both distributive and accumulative pension systems and pushed states to further reform complex pension systems. Summarizing the latest experience of reforming distributive pension subsystems in the OECD countries, it should be said that all the reform was reduced to bringing the current state's pension payment capabilities into line with current pension obligations. Special attention should be paid to the reforms of mandatory accumulative subsystems, which confirm the haste of the transition to the use of the accumulative element in individual countries.

So, having analyzed the history of the development of pension systems in different countries of the world, we came to another significant conclusion: the issues of the formation and reform of pension systems do not lie in a purely economic plane, - decisions in the field of pension policy should also be made taking into account the social, cultural and historical characteristics of this particular country. Moreover, having studied all the variety of pension reforms carried out and being carried out, we can conclude that the use of foreign experience without taking into account social factors and cultural characteristics of the state at the present stage of its development can lead to negative consequences for the country's pension system and its economy.

2 THE IMPACT OF THE GLOBAL FINANCIAL CRISIS ON THE DEVELOPMENT OF NATIONAL PENSION SYSTEMS

2.1 The financial crisis and pension systems in developed countries: factors and consequences of the impact

During the global crisis, pension systems of different countries are characterized by the presence of different pension provision structures, the volume and mechanism of investment. A study of this experience has shown that most countries have several levels of pension provision.

Level zero. It is also known as a "pension scheme without contributions." In this instance, payments are paid at the expense of employer and state contributions. Simultaneously, the pension is provided based on an assessment of the individual's economic well-being. A similar system exists in Kazakhstan and Kosovo, where basic pensions are provided to all citizens of retirement age.

The first level. Most Central Asian and European nations have a "first" or "distributive" level, in which contributions paid by current employees support the pensions of retirees today, while contributions paid by future employees finance the pensions of present employees. This is a distribution scheme.

The second level implies deposits are gathered on individual contributor's accounts and invested in a variety of financial instruments. Such deposits are not intended to fund actual pensioners. Deposits and investment income are given to the depositor when they attain retirement age. Bulgaria, Croatia, Estonia, Macedonia, Hungary, Kazakhstan, Kosovo, Latvia, Lithuania, Poland, Romania, Russia, and Slovakia all have accumulative pension systems.

The third level is a mechanism that allows individuals to save additional money for pensions on a voluntary basis. It is shown on figure 2 below: (Figure 2).

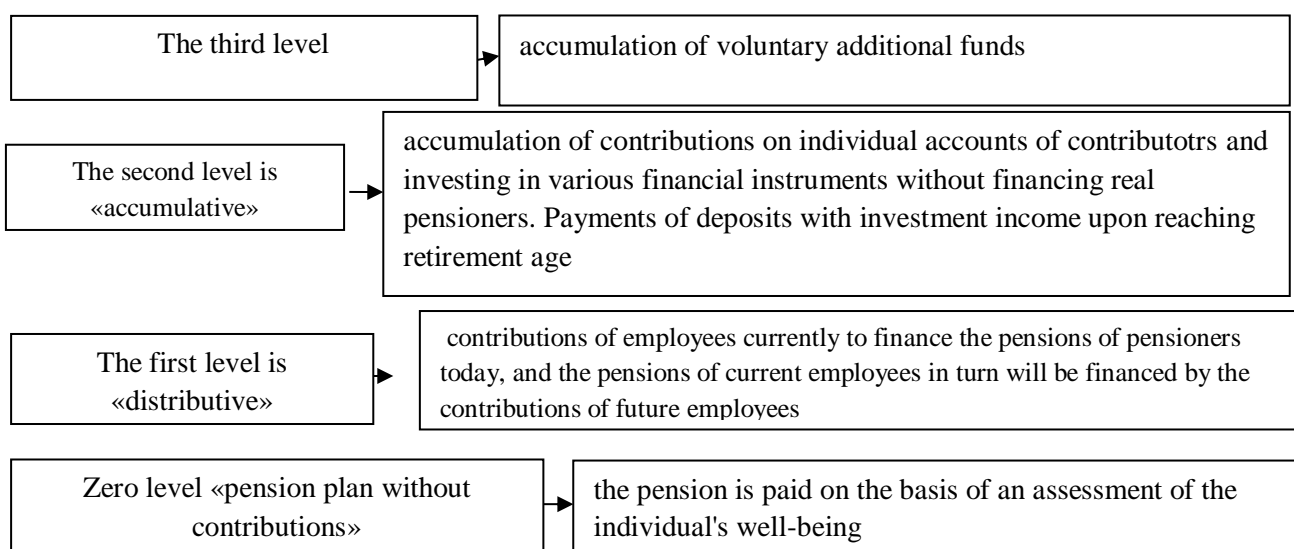


Figure 2 – Available levels of pension savings

Note – Compiled by author based on [28].

The crisis affects pension systems through several channels. The main ones are the following:

- an increasing probability of suspension or termination of employment by employees and applying for pension benefits;
- a rather difficult situation in the labor market, as a result of which a reduction in employment, as well as stagnation or a decrease in wages, may well lead to a narrowing of the income tax base;
- a rapid fall in asset prices, which may negatively affect the balance sheets of accumulative pension systems; the ability of the state and private enterprises that guarantee pension obligations to maintain the solvency of defined benefit pension systems in the event of an unfavorable situation.

The financial crisis has a different impact on the components of the pension system, and even if the scale and duration varies, depending on the countries, each component experiences its negative impact.

The zero level is financed at the expense of the state, and with a decrease in production and tax fees, the financing of the zero level is significantly reduced.

The first level is financed by contributions from employees and employers, and therefore the level of financing of pension payments is affected by an increase in the unemployment rate and a decrease in wages.

The second and third levels are financed by contributions from employers and employees and a percentage of income. Therefore, the level of pension payments is affected by the state of the financial assets of pension funds (figure 3).

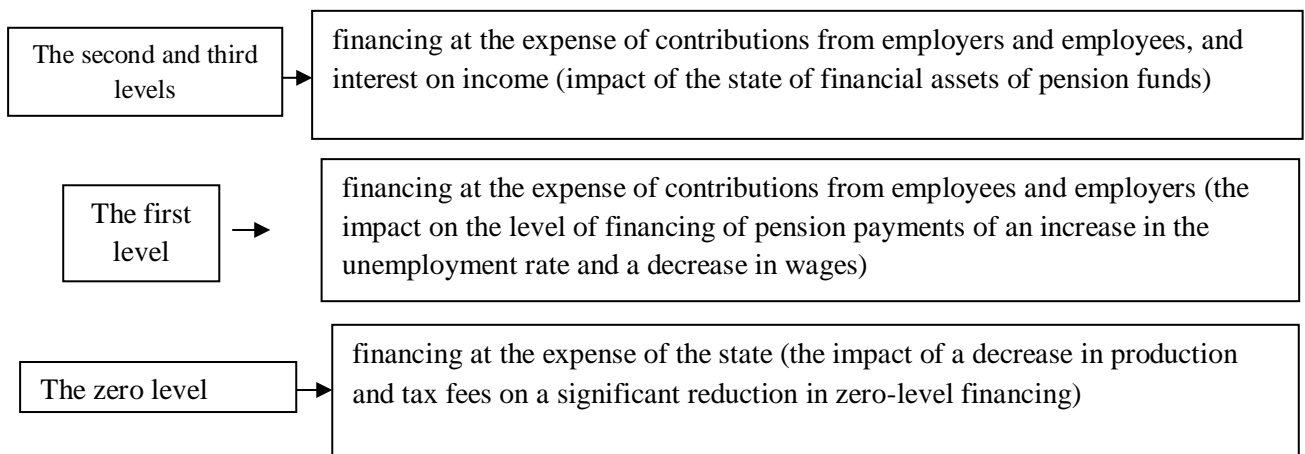


Figure 3 – The impact of the financial crisis on the financing of pension levels

Note – Compiled by author

As a result, it may be claimed that the crisis primarily affected employment and wage levels, and therefore the profitability of pension systems has sharply decreased. It can also be noted that during a crisis, the pension amount usually remains the same or rises, since countries, trying to maintain the social level, do not want to reduce pension payments, even despite a decrease in the level of average wages. These factors lead to significant losses in terms of income and increased expenses, which creates a

deficit in the financing of pension payments or increases the existing deficit.

The value of financial instruments in which pension funds are invested is particularly affected by the crisis in the case of a funded pension scheme (levels 2 and 3). The drop in asset value mostly affects depositors who have reached retirement age. Governments can pay damaged depositors, but this has an impact on overall budget strategy. Nonetheless, because such schemes were implemented relatively recently and did not include older employees, there are currently fewer pensioners and persons who have reached retirement age in the accumulative component of the pension system.

Prior to the crisis, the rate of return on savings systems was rather low. Income and salary growth were particularly strong in the early years of pension fund creation, since these nations were emerging from the 1990s crisis. Nonetheless, the funds' poor performance indicates that variety of issues linked to industry structure, regulation, and financial market growth must be addressed. The significant decline in asset prices caused by the crisis merely emphasises the inadequacy of the replacement rate produced by funds. Simultaneously, the existing scenario allows for the implementation of required actions to improve the performance of pension funds in the short and long term.

Pension reform has been on the agenda of most nations throughout the world, both developed and developing, during the previous decade. This issue is addressed by major international organisations like as the OECD and the World Bank, which design specific pension schemes that serve as a model for governments throughout the world. The fundamental reason for such strong attention to pension systems is the prevalence of demographic challenges in industrialised, particularly European, nations.

According to the EU statistical agency, the number of individuals between the ages of 15 and 64 in the region would fall by 52 million, or 17%, by 2050. At the same time, during the same 45 years, the number of elderly persons aged 65 and over will nearly double, accounting for around one-third of the total EU population. The percentage of old people in the southern EU nations (Spain, Italy, and Greece) will be the largest in the area, while it will be the lowest in the north, in the Netherlands, Luxembourg, and Denmark. Simultaneously time, the EU population will be decreased to 450 million by 2050, and even immigration would be insufficient to compensate for low birth rates. In view of the current scenario, the European Commission has already issued a recommendation to the bloc's member nations on the necessity for prompt pension reform in order to mitigate the negative repercussions of ageing and population reduction.

According to a study conducted by the Center for Strategic and International Studies (CSIS) and the Citigroup financial group, even if governments in industrialised countries do not increase the capacity of pensions for their aged people and keep them at the current level, the cost of pension payments will reach 30% of these countries' GDP by 2050. This is twice as much as today and also twice as much as the state pension authority projected. In 2050, the typical developed country will spend 13% of its GDP on pension payments.

Europe, where there has been an unusually low birth rate, substantial pensions, and a lower retirement age in recent decades, will confront the most significant issues. With the exception of Scandinavia, the United Kingdom, and Ireland, the cost of

pensions in the European Union will soon approach 15.9 percent of GDP, which is 9 percent more than official numbers show. Spain will spend up to 37% of GDP on pensions and health care in 2050, while Greece will spend 45 percent. The aging will take two-thirds of France's GDP. In Japan, 17.2 percent of GDP will be spent on the same goals by the mid-century. Pension provision is becoming an unsustainable burden for many state systems in view of recent demographic trends. Private pension funds, on the other hand, are having some challenges. For example, professional pension plans with guaranteed payments, which were the primary source of pension payments for the majority of Western seniors (USA, UK, etc.), are under threat. Recently, fewer and fewer businesses have been able to keep such funds. The reason for this is the necessity to cut expenses in the face of globalisation and increasing competition. It is well known that liabilities on pension obligations triggered the collapse of certain corporations. As a result, many businesses cut the size of their monthly contributions for guaranteed pensions. For example, the British Air Force Corporation, one of the major employers, has opted since 2007 to deny new employees' access to the pension system, and the retirement age would rise from 60 to 65 years. Existing pension systems in industrialised nations emerged as a consequence of a series of changes based on two principles. The first way is each member of society being required to engage in collective insurance based on the ideals of solidarity as implemented by the state (in other words, a distributive pension system).

The second strategy involves the deliberate insertion of obligatory accumulative features and the arranging of distribution systems. This strategy is common in nations with developed, universal distribution systems that cover the whole population and are complemented by optional systems based on personal insurance that operate primarily in the private sector. However, even in these nations, owing to the particular of socioeconomic and political growth, there is a need to execute changes in pension systems in such a manner that the population's faith in the long-term viability of pension systems is maintained. By Western European standards, the most major pension changes were adopted in the United Kingdom and Sweden. These countries have rebuilt a big part of their pension systems using accumulative principles. Other nations, notably the United States, Germany, Japan, and Italy, have attempted to improve pension system income by raising contributions. However, this sparked active criticism from both employees and business owners, requiring a revision of the current changes.

In industrialised nations, several techniques of adjusting old pension systems to changing socioeconomic and demographic conditions are utilised while implementing pension reforms. Governments in most Western nations are being forced to lower pension levels and raise retirement ages as society ages and life expectancy rises. The modifications also affect the balance of private and public pension systems, with a rise in the proportion of private insurance in current systems.

The difference between pension reform in wealthy nations and pension reform in developing countries is that most innovations are not truly innovative, but rather restorative in nature. Recent pension reforms have evolved into initiatives to restructure the roles of the public and private sectors in pension insurance. At the same time, pensioners' income in many affluent nations has long been comprised of both private

and public pensions, in contrast to countries with emerging economies, where state payments remain the primary source of pension income.

Since the pension system itself is a complex phenomenon, the effectiveness of the pension system can be considered both at the micro level and at the macro level. The effectiveness of the pension system at the micro level means its ability to maximize the consumer utility of an individual throughout his life. Here we are talking about maximizing pensions at a given level of pension contributions, or minimizing contributions to achieve a given level of pensions. At the macro level, the efficiency of the pension system is determined by the optimal redistribution of GDP between generations of working citizens and pensioners.

The issues of the effectiveness of the pension system can also be considered in relation to a particular model of the pension system. Thus, the effectiveness of the distributive pension system is reduced to the task of the government to find the optimal combination between the level of pension contributions, public expenditures and budget deficit, as well as the replacement coefficient to maximize the utility of one generation without changing the level of contributions and the level of pensions of other generations. At the same time, the effectiveness of the accumulative pension system is reduced to ensuring that the current value of contributions to additional pension provision is not lower than the current value of future pensions.

Most of the pension systems of the leading countries of the world today are complex and consist of several subsystems (distributive and accumulative). Therefore, the effectiveness of the pension system can also be internal (in the context of each of the subsystems), as well as external (taking into account the impact of the pension system on the state of public finances and the labor market).

Summarizing all the above, we note that the main criterion for the effectiveness of the pension system, for the purposes of the study, should be considered the ability of the system to provide an optimal ratio of the replacement coefficient and public spending on pension provision, taking into account the demographic factor.

Two categories may be conditionally identified among developed nations based on the degree of distribution and development of private pension provision: states with a dominating private pension system. Non-state pension provision is becoming more advanced in states where the state offers minimal basic pensions, such as Australia, Denmark, Finland, the Netherlands, and, to a lesser extent, the United Kingdom.

In most countries of this group, private pensions are mandatory either by law or according to tariff agreements, and, therefore, are deeply integrated into the general pension system. Countries with a predominant state pension provision. For example: Belgium, Germany, Italy and the USA. In these countries, participation in the private pension system is voluntary, so only a small part of employees receive a private pension.

It is possible to consider the features of the evolution of pension systems in developed countries by the example of some of the most indicative ones.

On average, in the OECD countries, pensioners receive 57.6% of the level of income they had before retirement. Moreover, this is despite the fact that the income level of working citizens in the OECD and EU countries is much higher than in the BRICS countries.

The United Kingdom, the United States, Germany, which use elements of voluntary accumulative pension systems, as well as Norway, in whose pension system there is both voluntary and mandatory personal pension insurance, achieve a significantly higher replacement rate through the use of accumulative systems. In the UK and the US, the use of voluntary accumulative systems leads to an increase in the replacement rate by almost 2 times – by 29.8 p.p. to 32.6 p.p., respectively. In Germany, the increase in the replacement rate is 12.5 percentage points, and in Canada, 29.3 percentage points. The same is true for the OECD countries as a whole: the use of accumulative elements leads to an increase in the replacement rate from 41.3% to 57.6% on average in the OECD countries. In all OECD countries, with the exception of Austria, Iceland, Chile and Mexico, it is the state distributive pension system that is the main pension system.

In the future, we should expect a significant increase in public spending on pension payments in most OECD countries. By 2050, the financing of pension systems in the OECD countries will increase by an average of 30% and will amount to 11.7% of GDP. As for the EU countries, the growth will be 20%, and the average level of national spending on pensions will increase to 13.1% of GDP by 2050. In some countries, for example, in Norway, the level of public spending on pensions will increase by 2.6 times from 5.4% of GDP to 13.9% of GDP by 2050.

Analyzing the distribution of the efficiency coefficient among the OECD countries, we can distinguish 4 groups of countries:

- The first group includes countries with a low level of the efficiency coefficient of the national pension system, not exceeding the indicator of 1.5. These are countries such as Poland, Slovenia, France and Turkey;

- The second group includes countries with an average level of the efficiency coefficient of the national pension system-in the range from 1.5 to 2.0. The countries of the second group are: Greece, the Czech Republic, Japan, Italy, Germany, Hungary, Mexico, Chile, Austria, Switzerland, Slovakia, Portugal, Belgium and Finland;

- The third group includes countries with a high level of the efficiency coefficient of the national pension system: from 2.0 to 3.0. The third group of countries includes: Estonia, Spain, Luxembourg, the United States, Norway, Israel, Sweden, New Zealand and the United Kingdom;

- The fourth group includes countries with the highest efficiency coefficient of the national pension system (the efficiency coefficient of the national pension system exceeds the indicator 3.0).

The most effective pension systems, determined in accordance with the results of the author's research, as well as the ratings of the Allianz Pension Sustainability Index and the Melbourne Mercer Global Pension Index. These are the pension systems of Australia, Denmark and the Netherlands [52].

The pension system of Australia is a three-tier system and includes a state distributive, mandatory accumulative subsystem. The rate of mandatory pension contributions is 9.5% and will be increased to 12% by July 1, 2025. The ceiling for the payment of contributions is an amount equal to 2.4 average annual salaries in the country [53]. There is also a program for co-financing pensions for employees with low and medium wages: the state doubles the contributions of citizens to the voluntary

funded subsystem, but not more than 500 Australian dollars. The size of the old-age pension is indexed in accordance with the growth of the consumer price index and the cost of living index of the pensioner (a larger one is selected). In addition to this, the Australian pension system offers incentives to continue working after reaching retirement age.

Denmark has a two-tier pension system consisting of a state distributive and mandatory funded subsystems, built on the corporate principle and covering 90% of the country's population. Pensions are indexed based on the growth of the salary level. Contributions to the mandatory funded subsystem are made in the amount of 12-18% (depending on the level of income) in the following proportion: 2/3 is paid by the employer and 1/3 by the employee himself. There are mechanisms for late retirement up to 10 years.

The pension system in the Netherlands is three-tiered: along with the state distribution subsystem, there is a quasi-mandatory accumulative subsystem (de jure it is not mandatory, but corporate pension insurance is assumed in industry collective agreements) and a personal voluntary accumulative subsystem. Within the framework of corporate pensions, employees are given the right to choose an investment institution: a pension fund or an insurance company. As for the level of contributions, as in Denmark, 2/3 is paid by the employer and 1/3 by the employee himself. The social responsibility of business, developed labor relations and flexible legislation have led to the formation of one of the most developed corporate pensions in Europe in the Netherlands. Corporate pensions, which, according to the author, still belong to the voluntary funded subsystem, provide up to 2/3 of the total replacement coefficient [Error! Bookmark not defined. P.310-312].

In total, in the OECD countries, as of 2019, the assets of private pension funds amounted to 24.8 trillion US dollars, which corresponds to 82.8% of the total GDP of the OECD member countries. As for state pension funds, their assets are equal to 19.7% of the total GDP, which corresponds to 5.3 trillion US dollars. The total assets of pension funds in the OECD countries amount to 30.1 trillion US dollars, which corresponds to 102.5% of the total GDP.

In terms of the absolute value of pension fund assets, the United States is leading by a huge margin (13.9 trillion US dollars, which is more than half of all assets of pension funds in OECD countries), while the Netherlands (148.7% of GDP) and Switzerland (113.4% of GDP) are the leaders in terms of relative value.

It is worth noting that from 2005 to 2019, the total assets of pension funds of the OECD countries increased from 16 trillion US dollars (43.4% of GDP) to 30.1 trillion US dollars (58.1% of GDP) [54]. During the same time, the number of pension funds in the OECD countries increased from 1,172,297 to 1,370,617 (an increase of 17%). At the same time, the number of pension funds in individual countries varies from 9 in Slovenia and 13 in Austria to 67,840 in Ireland and 685,203 in the United States [Error! Bookmark not defined., p. 34].

As for the structure of investment portfolios of pension funds of the OECD countries, as of the beginning of 2019, 51.2% of assets were placed in bonds and promissory notes, 25.5% were placed in shares, and 8.8% – in cash and deposits [Error! Bookmark not defined., p. 6.].

Two categories may be conditionally identified among developed nations based on the degree of distribution and development of private pension provision:

1) Countries having a high proportion of private pension provision. Non-state pension provision is becoming more established in nations where the state offers minimal basic pensions, such as Australia, Denmark, Finland, the Netherlands, and, to a lesser extent, the United Kingdom.

2) Private pensions are required in the majority of nations in this category, either by legislation or by tariff agreements, and thus are thoroughly linked into the overall pension system.

Pension system in the United Kingdom. In the United Kingdom, there is now a three-tier pension system. The first level is an obligatory state system funded by general taxes, principally income taxes, that guarantees a basic income to retirees (12 percent of the typical worker's pay). In this situation, men receive a distributive pension at the age of 65, while women receive a distributive pension at the age of 60. At the same time, no provision is made for early retirement.

To be assigned a pension, a person must quit working; otherwise, the pension is not paid; nevertheless, if the pensioner continues to work for 5 years, the future pension grows by 1/7 percent weekly. The size of the required pension is approximately one-third of the pension income and is not affected by age.

In the United Kingdom, around 10.6 million individuals get such a pension. Those who paid or for whose contributions were made for the whole working time earn full pensions (minus 4-5 years when the employee did not work). Pensions are provided in proportion to duration of service for those with less than the required insurance experience. The pension for insufficient seniority cannot be greater than 25% of the entire pension. Contributions to the pension fund are 10% of earnings, but only if they are less than 23,660 pounds per year. Employers also make payments to the pension fund ranging from 3% to 10.2% of income.

The state superannuation pension (SERPS), professional and personal pensions are all part of the second level of the pension system. The state superannuation pension is proportional to the employee's wage and is based on his earnings. The payroll tax, which is included in the cost of production, serves as the financial foundation for such a pension. Contributions to SERPS equal to an average of 4.6 percent of salaries, with employees paying 1.6 percent and employers paying 3 percent. Only self-employed people and low-wage employees are exempt from making payments. Those with a high salary, on the other hand, may be excused from contributions if they reject to join in SERPS in favor of a personal pension scheme. SERPS's stated objective is to raise the average pension to 20% of the average income level.

