

Senior Age Cohorts in the Russian Labour Market: Potential Effects of Raising Retirement Age

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Денисова И. А. Выход старших возрастных когорт с рынка труда: анализ методами дожития. Население и экономика. — 2017. — Т. 1. — № 1. — С. 22–49.

Denisova I. A. 2017. Exit of Senior Age Cohorts from the Russian Labour Market: a Survival Analysis Approach. Population and Economics. Vol. 1. No. 1. P. 152–175.

Motivation

Policy-relevant:

Retirement age reform: females from 55 to 60, males from 60 to 65

Rationale behind:

Population aging: expected sizeable decrease of working age population - by 13.5 mn, from 70% in 2010 to 56.6% in 2050

Risks of Increasing Pension Fund deficit under modest economic growth

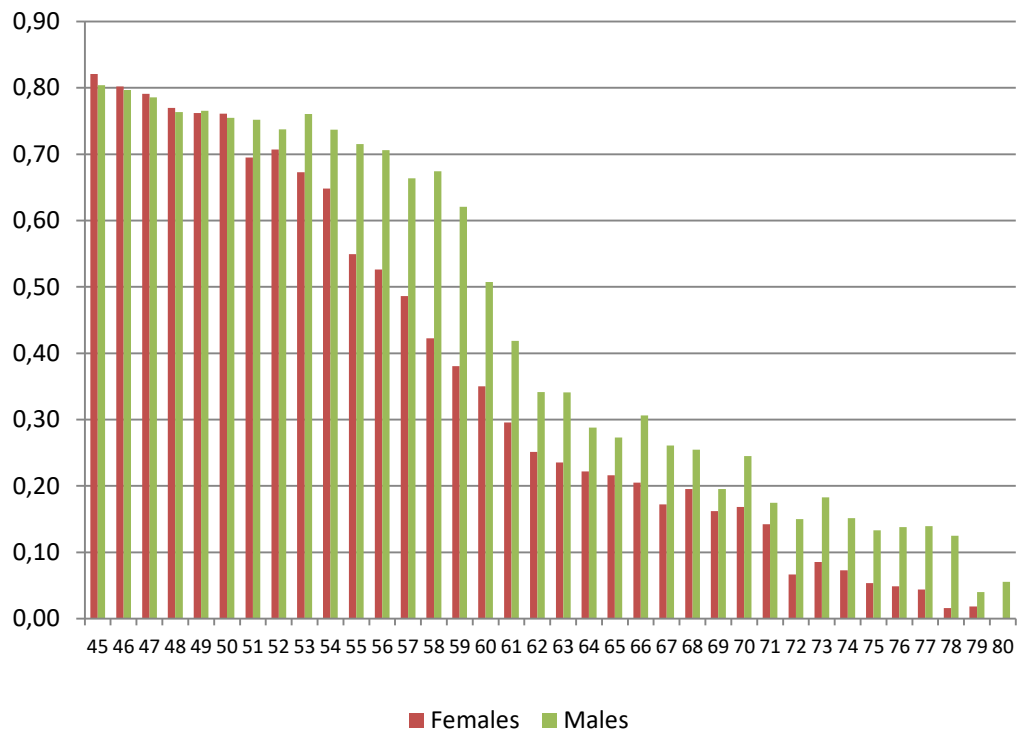
- How large would the shock to individual plans be?
 - Many still in the labor market beyond statutory pension age
- Labor market constraints?
 - Health
 - Skills
 - Motivation
 - Labor demand

Academic-literature-relevant:

- Exit to pension-age inactivity in a different environment of combination of
 - no penalty for work beyond pension age,
 - underdeveloped public insurance (against loss of income)
 - lack of risk-free long-term private financial instruments
- Pension age and occupational structure
 - Rubinstein, Saure, Zoabi 2016

