



NATIONAL RESEARCH UNIVERSITY
HIGHER SCHOOL OF ECONOMICS

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**THE EFFECT OF PENSION
GROWTH ON THE LABOR FORCE
PARTICIPATION OF PENSIONERS
IN RUSSIA**

BASIC RESEARCH PROGRAM

WORKING PAPERS

SERIES: PUBLIC AND SOCIAL POLICY
WP BRP 22/PSP/2019

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THE EFFECT OF PENSION GROWTH ON THE LABOR FORCE PARTICIPATION OF PENSIONERS IN RUSSIA

This paper examines the impact of the 34% increase in pensions in Russia at the end of 2009 and the beginning of 2010 on the labor market participation of pensioners. Several particular features of the pension system in Russia allow us to estimate the net effect of income from such a reform. For evaluation, we used a method combining difference-in-difference and regression discontinuity methods. The results showed that real pension growth by a third reduced labor force participation rate by 6–7.1% for men and by 6–6.4% for women. The heterogeneity of the impact of this reform was also investigated. Estimates showed that the effect was lower for more educated people or those living in villages and was completely absent among those who rated their health as poor or very bad.

JEL Classification: H55, J21, J26

Keywords: pension system, labor force participation, Russia, social security

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Introduction

Most developed countries went through a significant reduction of elderly employment in the second half of the twentieth century. The effective age of labor market exit decreased by five years for men and women from the mid-1970s until the early 2000s (OECD, 2017). This was largely due to the development of pension systems: almost all the aged population in these countries were covered by a pension system by the beginning of that period, and the amount of benefits continuously increased till the early 1990s (Blundell, French, Tetlow, 2016). In the first decades of the 21st century, the reverse trend appeared: the labor supply of old people began to grow and many economists believe this was because of the strengthening of eligibility requirements for pensions, increasing pension age, or replacement rates reduction (Blundell, French, Tetlow, 2016).

In Russia, the growth of labor force participation (or labor supply) of the elderly took place against the rising generosity of the pension system. The actual amount of pension benefits in Russia increased by more than three and half times between 2000 and 2015. As a result, the position of pensioners has changed. In the early 2000s, pensioner households were the group most exposed to poverty risk, while in recent years absolute and relative poverty risks among them became lower even than employed people of working age (Sinyavskaya et al., 2016). However, the average age of labor market exit increased by 2.0 years for men and 3.4 years for women² in that period, which may be explained by other factors: growing demand for labor, improved health and rising levels of education.

The most considerable increase of pensions took place in December 2009 and January 2010 when real pensions grew by more than one third. The aim of our study is to find out how these changes influenced the labor force participation of pensioners in Russia.

This paper analyzes the impact of pension reforms on the short-run labor force participation response in Russia. The analysis adopts a quasi-experimental approach exploiting a substantial increase in pension income. The paper also estimates the heterogeneity of labor supply effects across gender, education level, place of residence and health status. Russia is an interesting case-study for such an analysis due to its specific pension system and the availability of high-quality panel data. Almost every man and woman is eligible to a full pension when they reach pension age and there are no incentives to postpone the receipt of pension after pension age.

² Source: OECD-stat. URL: <http://www.oecd.org/els/emp/average-effective-age-of-retirement.htm>

The RLMS-HSE database was used as a source of data for the empirical analysis³. RLMS-HSE survey has been conducted annually since 1994, and nearly 15,000 respondents are interviewed annually. The uniqueness of this database is that it is a longitudinal representative survey of households in Russia covering a long period of time. The questionnaire of this study includes questions on employment status, household structure, income and expenditure, and the health of individuals.

The paper has the following structure. The first section provides a review of studies of how pensions influence the labor force participation of the elderly in developed and developing countries. The second section describes features of the Russian pension system. The third section presents the database and method used. The fourth section contains the principal results of econometric assessments. In the conclusion, we list main findings.

Background

Numerous empirical estimates show that pension rates are negatively correlated with labor supply. However, different methods and samples applied for the assessment of this effect provide different results, and there is no consensus on the degree of such an impact. Empirical estimators show that although pension size plays a role when making a decision on exiting the labor market, changing of the amount of pension benefit does not explain all the changes in the labor force participation of the elderly (Burtless, 1986; Krueger and Pischke 1992; Blau and Goodstein, 2010; Hanal, 2010; Brown, 2012; Danzer, 2013).

The main idea of determining the net effect of pension size on labor supply is to apply quasi-experimental assessment methods when two groups of people with similar characteristics are entitled to pension benefits of different amounts as the result of a pension scheme reorganization. Such a reorganization should be sudden so that individuals are unable to alter their labor market behavior in advance to prepare themselves for amendments to the pension law. In their pioneer paper, Krueger and Pischke (1992) analyzed the situation after the US pension reform of 1972, when pension benefits of one age group decreased while pension benefits of other age groups remained unchanged. The authors found that the change in pension benefits produced a small but statistically significant effect on the labor behavior of individuals.

There are also other studies using gaps between pension rates caused by sharp increases or decreases in pension benefits. Hanal (2010) studied the effect of decreasing early retirement

³ Source: "Russia Longitudinal Monitoring survey, RLMS-HSE, conducted by HSE University and OOO "Demoscope" together with Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology of the Federal Center of Theoretical and Applied Sociology of the Russian Academy of Sciences. (RLMS-HSE web sites: <http://www.cpc.unc.edu/projects/rlms-hse>, <http://www.hse.ru/org/hse/rlms>)

pensions on the labor behavior of individuals in Germany; Mastrobuoni (2009) analyzed the same for USA.

Another approach to assessing the influence of pensions is to investigate the specificities of pension law. Liebman et al. (2009) considered many factors (long record of service; the pension contributions of a spouse which significantly exceed that of the individual; widow status, etc.) which create gaps between pension benefits in the USA.

Works devoted to the implementation or modernization of social security systems in developing countries are of particular interest. Aging populations and urban migration are factors that made many countries of Asia, Latin America and Africa introduce and develop their own social security systems. Studies show that extending the coverage of pension payments and/or increasing pension different effects on the labor supply of the aged: from statistically insignificant in Juarez et al. (2010) and Ning et al. (2016) or low negative significance in Kaushal (2014) to a considerable decrease of employment in de Carvalho Filho (2008). It is difficult, however, to compare these effects due to differences in the reforms themselves: whether they cover those 60–64 years old or only the over-70s; the generosity of social security systems and the status of older people are different in such countries as India, China, Mexico or Brazil.