The second part of the second level is non-state, professional systems (OPS). They are created by employers on a voluntary basis, both employees and employers make contributions to professional systems. Such schemes are not suitable for people who often change jobs. Pensions in non-state professional systems often amount to up to 70% of the salary, but a person receiving such a pension loses the right to a state pension (SERPS).

The peculiarity of this system is that the state encourages employers to use various pension schemes by providing tax benefits. In particular, no income tax is charged on

the contributions of the employee himself. The benefit is valid if all current deductions of the employee (including voluntary ones) do not exceed 15% of the salary, and the industrial pension under this scheme does not exceed a certain amount (about 8000 f.st. per year for 1 person). No income tax is charged on the employer's contributions, the investment income of pension systems is exempt from paying all taxes. The tax is charged only when paying a pension. Thus, a citizen receives a kind of «tax credit» for several decades and, thanks to investing the entire accumulated amount, a significant increase to the pension.

Personal pension schemes in the UK are available to everyone. A person who creates a personal scheme can stop participating in SERPS. There are two main types of personal pension systems - income-appropriate (only for employees) and regular-for everyone. An employee can choose between participating in a state pension scheme of the second level, or in private pension funds [**Error! Bookmark not defined.**, p. 201-374].

Participation in private systems is stimulated by a number of significant tax benefits. According to experts, the current level of employee participation in such private pension schemes (about half of all employees) has reduced the state's pension obligations in the field of state social security by more than 30%. Of the 35 million working Britons, more than 7 million people participate in SERPS, 10.5 million in the professional system and 10 million in the personal one, with 0.5% refusing to participate in SERPS.

These two levels are under the strict control of the government. At the same time, the state encourages employees to choose a non-state pension system. Those who are over 30 receive a discount from the amount of the contribution if they choose a private system and, conversely, if they remain in the state system, the amount of contributions increases. The combination of the first and second levels leads to sufficient income after retirement.

The third level of the pension system operating in the UK is formed by voluntary additional private contributions that provide income exceeding the mandatory minimum. It covers more than 50% of Britons. Despite the private nature of savings, participation in individual programs is mandatory to the extent that it replaces participation in the state supplementary program and in the company program. The amount of the pension depends on the contributions. In addition, the state strongly encourages voluntary savings of citizens. This can be a special bank account, a contract for a lifetime pension with an insurance company, and participation in a private pension fund.

The UK pension market is Europe's largest, accounting for 40% of all pension deposits. 22 million of the 33 million British citizens of working age (over the age of 20) are employed. Half of them (10.5 million) engage in company-sponsored pension plans, 4.5 million contribute freely for a future "personal" pension, and just one-third (7 million) do not participate in pension plans. Another 3 million residents who are classified as self-employed (employers, persons in liberal professions) contribute to special pensions in part (about 2 million people in total).

Pension system of Germany. For the first time, pension provision in Germany appeared in 1889, the modern mandatory pension system was introduced in 1957. The

current model of the pension system in Germany is also characteristic of Austria, Italy, France and many other Western European countries. Currently, the pension provision in Germany includes three independently operating systems: mandatory pension insurance, pension insurance at enterprises and private pension insurance. All pension systems are non-state in nature. Participation in such a system is mandatory for almost all workers, it covers workers and employees, government officials, homeworkers, farmers, disabled people, widows, students, about 42.5 million people in total. In addition, persons of liberal professions are subject to mandatory pension provision - doctors, architects, lawyers, artists, artisans. The amount of pensions is determined based on the contributions of each employee. Such mandatory pension provision is provided by independent public-legal organizations: land insurance companies, the federal employees insurance company, insurance companies on a professional basis, insurance institutions for artisans and persons employed in agriculture. Those who are insured individually pay their premiums independently in full. Insurance institutions of individuals do not receive state subsidies [55].

Unlike other European countries and the United States, the German system does not provide for the redistribution of funds from the rich to the poor.

The provision of the poorest strata of pensioners is carried out with the help of social programs financed from the general budget. Pension insurance expenses account for the largest share in the structure of the social budget – about 30%. Financing of such schemes is carried out, firstly, at the expense of contributions, which until recently amounted to 18.6% of earnings, and today they are already equal to 20.3%. At the same time, the employee himself pays only half, the second half is paid for by the employer [56].

It is interesting to note that employees pay pension contributions only from earnings not exceeding 6,000 euros per month. If the salary is significantly higher, then contributions still need to be paid only with 6,000 euros. The pension amount cannot be more than 60-70% of the salary. The second source of financing is subsidies, the amount of which is 20% of the expenses of the insurance budget, they are determined taking into account trends in changes in wages and contributions. In addition, the state can provide interest-free short-term loans. Pension schemes also provide for financing at the expense of liquid funds redistributed between insurance organizations. Another source is the funds of the Federal Labor Department in the form of pension contributions for the unemployed.

The procedure for obtaining a pension and its size are adjusted annually in accordance with the dynamics of income. This principle, which underlies the determination of the pension amount, not only allows an employee to maintain the average level achieved by him during his working life, but also encourages him to increase labor productivity and income growth.

Pension provision in Germany is carried out in the form of:

- old-age pensions for men over 65 years of age. The required period for payment of pension contributions is 5 years, usually old-age pensions make up 45-50% of the last income;
- pensions granted to men from the age of 63, if the term of insurance payments is 35 years;

- pensions provided to women after the age of 60, usually old-age pensions make up 45-50% of the last income;

- old-age pensions for the unemployed (after 60 years), paid provided that the insured has had the status of unemployed for at least 52 weeks in the last 1.5 years and if mandatory insurance premiums have been paid for the last 10 years - 8 years;

- pensions for the loss of professional working capacity, or the onset of disability (after 60 years), if pension contributions were paid for 15 years.

The second level of the pension insurance system is voluntary pension insurance at the enterprise for employees, which is not associated with deduction from the wages of employees. Employers' contributions to the pension system amount to an amount not exceeding 0.5% of the wage fund annually. This form of pension insurance is purely voluntary. The entrepreneur decides all the issues related to the size of pensions, the amount of contributions, etc. The procedure, conditions and amount of collateral are not regulated by law, but the following conditions must be met:

- the inability of the employer to avoid creating a system if the collective agreement specifies the need for pension provision for employees in the future;

- preservation of the employee's right to a pension upon dismissal;

- bankruptcy protection;

- recalculation of the pension in case of inflation;

- the right of judicial appeal against the decision on the appointment of a pension.

Pension finance is determined by the scheme chosen from the available options:

1) non-funded plans with direct investments in the balance sheet accounts of the firm. Mutual insurance against the failure of such plans is provided by the PSV (Pensions-SicherungsVerein) system — a pension insurance system. Per year, insurance costs less than 0.001 percent of the company's capital. The required reserving of money on accounts under these pension systems was implemented in 1987. At the same time, contributions are tax-free.

2) direct insurance businesses engage into a contract on favor of the employee with an insurance company. The whole risk of investment and costs is passed to the insurance business in this situation, but the pension fund funds are also owned by the insurance company.

3) mutual insurance groups that operate as autonomous pension funds or security funds. In the absence of investment limits (even for non-independent investors), it is illegal for an employee to gain additional profit. Furthermore, only a portion of the donations are tax-free. This technique, however, has not been extensively implemented.

However, despite the growing importance of this form of pension provision, mandatory pension provision still prevails, since it provides a pension equal to 50-55% of wages.

Another form of additional pension provision is life insurance. Insurance payments can be one-time or current. Currently, insurance coverage in old age is provided by more than 1,000 institutions, the compensation paid was 20% of the total amount of the pension paid by the state. An alternative to mandatory and corporate security is private pension insurance. Contributions to private insurance companies can provide from 78 to 83% of wages.

Using the example of the German pension system, it is possible to trace the demographic and financial problems faced by most developed countries, in which a significant increase in the ratio of the number of pensioners to the number of contribution payers, i.e. the dependency ratio, is expected. Currently, the size of Germany's public debt is estimated at 67% of GDP, but if the country assumes all obligations under the pension system, this figure can reach 200%. Measures are being taken to increase the size of non-state pensions. Currently, the total contribution rate to the pension system is 19.2% of wages, and contributions are paid equally by the employer and the employee. In the future, it is supposed to voluntarily pay another 4% of the salary. In this case, the pension amount will be up to 80% of the salary.

Thus, in the course of pension reforms in European countries, a mixed three-level pension system has emerged and consolidated. At the same time, the main role is played by the system of conditionally accumulative accounts. It makes it possible to reduce the impact on the pension system of the demographic factor—an increase in life expectancy (the benefit is calculated on the basis of actuarial calculations, based on the life expectancy in the country at the time of the individual's retirement) and early retirement. This is also extremely important for developed countries, since, as already noted in previous chapters, an increase in the standard of living and the tax system stimulate retirement earlier than the legally established period [57].

By linking the size of the pension with the amount of accumulated contributions to pension provision, the system of conditional savings accounts significantly weakens the solidary, redistributive principle underlying the distribution system. The problem is solved by creating a special level in the pension scheme aimed at preventing poverty among the elderly population. According to the proponents of this system, it represents a compromise between bipolar distribution and accumulation systems, and also entails a serious shift in ideas about social protection.

Pension system in USA. In the United States differs significantly from European ones and is based mainly on personal insurance. The first pension program was implemented here by AmericanExpress. In accordance with this system, the condition for receiving a pension was the presence of 20 years of experience. In 1905, the first trade union pension program appeared. Its difference from private programs was that it was financed at the expense of the trade union members themselves - employees of enterprises, and not employers. From 1900 to 1925, more than 300 pension programs arose in the United States, which covered about 10% of the workforce. During the crisis of 1929-1933, many of them went bankrupt. The US social security system created in the 30s was based on the system operating in Germany and other European countries [58]. Currently, there are several pension programs in the United States:

1. The nationwide mandatory social Insurance program (SocialSecurity), which covers almost all those employed in the private sector of the economy, is based on the distributive principle, but very significant elements of social and state regulation are built into it. The program operates in accordance with the Social Insurance Act of 1935. The financial and administrative management of SocialSecurity public funds is carried out by the Board of Governors, which includes representatives of the US Government: the Ministry of Labor, Finance, Health and Social Services. It is important to note that these funds are extra-budgetary: their funds are not included in the federal budget and

cannot be used for other purposes.

The main equation for calculating benefits provides that the pensions of low-paid pensioners make up a higher share of their earnings than the pensions of high-paid ones. Since 1975, the benefits have been indexed. The pension is awarded from the age of 65, although the 1983 reform will gradually increase retirement in 2000-2027 to 67 years. And the first generation to retire at the age of 67 will be Americans born in 1959. If an employee has retired earlier, then its size is reduced, and work after retirement is stimulated. Usually, the state pension ranges from 50 to 80% of the salary and averages \$700. For employees, contributions to the pension fund amount to 7.5%, and the employer pays the same amount for his employee. But people of free professions: artists, lawyers, private entrepreneurs are required to deduct 15% of their earnings to the pension fund.

In general, the US state pension system performs a social, not an investment function. For two-thirds of pensioners, state pensions account for more than half of their income. The number of poor among pensioners, which was more than 40% in the 50s, currently does not exceed 10%.

2. Supplementary Pension Insurance Program (SSI). It should be noted that not all Americans are covered by the federal social insurance program. As a rule, it applies to employees of the private sector of the economy. A number of categories of workers whose income is insufficient to pay pension tax do not fall under the program: the cut-off limit is set at \$11 thousand per year. Those earning less than this amount are not covered by the federal program. The program also does not cover persons who do not have any labor income at all or whose work experience «does not reach» up to 10 years. The Social Insurance Administration pays such pensioners «pensions for the poor», or, if translated literally, additional social income (SupplementalSecurityIncome-SSI). In addition to low-income pensioners, they are assigned to blind and disabled citizens of the country. At the same time, pension schemes are financed from the state budget. At the moment, the social security program covers about two-thirds of working Americans, for whom state pensions make up the bulk of their income. The number of poor people receiving only SSI has significantly decreased in recent decades: from 40% in the 50s to 12% in the late 90s.

3. Private pension system. The fast rise of the private collective pension system began in the 1950s, when the American economy was actively developing. Unlike the state system, this one is based on the accumulative concept. Thirty million Americans were insured by a private pension scheme in the 1970s. Congress enacted the Private Pension Law in 1974. All private pension schemes were based on either a fixed payout or a fixed contribution basis. If there is insufficient money to pay benefits in a specified amount, the founding businesses are required to compensate the shortfall with profits. Funds are created at the expense of entrepreneur and employee deductions.

Private pension plans seek to recoup 65 to 80 percent of low-wage workers' final wages and 45 to 60 percent of high-wage workers' last earnings. The Act on the Protection of Employees' Pension Income was passed in 1974, and it legally protects pension funds and guarantees pensions to participants in private plans. Employer payments are totally tax-free as company (production) expenditures, contributions from workers' wages are often taxed, and self-employed citizens enjoy tax deferrals on

contributions.

In the 80-90s, the so-called 401 (K) plan became particularly popular in the private sector. According to the 401 (K), each participant has his own personal account in the pension fund. This plan is financed by both entrepreneurs and employees who pay contributions to the pension fund as a percentage of total income. Employees can make selective contributions by deducting money from wages, and those funds that went to this account are excluded from the tax.

In 1995, entrepreneurs accounted for \$53.7 billion, and employees – \$57.9 billion. In 1995, more than 90% of the contributions of employees participating in this plan were made to 401 accounts. Participants can choose investment strategies of private funds that manage pension assets. Thus, the participants themselves are responsible for the results, and they determine the payments themselves. In the late 90s, 20 million Americans used such accounts.

4. The system of personal pension accounts. In addition to participating in corporate pension schemes, each employee can also open a personal pension account (Individual Retirement Account-IRA) and save their pension on it. At the same time, the annual deductions to the account should not exceed \$2 thousand. As a rule, IRA-type deposits can be opened in a bank, an insurance company, a mutual fund or a broker working on the securities market.

At the same time, under the existing conditions, funds cannot be withdrawn from the account until 59.5 years, and after 79.5 the account is necessarily closed. The amount of contributions is limited to \$2 thousand. They are not subject to taxation, but at the time of closing and withdrawing money, they are taxed. Such accounts are opened in commercial and savings banks, mutual funds, insurance companies. They can be transferred by the account holders or transferred to management. Over the 11 years from 1985 to 1996, the amount of funds in personal pension accounts increased from \$200 billion to \$1,347 billion. The financial condition of the funds is subject to strict state control, they are required to report to the US Tax Service.

So, in the United States, there are currently three types of pensions - public, private, and personal.

A number of categories of employees are covered by other mandatory social insurance programs. They include employees of the Federal Government, 50 state and local governments. There are two programs for federal employees: CSRS (Civil Service Retirement System), which consists of employees hired before January 1, 1984, and FERS (Federal Employees Retirement System), which consists of employees hired after January 1, 1984. The CSRS system provides for a fixed pension amount, financed by the general contributions of the employer and the employee (7% of the employee's earnings). The FERS system is a three-level system. The first level involves the payment of a special tax by the employee and the employer, the second level requires the employee and the employer to pay an additional 0.8% of earnings to the Federal pension fund (FPF). The third level is a tax-deferred savings account. Employees contribute up to 10% of their earnings to it, which are supplemented by 4% of government contributions.

Thus, the private accumulative pension systems of the United States were able to accumulate huge funds and made a major contribution to the development of the

economy. At the same time, the US state pension system is currently on the verge of a serious crisis. First of all, this is due to the fact that representatives of the baby boomer generation have begun to retire. According to the head of the Federal Reserve System, Alan Griffin, currently 3.75 working Americans finance the pension benefit of 1 recipient under the social security system. According to the estimates of the trustees of the social security fund, by 2030 the number of recipients of pension benefits will approximately double, and the ratio of the number of employees contributing to the pension program to the number of recipients will decrease to about two. Under the current system, starting from 2017, payments from the Social Security fund exceed the receipts to it. Thus, the government needs to urgently review the system of payments to make them adequate to the receipts.

So, speaking about the modern pension systems of developed countries, the following common features of all the pension systems considered should be noted:

- the presence of three main levels of pension provision - mandatory, voluntary corporate and personal;
- establishment of tax benefits in the formation of sources of corporate pension provision;
- state regulation and control;
- promotion of more preferred private forms of pension provision, either through the provision of tax incentives, or in other ways.

The main distinguishing feature of these pension systems is a concrete solution to the problems of the formation and distribution of pension contributions.

As it has been repeatedly noted, recently the reforms to improve pension provision carried out in different countries are increasingly facing serious demographic problems. The solution to these problems involves, in particular, an increase in the retirement age and an increase in the amount of pension contributions, which should bring pension provision in line with the average standard of living of the population. On average, the pension level in Western countries is about 50% of the salary, now it is planned to increase the average salary to 70-80% in the countries.

So, in the official documents of the EU, specific goals for the transition to new designs of pension schemes until 2023 are set. It is assumed that during this period the share in pension payments of the distribution system will decrease from 84 to 64%; the accumulative component will increase significantly - from 12 to 29%, and the share of voluntary private pension insurance will triple (from 1.5 to 4.5%). Pension systems are becoming more and more individualized, the connection of benefits with the level and duration of insurance premiums is becoming stronger.

So, we can sum up that it is customary to include the countries of Central and South-East Asia as developing countries. Africa and Latin America, and the countries with economies in transition - the states of Central and Eastern Europe (former socialist countries), as well as the former republics of the USSR. It should be noted that among the numerous states of these regions there are countries with polar different levels of economic development: from relatively rich to very poor.

2.2 Features of the development of pension systems in developing countries in the context of the global financial crisis

It is customary to name the countries of Central and South-East Asia as developing countries. Africa and Latin America, and the countries with economies in transition - the states of Central and Eastern Europe (former socialist countries), as well as the former republics of the USSR. It should be noted that among the numerous states of these regions there are countries with polar different levels of economic development: from relatively rich to very poor.

In order to more clearly assess the possibilities and resources of pension provision in developing countries, we can divide them into several traditionally accepted groups - a group of post-socialist countries, which includes Central and Eastern Europe, a group of post-Soviet space-which includes the former Soviet republics, and new industrial countries, which include Chile, Argentina, Brazil, Indonesia, Malaysia, Thailand, etc. In our opinion, it would also be worth highlighting the group of least developed countries, which includes 50 States (mainly Asian and African countries), since they differ significantly from these groups.

Of course, the disproportions among these countries are very large. For example, only five developing countries accounted for 88% of the increase in foreign direct investment in 2017. Analyzing the forecast data of the British edition of *The Economist*, compiled according to surveys of leading economists regarding the pace of economic development and the current balance of payments in 25 developing countries of the world, it can be argued that analysts today are very optimistic about the economic prospects of developing countries (table 7).

Table 7 – Data from the British edition of *The Economist*, compiled from surveys of leading economists on the pace of economic development and the current balance of payments in 25 developing countries of the world.

Country	Real GDP %		Current balance of payments % of GDP	
	2018	2019	2018	2019
1	2	3	4	5
China	6.9	6.6	1.4	0.7
Hong Kong	3.8	3.8	4.3	3.4
India	6.7	7.3	-1.9	-3
Indonesia	5.1	5.1	-1.7	-2.4

7 - Table continuation

1	2	3	4	5
Malaysia	5.9	4.7	3.0	2.9
Philippines	6.7	6.5	-0.8	-1.5
Singapore	3.6	2.9	18.8	18.5
South Korea	3.1	2.8	5.1	5.0
Taiwan	2.9	2.7	14.5	13.8
Thailand	3.9	4.6	11.2	9.1
Argentina	2.9	-2.6	-4.9	-3.7

Brazil	1.0	1.4	-0.5	-1.3
Chile	1.5	4.0	-1.5	-2.5
Colombia	1.8	2.8	-3.3	-2.4
Mexico	2.0	2.2	-1.7	-1.3
Peru	2.5	4.1	-1.1	-1.8
Venezuela	-14	-18	2.0	6.1
Egypt	4.2	5.3	-6.2	-2.6
South Africa	1.3	0.8	-2.5	-3.2
Turkey	7.4	3.5	-5.6	-5.7
Czech	4.3	3.1	1.1	-0.4
Hungary	4.0	4.0	3.2	2.3
Poland	4.6	4.4	0.3	-0.8
Note – Compiled by author based on				

Until recently, most developing countries either had large-scale mature, universal distributive pension schemes, such as in post-socialist countries, or did not have pension provision at all, for example, most African countries. Because of this, they, unlike developed countries, where an adequate pension system has already developed, create as a result of reforms something new, characteristic of the current development of each individual country. It is worth noting that the growth of the economy and, in particular, the indicators of GDP and GDP per employed have allowed some developing countries (Latin America, Central and Eastern Europe) to start large-scale pension reforms or even completely switch to a funded pension system (Chile, Kazakhstan). The world experience accumulated to date shows that the solution of financial problems of pension systems can go in three directions:

1. Maintaining the state distributive pension system in a somewhat reformed form and at the same time stimulating the development of voluntary private pension programs.
2. Transition to a fully accumulative scheme.
3. Introduction of a multi-level distributive and accumulative pension scheme financed from various sources.

In this regard, the question arises not only about the preferential use of a particular pension system, but also about the factors contributing to the transition to a new system. As already noted, the accumulative system is becoming the most acceptable for most countries today. This is supported by the current situation, when unfavorable demographic factors already prevail in Europe, and are also characteristic, although to a lesser extent, for Asia and Latin America.

The situation in developing countries is aggravated by difficult economic conditions, social instability, and the inability of the state to maintain a decent level of pension provision. In these countries, the distribution of income among the population is quite differentiated, and poverty remains high, especially in rural areas. At the same time, as already mentioned above, the introduction of a funded system becomes possible only if there is a certain, sufficiently high level of economic development, assuming corresponding high living standards of the population and the development of financial markets.

The problem of the transition period is the need to compensate the current generation of pensioners for the funds that are diverted to the accumulative pension system. Therefore, one of the central issues of pension reforms in developing countries is where to get funds for the transition to a funded system. States have used a variety of ways to create conditions for the introduction of accumulative systems. Among the most popular: reducing the level of the distribution system by tightening the rules for receiving benefits, changing the formulas for calculating pensions, allocating budget funds to the pension system to finance the transition to a new pension system. For example, in Poland and some Latin American countries, part of the proceeds from privatization was used for this purpose.

Taking all of the above into account, it appears appropriate to consider national pension systems in developing countries and countries with transition economies not according to the previously recognized classification, which many authors adhere to, but according to the type of proposed or implemented pension system.

