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Formation of the Pre-Pensioner Segment in the Labor Market: Financial and Management Aspects

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ABSTRACT

The article considers the results of the implementation of the pension reform in Russia in 2018, reflected in changes in labor market indicators according to Rosstat. **The purpose** of the study is to develop a scientific understanding of the processes of formation of the pre-pensioner segment of the Russian labor market under the influence of its external and internal factors. The authors use **methods** of statistical, correlation, and regression analyses, the calculation of the average for a certain integral of functions, as well as the method of linear modeling of multiple regression. The study assesses the scientific elaboration of the research topic abroad and in Russia. The issues of financial literacy of the population are analyzed. The financing of the training of pre-retirees in the professional competencies that are currently in demand on the labor market and support for unemployed pre-retirees who are registered with the employment center are considered. The selection of relevant demographic data and a sample labor force survey by age group has been carried out. The total number of pre-pensioners in 2018–2020 has been calculated and their structure according to the status of labor activity in the Russian labor market has been identified. The general dynamic, structural, and gender characteristics of the economic activity of pre-pensioners in the labor market are analyzed. The demand for pre-retirees by type of economic activity in 2019 is assessed. The authors **conclude** that there is a tendency to reduce the share of the pre-pensioner segment in the labor market after reaching the project retirement age threshold from 10.88% to 9.76%. The employment rate in this group of the population will be 66%. The study has established that the demand for pre-pensioners by type of economic activity in the labor market is 1.13 times higher for women than for men. A methodical approach has been developed to analyze the results of assessing the demand for state support measures by pre-pensioners. The article analyzes the influence of financial and social measures of state support for pre-pensioners on increasing their labor activity and competitiveness in the labor market. The results of the study can be used by the authorities to substantiate the assessment of the effectiveness of financing the measures they take to provide social and economic support to pre-retirees.

Keywords: pre-pensioner; working capacity; employment; financial literacy; employer; employment; labor market; subsidies from the budget; financing of state support measures

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INTRODUCTION

The emergence of such a new segment as pre-pensioners on the Russian labor market represents a fait accompli of employers in the struggle to increase their incomes, and of the state — to accelerate GDP growth by raising the retirement age [1, 2].

From the ongoing reformatting of the labor market through the transformation of labor resources, all its subjects expect the resolution of the contradiction of the capitalist mode of production by expanding the scale of exploitation of hired labor by increasing the number of employees. In the meantime, the maneuvers on the scale of employment retain the possibility of only a short delay in the onset of the next crisis in GDP growth rates [3, p. 187]. In connection with the ongoing transformation, the problem of scientific explanation of the directions and strength of the trends in the formation of the pre-pensioner segment in the labor market, filling its content and assessing the impact of such factors on all this has arisen, such as employment, ability to work, economic activity, unemployment, measures of social and financial support, financial literacy, pension expectations of the population.

The relevance of the study on the topic is determined by the demand by the Russian Government for the results of explaining the trends and patterns of formation of the pre-pensioner segment in the labor market, in obtaining a scientific assessment of the demand for socio-economic support measures for the pre-pensioners, as well as receiving recommendations and proposals for improving the mechanism for their provision.

The object of the study is the process of formation of the segment of pre-pensioners, and the subject field is the factors of influence on the process of formation of the labor market.

The purpose of the study is to develop a scientific understanding of the processes of formation of the segment of pre-pensioners of the Russian labor market under the influence of its external and internal factors.

The objectives of the study are to analyze the trends and content of the formation of the pre-pensioner segment in the labor market and assess the demand for state support measures by them in order to maintain working capacity and increase competitiveness in the labor market. An assessment of the scientific elaboration of the issues raised in the article by researchers abroad and in Russia is given. The methods of statistical, correlation-regression analysis, calculation of the average over a certain integral of functions, as well as the method of linear modeling of multiple regression of demand for measures of state support for pre-pensioners in the Russian labor market are used.

SCIENTIFIC ELABORATION OF THE RESEARCH TOPIC

Scientific solutions on the topic abroad are based on studies of practices to prevent workers from leaving the labor market and increase the level of activity among workers aged 50 to 65 years in OECD countries with more than forty years of experience in such activities [4–8]. For this purpose, various liberally oriented models of flexible retirement age or gradual retirement are used. The study by A. Soest, A. Kapteyn, and J. Zissimopoulos [9] is devoted to assessing the degree of their acceptability [9].

The US pension sector is maximally liberalized [10, 11]. At the same time, the report by A. Gurría (2018) notes that, despite the weakness of the employment protection system in the labor market and the absence of mandatory retirement age in the United States, the employment rate of the population aged 55–64 years is 3 p.p. higher than in other OECD countries.¹

The impact of changing the statutory retirement age on the labor supply of older people in OECD countries was studied by K. Geppert et al.

¹ OECD (2018), Working Better with Age and Fighting Unequal Ageing in the United States, forthcoming, OECD Publishing, Paris. URL: <https://www.oecd.org/social/working-better-with-age-and-fighting-unequal-ageing-in-us-davos-2018.htm> (accessed on 10.04.2022)

(2019).² M. Nikolova and C. Graham (2014) focus on the study of the optimal relationship between retirement age and the financial burden of public pension systems [12].