Transition countries have come into focus less frequently. Their pension systems were established long ago and reforms suitable for analysis appear less often. In one of few papers on this topic, Danzer (2013) used the sharp increase of the minimum pension in Ukraine in 2004 to assess the effect on labor activity. Using discontinuity and difference-in-difference methods, the author showed that the twofold increase of pensions resulted in the probability of labor market exit of 33–37% for men of pension age, and 28–30% for women.

As we show, due to the peculiarities of the pension system in Russia, the analysis of the net income effect of developing countries is much closer than that of developed countries. A change in pension rates in Russia has the same net income effect on labor force participation as in many developing countries. Similar pension rate changes create both an income effect and a substitution effect in developed countries.

The Pension System in Russia

For a long time, the standard pension age in Russia was 60 years for men and 55 years for women which is much lower than in most OECD countries⁴. It was enough to have 5 years of labor experience to be entitled to a pension⁵. This labor experience includes work almost in any officially registered field of activity, except for state and military service, where separate pension systems are implemented. Thus, practically all Russians attaining pension age are entitled to a pension. However, the pension does not depend on current wages and employment status and there are practically no additional incentives for late registration for pensions as this enhances the pension amounts by relatively little.

Nearly one third of pensioners receive pension payments before attaining pension age due to early pension schemes⁶. On average, employees who have accumulated a particular amount of experience in some professional field or worked in “Far North” conditions may receive pension payments 5 or 10 years before reaching the standard pension age. These benefits are aimed at engaging additional employees in occupations with low wages (for example, in education and healthcare).

Private pension schemes are poorly developed in Russia. According to official statistics, the number of people receiving non-state pension benefits did not exceed 4%, and the number of members of such funds was no more than 10% of the total number of the employed⁷.

Simplified access to pension payments and a low pension age amid the economic recession of the 1990s resulted in a significant decrease of average rates of labor pensions in that period (see Figure 1). By 1999, both real pensions and wages were only a third of 1991 levels. From 2000, a long period of pension increase started. In 2010, immediately after the economic crisis of 2008–2009, there was the largest increase of pensions since the Soviet era: pensions grew by 34%. Wages did not grow at such a rate, so the average pension relative to the average wage increased from 28% in 2009 to 36% in 2010. This was due to the combination of a number of measures:

- the indexation of pensions was much higher than inflation and average wage growth;

⁴ Pension age will be gradually increased to 65 years for men and 60 years for women in the period from 2019 till 2028.

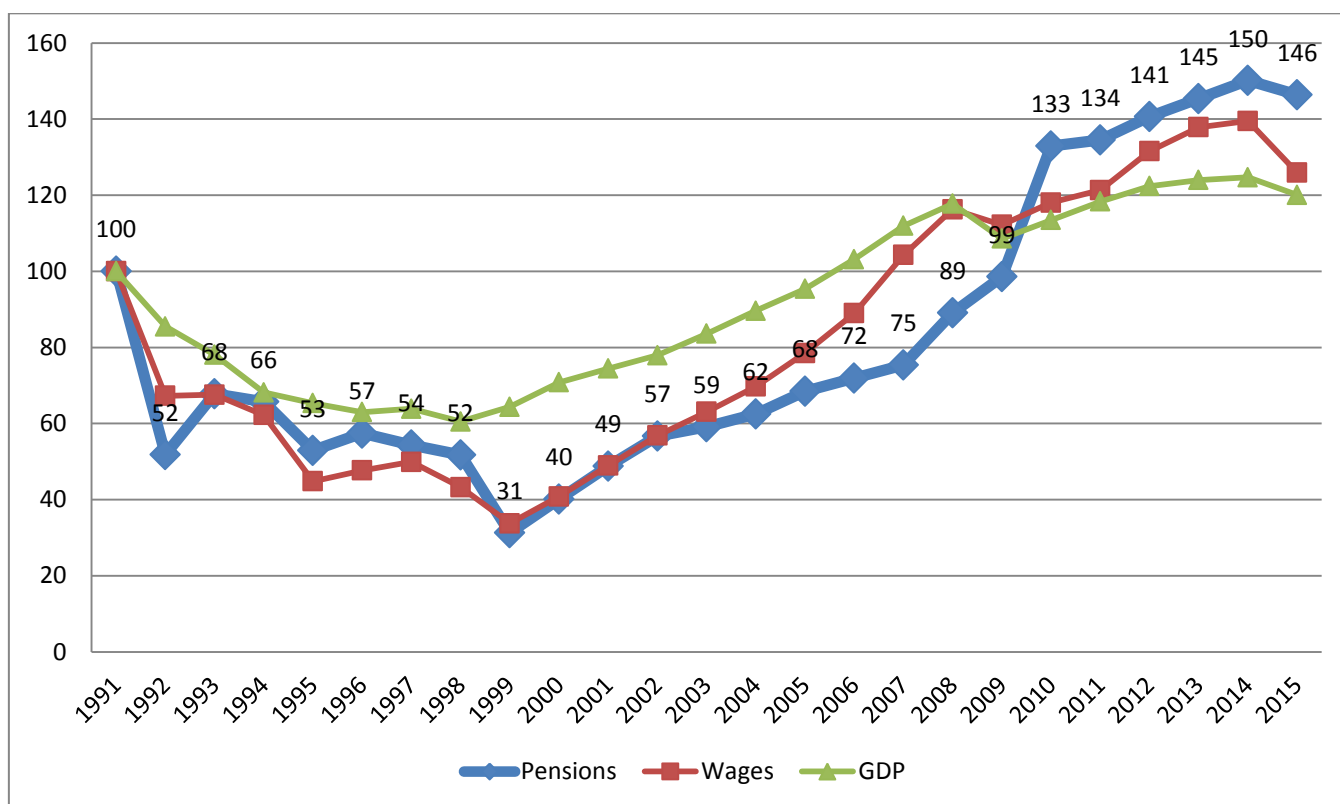
⁵ From 2015, necessary labor experience has been increased to 15 years, and the requirements for minimum amount of contributions necessary for receiving pension payments were introduced.

⁶ Firstly, pension age is decreased by 5–10 years for persons with a record of experience in arduous conditions or in the Far North conditions (i.e. in the areas beyond the Arctic Circle or equated localities). Secondly, education and healthcare employees may register their pension rights after attaining the established labor experience and, therefore, they are also eligible for earlier retirement age.

⁷ Russian Federal State Statistics Service data. Social and economic indicators of the Russian Federation in 1991–2017. URL: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1270707126016

- the fixed part of pensions increased by 30% from December 2009;
- pension valorization started in 2010, i.e. there was an additional bonus for labor experience gained before 1991. This measure had the most notable effect on payments to older pensioners;
- payments for pensioners whose benefits were below the poverty line were increased to the regional minimum subsistence level from the beginning of 2010.

