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Expenditures and Income Adequacy at Retirement

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Abstract

Using regression discontinuity design we study a change in household consumption-related expenditures in Russia and compare it to the change in subjective measure of income adequacy at retirement. We find that both measures decline in response to retirement.

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1. Introduction

The process of adaptation to changes in income and life situation receives a lot of attention in the economic literature. Easterlin (1974) found that despite the rise in income subjective indicators of well-being remained relatively flat for the post-war period. There are two possible explanations for the observed phenomenon. The first is that people care more about their relative position or their peers' incomes. The second is that there is a process of adaptation to income levels. For example, Easterlin (2005) showed that aspiration to material goods tends to rise with consumption.

One of the first empirical papers to look at the changes in consumption at retirement is Hamermesh (1984). He found that American consumers experience a sharp fall in expenditure in the first years after retirement. Sharp changes in consumption at retirement are documented in other USA studies (e.g. Hurd and Rohwedder, 2006; Aguiar and Hurst, 2009) and in UK, Italy and Germany (e.g. Banks *et al*., 1998; Battistin *et al*., 2009; Lührmann, 2010). A change in consumption does not necessary lead to the changes in welfare. Easterlin (2001), Blanchflower and Oswald (2008) provide evidence that life-cycle welfare remains constant or even increases at retirement.

This paper contributes to the literature in two ways. First, we provide evidence on the change in consumption-related expenditures at retirement in Russia. Several papers studied the consumption smoothing abilities of Russian households (e.g. Mu, 2006; Gerry and Li, 2010). However, none of the studies looked at the change in consumption-related expenditures at retirement in Russia. Second, we study the change in subjective measure of income adequacy and compare it to the change in consumption-related expenditures at retirement. We use the Minimum Income Question (MIQ) suggested by Groedhart et al. (1977). The question is formulated as follows: "Could you tell us how much money your family needs to live satisfactorily?".

2. Retirement in Russia

In Russia, people may receive a pension after accumulating 25 years of service for men and 20 years of service for women and reaching the legal retirement age of 60 for men and 55 for women. The income replacement rate is set at 55 percent of the average salary in the last two years of employment or any best 5 years of service. At the same time there is an upper cap on pensions. The maximum pension may not exceed 3 minimum pensions. The average income replacement rate of pensions did not exceed 28 percent during the 2000s (State Statistics Service, 2009). The pension code contains special provisions for various groups of workers. Individuals employed in the Far North and/or working in hazardous conditions are entitled to early unreduced pensions. The law has no provision restricting the right of pensioners to work.

3. Data and Sample

We use a survey of household welfare and participation in social programs (NOBUS), which provides a rich set of data on expenditures, household characteristics and MIQ.[1] The survey was developed by the World Bank and was administered by the Federal State Statistics Service in the 2nd quarter of 2003. The survey uses a random sample of 44,529 households and 117,209 people.

We take the head of the household to be the oldest male aged 50 to 70 years living in the household.[2] We exclude households situated in rural areas because of the problems associated with assigning monetary value to food produced at home and/or received in kind and small number of observations available in the dataset. We restrict the sample to the

[1] For the description of the survey, see Ovcharova and Tesluk (2008).
[2] Similar definition of the household head is used in Battistin et al. (2009).

household heads that are either employed or retired and receiving a work-related pension. The final number of households used in the analysis is 5,115.