The scientific report by H. Dubois, G. Runceanu, and R. Anderson (2016) on extending working life through flexible pension schemes focuses on the issue of employment motivation in the pre-retirement age, both at the national and EU sectoral levels of EU Member States, mainly by reducing the working day by up to 80%.³

The results of an Aegon Longevity Center and Transamerica Center (2015) survey of 16,000 respondents on their readiness to retire and an analysis of the implementation of flexible pension measures in 15 countries in Europe, America, Asia and Australia show that the most common system in which an employee of pre-retirement age a special contract with more flexible terms of employment is offered. On average, 26% of pre-retirees over 55 years old prefer to retire before the age of 65, 55% are inclined towards a flexible system of work up to the official pension, and 27% of employers provide them with the opportunity to work part-time.⁴

Fifty percent of pre-retirees believe that their employer does not provide enough information and support to prepare for retirement. Nevertheless, pre-pensioners note a significant activity of social responsibility of 14–24% of employers in providing the following types of support:

- (1) opportunities to move from full-time to part-time employment;
- (2) work more suitable for older workers;
- (3) flexible pension schemes with work beyond the normal retirement age;
- (4) medical assistance in retirement;
- (5) financial advice;
- (6) retraining or advanced training.⁵

Studies of the economic activity of pensioners in the Russian labor market revived ten years ago, and those of pre-pensioners five years ago [13, 14]. In 2020, the HSE Labor Market Research Laboratory analyzed the regional features of employment and unemployment of the population of pre-retirement age in Russia. As a result, it was found that employed workers of pre-retirement age have, on average, higher levels of education than the general population of pre-retirement age; the range of places of employment for workers of pre-retirement age is limited; the unemployment rate for workers of pre-retirement age is at a low level.⁶ At the same time, 23.6% of Russian employers are not satisfied with the professional skills of pre-pensioners.⁷

The federal budget for the period from 2020 to 2022 provides for annual subsidization of the regions in the amount of 3.4 billion rubles⁸ to train pre-pensioners in the professional competencies that are currently in demand in the labor market. Calculations show that subsidies from the budget for the education of one pre-pensioner during this period will grow

² Labour supply of older people in advanced economies: the impact of changes to statutory retirement ages. Working Paper English 11 Jun 2019 Christian Geppert, Yvan Guillemette, Hermes Morgavi, David Turner Pages: 43 in URL: OECD Economics Department Working Papers (accessed on 10.04.2022).

³ Eurofound (2016), Extending working lives through flexible retirement schemes: Partial retirement, Publications Office of the European Union, Luxembourg. 88 p. URL: Extending working lives through flexible retirement schemes: Partial (europa.eu) (accessed on 10.04.2022).

⁴ OECD (2018), Working Better with Age and Fighting Unequal Ageing in the United States, forthcoming, OECD Publishing, Paris. URL: <https://www.oecd.org/social/working-better-with-age-and-fighting-unequal-ageing-in-us-davos-2018.htm> (accessed on 10.04.2022).

⁵ The New Flexible Retirement. Aegon Center for Longevity and Retirement (2015). URL: The New Flexible Retirement | Aegon (accessed on 10.04.2022).

⁶ Smirnykh L.I., Emelina N., Travkin P.V., Leonova L.A., Roshchin S. Yu., Solntsev S.A. Workers of pre-retirement age in the labor market in the Russian Federation: information bulletin. Roshchin S. Yu., Solntsev S.A., ed. National Research University Higher School of Economics. M.: Higher School of Economics; 2020. P. 8. URL: https://lirt.hse.ru/data/2020/07/22/1596769602/Pre_pensioner_e_book.pdf (accessed on 10.04.2022).

⁷ Ibid. P. 30.

⁸ Kostenko Ya., Sidorenko E. You will learn before retirement: how to distribute subsidies for the education of citizens 50+. News. November 11, 2019. URL: <https://iz.ru/941234/iaroslava-kostenko-elena-sidorenko/pered-pensiei-nauchishsia-kak-raspredeliat-subsidii-na-uchebu-grazhdan-50> (accessed on 07.04.2022).

from 444 to 478 rubles per year. In general, the allocated subsidies are focused on the annual education of only 75 thousand pre-pensioners out of the available 7 million people. Also, at the expense of budget financing, city, and regional job fairs are held, focused on the employment of pensioners.

To support unemployed pre-pensioners registered with the employment center, 16.4 billion rubles are planned in the budget of the Pension Fund of the Russian Federation for the period from 2020 to 2022 with an annual increase in volumes of 26.8%, 34.1%, and 39.1%, respectively.⁹

At the same time, it should be noted that the level of financial literacy of the population in general and, in particular, people of pre-retirement age is quite low [15, 16]. The behavior of pre-pensioners is characterized to a large extent by carelessness regarding the concern for ensuring the stability of the source, and sufficient retirement income through their actions in solving current social and labor problems [17]. Regarding independent investment in their future pension, 72% of the population have formed negative expectations due to the measures of the authorities to “restrict the use of pension savings”, 64% are afraid to invest due to “corruption in the financial sector and authorities”, and 52% have concerns for the safety of investments due to the “lack of clear control over the activities of the PFR” [17]. Also, the low level of financial literacy refers to knowledge of the basics of pension legislation. Both understandable explanations for the pre-pensioners of the point-based system in the Russian pension system and detailed information about the non-state pension system and its possibilities are needed [16].

To change this situation, according to D. S. Tulenty, A. S. Ermolaeva, P. G. Raba, it

is necessary to change the principles of implementation of pension relations, which will provide pre-pensioners with the opportunity to choose strategies for financial behavior. In this case, the future material well-being of pre-pensioners will largely depend on their own decisions. Increasing the financial literacy of the elderly is a necessary condition for making an effective individual decision on how to form a pension. At the same time, activities to ensure financial literacy should be aimed at the principles and tools for the formation of future pensions [18].

