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# Life Satisfaction, Subjective Wealth, and Adaptation to Vulnerability in the Russian Federation during 2002-2017

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**Abstract**

We offer the first study on vulnerability adaptation to subjective well-being, using rich panel data over the past two decades for Russia. We found no adaption to vulnerability for life satisfaction and subjective wealth, with longer vulnerability spells being associated with more negative subjective welfare. Similar results hold for other outcomes including satisfaction with own economic conditions, work contract, job, pay, and career. Some evidence indicates that despite little differences between urban and rural areas with life satisfaction, rural areas exhibit a stronger lack of adaptation for subjective wealth, particularly for longer durations of vulnerability. Higher education levels generally exhibit a stronger lack of adaptation. The lack of adaptation to vulnerability is, however, similar at different education levels for subjective wealth. We also find a U-shaped relationship between age and durations of vulnerability and disability to have the most negative impacts on life satisfaction and subjective wealth.

Key words: vulnerability, adaptation, satisfaction, subjective wealth, gender, panel data, Russia
JEL: D6, I3, O1

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## I. Introduction

The central hypothesis in the literature on adaption is that individual well-being is determined not only by the current conditions but also by expectations about the future changes in these conditions (Easterlin 1995, 2001). These expectations, in turn, are formed by that individual's past experiences and by the circumstances of the reference groups. Understanding the process of adaptation to low levels of income, either through habituation or social comparisons, is of interest to policy practitioners as it affects the perceptions of subjective welfare in relation to the objective economic conditions. If people adapt to poverty and deprived economic conditions, in general, the subjective measures become unreliable measures of economic wellbeing.

Recent studies suggest that poor individuals do not adapt to poverty (Clark et al., 2016; Dang, Lokshin, and Abanokova, 2019).[1] That is, although individuals may have lived in poverty for some time, they do not lower their subjective welfare expectations in response to their undesirable (objective) economic status. This finding is relevant for policy interventions since poor individuals who are unsatisfied with their economic status would likely have stronger incentives to change their situation and take advantage of opportunities to escape poverty. Consequently, poverty alleviation programs such as education subsidies or job training are useful if they can help provide poor individuals with the means to move out of poverty.

Yet, as rising global living standards help shrink the poor population everywhere (Jolliffe et al., 2015; Ravallion, 2019), increasingly more attention is shifting from the poor to vulnerable groups of the population. For example, the United Nations have called for more rights to economic resources and access to basic services both for the poor and the vulnerable in the Sustainable Development Goals (SDGs). These vulnerable individuals are currently subject to a considerable

[1] Clark (2018) offers a recent review of adaptation to other outcomes, and he observes that people may adapt to certain life events (including marriage, children, divorce and widowhood), but not others (including unemployment).

risk of falling into poverty; put differently, they form the population group that could become poor in the future.[2] Policy programs that help to prevent the potential economic slide for this population group may be even more effective since such programs provide protective measures in the short term as well as sustainable solutions against poverty in the longer term. But to our knowledge, no study currently exists on adaptation to vulnerability (to poverty).[3]

We offer in this paper the first study on adaptation to vulnerability. We measure adaptation with an individual's satisfaction with her life. In particular, we investigate several research questions. Do individuals adapt to vulnerability? If yes, does the process of adaptation vary by different characteristics of an individual such as age, education achievement, and area of residence (i.e., urban and rural areas)? Do results change for alternative subjective welfare definitions such as subjective wealth? Do results change for different definitions of vulnerability, or different measures of income?[4] Are there other domains of one's life, such as own economic conditions, work contract, job, pay, and career that also affect the adaptation to poverty? Finally, will results differ by the varying lengths of time that an individual has to endure vulnerability?

We investigate these questions with panel data for the past two decades from Russia. Russia offers a particularly interesting case study for a variety of reasons. The country underwent a radical transformation from a centrally planned to a market-oriented economy in the early 1990s. Despite this upheaval with some initial falters, Russia has earned its place among the group of upper-middle-income countries and has achieved remarkable pro-poor growth and reduced inequality

[2] See https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals. See also Calvo (2018), Ceriani (2018), and Gallardo (2018) for recent reviews of different vulnerability concepts.
[3] Only one study exists that looks at the related relationship between vulnerability and happiness (Caria and Falco, 2018).
[4] This question asks respondents to imagine where they currently stand on a nine-step ladder where the poorest stand on the first (lowest) step and the richest stand on the ninth (highest) step.

since then (Dang et al., 2019). But no studies on Russia have thoroughly analyzed the welfare of the vulnerable population groups during this fascinating growth process. We aim to fill this gap with this detailed and policy-relevant analysis of adaptation to vulnerability.

Furthermore, related studies of mobility and vulnerability are typically constrained by short panel data sets. In the case of Russia, we overcome this limitation by exploiting multiple rounds of the Russia Longitudinal Monitoring Surveys that span over the last two decades from 2002 to 2017. Hardly any other transitional countries can offer the type of long-running, nationally representative panel household survey data that Russia does.[5] Finally, our findings are relevant to other transitional economies that are faced with similar challenges.[6]

We find no adaptation for subjective welfare outcomes including life satisfaction and subjective wealth. Our findings are robust to different model specifications, vulnerability index values, vulnerability definitions, definitions of income, and various other assumptions. We also find some evidence that there is not much difference between these areas for life satisfaction. Rural areas, however, offer stronger evidence of no adaptation for subjective wealth, particularly for longer durations of vulnerability. Higher education levels exhibit a stronger lack of adaptation, except for longer durations of vulnerability. Yet, the levels of no adaptation to vulnerability are rather similar at different education levels for subjective wealth. We also find a U-shaped relationship between age and duration of vulnerability, which is consistent with the established

[5] For example, the China Health and Nutrition Survey (CHNS) collects panel data and was implemented as early as 1989, but does not offer nationally representative data. A more recent panel survey, the China Family Panel Study (CFPS) provides more coverage but was started only in 2010. Alternatively, in the absence of actual panel data, statistical techniques have recently been developed that allow the construction of synthetic panels from repeated cross sections (Dang and Lanjouw, 2017).

[6] Notably, several centrally planned economies that have been undergoing a similar transition process to a market economy, such as China, Cuba, the Lao People's Democratic Republic, the Democratic People's Republic of Korea, and Vietnam, may particularly benefit from Russia's experience. Economies with heavy government subsidies such as the República Bolivariana de Venezuela may likely share certain features with Russia's previous central economic model.

finding of a similar relationship between age and subjective well-being. But this U-shaped relationship does not exist for longer durations of vulnerability or with subjective wealth. Interestingly, we find no adaption for other subjective well-being outcomes including own subjective wealth, satisfaction with economic conditions, work contract, job, pay, and career.

This paper consists of six sections. We discuss the analytical framework in the next section, which includes our definition of vulnerability and the empirical estimation equation. We subsequently discuss the data in Section III, before offering the main estimation results in Section IV. We offer further analysis of other outcomes in Section V and finally conclude in Section VI.

## II. Analytical Framework

### II.1. Empirical Strategy

To investigate the relationship between the subjective well-being and vulnerability to poverty, we employ the following linear model with individual fixed effects

$$y_{it} = \beta' V_{it} + \gamma' X_{it} + \eta_i + \tau_t + \varepsilon_{it} \quad (1)$$

where $y_{it}$ represents individual $i$'s subjective well-being outcomes in year $t$. $V$ is a set of dummy variables that indicate how long an individual has lived in vulnerability to poverty. Our coefficients of interest are $\beta$, which indicate no adaptation if they are statistically significant and do not decline in size as the duration in vulnerability grows. Furthermore, to measure the general correlation between vulnerability and subjective well-being, we also offer estimates where $V_{it}$ includes two dummy variables: one variable indicates whether an individual suffers from vulnerability (i.e., vulnerability incidence) and the other indicates how far the income of this individual falls below the vulnerability line (i.e., the degree of vulnerability intensity or vulnerability gap). Since in this paper we focus on the non-poor population groups that include the vulnerable, we exclude the poor

from our analysis (see our discussion in the next section). But we also offer estimates where the poor are included in the estimation sample as robustness checks.

$X_{it}$ includes the control variables, such as employment, age groups, education achievement, marital status, number of children, and regional dummy variables; $\eta_i$ and $\tau_t$ are respectively the individual fixed effects and year dummy variables. Equation (1) is the standard model used in the literature on happiness and adaptation to poverty (e.g., Ferrer-i-Carbonell and Frijters, 2004; Clark *et al.*, 2016).

Since our estimation sample includes individuals who are 16 years old or older, some of them are still attending school, which results in the education variables being time-varying variables. We also estimate our model after dropping the education variables for robustness checks. Life satisfaction is measured on a scale from 1 to 5, and subjective wealth from 1 to 9, with higher scores indicating more satisfaction or more subjective wealth. Satisfaction with one's economic conditions, work contract, job, pay, and career is also measured on a scale from 1 to 5.

**II.2. Vulnerability Lines**

We follow a recently developed method in setting the welfare line (threshold) that define the vulnerable population group (Dang and Lanjouw, 2017). In particular, this approach employs the existing (national or international) poverty line to define the category of the poor. It then further disaggregates the non-poor group into two subcategories: the vulnerable, who are defined as those currently non-poor but facing a significant risk of falling into poverty, and the remaining group of people who belong to the middle class and higher-income groups. Since individuals can have varying levels of vulnerability to poverty depending on their income, we can define their vulnerability level with a vulnerability index $\mathcal{P}$. Specifically, this vulnerability index $\mathcal{P}$ is formally defined as the percentage of the non-poor population in the first period that falls into

poverty in the second period. We can then derive the vulnerability line from the specified vulnerability index $\mathcal{P}$.[7]

The process of obtaining the vulnerability line $V_1$ consists of two steps. The first step is to identify a range of values for the vulnerability index and then select an appropriate value for the index, which could be done based on different criteria such as the government's available budget for social protection or (ideal or desirable) social welfare objectives. Given the specified vulnerability index $\mathcal{P}$ obtained in the first step, the second step is to empirically solve for the vulnerability line in the first period, $V_1$, from this equation

$$\mathcal{P} = P(y_2 \leq z_2 | z_1 < y_1 \leq V_1) \qquad (2)$$

Put differently, $V_1$ indicates that the vulnerability line is the highest income level among the currently non-poor who have a specified probability of falling into poverty in the next period. We can then deflate the vulnerability line $V_1$ in the first period to obtain the vulnerability lines in other periods using the appropriate deflators.[8] As discussed earlier, Equation (2) suggests that we can

[7] A simple example can help illustrate the use of $\mathcal{P}$ in reaching a desired social protection target, given the available budget. Assume that the total population consists of 1,000 households, where the poverty rate is 15 percent (i.e., 150 households are poor). Also assume that in this population, another 300 vulnerable households are currently non-poor, but have a high risk of falling into poverty, and these households can be made secure with a monthly transfer of $20 per household. Thus, the vulnerability index in this simple scenario is 35 percent (i.e., dividing 300 households that can be aided and that would have fallen into poverty without the government's support over the total of 850 non-poor households). If the government has enough budget to prevent all these 300 non-poor households from falling into poverty, it can reduce the vulnerability index to zero. On the other hand, if the government only has enough resources to prevent half of these vulnerable households from sliding into poverty, it can reduce the vulnerability index to 17.6 percent (i.e., dividing the remaining 150 vulnerable households over the total of 850 non-poor households). A zero-vulnerability index is certainly better than the 17.6-percent vulnerability index, and indicates no household is vulnerable to falling into poverty. However, the former would require a larger social transfer budget of $6,000 (=300*$20), compared with the smaller budget of $3,000 for the latter.

[8] This vulnerability approach is different from previous ones in the literature in several respects. First, it provides a new and explicit framework to estimate the vulnerability line, which is associated with a vulnerability index that can be derived in various and more flexible ways. Second, the target population consists of the currently non-poor households rather than all households. Finally, this approach employs simpler non-parametric estimation methods to estimate vulnerability as a function of consumption alone, and can work with either actual panel data or synthetic panel data that can be constructed from cross sections. This approach has been applied in various country settings including Sub-Saharan Africa, Middle East and North Africa, and India (see Dang, Jolliffe, and Carletto (2019) for a

focus on the non-poor population in period 1 and can exclude the poor in this period from our analysis.

In our analysis, we set the vulnerability index at a value of 0.25, which corresponds to a vulnerability line that is twice the national poverty line in 2002. There are a couple reasons why we use this vulnerability index (line). First, several countries such as Brazil, India, Pakistan, and Vietnam (Dang and Lanjouw, 2017) have followed a similar approach and set the vulnerability line as a multiple of the national poverty line. This approach is pragmatic since it is straightforward for policymakers to justify their choice to the public that the vulnerability line should provide a higher-income line compared to the poverty line, but the two lines are still closely connected.[9] Second, the vulnerability line that corresponds to this vulnerability index is 3381 rubles per month in 2002 prices, which we keep fixed in real terms for the subsequent years in our estimation sample (Appendix 1, Table 1.1). That is, we use deflators with this vulnerability line to obtain lines for the subsequent years up to 2017; for example, the vulnerability line for 2017 is equivalent to 8139 rubles per month in 2011 prices. But we will also show robustness checks using other values of the vulnerability index. Finally, since we will further disaggregate the time that an individual lives in vulnerability into varying lengths, we will need to ensure that we have sufficient numbers of observations for each of these time windows.