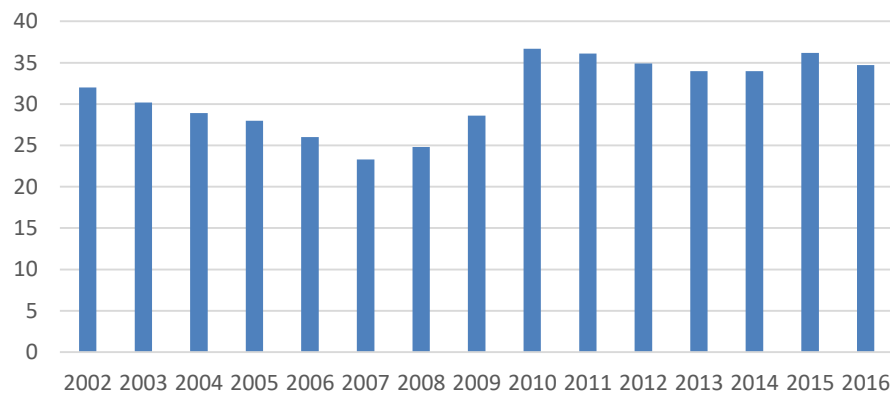
Russia: stimuli to continue labor life beyond pension age

- Low pension age
- No penalty for work beyond pension age
- Low replacement rates (pension to wage)
 - Gerber and Radl 2014: low income is a motive to continue labor life
- Weak stimuli introduced by 2015 reform (stimuli to postpone application for pension)



Share of working at age 45-80, males and females

Average pension replacement rate



Research questions

- What are the determinants of exit from labor market to pension-age inactivity?
 - Statutory pension age
 - Health
 - Reservation wage vs wage in the labor market
 - Family circumstances
 - Income
 - Labor demand
 - Skills (education and experience)
 - Ability to adopt, mobility characteristics
- Male/female asymmetries
- The focus is on
 - the rate of exit from the labour market at various ages,
 - the factors which accelerate or slow down departure from the labour market, lengthening or shortening people's working lives

Data

- Russian Longitudinal Monitoring Survey: 1995 – 2015
- Nationally representative data (about 5 ths households and 10 ths adults each round)
 - Sample – two-stage random sample of addresses based on 1989 micro-census
 - World-level standards of sampling, selection and training of interviewers, data quality control
- Has a panel component though sizeable attrition
- Subsample of 45-72 age group

<http://www.cpc.unc.edu/rlms>

Definition of pension-age inactivity:

- Does not work & Gets pension & Does not want to work
- Permanent exit to inactivity (temporary exits are disregarded)

Methodology

- **Survival analysis**
 - to get rid of bias due to right censoring
 - hazard rates for non-censored and survival functions for censored episodes

