Development of a multi-component social insurance product to improve the quality of social protection for Kazakhstanis

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Abstract: - Social insurance is of key importance in supporting citizens facing social risks. Despite growing social contributions and payments by Kazakhstan's state social insurance system, the full replacement of lost income of the insured person remains relevant. The organization of social insurance is limited only by the employer's obligation to make social contributions accumulated in the compulsory social insurance fund. The solution is voluntary insurance but the absence of social insurance products in Kazakhstan's insurance market does not allow this yet. The development and introduction of insurance products for better social protection are of great interest. The study considers the content and rationale of the new insurance product and demonstrates the mechanism of gradual involvement of economically active citizens and expansion of the sales market for new products. The analysis of the main social risks of compulsory social insurance shows their unconditional importance. The new product allows selecting a set of insured risks for each individual. The authors conclude that using a multi-component social insurance product will ensure effective interaction between the compulsory social insurance system and Kazakhstan's insurance market in providing citizens with full social protection. The study results can be used to develop the national insurance market and especially its socially oriented segment, encourage insurance agents, and form the infrastructure of the insurance market in insurance engineering and the activities of other professional participants.

Key-Words: - social insurance, social risk, social contributions, social payments, state social insurance system, insured person, insurance market, multi-component insurance product, social protection.

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1 Introduction

Social insurance is a fundamental category of social life and taxes and public services, whose composition, structure, and mechanisms must be constantly improved. The need for the further development of social insurance in its various forms is stipulated by the fact that society makes increasingly high demands on the quality of these services. Compulsory state social insurance is the result of the expedient activity of society. However, the volume of financial compensation cannot meet the individual needs of citizens due to its small amount compared to the lost income. Since compulsory social insurance pursues the goal of universal coverage, the legislative regulation of compensation for only part of the lost earnings is justified. As a result, insurance payments are insufficient for a full-quality life and cause dissatisfaction.

Today the development of social insurance is associated with the improvement of approaches to social insurance and the use of innovative technologies in insurance engineering. This is evidenced by research. In matters of adapting the foreign experience to Russian realities, M.A. Rzhevskaya, K.A. Kaznina, and D.M. Kalinina agree that the modern system of social protection of the population, namely social insurance, should include compulsory state, voluntary-corporate (collective), and individual insurance [1]. As exemplified by Indonesian life insurance companies which also provide voluntary social insurance, A.R. Masayu and M. Dachyar propose to improve the activities of insurance companies by introducing the business process reengineering approach. The result is the creation of simulation scenarios based on the selected best practices [2]. While studying the issues of reforming the social insurance system in Egypt based on the analysis of the characteristics of the participants in the social insurance system, G. Barsoum and I.N. Selwaness argue that structural barriers associated with the large number of low-paid workers and informal enterprises in the economy hinder the expansion of social insurance coverage. The authors emphasize the importance of social insurance elements as they relate to coverage, adequacy, affordability. sustainability, reliability, and redistribution [3].

There is a need for social insurance products of a new type or model that considers the individual needs of insured citizens. For the best social protection of the working population, it is necessary to introduce socially oriented insurance products for a wide range of risks.

We should pay attention to current trends in the increase of insurance claims in the Republic of Kazakhstan. In 2008, one insurance claim occurred for every 17 people, or 5.8% of all participants in the compulsory social insurance system. In 2022, there was one insurance claim for every six people (17.22%), which is an increase of almost three times [4]. On the one hand, this is a positive result indicating universal coverage of the economically active population and the feasibility of the current compulsory social insurance system. On the other hand, if this trend continues, problems with insufficient funds for social benefits may arise in the near future. Another burning issue is the discrepancy between the amounts of social payments for most social risks and the expectations of insured persons. This is evidenced by our research [5]. It is also worth mentioning the lack of insurance products in Kazakhstan's insurance market, allocated separately and related specifically to voluntary social insurance, which can be an addition to the current compulsory social insurance.