## III. Data Description

The Russian Longitudinal Monitoring Survey (RLMS) was initially created with funding from various sources including the G-7 countries, USAID, and the World Bank. The survey is currently

recent review). See also Dang and Lanjouw (2017) for a more detailed comparison of this approach with other approaches.

[9] A recent study for Russia (Tikhonova, 2018) defines the vulnerable population group as those that are between 0.5 and 0.75 times the median income.

managed by the Carolina Population Center, University of North Carolina, and Russia's National Research University Higher School of Economics. The ongoing panel survey started in 1994 and has been implemented every year since then, except for a break in 1997 and 1999. The RLMS collects nationally representative data on various topics, including household demographics, income and consumption, occupation characteristics, and others. The sample size is between 4,000 and 6,000 households, capturing between 8,000 and 17,000 individuals each year, which have been replenished several times due to panel attrition over time. Hardly any middle-income countries can offer such long-running and nationally representative panel data as the RLMS.

The main outcome variable that we analyze in this paper is the total household income per capita, which is based on a survey question asking about the total monetary income that a household received during the past 30 days. By definition, it includes other types of incomes such as capital income and labor income. However, the share of the capital income in the total incomes is small, accounting for less than 3 percent in all years. On the other hand, labor income has the biggest share and can comprise more than 60 percent for some years. We also examine several other definitions of income for robustness checks.[10] We deflate all the income variables with the annual regional consumer price deflators indexed to 100 in December 2011.[11]

[10] We focus on household income rather than household consumption since changes to consumption items in the survey questionnaires could render the latter variable incomparable over time. For example, 14 percent of total household consumption was comprised of items that were found in 2015 only. Furthermore, comparing household consumption between 1994 and 2015, 12 percent of total household consumption in 1994 is accounted for by consumption items that are more disaggregated than 2015; the corresponding figure for 2015 compared with 1994 is 11 percent.

[11] We did not include the value of imputed housing rent in household income for different reasons. The RLMS data enables us to look at household expenditure on rent. However, relatively few households have to pay market-based rents on their homes, the share of such tenants in was less than 10% between1994-2015. A significant share of the households rent from the government and pay "social rent" instead, which is controlled and below the private market price (Hamilton et al, 2008). Furthermore, the RLMS does not ask home owners to estimate the rental value of their house.

We focus on the period starting from 2002 rather than 2001 since income growth per capita for this year is 7.1 percent using RLMS data. This is far closer to the average income growth rate of 6 percent for the period 2002-17, compared to the unusually high growth rate of 27 percent for 2001 (see Appendix 1, Table 1.2). In addition, the range of the vulnerability index for 2002-03 is also more comparable to those for other years during the period 2002-17 (Appendix 1, Table 1.1).[12]

Table 1 offers the summary statistics of the estimation sample for the period 2002-17, which indicate that respondents have an average life satisfaction score of 3.3 and an average subjective wealth score of 4.0. The vulnerability incidence hovers around 27 percent. The majority of the respondents (83 percent) completed secondary education or higher, and the majority of them (64 percent) are employed. More than half (58 percent) of the sample are women, and around three-fourths (74 percent) of the sample live in urban areas (i.e., larger towns or cities).

## IV. Estimation Results

### IV.1. Adaptation to Vulnerability

We provide estimation results in Table 2, which show that both vulnerability incidence and intensity are statistically significant and are negatively correlated with life satisfaction and subjective wealth. Controlling for other factors, a vulnerable person would be 0.067 points less satisfied (column 1) and 0.157 points feeling less wealthy (column 4) than a non-vulnerable person. For comparison, completing more than secondary education is negatively and statistically significantly associated with life satisfaction and has a somewhat similar magnitude of association; but this relationship generally fails to hold for subjective wealth.

[12] Furthermore, Dang et al. (2019) show that after a long period of declining and recovering incomes related to the post-Soviet period and the crisis period of 1998, Russia was able to achieve the pre-crisis income level of 1994 in 2001. The country's steady income growth subsequently started since 2002.

Table 2 also suggests that a vulnerable person with an income half of the vulnerability line (i.e., with the vulnerability gap variable equal to 0.5) would be 0.218 points (=0.067+ 0.302*0.5) less satisfied than the same person when not vulnerable (Table 2, first column). Interestingly, these impacts hold for both men and women. Similar results apply for subjective wealth, where the same vulnerable person with an income half of the poverty line is 0.255 points feeling less wealthy than her non-vulnerable peer (Table 2, fourth column).[13]

These results are similar to those for adaptation for poverty provided in Dang et al. (2019). But do they change when we include in the estimation sample the poor individuals? Estimation results, shown in Appendix 1, Table 1.3, suggest that results remain qualitatively similar. In fact, the dummy variable that indicates whether an individual lives below the poverty line is not statistically significant, indicating that the inclusion of the poor group does not add to our analysis.

Table 2 provides estimates for a contemporaneous relationship only and does not tell whether the duration of stay in vulnerability is negatively correlated with subjective welfare. We further examine this relationship in Table 3. Following a similar approach by Clark *et al.* (2016), we restrict the estimation sample to those we can observe when they first entered vulnerability while in the panel (such that we know how long they have been vulnerable). For the currently vulnerable, we dissect their vulnerability status into four variables: whether they entered vulnerability within the past year, one to two years ago, and so on, up to three or more years ago. Vulnerability adaptation implies that individuals' subjective wellbeing has a weaker relationship with their vulnerability status over time. Yet, estimates (column 1) suggest no vulnerability adaptation, with

[13] Multicolinearity among some variables can be an issue with the regressions in Table 2 if, say, the vulnerable are more likely to be less educated and therefore have a higher risk of poverty. To address this concern, we implement variance inflation factors (VIF) tests for all the control variables. The VIF tests (available upon request) range from 1.10-1.11 (for the dummy variable indicating urban/rural locations) to 2.93 (for the variable vulnerability gap). These test values are far less than the rule-of-thumb value of 10 for harmful collinearity given by Kennedy (2008).

the estimated coefficients on the vulnerability duration variables ranging from -0.1 to -0.4. Formal statistical tests, however, show that the estimated coefficients on vulnerability duration of less than one year is larger in magnitude than (and statistically significantly different from) those on vulnerability durations of greater than one year (Appendix 1, Table 1.4). Estimates are generally qualitatively similar for subjective wealth, with the estimated coefficient on vulnerability duration of less than one year being not statistically different from those on longer vulnerability duration (column 4).

While there is not much difference between men and women for adaptation in terms of life satisfaction (Table 3, columns 2 and 3), a gender gap exists for adaptation in terms of subjective wealth. Specifically, men appear to adapt better, with the estimated coefficients on vulnerability durations of more than one year being statistically insignificant from zero (Table 3, column 5). But women do not show any sign of adaptation for either life satisfaction or subjective wealth (Table 3, columns 3 and 6).

Would the estimates in Table 3 change if we take into account major life events such as unemployment, retirement, loss of a partner, bad health, disability, and changes in household size? We plot in Figure 1 the differences in life satisfaction and subjective wealth for individuals that are affected by any of these events against those that are not. This figure indicates that the former has somewhat lower subjective wealth, but counterintuitively, has lower life satisfaction at longer durations of stay in vulnerability. This may be caused by the pooling of different major events that could have opposite impacts on subjective wellbeing. We thus provide a further breakdown for each of these events in Figures 1.1 and 1.2 in Appendix 1, which suggest that disability has the most negative impacts on life satisfaction and subjective wealth.

**IV.2. Robustness Checks**

We implement a battery of robustness checks in this subsection, which indicate that estimation results are robust to different model specifications, vulnerability index values, vulnerability definitions, income definitions, and various other checks.

First, as an alternative model specification, we add log income per capita as a control variable instead of the vulnerability gap. While the latter variable focuses on how far below the vulnerability line the vulnerable are, the former variable takes into account the whole income distribution. Estimate results, shown in Table 4, are rather similar.

Second, instead of fixing the vulnerability index at 0.25 (or 25 percent), Figure 2 examines whether the estimated coefficients on the dummy variable indicating individuals living under below the vulnerability line varies for different vulnerability indexes. The range of the vulnerability index is 22 percent to 30 percent. Estimation results suggest that longer vulnerability durations are more negatively correlated with subjective wealth than with life satisfaction.

Third, Tables 5 and 6 similarly investigate whether the estimation results on vulnerability adaptation shown in Table 4 change for different values of the vulnerability indexes. Estimates remain very similar. For example, the estimated coefficient on the dummy variable indicating whether individuals live in vulnerability for less than one year is -0.07 for the vulnerability index of 22 percent and -0.10 for the vulnerability index of 27 percent. These figures are close to the corresponding figure of -0.097 for the vulnerability index of 25 percent.[14]

Fourth, instead of obtaining the vulnerability index (line) based on the period 2002-03, we switch to obtaining these parameters using the period 2001-02. The range of the vulnerability index

[14] We only show in Tables 5 and 6 the estimates for a range of the vulnerability index of [22, 27], rather than the full range of [22, 30], to ensure there is a sufficient number of observations for each vulnerability duration spell.

is larger for the latter period (i.e., [29, 42]), given the unusual economic growth discussed earlier. We then rerun the estimates for adaptation for vulnerability (shown in Table 4); estimation results, provided in Appendix 1, Tables 1.4 and 1.5, remain qualitatively similar.

Fifth, as discussed earlier, the education achievement variables can be time-varying for some individuals that were still going to school at the time of the survey. For robustness checks, we drop these education variables and rerun the estimates in Table 3. Estimation results, shown in Appendix 1, Table 1.7, are qualitatively similar.

Sixth, Figure 1.3 in Appendix 1 shows estimation results where we use two other definitions of income that adjust for equivalence scales. The first definition is the OECD scale, and the second is based on Scharwe's (2003) adjustment and our own adjustment (Abanokova et al., 2019) using subjective scales. Estimates are generally qualitatively similar for both of these alternative definitions of income.

Seventh, to address concerns about potential bias due to panel attrition, we add to the regressions additional variables that indicate whether an individual participates in the next survey wave or the number of survey waves an individual participates in. This represents a simple but effective way to control for selectivity bias that does not require complicated modeling of the selection process (Verbeek and Nijman, 1992). Estimation results, shown respectively in Appendix 1, Table 1.8 and Table 1.9, remain similar.

Finally, we employ another approach developed by Chaudhuri et al. (2002) and Chaudhuri (2003) to define vulnerability. However, it should be noted that this approach only offers estimates of the vulnerability index, but not the vulnerability line (which is implicitly assumed to take on a certain value). As such, this approach can provide a check on the contemporaneous relationship between vulnerability and subjective well-being rather than the full sets of results on adaptation to

vulnerability. We provide a brief overview of this approach and estimates in Appendix 2. Estimation results, however, are qualitatively similar in terms of the contemporaneous relationship between vulnerability and subjective well-being.

### IV.3. Heterogeneity Analysis

We examine in this subsection whether estimation results vary for different characteristics of the population such as areas of residence, education achievement, age as well as different time periods.

Disaggregating estimates by urban and rural areas, Table 7 shows that there is not much difference between these areas for life satisfaction. However, rural areas offer stronger evidence of no adaptation for subjective wealth, particularly for longer durations of vulnerability.

Figure 3 shows that the lack of adaptation to vulnerability regarding life satisfaction is stronger for higher education levels, except for longer durations of vulnerability of 3 years or more. On the other hand, the level of no adaptation to vulnerability is rather similar at different education levels for subjective wealth.

Figure 4 considers the age profile of adaptation to vulnerability. Interestingly, there appears to be a U-shaped relationship between age and durations of vulnerability, which is consistent with the established finding of a similar relationship between age and subjective well-being (Clark, 2018). This U-shaped relationship, however, disappears for longer durations of vulnerability of 3 years or more with life satisfaction. It does not exist with subjective wealth either.

Further breaking down the period of analysis into three shorter time periods of 2002-07, 2007-12, and 2012-17, Table 8 shows a negative contemporaneous relationship between vulnerability and subjective welfare in all these periods. This is similar to that for the overall period 2002-17 show in Table 2. A vulnerable person with an income half of the vulnerability line would be 0.195

points, 0.185 points, 0.250 points less satisfied than the same person when not vulnerable respectively for the periods 2002-07, 2007-12, and 2012-17 (Table 8, first three columns). For subjective wealth, the corresponding figures are 0.228 points, 0.330 points, and 0.308 points feeling less wealthy than her non-vulnerable peer (Table 8, columns 4 to 6).

Plotting the estimates for adaptation for these shorter periods (which is similar to that of the whole population shown in Table 3), Figure 1.4 in Appendix 1 suggests qualitatively similar results for the two periods 2002-07 and 2012-17 with life satisfaction. The estimates with adaptation with life satisfaction for the period 2007-12 is, however, not statistically significant; neither are the estimates with adaptation with subjective wealth for all three periods. One possible reason is that the estimation sample sizes are smaller for these periods.[15]

## V. Further Extension

We turn next to examining the question of whether the lack of adaptation to vulnerability may apply to other subjective welfare outcomes such as satisfaction with one's overall economic conditions, work contract, job, pay, and career. If there is a similar lack of adaptation with these outcomes, our estimation results with life satisfaction and subjective wealth discussed above would be further corroborated.

Indeed, Table 9 shows that there is a negative contemporaneous relationship between vulnerability and these outcomes, which provides additional supportive evidence for our estimation results. We graphically show in Figure 5 estimates on vulnerability adaption, which point to no adaptation for these outcomes, except for one's work contract and career.