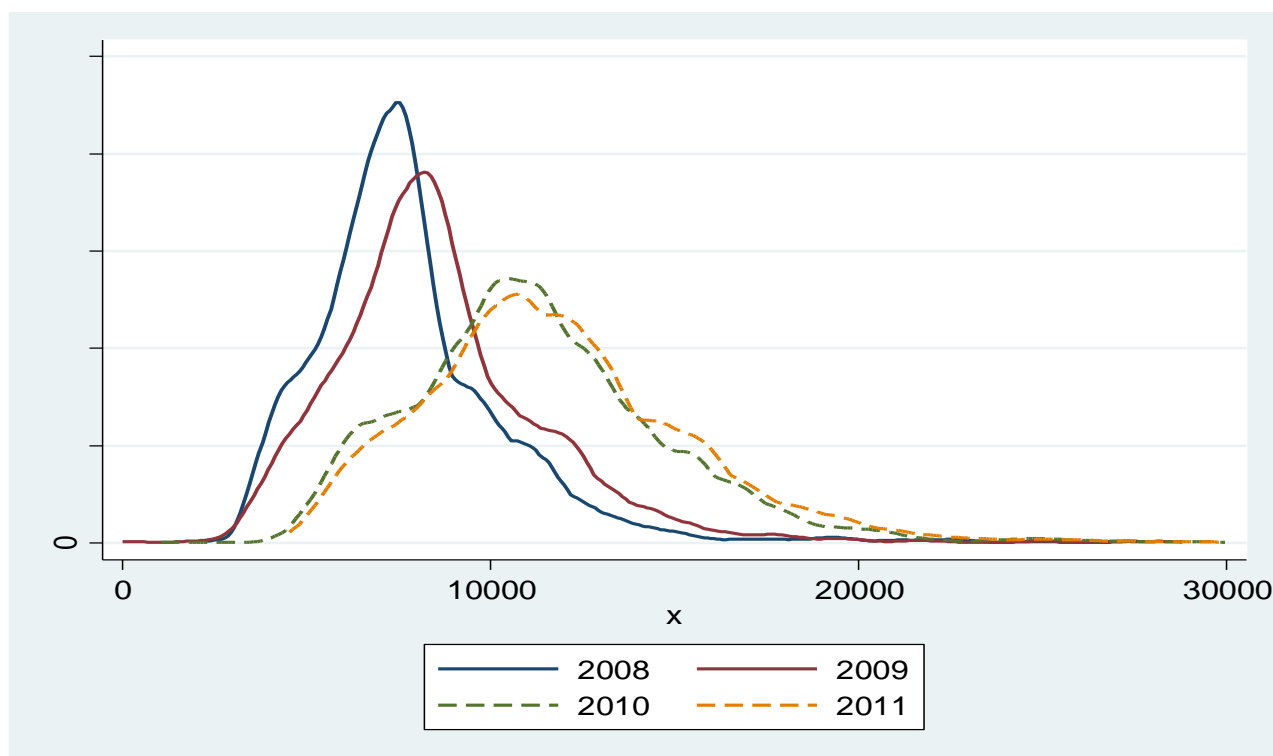
After 2010 pension growth was suspended, and in 2015, during the latest economic crisis, the real pension rate dropped for the first time in 15 years.



Source: Federal State Statistics Service (FSSS)

Figure 1 – Dynamics of real pensions, wages and GDP relative to the level of 1991, in %

Figure 1 provides a more complete picture of changing pension rates in the period concerned. Real pension rates increased by 31% from 8,534 rubles to 11,202 rubles at 2014 values from the end of 2009 until the end of 2010, according to RLMS-HSE respondents. This is three times higher than the average pension indexation 2001–2008. After 2010, the real growth of pensions was suspended. The second "hump", clearly seen in the allocation of pensions 2010–2011, is a result of bringing pension rates up to the minimum subsistence level.

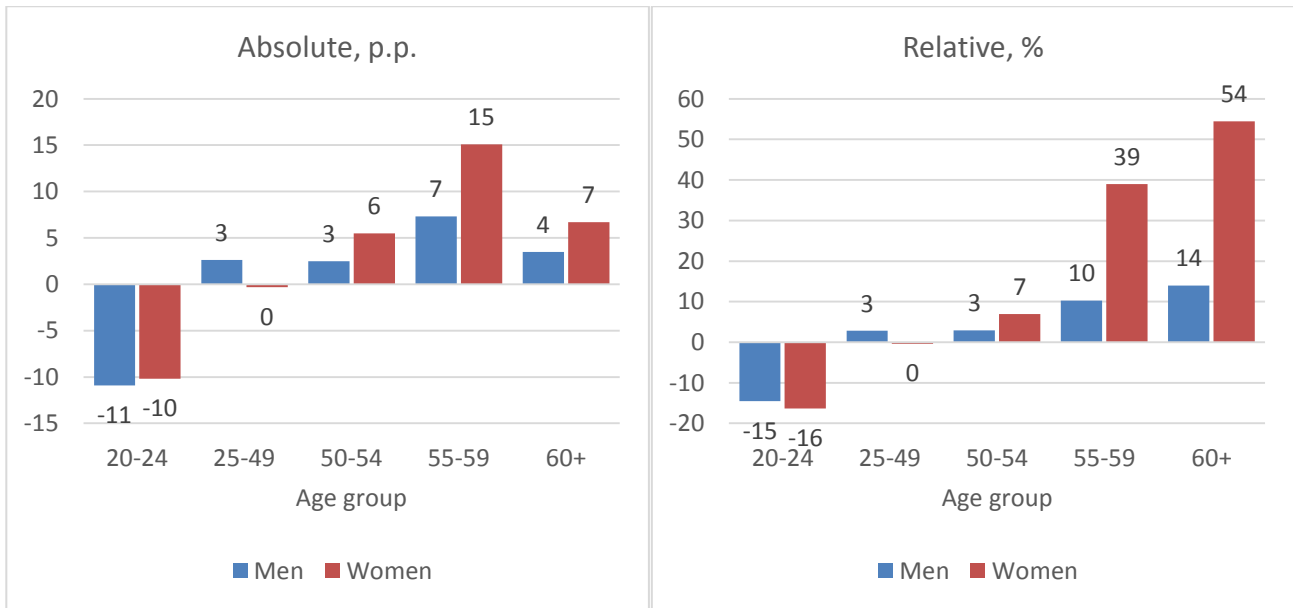


Source: RLMS-HSE, 2008-2011

Figure 2– Kernal density estimation of the real size of old-age pensions distribution (in 2014 prices), rub.