A justified mechanism for solving these problems is the voluntary insurance of social risks

based on the use of a multi-component social insurance product, whose main purpose is to increase insurance payments for social risks. This concept can be defined as follows: "A multicomponent social insurance product is a type of insurance implemented based on an insurance contract, the subject of which is social protection against two or more social risks that are most significant for the life, health, and ability to work of a stakeholder".

The study aims to develop a multi-component social insurance product to improve the quality of Kazakhstanis' social protection.

2 Methods

Based on the research objective, we used both qualitative and quantitative methods. At the initial stage, we analyzed theoretical literature and methodological approaches to the design of new insurance products. Thus, the necessary statistical data were selected. To determine the need for socially oriented insurance products and count the possible number of consumers, we conducted a survey on a wide range of issues. Based on the probability of social risks, we outlined the range of risks included in the new product. In conclusion, calculations were made to determine the number of consumers, insurance rates and payments, and the product's economic effect and investment attractiveness. Stochastic modeling was used to develop the product.

1) We analyzed the relevant literature and methodological principles for developing new insurance products.

2) We determined the probabilistic number of the economically active population for whom the new product is being developed.

For this purpose, the probabilistic number of the economically active population and participants in the state social insurance system was calculated from the expected population size. We made a probabilistic forecast of these indicators for 10 years.

3) We assessed insurance rates based on the analysis of consumer preferences since when choosing an insurance product, consumers pay attention to both the possibility of hedging several social risks and the cost of the product. Then we predicted the planned amounts of insurance premiums by year for the proposed product. For this, we used the following indicators: the probable number of consumers of the product from the economically active population; the probable number of consumers of the product from participants in the state social insurance system. We made a probabilistic forecast of these indicators for 10 years.

4) We determined the probability of social risks for potential consumers of the product, relying on scientific sources [6-8].

A survey of participants in Kazakhstan's insurance market showed that the majority $(68.3\pm4.3\%)$ of the respondents assess the probability of social risks for voluntary insurance at the level of the probability of social risks of the compulsory social insurance system. Assessments of the probability of social risks show that market participants estimate, on average, an excess of the probability of social risks in relation to the probability of social risks provided for by Kazakhstan's compulsory state social insurance system by no more than 3.4%.

5) We determined the probable number of consumers of the product exposed to social risks.

6) We calculated probabilistic insurance payments for a multi-component product and outlined a mechanism for making insurance payments. An analysis of the methods for assessing the economic viability of new insurance products [9, 10] showed that it is necessary to develop a mechanism for making insurance payments. Based on the projected number of consumers exposed to social risks, we calculated the probabilistic amounts of annual insurance payments for the product over 10 years, considering the duration of insurance payments.

7) We defined the economic effect as the difference between the amounts of insurance premium receipts and payments. To do this, it was necessary to subtract the total amount of insurance payments for all social risks for the corresponding years from the amounts of insurance premium receipts for the categories of potential consumers: 1) the economically active population; 2) voluntary participants in the state social insurance fund by year. A multi-component product is considered economically efficient if the annual economic effect has a positive value.

8) To assess investment attractiveness for the insuring party, we determined the possible investment potential for the product. For this purpose, we determined the planned amount of insurers' expenses for the implementation and sale of the product.

There are four groups of expenses in all expenses of an insurance company: net expenses for making insurance payments; expenses for paying commission fees for insurance activities; general and administrative expenses; and other expenses. For the product, all these expenses are considered and calculated based on an analysis of the previous data on Kazakhstan's insurance market.

9) We calculated investment income. To do this, we determined the average value of investment profitability of insurance companies in Kazakhstan over the past 8-10 years. The obtained value was used to calculate investment income for the product.

10) We calculated the net present value (NPV) from the implementation of the product with due regard to investment income.

The discount rate is the rate calculated based on the CAPM model:

$$i = r_f + \beta (r_m - r_f)_{(1)}$$

Where *i* is the expected return on the stock (discount rate); r_f is the return on risk-free investments (for example, the Central Bank refinancing rate); r_m is the market return; β is the beta coefficient, reflecting the riskiness of investment in relation to the market and the sensitivity of the change in the stock return to the change in the market return.