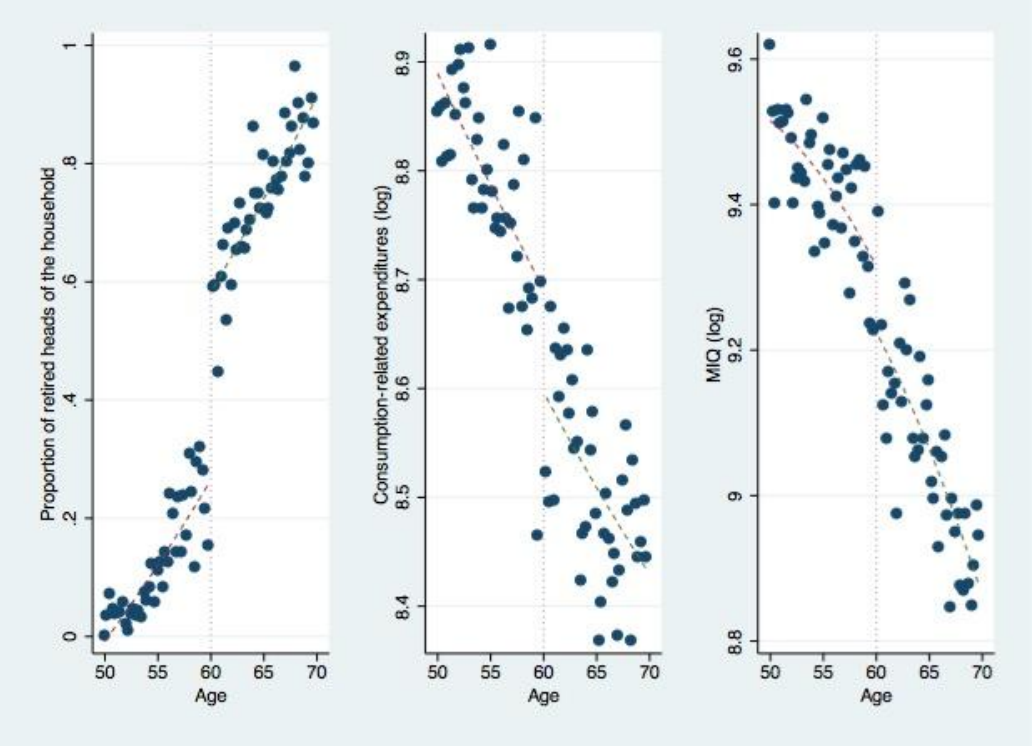
We define individual as being eligible to retire when he/she reaches the statutory retirement age. An individual is defined as retired if he/she reports receiving a work-related old-age pension and working zero hours per week.

The information on consumption-related expenditures collected with the NOBUS survey is comprehensive and fully accounts for food, clothing and non-durable expenditures. Food expenditures include purchased food, food received as a gift or remittances from other households as well as food received from an employer as payment in kind. Non-durable expenditures include expenditure on health, housing, communication, recreation and culture, and education. Non-durable expenditures also includes the value of government subsidies received by Russian households for housing, medical care and transport. Consumption-related expenditures are adjusted for regional price differences. We use OECD equivalence scale to account for the household size.

4. Analysis

We start with a graphical presentation of pension take-up rates, consumption-related expenditures and MIQ. We show the fitted values from a quadratic regression model estimated separately before and after pension eligibility. In Figure 1 (left panel) we present the proportion of retired heads of households by age. We observe a steady increase in the number of pension claims as people approach the threshold of retirement eligibility - age 60. Crossing the threshold is clearly associated with a discontinuous increase in pension take-up rates. In Figure 1 (middle panel) we examine the distribution of expenditure data. We find that consumption-related expenditures drop at a time of retirement. Finally in Figure 1 (right panel) we study the distribution of the responses to the MIQ. We observe that the MIQ diminishes with age. There is also a discontinuity in the distribution of MIQ at the pension eligibility threshold.

Figure 1: Changes in the number of retired, consumption-related expenditures and MIQ



Source: Authors calculation.

The probability of becoming a pensioner changes discontinuously when an individual reaches retirement age. In this respect the decision to retire may correspond to the regression discontinuity design (e.g. Battistin *et al*., 2009). The idea underlying the regression discontinuity design is to compare individuals who are marginally above or below some known eligibility threshold (retirement age in our case) where the probability of being retired changes discontinuously. Inference made on the basis of a sample of individuals marginally above and below some known threshold may be as good as a randomized experiment (Lee and Lemieux, 2010). In order to give the effect casual interpretation we need to impose an assumption of smoothness – continuity of conditional regression functions. The assumption implies that all factors (observed and unobserved) influencing the outcome should be smooth functions in the close proximity to the cut-off.