We set ourselves the task of analyzing all the possible pros and cons of such systems. We have conditionally divided the countries with developing economies into three groups, depending on the type of pension system and the degree of its development: countries with a predominantly distributive pension system (Argentina, Uruguay, Colombia, Czech Republic), countries with a funded system (Bolivia, Chile, El Salvador, Mexico, Kazakhstan, Poland, as well as Latvia) and countries with a mixed system (Croatia, Hungary). The results are presented in the table below:

Table 8 – Types of pension systems in emerging economies

Distributive system or pay as you go	Mainly pay as you go system	Mainly accumulative pension system	Accumulative pension system
Morocco Jordan	Argentina, Uruguay, Colombia, Czech Republic, Estonia, Georgia, Kyrgyzstan, Romania, Moldova	Croatia, Hungary, Lithuania	Bolivia, Chile, El Salvador, Mexico, Poland, Latvia, Kazakhstan, Indonesia, Malaysia
Note – Compiled by author			

The first example of the transition to a accumulative system among the countries under consideration is the pension reform implemented in 1981 in Chile. By that time, it became clear that the state was in danger of default on its social obligations due to a sharp increase in the number of pensioners and a reduction in the working population. If in the 60's there were 12 employees per pensioner, by the beginning of the 80's this ratio had decreased to 1 to 2.2, that is, almost 6 times.

The new system unified the old pension schemes. The essence of the Chilean reform is as follows: every working citizen has an individual account, to which his pension contributions equal to 10% of his salary are credited. Individual savings are capitalized at the expense of income from investments that management companies carry out from the funds accumulated by the funds. At the end of working life, this capital is returned to the participant or his legal successors in the form of a pension.

Money was accumulated in the state pension fund before to reform in Chile, as in other countries with a distributive pension system. In the early years of the system's reform, 25 non-state pension funds (NPFs) arose. Working citizens have transferred up to two-thirds of their money to them. These funds could only accrue funds and were handled by specific administrative firms (APFS). There were more than 15 of them at the start of the reform, but by the end, only six survived. Provida is the largest administrative firm that first established in the 1970s. Since its creation, it has led the pension savings industry. It now handles the pension funds of 2.5 million Chileans, accounting for 40% of the total number of covered.

Working citizens are allowed to select and modify their APF at any time. Furthermore, individuals can select the sort of pension fund based on their chosen investing plan. However, there are certain limitations based on the participant's age. People who are already members of the pension system, particularly those nearing retirement age, should pick the fund with the majority of its funds invested in fixed-income instruments in compliance with these requirements. Citizens who are just beginning out in their careers tend to invest in more profitable, but riskier, assets.

The Chilean State exercises supervisory and control functions through an authorized body-the Superintendent of Pension Fund Administrators. Recently adopted laws have also introduced new models of pension accumulation: such as voluntary pension savings accounts, contractual deposits, etc.

At the first stage of the reform, administrative companies faced serious difficulties. First of all, because they actually had nowhere to invest: the law prohibited investing pension savings in financial instruments of other countries, and there was no stock market in Chile at that time. It appeared in the early 80s, but only since the mid-90s, when the national stock market «settled down», the government has made some concessions. The list of permitted assets is established by the Risk Classification Commission, created from representatives of all APFS and the Superintendency. Currently, administrative companies are not allowed to invest more than 7% of their funds in shares of one company and more than 5% of their funds in shares of one bank. There are also certain limits on investing pension savings in financial assets of other countries: currently, pension funds can invest up to 20% of the total capital of the fund abroad, in the future this figure will increase to 25%. Then the law on the so-called multi-funds was adopted. This law allows each APF to manage five types of funds, which differ in the composition of the investment portfolio. It is allowed to invest no more than 50% of the total assets of the APF in government bonds.

The reasons for such restrictions on the formation of an investment portfolio are quite obvious. From the very beginning of the reform, the state has assumed certain obligations to guarantee the safety of pensioners' funds. In the event of the bankruptcy of the administrative company or in the event that its activities turned out to be counterproductive, the state is obliged to pay the Chilean a minimum pension or 70% of the minimum wage in the country. It goes without saying that with the massive devastation of the APF, this can become an unbearable burden for the budget. Therefore, the state in Chile prefers to strictly control the activities of both administrative companies and non-state pension funds. According to the authorities, the average amount of payments for men who received their first pension in March was

368,329 pesos (\$485), for women – 109,812 (\$144). The poverty threshold in Chile in March passed by an income of 170 thousand pesos (\$224), the minimum wage is 320,500 pesos (\$422), and the cost of the basic consumer basket in January 2020 was 45,105 pesos (\$60).

The profitability of the investment portfolio of the APF in the first years of the reforms was six times higher than the then average annual inflation rate: the first indicator in the 80s was about 13%, while the second fluctuated at the level of 2-3%. More than 10 million Chileans participate in the funded system, which is a fairly high for a country with a population of 18 million. Thanks to the «pension» money, the growth rate of the national economy increased by an average of 2-3% per year. At the same time, the government managed to «raise» the main industries, in particular metallurgy, at the expense of these funds.

As a result, the Chilean system provides certain guarantees, including, first and foremost, a minimum level of social support to seniors who are not covered by the mandatory plan, and secondly, a state-guaranteed minimum pension of around 25% of average salary, provided that payments to pension funds have been paid for at least 20 years, a minimum rate of return guaranteed by each pension fund, and a state-guaranteed annuity payout if an insurance or pension firm fails.

According to Degtyar L.S., the success of the Chilean pension reform is largely explained not only by successful strategic decisions, but also by the favorable economic and political situation in the country in the 80s. The state has accumulated a significant budget surplus, thanks to economic reforms, a period of stable growth has begun. The rigid authoritarian regime ensured socio-political stability with the mandatory participation of the entire working population in the new system (with the exception of small entrepreneurs, military personnel and some other groups of the population). In parallel with the pension reform, liberalization developed, and internal capital was formed. This gave an impetus to the development of the infrastructure of financial markets, contributed to the emergence of new financial institutions and led to high profitability of investment portfolios.

However, the successful development of the Chilean savings system is hindered by a number of factors, and, above all, by the poverty of the population. Because of unemployment, poverty, and mass evasion of pension contributions, the number of employees who have joined the system is greater than the number of those who actually make pension contributions. It is obvious that the poor population is not able to maintain a stable savings system (in Chile, more than a third of pension fund clients have incomes below the poverty line). The share of workers covered by the pension system is low and tends to decrease (according to unofficial estimates, the real coverage of the working-age population of the country is just over 50%). The next negative factor is the underdevelopment of the economy as a whole and, above all, the financial market. Pension funds are not able to allocate funds efficiently due to the lack of a developed credit system, a developed securities market, which leads to the inefficiency of their work, and, consequently, to the low profitability of these funds and their frequent ruin.

The world fame and success of the Chilean reform have become a model for other Latin American states (Mexico, Bolivia, El Salvador), as well as a number of Southeast

Asian countries (Indonesia, Malaysia, India, Kazakhstan). These countries also carried out drastic pension reforms in the mid-90s of the 20th century. With some modifications, they adopted the basic Chilean model with private pension funds that manage the individual funds of employees. At the same time, by the end of the 20th century. Only four Latin American countries-Chile, Bolivia, El Salvador and Mexico, as well as Kazakhstan-have completely abandoned the distribution system and switched to a purely accumulative one.

The Russian Federation In 2013, it was decided to change the procedure for the formation and implementation of citizens' rights to insurance pensions. Federal Law No. 400-dated December 28, 2013 introduced a new mechanism for the formation of pension rights based on individual pension coefficients.

It should be noted that the retirement age has not been changed yet again. The law also preserved the applicable types of insurance pensions (for old age, disability and loss of a breadwinner). The minimum insurance experience for receiving an old-age pension was 15 years. For those pensioners who were due to retire in 2015, the length of insurance experience was reduced to 6 years, consistently raising this level to 15 years by 2024. The insurance experience includes periods of work on the territory of the Russian Federation, subject to the accrual and payment of insurance premiums to the FIU.

The main innovation, as already noted, was the determination of the individual pension coefficient. In accordance with the law, an old-age insurance pension is assigned if there is a value of this coefficient (IPC) at least 30. At the same time, as well as in the case of work experience, from January 1, 2015, the old-age insurance pension is assigned with an IPC of at least 6.6, followed by an annual increase until reaching the level of 30.

Assessing the effectiveness of investing pension savings, it should be noted that the profitability of the Management Company of VEB (the state management company for pension savings under the trust management agreement) (under the management of which, according to the Management Company itself, as of the 3rd quarter of 2015, is 1.88 trillion. pension savings, or 48.7% of the total amount of pension savings) for 12 years only twice exceeded the inflation rate. As for the APF (1.98 trillion. in the third quarter of 2015, or 51.3% of the total amount of pension savings as of the 3rd quarter of 2015). For a more accurate assessment of the effectiveness, we will calculate the indicators of the accumulated profitability of the VEB Management Company, APFs and accumulated inflation in the period from 2004 to 2014. For 12 years in the period from 2004 to 2015, the cumulative accumulated inflation was 207%. Neither the APF with a cumulative accumulated yield of 199% (growth rate of 2.99), nor the VEB Management Company, which showed the worst cumulative yield of 116% (growth rate of 2.16), failed to provide a yield that would exceed inflation.

There was an attempt to create a mixed pension system in Russia. From 2002 to 2014, the mandatory pension contributions of employers were divided into parts. For example, since 2010, 16% of the salary of each employee (born in 1967 and younger) went to the budget of the Pension Fund of Russia (PF), and then to payments to current pensioners, And 6% went to the individual pension account of a person.

Everyone could top up this account himself. If personal contributions reached 2000 rubles a year, the state paid the same amount to the person's account (but no more than 12,000 rubles per year). This was called co-financing of the pension. This is how personal pension savings were formed.

Nevertheless, over time, the gap between the contributions that employers make and the payments that go to pensioners has increased. And since 2014, the government has «frozen» the funded part of the pension. New employer contributions do not replenish it – everything goes to the FIU. Thus, the pension system has become distributive again.

At the same time, those pension savings that have already been made remain on the individual accounts of Russians. People, as before, can make voluntary contributions and independently replenish these accounts.

In addition, the owners of pension savings can decide for themselves who to entrust the management of this money to. After all, the size of a person's future pension will depend on how successfully pension savings will be invested and what investment income they will bring.

According to the law, you can transfer your pension savings to a non-state pension fund (NPF) or leave them in the pension fund. The Pension Fund of Russia has several authorized management companies that offer different investment strategies. Person can choose any of them.

Other Latin American countries, like Argentina, Colombia, Peru, and Uruguay, decided to maintain their existing distribution methods while introducing a partly subsidized mechanism. Here, mixed multi-level systems were built. In these nations, the proportion of pension contributions going to the funded component ranges from 8% (Peru) to 15% (Uruguay) of the employee's monthly salary. Employees are given the freedom to pick their own distribution or accumulative system, as well as the option to change them (Columbia), shifting from one system to another [59].

For example, in Malaysia, a Worker's Savings Fund was established in 1991, which covered almost the entire working population. Since 1994, the rate of deductions to this fund has been 15% for the employer and 12% for the worker. The savings fund of employees, as in Chile, is subject to serious state regulation and control. More than 70% of the fund's assets are invested in government securities. The fund is managed centrally. Such a system, of course, does not allow participants to choose among various competing funds. It is interesting to take revenge that the fund does not practice periodic pension payments, but makes a one-time payment of the entire amount after the employee retires. Similar savings funds operate in India, Nepal, the Gambia, Zambia, only in these countries employees make contributions to the system that unites pension funds - the Central Association. Such schemes are most often offered to employees of the private sector. The combined fund invests the funds received in various assets, and receives dividends and interest on deposits, depending on the investment strategy. Funds are also allowed to buy real estate or make other investments that are considered socially useful. In some countries, dividends are averaged over several years to reduce losses in case the system is insufficiently financed.

The difference from the Chilean model in these countries is also expressed in the

timing of the complete rejection of the distributive pension system. This process, as a rule, occurs rather slowly due to the lack of necessary conditions for the existence of a new system [60].

Thus, we can say that the developing countries of Latin America and Asia for the most part had insufficiently developed pension systems that cover only a certain, small group of the population, and are based on the solidarity principle. The ongoing economic reforms have led to a certain improvement in the situation of workers, which has indicated the possibility of a certain reform of the social sphere. First of all, it concerned the involvement of the majority of the population in the sphere of pension provision and the reduction of state expenditures on pension provision. The main reasons for such reforms, unlike in developed countries, were not demographic problems - due to the high birth rate and rather low life expectancy in these countries, the problems of transition to a funded system are not so acute. At the same time, it is expected that in the future these problems will not only appear, but also begin to worsen. Thus, by 2025, it is assumed that in the countries of Southeast Asia, the number of pensioners in relation to the working population will triple. In Sri Lanka, the proportional ratio of those over 60 and the working population will increase from the current level of 9% to 20% by 2025.

The main problems that lead to the need to reform pension systems in these countries are the same as in the countries of Eastern Europe and the CIS: pressure on state budgets (China), insufficient deposits in pension funds for pension payments (Vietnam), low incomes (Mongolia), underdeveloped financial markets, without which the transition to a funded system is impossible. Investment, as a rule, is carried out only in public assets, which reduces their efficiency and profitability (Sri Lanka, the Philippines), in most countries there are completely different pension programs for the private sector and enterprises [61].

In countries with economies in transition, the need for serious reform has always been explained by numerous problems exacerbated by the transition period, which accelerated the collapse of distributive pension systems [62]. Among them are:

- a high state budget deficit, in which the government was not able to make pension payments in full;

- the need to create administrative institutions that could work in a market economy;

- a decreasing number of potential participants (payers) of the pension system. After the transition from a command economy to a market economy in the countries of Central and Eastern Europe, wages remained relatively high in the wealthier countries, but fell seriously in the poorer ones, which led to a decrease in the amount of income to the pension system;

- the presence of numerous preferential categories of the population;

- low retirement age: 60 years for men and 55 years for women.

Since the early 1990s, the countries of Central and Eastern Europe have radically changed their interaction with the rest of the world. Having identified accelerated economic growth as the goal, these countries have embarked on the path of intensive integration into the global economy. They seek to participate more actively in

international trade, attract international investment and exchange ideas, practical experience and technologies with other countries.

Since the late 1990s, economic growth has been observed in the CEE countries, which contributed to an increase in family income, as well as an increase in public spending on social needs. National income has been growing in all CEE countries since the late 1990s. The 5 Central European States that joined the EU in May 2004 - the Czech Republic, Hungary, Poland, Slovakia and Slovenia - had the highest economic indicators among the CEE states, and economic growth since the middle of the decade has smoothed the consequences of the shocks of the transition period. In Bulgaria and Romania, whose accession to the EU was in 2007, steady economic growth began only at the turn of the new millennium. The situation in the countries of South-Eastern Europe was not uniform. In countries such as Macedonia, political crises and conflicts hindered economic development, while Croatia was not inferior to the Central European countries in terms of economic growth [63].

It is obvious, however, that economic growth alone is not a guarantee of improving the living conditions of the population. In this case, the so-called «quality» of economic growth is very important, partly measured by such indicators as changes in employment (and, accordingly, in earnings) and in government spending, especially on social security.

The demographic situation in the CEE countries is characterized by a common factor for European countries – an increase in the older population. The data confirming this is presented in the table below (table 9):

Table 9 – Proportion of elderly people in CEE countries (ratio of the population aged 65 years and over to the population aged 15-64 years, as a percentage)

Countries	Years														
	1991	1993	1995	1997	1999	2001	2003	2005	2007	2009	2011	2013	2015	2017	2019
Czech Republic	19.162	19.549	19.384	19.692	19.839	19.803	19.661	19.771	20.342	21.312	22.816	24.815	26.907	29.004	31.3
Hungary	20.707	20.970	21.077	21.628	22.071	22.362	22.515	22.679	23.009	23.252	23.729	24.527	25.705	27.683	30.5
Poland	15.654	16.193	16.585	17.098	17.275	17.858	18.377	18.598	18.605	18.649	19.356	20.690	22.461	24.499	28.0
Slovakia	16.117	16.200	16.133	16.341	16.417	16.393	16.323	16.254	16.557	16.971	17.659	18.612	19.894	21.664	22.8
Slovenia	15.974	16.824	17.688	18.736	19.714	20.553	21.277	21.978	22.816	23.667	24.530	25.433	26.815	28.892	31.1
Bulgaria	20.447	21.557	22.549	23.552	24.305	24.793	25.060	25.128	25.496	25.972	27.098	28.801	30.153	32.019	33.2
Romania	16.281	17.161	17.945	18.883	19.684	20.592	21.571	22.096	22.506	22.686	23.188	24.016	25.153	26.687	29.16
Albania	9.193	9.872	10.583	10.862	11.137	11.626	12.353	13.108	14.169	15.338	16.370	17.148	18.054	18.997	21.3
Bosnia and Herzegovina	10.166	11.700	13.373	14.447	15.457	16.828	18.530	19.600	19.862	19.710	20.160	21.402	22.515	23.908	26.14
Croatia	17.508	18.813	20.163	21.468	22.650	23.876	25.106	25.734	25.966	25.987	26.507	27.385	28.489	30.073	32.7
The former Yugoslav Republic of Macedonia	11.266	12.188	13.163	13.814	14.401	14.991	15.566	15.966	16.220	16.360	16.729	17.033	17.736	18.909	20.8
Serbia and Montenegro	14.950	16.102	17.215	18.635	19.941	20.965	21.644	21.838	21.580	21.247	21.696	22.845	24.326	26.253	28.8
Note – Compiled by author															

In addition, as a result of a decrease in the birth rate, the proportion of young people of working age is decreasing. In recent years, the ratio of the number of employed and pensioners has noticeably worsened. Thus, in Bulgaria in 1990 there were 58 pensioners per 100 employed, in 2019 - 92, in Hungary – 45 and 80, in Poland – 44 and 62. Thus, the burden on the working-age population has reached a high degree, comparable to economically developed countries. Against the background of the economic downturn and the reduction on this basis of contributions to the state pension fund and the financial capabilities of the state as a whole, the share of pension expenses in GDP has been constantly increasing.

Until recently, all CEE countries had large-scale mature, universal distributive pension schemes. Currently, the pension systems in these States are in a state of serious reform. At the same time, due to the different economic levels of countries, the structure of their pension systems is quite diverse. The same can be said about the nature and depth of the ongoing reforms.

In general, it should be noted that the pension systems in the CEE countries are experiencing the same difficulties and are just as compromising as, for example, the Russian pension system. The state pension continues to be the basis of pension provision, the transition to the new system is extremely slow and the level of pension burden on the budget remains at a fairly high level. There are also such problems as insufficient development of the securities market, low market capitalization, lack of diversification of investments, the dominance of investments in government bonds, which are typical for most countries of the group under consideration. The voluntary insurance sector is extremely poorly developed due to the lack of incentives for employers to offer employees occupational pensions and insurance. In addition, according to the calculations of the OECD, since 2010 in some countries of Central and Eastern Europe, there is a growing deficit of the pension system, which will reach catastrophic proportions by 2030-2040. It is obvious that in this situation, States need to reduce administrative costs, which are increasing due to the parallel existence of the old and new pension systems. This becomes especially relevant in the light of integration into the EU, since the current level of contributions to the system is clearly insufficient to ensure payments when the levels of economic growth and inflation approach European standards [64].

Pension systems in the least developed countries (African countries). The countries of Africa occupy a special place in the group of developing countries. The middle-income countries of Africa and the Middle East have not yet undertaken major reforms in the field of pension provision. This is partly due to the fact that the existing distribution systems have not yet outlived themselves. For example, the pension system of Jordan, designed for private employees, should spend, according to some estimates, 16% of gross domestic product, and spends on average less than 1% of gross domestic product per year. In addition, due to the high mortality rate, the vast majority of the population of these countries are young people who are mainly employed in agriculture and do not have an official retirement age. These country features reduce the severity of demographic problems and, consequently, the need for pension reform. It is assumed that these systems, without appropriate reforms, will also become a financial burden in the future, but this will happen only in the next century. Thus, most of the medium-

developed African countries and countries of the Middle East are characterized by distribution systems that do not require any serious reform at the moment. The same can be said about low-income countries in the African and Middle East region (the average per capita income is less than \$700 per year). The countries are demographically young. They are also characterized by a low dependency ratio, due to the predominance of the working population over pensioners (high birth rate with high mortality). A high percentage of the labor force is employed in agriculture (on average, almost 75 percent), so most pension systems in the Sub-Saharan African countries often cover less than 5 percent of the labor force, and the cost of paying pensions is less than 1.5% of GDP. In the more developed countries of Sub-Saharan Africa, pension coverage reaches approximately 10 percent of the workforce operating in the private sector. In many African countries, there is a so-called national social insurance system - in fact, it is a pension program for a civil servant. These schemes can be very generous and often provide full pensions for people aged 55 who have 10 years of work experience [65].

In the more developed countries of Africa, there is a «mixed» pension system, where, along with a distributive pension system, there is also a funded system in the form of separate schemes for the population and the private sector. However, in general, pension systems are in a developing state and there are several reasons for this. The lack of a developed financial market leads, firstly, to the fact that the role of pension funds is mainly played by semi-state and foreign companies (for example, in Zambia and Kenya), and secondly, to inefficient cash management. In Egypt and Zambia, for example, due to the low, and sometimes negative, income of pension funds, there is an outflow of funds and the transfer of these funds by payers to deposits in banks, where the interest on deposits is on average 8-12 percent.

So, we can sum up that the situation in the field of pension reform in developing countries and countries with economies in transition is far from unambiguous. The main measures designed to solve the emerging demographic and economic problems should be the following:

- transition from a distributive to a funded pension system;
- raising the retirement age;
- reduction of the «pension coverage» of income before retirement;
- fighting inflation and protecting pension savings;
- development of the stock market to increase retirement savings through accumulation.

2.3 Trends in the development of the pension system of the Republic of Kazakhstan in the context of the destabilization of the global financial system

The formation of new economy trends and reaching high rates of development are possible under the risk minimization: administrative, fiscal, customs, legal impact, etc. It is especially important to provide sources of financing: an effective financial system, inflow of foreign investments, a rise in the savings rate, a reduction in capital outflow, etc. For Kazakhstan, it is important to build a progressive financial system, as well as a stimulating investment climate, addressed to the development of advanced sectors of the economy. The modern understanding of the essence of the financial system is not

limited to the forms of accumulation, distribution and redistribution of financial flows. The financial system has become a mechanism for transforming savings into investments [66].

In 1998, Kazakhstan was one of the first in the CIS to start pension reform with the transition to a funded mechanism. Russia has switched to a two-tier system with the state pension fund remaining dominant since 2002, which we no longer have. By 2007, the market of Kazakhstan had already formed the process of concentration, consolidation of accumulative pension funds and their transformation into institutional investors had passed.