- **Episode: time till pension age inactivity**

- **Proportional hazard model**

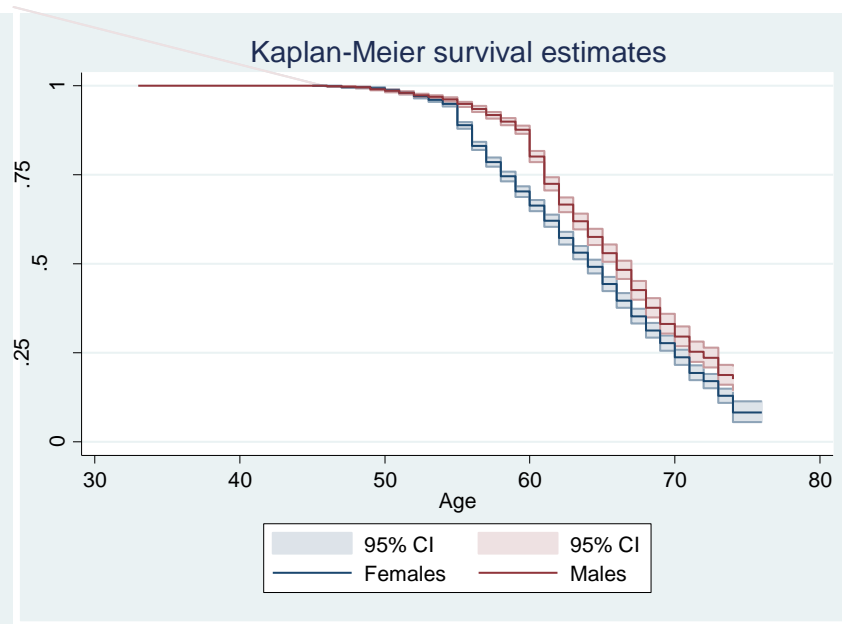
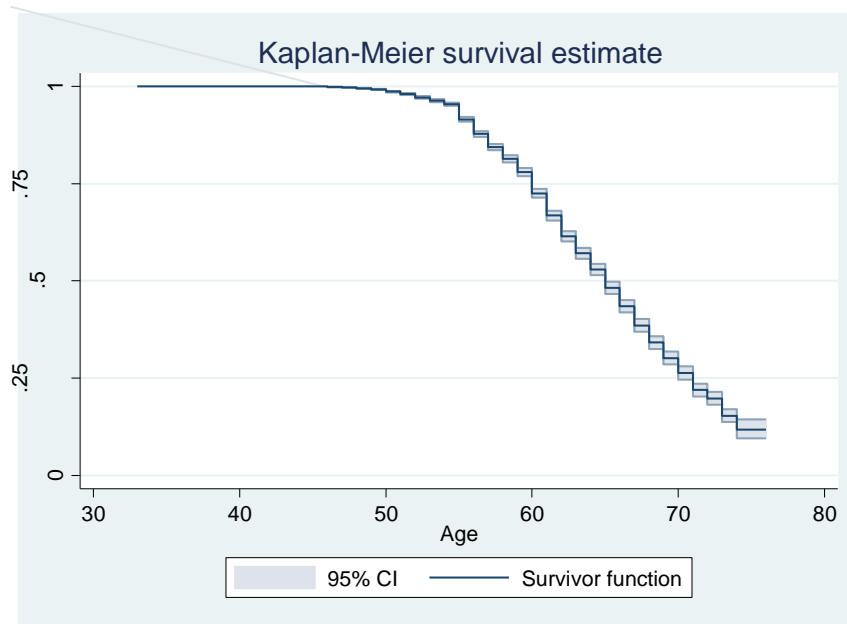
$$\lambda(t, x, \beta, \lambda_0) = \phi(x, \beta) \lambda_0(t),$$

$$\phi(x, \beta) = \exp(x' \beta) \quad \partial \ln \lambda(t, x, \beta, \lambda_0) / \partial x = \beta$$

- Tried parametric – Weibull and Gamma specifications
- Semi-parametric – Cox specification – is chosen based on goodness-of-fit analysis
- Robust SE estimates with clustering by individuals