11) The insurance rate for insurance companies was calculated based on actuarial methods, using forecast calculations of insurance premium receipts for two types of product consumers, a probabilistic assessment of insurance payments, and a model for calculating the risk premium of the insurance rate for a set of risks.

3 Results

The analysis of the corresponding literature and methodological foundations for designing new insurance products [11-14] allowed us to formulate the following comprehensive methodology for developing new social insurance products.

Since the conducted research and analysis of the practice of creating insurance products [15, 16] showed that the maximum consumer value is attributed to an insurance product that includes the possibility of insuring against several social risks, we determined the set of social risks that the new product is aimed at. Its multi-component nature increases the prospects for its implementation in the insurance market.

The product provides for the social protection of citizens in the event of the most pressing social risks for all Kazakhstanis:

- Temporary disability (up to six months);

- Permanent disability (for life);

- The loss of job (up to six months);

- The loss of breadwinner (until children reach adulthood);

- The temporary loss of the opportunity to receive wages in connection with caring for a child aged one to three years.

To develop the product, we used a probabilistic approach based on the conducted data analysis. The time range is defined as 10 years from 2022 to 2031.

First, we determined the probable number of the economically active population for which the product is developed. This required the following indicators: the expected population of Kazakhstan and the expected number of the economically active population of Kazakhstan; the probable number of participants in Kazakhstan's state social insurance system.

The initial indicators of the expected population of Kazakhstan from 2022 to 2031 were the data from the source [17]. The probable number of the economically active population is based on the data from 2008 to 2020, where the share of the economically active population was 51.1% of the total population over 13 years. This indicator is used to determine the probable number of the economically active population from 2022 to 2031.

Since the product is an addition to the existing compulsory social insurance system in Kazakhstan, it is planned to be implemented voluntarily. Despite the fact that at least $34.5\pm2.9\%$ of the respondents are ready to purchase a new insurance product, only 29±2.8% understand social insurance, so the volume of potential consumers can be estimated at $10\pm1.9\%$ (0.29*0.345) of the economically active population. The full coverage of 10% of the economically active population in the first year of introducing the product cannot be achieved. In the first option, 1% of the economically active population can be envisaged as potential consumers of the product. Then, an annual increase of potential consumers by 1% will provide for 10% of the economically active population by 2031. In the second option, it is proposed to start with 1% of participants in the state compulsory social insurance system in the first year and gradually increase it by 1% annually, which provides for 10% at the end of the forecast period.

From 2008 to 2020, the share of participants in Kazakhstan's state social insurance system amounted to an average of 68.8% of the economically active population. This indicator is used to determine the probable number of participants in the system from 2022 to 2031.

Second, the planned amounts of insurance premiums received by year for the product are determined in two options.

The following indicators are required for calculation: the probable number of consumers of the product from the economically active population (based on the calculations performed, this indicator is 51.1% of the projected population) [17]; the probable number of consumers of the product from participants in the state social insurance system (based on the calculations performed, this indicator is 68.8% of the economically active population); insurance tariff.

Based on the calculations, the probable number of consumers of the product in the first option (from the economically active population) amounted to 96,870 people in 2022 (1% of the projected population), increasing by 1% annually until 2031 and reaching 1,031,862 people (10% of the projected population). In the second option (from the participants of the state social insurance system), it amounted to 66,647 people (1% of the probable number of participants of the state social insurance system), then increasing by 1% annually until 2031 and reaching 709,921 people (10% of the probable number of participants of the state social insurance system).

To calculate the insurance rate, as a first approximation, we use the market pricing method based on the insurance rate at which the consumer agrees to purchase the product. If the voluntary insurance market is underdeveloped, this approach is promising.

The insurance rate for the product in the first option is determined at no more than 30% of the minimum wage for the planning period.

According to [18], the minimum wage was 42,500 tenge in Kazakhstan in 2022. This indicator served as the basis for the calculation. To determine the minimum wage from 2024 to 2031, we used the study results that indicate that the minimum wage increased annually by 11.59% from 2008 to 2020. This growth interval was used to calculate and forecast the minimum wage from 2023 to 2031.