Among the problems of the formation of the pre-pensioner segment in the Russian labor market are increased risks of age discrimination by employers, pay, job status, precarization of employment [19–23]. The impact of gender differences on employment in the segment of pre-retirees was identified by M. Agranovich [24]. Nevertheless, A. Lukyanova and R. Kapeliushnikov give an optimistic forecast for the formation of the pre-pensioner segment in the Russian labor market [25].

A generalization of the scientific elaboration of the research topic shows that even the similarities in the behavior of pre-pensioners in the labor markets of different countries differ in the essence of the institutionalization of their mechanisms: in the countries of Europe, America, Asia, and Australia, liberal models of behavior regulation prevail, and in Russia — the paternalistic model. For this reason, the use of their results as arguments for our study is hardly acceptable, with the exception of instrumental components.

ANALYSIS OF TRENDS AND SEGMENT FORMATION CONTENT

In the study, we proceed from the fact that the labor resources represent “a part of the population with physical development, mental abilities and knowledge that are necessary for work” in the sectors of the economy.¹⁰

⁹ The budget included 4.4 billion rubles for early pensions for unemployed pre-pensioners. IAFI Banks today, 2019. URL: <https://bankstoday.net/last-news/v-byudzhnet-zalozhili-4-4-milliarda-rublej-na-dosrochnye-pensii-bezrabotnym-predpensioneram> (accessed on 08.04.2022).

¹⁰ Zlatin P.A. et al. Management of labor resources. Textbook for students of higher educational institutions in economic and managerial specialties. Zlatin P.A., Krekova M.M., ed. by

Таблица 1 / Table 1

Dynamics and structure of economic activity of pre-pensioners

Indicator	Years			Rate of change in 2020 to 2018, %
	2018	2019	2020	
Population of pre-retirement age, thousand people	9796.91	9522.98	9267.78	94.60
Total number of employees, thousand people	72 354	71 933	70461	97.38
Employment of pre-pensioners, thousand people	8271	8049.8	7665.9	92.68
Share of pre-pensioners in the total population, %	6.67	6.49	6.33	–
Share of pre-pensioners in the employed population, %	11.43	11.19	10.88	–
Employment rate of pre-pensioners, %	84.42	84.53	82.72	–
Unemployment rate of pre-pensioners, %	3.77	3.49	4.18	–
Level of economic activity of pre-pensioners, %	88.19	88.02	86.9	–

Source: compiled by the authors according to Rosstat. Results of the sample labor force survey. Relevant years. Moscow: Rosstat; 2018–2020, Tables 1.9; 2.1a; 4.3; 21. URL: <https://rosstat.gov.ru/compendium/document/13265> (дата обращения: 10.08.2021) / (accessed on 10.08.2021).

The working-age population is of paramount importance in the labor resources. It includes persons “mainly of working age, capable of participating in the labor process by their psychophysiological data”.¹¹ Threshold values of the working age are established by the legislative bodies of the central government.

The working-age population itself has different attitudes towards participation in socially useful activities in exchange for personal income. The population participating in the creation of such an income is classified

as economically active (labor force),¹² and not participating — as economically inactive. An important behavioral characteristic of the economically active population from the point of view of the issues under study is that not the entire labor force is realized in the labor market, but only in terms of the working capacity of the worker.

An innovation of the pension reform in 2018 was the increase in the age threshold of the working-age population to 60 years for women, to 65 years for men, and the allocation

Federal Agency for Education, Moscow State. industrial un-t. M.: MGIU publishing house; 2010. P. 4. URL: <https://search.rsl.ru/ru/record/01004920396> (accessed on 10.04.2022).

¹¹ Ibid. P. 5.

¹² Classification of statistical data on the composition of the labor force, economic activity, and status in employment. Methodological provisions on statistics. Moscow: Rosstat; 2006. URL: https://www.gks.ru/bgd/free/b99_10/isswww.exe/stg/d000/i000080r.htm (accessed on 10.04.2022).

of a special age category of the working-age population with the status of “pre-pensioners” in the final five-year plan. In general, the reform in the distribution of public goods has changed not only the timing of access for a significant part of the working-age population to receiving such personal income to the means of subsistence as an old-age pension but also the structure of the labor market. The reform affected the interests of the economically active part of the population to a greater extent, which changed the nature of its economic behavior, mainly in older age groups [2, 26].

Next, we will analyze the trends in the processes of the behavior of the population of pre-retirement age in the labor market. Rosstat data show that, despite a pronounced downward trend in the population of pre-retirement age from 2018 to 2020 by 5.4 p.p. (100–94.6%), their share in the total population was quite stable: 6.33–6.67% (*Table 1*).

At the same time, calculations according to Rosstat data, based on the average of a certain integral of regression functions in the interval of 50–55/51.5–56.5 years for women and 55–60/56.5–61.5 years for men, according to the employed population in the pre-retirement age, show that the number of this category of the economically active population, as the retirement age gradually increased, decreased at an average rate of 3.73% per year. As a result, over two years of reforms, their number decreased to 92.68%. With this outcome, the share of pre-retirees in the employed population for the period from 2018 to 2020 consistently decreased from 11.43 to 10.88% (*Table 1*). There is a pronounced trend toward a decrease in the pre-pensioner segment in the labor market with each subsequent stage of raising the retirement age to the indicator of the upper limit of the working capacity of the population.