Explanatory variables

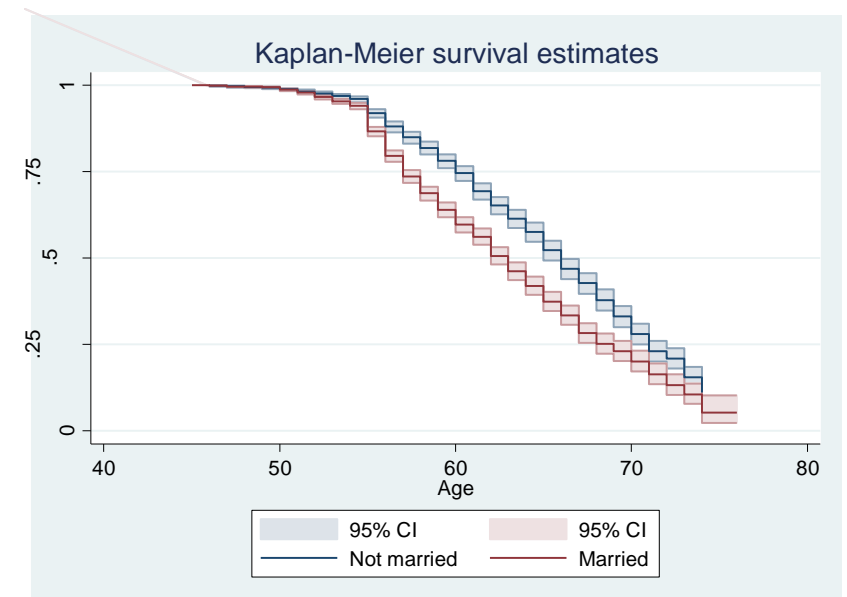
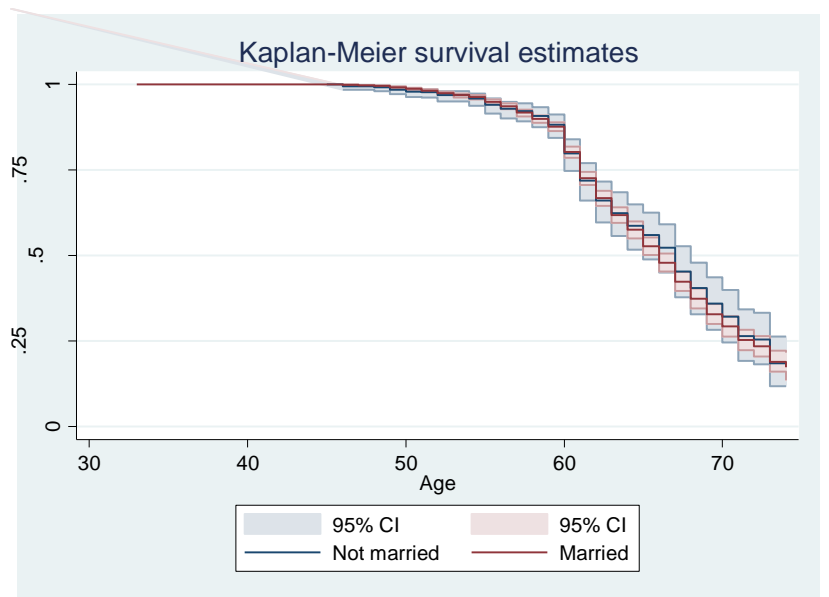
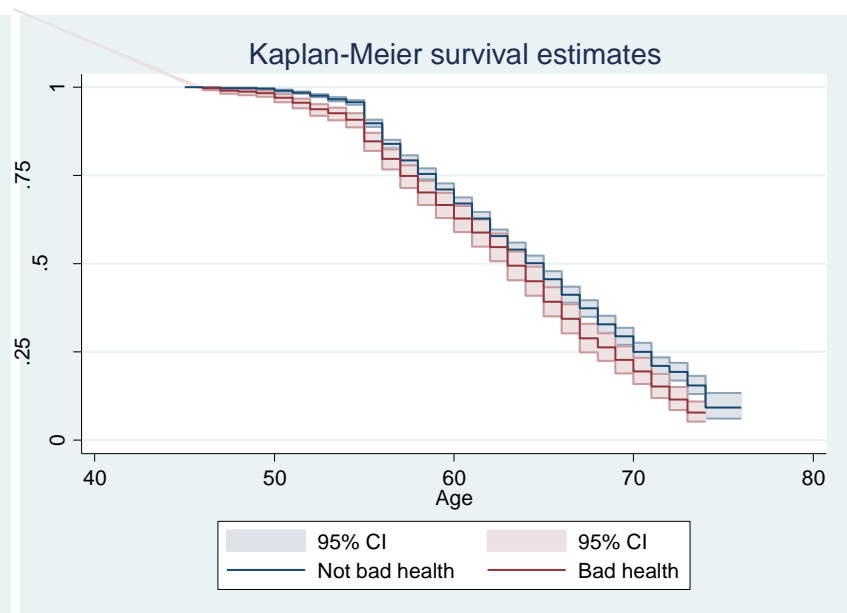
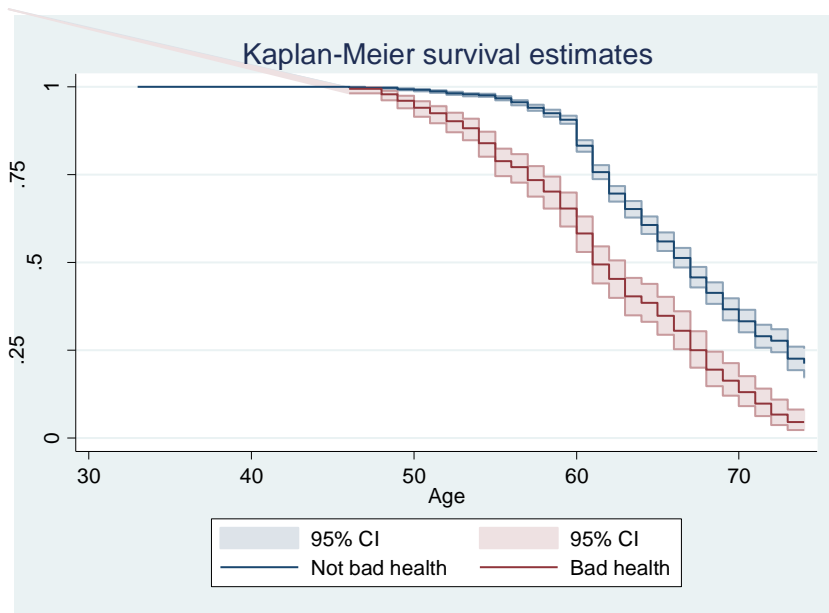
- *Attainment of statutory pension age*
- *Education*
- *Family circumstances*
- *Labor market*
 - *Occupational groups*
 - *Entrepreneurship and self-employment*
 - *Work at state enterprise*
 - *Downward occupational mobility*
 - *Unemployment*
- *Replacement rate*
- *Health*
- *Income*
- *Place of residence*
- *Year FE*