Insurance premiums received for the product under the first option (from the economically active population in 2022) is equal to 9,880.74 million tenge per year (20% of the minimum wage (8,500 tenge) multiplied by the probable number of consumers (96,870 people) and multiplied by 12 months). Calculating by analogy with the annual growth of the minimum wage by 11.59%, the probable number of consumers will increase annually until 2031 and insurance premiums received by that time will be equal to 282,391.73 million tenge.

The insurance tariff in the second option is calculated based on the average salary in Kazakhstan's compulsory social insurance system. Thus, the insurance rate is 20% with an annual increase of 2%, provided that the social risk "In case of the loss of income due to caring for a child upon reaching the age of one year" is included in the product. The insurance rate is 30% with an annual increase of 5% if the social risk "In case of the loss of income due to caring for a child upon reaching the age of three years" is included in the product. Although payments in case of an insured event will be equal to the insured person's salary in full, the insurance premium of 30% of the salary is too high and will not be in demand. Unlike in the compulsory social insurance system, the payers can be both employees and employers to increase material motivation employees' and social responsibility. However, it is unlikely that the employer will agree to an amount equal to 30-46% of the salary. As in the first case, we will focus on the inclusion of the social risk "In case of the loss of income due to caring for a child upon reaching the age of one year" in the product.

According to the labor and employment statistics in Kazakhstan, the average salary had an upward trend from 2008 to 2020 [19], and the annual increase during this period was 11.59%. To calculate the average salary, we considered the official figure for 2022, which was 261,987 tenge. It will increase annually by 11.59% and its amount will be equal to 290,806 tenge in 2023.

Thus, the amounts of insurance premiums received for the product under the second option, i.e., from participants in the state social insurance system in 2022, are equal to 25,143.33 million tenge per year (12% of the average salary (31,438 tenge in 2022, with an annual increase of 4% until 2031) multiplied by the probable number of consumers (66,647 people) and multiplied by 12 months). Calculating by analogy with the annual growth of the average salary by 11.59%, the probable number of consumers will increase annually until 2031 and insurance premiums received by that time will be equal to 975,124.67 million tenge.

Third, the probability of social risks for potential consumers of the product is determined in two options.

The survey of insurance market participants has shown that the probability of social risks in voluntary insurance can be calculated using the data on the probability of social risks for participants in Kazakhstan's state compulsory social insurance system. Based on these results, we determined that the probability of social risks increased annually by an average of 0.8% from 2009 to 2020.

The highest probability of social risks in the State Social Insurance Fund JSC system was noted in 2017 (12.97%). There had been a decline until 2020. Therefore, it is advisable to use the average indicators from 2017 to 2020 to calculate the probability of social risks in the future. These are presented as follows: the number of people exposed to social risks (12.3%), including (1) in case of the loss of ability to work (1.27%); (2) in case of the loss of breadwinner (0.7%); (3) in case of the loss of job (0.87%); (4) in case of the loss of income due to pregnancy and childbirth, with the adoption of a newborn child (children) (2.84%); (5) in case of the loss of income due to caring for a child upon reaching the age of one year (6.66%) [20].

The probability of social risks for the relevant year and the corresponding share of probable consumers of the product for two options have the following values: the probability of social risks for the economically active population and for participants in the State Social Insurance Fund is determined at 12.3% from 2022 to 2031; the share of consumers of the product from the economically active population and participants in the State Social Insurance Fund in 2022 is 1% and will increase annually by 1% (10% by 2031); the share of the economically active population and participants in the State Social Insurance Fund who have a high probability of social risks amounts to 1.123% in 2022 and will increase annually (1.23% by 2031).

Fourth, it is necessary to establish the probable number of consumers of the product exposed to social risks for two options, which is calculated as follows. In 2022, the share of the economically active population and participants in the State Social Insurance Fund who have a high probability of social risks is 0.123%. According to the first option, the number of consumers from the economically active population is 96,870 people. Accordingly, the number of consumers exposed to social risks is 11,915 people. While increasing annually, the number of consumers exposed to social risks will be 126,919 people by 2031. It is similarly calculated for the second option, including the participants in the State Social Insurance Fund. In 2022, the number of consumers is 66,647 people. Accordingly, the number of consumers exposed to social risks is 8,198 people. While increasing annually, the number of people exposed to social risks will be 87,320 people by 2031.