However, by 2010, the pension system was characterized by the fact that it could not protect savings from inflationary trends. The indicator of nominal profitability (K2) of all pension funds of Kazakhstan for the period December 2010 -December 2011 was 2.59%, while inflation at the end of the period was 7.4%, and the average annual rate was 8.3%. These trends were the main reason for the reform of the pension system of Kazakhstan [67].

The history of Kazakhstan’s pension system development can be shown on figure 4 below:

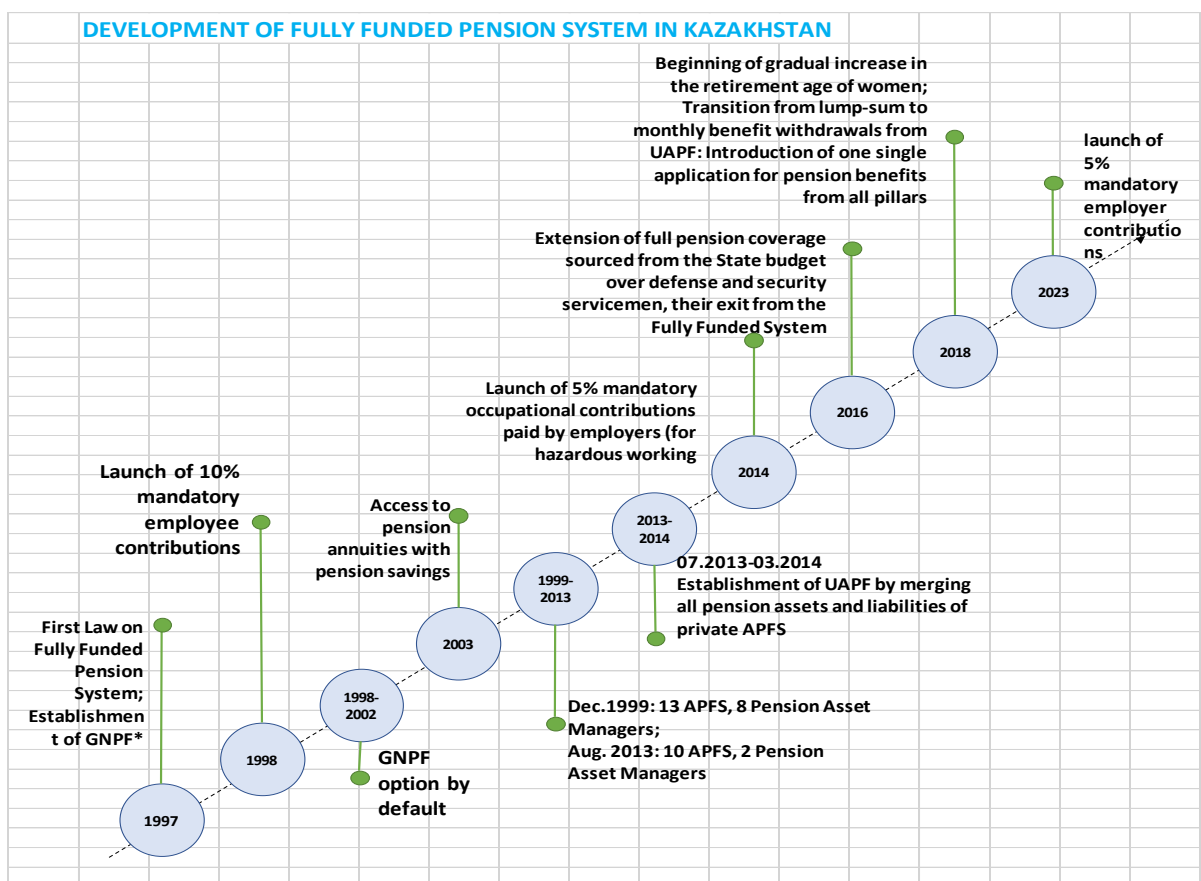


Figure 4 – Development of fully funded pension system in Kazakhstan

Note – Compiled by author

Table 9 – The rate of return of pension funds from the moment of creation until the end of 2007

Country	Year	Real rate of return
Bulgaria	2002	3.2
Estonia	2002	4.9
Hungary	1998	2.6
Latvian	2001	-3.5
Lithuania	2004	5.7
Poland	1999	8.9
Slovakia	2005	0.9
Note – Compiled by author		

To display the profitability of pension savings, an indicator of the value of a conditional unit of pension assets is used. To present the overall picture for all funds, the weighted average value of the conditional deposit was calculated. Before the crisis of 2008, this value grew at a good pace, after which the conditional depositor lost 2.6%. In 2011, the conditional unit of pension assets steadily decreased: as of January 1, it was 445.4 thousand tenge, as of January 1, 2012, 436.4 thousand tenge, as of July 1, 2021, 910 tenge [68]. Kazakhstan is integrated into the world economic processes. Throughout 2011, the global economy was under the burden of the debt problems of the United States and the eurozone countries – the crisis continued. Ratings were decreased for many economies that had the cherished «AAA». As a result, the stock market had a downward trend all year: the S&P 500 and FTSE 100 had a difference between the maximum peak and the minimum 20%, and the NIKKEI 225-24%. However, the share of shares and bonds of foreign issuers in the structure of the investment portfolio of domestic pension funds was small. At the same time, the real sector of our economy experienced a decrease in the growth rate of industry to 3.5% (5.8% in 2010).

In the financial sphere, the situation was ambiguous: for 2011, respectively, instability. Since 2008, the share of state securities in the portfolios of PFs has been increasing despite the reduction of the limit on investing in state securities.

In 2011, the yield of state securities (including securities of the National Bank and municipal securities) at the initial placement varied from 1.46% to 5.84% per annum. (In September 2013, the yield ranged from 1.39 to 5.77). In addition, the Ministry of Finance specifically placed for pension funds securities whose coupon is linked to inflation – MEUZHKAM. 92% of the volume of government securities placed just falls on these two types of bonds, as well as on MEOKAM (the yield as of January 1 is 5%).

Then there are deposits to the banking system. The level of deposit rates for non-bank legal entities in second-tier banks as of January 1, 2012 was at that time in the national currency: demand deposits - 1.3%, on term deposits-2.7%, on conditional deposits-4.8% (in August 2013 – 2.5; 4.4; 4.6, respectively); in foreign currency: demand deposits-1.5%, on term deposits-1.4%, on conditional deposits-1.6% (in August 2013-0.1; 1.3; 0.2, respectively).

The decline in the ratings of the main economies of the world during the crisis led to an increase in the cost of servicing debt for them, and therefore, profitability. Automatically, the reduction of sovereign ratings increases the cost of debt servicing for companies resident in these countries. Therefore, the global market of government bonds and companies has definitely increased the yield [69].

Bonds of Kazakhstani companies, according to KASE, had an average yield of about 14.5%. The same trend continues at the present time.

Thus, by calculating the weighted average return on the structure of the investment portfolio, which can be found on the website of the Financial Supervision Committee or in the statistical bulletin of the National Bank of the Republic of Kazakhstan, as of January 1, 2012, it is possible to estimate the profitability of all instruments. According to approximate calculations (excluding the yield of foreign securities), the total nominal yield of PFs for 2011 should have been at the level of more than 5%, and not 2.59%, as indicated in the statistics of the NBRK Financial Supervision Committee. Thus, «Commission remuneration due to the pension fund, including from pension assets and from investment income/loss on placed pension assets» for the period from 2005 to the beginning of 2012, the growth rate of commission remuneration of PFs exceeded the growth rate of investment income earned by them – 40% versus 30%. The funds received a commission fee from the amount of investment income, as well as from the amount of pension assets under their management (15% of investment income and 0.05% of pension assets), and the assets are constantly growing. Thus, if in 2005 the estimated margin of pension funds in investment income was 15.2%, then by January 1, 2012 it was 21%. If we compare it with the services of brokers and banks, their commissions are several times less: the broker charges no more than 2-5% for servicing, and the bank charges up to 5% for organizing a loan, taking into account all its fees [70].

Since the commissions are calculated from the amount of investment income, its decrease leads to a decrease in the profit of the pension funds themselves - in 2011 it fell by 45% compared to 2010. In addition, the funds had a pattern-the growth of income is not adequate to the growth of expenses. Namely, in 2011, compared to 2010, the income of the NPF fell by 6%, expenses increased by 16%, general and administrative expenses (non - production expenses, which support the staff of the NPF) - by 17%, the salary fund-by 18% [71].

As for now, the pension portfolio of UAPF looks like this (figure 5).

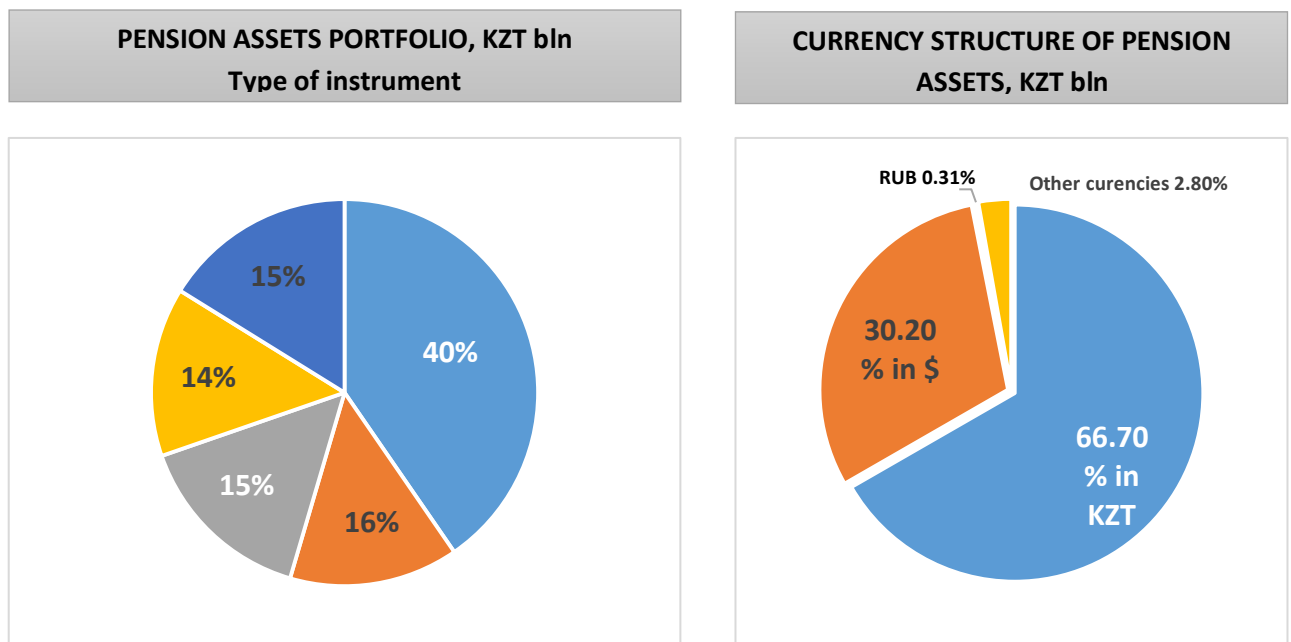


Figure 5 – Pension assets structure

Note – Compiled by author based on data of UAPF [72]

Where 40,0 % – 4 34.01 Government securities of RK; 14,0% - 1 543.37 Second tier banks of RK (Deposits, bonds and stocks); 15,0% - 1 596.76 Government securities of foreign states and IFO; 15,0% - 1604. Securities of quasistate organizations of RK; 16% – 1 685.22.

Thus, during the crisis, there were several problems in the development of the accumulative pension system:

- excessively conservative regulations that prevent funds from extracting large returns;
- inefficiency in choosing the optimal investment portfolio, taking into account risk and profitability, in order to have a positive interest rate of return compared to inflation;
- weak motivation of pension funds for profitability.

Experts of international financial institutions, for example, the World Bank, do not recommend carrying out very serious reforms in the field of pension provision, since the crisis is only temporary and affects only a small part of the population who found themselves in retirement or pre-retirement age during this period. And therefore, special attention should be paid to short-term risks. In addition, it is proposed to change the approaches to the construction of pension systems from unilateral to multilateral. As for Kazakhstan, the transition to a multi-stage system was carried out back in 1998. It is possible that in a crisis with a single-stage system that existed earlier (solidary) in social terms, Kazakhstan could find itself in a rather difficult situation if pension payments were made from the budget. The transition to the accumulative level made it possible for the population to accumulate funds to ensure old age and the results of the assessment of the investment activity of pension funds over the period of their existence generally showed good results, and in comparison with other countries, we can say that they are high. Nevertheless, the total amount of pension savings in Kazakhstan's pension funds as of December 1, 2011 was 2.607 trillion tenge (\$17.5

billion). The weighted average coefficient of nominal income on pension assets of accumulative pension funds for 12 months (November 2010-November 2011) was 4.66%, while the accumulated inflation rate for the same period was 7.8%.

Let us consider in more detail the factors that influenced the development of the pension system of Kazakhstan during the crisis [73].

By the beginning of the crisis (2007), there were 14 pension funds operating in Kazakhstan. As of October 1, 2013, 10 accumulative pension funds began operating in the republic. During the crisis, pension funds continued the policy of actively attracting the economically active population to the accumulative pension system, which affected the number of depositors and, as a result, the volume of assets of pension funds. So, if in 2007 the number of contributor's accounts was 259,489, then as of January 1, 2019, their number increased to 10,462,958 with a total amount of pension savings of 9,894,170,581 billion tenge.

It is noteworthy that during the crisis, the increase in voluntary savings accounts can be explained by the desire of the population to insure their future old age as much as possible, and therefore the number of accounts and their volumes are increasing. But, on the other hand, an increase in the unemployment rate and a decrease in the level of public confidence in financial institutions reduces the activity of the population in such investments, which was reflected already in 2013.

And the worldwide volume of pension assets for the 10 years shown below in Table 10.

Table 10 – Volume of pension assets worldwide

Country	Volume of pension assets by year In thousand million \$											Increase of pension assets in 10 yrs in %
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Australia	839 275.0	986 838.6	1 397 418.3	1 383 455.6	1 440 897.9	1 634 817.6	1 474 532.8	1 492 331.8	1 797 033.3	1 819 389.8	1 813 076.5	8,30%
Denmark	138 350.8	154 612.1	154 535.3	161 358.3	146 699.6	152 348.5	130 392.8	138 345.2	160 173.3	154 372.8	169 433.8	2,50%
Israel	94 426.3	112 070.9	112 462.9	129 591.5	152 678.6	153 546.8	160 832.7	175 958.3	211 424.3	198 895.0	252 458.7	7,90%
Latvia	188.8	207.6	208.6	261.3	325.1	342.4	360.5	402.8	520.9	528.9	628.8	11,00%
Mexico	107 810.6	134 749.4	132 380.8	168 563.3	181 254.7	181 881.0	163 963.5	145 819.6	173 620.8	181 696.8	211 538.2	5,20%
Norway	30 309.9	33 134.8	33 627.2	39 454.0	40 908.5	37 380.4	34 209.8	36 899.0	42 102.9	40 013.5	43 983.5	2,80%
Chile	118 052.2	148 437.0	134 962.3	162 021.0	162 988.0	165 431.5	154 711.2	174 479.8	210 512.3	193 110.0	215 373.4	5,00%
Sweden	35 954.2	47 126.5	46 714.1	57 406.1	53 767.4	47 035.8	43 698.3	20 129.0	22 609.6	21 116.9	22 839.8	6,90%
Estonia	1 371.7	1 430.7	1 467.3	1 953.4	2 442.6	2 676.4	2 844.2	3 263.8	4 365.1	4 511.1	5 341.6	11,40%
Hongkong	67 364.9	78 068.2	79 465.3	90 330.2	102 871.5	110 053.3	115 076.7	122 935.2	148 119.8	148 531.2	166 430.9	8,20%
India		3 347.5	2 848.2	5 450.1	6 818.5	11 465.0	16 253.4	23 472.2				32,10%
Indonesia	11 495.7	13 982.9	15 057.8	15 899.7	12 929.7	14 963.0	14 505.6	17 034.7	18 842.9	18 028.6	20 332.0	4,60%
Kazakhstan	12 600.3	15 300.4	18 138.4	21 375.9	24 592.7	25 269.0	26 318.3	19 530.7	23 920.8	24 869.5	28 252.7	8,00%
China	37 096.2	42 413.4	56 658.6	76 650.3	98 895.5	125 657.8	146 745.7	159 357.1	197 800.8	215 526.0	257 406.6	19,20%
Malaysia							273.1	337.7	549.5	647.6	855.2	23,60%
Singapore			159 255.5	187 818.5	199 670.7	208 112.7	211 578.2	226 913.7	268 449.3	285 802.0	314 528.1	7,60%

Note – Compiled by the author

In this regard, we will consider the development of events in the labor market, as well as the dynamics of the number of depositors' accounts in the period from 2007 to 2013 (figure 6).

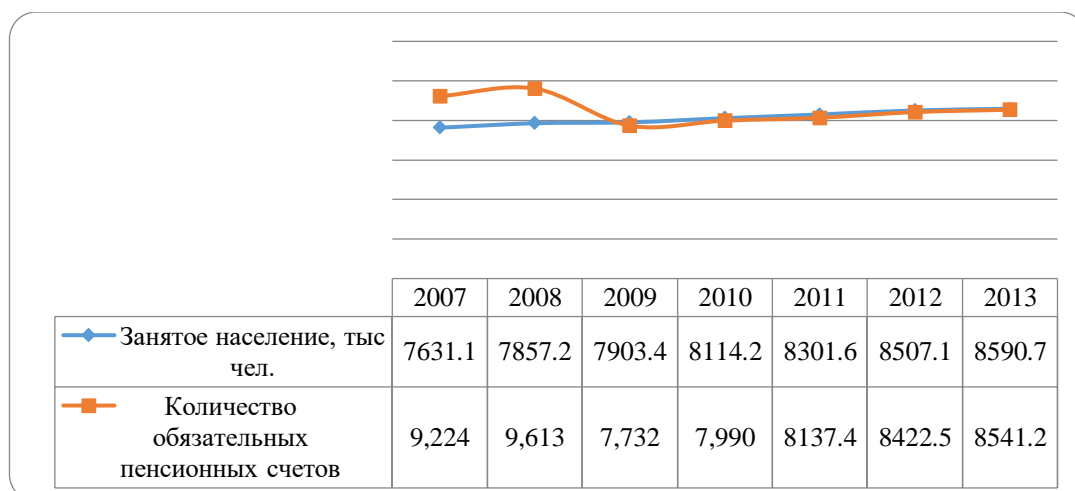


Figure 6-Labor market dynamics and the number of mandatory pension accounts in Kazakhstan from 2007 to 2013

Note – Compiled by author based on [**Error! Bookmark not defined.**]

An interesting fact is revealed. During the crisis, the number of pension accounts is smaller compared to the number of employed people. Since 2009, these indicators have been approaching as closely as possible. The fact is that during this period, the current accounts of the population are being optimized, which makes it possible to trace the real picture of the work of pension funds. As we can see, despite the difficult period for the financial system and the entire economy, the level of the employed population and pension savings steadily increased. Apparently, the state economic policy in the field of employment provision within the framework of the state program «Employment Roadmap» and Accelerated industrial and Innovative Development has influenced the dynamics of the labor market and, as a result, the growth of pension savings of the population (the data are given in the previous paragraph).

As for profitability, the negative development trends in the national economy observed since August 2007 have affected almost all segments of the financial market, including the accumulative pension system. The increasing level of inflation, the lack of investment-attractive instruments led to the accumulation of negative trends in the mechanism of investing pension assets.

Due to the global financial crisis, domestic savings funds have suffered losses. In 2008, accumulative pension funds lost more than 30 billion tenge. The yield losses were associated with the collapse of the securities market, which occurred three times in 2008. There was a reassessment of risks and a shortage of capital in the international markets, and investors were forced to sell assets to get live money, which leads to a decrease in stock and bond prices.

Thus, the sharp slowdown and even decline in indicators was due to the impact of the global financial crisis and the fall in world commodity prices. The deterioration of

the situation in the real sector of the economy with a certain time lag was similarly reflected in the indicators of the financial services market.

Kazakhstan has formed a single accumulative pension system, which is aimed at maximizing the preservation of savings and increasing the income of individuals participating in the accumulative pension system.

On the eve of the reform, Kazakhstan raised the retirement age of women. This was due to the need to reduce the burden on the country's budget during the period of industrial and innovative development, where significant resources are allocated. Moreover, all the «demographic» grounds for raising the retirement age of women have already developed in Kazakhstan. According to the data of the mortality table, in Kazakhstan, the life expectancy for newborn girls is 73.79 years (Table 11). But women who have lived to the age of 58 have more than 20 years ahead, that is, their total life expectancy will reach an average of 78.84 years. At the same time, the probability for newborn girls to live up to 60 years is 86.3% [74].

For men, the corresponding indicators are much lower, but they also overwhelmingly live to the age of 63, and their «retirement» period of life is on average 12.99 years. It is also associated with fluctuations in the birth rate and, perhaps, migration in the past. Moreover, it is difficult to separate the contribution of the growth of survival from the action of other factors mentioned.

Table 11 – Some indicators of the life expectancy tables of the population of Kazakhstan for 2013

Age	Total	Men	Women
Life expectancy, years:			
At birth	69.01	64.23	73.79
When you reach the age of 58	18.64	15.89	20.84
When you reach the age of 63	15.29	12.99	16.99
The probability of survival for newborns, %			
Up to the age of 58	77.5%	68.6%	86.3%
Up to the age of 63	69.7%	58.5%	80.7%
Note – Compiled by author based on [32,33]			

It should also be taken into account that in this case, the mortality table is built according to the method of conditional generation, and the indicators of life expectancy give an integral assessment of the age cross-section of mortality of contemporaries. In fact, each cohort of newborns has its own «history», their living conditions may differ significantly from those of previously born generations. For example, the mass nature of higher education and a more rational way of behavior of today's youth (a healthy lifestyle) gives every reason to hope that improving the quality of life will make it possible to live even longer than the tabular indicators «predict».

The fact that the vast majority of people live up to the modern limits of retirement age, and the «retirement» period of life is quite long. As of January 1, 2013, the number of pensioners by age was 1,732. 4 thousand people, or 10% of the total permanent population of the country (that is, now every tenth resident of Kazakhstan is a pensioner) [75].

Based on the indicators of the probability of survival and life expectancy (table 11), it is completely illogical to leave a lower retirement age for women. As you know, the 5-year difference in the retirement age of women and men appeared back in the time of Bismarck, and had a «demographic» background: in the family, the husband was older than his wife by an average of 5 years, and with the same retirement age, the role of the husband as the main breadwinner and head of the family would be under threat. The modern model of the family does not imply a large difference in the age of the spouses. The picture is quite expressive. Currently, the average age lag of people entering into marriage SINCE 2005-2012 is only 2.6 years, and this value tends to stagnate.