		Survival time (years)		
		25% of sample	50% of sample	75% of sample
Sample mean		60	65	71
	<i>Sex</i>			
Females		58	64	70
Males		60	65	71

	Total		Males		Females	
	Mean	St.Dev.	Mean	St.Dev.	Mean	St.Dev.
Age	55,341	0,028	55,097	0,043	55,523	0,037
Sex: Males - 1, Females - 0	0,427	0,002				
Marital status: Married	0,714	0,002	0,886	0,002	0,586	0,003
<i>Health</i>						
Self assessed health: poor and very poor	0,159	0,001	0,133	0,002	0,178	0,002
Diagnosed heart attack	0,030	0,001	0,044	0,001	0,020	0,001
Diagnosed stroke	0,026	0,001	0,028	0,001	0,024	0,001
Diagnosed diabetes	0,069	0,001	0,037	0,001	0,093	0,001
<i>Education</i>						
Below secondary school	0,167	0,001	0,205	0,002	0,139	0,002
Secondary school	0,172	0,001	0,186	0,002	0,162	0,002
Junior professional	0,161	0,001	0,203	0,002	0,130	0,002
Secondary professional	0,253	0,002	0,180	0,002	0,307	0,002
Higher professional and above	0,246	0,002	0,226	0,002	0,262	0,002
<i>Labour Market</i>						
Employed at state enterprise	0,343	0,002	0,321	0,003	0,360	0,002
Entrepreneur or self-employed	0,016	0,000	0,019	0,001	0,014	0,001
<i>Occupational groups</i>						
High skilled (ISCO 1-3)	0,245	0,002	0,177	0,002	0,296	0,002
Mid-skilled (ISCO 4-5)	0,125	0,001	0,085	0,002	0,154	0,002
Skilled workers (ISCO 7-8)	0,180	0,001	0,347	0,003	0,055	0,001
Unskilled workers (ISCO 9)	0,055	0,001	0,031	0,001	0,074	0,001
<i>Settlement type</i>						
Regional center	0,402	0,002	0,384	0,003	0,415	0,003
Large city	0,264	0,002	0,260	0,003	0,266	0,002
Small town	0,070	0,001	0,069	0,002	0,071	0,001
Rural	0,264	0,002	0,287	0,003	0,247	0,002
<i>Income</i>						
Logarithm income from the main job	8,037	0,010	7,983	0,017	8,077	0,013
Logarithm per capita household income	8,112	0,003	8,090	0,005	8,129	0,004