According to our calculations, upon reaching the project milestone of the transformation of the labor resources of Russia in connection with the completion of the formation of the segment of pre-pensioners in the labor market, its total share in the total number of economically

active population will decrease from the current 10.88% to 9.76% (4.28% for women aged 55–59 and 5.48% in men aged 60–64). Since the share of men pre-pensioners will remain at the same level, the identified decrease will occur due to a reduction by more than a third of women pre-pensioners: from 6.12 to 4.28%. Thus, there are significant differences in the strategies for continuing the labor activity of men and women of pre-retirement age in the labor market: women prefer the status of “outside the labor force” to the status of “labor force”.¹³ At the same time, for women of pre-retirement age, even in the labor force, the average working time of participation in the “production process of economic entities” is 1.074–1.093 times less than for men, which confirms the conclusion that women are less interested in employment.

At the same time, the employment rate of pre-pensioners in 2018–2020 was 82.82–84.53% (*Table 1*), which is very close to the level of employment of population groups aged 30–49 (83.8–89.3%).¹⁴ Consequently, in the transition period, there is a high demand for pre-pensioners in the labor market. However, as the retirement age reform targets are reached, the employment rate of pre-pensioners may drop to 77% for men and 55% for women, and the overall employment rate in this population group will be 66%.

Table 2 gives an idea of the greatest demand for pre-pensioners by type of economic activity in 2019.

According to *Table 2* data, despite the fact that in 2019 the share of male pre-retirees in the employed population was 5.32%, and women 5.87%, the demand for the former in the above types of activities was 1.8–2.7 times

¹³ On the approval of the Official Statistical Methodology for the formation of a system of indicators of labor activity, employment, and labor underutilization, recommended by the 19th International Conference of Labor Statisticians. Order of Rosstat dated December 31, 2015. No. 680. Moscow: Rosstat; 2015. 32 p. URL: <https://rosstat.gov.ru/storage/mediabank/met-680.pdf> (accessed on 10.08.2021).

¹⁴ Labor force, employment, and unemployment in Russia. Moscow: Rosstat; 2020. 147 p. URL: https://rosstat.gov.ru/storage/mediabank/2EfrJGV/Rab_sila_2020.pdf (accessed on 10.08.2021).

Table 2

Demand for pre-pensioners by type of economic activity in 2019, %

Type of economic activity	Men	Women
Agriculture, forestry, hunting, fishing, and fish farming	13.8	14.0
Electricity, gas, and steam; air conditioning	13.2	15.7
Water supply; wastewater disposal, waste management, and remediation activities	15.0	15.8
Manufacturing	10.5	13.4
Transport and storage	11.7	13.8
Real estate	14.2	14.8
Education	14.2	13.6
Healthcare and social services	14.0	14.5
Construction	9.6	12.8
Culture, sports, leisure, and entertainment	9.6	13.5
Other	11.7	14.4

Source: compiled by the authors according to Rosstat. Labor Force, Employment and Unemployment in Russia. Moscow: Rosstat; 2020. 147 p. URL: https://rosstat.gov.ru/storage/mediabank/2EfrJGVJ/Rab_sila_2020.pdf (accessed on 10.08.2021).

higher than the average, ranging from 9.6 to 14.2%, and the latter — 1.6–2.4 times higher than the average, ranging from 12.8 to 15.8%. At the same time, the average level of demand for women in these types of activities in the labor market is 1.13 times higher than for men.

In general, for most types of economic activity in the labor market, there is a high demand for representatives of the pre-pensioner segment by employers. However, the labor mobility of pre-pensioners in the Russian labor market is half the average for all age groups.

The employment of pre-pensioners largely depends on the development of their professional capacity for work, determined in modern conditions by the level of education. According to the HSE research team (2020), the maximum employment rate of “the population of pre-retirement age is observed among holders of higher education (89.8%), and the minimum level is among those who do not have a basic general education (33.7%)”.¹⁵ In

total, the presence of secondary and higher education among pre-retirees significantly expands the “range of job availability”, since this is more mental work, for which they have enough individual performance, unlike those who do not have such education.

Analysis of the trends in the formation of the segment of pre-pensioners in the labor market cannot be complete without assessing the contribution of unemployed pre-pensioners to it [15, 24]. It should be noted that the unemployment rate in the segment of pre-pensioners is almost the same as in the group of the population aged 30–49 years (3.4–4.4%),¹⁶ and varies depending on the general situation in the labor market in the range of 3.49–4.18% (Table 1). Thus, the unemployment of pre-pensioners can be regulated by ordinary methods.

bulletin. Roshchin S. Yu., Solntsev S.A., red. National Research University Higher School of Economics. M.: Higher School of Economics; 2020. P. 16. URL: https://lirt.hse.ru/data/2020/07/22/1596769602/Pre_pensioner_e_book.pdf (accessed on 10.04.2022).

¹⁶ Labor force, employment, and unemployment in Russia. Moscow: Rosstat; 2020. C. 115. URL: https://rosstat.gov.ru/storage/mediabank/2EfrJGVJ/Rab_sila_2020.pdf (accessed on 10.08.2021).