Taking into account the peculiarities of the age structure of the population of Kazakhstan, it can be assumed that in the coming years the number of people getting married (born in the second half of the 80s of the twentieth century) has increased (table 11).

Since most births are carried out in marriage, an increase in the birth rate is also expected.

Table 11 – Average age of first marriage for men and women

Years	2005	2006	2007	2008	2009	2010	2011	2013	2015	2018	2019
Age of women entering into marriage	24,1	24,2	24.2	24.1	24.2	24.3	24.3	24.5	24.7	25.8	25
Age of men entering into marriage	26,9	26,9	26.8	26.8	26.9	27	26.9	27.0	27.2	28.1	27.6
Age difference	2.8	2.9	2.6	2.7	2.7	2.7	2.6	2.5	2.5	2.3	2.6

Note – Compiled by author based on [**Error! Bookmark not defined.**].

Recently, there have been proposals to reduce the retirement age for women in accordance with the number of children born in order to stimulate the birth rate. The experience of the Czech Republic, where such a practice has existed since the 1960s, proves the ineffectiveness of such measures: the total birth rate in this country is noticeably lower than the average European one. At the same time, the highest birth rates are consistently demonstrated by the Nordic countries - Denmark, Iceland, the Netherlands, Norway, Sweden, Finland, where the highest level of employment among women and the retirement age is the same for women and men [76].

One of the main conditions for raising the retirement age is a life expectancy that, according to the recommendations of World Bank experts, will allow receiving pension payments for at least 15.5 years after retirement.

Thus, the analysis carried out over the past years confirmed that:

- the boundaries of the retirement age should be determined on the basis of demographic indicators, since they are the most objective and predictable;
- the demographic situation in Kazakhstan makes it quite possible to increase the retirement age of women;
- the retirement age for women and men can be leveled to the level of 63 years.

In the accumulative pension system, there is a risk of insufficient coverage of the population by the accumulative pension system. Thus, the share of participants in the pension system is less than half of the employed population. The reasons for the low coverage are a large proportion of the self-employed in the economy and unemployment. In this situation, in order to increase the coverage of the population by the accumulative pension system, the urgency of developing administrative measures by the Government of the Republic of Kazakhstan in terms of improving tax administration, including tax incentives for the population to voluntary pension contributions, the introduction of a system of mandatory universal declaration of income and increasing the level of employment by creating jobs for all age categories of citizens increases [77].

The following factors influence the size of the pension when reaching retirement age:

- 1) accumulated work experience, during which monthly pension contributions were made;
- 2) an increase in the life expectancy of the population over the past 12 years by 3.5 years;
- 3) a slowdown in the growth rate of the birth rate with the simultaneous aging of the «baby-boom» generation;
- 4) the gradual reduction of the share of the solidarity component in the paid pension provided for by the legislation upon reaching the retirement age.

Thus, this specificity of demographic and socio-economic indicators has a negative impact on the actual amount of savings. In addition, the level of pension savings of women is influenced by additional factors, which makes them more socially unprotected compared to men when they reach retirement age:

- 1) the work experience of women is 5 years less than that of men;
- 2) during the periods of leave to care for newborn children, the pension accumulation period is reduced by an average of another 3-9 years;
- 3) the life expectancy of women is on average 6 years longer than that of men.

Taking into account the above, the relevance of improving the efficiency of solving the following issues is increasing at all times:

- 1) expanding the coverage of the population by the accumulative pension system;
- 2) the creation by the state of the necessary conditions for ensuring the continuity of work experience and the corresponding monthly deduction of pension contributions by the population of working age;
- 3) gradual equalization of the retirement age for men and women.

In addition, the following will contribute to increasing the amount of pension savings: further development of the system of mandatory professional contributions;

stimulating the interest of the population in making voluntary pension contributions; improving approaches to paying demogrant; creating conditions for the development of corporate pension plans and family annuities [78].

Investment funds abroad are mainly index funds, since such investment has long been recognized as the most progressive. Such funds through securities reflect the movement of general market stock indices and tend to follow the fluctuations of the index. This is achieved by having the contents of an index or a representative selection of securities in the portfolio. Deposits in foreign investment funds of this type are suitable for investors who have a long-term passive trading strategy.

Deposits in foreign sector-type investment funds allow you to invest in shares of any sector of the economy. This can be healthcare, energy or the financial sector. The risks of such an investment are very low. Such funds can be both global and operating within the same country.

There are funds characterized by a specific investment style. Funds with the growth style invest money in organizations whose profit growth is planned to be faster than the average value in the market. Due to the potential for high growth, such organizations try to reduce the payment of dividends to a minimum and use profits in the development of the company.

Blend style involves combining both shares of companies with high potential growth and undervalued ones in the portfolio. The proportions may be different depending on the fund.

Smallcap style funds offer to invest in shares of organizations with small capitalization. In addition, there are midcap and largecap styles that invest in companies with medium and large capitalization.

Bond funds form their basket, in addition to the bonds themselves, and from other assets that contain bonds. The bonds are used both by state-owned companies and by various companies with a credit rating from low to high.

Commodity investment funds invest in commodity futures or exchange-traded commodities. Futures trading, which almost no commodity fund can do without today, can bring completely different income in comparison with trading in goods as such.

For example, in the United States, a regular pension is on average about \$1,200 (50% of the salary). Employees pay contributions to the pension fund in the amount of 7.5 % (the same amount is paid by the employer). Non-employees (businessmen, lawyers, artists, etc.) pay the full amount for themselves – 15%.

In Japan, the pension consists of two parts – the basic one (guaranteed to be paid to everyone upon reaching retirement age) and the labor one (formed from contributions that employees and employers make equally). The average pension reaches 60 % of earnings.

In Germany, the employer and the employee equally share contributions to the pension fund – only 20.3% of the employee's earnings. The pension amount reaches 70% of the salary.

In the UK, an employee pays 10% of earnings to the fund, the employer adds from 3 to 10.2%. The pension reaches 50% of the salary. The state guarantees only a minimum pension.

The French contribute 16.35% of their earnings to the pension fund (employees and employers-in half, persons of liberal professions-completely independently). The pension amount is 50% of the average salary for the last 11 years of work [79].

One of the most important points in the success of the pension system is not only an increase in the profitability of NPFs, but also a decrease in inflation in the country.

After the reform made by Kazakhstan in 2013-2014 the pension system has changed. The micro economic environment has also experienced changes. As you can see in Figure 7 below for 2021.

REAL GDP GROWTH		INFLATION		POPULATION		LABOUR FORCE (AGE 15 AND OLDER)		RETIREMENT AGE	
4,30%		5,40%		18,6 mln ppl		9,2 mln ppl 49,50%		female male	
LIFE EXPECTANCY AT BIRTH, YEARS*				TOTAL MORTALITY RATE* (per 1000 ppl)		TOTAL FERTILITY RATE*		59,5 (in 2020) gradual increase to 63 by 2027	
BOTH SEXES		MALE		FEMALE		7,1		2,84	
73,2		68,8		77,2				63	
AVERAGE PAYG PENSION BENEFIT		MINIMUM PENSION BENEFIT		COST OF LIVING ALLOWANCE (COLA)		AVERAGE MONTHLY SALARY		MONTHLY CALCULATION INDICATOR (MCI) MPII	
\$ 152		\$ 94		\$ 76		545\$		\$ 7	

Figure 7 – Macro-economic and socio-demographic indicators

Note – Compiled by the author

So, we can sum up that as a rule, every country in the world uses a combined system that includes two or all three types of pension systems. In developed countries, due to the demographic situation, distribution systems are falling into decline: for every pensioner, there are fewer and fewer working fellow citizens. In Denmark, Finland, France, the United States and other highly developed countries of the world, thanks to pension savings systems, the population receives large pensions.

3 THE GLOBAL FINANCIAL CRISIS AND PROSPECTS FOR THE MODERNIZATION OF THE NATIONAL PENSION SYSTEM

3.1 Programs of anti-crisis measures to improve the efficiency of pension systems

In the economic literature, the concept of social security is defined as " state-regulated economic relations through which the distribution and redistribution of national income is carried out for the purpose of education and the use of funds to provide for members of society who are recognized as disabled. Based on this, the essence of pension provision is defined as a separate part of the national income directed to providing disabled members of society. The maintenance of disabled members of society requires certain costs, which are reimbursed by the labor of able-bodied citizens. In this regard, there is a contradiction between the non-working social group and the young, working generation. The form of resolving this contradiction is pension provision. Therefore, the main function of pension provision is to coordinate the interests of disabled members of society with the rest of the population that creates material benefits. The subjects of pension provision are the state, the disabled and working members of society who create that part of the national income that goes to provide for the disabled.

Thus, the state plays an important role in the pension provision of citizens and covers a wide range of issues of financing, management and regulation of income security in old age. First of all, the state should create programs that provide assistance to the elderly in a way such as:

- assistance to the efforts of the population to redistribute part of their income from the period of active economic activity to old age at the expense of savings or otherwise;
- redistributing additional income in favor of the elderly, who have been classified as the least well-off all their lives, while avoiding the unacceptable practice of redistributing income between representatives of one generation and unintentional redistribution of income between different generations;

- providing insurance against many risks that the elderly are particularly exposed to. These programs should contribute to improving the situation in the economy as a whole:

- minimizing hidden costs that hinder economic growth, such as reducing the employment of the labor force, limiting savings, excessive burden on the budget, mistakes in investment activities, large administrative expenses and evasion of contributions.

When developing state programs for ensuring old age, the basic principles of state regulation of income are associated with the functions of accumulating money, redistributing income and insuring it, which are important for citizens.

The accumulation of funds as a function helps to equalize the distributed income of a person during the entire period of his life. As long as people are able to work and have certain incomes, they save part of the money to meet their needs in old age so that. To be able to consume more than their existing income could allow.

The function of income redistribution provides for the distribution of income of one person for the period of his life in favor of another.

Insurance provides income protection in case of unforeseen circumstances related, for example, to an economic crisis, investment fluctuations, which can contribute to the loss of savings.

Programs for the elderly in a given country should perform all three functions, but in each of them the State should have different roles.

A general and unconditional condition for any pension system is the creation by the state of legal, organizational and economic conditions that ensure the preservation of pension rights.

Thus, the state as a representative of the interests of society as a whole has a special importance in the organization of pension provision. First of all, the state is called upon to be a guarantor of social protection of citizens with the help of legislative and executive authorities, a guarantor of compliance with regulatory and legislative acts on pension provision.

State structures determine the most important priorities, social standards and pension insurance programs, develop an appropriate legislative framework and create an environment for the provision of pension services.

The principal role of the state is to develop economic and organizational and legal mechanisms for coordinating the interests of pension insurance entities on the basis of social partnership. The solution of other tasks remains for the market mechanisms of self-regulation.

The ratio of state regulation and market self-regulation is determined by the state of the economy: a significant drop in production, an aggravation of inflation, an increase in unemployment entail a strengthening of the role of the state;

In this situation, the state influence is weakened, and market regulators come into effect. The specifics of the regulation of the social insurance system comes from the need to combine market mechanisms of self-regulation of this sphere with a developed system of state influence on it.

The ultimate goal of state regulation of the pension sector is such a redistribution of financial resources that, with a gradual, sufficiently increasing volume of financial resources reproduced in society, would satisfy the following needs:

- ensuring the subsistence minimum regardless of the social status, national, gender and age composition of the population and the method of its participation in labor activity;
- improving the living standards of citizens, including the disabled, as the goals of a socially-oriented market economy;
- achieving social justice by stimulating the labor and business activity of the population.

A developed and effective pension system will allow solving two major problems by using the same financial resources: providing additional social protection for the population and significantly expanding the investment opportunities of the state.

One of the main policy issues in the development of old-age security programs is related to the relative importance of the functions of accumulation of funds, income redistribution and insurance, as well as the role of the state in the implementation of each of them:

– the accumulation of funds provides for a certain equalization of the distribution of income of a person throughout the entire period of life: while people are young and have high incomes, they postpone meeting part of consumer needs in order to be able to consume more in old age than their reduced incomes would allow;

– redistribution involves the distribution of one person's income over his entire life in favor of another; perhaps this is due to the fact that if low-income workers saved enough money to live in old age, they would be below the poverty line in their youth;

– insurance provides protection in case an economic downturn or an investment mistake leads to the loss of savings, if inflation leads to a drop in their real value, if someone does not have enough of these savings for the rest of their life.

Pension schemes in a particular country should perform all three functions, but in each of them the state should be assigned different roles. This leads to the conclusion that there should be numerous financial and management mechanisms in countries; that is, it is necessary to ensure the division of responsibility between the various basic old-age security plans.

The necessity and possibility of state regulation of the pension system as a whole in the theoretical aspect is developed by economic and financial science from the standpoint of the following factors:

– production and creation of «public goods», which generally includes the activities of the state as an organizer of public life, providing the population with services for external and internal security, law enforcement, education, etc.;

– legal regulation of the functioning of the market economy, the establishment of «rules of the game» in relation to the actions of economic entities, ensuring competition;

– redistribution of income between market participants due to the inability of the market mechanism to respond to social inequality in society.

The state takes into account these areas of society's needs as a legal union, represented by the relevant bodies, determines its will through legislative and regulatory acts, which are a mechanism for meeting the needs of the whole society.

However, the existence of both the state itself and the legislative provisions developed by it, and the mechanism for their implementation are determined by the objective needs of social development. The state only takes into account the objective necessity of economic relations and their varieties - price, financial, credit, insurance and legislates various forms and methods of their use.

The state should create appropriate rules for the operation of such a system. If the state does not create normal rules for the operation of the private pension system, this can lead to fraud, misuse of funds, conducting transactions in its own interests and violation of fiduciary obligations, which leads to the leakage of funds from accumulative pension funds, harms the interests of its recipients and destroys the country's economy. The state should regulate private pension funds, require mandatory accumulation of funds, guarantee the payment of benefits, introduce tax incentives, create a legal system that ensures the reliability of financial institutions, reduce inflation in order to promote voluntary accumulation of funds, etc.

In modern conditions, in our opinion, the main functions of the state in the pension system are

- development of a clear regulatory framework for pension provision;
- development and implementation of the institutional policy of the pension system functioning;
- determination of the principles and methods of effective control over the functioning and development of the pension system;
- development of a system for countering threats in crisis conditions [80].

The most important, in our opinion, in the system of pension provision regulation is the reflection of the basic principles of the pension system functioning. The principles of pension provision should fully reflect the social orientation of state policy. It is proposed to highlight the following fundamental principles of the functioning of the system of ensuring the rights of citizens to a labor pension:

- equality and fairness for all participants of the pension system;
- stability of the financial mechanism of mandatory pension provision;
- the responsibility of the state for the proper organization of pension provision;
- transparency of the pension asset management mechanism;
- fulfillment of the state's obligations to preserve mandatory pension savings;
- effective management of pension assets and responsibility for the targeted use of pension funds;

- supervision and control by the company over the activities of pension funds

Thus, the state, playing a key role in determining the environment in which the pension system operates, should become a guarantor of the effective functioning of the old-age security system, regardless of the impact of various factors.

In the financial markets of Kazakhstan, with the strengthening of its integration, an increasing potential for destabilization accumulated and, at the same time, the quality of the financial superstructure base deteriorated, as financial institutions spent less and less time on analyzing credit risks [81].

Since the formation and development of the pension system of Kazakhstan is increasingly focused on the world market, it becomes obvious that various factors influence its development. In the course of the study, we systematized the factors affecting the financial stability of the pension system, presented in Table 12.

Table 12 -Factors of financial stability of the pension system of Kazakhstan

Factors of financial stability of the pension system	
1	2
External factors	External factors External conditions of the macroeconomic environment
	There is a tendency to slow down the growth rate of world trade due to a decrease in domestic demand in national economies. In the future, stable global current account imbalances remain in the global economy. The trend of increasing prices for food products is expected.
	Trends in the global money, currency and capital markets
	There is a steady trend of weakening of the currencies of developing countries against the US currency. The aggravation of the problem of lack of liquidity in the global financial system, due to uncertainty about the distribution of risks of pension funds and a decrease in the confidence of market participants in their counterparties. The trend of decreasing confidence has become characteristic of financial system institutions

12 - Table continuation

1	2
	<p>in general, which has led to an increase in the cost of funding on interbank markets, tightening of credit conditions and active participation of central banks to maintain liquidity. The concern of market participants about the further development of the situation in the financial market and in the global economy as a whole contributed to the high volatility of stock markets. There is a reduction in the positions of investors in risky instruments.</p>
	<p>Global capital movement trends</p>
	<p>In the future, a decrease in capital inflows to developing countries is predicted. Among the leading developing countries of the world, there is a rapid growth of international reserves due to favorable trade conditions, super-profits from high oil prices, high capital flows, which significantly increases their readiness to withstand moderate shock events.</p>
<p>Internal factors</p>	<p>Factors of economic growth</p>
	<p>Economic growth in Kazakhstan is ensured to a greater extent due to the development of industries stimulated by domestic demand, and is also characterized by the preservation of the raw material orientation of the economy, which, in our opinion, carries risks of volatile economic development depending on world prices for energy carriers and other raw materials. Among the factors determining the country's stable economic growth, one can distinguish both the role of business activity in the oil and gas sector and the increasing dependence on domestic demand. A soft fiscal policy due to high current costs, financed largely by oil revenues to the budget, will stimulate an increase in domestic consumer demand. The export orientation of raw materials industries leads to a strengthening of the national currency and an increase in costs, which can damage the overall competitiveness of the country. Credit expansion, the source of which is external borrowings of financial organizations, primarily finances the current needs of enterprises, which causes disproportions in the distribution of credit resources between sectors of the economy. At the same time, it has been proven in international practice that monetary policy is not sufficiently effective in curbing the credit boom, where fiscal policy should play a decisive role. In the context of the growth of lending to the economy, mainly industries with low gross value added creation against the background of increased labor costs per unit of production, low productivity of industries and soft fiscal policy strengthen inflationary processes. The difficulty in achieving the goal of maintaining a stable price level is determined by the fact that monetary policy in the conditions of increasing government spending, significant capital inflows and, accordingly, money supply must simultaneously solve the tasks of forming a foreign exchange reserve adequate to risks, sterilizing inflows and curbing inflation. All these factors affect the investment conditions of pension funds, as well as the narrowing of financial instruments on the stock market.</p>
	<p>Financial indicators of the corporate sector</p>
	<p>Trends in the development of financial indicators of the corporate sector are one of the important components of the financial stability of the economy. The level of risks of the financial system as a whole depends on this. The deterioration of the quality of corporate sector finances narrows the investment opportunities of the pension system</p>
<p>Note –compiled by the author</p>	

As can be seen from the table data, along with endogenous factors of the development of the financial system, the influence of exogenous factors of financial stabilization in the field of state regulation of the pension system of Kazakhstan is also noticeable.

Financial turmoil in the global economy has demonstrated the exposure of the economy of the Republic of Kazakhstan to external risks. The fundamental features of economic development that have been formed over the past few years have become one of the main factors of vulnerability.

Domestic scientists have repeatedly expressed concerns about the effectiveness of the pension system in the conditions of instability of the entire financial segment.

The state is still coping with the difficulties that the economy is experiencing. In this regard, we can welcome the economic policy measures taken in the monetary, fiscal and supervisory areas in order to increase the sustainability of all sectors of the

economy, including the pension system of Kazakhstan. Nevertheless, there are still serious problems that are compounded in the new period of volatility in the global financial markets.

Thus, it is necessary to highlight the most key problems of an internal nature, namely:

- a problem caused by the high dependence of the domestic economy on the conjuncture of world commodity markets. The measures taken to neutralize the possible negative consequences of changes in the global market situation in the form of the creation of a National Fund, despite their unconditional positive role, are aimed only at mitigating these consequences, while measures were needed to prevent them, that is, to reduce the dependence of the economy of Kazakhstan on the raw material component;

- low capitalization of the largest domestic companies and their lack of activity and competitiveness at the international level;

- the «vulnerable» structure of GDP production, in which there are practically no branches of the so-called «new», post-industrial economy, but even manufacturing industries;

- inefficiency of state assets management.

The current financial situation in the country once again confirms the existence of a problem in certain functional areas of state regulation. In particular:

- 1) monetary regulation is still insufficiently aimed at stimulating lending by second-tier banks to the real sector of the economy;

- 2) there is absolutely no progress in the development of the equity securities market;

- 3) tax regulation is focused more on performing a fiscal, rather than a stimulating function, without creating real levers for the implementation of the tasks set - innovative development of the national economy, including the development of the extractive, manufacturing industries, as well as the small and medium-sized business sector.

One of the main social achievements of the industrial states of the 20th century can be called providing a guaranteed income to the elderly population after retirement and increasing the period of survival. The aging of the population and the reduction of the total number of employees leads to an increase in public spending in the structure of the state budget, the burden on able-bodied members of society increases.

The increase in the number of disabled citizens will contribute to an increase in the burden on the social segment of the economy, primarily in the field of pension provision, as well as a decrease in the ratio of pension and salary. That is, the problems of pension provision are caused not only by the demographic situation, but also by changing socio-economic conditions, the situation on the labor market.

The main disadvantage of pension systems is its vulnerability to demographic changes. Demographic changes are determined not only by an increase in life expectancy, but also by a decrease in child mortality and, as a result, a decrease in the birth rate. The recent low birth rate, which is insufficient for the reproduction of the population, has forced some States to change the direction of immigration policy.

Demographic trends of recent years indicate that in the near future their development will have an increasingly tangible impact on the financing of pension systems. However, as many demographers note, in most countries with economies in transition, as well as in the developing countries of the first echelon, the features characteristic of the demography of developed countries are increasingly manifested. While maintaining the current conditions for pension payments and deduction rates, none of the existing pension systems in the world is balanced.

In this regard, the state, fulfilling the socio-economic function assigned to it, is to ensure the sustainable development of the pension system.

The amount of the pension paid from the budget is determined and guaranteed by the State. In fact, in a stably stable distributive pension system, current taxpayers pay for pensions, ensures the maintenance of the quality and standard of living of the current older population. The future growth of payments of this part of the pension depends entirely on the growth of tax and other revenues of the state budget. Since the state budget depends on the annual transfer of petrodollars from the National Fund, pension payments from the state budget are under strong pressure during low oil prices [82].

Assessing the impact of the demographic factor on the pension system.

Scenario 1 («raising the retirement age»). Recently, the issue of changing the boundaries of the retirement age has been widely discussed in the Kazakh society. Most experts are inclined to believe that the aging of the population and the limited budget potential of pension systems make an increase in this age inevitable. The economic logic of this line of thought is clear.

The main reason for the inability to raise the retirement age in Kazakhstan, as in the CIS, was usually called low life expectancy at birth. The reasoning is based on the data of the Agency of the Republic of Kazakhstan on Statistics.