Fifth, the types of social risks included in the product are determined.

The compulsory social insurance system provides for social protection of citizens in connection with temporal disability. The average share of those exposed to this social risk from 2017 to 2020 was 1.27% of all participants in the State Social Insurance Fund.

In accordance with the product, the social risk "In case of the loss of ability to work" was divided into two separate social risks: "Temporary "Permanent disability" and disability". Accordingly, the social risk of 1.27% was divided into two categories. Statistical data [20] demonstrate that the insured event "Permanent disability" occurs in no more than 10% of social risks connected with the loss of ability to work. Consequently, the probability of the social risk "Temporary disability" was 1.143%. The probability of the social risk "Permanent disability" was 0.127%.

The social risk "In case of the loss of breadwinner" is 0.7%. The social risk "In case of the loss of job" is 0.87%.

The social risk "In case of the loss of income due to caring for a child until the age of one year" is 6.66%. One of these social risks can be included in the product, including the social risk "In case of the loss of income due to caring for a child until the age of one year" or the social risk "In case of the loss of income caring for a child until the age of three years".

The total share of citizens exposed to social risks in the compulsory social insurance system used for the calculation and including the social risk "In case of the loss of income due to caring for a child until the age of one year" in the product is as follows:

1.016%+0.254%+0.7%+0.87%+6.66%=9.51%.

The implementation period for the product begins in 2022.

Next, the number of consumers of the product was calculated. In 2022, consumers are 1% of the economically active population, which is 96,870 people, and the annual increase in consumers is 1%.

To calculate the number of insured events for each type of social risk, we used the probabilities of social risks. In 2022, the number of insured events for the social risk "Temporary disability" was 1.143%*96,870=1,107 people. In 2023, the calculation is as follows: 0.147%*195,396=2,233. By analogy, we calculated insured events for the social risk "Disability due to the loss of work". To increase the financial efficiency of the product in the first option, we also considered the social risk "In case of the loss of income due to caring for a child upon reaching the age of one year", with payments expected within one year. In 2022, the number of insurance cases for the social risk "Permanent disability" was 0.127%*96,870=123 people. In 2023, the calculation is as follows: 123+0.127%*195,396=371. By analogy, the insurance case for the social risk "Disability due to the loss of breadwinner" was calculated.

To develop a financial mechanism for making insurance payments, which must be economically justified, we calculated the costs of social risks by types of insurance events. However, the duration of the social risk is not determined for all types of insurance events due to the lack of statistical data.

For this reason and to determine the maximum probable social payments, the costs were calculated for the maximum possible periods.

Under the first option, insurance payments must be made in an amount corresponding to the minimum wage of the corresponding year per month for all types of social risks. The product can be attractive to all categories of consumers as additional social protection from the insurance market for the following reasons.

1. The material compensation provided in the event of most social risks from the state compulsory social insurance system is lower than the minimum wage, and compensation for the product is equal to the minimum wage;

2. For risk No. 1 "Temporary disability", compensation is possible for up to six months, i.e. until the full recovery of health and readiness for work;

3. For risk No. 2 "Permanent disability", insurance payments are provided for life;

4. For risk No. 3 "Loss of job", insurance payments for up to six months allow one to find a suitable job or start a business;

5. For risk No. 4 "Loss of breadwinner", insurance payments are provided by the system of state compulsory social insurance until minor children reach the age of majority (on average 10 years) in the amount of the minimum wage for each child in the family and not as a percentage ratio;

6. For risk No. 5.1 "In connection with caring for a child until they reach the age of one year", the possible compensation of earnings in the amount of the minimum wage up to one year is provided as a supplement to the existing system of social benefits; 7. For risk No. 5.2 "In connection with caring for a child until they reach the age of three years", the possible compensation of earnings in the amount of the minimum wage up to one year is provided as a supplement to the existing system of social benefits, as the only benefit for the second and third years.