¹⁵ Smirnykh L.I., Emelina N., Travkin P.V., Leonova L.A., Roshchin S. Yu., Solntsev S.A. Workers of pre-retirement age in the labor market in the Russian Federation: Information

According to a survey in 2020 by the recruiting company HeadHunter, it was revealed that 65% of non-working pre-pensioners are looking for a job, and among those who continue to work, 34%¹⁷ are looking for a job. For 35% of pre-pensioners, the search for a job lasts from a month to six months, and for another 31% — more than six months. For 87% of pre-pensioners, job searches are complicated. In 51% of cases, the difficulties are caused by low wages and the lack of work in professional fields, in 31% of cases the difficulty is due to the lack of work in compliance with the Labor Code, and in 26% — due to the remoteness of the place of work from home.¹⁸

The main reason employers refused employment to pre-pensioners was their age and health problems (32%), and in 36% of cases, the refusal was without explanation. At the same time, 62% of pre-pensioners themselves believe that their age at employment is a significant disadvantage, and in 38% of cases this disadvantage was a poor command of modern technologies. On the contrary, 67% of pre-pensioners consider “a more responsible approach to work” as their advantages, 60% — professional knowledge and experience, 52% — an interest in long-term employment, 45% — an understanding of work and the ability to achieve results, 36% — willingness to be a mentor.¹⁹

A 2020 survey of employers by the recruiting company HeadHunter revealed that the real reason for the refusal of 57% of pre-pensioner in employment is not the age, but “the discrepancy between the employer’s salary offers and the pre-pensioners’ expectations.”²⁰

In general, the segment of pre-pensioners in the labor market in 2018–2020 demonstrates almost the same level of participation in the labor force (86.90–88.19% — *Table 1*) as the

population groups aged 35–49 years (91.5–93.0%).²¹

Due to the objective decrease in the population of pre-retirement age, the costs of the authorities in base prices for indirect and direct measures to support the active participation of pre-retirees in the labor market will decrease.

The results of the analysis of the processes of the behavior of the population in the segment of pre-pensioner of the labor market can serve as a basis for explaining their trends and patterns, as well as justification by the authorities for assessing the effectiveness of their measures for the socio-economic support of pre-pensioners and entrepreneurs to enhance participation in the “production process of economic units”, corresponding their real reactions.

ASSESSMENT OF THE DEMAND FOR STATE SUPPORT MEASURES BY PRE-PENSIONERS

The general expectations of the population from the state measures in the pension sector can be judged by the VCIOM data through the attitude of part of the population to the pension reform. 90% of respondents believe that the state should act as the main source of financing pensions, invest resources in the pension provision of citizens in the present and future [17, 27].

The authors propose to determine the real demand for measures of state support for the activity of their participation in the labor market by pre-pensioners based on the hypothesis that their specific attitude to support measures is expressed by personal assessments of expectations associated with ideas about their own attitude to the conditions in which they have to act (live) with the measures provided by the state in the areas grouped in *Table 3*.

¹⁷ Work and age: Stereotypes and reality. Website: HeadHunter. July 31, 2020. URL: <https://hh.ru/article/27243> (accessed on 10.04.2022).

¹⁸ Ibid.

¹⁹ Ibid.

²⁰ Ibid.

²¹ Results of a sample labor force survey. Relevant years. Moscow: Rosstat; 2018–2020, Tab. 1.9. URL: <https://rosstat.gov.ru/compendium/document/13265> (accessed on 10.08.2021).

Table 3

Types of guarantees and benefits provided to citizens of pre-retirement age

Scope of support	Types of guarantees and benefits
Labor relations	Provision of increased unemployment benefits
	Early retirement
	Ban on dismissal due to age
	Providing opportunities for advanced training and retraining with the payment of a scholarship equal to the minimum wage under the programs of employment centers
	Provision of paid two days off for annual medical examination
Property relations	Retention of the right to receive a funded pension from the age of 55/60 years
	Granting the right to a mandatory share in the inheritance to citizens of pre-retirement (former retirement) age
	Preservation of the right of disabled women who have reached the age of 55 and men who have reached the age of 60 to receive alimony
	Exemption from property tax
	Reduction of the tax base (deduction) for land tax
Healthcare	Increase in financing by the Compulsory Social Insurance Fund of payments to enterprises for vouchers for sanatorium and resort treatment of pre-pensioners by 30%
	Provision of medications for free
	Preferential manufacture of dentures
Services	Reduced transport fares
	Discount on overhaul
	Discount on utility bills

Source: compiled by the authors.

The contents of *Table 3* show that support measures for pre-pensioners are aimed at four areas of their life: labor relations, property relations, healthcare and services. In total, the authors studied the need for sixteen support measures in the covered areas of life.

Based on the adopted methodology for assessing the demand for state measures to support citizens who are in pre-retirement age, the authors conducted a pilot survey of working pre-pensioners. The survey was conducted in order to use its results to create a methodology for developing a model for assessing the demand for measures to support pre-pensioners.

The survey involved citizens of pre-retirement age from eight subjects of the

Russian Federation: five subjects of the Central Federal District, one subject of the Southern Federal District and two subjects of the North Caucasus Federal District. The survey involved 24 women (64.9%) and 13 men (35.1%).

The methodological approach to analyzing the results of assessing the demand for state support measures by pre-pensioners is as follows.

The authors propose to identify quantitative assessments of the demand for certain types of state support measures by pre-pensioners in each of the four areas of their life using the scale of the bipolar semantic differential of verb antonyms according to the degree of demand for each of the proposed measures: “unnecessary-necessary” in seven degrees: “not at all necessary” — 0.00; “not necessarily” —

Table 4

Distribution of personal assessments of the demand for support measures in the field of employment by pre-pensioners, units

Weighted average of verbal assessments of the level of demand for support measures	Types of guarantees and benefits				
	Increased unemployment benefits	Early retirement	Ban on dismissal due to age	Providing opportunities for advanced training and retraining with the payment of a scholarship equal to the minimum wage under the programs of employment centers	Provision of paid two days off for annual medical examination
Total	0.61172	0.71683	0.85511	0.59589	0.734

Source: compiled by the authors.