	Mean		Standard deviation	
	Always in sample	Drop-outs	Always in sample	Drop-outs
Age	58,564	54,910	0,115	0,089
Sex: Males - 1, Females - 0	0,403	0,494	0,007	0,006
Marital status: Married - 1	0,671	0,705	0,006	0,006
<i>Health</i>				
Self assessed health: poor and very poor	0,170	0,177	0,005	0,005
<i>Education</i>				
Below secondary school	0,142	0,153	0,005	0,005
Secondary school	0,160	0,151	0,005	0,005
Junior professional	0,170	0,167	0,005	0,005
Secondary professional	0,264	0,246	0,006	0,005
Higher professional and above	0,265	0,283	0,006	0,006
<i>Settlement type</i>				
Regional center	0,403	0,525	0,007	0,006
Large city	0,257	0,269	0,006	0,006
Small town	0,073	0,048	0,004	0,003
Rural	0,267	0,159	0,006	0,005



	Survival time (years)			Observations(subjects)
	25% of sample	50% of sample	75% of sample	
Sample mean	60	65	71	12307
<i>Sex</i>				
Females	58	64	70	6711
Males	60	65	71	5596
<i>Education</i>				
Below secondary school	60	64	70	2361
Secondary school	59	63	69	2658
Junior professional	59	63	69	2886
Secondary professional	60	65	71	3546
Higher professional (university and more)	62	68	74	3603
<i>Labour Market</i>				
Employed at state enterprise	62	69	.	6818
Employed at enterprise with no public share or does not work for wages	59	63	69	9188
Entrepreneur or self-employed	62	69	.	531
Not entrepreneur nor self-employed	60	65	71	12167
<i>Health</i>				
Self assessed health "Bad"	57	63	68	3159
Self assessed health "Not Bad"	60	66	71	11659
<i>Family circumstances</i>				
Married	60	65	71	9510
Not married/Divorced/Widow/Do not live together	61	66	71	3972
<i>Settlement type</i>				
Regional center	61	67	73	5826
Big city	60	64	70	3227
Small town	59	64	69	726
Rural/Village	58	62	68	2542