Here is an example of a calculation for social risk No. 1. In 2022, the number of people exposed to social risk No. 1 is set at 1,107. The minimum wage is set at 42,500 tenge. The maximum term of insurance payments is six months. Thus, 1,107 multiplied by 42,500 tenge and by 6 months=282.29 million tenge.

Here is an example of a calculation for social risk No. 2. In 2022, the number of people exposed to social risk No. 2 is 123. The minimum wage is set at 42,500 tenge. The maximum term of insurance payments is life-long. Thus, 123 multiplied by 42,500 tenge and by 12 months of the current year=62.73 million tenge. Since the product is forecasted for only 10 years, we did not subtract the number of those who had not survived to the end of this period from the number of those exposed to social risk No. 2.

Similar to social risk No. 1, we calculated social risk No. 3. Average expenses on insurance payments for social risk No. 4 were calculated with due regard to the average number of children in a family. In 2022, the number of people exposed to social risk No. 4 is 678. The minimum wage is set at 42,500 tenge. The average term of insurance payments is 10 years. Thus, we multiplied 678 by 42,500 tenge, by 12 months of the current year, and by the average number of children in a family of 1.9 and get 656.98 million tenge.

Social risk No. 5 is calculated for insurance compensation within one year, and the initial data are based on the number of people exposed to this social risk. The calculation procedure is similar. For example, 6,452 newborns are predicted in 2022: 6,452 are multiplied by 42,500 tenge and by 12 months=3,290.52 million tenge. In 2023, 13,013 newborns are expected; this figure is multiplied by 47,426 tenge and by 12 months=7,405.85 million tenge.

The calculation mechanism for the second option is similar to the first option. However, insurance compensation is identical to the current compulsory social insurance system. It is calculated based on the average wage, the analysis of past years (from 2008 to 2020), and a survey of insurance company employees. To assess the economic effect, we determined the difference between insurance premiums and payments.

To determine the economic effect, the total amount of insurance payments for five social risks in two options for the corresponding years was subtracted from the amounts of insurance premiums received by the years. To assess the investment attractiveness of the product, it is necessary to determine the possible investment income of insurers. For this purpose, we estimated insurers' expenses for the implementation and sale of the product.

Commission fees for insurance activities were determined based on the analysis of data from previous years on Kazakhstan's insurance market. These expenses directly depend on income from insurance activities.

After analyzing the share of commission fees, we calculated the average value of the commission fee equal to 22% of the receipts from insurance premiums and the average share of general and administrative expenses equal to 23.2% of the receipts from insurance premiums.

Cash potential is defined as operating profit from insurance activities equal to the difference between the receipts from insurance premiums and payments, expenses on the payment of commission fees, and general administrative income for the product.

Next, investment income was obtained. For this, the average value of investment income from insurance activities of previous years was determined, namely from 2012 to 2020 [21], which amounted to 31.7%. This value was used to calculate investment income for the product.

The procedure for determining investment income is as follows. 31.7% is calculated from the monetary potential for investment in the relevant year, and the invested amount is added to the resulting amount. Thus, investment income from the product under the first option, considering the deduction of corporate income tax (20%), has had positive results from the very beginning. 955.79 million tenge of 2022 would increase annually and amount to 13,559.53 million tenge by 2031.

To determine the investment attractiveness of the product, the discount rate was calculated using the CAPM model. The yield on 10-year government bonds of the Republic of Kazakhstan, equal to 9.26%, was selected as the risk-free rate [22]. To determine the total equity risk premium, we used the data from Damodaran's tables [23]. For Kazakhstan, the total equity risk premium $(r_m - r_f)$ is 6.85%.

According to [23], the average share of equity in insurance companies in Kazakhstan is 46.22%. Therefore, the ratio of debt-to-equity capital is 1.16.

The discount rate is 23.39% calculated according to the CAPM model with β =2.063, a risk-free rate of 9.26% and a risk premium of 6.85%.

The NPV for the first option $(18,004.1\pm6,014.47)$ million tenge over 10 years) and analysis of the project's effectiveness show that the product is attractive to investors.