The labor force participation of older men and women increased 2000–2015 and much more quickly than in other age groups. This was largely due to the fact that the reserves for increasing the number of employed people of middle age had been almost exhausted by 2000: 91–94% of men and 81–90% of women 25–49 years old were economically active.

Let us compare different groups of older persons: of pension age and nearing pension age. Women 55–59 demonstrated the sharpest growth in labor force participation – over 15 percentage points while for women 50–54 this value was only 5.5 percentage points. Therefore, even with increasing pension benefits, women of pension age continued entering the labor market faster than those who were not yet 55. However, for men the situation is quite different: the growth of labor force participation of individuals over 60 years was lower 2000–2015 than for those nearing pension age. The relative growth rates show that the most significant changes occurred in 60–72 year-olds.



Source: FSSS, LFS, 2000-2015

Figure 3 – Absolute and relative changes in the labor force participation of men and women, 2000-2015

Data and methods: the empirical assessment of the impact of pension growth

In order to find the net effect of pension growth, a control group is necessary. The increase of pension rates in 2010 may serve as an example of such a quasi-experiment.

Firstly, the income growth is exogenous as it was sudden. The increase of pensions in the period concerned was uneven, the average increase, 2001–2009, was 10.7%. Therefore, the 2010 increase was more than three times higher. The additional measures to increase pension rates in that year, mentioned above, were announced several months before being implemented and the population were unlikely to be able to change employment status within this period.

Secondly, the Russian pension system does not provide any additional incentives deforming the labor behavior of individuals. Pension benefits are paid to almost all employed persons reaching pension age, they neither depend on their other income nor require leaving the labor market. Finally, the pension system does not create any incentives for late registration of pension rights.

To determine the net income effect arising for the sharp change of pensions we use a model that is a combination of two methods: the discontinuity method and difference-in-difference.

The first method compares two groups: pensioners and those not yet entitled to a pension. If we compare people of nearly the same age with similar social and demographic parameters,

the difference in labor force participation will be explained by the availability of a pension. Thus, people of pension age are the treatment group while persons who are not yet entitled to a pension are the control group.

The second method enables us to define how the 2010 increase influenced the labor supply of these groups. This increase in pensions was sudden, which allows us to use the change of pensions as a quasi-experiment. The increase should have an effect on labor force participation of pensioners but not on the control group.

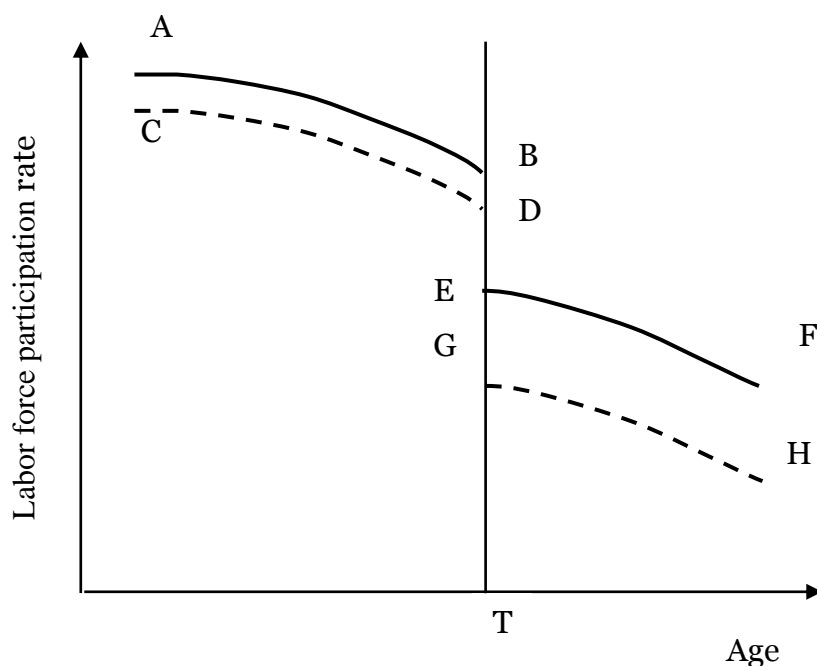


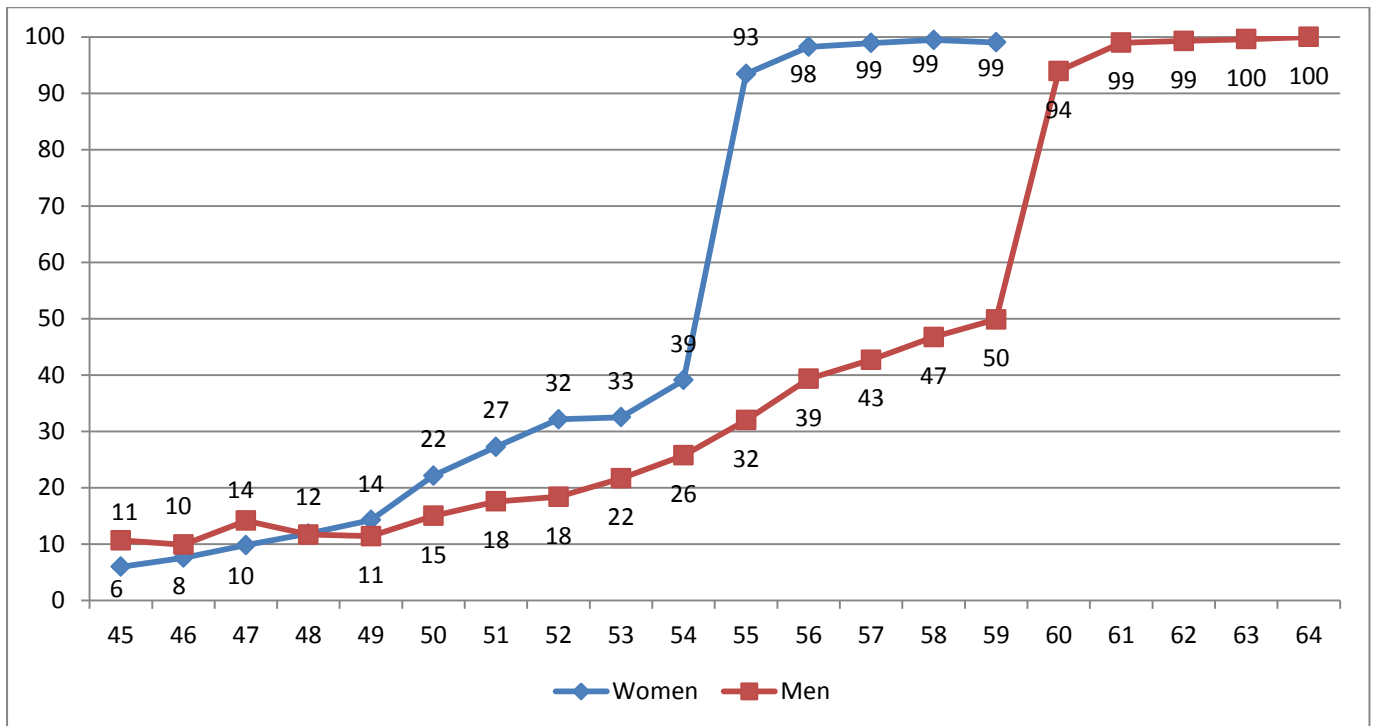
Figure 3 – Labor force participation rate depending on age, example