Table 5

Distribution of personal assessments of the demand for support measures in the field of property relations by pre-pensioners, units

Weighted average of verbal assessments of the level of demand for support measures	Types of guarantees and benefits				
	Retention of the right to receive a funded pension from the age of 55/60 years	Granting the right to a mandatory share in the inheritance to citizens of pre-retirement (former retirement) age	Preservation of the right of disabled women who have reached the age of 55 and men who have reached the age of 60 to receive alimony	Exemption from property tax	Reduction of the tax base (deduction) for land tax
Total	0.72739	0.60678	0.54028	0.89933	0.77278

Source: compiled by the authors.

0.17; “rather not necessary” — 0.34; “it is difficult to say whether it is necessary or not” — 0.50; “rather necessary” — 0.67; “necessary” — 0.83; “extremely necessary” — 1.00..

The results of the survey were analyzed using the methodological approach described below. When processing the results of the survey, the following was established.

In the sphere of labor activity, which is directly related to the economic activity of the population in the labor market, the distribution of weighted average personal assessments of the demand for support from state bodies by

pre-pensioners by five types of measures was studied and presented in *Table 4*.

Table 4 shows that in the labor market, such a measure of state support as “a ban on dismissal due to age” is most in demand by pre-pensioners (0.85511 units). The received assessment at the verbal level means that this measure is “necessary”. The least demanded measure was “providing opportunities for advanced training and retraining with the payment of scholarships equal to the minimum wage under the programs of employment centers” (0.59589 units). On the verbal scale,

Table 6

Distribution of personal assessments of the demand for state support measures provided in the healthcare sector for pre-pensioners, units

Weighted average of verbal assessments of the level of demand for support measures	Types of guarantees and benefits		
	Increase in financing by the Compulsory Social Insurance Fund of payments to enterprises for vouchers for sanatorium and resort treatment of pre-pensioners by 30%	Provision of medications for free	Preferential manufacture of dentures
Total	0.7335	0.84867	0.76039

Source: compiled by the authors.

this measure is located between the estimates “it is difficult to say whether it is necessary or not” and “rather necessary”. Its low demand is explained by the fact that from 24 to 32% of pre-pensioners have a higher education, and 51% have a secondary vocational education [18, p. 36]. The range of variation between these measures is 43.5%, which is equal to two-and-a-half intervals of the applied semantic differential. The demand for the remaining three support measures varies from 0.61172 to 0.734 units. This means that their demand for supporting the economic activity of pre-pensioners in the labor market is not so decisive, since according to the semantic differential they are closest to the “rather necessary” assessment.

The generalized demand for support measures according to the weighted average is 0.70271 units. On this basis, we can conclude that, in general, the measures proposed by the authorities to support pre-retirees in the field of labor activity are assessed by them as “rather necessary”.

In the field of property relations, the distribution of personal assessments of the demand for five types of state support measures by pre-pensioners is presented in *Table 5*.

According to the data in *Table 5*, the greatest demand for pre-pensioners, according to the weighted average assessment, is observed in relation to the measure “exemption from property tax” (0.89933 units). The assessment received at the verbal level of the respondents means that this measure is “necessary”. The

least demand by pre-pensioners is observed in relation to the “preservation of the right of disabled women who have reached the age of 55, and men who have reached the age of 60, to receive alimony” (0.54028 units). On the verbal scale, this measure is close to the assessment “it is difficult to say whether it is necessary or not”. The range of variation between these measures is 66.45%, which is almost equal to four intervals of the applied semantic differential.

The demand for the remaining three measures of state support in the field of property relations by pre-pensioners varies from 0.60678 to 0.77278 units. This means that on the semantic differential, the remaining three measures are located closest to the “rather necessary” assessment (0.67 units).

The generalized demand for support measures according to the weighted average is 0.709312 units. Consequently, in general, the measures proposed by the authorities to support pre-pensioners in the field of property relations are assessed by them as “rather necessary” (0.67 units).

In the field of healthcare, which directly ensures the safety of the working capacity of pre-retirees in the labor market, the distribution of their personal assessments of the demand for support measures provided by state bodies was studied according to three types of measures (*Table 6*).

According to *Table 6* the weighted average assessment of the measure “provision of medications for free” is most in demand by

Table 7

Distribution of personal assessments of demand by pre-pensioners for support measures provided by state bodies in the service sector, units

Weighted average of verbal assessments of the level of demand for support measures	Types of guarantees and benefits		
	Reduced transport fares	Discount on overhaul	Discount on utility bills
Total:	0.89406	0.91039	0.92161

Source: compiled by the authors.

pre-pensioners (0.84867 units). According to the semantic differential, it is commensurate with the level of demand for the “necessary” (0.83 units). The remaining two support measures “increase in financing by the Compulsory Social Insurance Fund of payments to enterprises for vouchers for sanatorium and resort treatment of pre-pensioners by 30%” (0.7335 units) and “preferential manufacture of dentures” (0.76039 units) also gravitate to demand at the “necessary” level.

The generalized need for support measures according to the weighted average assessment in the healthcare sector is 0.780853 units. Consequently, in general, the measures proposed by the authorities to support their performance in the labor market are assessed by pre-pensioners as “necessary” (0.83 units) according to the semantic differential.

In the service sector, the distribution of personal assessments of the needs of pre-pensioners for state support was studied according to three types of indicators (Table 7).