To what extent does the situation of the pension system depend on the dynamics in the population structure? How sensitive are pension provision indicators to changes in the parameters of demographic development? Can raising the retirement age reduce the impact of demographic aging on the pension system? The probability of survival of a newborn to the age of x is shown in Appendix C.

The new family model in developed countries consists of two working parents and 1-2 children. Thus, children cease to serve as a source of life support in old age. In developing countries, the demographic situation today looks different: life expectancy is increasing, the birth rate remains high, child mortality is decreasing, the overall mortality rate remains at a fairly high level with a downward trend.

In fact, each cohort of newborns has its own «history», their living conditions may differ significantly from those of previously born generations. For example, the mass nature of higher education and a more rational way of behavior of today's youth gives every reason to hope that improving the quality of life will make it possible to live even longer than the tabular indicators «predict» (Table 14).

Table 14 – Pension provision in Kazakhstan

-	Minimum pension amount	Average pension amount (tg)	Number of recipients
2002	4336	5818	1690566
2004	5800	8628	1640718
2006	6700	9898	1637062
2008	7900	13148	1640498
2010	12344	21238	1695301
2012	17941	29644	1759321
2014	21736	36068	1918516
2016	25824	42476	2061660
2018	33745	54387	2192549
2019	36108	57622	2227707
Note – Compiled by author based on [Error! Bookmark not defined.]			

Secondly, based on the indicators of the probability of survival and life expectancy (see Table 13), it is completely illogical to leave a lower retirement age for women. As you know, the 5-year difference in the retirement age of women and men appeared back in the time of Bismarck, and had a «demographic» background: in the family, the husband was older than his wife by an average of 5 years, and with the same retirement age, the role of the husband as the main breadwinner and head of the family would be under threat.

The modern model of the family does not imply a large difference in the age of the spouses. Currently, the average age lag of people getting married in Kazakhstan was only 2.6 years in 2019, and this value tends to further stagnate.

Table 15 – Average age of first marriage for men and women

-	2007	2009	2011	2013	2014	2015	2016	2017	2018	2019
Women	24.2	24.2	24.3	24.5	24.6	24.7	24.8	25	25	25
Men	26.8	26.9	26.9	27	27.1	27.2	27.3	27.5	27.6	27.6
Difference	2.6	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.6	2.6
Note – Compiled by author based on [Error! Bookmark not defined.]										

Recently, there have been proposals to reduce the retirement age for women in accordance with the number of children born in order to stimulate the birth rate. The experience of the Czech Republic, where such a practice has existed since the 1960s, proves the ineffectiveness of such measures: the total birth rate in this country is noticeably lower than the average European one. At the same time, the highest birth rates are consistently demonstrated by the countries of Northern Europe - Denmark, Iceland, the Netherlands, Norway, Sweden, Finland, where the highest level of employment among women and the retirement age is the same for women and men. Third, one of the main conditions for raising the retirement age is a life expectancy

that, according to the recommendations of World Bank experts, will allow you to receive pension payments for at least 15.5 years after retirement.

Summary: 1) the boundaries of the retirement age should be determined on the basis of demographic indicators, since they are the most objective and predictable; 2) the demographic situation in Kazakhstan allows for an increase in the retirement age; 3) at the first stage, it is necessary to equalize the retirement age for women and men at the level of 63 years; 4) the growth in the number of pensioners in Kazakhstan is associated not only with the fact that the vast majority of people live up to the modern boundaries of retirement age, and the retirement period of life is quite long. It is also associated with fluctuations in the birth rate and, perhaps, migration in the past. Moreover, it is difficult to separate the contribution of the growth of survival from the action of other factors mentioned.

The study tests the following research hypothesis:

H1: Demographic crisis, when the number of employees is less than the number of pensioners, increases the pension burden on the working population and poses a threat to the financial security of state pension obligations.

The idea of the work. The demographic crisis forces not only Kazakhstan, but also all developed countries of the world to look for ways to optimize their pension systems aimed at protecting the elderly population and promoting economic growth under the influence of the global financial crisis.

The initial data. To calculate the forecast of the number of employees, the salary fund, income and expenses of the pension system, we used the GDP growth rate, CPI, inflation (on average for the year, % compared to the previous year), real wages % compared to the previous year, the number of employees million a person, the number of self-employed, the salary fund, the average salary and GRP data, the minimum pension amount, the number of recipients, the average pension amount, as well as data on socio-economic conditions in the regions of the country from the website of the Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan. From the World Development indicators of World Bank database

Methodology. In this study, the methods of conditional generation, methods of demographic tables and structural analysis, an integral assessment of the age-related mortality cross-section are used. At the moment, an econometric approach is being applied to modeling the development of the accumulative pension system. Therefore, along with various factors of economic growth, we have included a realistic, pessimistic, optimistic scenario in the model. In addition, the model examines the combined influence of factors: pension burden, population in the largest city (Population in largest cit), Mortality, gross (per 1000 people), Death rate, crude (per 1,000 people), Life expectancy at birth, total (years) Life expectancy at birth, total. Secondly, the list of independent variables includes traditional and alternative indices for calculating the demographic burden to study the current situation of pension provision and form recommendations for an effective pension policy. The traditional elderly dependency ratio is based on chronological age and is calculated as:

and it is a composite index that characterizes the integral level of the demographic burden and the demographic structure of the country.

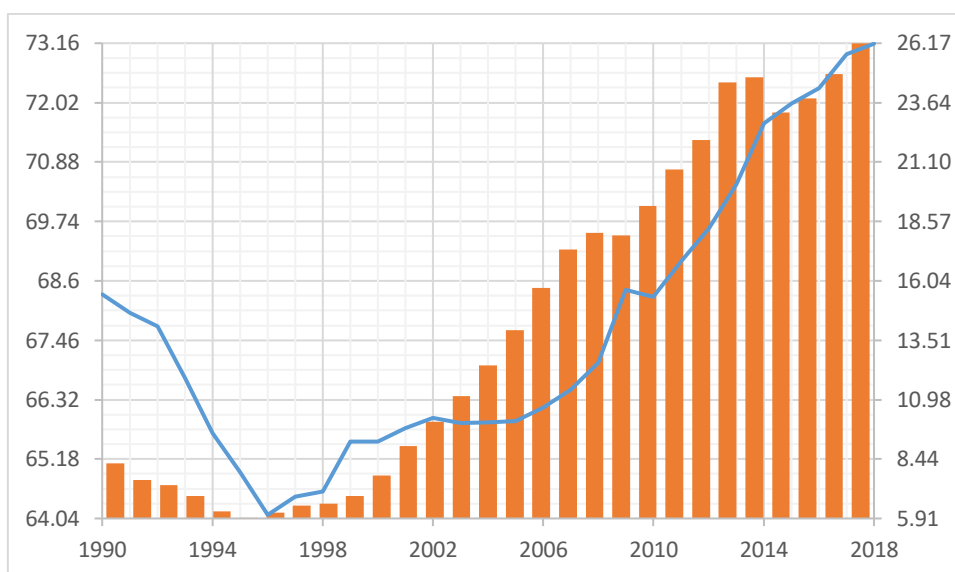


Figure 8 – Dynamics of the coefficient of dependence of the elderly (1990-2019, Kazakhstan)

Note – Compiled by the author

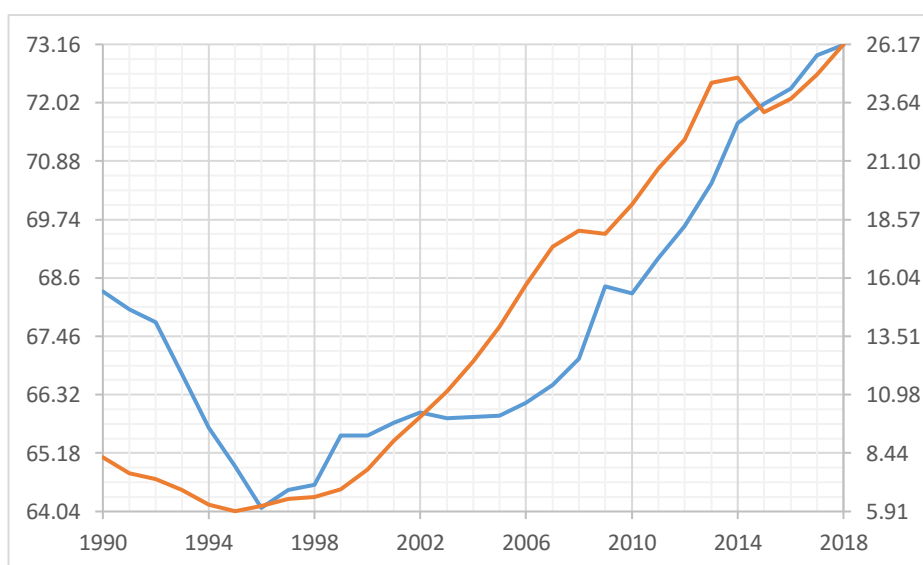


Figure 9 – Forecasting the dynamics of the coefficient of dependence of the elderly (1990-2019, Kazakhstan) until 2026.

Approximation and smoothing of the trend line by a sixth-order polynomial. The equation of the line

$$y = 4E-13x^5 - 2E-11x^4 + 5E-10x^3 - 9E-09x^2 + 9E-08x + 1E-06; R^2 = 0.89086 \quad (2)$$

An alternative prospective dependence coefficient in old age is based on the remaining life expectancy of 15 years and is calculated as:

$$\frac{\text{number of people older RLE in 15 years}}{\text{number of people } \geq \text{in 20} - < \text{in 15 years}} \quad (3)$$

The alternative coefficient of economic dependence in old age is based on the ratio of consumers over the age of 65 and the number of effective workers of all ages.

$$\frac{\sum_{x=65}^w c(x)N(x)}{\sum_{x=0}^w y(x)N(x)} \quad (4)$$

An alternative coefficient of demographic load, which includes the health factor and determines the total number of healthy and unhealthy elderly people over 65+ per the working-age population, is:

$$\frac{N_{Healthy,65+}}{N_{15-64}} + \frac{N_{Unhealthy,65+}}{N_{15-64}} = \frac{N_{65+}}{N_{15-64}} = OADR \quad (5)$$

Predicting the effects of increasing the retirement age of men and women. Initial forecast parameters and forecasting methodology. To predict the number of employees, the salary fund, income and expenses of the pension system, we used the official conservative forecast of the UAPF. For the following years, the growth rates of GDP, inflation (CPI), and wage growth were set based on the conservative forecast of the UAPF until 2030. The indicators of the dynamics of the wage fund were calculated on the basis of the number of employees predicted and differing for different demographic scenarios. It should be noted that there is a significant shortage of information necessary to move from the demographic forecast to the forecast of pension contribution payers and pensioners. Currently, only statistics on economic activity and employment of the population are publicly available, while information about pension contribution payers is not published. Despite the fact that there are periodically published statistics on the number of employees of large and medium-sized enterprises, which shows a downward trend, it is unclear how these employees are distributed among different age and gender groups.

PB (pension burden) - pension burden coefficient

PLC - Population in the largest city (Population in the largest city PLC)

DR-Mortality, gross (per 1000 people) Death rate, crude (per 1,000 people)

LE - Life expectancy at birth, total (years) Life expectancy at birth, total (PBears)

LAB

Parameters of the multiple regression equation

1. Estimation of the regression equation. According to the least squares method, we determine the vector of estimates of regression coefficients. Regression analysis of the impact of life expectancy and mortality rate on the pension burden coefficient.

$$PB = -29.4919 + 9.0E-6PLC + 1.4793DR + 0.2686LEB \quad (6)$$

Interpretation of regression coefficients. The constant -29.4919 evaluates the aggregated influence of other factors on the pension burden coefficient and means that the pension burden in the absence of xi would be -29.4919. The coefficient b1 indicates that with an increase in the population in the largest city by 1%, the pension burden coefficient increases by 9.0 E-6. The b2 coefficient indicates that with an increase in the mortality rate by 1, the pension burden coefficient increases by 1.4793. The b3 coefficient indicates that with an increase in life expectancy at birth by one year, the pension burden coefficient increases by 0.2686.

The matrix of paired correlation coefficients R. The number of observations n = 59. The number of independent variables in the model is 3, and the number of regressors taking into account the unit vector is equal to the number of unknown coefficients. Taking into account the PB attribute, the dimension of the matrix becomes equal to 5. The matrix of independent variables X has dimension (59 x 5).

$$r_{yx_1} = \frac{12550797.722 - 1071350.644 \cdot 10.947}{317804.174 \cdot 3.084} = 0.84 \quad (7)$$

$$r_{yx_2} = \frac{100.363 - 9.204 \cdot 10.947}{1.274 \cdot 274 \cdot 3.084} = -0.0996 \quad (8)$$

We calculate the observed values of the t-statistics for rPBPLC using the formula:

$$t_{nabl} = r_{yx_1} \cdot \frac{\sqrt{n-m-1}}{\sqrt{1-r_{yx_1}^2}} \quad (9)$$

where m = 1 - the number of factors in the regression equation.

$$t_{nabl} = 0.84 \cdot \frac{\sqrt{59-1-1}}{\sqrt{1-0.84^2}} = 11.68 \quad (10)$$

According to the Student's table, we find the table tcriterion $t(n-m-1; \alpha/2) = (57; 0.025) = 2.299$. Since t is $n > t$ is critical, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. We calculate the observed values of the t-statistics for rPBDR using the formula:

$$t_{nabl} = 0.0996 \cdot \frac{\sqrt{59-1-1}}{\sqrt{1-0.0996^2}} = 0.76 \quad (11)$$

we accept the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is not statistically significant. We calculate the observed values of the t-statistics for rPBLEB using the formula:

$$t_{nabl} = 0.62 \cdot \frac{\sqrt{59-1-1}}{\sqrt{1-0.62^2}} = 5.92 \quad (12)$$

Because $t_{nabl} > t_{krit}$, then we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant.

Partial correlation coefficients. The partial correlation coefficient differs from the simple linear pair correlation coefficient in that it measures the pair correlation of the corresponding features (PB and xi), provided that the influence of other factors (xj) on them is eliminated. Based on the partial coefficients, we can conclude that the inclusion of variables in the regression model is justified. If the coefficient value is small or insignificant, it means that the relationship between this factor and the resulting variable is either very weak or completely absent, so the factor can be excluded from the model.

$$r_{yx_1/x_2} = \frac{0.84 - (-0.0996) \cdot (-0.526)}{\sqrt{(1-0.0996^2) \cdot (1-0.526^2)}} = 0.93 \quad (13)$$

The tightness of the connection is very strong. Let's determine the significance of the correlation coefficient rPBPLC/DR. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_1/x_2} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_1/x_2}^2}} \quad (14)$$

where, $k = 1$ - the number of fixed factors.

$$t_{nabl} = 0.93 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.93^2}} = 18.97 \quad (15)$$

In other words, the correlation coefficient is statistically significant. As you can see, the connection between PB and PC, provided that DR is included in the model, has become stronger.

$$r_{yx_1/x_3} = \frac{0.84 - (-0.617) \cdot (-0.899)}{\sqrt{(1-0.0617^2) \cdot (1-0.899^2)}} = 0.827 \quad (16)$$

The tightness of the connection is strong. Let's determine the significance of the correlation coefficient rPBPLC/LEB. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_1/x_3} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_1/x_3}^2}} \quad (17)$$

where $k = 1$ - the number of fixed factors

$$t_{nabl} = 0.83 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.83^2}} = 11.03 \quad (18)$$

Then find T_{tabl} , $T_{crit}(n-k-2;\alpha/2) = (56;0.025) = 2.299$. Since $t_{nabl} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the connection between PB and PC, provided that LEB is included in the model, has decreased. From this we can conclude that the introduction of PLC into the regression equation remains impractical.

$$r_{yx_2/x_1} = \frac{-0.0996-0.84 \cdot (-0.526)}{\sqrt{(1-0.84^2) \cdot (1-0.526^2)}} = 0.74 \quad (19)$$

The tightness of the connection is strong. Let's determine the significance of the rPBDR/PLC correlation coefficient.

To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_2/x_1} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_2/x_1}^2}} \quad (20)$$

$$t_{nabl} = 0.74 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.74^2}} = 8.24 \quad (21)$$

Since $t_{nabl} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the connection between PB and DR, provided that the PLC enters the model, has become stronger.

$$r_{yx_2/x_3} = \frac{-0.0996-0.617 \cdot (-0.796)}{\sqrt{(1-0.617^2) \cdot (1-0.796^2)}} = 0.822 \quad (22)$$

The tightness of the connection is strong. Let's determine the significance of the rPBDR/LEB correlation coefficient. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_2/x_3} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_2/x_3}^2}} \quad (23)$$

$$t_{nabl} = 0.82 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.82^2}} = 10.79 \quad (24)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As we can see, the connection between PB and DR, provided that LEB is included in the model, has become stronger.

$$r_{yx_3/x_1} = \frac{0.617 - 0.84 \cdot 0.899}{\sqrt{(1 - 0.84^2) \cdot (1 - 0.899^2)}} = 0.581 \quad (25)$$

The tightness of communication is moderate. Let's determine the significance of the rPBLEB/PLC correlation coefficient. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{набл} = r_{yx_3/x_1} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_3/x_1}^2}} \quad (26)$$

$$t_{набл} = 0.58 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.58^2}} = 5.34 \quad (27)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the relationship between PB and LB, provided that the PLC enters the model, has decreased. From this we can conclude that entering LEB into the regression equation remains impractical.

$$r_{yx_3/x_2} = \frac{0.617 - (-0.0996) \cdot (-0.796)}{\sqrt{(1 - 0.0996^2) \cdot (1 - 0.796^2)}} = 0.893 \quad (28)$$

The tightness of the connection is strong. Let's determine the significance of the correlation coefficient rPBLEB/DR. To do this, we calculate the observed values of the t-statistics using the formula

$$t_{набл} = r_{yx_3/x_2} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_3/x_2}^2}} \quad (29)$$

$$t_{набл} = 0.89 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.89^2}} = 14.82 \quad (30)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As we can see, the relationship between PB and LB, provided that DR is included in the model, has become stronger.

$$r_{x_1x_2/y} = \frac{r_{x_1x_2} - r_{x_1y} \cdot r_{x_2y}}{\sqrt{(1-r_{x_1y}^2)(1-r_{x_2y}^2)}} \quad (31)$$

$$r_{x_1x_2/y} = \frac{-0.526 - 0.84 \cdot (-0.0996)}{\sqrt{(1-0.84^2) \cdot (1-0.0996^2)}} = -0.818 \quad (32)$$

The tightness of the connection is strong. Let's determine the significance of the correlation coefficient rPB DR/PB. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_2/y} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_2/y}^2}} \quad (33)$$

$$t_{nabl} = 0.82 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.82^2}} = 10.65 \quad (34)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As we can see, the relationship between PB and DR, provided that PB enters the model, has become stronger.

$$r_{x_1x_2/x_3} = \frac{-0.526 - 0.899 \cdot (-0.796)}{\sqrt{(1-0.899^2) \cdot (1-0.796^2)}} = 0.717 \quad (35)$$

The tightness of the connection is strong. Let's determine the significance of the rPBDR/LEB correlation coefficient. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_2/x_3} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_2/x_3}^2}} \quad (36)$$

$$t_{nabl} = 0.72 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.72^2}} = 7.69 \quad (37)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As we can see, the connection between PB and DR, provided that LEB is included in the model, has become stronger.

$$r_{x_1x_3/y} = \frac{r_{x_1x_3} - r_{x_1y} \cdot r_{x_3y}}{\sqrt{(1-r_{x_1y}^2)(1-r_{x_3y}^2)}} \quad (38)$$

$$r_{x_1x_3/y} = \frac{0.899 - 0.84 \cdot 0.617}{\sqrt{(1-0.84^2) \cdot (1-0.617^2)}} = 0.892 \quad (39)$$

The tightness of the connection is strong. Let's determine the significance of the correlation coefficient $r_{PBLEB/PB}$. To do this, we calculate the observed values of the t-statistics using the formula:

$$t_{nabl} = r_{yx_3/y} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_3/y}^2}} \quad (40)$$

$$t_{nabl} = 0.89 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.89^2}} = 14.73 \quad (41)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the relationship between PB and LEB, provided that PB enters the model, has become stronger.

$$r_{x_1x_3/x_2} = \frac{0.899 - (-0.526) \cdot (-0.796)}{\sqrt{(1-0.526^2) \cdot (1-0.796^2)}} = 0.933 \quad (42)$$

The tightness of the connection is very strong. Let's determine the significance of the correlation coefficient $r_{PBLEB/DR}$. To do this, we calculate the observed values of t-statistics using the formula:

$$t_{nabl} = r_{yx_3/x_2} \cdot \frac{\sqrt{n-k-2}}{\sqrt{1-r_{yx_3/x_2}^2}} \quad (43)$$

$$t_{nabl} = 0.93 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.93^2}} = 19.46 \quad (44)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the connection between PB and LEB, provided that DR enters the model, has become stronger.

$$r_{x_2x_3/y} = \frac{-0.796 - (-0.0996) \cdot 0.617}{\sqrt{(1-0.0996^2) \cdot (1-0.617^2)}} = -0.938 \quad (45)$$

The tightness of the connection is very strong. Let's determine the significance of the correlation coefficient $r_{PBLEB/PB}$. To do this, we calculate the observed values of t-statistics using the formula:

$$t_{nabl} = 0.94 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.94^2}} = 20.24 \quad (46)$$

Since $t_{набл} > t_{крит}$, we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the relationship between PB and LEB, provided that PB enters the model, has become stronger.

$$r_{x_2x_3/x_1} = \frac{-0.796 - (-0.526) \cdot 0.899}{\sqrt{(1-0.526^2) \cdot (1-0.899^2)}} = -0.868 \quad (47)$$

The tightness of the connection is very strong. Let's determine the significance of the correlation coefficient $r_{PBLEB/PLC}$. To do this, we calculate the observed values of t-statistics using the formula:

$$t_{набл} = 0.87 \cdot \frac{\sqrt{59-1-2}}{\sqrt{1-0.87^2}} = 13.09 \quad (48)$$

Since $t_{набл} > t_{крит}$, then we reject the hypothesis that the correlation coefficient is equal to 0. In other words, the correlation coefficient is statistically significant. As you can see, the connection between PB and LEB, provided that PLC enters the model, has become stronger. When comparing the coefficients of paired and partial correlation, it can be seen that due to the influence of interfacial dependence between x_i , an overestimation of the closeness of the relationship between variables occurs.