Graphically this may be represented as in Figure 4. Let $ABEF$ be the level of labor supply depending on age in year t . It continuously decreases to the pension age, T , then there is a drop and subsequent smooth decrease. In this case, the gap, BE , results from the effect of pension rates on labor force participation.

Let us assume that in year $t+1$ pensions increased, and there was an externally caused general change in the labor force participation rate. The new labor participation-age curve will have the form $CDGH$. The shift from AB to CD is completely determined by external factors but not increasing pension rates, while the shift from EF to GH reflects the impact of both factors. The net effect of the pension rate increase will be the difference between EG and BD .

In Russia, almost one third of pensioners register their pension rights 5–10 years before the standard pension age, moreover there are many disabled pensioners in the oldest age group (Figure 5). We selected the status of a pensioner as an indicator dividing the treatment and control groups but not age, so as not to exclude this rather large category of people. Therefore,

the graphical representation is not absolutely true as a part of population is also attributed to the treatment group. Sampling in this analysis was limited to men aged 45–64 and women 45–59.



Source: RLMS-HSE, 2008-2011

Figure 5 – Share of pension recipients in different age groups, %

Formally, we designed the following regressions to assess the change of labor market participation of the elderly (y) with the growth of pension rates in 2010:

$$y = P\beta_1 + d\beta_2 + (P \times d)\beta_3 + age\beta_4 + X\beta' + u$$

where,

P is a dummy variable showing whether a person receives a pension. The coefficient of this variable will indicate the influence of the pensioner's actual status on his/her labor participation;

d is a dummy variable for the year of interview. Coefficients of this variable will show the impact of general economic factors on the employment of the whole sample against a set reference year;

$P \times d$ are a series of the interactions of a pensioner's status and the yearly dummy variable. The coefficients of this will reflect the effect of pensioner specific factors. Here, the main factor is the increase of pension rates in comparison with the reference year;

X are a series of variables demonstrating health condition, marital status, etc.

One of the key assumptions of this method is the fact that the pension rate change will affect only beneficiaries of pensions. Pension variation should not influence the behavior of

other individuals in the market. However, this is not so in the long term: the growth of pensions, with all else being equal, should make jobs entitled to early retirement more advantageous. But in the short- and medium-terms individuals will not be able to adapt. The required specific experience for early retirement pension is 25–30 years which is why the labor market adjustment to the pension rate growth in the four-year period will be minimal.

It is expected that increasing pension rates by one third may have an uneven effect on elderly employment: it will be immediate for some and with a certain lag for others. Therefore, we took 2010 and 2011 as the *post*-reform period and 2008 and 2009 as the *pre*-reform period.

Table A1, in Appendix, provides descriptive statistics, separately for men and women, for pensioners and non-pensioners in the pre-reform and the post-reform periods.

There are four main differences between pensioners and non-pensioners in our sample for 2008–2011. Firstly, it is obvious that pensioners are older. Secondly, their labor market participation rate is much lower. Thirdly, their health is worse according to subjective and objective parameters. The number of pensioners who have suffered a heart attack or a stroke and the number estimating their health as bad or very bad is 2–3 times higher than non-pensioners. Finally, the education level of men receiving pensions is much higher than that of men not receiving pensions. However, there are no such differences between women. This is explained by the low male life expectancy in Russia, especially, among undereducated men. The differences of other characteristics are statistically insignificant.

A considerable increase in pension rates was seen from 2008 to 2011. Although, the labor participation rates of pensioners and non-pensioners remained practically unchanged during that time. This is shown in the diagrams of the labor market participation rate of different age groups 2008–2011. The slope of curves was almost unchanged 2010–2011 after the pension rates were increased by one third.

The period from the 3rd quarter of 2008 until the 2nd quarter 2009 was a time of economic crisis. An economic recession should decrease demand for labor without having any direct effect on labor market participation. However, even if we assume that the latter indicator was also changed due to the crisis, we could expect that pensioner participation in the labor market should be more volatile and drop much more significantly than in other groups. The labor demand of pensioners and of persons nearing the pension age did not increase.

The impact of increasing pensions on the labor force participation of the elderly in Russia: econometric estimates

In order to test the hypothesis that increasing pension rates has effect on the employment of the elderly population, we used several econometric methods. The longitudinal nature of data allows us to apply fixed-effects panel methods. Labor force participation was used as a dependent variable. The dependent variable was set to 1 if the respondent was employed or had unemployment status and 0 otherwise. We determined two specifications of models for regressions: without control variables (short specification) and with control variables (full specification). Using fixed effects in regressions allowed us to keep only those variables whose values could have changed with age: the self-assessment of health, having had a stroke, marital status, the employment of a partner, non-earned income log (except for pensions). The results of econometric assessments are provided in Table 1.

Table 1 – The impact of changes in the size of pensions on labor market participation, panel regression with fixed effects

	Men		Women	
	Short specification	Full specification	Short specification	Full specification
Pensioner	-0.214*** (0.032)	-0.221*** (0.034)	-0.094*** (0.022)	-0.086*** (0.025)
2010-2011	0.027** (0.012)	0.035*** (0.014)	0.018 (0.012)	0.027* (0.014)
Pensioner * 2010-2011	-0.062*** (0.016)	-0.071*** (0.017)	-0.061*** (0.014)	-0.064*** (0.016)
Age	-0.024*** (0.005)	-0.022*** (0.006)	-0.022*** (0.005)	-0.024*** (0.006)
Health (base - average)				
Poor or bad health		-0.079*** (0.018)		-0.039** (0.017)
Good or very good health		0.012 (0.012)		-0.011 (0.015)
Marital status (1 = married)		-0.025 (0.053)		0.018 (0.037)
Employment of the spouse (1 = married and spouse working, 0 = either spouse not working, or no spouse)		0.062*** (0.019)		0.023 (0.022)
Log of nonlabor income		-0.011*** (0.003)		-0.006*** (0.002)
Intercept	2.047*** (0.285)	2.080*** (0.314)	1.907*** (0.261)	2.031*** (0.297)
R ² - within	0.063	0.083	0.046	0.050
Number of groups	3105	2899	3430	3104

(individuals)				
Number of observations	7654	6734	8324	7061

Notes. Robust standard errors in parentheses. The level of statistical significance is indicated by asterisks: * $p < 0.05$, ** $p < 0.05$, *** $p < 0.01$.