Results: pension age, education, health

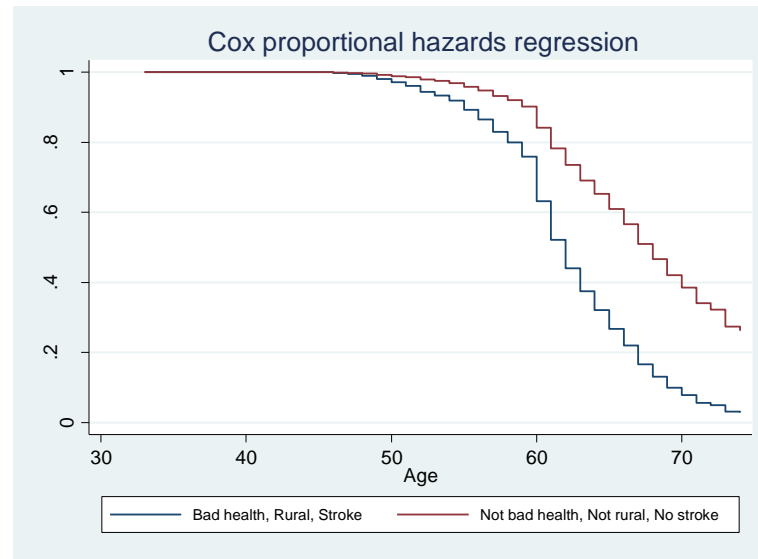
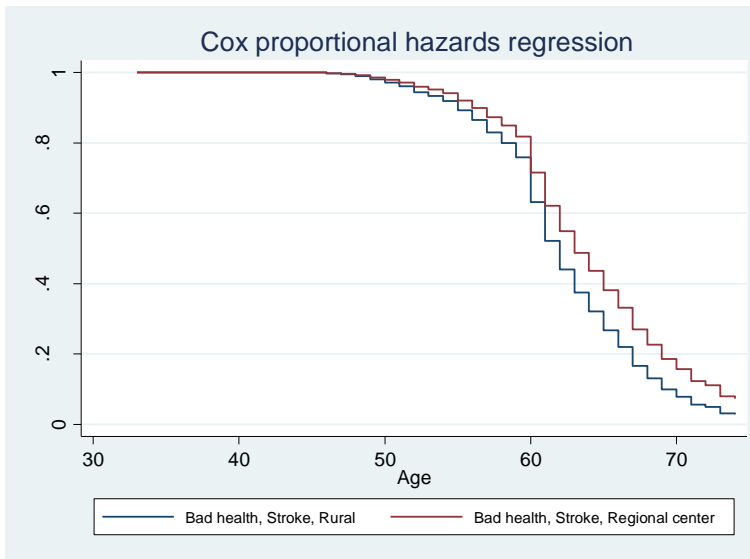
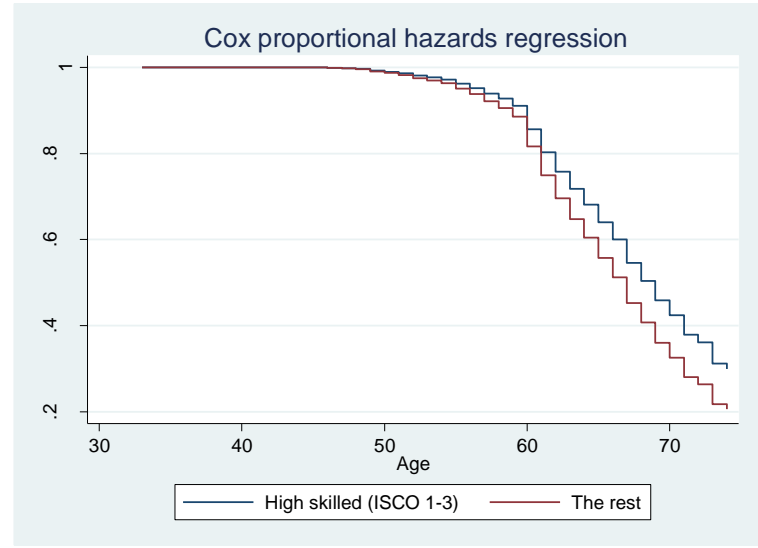
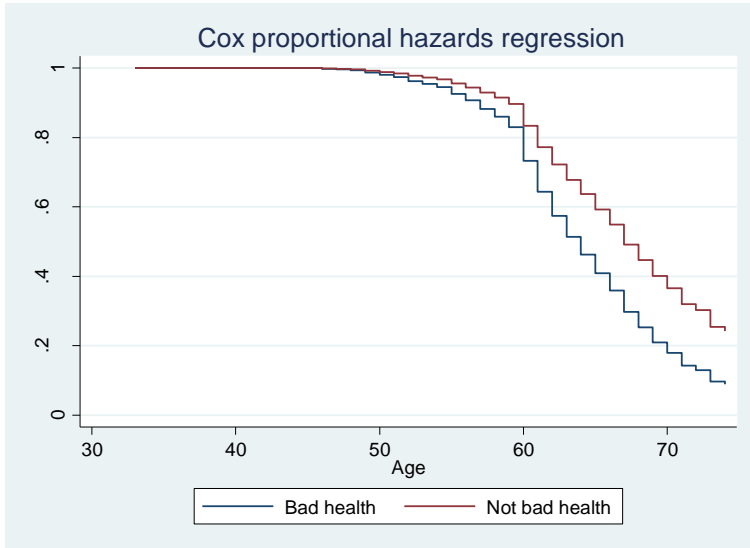
	<i>Hazard rate</i>		<i>Statistically different at</i>	Effect Exp(β)	
	<i>Males</i>	<i>Females</i>		<i>Males</i>	<i>Females</i>
Statutory pension age dummy	0.210* (0.112)	0.489*** (0.080)	**	1,25	1,63
Education: Secondary school - reference category					
Below secondary school	-0.067 (0.095)	-0.192** (0.084)	**	0,95	0,82
Junior Professional	-0.064 (0.104)	0.159* (0.088)	*	0,94	1,17
Secondary Professional	-0.055 (0.106)	-0.098 (0.071)		0,94	0,90
Higher Professional (University and above)	-0.328*** (0.105)	-0.302*** (0.079)		0,71	0,75
<i>Health</i>					
Self-assessed health as poor or very poor	0.519*** (0.085)	0.065 (0.064)	***	1,71	1,07
Diagnosed Heart Attack	0.218 (0.134)	-0.325** (0.150)	***	1,24	0,72
Diagnosed Stroke	0.251 (0.158)	0.266* (0.140)		1,30	1,32
Diagnosed Diabetes	0.242* (0.126)	-0.008 (0.079)	*	1,25	0,98