[15] Since there are insufficient number of observations in the group of vulnerability duration of "3 years or more", we have to aggregate this group with the group of vulnerability duration of "1 to 2 years" for Figure 1.4 in Appendix 1.

## VI. Conclusion

We offer the first study on adaptation to vulnerability using panel data from Russia, a middle-income transition country. We find that there is no adaptation for subjective welfare outcomes including life satisfaction and subjective wealth. Furthermore, our findings are robust to different model specifications, vulnerability index values, vulnerability definitions, income definitions, and various other checks.

We also find some evidence that there is not much difference between these areas for life satisfaction. Rural areas, however, offer stronger evidence of no adaptation for subjective wealth, particularly for longer durations of vulnerability. The lack of adaptation to vulnerability regarding life satisfaction is stronger for higher education levels, except for longer durations of vulnerability. On the other hand, the level of no adaptation to vulnerability is rather similar at different education levels for subjective wealth.

We also find a U-shaped relationship between age and durations of vulnerability, which is consistent with the established finding of a similar relationship between age and subjective well-being. But this U-shaped relationship does not exist for longer durations of vulnerability or with subjective wealth.

Finally, our findings are further supported by similar results with other subjective well-being outcomes including own subjective wealth, satisfaction with economic conditions, work contract, job, pay, and career.

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**Table 1. Descriptive Statistics, RLMS 2002-2017**

| Variables | Life satisfaction | | Subjective wealth | |
|---|---|---|---|---|
| | **Mean** | ***Std_dev*** | **Mean** | ***Std_dev*** |
| Dependent variable | 3.253 | *1.066* | 4.049 | *1.413* |
| Below vulnerability line | 0.271 | *0.445* | 0.270 | *0.444* |
| Vulnerability gap | 0.052 | *0.108* | 0.052 | *0.108* |
| *Individual characteristics* | | | | |
| Employed | 0.642 | *0.479* | 0.645 | *0.479* |
| Unemployed/out of labour force | 0.358 | *0.479* | 0.355 | *0.479* |
| Age 16–20 | 0.069 | *0.253* | 0.068 | *0.251* |
| Age 21–30 | 0.193 | *0.394* | 0.193 | *0.395* |
| Age 31–40 | 0.177 | *0.382* | 0.178 | *0.382* |
| Age 41–50 | 0.161 | *0.368* | 0.162 | *0.368* |
| Age 51–60 | 0.166 | *0.372* | 0.167 | *0.373* |
| Age 61–70 | 0.118 | *0.322* | 0.118 | *0.323* |
| Age 71–80 | 0.085 | *0.278* | 0.084 | *0.278* |
| Age 80+ | 0.038 | *0.190* | 0.037 | *0.188* |
| Female | 0.578 | *0.494* | 0.579 | *0.494* |
| *Education* | | | | |
| Incomplete secondary | 0.174 | *0.379* | 0.171 | *0.376* |
| Complete secondary | 0.297 | *0.457* | 0.297 | *0.457* |
| Secondary+vocational | 0.263 | *0.440* | 0.264 | *0.441* |
| University and higher | 0.265 | *0.441* | 0.267 | *0.442* |
| Single | 0.164 | *0.371* | 0.163 | *0.369* |
| Married | 0.629 | *0.483* | 0.631 | *0.483* |
| Divorced/widowed/separated | 0.205 | *0.404* | 0.205 | *0.404* |
| Number of children | 0.480 | *0.730* | 0.481 | *0.731* |
| *Regional characteristics* | | | | |
| Moscow/Saint-Petersburg | 0.129 | *0.335* | 0.129 | *0.336* |
| City | 0.342 | *0.474* | 0.344 | *0.475* |
| Town | 0.272 | *0.445* | 0.273 | *0.445* |
| Small town | 0.057 | *0.232* | 0.056 | *0.230* |
| Rural | 0.200 | *0.400* | 0.197 | *0.398* |
| *Number of observations* | *153 922* | | *152 190* | |
| *Number of individuals* | *33 550* | | *33 355* | |

**Note:** Means and standard deviations are obtained with pooled unweighted data. The summary statistics under "Life satisfaction" and "Subjective wealth" are for each for these estimation samples respectively.

**Table 2. Life satisfaction/subjective wealth and vulnerability, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | Whole sample | Men | Women | Whole sample | Men | Women |
| Below vulnerability line | -0.067*** | -0.061*** | -0.070*** | -0.157*** | -0.138*** | -0.169*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.02)* |
| Vulnerability gap | -0.302*** | -0.285*** | -0.318*** | -0.195*** | -0.240*** | -0.164** |
| | *(0.05)* | *(0.06)* | *(0.05)* | *(0.07)* | *(0.09)* | *(0.07)* |
| *Individual Characteristics* | | | | | | |
| Unemployed/out of labour force | -0.192*** | -0.277*** | -0.141*** | -0.200*** | -0.287*** | -0.148*** |
| | *(0.01)* | *(0.02)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.01)* |
| Age 16–20 | 0.249*** | 0.232*** | 0.250*** | 0.328*** | 0.252*** | 0.396*** |
| | *(0.03)* | *(0.04)* | *(0.04)* | *(0.04)* | *(0.06)* | *(0.05)* |
| Age 21–30 | 0.027 | -0.027 | 0.056** | 0.117*** | 0.033 | 0.181*** |
| | *(0.02)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* | *(0.03)* |
| Age 31–40 | -0.015 | -0.044** | 0.003 | 0.052*** | 0.004 | 0.085*** |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| Age 51–60 | 0.062*** | 0.027 | 0.087*** | -0.033** | -0.057** | -0.018 |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| Age 61–70 | 0.133*** | 0.142*** | 0.133*** | 0.005 | 0.039 | -0.010 |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.02)* | *(0.04)* | *(0.03)* |
| Age 71–80 | 0.116*** | 0.126*** | 0.110*** | 0.011 | 0.037 | 0.001 |
| | *(0.02)* | *(0.04)* | *(0.03)* | *(0.03)* | *(0.05)* | *(0.03)* |
| Age 80+ | 0.139*** | 0.168*** | 0.117*** | 0.245*** | 0.248*** | 0.243*** |
| | *(0.03)* | *(0.05)* | *(0.03)* | *(0.04)* | *(0.07)* | *(0.04)* |
| *Education* | | | | | | |
| Complete secondary | -0.032** | -0.030* | -0.036* | -0.009 | -0.023 | 0.006 |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* |
| Secondary+vocational | -0.067*** | -0.072*** | -0.063*** | -0.068*** | -0.066** | -0.066** |
| | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.03)* |
| University and higher | -0.073*** | -0.077** | -0.078*** | -0.035 | -0.008 | -0.046 |
| | *(0.02)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* | *(0.04)* |
| Single | -0.165*** | -0.146*** | -0.187*** | -0.052** | -0.030 | -0.067** |
| | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.03)* |
| Divorced/widowed/separated | -0.260*** | -0.338*** | -0.239*** | -0.178*** | -0.144*** | -0.189*** |
| | *(0.01)* | *(0.03)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| Number of children | 0.015** | 0.012 | 0.015* | 0.026** | 0.020 | 0.030** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* |
| Constant | 3.335*** | 3.503*** | 3.314*** | 4.069*** | 4.168*** | 3.989*** |
| | *(0.09)* | *(0.07)* | *(0.09)* | *(0.07)* | *(0.16)* | *(0.10)* |
| *Mean of dependent variable* | 3.25 | 3.32 | 3.20 | 4.05 | 4.13 | 3.99 |
| *(Standard deviation)* | *(1.07)* | *(1.05)* | *(1.07)* | *(1.41)* | *(1.42)* | *(1.41)* |
| *R2* | 0.017 | 0.018 | 0.018 | 0.019 | 0.021 | 0.019 |
| *Number of observations* | 153,922 | 64,931 | 88,991 | 152,190 | 64,089 | 88,101 |
| *Number of individuals* | 33,550 | 14,875 | 18,675 | 33,355 | 14,792 | 18,563 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. Regional and time dummy variables are included but not showed. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). The vulnerability index is defined as P (Y1<Z1|Z0<Y0<V0) = 0.25 in 2002, which is then adjusted for inflation using annual (December to December) CPI for each of 32 regions. Estimation results are based on real total household income per capita. Estimation sample is restricted to individuals 16 years old or older.

**Table 3. Adaptation to vulnerability, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Men** | **Women** | **All** | **Men** | **Women** |
| Less than 1 year in vulnerability | -0.097*** | -0.062* | -0.120*** | -0.162*** | -0.136*** | -0.172*** |
| | *(0.02)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* | *(0.04)* |
| 1-2 years in vulnerability | -0.196*** | -0.160*** | -0.209*** | -0.192*** | -0.086 | -0.256*** |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.06)* | *(0.08)* | *(0.07)* |
| 2-3 years in vulnerability | -0.221*** | -0.263*** | -0.180** | -0.164* | -0.034 | -0.232** |
| | *(0.06)* | *(0.09)* | *(0.08)* | *(0.09)* | *(0.12)* | *(0.09)* |
| Over 3 years in vulnerability | -0.428*** | -0.315** | -0.482*** | -0.310** | -0.182 | -0.364** |
| | *(0.10)* | *(0.14)* | *(0.12)* | *(0.13)* | *(0.17)* | *(0.14)* |
| *Mean of dependent variable* | 3.23 | 3.30 | 3.18 | 4.04 | 4.10 | 4.00 |
| (*Standard deviation*) | *(1.06)* | *(1.06)* | *(1.06)* | *(1.39)* | *(1.40)* | *(1.38)* |
| *R2* | 0.027 | 0.045 | 0.027 | 0.038 | 0.047 | 0.040 |
| *Number of observations* | 10,047 | 4,329 | 5,718 | 9,918 | 4,278 | 5,640 |
| *Number of individuals* | 3,035 | 1,332 | 1,703 | 3,024 | 1,330 | 1,694 |

**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis.

**Table 4. Life satisfaction/subjective wealth and vulnerability, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | Whole sample | Men | Women | Whole sample | Men | Women |
| Below vulnerability line | -0.040*** | -0.041*** | -0.038*** | -0.060*** | -0.060*** | -0.060*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.01)* |
| Log of income per capita | 0.157*** | 0.135*** | 0.172*** | 0.266*** | 0.241*** | 0.282*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.02)* |
| *Mean of dependent variable* | 3.25 | 3.32 | 3.20 | 4.05 | 4.13 | 3.99 |
| *(Standard deviation)* | *(1.07)* | *(1.05)* | *(1.07)* | *(1.41)* | *(1.42)* | *(1.41)* |
| *R2* | 0.019 | 0.020 | 0.021 | 0.024 | 0.025 | 0.024 |
| *Number of observations* | 153,922 | 64,931 | 88,991 | 152,190 | 64,089 | 88,101 |
| *Number of individuals* | 33,550 | 14,875 | 18,675 | 33,355 | 14,792 | 18,563 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All the regressions include all control variables in Table 2. Regional and time dummy variables are included but not showed. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). The vulnerability index is defined as P (Y1<Z1|Z0<Y0<V0) = 0.25 in 2002, which is then adjusted for inflation using annual (December to December) CPI for each of 32 regions. Estimation results are based on real total household income per capita. Estimation sample is restricted to individuals 16 years old or older.

**Table 5. Adaptation of life satisfaction to vulnerability, fixed-effects regressions, RLMS 2002-2017**

| | Vulnerability indexes (%) | | | | | |
|---|---|---|---|---|---|---|
| | **22** | **23** | **24** | **25** | **26** | **27** |
| Less than 1 year in vulnerability | -0.070*** *(0.03)* | -0.106*** *(0.02)* | -0.123*** *(0.02)* | -0.097*** *(0.02)* | -0.102*** *(0.02)* | -0.100*** *(0.02)* |
| 1-2 years in vulnerability | -0.132*** *(0.04)* | -0.187*** *(0.04)* | -0.227*** *(0.04)* | -0.196*** *(0.04)* | -0.194*** *(0.04)* | -0.189*** *(0.04)* |
| 2-3 years in vulnerability | -0.179*** *(0.05)* | -0.104* *(0.05)* | -0.203*** *(0.05)* | -0.221*** *(0.06)* | -0.132* *(0.07)* | -0.103 *(0.07)* |
| Over 3 years in vulnerability | -0.211*** *(0.07)* | -0.134* *(0.07)* | -0.268*** *(0.08)* | -0.428*** *(0.10)* | -0.371*** *(0.11)* | -0.260** *(0.11)* |
| *R2* | 0.022 | 0.031 | 0.031 | 0.027 | 0.028 | 0.029 |
| *Number of observations* | 8,508 | 10,748 | 10,688 | 10,047 | 9,809 | 9,279 |
| *Number of individuals* | 2,352 | 3,071 | 3,092 | 3,035 | 3,008 | 2,872 |

**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis. The range of vulnerability indexes is selected to ensure that the number of observations in each duration category is at least 100.