The results in Table 1 are as expected: the pensioner status increases the probability of labor market exit, bad or very bad self-assessed health and non-earned additional income. The probability of labor force participation also decreases with age. In 2010–2011, the general labor force participation rate grew, which may be connected with the economic recovery.

The interaction of pensioner status with the dummy variable for 2010–2011 is statistically significant at the 1% level and shows that pensioner labor force participation dropped during that period. As we have already said, we believe such a decrease may be caused, primarily, by the considerable and sudden growth of pensions. According to the data, this reduced the labor supply of the population by 6.2–7.1% for men and by 6.1–6.4% for women.

Since the dependent variable is a dummy variable, we used non-parametric assessment methods, i.e. a fixed-effects panel logit regression, to check robustness. The assessment results are provided in Table A2 in Appendix. The signs of the coefficient values and their statistical significance remained unchanged indicating the high quality of the model.

In order to check the robustness, we used an alternative variable determining pensioner status. In the above models the status of a pensioner was determined on the basis of receiving a pension. In this case disabled pensions and survivor's pensions were also taken into account as they also were increased. However, most of the population starts receiving a pension after the pension age is reached. Subsequently, an age variable was used in the alternative model. The results did not change significantly (Table A3 in Appendix)⁸.

Finally, differences in the effect of increasing pensions for various population groups were estimated. We divided our sample into subsamples by education level, self-evaluation of health, and place of residence. We used a fixed-effects panel regression (short and full specifications) for assessment. Table 2 shows values of the coefficients and robust standard errors for the key variable which is the interaction of pensioner status and the dummy variable for 2010–2011 and the number of observations.

⁸ We also estimated the interactions of the pensioner's status with dummies for years other than 2010-2011. They were statistically insignificant.

Table 1 – Heterogeneity of the impact of changes in the size of pensions in 2010 on employment rate

	Short specification		Full specification	
	Coefficient and robust standard error	Number of observations	Coefficient and robust standard error	Number of observations
Education:				
Primary	-0.059 (0.038)	1196	-0.072* (0.044)	1053
Upper secondary	-0.057** (0.029)	2822	-0.072** (0.031)	2415
Post-secondary non-tertiary	-0.068*** (0.023)	4025	-0.075*** (0.026)	3510
Short-cycle tertiary	-0.051** (0.021)	4465	-0.52** (0.022)	3908
Tertiary	-0.062*** (0.020)	3452	-0.059*** (0.023)	2891
Health:				
Poor or bad health	0.001 (0.048)	2180	-0.001 (0.054)	1902
Average health	-0.072*** (0.013)	10737	-0.078*** (0.015)	9343
Good or very good health	-0.084** (0.036)	3000	-0.068* (0.037)	2550
Place of residence:				
Urban areas	-0.070*** (0.012)	11517	-0.075*** (0.014)	9861
Countryside	-0.042** (0.019)	4461	-0.048** (0.021)	3934

Notes. Robust standard errors in parentheses. The level of statistical significance is indicated by asterisks: * $p < 0.05$, ** $p < 0.05$, *** $p < 0.01$.

The growth of pensions had a more significant effect on undereducated people (school or primary technical education). They receive lower wages on average, and as the distribution of pension rates is more uniform than that of wages, increasing pensions had much more profound effect on employment for these people.

The reform had no impact on people assessing their health as bad or very bad. As shown in many studies, including, with respect to Russia, Denisova, (2017), people with poorer health leave the labor market earlier. In this case, similar to Denzer's (2012) study for Ukraine, we assume that for such people monetary effects are not critical for their employment decision.

Besides, the assessments show that the pension reform response of individuals living in cities was higher than that of individuals in rural areas. This result remains robust even

controlling for health, non-earned income and marital status. We assume that this may relate to specific features of employment in cities compared to villages and rural areas. It may be possible for the employed in rural areas to reduce working hours.

Conclusion

We have shown that, unlike in many developed countries, labor market participation grew from 2000 among the elderly in Russia, which was followed by an increase in pensions with unchanged pension eligibility. However, these mutual dynamics are explained by other factors because sudden changes of pension rates discouraged people from continuing to work. Thus, the real growth of pensions by one third in 2010 had a significant effect on the probability of a labor market exit of men and women of pension age.

We suggest that the elasticity of the labor supply of the elderly by the level of pension is lower in Russia than in many developed countries. If a person can work and at the same time receive a pension, and the pension rate is almost independent of the age of pension registration, the incentives for leaving the labor market after a pension rate increase may be much lower. In countries where pensions are paid only to unemployed pensioners, increasing pension rates creates additional incentives for leaving the labor market, especially for those whose wages were relatively low. In Russia, this group will tend to retire on a pension less often, keeping both sources of income instead.

As a result, exit from the labor market in Russia means a loss of a considerable part of the gross income. The 2010 pension reform increased pensions by a third, yet, the latter remained relatively low for the most individuals and created an incentive for labor market exit for only a small part of population. However, controlling for other factors, increasing pension rates gradually reduced the employment of pensioners. The labor force participation of men and women who were pensioners reduced by 6–7 percentage points in 2010–2011. The labor market participation reduction is not noticeable in terms of aggregated statistical indicators. We can assume this was due to the fact that pension increases have practically stopped since 2011; according to RLMS-HSE data, in the following five years average pension rate increased just by 3.7%. The grow rate of wages and the minimum subsistence level was much higher, and this reduced the relative value of pensions. In these conditions the slight reduction of labor supply, found by empirical estimators, appeared to be unstable. Further, increasing pension rates had an effect on the incentives for labor market exit only for healthier individuals. Taking into account the high mortality rate and low life expectancy in Russia, especially among men, it is not surprising that the effect of increasing pension rates was lower than in many other countries.

The low rate of pensions compared to wages is the factor which restricts the probability of leaving the labor market for most of the pension age population. The pension system mechanism which creates almost no incentive for exiting the labor market after the pension age is reached also contributes to this effect.