Results: labor market

	<i>Hazard rate</i>		<i>Statistically different at</i>	Effect Exp(β)	
	<i>Males</i>	<i>Females</i>		<i>Males</i>	<i>Females</i>
<i>Labour Market</i>					
Entrepreneur or self-employed as the main occupation	-0.751 (0.573)	-0.494 (0.315)		0,47	0,59
Employed at state enterprise	0.048 (0.091)	-0.136* (0.078)		1,58	0,87
Downward occupational mobility	-0.054 (0.095)	-0.204** (0.080)		0,95	0,82
Unemployed	-0.353*** (0.124)	0.154 (0.099)	***	0,70	1,17
<i>Occupational group: ISCO 4-6 - reference group</i>					
Hig Skilled (ISCO 1-3)	-0.285* (0.151)	-0.354*** (0.089)		0,76	0,72
Qualified Workers (ISCO 7-8)	0.132 (0.125)	0.036 (0.134)		1,14	1,12
Unskilled Workers (ISCO 9)	0.064 (0.221)	0.010 (0.103)		1,06	1,01
Does not work or works not for wages	1.106*** (0.135)	0.709*** (0.090)		2,89	2,13

Results: income, family, settlement type

	<i>Hazard rate</i>		<i>Statistically different at</i>	<i>Effect Exp(β)</i>	
	<i>Males</i>	<i>Females</i>		<i>Males</i>	<i>Females</i>
<i>Income</i>					
Logarithm of Income from the main job	-0.015 (0.010)	-0.010 (0.010)	*	0,99	0,99
Logarithm of per capita household income	-0.099*** (0.038)	-0.066** (0.032)		0,91	0,93
<i>Family Cicumstances</i>					
Married	0.240** (0.100)	0.382*** (0.050)	*	1,25	1,47
Small children (below 7) in household	-0.033 (0.098)	0.191** (0.074)	**	0,97	1,21
<i>Settlement type: Large city - reference category</i>					
Regional center	-0.297*** (0.081)	-0.216*** (0.061)		0,74	0,81
Small town	-0.045 (0.124)	0.237*** (0.092)	*	0,96	1,26
Rural/Village	0.164* (0.089)	0.303*** (0.067)		1,20	1,35
Year Dummies	Yes	Yes			
Observations	22927	27709			



Results

- The most surprising result: high sensitivity of women to the legally established retirement age (2.5 times higher than for men).
- Confirm importance of health and financial incentives as determinants of exit to inactivity as in other countries.
- Specifics in Russia:
 - Self-assessment of health as poor has an effect that is comparable to that of the statutory retirement age for men, but not for women
 - In contrast with many developed countries, only highly qualified persons stay for substantially longer, while medium-level qualifications and skilled and unskilled workers show no statistically significant differences.
 - Female employees at enterprises with state ownership stay longer
 - There is indirect evidence that workers in the upper part of the wage distribution are inadequately insured and remain in the labour market longer for this reason.

Policy implications

- Low by international standards statutory retirement age for females.
 - An increase in the retirement age for women seems socially acceptable
 - Our result: the statutory retirement age has a decisive influence on choice by women of their time of exit from the LM
 - controlling (as far as data permit) for differences in education, situation in the labour market and family circumstances.
- Strong shock for females: the increase in the retirement age strongly disturb their life plans. Opposition?
- Essential labor market constraints
 - equilibrium length of working life by occupations is to be disturbed
 - forced downward occupational mobility already in earlier ages
 - small town and rural LM are of special concern
 - strong health constraints for males