**Table 6. Adaptation of subjective wealth to vulnerability, fixed-effects regressions, RLMS 2002-2017**

| | Vulnerability indexes (%) | | | | | |
|---|---|---|---|---|---|---|
| | **22** | **23** | **24** | **25** | **26** | **27** |
| Less than 1 year in vulnerability | -0.127*** | -0.147*** | -0.139*** | -0.162*** | -0.133*** | -0.128*** |
| | *(0.04)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.03)* |
| 1-2 years in vulnerability | -0.159*** | -0.209*** | -0.211*** | -0.192*** | -0.102 | -0.125* |
| | *(0.06)* | *(0.05)* | *(0.05)* | *(0.06)* | *(0.06)* | *(0.07)* |
| 2-3 years in vulnerability | -0.233*** | -0.147** | -0.159** | -0.164* | 0.021 | -0.054 |
| | *(0.08)* | *(0.07)* | *(0.07)* | *(0.09)* | *(0.09)* | *(0.10)* |
| Over 3 years in vulnerability | -0.260*** | -0.050 | -0.128 | -0.310** | -0.196 | -0.220 |
| | *(0.10)* | *(0.09)* | *(0.10)* | *(0.13)* | *(0.13)* | *(0.14)* |
| *R2* | 0.031 | 0.035 | 0.037 | 0.038 | 0.037 | 0.034 |
| *Number of observations* | 8,450 | 10,680 | 10,588 | 9,918 | 9,691 | 9,163 |
| *Number of individuals* | 2,351 | 3,069 | 3,087 | 3,024 | 2,998 | 2,863 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis. The range of vulnerability indexes is selected to ensure that the number of observations in each duration category is at least 100.

**Table 7. Adaptation to vulnerability by urban/rural areas, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Urban** | **Rural** | **All** | **Urban** | **Rural** |
| Less than 1 year in vulnerability | -0.097*** | -0.101*** | -0.100** | -0.162*** | -0.146*** | -0.179*** |
| | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* | *(0.04)* | *(0.06)* |
| 1-2 years in vulnerability | -0.196*** | -0.209*** | -0.174** | -0.192*** | -0.137** | -0.315*** |
| | *(0.04)* | *(0.05)* | *(0.08)* | *(0.06)* | *(0.07)* | *(0.12)* |
| 2-3 years in vulnerability | -0.221*** | -0.232*** | -0.221* | -0.164* | -0.019 | -0.485*** |
| | *(0.06)* | *(0.08)* | *(0.12)* | *(0.09)* | *(0.10)* | *(0.16)* |
| Over 3 years in vulnerability | -0.428*** | -0.356*** | -0.594*** | -0.310** | -0.167 | -0.538** |
| | *(0.10)* | *(0.12)* | *(0.20)* | *(0.13)* | *(0.16)* | *(0.23)* |
| *Mean of dependent variable* | 3.23 | 3.23 | 3.24 | 4.04 | 4.01 | 4.11 |
| (*Standard deviation*) | *(1.06)* | *(1.05)* | *(1.09)* | *(1.39)* | *(1.38)* | *(1.41)* |
| *R2* | 0.027 | 0.027 | 0.045 | 0.038 | 0.046 | 0.048 |
| *Number of observations* | 10,047 | 7,166 | 2,881 | 9,918 | 7,119 | 2,799 |
| *Number of individuals* | 3,035 | 2,150 | 885 | 3,024 | 2,147 | 877 |

**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis. "Urban" category includes Moscow, Saint Petersburg, big cities (oblastnoy center), semi-urban areas (towns). "Rural" category includes semi-rural (small towns) and rural areas.

**Table 8. Life satisfaction/subjective wealth and vulnerability, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | 2002-2007 | 2007-2012 | 2012-2017 | 2002-2007 | 2007-2012 | 2012-2017 |
| Below vulnerability line | -0.044** | -0.054*** | -0.078*** | -0.091*** | -0.079*** | -0.152*** |
| | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* | *(0.02)* |
| Vulnerability gap | -0.302*** | -0.261*** | -0.343*** | -0.273*** | -0.502*** | -0.312** |
| | *(0.07)* | *(0.09)* | *(0.10)* | *(0.09)* | *(0.12)* | *(0.14)* |
| *R2* | 0.012 | 0.012 | 0.014 | 0.009 | 0.008 | 0.029 |
| *Number of observations* | 35,861 | 64,955 | 75,239 | 35,592 | 64,200 | 74,291 |
| *Number of individuals* | 13,810 | 23,714 | 22,945 | 13,753 | 23,531 | 22,794 |

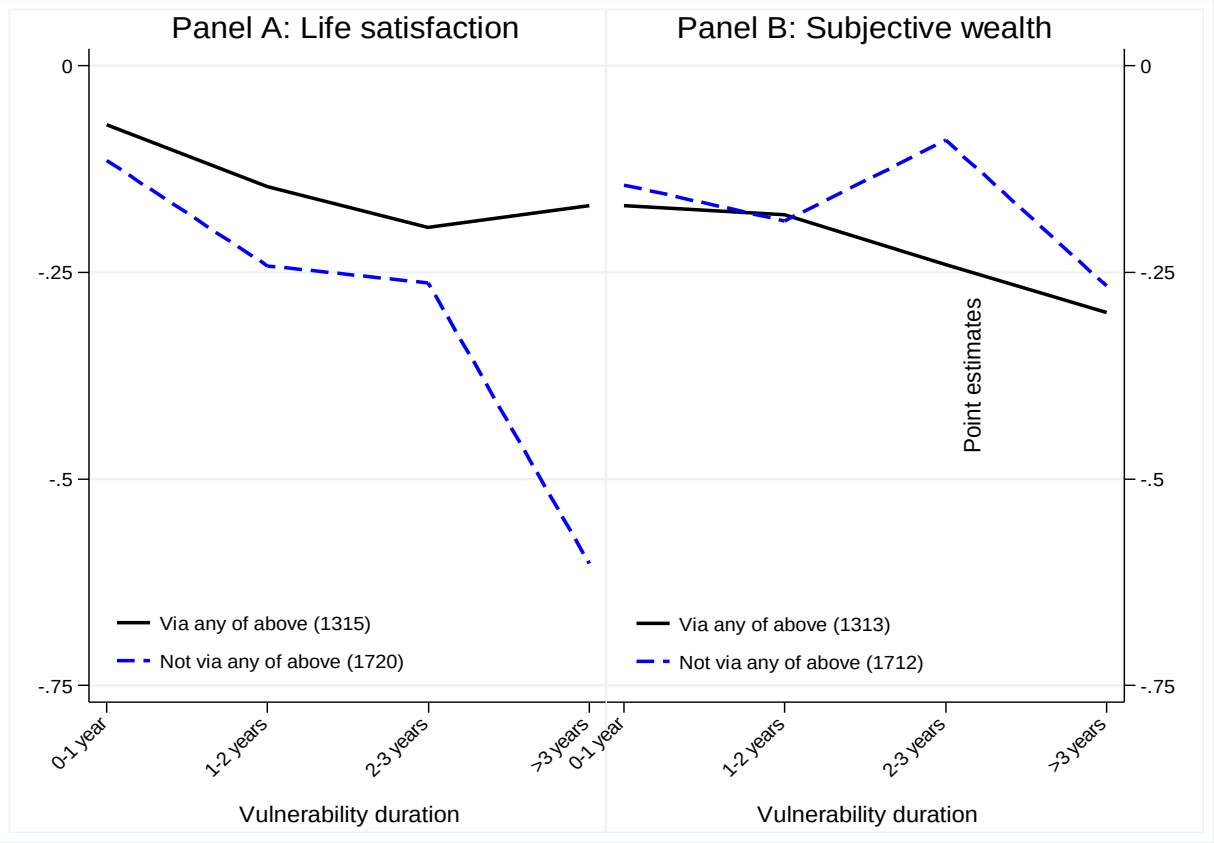
**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All the regressions include the same control variables as in Table 2. Regional and time dummy variables are included but not showed. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). The vulnerability index is defined as P (Y1<Z1|Z0<Y0<V0) = 0.25 in 2002, which is then adjusted for inflation using annual (December to December) CPI for each of 32 regions. Estimation results are based on real total household income per capita. Estimation sample is restricted to individuals 16 years old or older.

**Table 9. Satisfaction with other dimensions of life and vulnerability, fixed-effects regression, RLMS 2002-2017**

| Variables | Satisfaction with | | | | |
|---|---|---|---|---|---|
| | **Economic conditions** | **Job** | **Work contract** | **Pay** | **Career** |
| Below vulnerability line | -0.067*** | -0.158*** | -0.040*** | -0.024* | -0.136*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* |
| Vulnerability gap | -0.302*** | -0.403*** | -0.255*** | -0.275*** | -0.349*** |
| | *(0.05)* | *(0.05)* | *(0.06)* | *(0.06)* | *(0.07)* |
| *Mean of dependent variable* | 2.50 | 3.61 | 3.54 | 2.84 | 3.15 |
| (*Standard deviation*) | *(1.13)* | *(0.97)* | *(1.02)* | *(1.19)* | *(1.18)* |
| *R2* | 0.017 | 0.026 | 0.021 | 0.026 | 0.027 |
| *Number of observations* | 153,922 | 153,689 | 93,033 | 92,875 | 92,667 |
| *Number of individuals* | 33,550 | 33,530 | 22,813 | 22,798 | 22,790 |

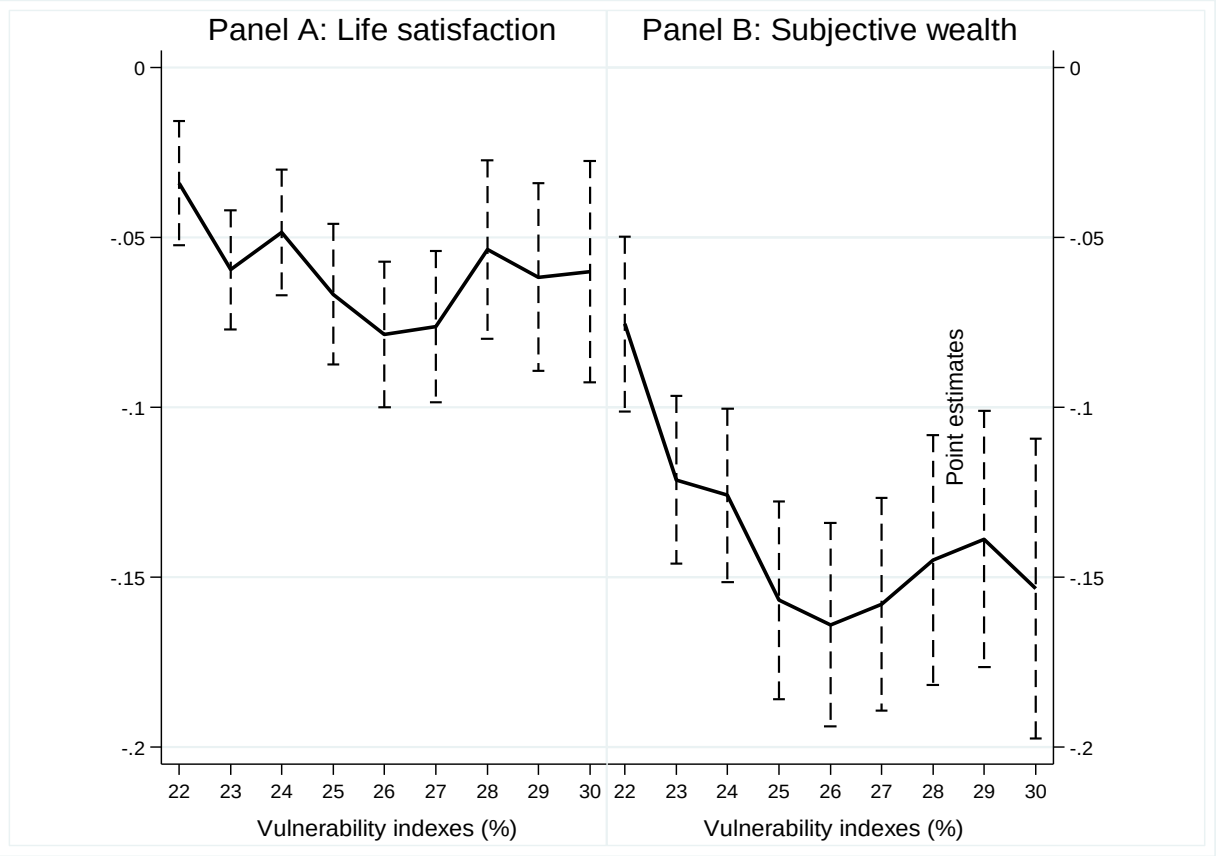
**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Data on satisfaction with economic conditions and satisfaction with job, work contract, pay and career are available respectively from 2000 and 2002 for employed individuals.