The calculations made for the second option considering investment income and net discounted (present) income at a discount rate of 23.39% prove the investment attractiveness of the second option of the product ($86,155.51\pm28,281.27$ million tenge over 10 years).

5 Discussion

These approaches to defining insurance products [24] allow us to formulate our definition of an insurance product as a result of the insurance engineering process, whose purpose is to create a tool that can most fully satisfy the needs of a specific insuring party by providing insurance coverage against specific risks, backed by legal support and service.

An analysis of responses to questions directly related to social risks showed that 61.7% of the respondents faced social risks; 52% would like to receive better financial support when social risks occur: 32% believe that it is worthwhile to take preventive measures to provide financial protection against social risks during active work. The most dangerous risks that entail the loss of income are the risk of loss of income associated with the loss of health (51%), the loss of job (42%), and the lack of income in entrepreneurial activity (22%). There is a need to develop an insurance product designed for the economically active population. This product is in demand and has a chance of implementation. However, it is necessary to perform high-quality work on the gradual implementation of the new insurance product with different options for insurance premiums and types of consumers.

Assessing the investment attractiveness of the product considers the mechanism for making insurance payments. This required determining the probability of social risks for each type of insured event.

Based on the survey of insurance market participants, the assessments of the probabilities of

social risks provided for by Kazakhstan's compulsory state social insurance system served as the basis since expert assessments of these risks differ insignificantly. Assessments of the probabilities of social risks show that market participants expect an average increase of 3.4% in relation to the probabilities of social risks provided for by Kazakhstan's compulsory state social insurance system.

The study results demonstrate that the insurance rate for the product in the first option should not be higher than 30% of the minimum wage for the planning period. To attract consumers based on modeling the economic effect of the product in 2022, we proposed to set the insurance rate at 20% of the minimum wage and increase it annually by 5% until reaching 30% of the minimum wage in 2031.

According to research, the insurance rate for the product in the second option should not be higher than 25% of the average salary for the planned period. To attract consumers based on modeling the economic effect of the product, we proposed to set the insurance rate at 20% of the average salary in 2022 and increase it annually by 2% until it reaches 25% of the average salary.

From the beginning of using the product, it is necessary to provide an effective investment policy for insurance premiums, which should prevent critical situations in the activities of insurers under the product.

The analysis shows that the product has great financial potential for investment, higher insurance payments, insurance bonuses, and concessions for potential consumers.

The investment funds in the product under the first option in 2022 amounted to 907.16 million tenge, increasing annually. In 2031, it will reach 12,869.72 million tenge. According to the second option, there are also positive results. 5,163.8 million tenge in 2022 should increase annually and reach 55,247.32 million tenge by 2031.

Thus, the results indicate that the product, considering investment income and the payment of corporate income tax in the expected period, is selfsufficient and has monetary potential for further investment.

The sensitivity analysis of the NPV with due regard to the variation of the discount rate (\pm 5%), the variation of the return on investment of insurance companies (\pm 10%), and changes in insurance premiums received (\pm 2-3%) and insurance payments (\pm 2-3%) shows that both options of insurance products are attractive for investment even in a pessimistic scenario, namely

an increase in the discount rate by 5%, a decrease in the return on investment income of insurance companies by 10%, a decrease in insurance premiums received by 2-3%, and an increase in insurance payments by 2-3%.

The product can include all or only a few types of social risks. Thus, the exclusion of social risk No. 5 will reduce the insurance rate under the first option to 15% of the minimum wage with a 5% annual increase until reaching 20% in 2028. Starting from 2028, it is necessary to fix the insurance rate at 20% of the minimum wage. The exclusion of social risk No. 5 from the second option of the product will reduce the insurance rate to 10% of the average wage, with a 2% annual increase until reaching 12% in 2032. Starting from 2032, it is necessary to fix the insurance rate at 12% of the average wage.

The sensitivity analysis of the product including risks No. 1-4 considers the variation of the discount rate (\pm 5%), the variation of the return on investment of insurance companies (\pm 10%), and changes in insurance premiums received (\pm 8-10%) and insurance payments (\pm 8-10%) demonstrates that both options of insurance products are investment attractive in a pessimistic scenario, namely an increase in the discount rate by 5%, a decrease in the return on investment income of insurance premiums received by 8-10% and an increase in insurance payments by 8-10%.