Multicollinearity analysis. Multicollinearity analysis based on a matrix of correlation coefficients. If there is an interfacial correlation coefficient $r_{x_jx_i} > 0.7$ in the matrix, then multicollinearity exists in this model of multiple regression. In our case, $r(PLCLEB)$, $r(DRLEB)$ have $|r| > 0.7$, which indicates the multicollinearity of the factors and the need to exclude one of them from further analysis. The analysis of the first row of this matrix makes it possible to select factor features that can be included in the model of multiple correlation dependence. Factor features in which $|r_{pbx_i}| < 0.5$ are excluded from the model. The following qualitative interpretation of the possible values of the correlation coefficient (on the Cheddock scale) can be given: if $|r| > 0.3$ - there is practically no connection; $0.3 \leq |r| \leq 0.7$ - the connection is average; $0.7 \leq |r| \leq 0.9$ - the connection is strong; $|r| > 0.9$ - the connection is very strong. Let's check the significance of the obtained paired correlation coefficients using the Student's t-test. Coefficients for which the values of the t-statistics are modulo greater than the found critical value are considered significant.

Thus, the relationship between (PB and xPLC), (PB and xDR), (PB and xLEB) is essential. The PLC factor ($r = 0.8398$) has the greatest influence on the effective feature, which means that when constructing the model, it will enter the regression equation first. A more objective characterization of the closeness of the connection is given by partial correlation coefficients that measure the effect of factor x_i on the result at a constant level of other factors. Testing and eliminating multicollinearity.

Collinearity is the relationship between factors. The most complete multicollinearity research algorithm is the Farrar-Glober algorithm. With its help, three types of multicollinearity are tested: the χ^2 - chi-square criterion, the Fisher criterion, and the Student criterion.

Let's check the variables for multicollinearity according to the criterion. To do this, we will find the partial correlation coefficients.

It can be concluded that when constructing a regression equation, the factors PLC, DR, LEB should be selected.

A regression model on a standard scale. The standardized form of the regression equation has the form:

$$t_{PB} = 0.882PLC + 0.611DR + 0.311LEB \quad (49)$$

Analysis of the parameters of the regression equation. Let's move on to the statistical analysis of the obtained regression equation: checking the significance of the equation and its coefficients, investigating absolute and relative approximation errors. Average approximation error:

$$A = \frac{\sum|\epsilon:Y|}{n} \cdot 100\% = \frac{4.59}{59} \cdot 100\% = 7.78\% \quad (50)$$

$$s^2 = \frac{1}{n-m-1} \cdot s_e^2 = \frac{1}{59-3-1} \cdot 72.251 = 1.3137 \quad (51)$$

$$S = \sqrt{s^2} = \sqrt{1.3137} = 1.146 \quad (52)$$

Indicators of the closeness of the relationship of factors with the result. If the factor features are different in their essence and (or) have different units of measurement, then the regression coefficients b_j for different factors are not comparable. Therefore, the regression equation is supplemented with commensurate indicators of the closeness of the relationship between the factor and the result, which allow ranking factors by the strength of their influence on the result. Such indicators of tightness of connection include: partial elasticity coefficients, β -coefficients, partial correlation coefficients.

Partial elasticity coefficients.

In order to expand the possibilities of meaningful analysis of the regression model, partial elasticity coefficients are used, which are determined by the formula: $E_i = b_i \cdot (x_i / y_i)$.

The partial coefficient of elasticity shows how much percent on average the attribute-result y changes with an increase in the attribute-factor x_j by 1% from its average level with a fixed position of the other factors of the model. $E_1 = 0.838$

If the x_1 factor changes by 1%, PB will change by 0.838%. The partial coefficient of elasticity $|E_1| < 1$. Consequently, its effect on the effective feature of PB is insignificant. $E_2 = 1.244$.

If the x_2 factor changes by 1%, PB will change by 1.244%. The partial coefficient of elasticity $|E_2| > 1$. Therefore, it significantly affects the effective feature PB. $E_3 = 1.613$.

With a change in factor x_3 - life expectancy at birth, total (years)) by 1%, the pension burden ratio will change by 1.613%. The partial coefficient of elasticity $|E_3| > 1$. Therefore, it significantly affects the effective feature of PB.

Standardized partial regression coefficients.

Standardized partial regression coefficients - β -coefficients (β_j) show by which part of its mean square deviation $S(y)$ the attribute-result PB will change with a change

in the corresponding factor x_j by the value of its mean square deviation (SJ) with the constant influence of other factors.

According to the maximum β_j , it is possible to judge which factor has a stronger effect on the result of PB. The opposite conclusions can be drawn from the elasticity coefficients and β -coefficients. The reasons for this are: a) the variation of one factor is very large; b) the multidirectional impact of factors on the result. The coefficient β_j can also be interpreted as an indicator of the direct (direct) influence of the j -th factor (x_j) on the result (PB). In multiple regression, the j -th factor has not only a direct, but also an indirect effect on the result.

Indirect influence is measured by the value: $\sum \beta_i r_{x_j, x_i}$, where m is the number of factors in the model. The total influence of the j -th factor on the result equal to the sum of direct and indirect influences measures the linear pair correlation coefficient of this factor and the result - $r_{x_j, PB}$.

So for our example, the direct influence of the PLC factor on the result PB in the regression equation is measured β_j and is 0.882; the indirect influence of this factor on the result is defined as:

$$\Gamma_{PLCDR}\beta_2 = -0.526 * 0.611 = -0.3212 \quad (53)$$

As a result of the calculations, the multiple regression equation was obtained:

$$PB = -29.4919 + 9.0E-6PLC + 1.4793DR + 0.2686LEB \quad (54)$$

Economic interpretation of the model parameters: an increase in PLC by 1 unit of change leads to an increase in PB by an average of 9.0E-6 units of change; an increase in DR by 1 unit of change leads to an increase in PB by an average of 1.479 units of change; an increase in LEB by 1 unit of change leads to an increase in PB by an average of 0.269 units of change. According to the maximum coefficient $\beta_1=0.882$, we conclude that the PLC factor has the greatest influence on the PB result. The statistical significance of the equation was verified using the coefficient of determination and the Fisher criterion. It was found that in the studied situation 87.13% of the total variability of PB is explained by a change in X_j factors.

The scientific novelty of the research consists in the development of a set of models for analyzing the relationship between the global financial crises and the stability of pension provision, in particular, taking into account changes in demographic processes at the international level, and their impact on the financial stability of the pension system.

In terms of pension systems, the novelty of the study consists in the proposed approaches based on the use of methods for measuring and analyzing the level, components and factors of mortality and health of the population and standardization of approaches that can be used to assess the state of the pension system in the Republic of Kazakhstan.

The features and differences, the efficiency criterion, the justification of pension reforms in developed and developing countries are shown, which are distinguished by the level and nature of economic development, taking into account the socio-political heterogeneity and uneven economic development of these states.

In developed countries, the birth rate is low, and in developing countries it is higher, investment opportunities for developed countries are better than for developing countries due to the development of financial systems themselves, as well as economies in general, etc

Despite the increase in pension costs and their high value in relation to GDP, the size of pensions remains very modest – in relation to both the subsistence minimum and salary, and pensions do not compensate for a sufficient percentage of the lost earnings of average and high - paid workers.

The reasons for the current situation:

At the macro level, the base for financing labor pensions – the official salary fund of employees of enterprises – remains limited and does not show growth trends in the future, at the micro level, there is a reduction in the duration of individual working life, which does not allow forming a sufficient amount of conditional and real pension capital

The funds received by the pension system are spent inefficiently, since the system generates an excessive number of pension rights (low requirements for the minimum length of service for awarding a pension, early pensions, a low generally established age for awarding a pension for women, taking into account the expected period of receiving a pension).

So, we can sum up that the pension system is currently financially unbalanced and is not able to ensure long-term financial stability in the future.

The solution: to increase the rate of insurance deductions; To increase the share of budget financing of the pension system; To fix the source of financing the costs of transition to a new pension system; To reduce the size of pensions; To increase the actual retirement age by reforming early pensions, increasing the requirements for seniority and raising the generally established retirement age; To partially limit the employment of pensioners (but at the same time this is a reduction in income); To preserve the mandatory funded component, ensuring its higher profitability.

3.2 Directions of modernization of the pension system of Kazakhstan in the conditions of the new economic reality

Demographic changes in the population structure caused by a decrease in the birth rate and an increase in average life expectancy have led to a crisis of pension systems in developed countries, in connection with which the issues of conducting economic and mathematical calculations for further modernization of the pension system, taking into account the development of a multi-level model of pension provision, are of particular relevance and are included in the problems of ensuring economic security.

Using predictive statistical models. As part of the analysis, three scenarios for the development of the accumulative pension system were modeled: basic, pessimistic, and optimistic. The main assumptions and simulation results are given in Tables 15-16.

Table 15 – Introductory parameters for modeling and forecasting the development of the pension system

Parameters	Description
gradual increase in the retirement age (for six months over 10 years) of women	58 years -2017, 58.5 – 2018, and so on until 2027, where the retirement age is 63 years.
Basic pension:	
the amount of the basic pension	since January 1, 2017, it is 12,802 tenge,
	since July 1, 2017 - 14,466 tenge,
	From January 1, 2018, the amount of the basic pension is 54% of the PM;
	starting from July 1, 2018, the basic pension will be assigned according to a new method, depending on the length of participation in the pension system;
- the amount of the subsistence minimum	from January 1, 2018, increased by 15.6% and will amount to 28,284 tenge. In the future, the amount of the subsistence minimum will increase by inflation.
Solidary pension:	
the size of a solidary pension	- starting from July 1, 2017, in addition to the 9% increase since the beginning of the year, the size of the solidarity pension will be increased by another 11%.
indexation procedure	- the procedure for indexing solidarity pensions will correspond to the formula «inflation + 2%»;
restriction on the income accepted for calculating the size of a solidary pension	- from July 1, 2017, the limit on the income accepted for calculating the size of a solidarity pension will increase from 41 MCI to 46 MCI.
Conditional funded pension system	
Mandatory pension contributions of the employer	- the introduction of 5% of mandatory employer pension contributions is postponed from 2018 to 2023.
-	- payment of pensions from the conditional accumulative pension system is made if there is at least 5 years of participation experience, depending on the volume of conditional pension savings and life expectancy, taking into account the pension limit of no more than 2 PM.
Note – Compiled by the author according to actuarial calculations and estimates of the UAPF for three scenarios of the development of the accumulative pension system	

Table 16 – Forecast calculations of the development of the accumulative pension system

	Investment income	the level of coverage of the employed population of the NPS	average annual frequency of contributions	growth of household income from which MPC(mandatory pension contributions), MPCE are paid
Realistic scenario: Measures: Implementation of structural transformations; Development of informatization in pension provision	at the level of inflation	by 2030, it will gradually reach 80%	it will remain at the level of 9 times a year	it is taken into account at the historical level/using the life cycle.
Results: a realistic scenario: It is aimed at the progressive and comprehensive development of the pension system for the elderly population. The UAPF estimate for a Realistic scenario is an increase in private and public spending on pension provision from 4.6% of GDP in 2010 to 6.1 % of GDP in 2020 and to 7.1% of GDP in 2030.				
A pessimistic scenario:	at the level of «inflation – 2%»	-by 2030, it will remain at the current value (70-71%)	the level of 7 times a year	it is taken into account at the historical level/using the life cycle.
Results of a pessimistic scenario: All measures of a realistic scenario + - 1) introduction of pension insurance on the territory of Kazakhstan; 2) active dissemination of public-private partnership mechanisms in pension provision.				
Optimistic scenario:	at the level of «inflation + 1%»	by 2030, gradually reaches 82%	the level of 11 times a year	it is taken into account at the historical level/using the life cycle.
<p>Notes</p> <p>1 The results of the optimistic scenario: Costs remain at the level of 2020. It is automatically implemented in the absence of reforms of the neutral and innovative scenario;</p> <p>2 Actuarial calculations and evaluation for three development scenarios (UAPF);</p> <p>3 Compiled by the author</p>				

Key conclusions and summary of the results of forecast calculations for all three scenarios:

1) Assessment of the impact of changes in the methodology for assigning the basic pension payment on the amount of the total pension and state expenditures until 2050: a comparison of the annual budget expenditures for the payment of the basic pension (hereinafter referred to as BP) in 2017, 2018, 2020, 2030, 2040 and 2050 and a comparison with and without changing the methodology for calculating the accrual of BP shows that additional annual budget expenditures in 2017 will amount to 23,104 million tenge, in 2018 160,582 million tenge and continue to increase annually. The almost double increase in costs in 2018 and in subsequent years compared to 2017 is caused by taking into account the seniority of pensioners both before 1998 and in the accumulative period after 1998. The total amount of additional budget costs associated with the change in the method of assigning BP from 2017 to 2050 will amount to 13,368,476 million tenge.

2) Assessment of the impact of reducing the length of service (up to 01.01.1998) of citizens on the size of the solidarity pension and state expenditures until 2050: a

comparison of the results of calculating budget expenditures for the payment of a solidary pension, «With a change» and «Without a change» of the methodology for assigning a solidary pension shows that additional annual costs in 2017 will amount to 61,781 million tenge, in 2018 123,848 million tenge and will increase until 2030. Further, the annual costs are reduced.

The increase in the cost of a solidary pension until 2030 is caused by the continuing sharp increase in the number of pensioners associated with the so-called «baby boom» of children born after the war period, which lasted until 1960. After 2030, due to a decrease in the length of service until 1998, budget expenditures for newly retiring pensioners are reduced. The total amount of additional budget costs associated with the change in the method of assigning a solidarity pension from 2017 to 2050 will amount to 3,720,012 million tenge.

To assess the adequacy of various types of pensions: basic pension, solidarity pension, funded pension and pension from the conditional-funded system, all depositors were divided into 6 income groups. A step in the amount of the cost of living allowance was taken as the basis for the division of groups by income (hereinafter-COLA, as of 01.01.2017, the amount of PM is 24,459 tenge):

- group 1 – up to 1 COLA,
- group 2 – from 1 to 2 COLA,
- group 3-from 2 to 3 COLA,
- group 4 – from 3 to 6 COLA,
- group 5 – from 6 to 9 COLA,
- group 6-over 9 COLA.

The growth of real wages is taken from the analysis of historical contributions according to the data of JSC «GTSVP».

The results are presented selectively in 2020, 2030, 2040, and 2050, depending on various investment scenarios: basic, pessimistic, and optimistic. The year of introduction of the conditional-accumulative system is determined in 2020.

The comparison shows that changes in the method of calculating the basic pension increase the BP on average by almost 2 times, and changes in the calculation of the solidarity pension increase it by 10%.

To assess the impact of the year of the introduction of the MPCE (mandatory pension contributions of the employer) on the size of the pension, the Comparison shows, for example, that for a man from group 1, MPCE in 2050, when introduced from 2018, will amount to 4,228 tenge. Whereas with the introduction of the MPCE from 2020, for a man from the same group 1, the MPCE in 2050 will be lower than 3,985 tenge, (KZ – 11.8%). Delaying the introduction of the MPCE for 2 years reduces the pension of the MPCE in 2050 by 6% for a representative of group 1. On average, delaying the introduction of the MPCE for two years will reduce pensions by no more than 2%.

Regarding the estimation of substitution coefficients. To assess the adequacy of pensions and the replacement rate, it is necessary to pay attention to wage growth in the analysis. The replacement rate depends on the last salary. The year of introduction of the MPCE is 2023. A comparative analysis shows that with a high real wage growth, solidary, accumulative and conditionally accumulative pensions are higher in absolute

terms, but at the same time the replacement coefficient decreases. It is necessary to take into account the dependence of wage growth not only on the state and development of the country's economy, but also on the investor's labor cycle. The results show that the target weighted average replacement rate of 40% is achieved in 2030 under the baseline scenario and zero real wage growth or real wage growth taking into account the life cycle of the contributor.

Regarding the «maturity of the MPCE». When analyzing and comparing the replacement coefficients, it is necessary to take into account the fact that the full cycle of funded pensions will reach in 2040, and the conditional funded pension will reach «maturity» after 2060. Whereas, budget pensions are already in a «mature» state and with high short-term benefits.

Phased introduction of MPCE (mandatory pension contributions of employer): from 2020-1%; 2021-2%; 2022-3%; 2023-4%; 2024-5%. A comparative analysis shows, for example, a man of group 1 in 2030 would have a MPCE pension of 540 tenge, a man from group 6 would have a pension of 11,836 tenge, while with the phased introduction of MPCE, the MPCE pension of the same representatives will decrease in 2030: a man of group 1 – 431 tenge, a man of group 6-9,956 tenge, i.e. a reduction in the MPCE pension by 25% and 19%, respectively. However, a comparative analysis of the same representatives in 2050, this decrease due to the phased introduction shows no significant impact (decrease), about 8% and 0.5%, respectively. In addition, as will be shown below, the reduction of the MPCE pension due to the phased introduction and the shift of the year of introduction of the MPCE will be covered by the minimum guaranteed pension from 2030.

1) Assessment of the replacement coefficient of the total pension during the transition to the minimum guaranteed pension from 2030, as well as an assessment of budget expenditures for the payment of the minimum guaranteed pension:

Assessment of budget expenditures for the payment of a minimum guaranteed pension if the total pension is more than 2 PM (poverty minimum) and if the total pension is less than 2 PM, with an additional payment of no more than 1 COLA. In the year of the introduction of IHL in 2030, the cost of MP (min.pension) is higher than the cost of BP by 15,664 million tenge. This is due to the fact that the costs of an additional payment to MP (min.pension) for established pensioners are always higher than the costs of paying BP, while the total amount of expenses decreases over the years due to a decrease in the number of these pensioners. The additional payment up to MP (min. pension) for newly retired pensioners is lower than the cost of BP, since for high-income pensioners from groups 5 and 6, the additional payment up to MP (min.pension) is less or absent, since representatives of these groups have a total pension of about or higher than the upper limit of 2 COLA.

A comparative analysis of the assessment of the replacement coefficients of the aggregate pension during the transition to a minimum guaranteed pension from 2030 instead of BP for various income groups shows that pensioners of groups 1, 2 and 3 have a total pension taking into account MP(min.pension) becomes higher, while for pensioners of groups 4, 5 and 6, the total pension and the KZ becomes lower.

CONCLUSION

Based on the results of the study, the following conclusions can be drawn:

1. The following general trends of financial crises are highlighted: cyclical nature, globalization, specific price changes in the markets, the growth of global monopolism, a decrease in the efficiency and quality of management, the crisis of financial institutions.

2. Since the beginning of the XXI century, in most developed countries of the world, there has been a process of constant evolution of pension systems, the necessity and direction of which are predetermined, first of all, by changing demographic conditions, mainly the aging of the population. At the same time, in recent years, the world economy has faced the problem of low growth rates. The layering of these global processes has led to an unprecedented crisis of pension systems. Based on the types and forms of economic crises, a classification of the impact of crises on pension systems is proposed, which identifies the impact on certain levels, by the nature of the impact, due to structural imbalances, etc.

3. Demographic trends of recent years indicate that in the near future their development will have an increasingly tangible impact on the financing of pension systems. The problems of pension provision in the EU countries are caused not only by the demographic situation, but also by changing socio-economic conditions. First of all, this is due to the increase in unemployment, forcing workers to retire before reaching retirement age.

4. Analysis of the impact of crises allows us to state that severe financial crises have a significant negative impact on the labor market, and then on the pension system. As a result of the crisis, production volumes are decreasing; unemployment is growing; financial structures are going bankrupt; markets are falling. All this has a serious impact on the standard of living, and therefore on social systems, including the pension system.

5. Pension funds were more affected by the difficult situation in the financial markets and the fall in the value of their assets, as they invested more in stocks and real estate and less in bonds and deposits. The functioning of pension systems is closely linked to trends in financial markets. It follows from this that the development of the sectors of the financial system has a close connection with the problems of general economic stability. We share this position. At the same time, I would like to note that the functioning of pension systems has a stable causal relationship with economic growth. The most important function in the implementation of this relationship is performed by the financial market. The financial superstructure has a great destabilizing potential, since it unites huge and highly unstable currency markets, debt markets, derivatives markets.

6. It was professional associations that formed the basis for the formation of modern methods and types of material support for people in old age. Mutual support and mutual assistance within the framework of professional associations have become a strong impetus for the socialization of society, the manifestation of charity, the unification of people and the formation of their responsibility for fellow citizens, the manifestation of sympathy. But this form of assistance was of a non-permanent nature,

and the size of donations were not so significant and therefore not sufficient. Only in the XVI-XIX centuries. European countries adopted laws on the poor. This process made it possible to form an organizational and legal form of social protection of the population unable to work due to old age. In modern literature, a complex of economic, demographic and social prerequisites are identified as the main factors of the emergence of a system of material security of old age. In Asian countries, the system of ensuring old age as such was absent and in the Middle Ages also did not have such rapid development as in Western countries. Only in the twentieth century, with the development of industry and changes in the social system in the countries of Southeast, Central and Central Asia, social insurance systems, including pension provision, began to be developed.

7. Two factors had a significant impact on the formation of new views on the social protection of the elderly population. Firstly, the current stage of the second demographic transition has led to the need for material support for wage workers exposed to the social risk of disability due to old age, disability. Secondly, the emerging social and labor relations related to industrial labor required new forms of social protection for employees, and therefore began to include in their circle the costs of insuring employees against loss of wages. The prerequisites and factors of the development of the system of social protection of old age according to the main stages of the formation of pension systems in the countries of the world are highlighted.

8. In a number of developed countries, additional steps have been taken to reduce the impact of the above adverse factors and stabilize the financial stability of pension systems, the main of which are: raising the retirement age; stimulating later retirement; applying adjustments to pension indexations; tightening the rules for early retirement; increasing insurance premium rates.

9. To date, the basic principles of reforming the pension system can be formulated as follows: providing people with a guaranteed income after retirement, so that the termination of participation in the labor process does not automatically mean a decrease in living standards; ensuring a minimum standard of living for disabled members of society; protecting people of retirement age from increasing risks associated with various social and economic, as well as moral and physical factors. From a political point of view, in order to fulfill these tasks, the following factors must be taken into account: the health and economic status of pensioners (income and savings), the relationship between state pension policy and the behavior of individuals (to what extent state pension payments reduce incentives for personal savings), as well as the relationship between the demographic situation and the securities market. The latter factor is especially important for countries where the state pension system is less developed and private ones are more developed..

10. Let's highlight the factors that determine the specifics of the national pension system in a particular state:

– Social factors determine the degree of development of social and labor relations in the state. An example of social factors can be considered the historical and ethno-cultural features of the development of the state, the national mentality, the religious side of society, the social policy pursued by the state with its strategic and

tactical goals and objectives, the social structure of the population, the situation on the labor market, the level of wages, etc.;

- Economic factors determine the capabilities of the state and the economic conditions in which the pension system is built and operates. Economic factors, for example, include the state of public finances, the level of welfare of society, the economic policy pursued by the state with its strategic and tactical goals and objectives, the role of the state in the economy, the level of development of production, etc.;

- Demographic factors also serve as an important guideline for determining the qualitative and quantitative characteristics of the pension system, as they reflect the needs of society for pension protection. Demographic factors, among other indicators, include the age structure of the population, the share of pensioners in society, the level of population growth, the ratio of employed and pensioners, and others.