The local average effect of retirement on consumption-related expenditures and MIQ can be estimated using a two-stage model where the endogenous variable, pension receipt, is instrumented by the dummy variable – reaching retirement age. To account for the binary nature of the dependent variable in Eq. (2) we estimate a mixed system following Roodman (2011). We specify the following regression of household consumption on the retirement status.

$$Y = \beta_0 + \beta_1 P + f(X - c) + \varepsilon \quad \textbf{(1)}$$
$$P = \gamma_0 + \gamma_1 E + g(X - c) + v \quad \textbf{(2)}$$

where P is a dummy variable that is equal to 1 if the individual receives pension and 0 otherwise. The decision to retire is instrumented by a dummy variable E that takes the value 1 if the individual has reached retirement age and 0 otherwise, $f(\cdot)$ and $g(\cdot)$ are flexible functions of age approximated by the second order polynomial.

The first-stage regression of retirement status on pension eligibility, a second-order polynomial in age, yields the coefficient of eligibility, γ_1, of 0.61, with a standard error of 0.098. The result of the impact of retirement on consumption is reported in the first column of Table I. Consumption-related expenditures drop by 42 percent at retirement, which is significantly different from zero at the 1 percent level.[3] At the same time the change in MIQ caused by retirement induced by eligibility is equal to 50 percent, which is relatively close to the change in consumption (see second column Table I).

We examined the robustness of our results by checking the sensitivity to the choice of the width of the sample window and alternative specifications of the smoothing parameters. The results were robust. We performed an over-identification test following Lee (2008). The test examines whether the observed baseline covariates are "locally" balanced on either side of the threshold. The baseline covariates used in the test should not be affected by the eligibility status, but they should correlate with unobservables, which are likely to affect consumption. We used the same procedure as described in Section 4 for a battery of outcomes: education, age of the household head, size of the dwelling and size of the city in which the individual is living. In all of the cases considered there is no indication of a discontinuity at the threshold.[4]

[3] The measure of the percentage impact of the dummy variable *Retired* on *Consumption* is given by the following formula *(exp(Retired)-1)*100*.
[4] Results are available on request.

Table I Regression results

	Consumption	MIQ
	(1)	(2)
Retired	-0.350***	-0.416**
	(0.0933)	(0.198)
$f(X-c)*100$	-0.170	-0.297
	(0.132)	(0.275)
$f(X-c)^2*100$	0.000512	-0.00315
	(0.00171)	(0.00214)
Constant	8.800***	9.441***
	(0.0416)	(0.0857)
Number of observations	5115	5115
Log likelihood	-6134.279	-6913.023

Note: Robust, clustered standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01. The dependent variables are in logs.

5. Conclusion

Consistent with international evidence, we find a drop in consumption-related expenditures at retirement. The drop is larger than that found for other countries (e.g. Banks *et al*., 1998; Battistin *et al*., 2009; Lührmann, 2011). There are several explanations for the results.

First, a pensioner's household may substitute time for money. According to Backer's (1965) "household production" model, households are "assumed to combine time and market goods to produce more basic commodities that directly enter their utility functions." For example, Aguiar and Hurst (2007) find that decline in expenditures of older households may be offset by increased home production and more efficient shopping. Recent evidence suggests that home production and shopping behaviour may be an important consumption smoothing mechanism for pensioners in Russia (e.g. World Bank, 2005).

Second, the definition of consumption used in this paper is broad and includes work-related expenditures. The abrupt drop in work related expenditures at retirement may partially explain our result. Previous studies stress that the drop at retirement is heterogeneous among consumption categories (e.g. Hurst, 2008). Using the same data as in this paper Abazieva et al. (2010) show that food consumption declines by 17 percent at retirement that corresponds to the upper bound of food consumption decline found in other studies.

Third, we cannot rule out the possibility that some people retire unexpectedly due to an illness. Losses associated with forced retirement negatively affect household expenditures and well-being (e.g. Smith, 2006).

Finally, we find that the fall in consumption-related expenditures is mirrored by the fall in the MIQ. The fact that the MIQ decline is similar to consumption decline may indicate that the observed consumption drop of Russian pensioners should not be taken as evidence against life-optimizing behavior. We believe that the drop in the perception of subjective resources may be driven by two factors. First, objectively pensioners require fewer resources due to the elimination of work-related expenditures. Second there is a process of subjective adaptation towards decreasing resources available for consumption. Distinguishing between these two hypotheses is the topic for future research.

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