The analysis of the investment attractiveness of the product for insurance companies shows that the insurance rate of the product can be calculated based on actuarial methods, using the forecast data. To this end, we used formulas for calculating insurance rates for a set of risks.

The calculation of insurance rates shows that in the case of the product that includes risks No. 1-5 the gross rate was $23.473\pm0.6636\%$ considering the set of social risks, which generally coincides with the data for both options.

The insurance rate is calculated for a year and considers our recommendations to increase the insurance rate by 5% annually until reaching 30% in the first option and to increase it by 2% annually until reaching 25% in the second option.

For the product including social risks No. 1-4, the gross rate was $11.9795\pm0.2865\%$ considering the totality of risks, which generally coincides with the calculated data for the second option of the product (our recommendations are 10% for the first year, with an increase of 2% annually until reaching 12%). For the first option, this value is underestimated, but with an increase of 5%

annually in the insurance rate until reaching 20%, the product will become economically efficient.

To increase the financial stability of investing in the product, it is necessary to ensure an increase in its consumers by at least 5-15% annually during the first 10 years. In this case, even if 5% of insurance premiums are used to promote the product, its efficiency will be higher and the NPV will be positive. The product including social risks No. 1-5 has the highest insurance rate and, to reduce insurance tariffs, can be combined with cumulative insurance annuities.

The calculations prove that the product can provide better social insurance protection for citizens in the event of the most relevant social risks since this will be an addition to the payments of compulsory social insurance, and the total amount of payments will be sufficient to cover the consequences of social risks for the population. This will also contribute to the development of voluntary social insurance in Kazakhstan's insurance market, provided that the product is systematically promoted to the social insurance market by government bodies and insurance companies. The product will prevent social risks, promote the planning of individual social risks by citizens, and improve the social security of Kazakhstanis.

The use of the product should ensure:

- Effective interaction between the system of compulsory state social insurance and Kazakhstan's insurance market in providing citizens with full-fledged social protection;

- Construction of the national insurance market and its socially oriented segment (voluntary social insurance);

- Creation of additional investment resources for the economy;

- Support of insurance agents and the insurance market infrastructure in the field of social insurance, in particular in the field of insurance engineering and the activities of other professional participants;

- Reduction of the state burden on social security;

- Development of additional reserves and measures of social support for the population.

6 Conclusions

It is possible to improve the social insurance system, including Kazakhstan's insurance market, to enhance the effectiveness of the population's social protection. Based on the study, we drew the following conclusions. To form a full-fledged system of social protection that meets social requirements and does not promote social dependency, it is necessary to increase the role of voluntary social insurance with a clear accounting of insurance contributions and motivated differentiation of insurance payments for each participant in social insurance relations. Promoting the product should contribute to preventing social risks and improving the quality of social protection of Kazakhstanis.

The advantages of this product include 1) an increase in insurance payments for the most common social risks, 2) the formation of a responsible attitude to social insurance on the part of the employed population, 3) the development of a voluntary insurance system, 4) an increase in the turnover of the insurance market, 5) the elimination of welfare mentality among the employed population, and 6) an increase in social security of the population.

We developed a new generalized multicomponent social insurance product that generally meets the current needs of Kazakhstanis.

In the process of forming the study database, in particular when conducting the survey, we showed that part of society does not distinguish between social insurance and security. Due to the lack of insurance products related to voluntary social insurance, we limited ourselves to statistical data on the occurrence of social risks in Kazakhstan's compulsory social insurance system. Accordingly, the most common social risks were included in the composition due to the lack of statistical data on the probability of other social risks relevant to specific consumers. This requires further research.

Further research should also focus on risks typical of specific target groups, such as women of reproductive age or seasonal workers, and develop social insurance products for them. Continuing scientific work in this area is key to building a strategy for voluntary social insurance and planning tactical approaches for gradually introducing insurance services into the market.

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