References

1. Blau, D. M., & Goodstein, R. M. (2010). Can social security explain trends in labor force participation of older men in the United States? *Journal of human Resources*, 45(2), 328-363.
2. Blundell, R., French, E., & Tetlow, G. (2016). Retirement incentives and labor supply. In *Handbook of the economics of population aging* (Vol. 1, pp. 457-566). North-Holland.
3. Burtless, G. (1986). Social security, unanticipated benefit increases, and the timing of retirement. *The Review of Economic Studies*, 53(5), 781-805.
4. Danzer, A. M. (2013). Benefit Generosity and the Income Effect on Labour Supply: Quasi-Experimental Evidence. *The Economic Journal*, 123(571), 1059-1084.
5. de Carvalho Filho, I. E. (2008). Old-age benefits and retirement decisions of rural elderly in Brazil. *Journal of Development Economics*, 86(1), 129-146.
6. Denisova I.A. (2017). Exit of Senior Age Cohorts from the Russian Labour Market: a Survival Analysis Approach. *Population and Economics*. 1(1), 152–175.
7. Hanel, B. (2010). Financial incentives to postpone retirement and further effects on employment—Evidence from a natural experiment. *Labour Economics*, 17(3), 474-486.
8. Juarez, L. (2010). The effect of an old-age demogrant on the labor supply and time use of the elderly and non-elderly in Mexico. *The BE Journal of Economic Analysis & Policy*, 10(1).
9. Kaushal, N. (2014). How public pension affects elderly labor supply and well-being: Evidence from India. *World Development*, 56, 214-225.
10. Krueger, A. B., & Pischke, J. S. (1992). The effect of social security on labor supply: A cohort analysis of the notch generation. *Journal of labor economics*, 10(4), 412-437.
11. Liebman, J. B., Luttmer, E. F., & Seif, D. G. (2009). Labor supply responses to marginal Social Security benefits: Evidence from discontinuities. *Journal of Public Economics*, 93(11-12), 1208-1223.
12. Mastrobuoni, G. (2009). Labor supply effects of the recent social security benefit cuts: Empirical estimates using cohort discontinuities. *Journal of public Economics*, 93(11-12), 1224-1233.

13. Ning, M., Gong, J., Zheng, X., & Zhuang, J. (2016). Does new rural pension scheme decrease elderly labor supply? Evidence from CHARLS. *China Economic Review*, 41, 315-330.
14. Sinjavskaja O. V., Birjukova S. S., Ermolina A. A., Fajzullina D. R. (2016). Position of pensioners: dynamics, factors of poverty and the possible consequences of a policy to limit pension benefits. [Dohodnoe polozhenie pensionerov: krizisnaja dinamika, faktory bednosti i vozmozhnye posledstvija politiki po ogranicheniju pensionnyh vyplat]. Moscow.: Institute for Social Policy NRU HSE.
15. Stock, J. H., & Wise, D. A. (1990). The pension inducement to retire: An option value analysis. In *Issues in the Economics of Aging* (pp. 205-230). University of Chicago Press, 1990.

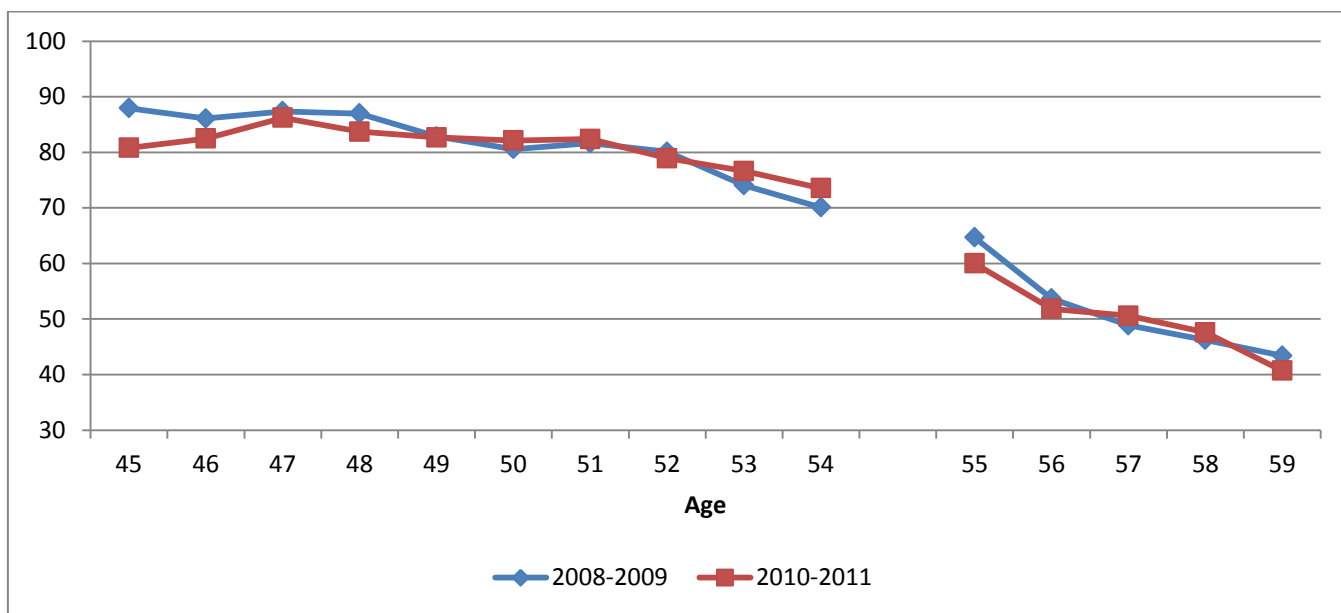
Appendix

Table A1 – Comparison of Pensioners and Non-Pensioners

	Men				Women			
	Pensioners		Non-Pensioners		Pensioners		Non-Pensioners	
	2008-2009	2010-2011	2008-2009	2010-2011	2008-2009	2010-2011	2008-2009	2010-2011
Number of observations	1046	1843	1889	2881	1531	2326	1775	2695
Labor force participation rate, %	45.2	42.6	86.5	86.3	56.8	54.0	85.2	84.7
Age	57.6	58.3	50.9	51.2	55.0	55.3	49.3	49.5
Pension size, rub. in 2014 prices	10217	13335			8637	11478		
Health, %								
Poor or bad health	25.6	22.7	6.7	6.6	20.5	20.0	9.0	9.2
Average health	62.3	64.6	66.5	63.9	69.4	69.3	73.2	69.4
Good or very good health	12.1	12.7	26.8	29.6	10.1	10.7	17.8	21.4
Education, %								
Primary	10.8	10.0	9.4	8.9	8.1	6.6	4.5	4.2
Upper secondary	16.7	14.8	21.0	22.6	16.1	16.3	15.9	15.8
Post-secondary non-tertiary	29.0	28.1	32.7	31.8	19.5	18.8	21.0	21.1
Short-cycle tertiary	21.8	19.0	19.4	19.0	33.4	36.0	35.7	34.3
Tertiary	21.8	24.2	17.5	17.8	22.9	22.4	23.0	24.6
Survived a heart attack, %	27.0	27.5	9.2	9.9	25.6	26.1	14.7	14.9
Survived a stroke, %	5.5	6.9	1.0	1.3	3.6	3.7	0.8	0.9
Married, %	87.7	88.1	89.5	90.5	62.7	60.9	69.2	69.0
Married and spouse working, %	46.0	42.2	63.6	62.4	38.5	36.7	50.7	49.6
Log of nonlabor income	8.6	8.7	8.6	8.6	8.1	8.2	8.4	8.5