**Figure 1. Adaptation to vulnerability, by events causing vulnerability, RLMS 2002-2017**



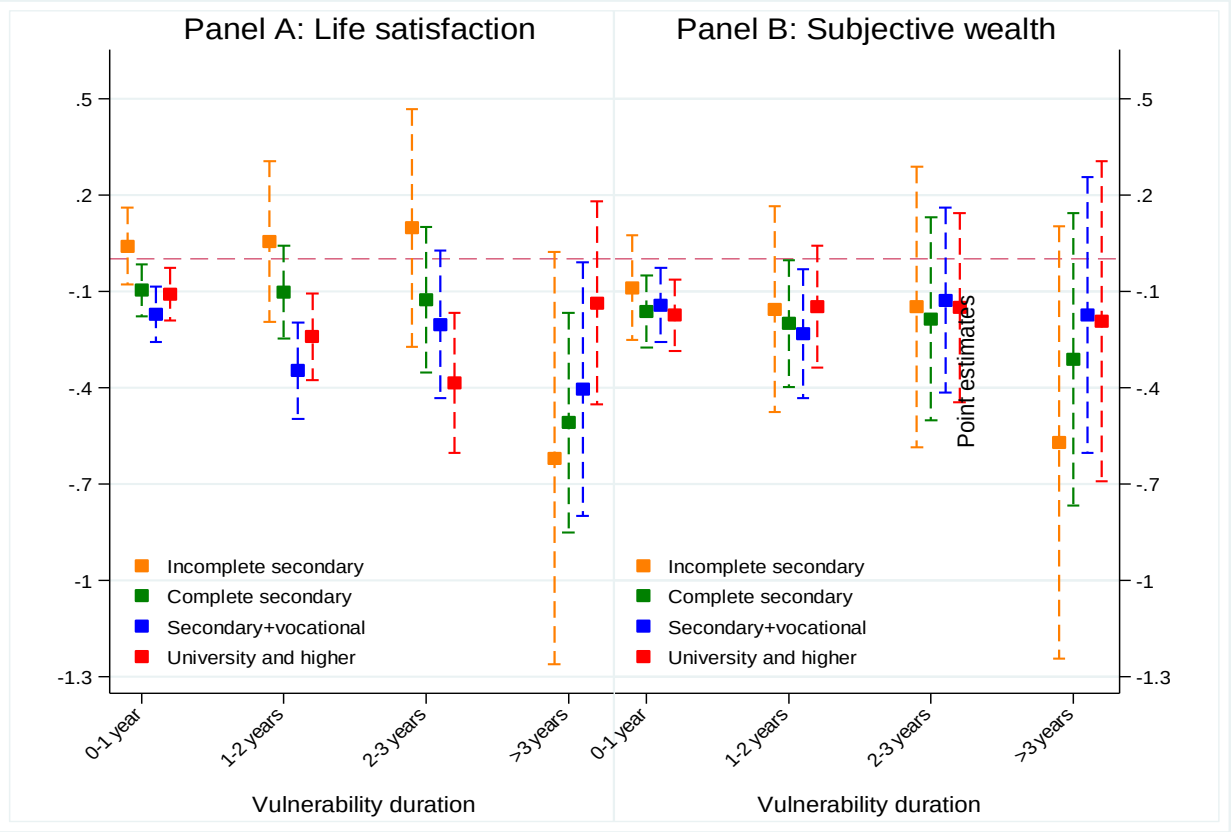

**Note:** The numbers in parentheses refer to the number of individuals (i.e. vulnerability entries). Vulnerability events include major life events such as unemployment, retirement, loss of a partner, bad health, disability, and changes in household size

**Figure 2. Life satisfaction/subjective wealth and vulnerability, RLMS 2002-2017**



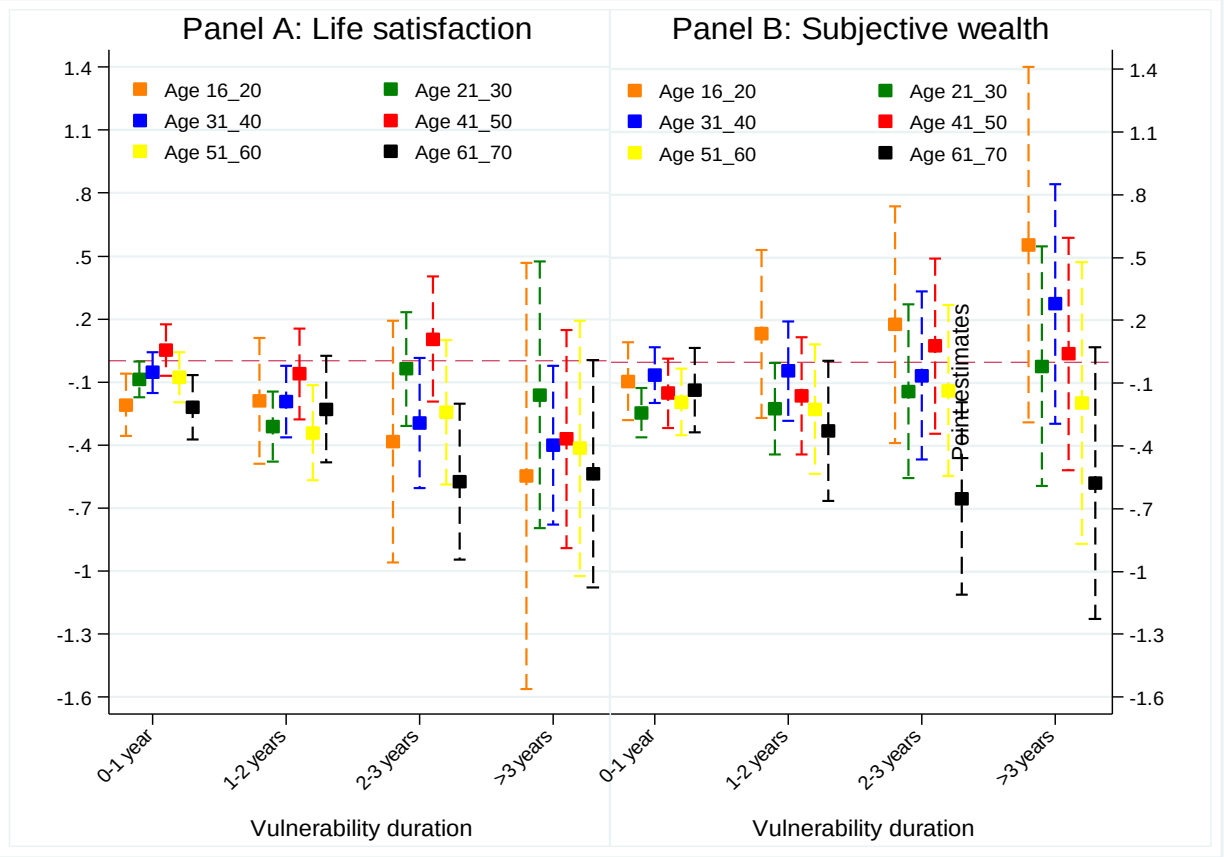

**Note:** Regressions include all the control variables in Table 2. The dashed line represents the 95% confidence intervals.

**Figure 3. Educational profiles of vulnerable individuals, fixed-effects regression, RLMS 2002-2017**



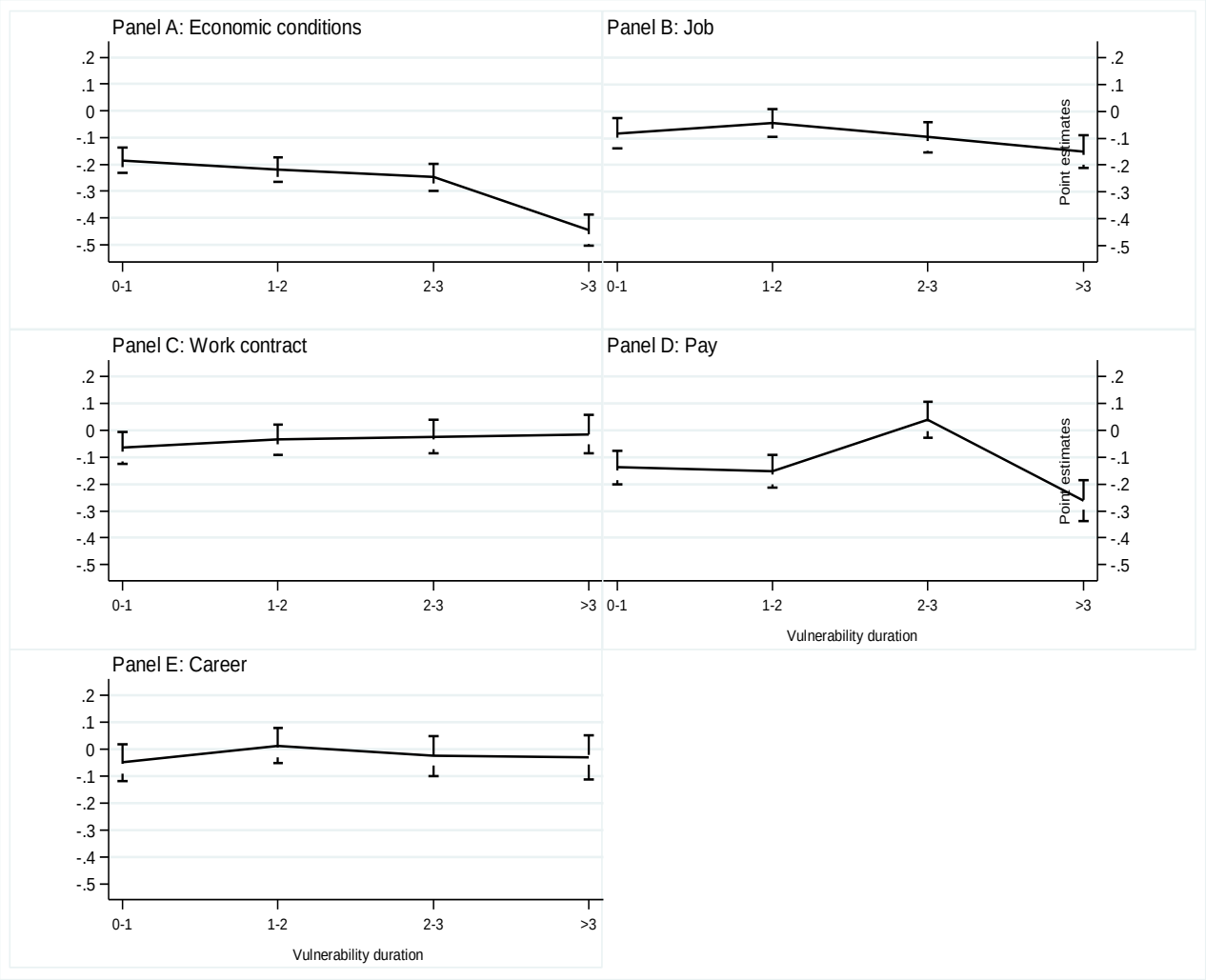

**Note:** Vulnerability spells are constructed on an annual basis. The dashed line represents the 95% confidence intervals.

**Figure 4. Age profiles of vulnerable individuals, fixed-effects regression, RLMS 2002-2017**




**Note:** Vulnerability spells are constructed on an annual basis. The dashed line represents the 95% confidence intervals.

**Figure 5. Satisfaction with other dimensions of life and vulnerability duration, fixed-effects regression, RLMS 2002-2017**



## Appendix 1. Additional Tables and Figures

### Table 1.1a. Vulnerability Lines for Russia, 2001-2017

| 2001-2002 | | 2002-2003 | | 2003-2004 | | 2004-2005 | | 2005-2006 | | 2006-2007 | | 2007-2008 | | 2008-2009 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline |
| ***42*** | 5048 | | | | | | | | | | | | | | |
| ***41*** | 5111 | | | | | | | | | | | | | | |
| ***40*** | 5194 | | | | | | | | | | | | | | |
| ***39*** | 5526 | | | | | | | | | | | | | | |
| ***38*** | 5609 | | | | | | | | | | | | | | |
| ***37*** | 5734 | | | | | | | | | | | | | | |
| ***36*** | 5962 | | | | | ***36*** | 5714 | | | | | | | ***36*** | 6546 |
| ***35*** | 6170 | | | | | ***35*** | 5326 | | | | | | | ***35*** | 6661 |
| ***34*** | 6845 | | | | | ***34*** | 6057 | | | | | | | ***34*** | 6921 |
| ***33*** | 7271 | | | | | ***33*** | 6240 | | | | | | | ***33*** | 7008 |
| ***32*** | 7417 | | | | | ***32*** | 6377 | | | | | | | ***32*** | 7123 |
| ***31*** | 8289 | | | | | ***31*** | 6491 | | | | | | | ***31*** | 7325 |
| ***30*** | 9671 | ***30*** | 6181 | | | ***30*** | 6880 | | | | | | | ***30*** | 7498 |
| ***29*** | 10761 | ***29*** | 6594 | ***29*** | 6401 | ***29*** | 7246 | | | | | | | ***29*** | 7555 |
| | | ***28*** | 6746 | ***28*** | 6560 | ***28*** | 7611 | | | | | | | ***28*** | 7671 |
| | | ***27*** | 7595 | ***27*** | 7400 | ***27*** | 7703 | | | | | | | ***27*** | 7757 |
| | | ***26*** | 7845 | ***26*** | 7605 | ***26*** | 8000 | | | | | | | ***26*** | 7930 |
| | | ***25*** | 8139 | ***25*** | 8808 | ***25*** | 8388 | | | ***25*** | 6752 | | | ***25*** | 8161 |
| | | ***24*** | 9663 | ***24*** | 9432 | ***24*** | 8846 | | | ***24*** | 6889 | | | ***24*** | 8334 |
| | | ***23*** | 11447 | ***23*** | 11918 | ***23*** | 9268 | | | ***23*** | 7243 | ***23*** | 7087 | ***23*** | 8449 |
| | | ***22*** | 14559 | ***22*** | 21577 | ***22*** | 11874 | | | ***22*** | 7406 | ***22*** | 7169 | ***22*** | 8911 |
| | | | | | | ***21*** | 13691 | | | ***21*** | 7896 | ***21*** | 7388 | ***21*** | 9401 |
| | | | | | | ***20*** | 18411 | ***20*** | 8978 | ***20*** | 8114 | ***20*** | 7743 | ***20*** | 9747 |
| | | | | | | | | ***19*** | 9842 | ***19*** | 8495 | ***19*** | 7935 | ***19*** | 10295 |
| | | | | | | | | ***18*** | 10430 | ***18*** | 9475 | ***18*** | 8400 | ***18*** | 11304 |
| | | | | | | | | ***17*** | 11739 | ***17*** | 9775 | ***17*** | 8783 | ***17*** | 12371 |
| | | | | | | | | ***16*** | 14252 | ***15*** | 13192 | ***16*** | 9494 | ***16*** | 14275 |
| | | | | | | | | ***15*** | 17642 | ***14*** | 15329 | ***15*** | 10507 | ***15*** | 16409 |
| | | | | | | | | | | ***13*** | 19046 | ***14*** | 11109 | ***14*** | 18802 |
| | | | | | | | | | | | | ***13*** | 13872 | ***13*** | 28939 |
| | | | | | | | | | | | | ***12*** | 16677 | | |
| | | | | | | | | | | | | ***11*** | 23216 | | |

**Note:** Vulnerability lines are expressed in December prices of the 2011 year by using the annual (December to December) national CPI.