Table 7 shows that the measure “discount on utility bills” (0.92161 units) is the most demanded by pre-pensioners according to the weighted average assessment. Its value is located in the center of the semantic differential of the interval between the demand levels “necessary” (0.83 units) and “extremely necessary” (1.0 units). At the same time, the levels of demand by pre-pensioners for the measures “reduced transport fares” (0.89406 units) and “discount on overhaul” (0.91039 units) are only 3.08 and 1.2% less than the maximum in the service sector.

The generalized demand for support measures according to the weighted average assessment in the service sector is 0.908687 units. Thus, the measures of support offered by the authorities in the service sector are assessed by pre-retirees at the level located in the center of the semantic differential in the interval between the levels of demand “necessary” (0.83) and “extremely necessary” (1.0 units).

In general, an analysis of the results of assessing the demand for support measures by residents of Russian regions of pre-retirement age showed that they expect measures from the authorities most of all in the service sector (0.908687 units — the assessment is between the “necessary” and “extremely necessary”). The measures of this support group increase the competitiveness of the labor force of pre-pensioners in the labor market. Thus, the “discount on overhaul” and “discount on utility bills” form preferential conditions for the reproduction of the working capacity of pre-pensioners in the labor market, driven by age-related health problems. The “reduced transport fares” measure increases competitiveness in terms of reducing the cost of bringing pre-pensioners their workforce to the labor market.

To a lesser extent, pre-pensioners demand state support measures for the safety of their ability to work in the labor market at the expense of the healthcare sector (0.780853 — according to the semantic differential, it is closer to the “necessary” assessment). However, with regard to the “provision of medications for free”, pre-pensioners confidently assess this measure as “necessary” (0.84867).

Table 8

Linear model of multivariate regression on variables of pre-retirement demand for support measures proposed by the authorities

Independent variables	Model coefficients, a_n	Standard error	t-statistic	P-value
Y – intersection, equal to a_0	0.375564	0.071	5.319	0.000
X1 – provision of increased unemployment benefits	-0.00749	0.032	-0.231	0.820
X2 – early retirement	-0.0019	0.046	-0.041	0.968
X3 – ban on dismissal due to age	0.029236	0.039	0.749	0.462
X4 – providing opportunities for advanced training and retraining with the payment of a scholarship equal to the minimum wage under the programs of employment centers	-0.03366	0.045	-0.748	0.463
X5 – provision of paid two days off for annual medical examination	-0.00054	0.054	-0.010	0.992
X6 – retention of the right to receive a funded pension from the age of 55/60 years	-0.02378	0.041	-0.582	0.567
X7 – granting the right to a mandatory share in the inheritance to citizens of pre-retirement (former retirement) age	0.154255	0.050	3.102	0.005
X8 – preservation of the right of disabled women who have reached the age of 55 and men who have reached the age of 60 to receive alimony	-0.06945	0.046	-1.496	0.150
X9 – exemption from property tax	0.055786	0.101	0.550	0.588
X10 – reduction of the tax base (deduction) for land tax	-0.02895	0.039	-0.740	0.468
X11 – increase in financing by the Compulsory Social Insurance Fund of payments to enterprises for vouchers for sanatorium and resort treatment of pre-pensioners by 30%	0.044609	0.047	0.947	0.355
X12 – provision of medications for free	-0.18835	0.093	-2.027	0.056
X13 – preferential manufacture of dentures	0.072122	0.043	1.685	0.107
X14 – reduced transport fares	0.17467	0.087	2.001	0.058
X15 – discount on overhaul	0.441169	0.123	3.584	0.002

Source: compiled by the authors.

The sphere of property relations has little to do with the behavior of pre-pensioners in the labor market. Despite the general demand by pre-pensioners in 0.709312 units of the semantic differential corresponding to the level “rather necessary”, such a support measure as “exemption from property tax” (0.89933) is characterized by them as “necessary”. The least demanded by pre-retirees of property relations is a measure of support in relation to the remote period from their pre-retirement period — “preservation of the right of disabled women who have reached the age of 55 and men who have reached the age of 60 to receive alimony” (0.54028 — “it is difficult to say whether it is necessary or not”). At the same time, the measure “exemption from property tax” (0.89933 units) is most in demand by pre-pensioners. Its level according to the semantic differential exceeds the assessment “necessary” (0.83 units).

The total demand by pre-pensioners for state support measures in the field of labor relations is at the level of 0.70271 units of semantic differential, which corresponds to the assessment “rather necessary” (0.67 units). At the same time, a significant decrease in the overall level of demand by pre-pensioners for measures of state support in the field of labor relations is affected by such a measure as “providing opportunities for advanced training and retraining with the payment of a scholarship equal to the minimum wage under the programs of employment centers” (0.59589). According to the semantic differential, this measure is located between the estimates “it is difficult to say whether it is necessary or not” (0.50) and “rather necessary” (0.67).

Thus, an analysis of the results of assessing the demand for pre-pensioners in eight regions of Russia on state support measures showed that theoretically, the level of demand for measures by pre-pensioners is explained by their influence on the development and preservation of working capacity, increasing competitiveness in the labor market by creating favorable conditions for reproducing the working capacity of pre-pensioners and

delivering their workforce to the labor market, and relevance in a time of their provision.

It is possible to form a holistic view of the interrelations and influence on each other of disparate types of demand for measures of state support for pre-pensioners in various aspects of maintaining and reproducing their working capacity, as well as increasing their competitiveness in the labor market using a general linear multivariate regression model:

$$Y = a_0 + a_1X_1 + \dots + a_nX_n, \quad (1)$$

where a_n — coefficients at variables X_n , n varies from 0 to i -th value.