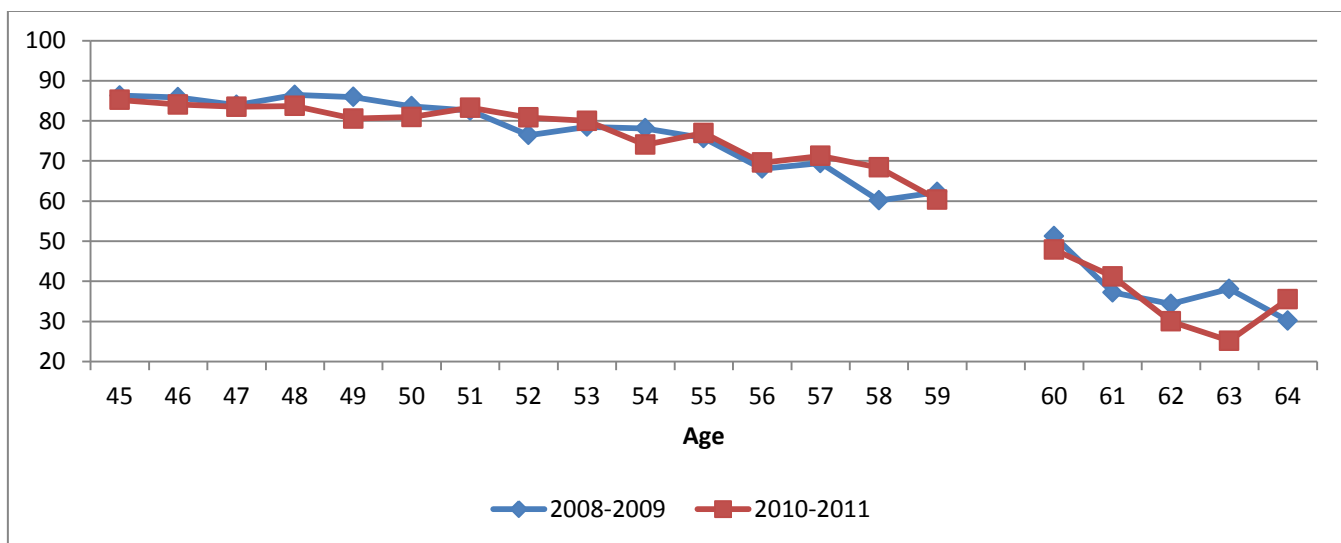
Source: RLMS-HSE, 2008-2011

Figure A1 – Labor force participation rate of women by age, in %



Source: RLMS-HSE, 2008-2011

Figure A2 – Labor force participation rate of men by age, in %



Source: RLMS-HSE, 2008-2011

Table A2 – The impact of changes in the size of pensions on labor market participation, panel logit regression with fixed effects

	Men		Women	
	Short specification	Full specification	Short specification	Full specification
Pensioner	-1.792*** (0.410)	-1.887*** (0.484)	-1.318*** (0.390)	-1.330*** (0.439)
2010-2011	0.575** (0.269)	0.732** (0.306)	0.366 (0.269)	0.563* (0.303)
Pensioner * 2010-2011	-1.033*** (0.275)	-1.207*** (0.311)	-1.011*** (0.281)	-0.994*** (0.307)
Age	-0.456*** (0.110)	-0.431*** (0.126)	-0.479*** (0.107)	-0.534*** (0.121)
Health (base - average)				
Poor or bad health		-1.047*** (0.295)		-0.638** (0.281)
Good or very good health		0.210 (0.249)		-0.365 (0.263)
Marital status (1 = married)		-0.686 (0.862)		0.246 (0.584)
Employment of the spouse (1 = married and spouse working, 0 = either spouse not working, or not spouse)		0.891*** (0.307)		0.316 (0.296)
Log of nonlabor income		-0.229*** (0.067)		-0.156*** (0.052)
Pseudo R ²	0.185	0.249	0.203	0.224
Number of groups (individuals)	393	337	396	332
Number of observations	1319	1097	1300	1053

Notes. Robust standard errors in parentheses. The level of statistical significance is indicated by asterisks: *p<0.05, **p<0.05, ***p<0.01.

Table A3 – The impact of changes in the size of pensions on labor market participation, panel logit regression with fixed effects, alternative model

	Men		Women	
	Short specification	Full specification	Short specification	Full specification
Pension age and older (60 years for men, 55 years for women)	-0.103*** (0.034)	-0.114*** (0.037)	-0.042** (0.021)	-0.057** (0.023)
2010-2011	0.015 (0.012)	0.020 (0.013)	0.007 (0.012)	0.015 (0.014)
Pension age and older * 2010-2011	-0.069*** (0.022)	-0.076*** (0.024)	-0.057*** (0.017)	-0.059*** (0.019)
Age	-0.027*** (0.006)	-0.024*** (0.006)	-0.024*** (0.005)	-0.024*** (0.006)
Health (base - average)		-0.089*** (0.019)		-0.038** (0.017)
Poor or bad health		0.018 (0.012)		-0.009 (0.015)
Good or very good health		-0.023 (0.054)		0.018 (0.037)
Marital status (1 = married)		0.061*** (0.020)		0.024 (0.022)
Spouse employment (1 = married and spouse working, 0 = either spouse not working, or not spouse)		-0.010*** (0.003)		-0.006*** (0.002)
Intercept	2.146*** (0.289)	2.121*** (0.319)	1.979*** (0.269)	2.027*** (0.306)
R ² - within	0.038	0.057	0.036	0.044
Number of groups (individuals)	3105	2899	3430	3104
Number of observations	7654	6734	8324	7061

Notes. Robust standard errors in parentheses. The level of statistical significance is indicated by asterisks: *p<0.05, **p<0.05, ***p<0.01.

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