## Table 1.1b. Vulnerability Lines for Russia, 2001-2017

| 2009-2010 | | 2010-2011 | | 2011-2012 | | 2012-2013 | | 2013-2014 | | 2014-2015 | | 2015-2016 | | 2016-2017 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline | vindex | vline |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | ***39*** | 7933 | | | | |
| | | | | | | | | | | ***38*** | 8156 | | | | |
| | | | | | | | | | | ***37*** | 8251 | | | | |
| | | | | | | | | | | ***36*** | 8315 | | | | |
| | | | | | | | | | | ***35*** | 8442 | | | | |
| | | | | | | | | | | ***34*** | 8570 | | | | |
| | | | | | | | | | | ***33*** | 8793 | | | | |
| | | | | | | | | | | ***32*** | 9048 | | | | |
| | | | | | | | | | | ***31*** | 9239 | | | | |
| | | | | | | | | | | ***30*** | 9334 | | | | |
| | | | | | | ***29*** | 7269 | | | ***29*** | 9494 | | | | |
| | | | | | | ***28*** | 7453 | ***28*** | 7501 | ***28*** | 9685 | | | | |
| | | | | | | ***27*** | 7880 | ***27*** | 7727 | ***27*** | 9908 | | | | |
| | | | | | | ***26*** | 7972 | ***26*** | 7920 | ***26*** | 10163 | | | | |
| | | | | | | ***25*** | 8063 | ***25*** | 7984 | ***25*** | 10577 | ***25*** | 7446 | | |
| | | ***24*** | 7936 | | | ***24*** | 8247 | ***24*** | 8145 | ***24*** | 11055 | ***24*** | 7786 | | |
| ***23*** | 6899 | ***23*** | 8268 | ***23*** | 6847 | ***23*** | 8430 | ***23*** | 8467 | ***23*** | 11532 | ***23*** | 7718 | | |
| ***22*** | 6958 | ***22*** | 8479 | ***22*** | 6910 | ***22*** | 8522 | ***22*** | 8789 | ***22*** | 11883 | ***22*** | 8024 | ***22*** | 8302 |
| ***21*** | 7167 | ***21*** | 8570 | ***21*** | 7261 | ***21*** | 8796 | ***21*** | 8821 | ***21*** | 12552 | ***21*** | 8160 | ***21*** | 8335 |
| ***20*** | 7286 | ***20*** | 8932 | ***20*** | 7770 | ***20*** | 8980 | ***20*** | 9015 | ***20*** | 12998 | ***20*** | 8364 | ***20*** | 8629 |
| ***19*** | 7523 | ***19*** | 9173 | ***19*** | 7961 | ***19*** | 9255 | ***19*** | 9401 | ***19*** | 13826 | ***19*** | 8432 | ***19*** | 8792 |
| ***18*** | 8416 | ***18*** | 9354 | ***18*** | 8152 | ***18*** | 9407 | ***18*** | 9723 | ***18*** | 14463 | ***18*** | 9112 | ***18*** | 9021 |
| ***17*** | 8802 | ***17*** | 9626 | ***17*** | 8280 | ***17*** | 9621 | ***17*** | 10109 | ***17*** | 15594 | ***17*** | 9555 | ***17*** | 9348 |
| ***16*** | 9129 | ***16*** | 10078 | ***16*** | 8598 | ***16*** | 10018 | ***16*** | 10399 | ***16*** | 16789 | ***16*** | 10031 | ***16*** | 9740 |
| ***15*** | 9724 | ***15*** | 10742 | ***15*** | 8917 | ***15*** | 10507 | ***15*** | 11139 | ***15*** | 18573 | ***15*** | 10643 | ***15*** | 10100 |
| ***14*** | 10259 | ***14*** | 11557 | ***14*** | 9140 | ***14*** | 11118 | ***14*** | 11526 | ***14*** | 24116 | ***14*** | 11221 | ***14*** | 10427 |
| ***13*** | 11151 | ***13*** | 13005 | ***13*** | 9617 | ***13*** | 11912 | ***13*** | 12363 | ***13*** | 45094 | ***13*** | 11833 | ***13*** | 11080 |
| ***12*** | 12787 | ***12*** | 14937 | ***12*** | 10031 | ***12*** | 12920 | ***12*** | 13490 | | | ***12*** | 12887 | ***12*** | 12028 |
| ***11*** | 14898 | ***11*** | 18195 | ***11*** | 10604 | ***11*** | 14233 | ***11*** | 14745 | | | ***11*** | 14009 | ***11*** | 13303 |
| ***10*** | 18883 | ***10*** | 26599 | ***10*** | 11687 | ***10*** | 16890 | ***10*** | 17289 | | | ***10*** | 15777 | ***10*** | 14480 |
| | | | | ***9*** | 12897 | ***9*** | 23488 | ***9*** | 22021 | | | ***9*** | 19415 | ***9*** | 17323 |
| | | | | ***8*** | 14999 | | | | | | | | | ***8*** | 31410 |
| | | | | ***7*** | 21304 | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

**Note:** Vulnerability lines are expressed in December prices of the 2011 year by using the annual (December to December) national CPI.

## Table 1.2. Annual growth rate of income per capita, Rosstat vs. RLMS, 2001-2017

| | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Annual growth rate of per capita incomes (Rosstat), % | 13.2 | 12.0 | 16.9 | 10.8 | 14.0 | 15.2 | 10.4 | 4.6 | 4.5 | 3.2 | 3.3 | 4.9 | 4.9 | -3.8 | -2.8 | -4.5 | -0.2 |
| Annual growth rate of per capita incomes (RLMS), % | 26.8 | 7.1 | 13.1 | 3.6 | 20.3 | 15.8 | 5.6 | 18.3 | -3.9 | 4.9 | 5.3 | 8.0 | 2.7 | -3.9 | -6.6 | 1.3 | 4.1 |

**Sources:** Rosstat (money incomes of population https://eng.gks.ru/living), RLMS.

**Table 1.3. Life satisfaction/subjective wealth and vulnerability, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | Whole sample | Men | Women | Whole sample | Men | Women |
| Below vulnerability line | -0.052*** | -0.044*** | -0.057*** | -0.140*** | -0.128*** | -0.149*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.01)* |
| Below poverty line | 0.001 | -0.002 | 0.006 | -0.001 | 0.008 | -0.006 |
| | *(0.01)* | *(0.02)* | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* |
| Vulnerability gap | -0.408*** | -0.385*** | -0.421*** | -0.353*** | -0.379*** | -0.328*** |
| | *(0.03)* | *(0.04)* | *(0.03)* | *(0.04)* | *(0.05)* | *(0.04)* |
| *Individual Characteristics* | | | | | | |
| Unemployed/out of labour force | -0.199*** | -0.287*** | -0.143*** | -0.186*** | -0.275*** | -0.129*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.01)* |
| Age 16–20 | 0.284*** | 0.298*** | 0.248*** | 0.313*** | 0.257*** | 0.351*** |
| | *(0.02)* | *(0.04)* | *(0.03)* | *(0.03)* | *(0.05)* | *(0.04)* |
| Age 21–30 | 0.017 | -0.025 | 0.032 | 0.118*** | 0.035 | 0.172*** |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.03)* |
| Age 31–40 | -0.023* | -0.049*** | -0.008 | 0.051*** | 0.002 | 0.085*** |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* |
| Age 51–60 | 0.061*** | 0.043** | 0.078*** | -0.020 | -0.038* | -0.007 |
| | *(0.01)* | *(0.02)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.02)* |
| Age 61–70 | 0.132*** | 0.179*** | 0.115*** | 0.028 | 0.077** | 0.008 |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| Age 71–80 | 0.123*** | 0.150*** | 0.107*** | 0.054** | 0.113** | 0.030 |
| | *(0.02)* | *(0.04)* | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* |
| Age 80+ | 0.138*** | 0.187*** | 0.103*** | 0.290*** | 0.281*** | 0.285*** |
| | *(0.03)* | *(0.05)* | *(0.03)* | *(0.03)* | *(0.06)* | *(0.04)* |
| *Education* | | | | | | |
| Complete secondary | -0.044*** | -0.046*** | -0.045*** | -0.006 | -0.010 | -0.003 |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.02)* | *(0.02)* |
| Secondary+vocational | -0.075*** | -0.075*** | -0.074*** | -0.039** | -0.044* | -0.035 |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| University and higher | -0.095*** | -0.097*** | -0.103*** | 0.003 | 0.020 | -0.007 |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.02)* | *(0.04)* | *(0.03)* |
| Single | -0.167*** | -0.145*** | -0.184*** | -0.026 | 0.001 | -0.042* |
| | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* | *(0.03)* | *(0.02)* |
| Divorced/widowed/separated | -0.262*** | -0.315*** | -0.249*** | -0.179*** | -0.162*** | -0.186*** |
| | *(0.01)* | *(0.02)* | *(0.01)* | *(0.01)* | *(0.03)* | *(0.02)* |
| Number of children | 0.023*** | 0.024*** | 0.018*** | 0.028*** | 0.023** | 0.031*** |
| | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* | *(0.01)* |
| Constant | 3.388*** | 3.435*** | 3.317*** | 4.117*** | 3.907*** | 3.818*** |
| | *(0.07)* | *(0.09)* | *(0.05)* | *(0.10)* | *(0.14)* | *(0.08)* |
| *R2* | 0.028 | 0.029 | 0.031 | 0.022 | 0.024 | 0.022 |
| *Number of observations* | 206,345 | 86,959 | 119,386 | 203,580 | 85,620 | 117,960 |
| *Number of individuals* | 37,843 | 16,881 | 20,962 | 37,640 | 16,779 | 20,861 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. Regional and time dummy variables are included but not showed. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). The vulnerability index is defined as P (Y1<Z1|Z0<Y0<V0) = 0.25 in 2002, which is then adjusted for inflation using annual (December to December) CPI for each of 32 regions. Estimation results are based on real total household income per capita. Estimation sample is restricted to individuals 16 years old or older.

**Table 1.4. Test for equality of coefficients from Table 3, RLMS 2002-2017**

| F-statistics | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | All | Men | Women | All | Men | Women |
| Less than 1 year – (1-2 years) in vulnerability | 8.04 | 3.81 | 4.47 | 0.37 | 0.60 | 2.17 |
| | *(0.00)* | *(0.05)* | *(0.03)* | *(0.55)* | *(0.44)* | *(0.14)* |
| Less than 1 year – (2-3 years) in vulnerability | 4.58 | 6.06 | 0.70 | 0.00 | 0.94 | 0.51 |
| | *(0.03)* | *(0.01)* | *(0.04)* | *(0.98)* | *(0.33)* | *(0.48)* |
| Less than 1 year – (Over 3 years) in vulnerability | 11.07 | 3.49 | 10.53 | 1.54 | 0.08 | 2.17 |
| | *(0.00)* | *(0.06)* | *(0.00)* | *(0.21)* | *(0.78)* | *(0.14)* |

**Note:** P-values are in parentheses. Vulnerability spells are constructed on an annual basis.

**Table 1.5. Adaptation of life satisfaction to vulnerability, fixed-effects regressions, RLMS 2001-2017**

| | Vulnerability indexes (%) | | | |
|---|---|---|---|---|
| | **29** | **30** | **31** | **32** |
| Less than 1 year in vulnerability | -0.090*** | -0.101*** | -0.094*** | -0.102*** |
| | *(0.02)* | *(0.02)* | *(0.02)* | *(0.02)* |
| 1-2 years in vulnerability | -0.178*** | -0.179*** | -0.170*** | -0.186*** |
| | *(0.04)* | *(0.04)* | *(0.04)* | *(0.04)* |
| 2-3 years in vulnerability | -0.093* | -0.161*** | -0.196*** | -0.168** |
| | *(0.05)* | *(0.06)* | *(0.06)* | *(0.08)* |
| Over 3 years in vulnerability | -0.062 | -0.186** | -0.331*** | -0.183* |
| | *(0.07)* | *(0.08)* | *(0.11)* | *(0.11)* |
| *R2* | 0.033 | 0.030 | 0.025 | 0.030 |
| *Number of observations* | 10,658 | 10,574 | 10,081 | 8,575 |
| *Number of individuals* | 3,078 | 3,099 | 3,088 | 2,688 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis. The range of vulnerability indexes is selected to ensure that the number of observations in each duration category is at least 100.