To select the most appropriate dependent variable, which fully reflects the mutual influence and relationships between the various types of state support measures proposed by the authorities, a correlation analysis of the matrix of the initial 16 variables was performed. As a result of this analysis, it was found that the sum of the squared deviations for the X_{16} variable “discount on utility bills” is the maximum: 1.565. This circumstance served as the basis for choosing it as an independent variable with the designation Y .

The remaining types of measures of state support for pre-pensioners $X_1 - X_{15}$ are taken by us as independent variables. With respect to Y , a linear model of multivariate regression $X_1 - X_{15}$ was constructed. The found regression coefficients of independent variables and a number of statistical estimates for the resulting model are given in *Table 8*.

The analysis of the quality of the obtained model according to statistical estimates showed that the coefficient of multiple correlation tightness $R = 0.9547557$ between Y and independent factor signs of the demand for state support measures by pre-pensioners $X_1 - X_{15}$ turned out to be the maximum of all other options we tested.

The closeness of the reduced R value to one indicates a high statistical significance of the constructed multiple regression model. The revealed fact gives good reason to be confident

in the adequacy and reliability of the model explanation of the relationship between the demand for measures to support pre-pensioners of the dependent variable “discount on utility bills” Y and the factor (independent) of the characteristic $X1-X15$ (Table 8).

Let us characterize the revealed connections. Firstly, the model shows that if for all the studied support measures, types of guarantees and benefits offered by the authorities, the demand for “extremely necessary” among pre-pensioners is 1.0 units, then the dependent demand for “discount on utility bills” will be equal to 0.99328 units, i.e. will be demanded as a “extremely necessary” measure. Thus, whatever equal value is set for each independent variable, the Y value will also be equal to that value. Consequently, the demand for “discount on utility bills” by pre-pensioners can rightfully be considered a key parameter of demand for all other measures of state support.

Secondly, the value of the Y -intersection indicator, equal to 0.375564 units of demand, which is a sign of incomplete coverage of the variables of the model of the phenomenon under study, indicates that 37.55% of the demand for pre-pensioners is reflected in measures not yet included by government authorities in support measures. In an ideal model, the Y -intersection should be equal to zero, which is possible only as an exceptional case.

Thirdly, changes in the demand for pre-pensioners only for six support measures ($X7, X8, X12 - X15$) noticeably (0.07–0.441 units) affect the change in Y – the demand for “discount on utility bills” by pre-pensioners. Consequently, the demand for other support measures ($X1 - X6, X9 - X11$) should be equal to any of the arbitrary Y values in the range from 0.0 to 1.0 units with a small deviation of 0.001–0.0446 units.

Fourthly, of the support measures $X7, X8, X12 - X15$ the strengthening effect on Y of 0,0721–0,4411 units is only in measures $X7, X13 - X15$. On the contrary, they weaken the demand for pre-pensioners on Y by $-0,0694 \div -0,1883$ units in measures $X8$ and $X12$,

and vice versa, an increase in the demand of pre-pensioners on “discount on utility bills” will weaken their demand in measures $X8$ and $X12$.

In addition, it should be noted that all t -statistics for support measures $X7, X8, X12 - X15$ have such values that confirm their sufficient reliability from 90 to 98%.

In general, the developed model for assessing the demand for state support measures by pre-pensioners revealed good adequacy in highlighting the real strength and direction of the relationships of various types of demand, showed sufficient reliability in explaining the relationships between the types of demand for pre-pensioners in state support measures by regression coefficients with a dependent variable.

During the analysis of the model, it was proved that the key parameter for assessing the demand for measures to support pre-pensioners is such a measure as “discount on utility bills”. Demand for it serves as a benchmark for establishing acceptable demand criteria for all other support measures, based on the lower “necessary” (0.83 units) and upper “extremely necessary” (1.00 units) thresholds and are determined by the calculation method based on the indicators of the model. To check the sensitivity of the model of this sample, it is enough.

CONCLUSIONS

The study of the formation of the pre-pensioner segment in the labor market allows us to draw the following conclusions.

In most countries of Europe, America, Asia, and Australia, liberal models of regulating the behavior of pre-pensioners in the labor market prevail, while in Russia, the paternalistic model prevails. The mechanical transfer of methods for regulating the behavior of pre-pensioners from one model to another is often inadequate.

The low level of financial literacy of people approaching retirement age is the cause of careless behavior in regard to ensuring sufficient retirement income. Improving the financial literacy of pre-pensioners, aimed at the principles and tools for forming a future pension,

is a necessary condition for making an effective individual decision on the method of forming a pension.

The formation of the pre-pensioner segment in the labor market has a pronounced tendency to decrease with each subsequent stage of raising the retirement age to the upper limit of the working capacity of the population.

The sixteen measures of state support for pre-pensioners are aimed at four areas of their life: labor relations, property relations, healthcare, and services. The implementation of these measures is carried out at the expense of state funding.

In the field of labor relations, pre-pensioners employed in the labor market

most demand the measure of state support for the “ban on dismissal due to age”. In the sphere of property relations, the measure for “exemption from property tax” is more in demand by pre-pensioners. In the field of healthcare, the most demanded measure by pre-pensioners is the state support measure for the “provision of medications for free”, and in the service sector — “discount on utility bills”.

The research results can serve as a basis for explaining their trends and patterns, as well as for substantiating the assessment by the authorities of the effectiveness of financing the measures they take to provide social and economic support to pre-pensioners.

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E. V. Kamneva — sections “Scientific elaboration of the research topic” and “Analysis of trends and content of the formation of the segment”.

M. V. Polevaya — abstract, introduction, conclusions.

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