11. So, speaking about the current situation in the world in the field of pension provision, when the reform is still ongoing, it should be noted that until now, even in most developed countries, the main source of pension payments are state pension programs (Western European countries). However, in some States they represent only one of the sources. In the UK, the Netherlands, the USA, Canada and Japan, as a result of multi-stage reforms, a system of pension plans has been built in which pensions are guaranteed by the employer. Today, these occupational pension systems serve as the main source of payments for a large number of citizens. Sometimes pensioners receive fixed payments from the employer in the form of annuities, in addition to payments from the state pension system. At the same time, in some countries, for example, in the USA, occupational pension payments are an addition to state ones. This practice is quite common in countries with developed economies, where sufficient experience has already been accumulated, which can be used by states reforming their pension systems.

12. Thus, speaking about the reform of pension systems in the context of demographic changes taking place in the world, we can say that these processes are still ongoing in most countries today and are characterized by the gradual introduction of new elements. In some countries, this process will last for several decades. Countries with developing economies are guided by the experience of developed countries when implementing pension reforms, especially since demographic problems that gave impetus to social reforms are becoming more and more noticeable in developing countries.

13. The crisis affects pension systems through several channels. The main ones are the following:

- increasing probability of suspension or termination of employment by employees and applying for pension benefits;

- a rather difficult situation in the labor market, as a result of which a reduction in employment, as well as stagnation or a decrease in wages may well lead to a narrowing of the income tax base;

- a rapid drop in asset prices, which may negatively affect the balance sheets of accumulative pension systems;

- the ability of the state and private enterprises guaranteeing pension obligations to maintain the solvency of defined benefit pension systems in the event of an unfavorable situation.;

14. The financial crisis has a different impact on the components of the pension system, and even if the scale and duration varies, depending on the countries, each component experiences its negative impact. The zero level is financed at the expense of the state, and with a decrease in production and tax fees, the financing of the zero level is significantly reduced. The first level is financed by contributions from employees and employers, and therefore the level of financing of pension payments is affected by an increase in the unemployment rate and a decrease in wages. The second and third levels are financed by contributions from employers and employees and percentages of income. Therefore, the level of pension payments is affected by the state of financial assets of pension funds.

15. Speaking about modern pension systems of developed countries, the following common features of all the pension systems considered should be noted: the presence of three main levels of pension provision - mandatory, voluntary corporate and personal; the establishment of tax benefits in the formation of sources of corporate pension provision; state regulation and control; stimulation of more preferred private forms of pension provision either through the provision of tax benefits or other ways. The main distinguishing feature of these pension systems is a concrete solution to the problems of formation and distribution of pension contributions.

16. The situation in the field of pension reform in developing countries and countries with economies in transition is far from clear. The main measures designed to solve the emerging demographic and economic problems should be the following: the transition from a distributive to a funded pension system; raising the retirement age; reducing the «pension coverage» of income before retirement; fighting inflation and protecting pension savings; developing the stock market to increase pension savings through accumulation.

17. Thus, during the crisis, several problems were observed in the development of the accumulative pension system: excessively conservative regulations that prevent funds from extracting greater returns; inefficiency in choosing the optimal investment portfolio, taking into account risk and profitability, in order to have a positive interest rate of return compared to inflation; weak motivation of pension funds for profitability.

18. It is proposed to highlight the following fundamental principles of the functioning of the system of ensuring the rights of citizens to a labor pension: equality and fairness for all participants of the pension system; stability of the financial mechanism of mandatory pension provision; responsibility of the state for the proper organization of pension provision; transparency of the mechanism for managing pension assets; fulfillment of state obligations to preserve mandatory pension savings; effective management of pension assets and responsibility for the targeted use of pension funds; supervision and control by the company over the activities of pension funds.

19. As part of the analysis, three scenarios for the development of the accumulative pension system were modeled: basic, pessimistic, optimistic. The analysis showed that: 1) the boundaries of the retirement age should be determined on

the basis of demographic indicators, since they are the most objective and predictable; 2) the demographic situation in Kazakhstan allows for an increase in the retirement age; 3) at the first stage, it is necessary to equalize the retirement age for women and men at the level of 63 years; 4) the increase in the number of pensioners in Kazakhstan is not only due to the fact that the vast majority of people live up to the modern limits of retirement age, and the retirement period of life is quite long. It is also associated with fluctuations in the birth rate and, perhaps, migration in the past. Moreover, it is difficult to separate the contribution of survival growth from the action of the other factors mentioned. A solidary pension system can function in a balanced and successful manner when there are four working people per pensioner. Based on official statistics, there are 8.7 million citizens currently employed in Kazakhstan. And this number is just more than 4 times the number of people of retirement age.

It is proposed to revise the retirement age of citizens depending on the complexity of working conditions. The early retirement provided for by law only for law enforcement officers is unfair to miners, metallurgists, artists (ballerinas) who lose their professional fitness much earlier than 60 years. Pension legislation should not discriminate against different categories of citizens depending on their affiliation to a particular field of activity and should equally take into account the complexity of working conditions. The need to recalculate the solidarity pension taking into account the index of growth of real consumer prices. So that the pension is calculated not taking into account inflation, but on the basis of changes in prices of a wide range of goods, in order to index on the basis of price increases for socially significant consumer goods. The average pensioner does not buy cars, the prices of which are taken into account when calculating inflation. His pension should be sufficient to purchase socially important consumer goods and services that are vital to him.

REFERENCES

1. Бузгалин А., Колганов А. Мировой экономический кризис и сценарии посткризисного развития: марксистский анализ // Вопросы экономики. – 2009. – № 1. – 7 с.
2. Bordo M., Landon-Lane J. The Global Financial Crisis of 2007-2008: Is It Unprecedented? NBER WP 16589. – Cambridge, NBER. – 2010. – 6 p.
3. Oppers S. The Austrian Theory of Business Cycles: Old Lessons for Modern Economic Policy? WP/02/2. – Washington DC: IMF, 2002. – p 142.
4. Аникин А.В. История финансовых потрясений. – 3-е шд. – М.: ЗАО «Олимп-Бизнес», 2009. – 306 с.
5. Reinhart C., Rogoff K. The Aftermath of Financial Crises. NBER 14656. – Cambridge, MA: NBER, 2009. <http://www.nber.org/papers/w14656>, January 2009.
6. Bernanke B., Gertler M., Gilchrist S. The Financial Accelerator and the Flight to Quality // The Review of Economics and Statistics. – 1996. – Vol. 78, № 1. – P. 1-15.
7. Кушлин В. Факторы экономического кризиса и базис его преодоления // Экономист. - 2009. - №3.
8. Пахомов Ю. Мировой финансовый кризис: цивилизационные истоки // Экономист. - 2009. - №2. - С.37-42. Global Capital Markets: Entering a New Arca. – McKinsey Global Institute, 2009. – 9 p.
9. Furceri, D. and A. Mourougane (2009), «Financial Crises: Past Lessons and Policy Implications», OECD Economics Department Working Papers, №668, OECD Publishing, Paris, <https://doi.org/10.1787/226777318564>.
10. World population ageing 2015. New York, United Nations, 2015, p. 164
11. Павлюченко В.Г. Социальное страхование. – М.: «Издательский дом Дашков и К», 2007. – 19 с.
12. Disney R., Johnson P. Pension systems and retirement incomes across OECD countries, Aldershot: Edward Elgar. – 2001. – 11 p.
13. М.М. Khalitova, S.K. Nuryмова, A. Yessentay. Regulation of national economies in terms of the global financial crisis: contradictions and measures of overcoming them // Economy : strategy and practice. – 2018. – Vol. 3 (47). – P. 31-42.
14. Formation and crisis of the social protection system in the modern world // Bulletin of Europe. – 2003. – № 2. – 23 p.
15. Sharin V. Social assistance in ancient states // Social Security. – 2009. – № 8. – 18 p.
16. For veterans of the emperor's guard, an increased pension was paid // Bulletin of Ancient History. – 1960. – № 1. – P. 108-109.
17. Grigoriev. History of Social Work in 2 hours 1. – Minsk, 2006. – 108 p.
18. Textbook on the history of Ancient Greece / Edited by Dr. D. P. Kallistov. – М.: Mysl, 1964. – P. 516-517.
19. Мосейко В.В. Генезис пенсионных систем как проявление социальной функции государства / В.В. Мосейко [Электронный ресурс]. – Режим доступа: <http://docplayer.ru/37827090-Genezispensionnyh-sistem-kakproyavleniesocialnoy-funkcii-gosudarstva.html>. С.3.

20. Колесникова, Т. С. (2010). Европейская повседневная культура 19 века. Аналитика культурологии. – 2010. – № 17. – P. 93-104.
21. Fitzgerald Ch.P. History of China / Translated from the English by L.A. Kalashnikova. – M., 2005. – p. 27.
22. Materials on the economic history of China in the early Middle Ages / Trans. Bokshchanina and Lin Kyunyi. – M., 1980. – P. 15-26.
23. Chernova L. N. History of Asian and African countries (course program, subject of control papers, sources). Educational and methodological manual. – Saratov: IC «Science», 2010. – 166 p.
24. Pensions before the revolution: social security in Russia at the turn of the XIX-XX centuries // <http://pfr.pba.su/Content/Read/271> accessed 02.06.2019.
25. Bernstein P. Against the gods: Taming risk / trans. from English. – M.: CJSC «Olympus-Business», 2000. – P. 92-94; – P. 104-106.
26. How long did our ancestors live: historical facts and opinions of scientists // <https://agesecrets.ru/voзраст/dolgoletie/skolko-zhili-nashi-predki-istoricheskie-fakty-i-mneniya-uchenyh>. 03.06.2019.
27. Roik V.D. Fundamentals of social insurance: textbook. – M.: RAGS under the President of the Russian Federation, 2007. – P. 54-75
28. Fedotov A. The history of the emergence of pension systems in foreign countries // Proceedings of the ISA RAS. – 2006. – № 23. – P. 308-316.
29. Sorokina E.G. Foreign experience in modeling pension systems // Moscow Center of Law. Retrieved from <http://www.notariusy.ru/publisher/c21.htm>. 04.06.2019.
30. Yungblud D. Socio-economic models of developed countries: main features, efficiency, prospects // Society and Economy. – 2007. – № 7. – P. 99-147.
31. Ignatov A.V. Pension reform: there are alternative opportunities. // Social world. – 2001. – № 12. – 54 p.
32. Gaidar E. I. Rich and poor. II. The history of pensions. Formation and crisis of the social protection system in the modern world [Electronic resource]. – 2003. – № 10. – p. Mode of access: <http://maga-zines.russ.ru/vestnik/2003/10/gaid2.html>.
33. Soede A., Vrooman C. A comparative typology of pension regimes // ENEPRI research report. – 2008. – № 54. – P. 25-26. [Electronic resource]. – Mode of access: <http://aei.pitt.edu/11490/1/1647.pdf>
34. Sanfider C.E. Pensions and insurance before 1800: A social history, Historia Mathematica. – Cambridge: Tuckwell Press, 2003. – 471 p.
35. OECD (2019), Pensions at a Glance 2019: OECD and G20 Indicators, OECD Publishing, Paris, <https://doi.org/10.1787/b6d3dcfc-en>. 2019, November 27.
36. Есентай А., Международный опыт в вопросе определения самозанятых, их портрета и культуры планирования пенсии // «Политико-правовые и экономические аспекты развития современного Казахстана в условиях глобализации»: сборник материалов международной научно-практической конференции, посвященный 50-летию юбилею доктора юридических наук, профессора, декана факультета международных отношений КазНУ им. аль-Фараби Айдарбаева Сагынғали. – Алматы: Казак университет, 2019. – С. 199-210.

37. Hassel A., Naczuk M., Wiß T. The political economy of pension financialisation: public policy responses to the crisis // *Journal of European Public Policy*. – 2019. – Vol. 26, № 4. – P. 483-500.
38. Shamsudinova M.D., Hasambiyevich T.N., Tokayeva T.I. et al. Economic guarantees of the pension system, social and cultural transformations in the context of modern globalism // *European Proceedings of Social and Behavioral Sciences*. – 2019. – Vol. 91. – P. 1050-1055.
39. Федотов А.И. История возникновения пенсионных систем в зарубежных странах // *Труды ИСА РАН*. – 2006. – № 23. – 315 p.
40. Barr N., Diamond P. Reforming pensions: Principles, analytical errors and policy directions // *International social security review*. – 2009. – Vol.62, № 2. – 16 p.
41. Дегтярь Л.С. Российская пенсионная реформа в контексте мирового опыта // *Институт народнохозяйственного прогнозирования РАН*. – 2002. – 78 с. [Электронный ресурс]. – Режим доступа: <http://www.ecfor.ru/pdf.php?id=2002/6/06>.
42. Barr N., Diamond P. Reforming pensions: Principles, analytical errors and policy directions // *International social security review*. – 2009. – Vol.62, № 2. – P. 21–22.
43. Barr N., Diamond P. Reforming pensions: Principles, analytical errors and policy directions // *International social security review*. – 2009. – Vol.62, № 2. – 20 p.
44. Чернулич А. Исследование эффективности пенсионных систем в зависимости от наличия в стране сырьевой экономики // *Европейский университет в Санкт-Петербурге. Препринт Ес-09/13*. – 2013. – 34 с. [Электронный ресурс]. – Режим доступа: http://pensionreform.ru/files/64494/Ес-09_13.pdf
45. Ahrend R. How to Sustain Growth in a Resource Based Economy?: The Main Concepts and their Application to the Russian Case // *OECD Economics Department Working Papers, OECD Publishing*. – 2006. – № 478. – 6 p.
46. Pension Fund Reform and Implications for the Market. SSB City, Asset Management Limited. 2001. – Boston, 06.03.2001. – p 175.
47. Лазаревский А., Сушкевич Л. Пенсионная реформа в России на фоне зарубежного опыта. РДИ «Яблоко» – 2002, март – 6. – с. 134.
48. Disney R., Johnson P. Pension systems and retirement incomes across OECD countries, Aldershot: Edward Elgar. – 2001. – 11 p.
49. OECD Pensions at a Glance : OECD and G20 Indicators, OECD Publishing. – 2015. – P.201-374. <http://www.pensionfundsonline.co.uk/content/country-profiles>
50. Eroshenkov S. G. Analysis of the regularities of pension provision abroad and determination of the actual state of the pension system in Russia (according to the OECD). – 2019. – p 25-27.
51. Мосейко В.В. Генезис пенсионных систем как проявление социальной функции государства / В.В. Мосейко [Электронный ресурс]. – Режим доступа: <http://docplayer.ru/37827090-Genezispensionnyh-sistem-kakproyavleniesocialnoy-funkcii-gosudarstva.html>.
52. Melbourne Mercer Global Pension Index, Australian Centre for Financial Studies, Melbourne. – 2016. – 7 p.

53. OECD Pensions at a Glance 2015: OECD and G20 Indicators, OECD Publishing. – 2015. – 207 p.
54. OECD Pension Markets in Focus 2016: OECD Publishing. – 2015. – 29 p. OECD official online statistical database. [Electronic Resource]. – Mode of access: <https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>
55. Федотов А.И. История возникновения пенсионных систем в зарубежных странах // Труды ИСА РАН. – 2006. – № 23. – 309 с.
56. Grimmer-Solem E. A history of the German Public Pension System: Continuity amid change//American historical review. – 2018. – Vol. 123(1). – P. 318-320.
57. Антропов В.В. Социальная защита в странах Европейского союза. История, организация, финансирование, проблемы. – М.: ЗАО «Издательство «Экономика», 2006. – 271 с.
58. Болотская Д.В. Опыт формирования систем пенсионного обеспечения в ведущих странах мира // Экономика промышленности. – 2013. – № 4(64). – 81 с.
59. Костюнина Г.М. Реформирование пенсионных систем в странах Латинской Америки // Труд за рубежом. – 2007. – № 3. – С. 79-81.
60. Monteiro Pessoa R. The Violation to the vital minimum in Chilean Social security system // Revista Latinoamericana de Derecho social. – 2019. – Vol. 29. – P. 219-238.
61. Morgan P.J., Long T.Q. Costs and potential funding of expanded public pension coverage in Asia // Asian Pacific Economic literature. – 2017. – Vol. 748. – P. 3-26.
62. Makarski K., Hagemeyer J., Tyrowicz J. Analyzing the Efficiency of Pension Reform: the Role of the Welfare Effects of Fiscal Closures // Macroeconomic Dynamics. – 2017. – Vol. 21(5). – P. 1205–1234.
63. Chybalski F., Marcinkiewicz E. The Replacement Rate: An Imperfect Indicator of Pension Adequacy in Cross-Country Analyses // Soc. Indic. Res. – 2016. Vol. 126. – P. 99-117.
64. Roman M.D., Toma G.C., Tuchilus G. Efficiency of Pension Systems in the EU Countries // Romanian Journal of Economic Forecasting. – 2018. – Vol. 21(4). – P. 161-173.
65. Nicholas B. Retirement puzzle // https://books.google.ru/books?id=4OJ_1OQWfnMC&printsec=frontcover&hl=ru. 10.02.2020.
66. S. Nurymova, A. Yessentay, M. Khalitova, Y. Jumabayev, Mohd-Pisal Zainal. // The Bulletin of the National academy of science of the Republic of Kazakhstan. – 2019. – Vol.1, № 377. – P. 130-144.
67. Темирханов М. В чем заключается эффективность накопительной пенсионной системы // <https://forbes.kz//process>. 10.04.2020.
68. Бахмутова Е. О сильных и слабых сторонах пенсионной системы // <https://forbes.kz//life>. 10.04.2020.
69. Bonoli G. Classifying Warfare States: a Two dimension Approach // Journal of Social Policy. – 1997. – Vol.26, № 3. – P. 351-372.
70. Данные Бюро национальной статистики Агентства по стратегическому планированию и реформам РК // <http://stat.gov.kz>. 20.02.2020

71. Данные Национального банка РК // <https://nb.gov.kz/?switch=russian>. 08.02.2020.
72. Данные Министерства труда и социальной защиты населения Республики Казахстан // <https://www.gov.kz/memleket/entities/enbek>. 02.02.2020.
73. Оценка пенсионного законодательства Республики Казахстан и перспективы развития пенсионной системы / Общественный фонд «Центр анализа общественных проблем». – Алматы, 2009. – 195 с.
74. Бекишева А. Государственное регулирование накопительной пенсионной системы Казахстана в условиях переходной экономики: дис. канд. экон. наук: 08.00.01. – Алматы, 2002. – 157 с.
75. Data of the Statistics Agency of the Republic of Kazakhstan – 2018-2021 year.
76. Whitehouse Ed. Pensions Panorama: Retirement-Income Systems in 53 Countries. – Washington, DC: World Bank, 2007. – 254 p.
77. Татибеков Б.Л., Темирбекова Ж.А., Смирнова Е.В. и др. Механизм сокращения неофициального рынка труда и неформальной занятости в Республике Казахстан. – Каскелен: Университет имени Сулеймана Демиреля, 2017. – 176 с.
78. Бекишева А. Государственное регулирование накопительной пенсионной системы Казахстана в условиях переходной экономики: дис. канд. экон. наук: 08.00.01. – Алматы, 2002. – 157 с.
79. Holtzman R., Hinz R. et al. Secured old age in the 21st century, Pension systems and reforms in an international perspective. – Washington: World bank, 2005. – 232 p.
80. Junusbekova G., Zhaumitova M. The Efficacy of the Retirement Pension Provision System: Modeling, and Assessing of the Case of Kazakhstan // Journal of Open Innovations: Technology, Market and Complexity. – 2020. – Vol. 6. – P. 1-16.
81. Амержанова Д. Инвестиционная деятельность накопительных пенсионных фондов и их влияние на макроэкономику: дис. ... канд. экон. наук: 08.00.10. – Бишкек, 2017. – 175 с.
82. Изекенова А.К. Стратегические направления функционирования и развития пенсионного обеспечения в Республике Казахстан: дис. ... док. PhD: 6D050600. – Алматы, 2014. – 128 с.

APPENDIX A

Certificate on the use of the results of the dissertation (act of implementation)

"БІРЫҢҒАЙ ЖИНАҚТАУШЫ
ЗЕЙНЕТАҚЫ ҚОРЫ"
АКЦИОНЕРЛІК ҚОҒАМЫ



АКЦИОНЕРНОЕ ОБЩЕСТВО
"ЕДИНЫЙ НАКОПИТЕЛЬНЫЙ
ПЕНСИОННЫЙ ФОНД"

А15Т6М5, Алматы қ.,
Нұрсұлтан Назарбаев даңғ., 223 үй, 247 т.е.б.
☎ +7 (727) 356-10-60; 331-66-99;
☎ +7 (727) 312-13-25;
● www.enpf.kz; ✉ enpf@enpf.kz

А15Т6М5, г. Алматы,
проспект Нұрсұлтан Назарбаев, дом 223, н.п. 247
☎ +7 (727) 356-10-60; 331-66-99;
☎ +7 (727) 312-13-25;
● www.enpf.kz; ✉ enpf@enpf.kz

В Диссертационный совет по специальности
«6D051300 - Мировая экономика
050040, г. Алматы, пр. аль-Фараби, 71

Акт о практическом применении результатов диссертационного исследования

Настоящим Актом подтверждается, что результаты диссертационного исследования Есентай Айгерим на тему: «Мировой финансовый кризис и национальные пенсионные системы: оценка влияния и перспективы развития» были тщательно изучены и использованы при реализации проектов по анализу международного опыта, в рамках ЕНПФ.

Результаты качественного и количественного исследования, представленного во второй главе, в частности, итоги анализа международного опыта реформирования пенсионных систем, воздействующих на показатели успеха, были использованы при подготовке проектов.

Выводы и предложения, указанные в третьей главе, могут быть применены при подготовке отчетов и предложений касательно развития пенсионной системы РК в Правительство и другие вышестоящие органы.

Управляющий директор

Тулгенова Ж.К.

ҚАРЖА, ТӨЛЕНЕ, КЕПІЛДІК БІРЛІГІ, КЕПІЛ МІНДЕТТЕРІ МЕРГІМ ЕКПӨДІМЕЛЕР ҚҰМН ПАЙДАЛАНА АТҚАНЫ САЛЫМАДЫ
ЗАРТТЫСАҢЫЗ ИСПОЛЬЗОВАТЬ ДВА ФИНАНСОВЫХ, ПЛАТЕЖНЫХ, ГАРАНТИЙНЫХ, ЗАЛОГОВЫХ ОБЯЗАТЕЛЬСТВ И ПОРУЧИТЕЛЬСТВА