**Table 1.6. Adaptation of subjective wealth to vulnerability, fixed-effects regressions, RLMS 2001-2017**

| | Vulnerability indexes (%) | | | |
|---|---|---|---|---|
| | **29** | **30** | **31** | **32** |
| Less than 1 year in vulnerability | -0.165*** | -0.132*** | -0.157*** | -0.105*** |
| | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* |
| 1-2 years in vulnerability | -0.184*** | -0.145*** | -0.183*** | -0.137** |
| | *(0.05)* | *(0.05)* | *(0.06)* | *(0.07)* |
| 2-3 years in vulnerability | -0.207*** | -0.044 | -0.121 | -0.050 |
| | *(0.07)* | *(0.08)* | *(0.09)* | *(0.10)* |
| Over 3 years in vulnerability | -0.108 | -0.060 | -0.244* | -0.172 |
| | *(0.10)* | *(0.11)* | *(0.13)* | *(0.15)* |
| *R2* | 0.035 | 0.038 | 0.033 | 0.035 |
| *Number of observations* | 10,584 | 10,494 | 9,962 | 8,474 |
| *Number of individuals* | 3,075 | 3,097 | 3,081 | 2,679 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis. The range of vulnerability indexes is selected to ensure that the number of observations in each duration category is at least 100.

**Table 1.7. Adaptation to vulnerability (without educational characteristics), fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Men** | **Women** | **All** | **Men** | **Women** |
| Less than 1 year in vulnerability | -0.096*** | -0.058* | -0.120*** | -0.160*** | -0.133*** | -0.174*** |
| | *(0.02)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* | *(0.04)* |
| 1-2 years in vulnerability | -0.197*** | -0.162*** | -0.210*** | -0.191*** | -0.082 | -0.262*** |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.06)* | *(0.08)* | *(0.07)* |
| 2-3 years in vulnerability | -0.222*** | -0.268*** | -0.180** | -0.164* | -0.034 | -0.240** |
| | *(0.06)* | *(0.09)* | *(0.08)* | *(0.09)* | *(0.12)* | *(0.09)* |
| Over 3 years in vulnerability | -0.428*** | -0.310** | -0.481*** | -0.309** | -0.181 | -0.371*** |
| | *(0.10)* | *(0.14)* | *(0.12)* | *(0.13)* | *(0.18)* | *(0.14)* |
| *R2* | 0.026 | 0.042 | 0.027 | 0.038 | 0.045 | 0.039 |
| *Number of observations* | 10,047 | 4,329 | 5,718 | 9,918 | 4,278 | 5,640 |
| *Number of individuals* | 3,035 | 1,332 | 1,703 | 3,024 | 1,330 | 1,694 |

**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2 except educational characteristics. Vulnerability spells are constructed on an annual basis.

**Table 1.8. Adaptation to vulnerability, controlling for whether individuals participate in the next survey round, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Men** | **Women** | **All** | **Men** | **Women** |
| Less than 1 year in vulnerability | -0.109*** | -0.070** | -0.138*** | -0.173*** | -0.135*** | -0.192*** |
| | *(0.02)* | *(0.04)* | *(0.03)* | *(0.04)* | *(0.05)* | *(0.04)* |
| 1-2 years in vulnerability | -0.213*** | -0.172*** | -0.235*** | -0.207*** | -0.084 | -0.284*** |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.06)* | *(0.08)* | *(0.07)* |
| 2-3 years in vulnerability | -0.242*** | -0.279*** | -0.211*** | -0.183** | -0.031 | -0.266*** |
| | *(0.07)* | *(0.09)* | *(0.08)* | *(0.09)* | *(0.13)* | *(0.10)* |
| Over 3 years in vulnerability | -0.451*** | -0.331** | -0.517*** | -0.331** | -0.179 | -0.402*** |
| | *(0.11)* | *(0.15)* | *(0.12)* | *(0.13)* | *(0.18)* | *(0.15)* |
| **Present in next wave** | -0.042 | -0.029 | -0.063 | -0.039 | 0.006 | -0.070 |
| | *(0.03)* | *(0.05)* | *(0.04)* | *(0.04)* | *(0.06)* | *(0.05)* |
| *R2* | 0.027 | 0.045 | 0.028 | 0.038 | 0.047 | 0.040 |
| *Number of observations* | 10,047 | 4,329 | 5,718 | 9,918 | 4,278 | 5,640 |
| *Number of individuals* | 3,035 | 1,332 | 1,703 | 3,024 | 1,330 | 1,694 |

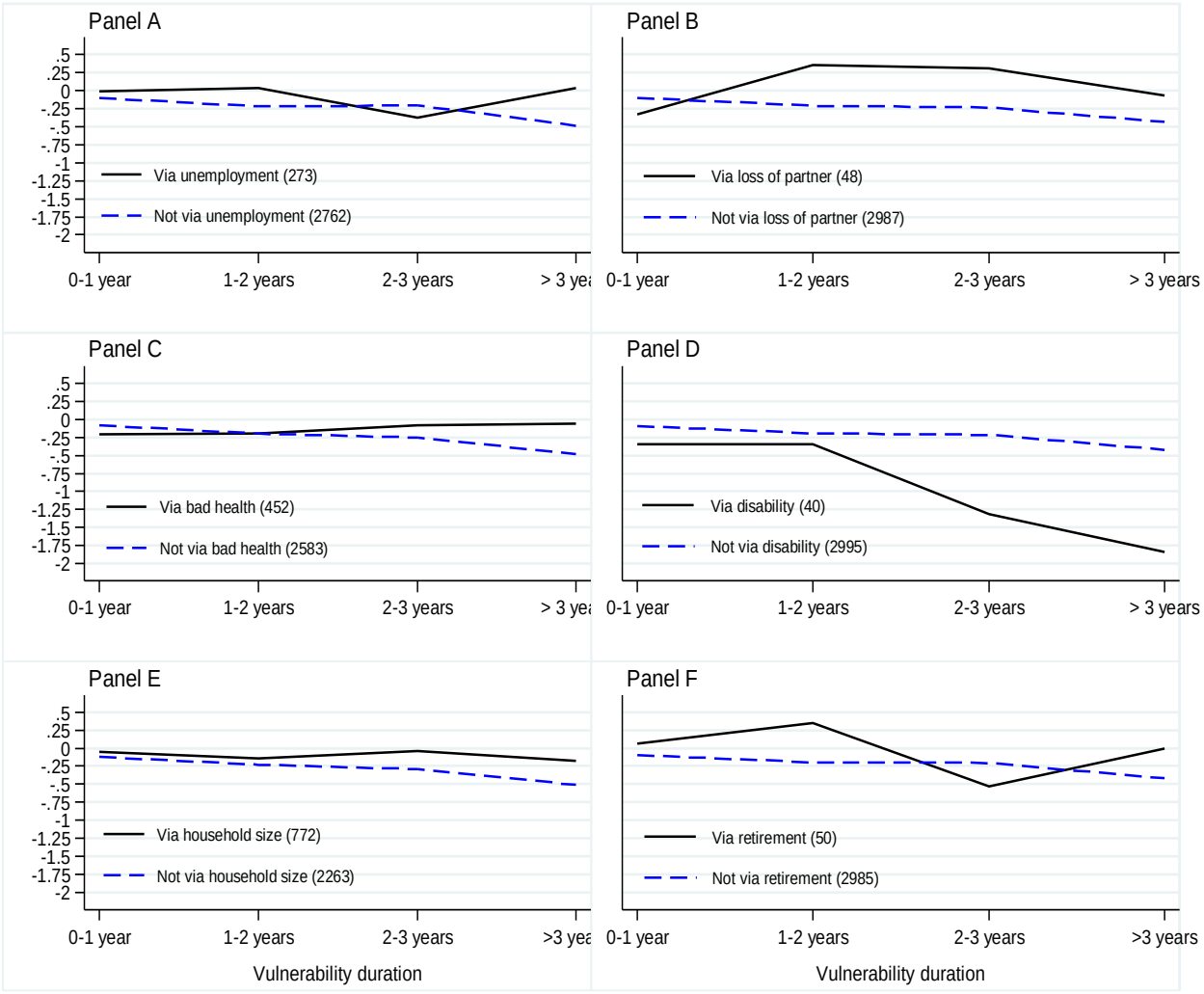
**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2. Vulnerability spells are constructed on an annual basis.

**Table 1.9. Adaptation to vulnerability, controlling for the number of survey rounds that individuals participate in, fixed-effects regressions, RLMS 2002-2017**

| Variables | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Men** | **Women** | **All** | **Men** | **Women** |
| Less than 1 year in vulnerability | -0.097*** | -0.062* | -0.120*** | -0.162*** | -0.136*** | -0.172*** |
| | *(0.02)* | *(0.03)* | *(0.03)* | *(0.03)* | *(0.04)* | *(0.04)* |
| 1-2 years in vulnerability | -0.196*** | -0.160*** | -0.209*** | -0.192*** | -0.086 | -0.256*** |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.06)* | *(0.08)* | *(0.07)* |
| 2-3 years in vulnerability | -0.221*** | -0.263*** | -0.180** | -0.164* | -0.034 | -0.232** |
| | *(0.06)* | *(0.09)* | *(0.08)* | *(0.09)* | *(0.12)* | *(0.09)* |
| Over 3 years in vulnerability | -0.428*** | -0.315** | -0.482*** | -0.310** | -0.182 | -0.364** |
| | *(0.10)* | *(0.14)* | *(0.12)* | *(0.13)* | *(0.17)* | *(0.14)* |
| **Number of waves individual presents** | -0.004 | -0.030* | 0.013 | -0.020 | -0.053** | 0.000 |
| | *(0.01)* | *(0.02)* | *(0.01)* | *(0.02)* | *(0.02)* | *(0.02)* |
| *R2* | 0.027 | 0.045 | 0.027 | 0.038 | 0.047 | 0.040 |
| *Number of observations* | 10,047 | 4,329 | 5,718 | 9,918 | 4,278 | 5,640 |
| *Number of individuals* | 3,035 | 1,332 | 1,703 | 3,024 | 1,330 | 1,694 |

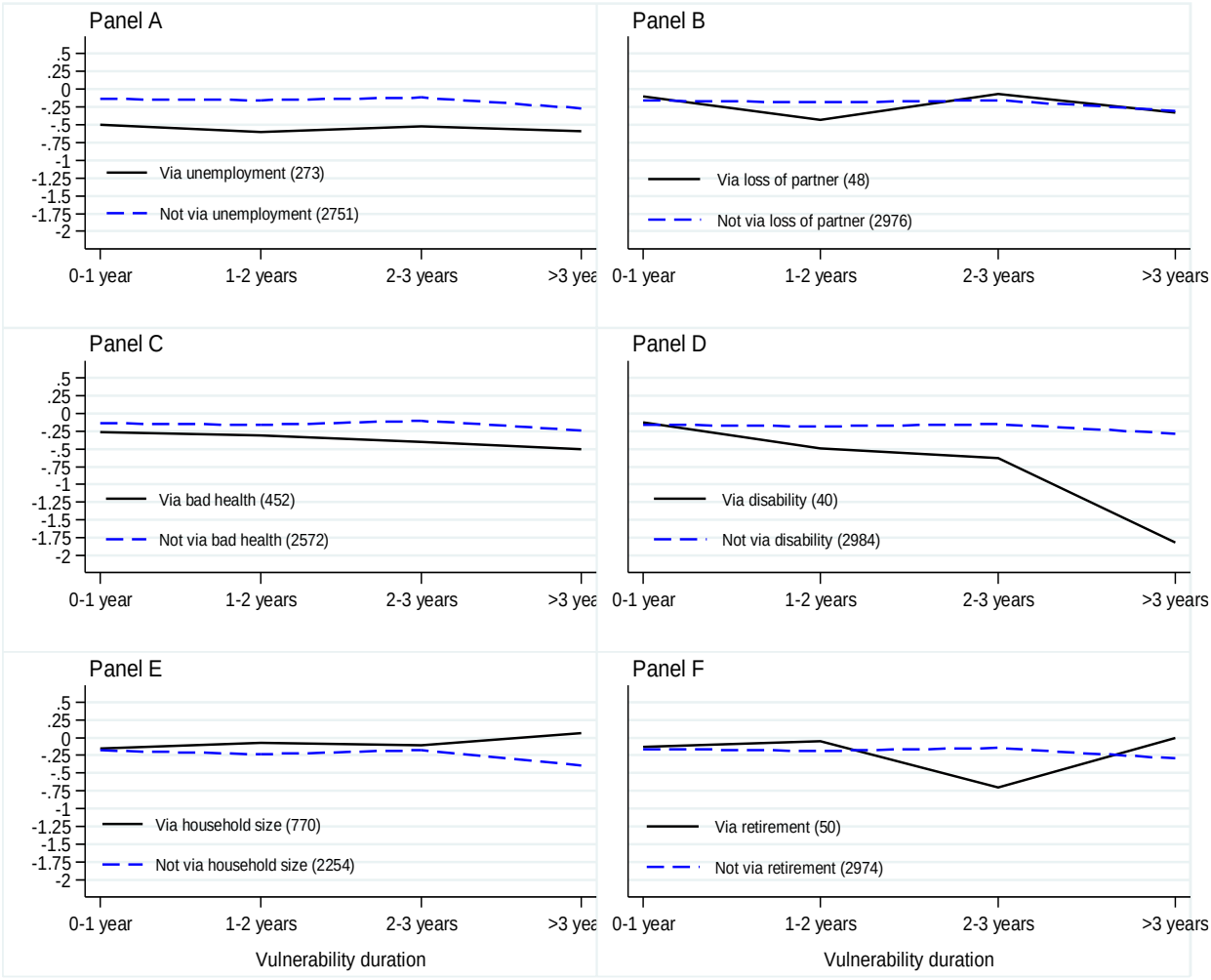
**Note:** *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors clustered at household-year level are in parentheses. All regressions include all control variables in Table 2 except educational characteristics. Vulnerability spells are constructed on an annual basis.

**Figure 1.1 Adaptation to vulnerability, by events causing vulnerability, RLMS (2002-2017) (dependent variable-life satisfaction)**



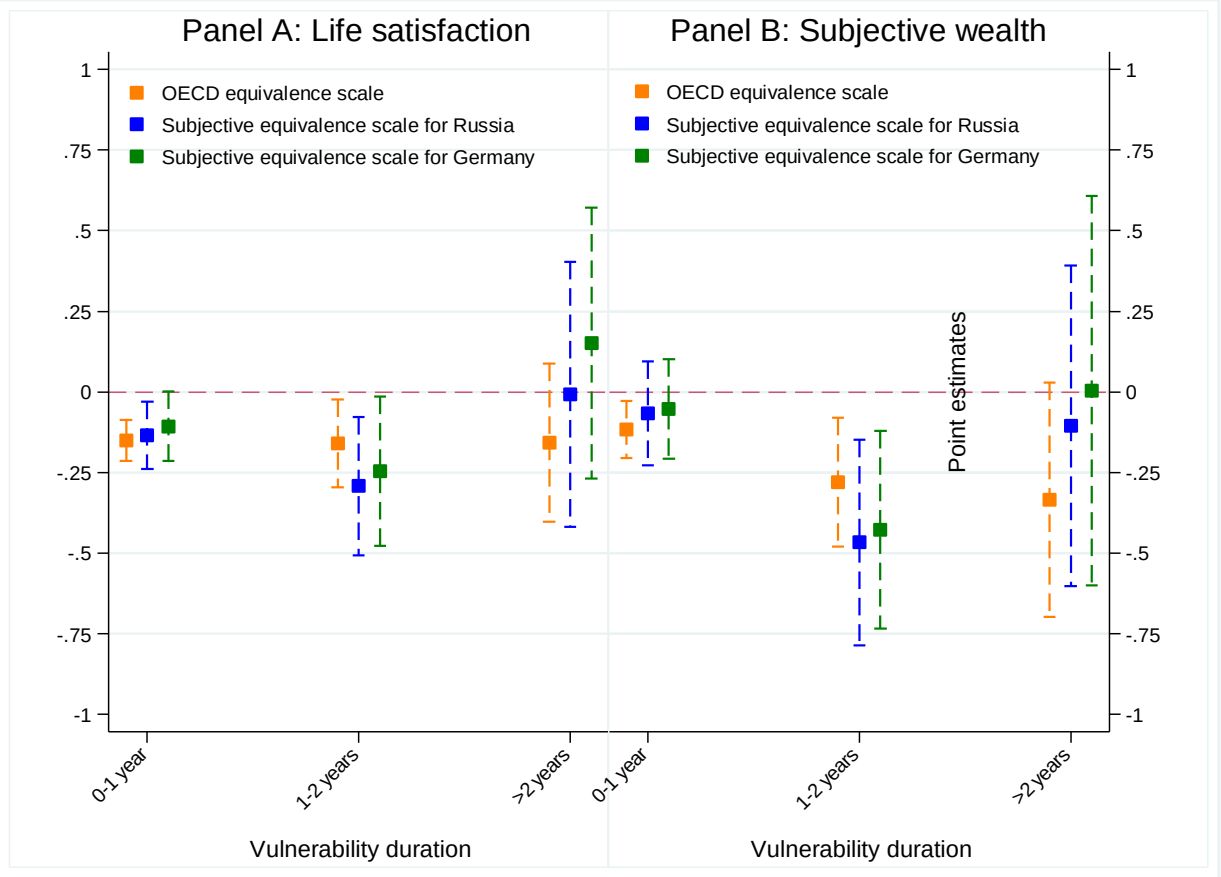

**Note:** The numbers in parentheses refer to the number of individuals (i.e. vulnerability entries). Information on respondent`s disability status is available since 2003.

**Figure 1.2 Adaptation to vulnerability, by events causing vulnerability, RLMS (2002-2017) (dependent variable-subjective wealth)**



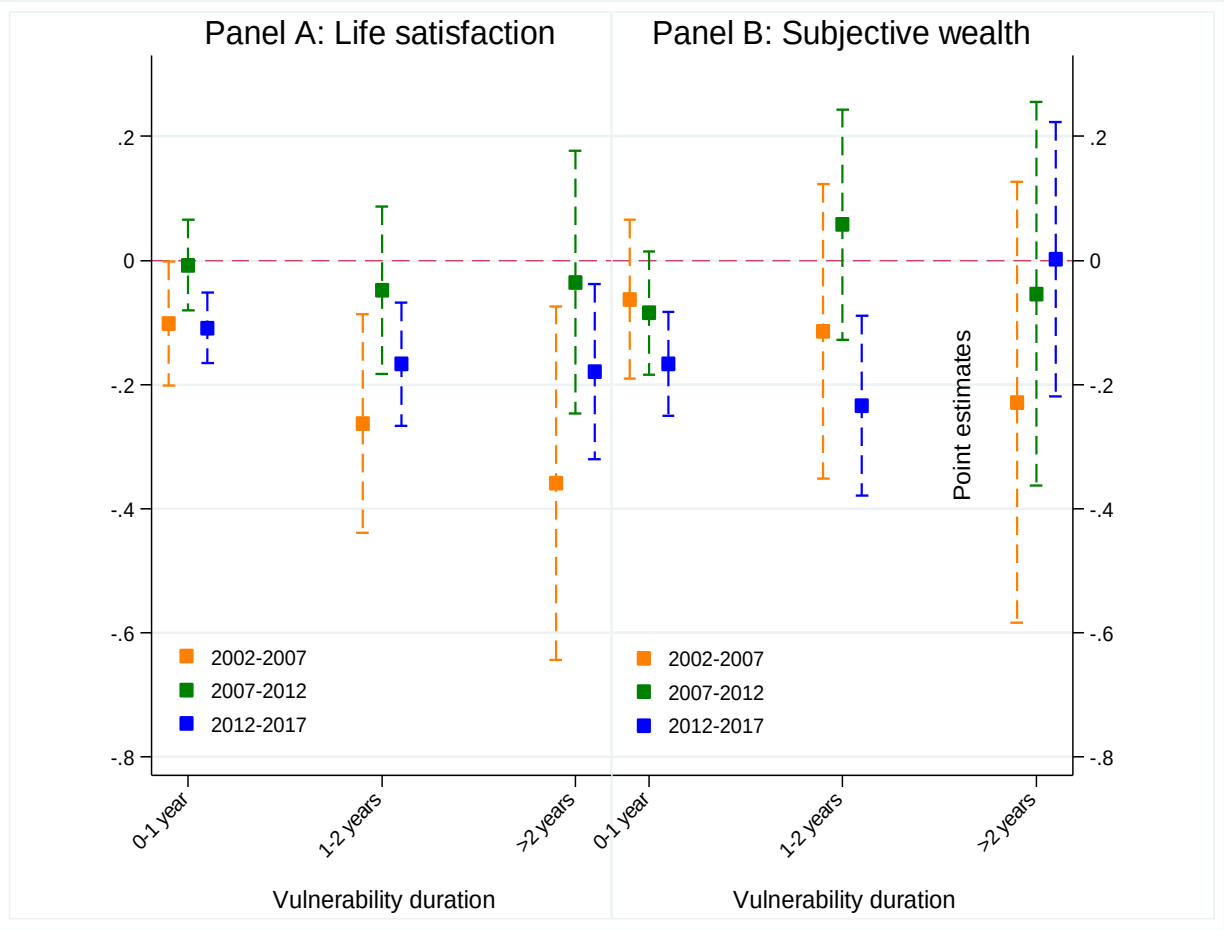

***Note:*** The numbers in parentheses refer to the number of individuals (i.e. vulnerability entries). Information on respondent`s disability status is available since 2003.

**Figure 1.3. Adaptation to vulnerability by different income definitions, fixed-effects regression, RLMS 2002-2017**




**Note:** Vulnerability spells are constructed on an annual basis. The dashed line represents the 95% confidence intervals. "OECD equivalence scale" assigns a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child. "Subjective equivalence scale for Russia" and "Sucjective equivalence scale for Germany" are computed as a scale elasticity using formula $e = a - bk$ where $a$ is a adult scale parameter equals 0.407 for Russia and 0.351 for Germany, $b$ is a child scale parameter equals 0.048 for Russia and 0.037 for Germany and $k$ is a number of children (Schwarze (2003) for detailed description of method).

**Figure 1.4. Adaptation to vulnerability by different time periods, fixed-effects regression, RLMS 2002-2017**




**Note:** Vulnerability spells are constructed on an annual basis. The dashed line represents the 95% confidence intervals.

**Appendix 2. Using an Alternative Definition of Vulnerabilty**

We employ an alternative common approach to identifying vulnerability as expected poverty developed by Chaudhuri et al. (2002) and Chaudhuri (2003). We define individual's income vulnerability at time *t* as the probability that the individual's income *y* will fall below a certain threshold *z* in the next period

$$V_{it} = \Pr(y_{it+1} < Z) \tag{2.1}$$

The probability distribution of an individual's future income can be specified as a function of individual (household) characteristics and the risks to the individual's income

$$\ln(y_{it}) = X_{it-1}\beta + S_{it}\gamma + \theta_i + \mu_t + \varepsilon_{it} \tag{2.2}$$

In Equation (2.2), $X_{it-1}$ are the set of observable characteristics at time *t-1*, $S_{it}$ are the observable idiosyncratic shocks experienced by individual between *t-1* and *t*, $\theta_i$ is the unobservable individual fixed effect, and $\mu_t$ captures the time effects and covariate shocks that are common across individuals. Following Christiaensen and Subbarao (2005), we include information on idiosyncratic shocks to better account for variations in income.[16]

Using the estimates $\hat{\beta}$ and $\hat{\theta}$ from Equation (2.2), we can define individual's expected future income, conditional on its previous observed time-varying and unobserved time-invariant characteristics

$$\mathrm{E}[\ln(y_{it})] = X_{it-1}\hat{\beta} + \hat{\theta}_i + \hat{\mu}_t \tag{2.3}$$

The variance of $\varepsilon_{it}$ from the following equation is considered as a measure of individual`s income variability that depends on individual (and household) characteristics

$$Var(\ln(y_{it})|X_{it-1},\ S_{it}) = \hat{\varepsilon}_{it} = X_{it-1}\varphi + S_{it}\gamma + \tau_i + \omega_{it} \tag{2.4}$$

The next step is to use the estimated mean from Equation (2.3) and the etimated variance from Equation (2.4) to estimate vulnerability to poverty, assuming log-normal probability distribution of income

$$V_{it} = \Pr(y_{it+1} < Z) = \Phi\left[\frac{Z-\hat{y}_{it}}{\widehat{\sqrt{Var}}_{it}}\right] \tag{2.5}$$

In Equation (2.5), $\hat{y}_{it}$ denotes the predicted value of (log) income from Equation (2.3) and $\widehat{\sqrt{Var}}_{it}$ the square root of predicted variance from Equation (2.4). Our estimates of vulnerability are obtained as the probability of falling below the poverty line in *t+1*, given individual's characteristics in *t-1*.

[16] From Equation (2.2), estimation of the parameters requires at least a two-period panel. Estimation of the parameters is also complicated by the presence of unobserved individual heterogeneity. To address potential biases in coefficients arising from unobserved heterogeneity, an individual fixed effects model could be applied which would require at least a three-period panel. An advantage of the fixed effect model is that we do not have to assume that θ_i is correlated with a set of time-varying covariates but, at the same time, fixed effect model requires time-varying characteristics to be strictly exogenous. We assume that using lagged levels of individual and household characteristics can ensure strict exogeneity.

**Table 2.1. Life satisfaction/subjective wealth and vulnerability, poverty line is set as Official Poverty Line, RLMS 2004-2017, fixed effect regressions**

| | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Male** | **Female** | **All** | **Male** | **Female** |
| Vulnerability index | -0.276*** | -0.130 | -0.338*** | -0.175* | -0.462*** | -0.077 |
| | *(0.07)* | *(0.12)* | *(0.08)* | *(0.09)* | *(0.16)* | *(0.11)* |
| Log of income | 0.167*** | 0.182*** | 0.158*** | 0.261*** | 0.308*** | 0.234*** |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* |
| Earning Quart=2 | -0.023 | 0.017 | -0.038 | -0.068** | -0.069 | -0.064* |
| | *(0.02)* | *(0.04)* | *(0.03)* | *(0.03)* | *(0.05)* | *(0.03)* |
| Earning Quart=3 | -0.008 | 0.028 | -0.023 | -0.040 | -0.038 | -0.041 |
| | *(0.03)* | *(0.05)* | *(0.03)* | *(0.04)* | *(0.06)* | *(0.05)* |
| Earning Quart=4 | 0.017 | 0.089 | -0.047 | 0.059 | 0.040 | 0.068 |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.05)* | *(0.08)* | *(0.06)* |
| Informal employment | -0.111*** | -0.137*** | -0.082* | -0.154*** | -0.168*** | -0.138** |
| | *(0.03)* | *(0.04)* | *(0.05)* | *(0.04)* | *(0.05)* | *(0.07)* |
| Age 16–20 | 0.101 | -0.008 | 0.206* | 0.626*** | 0.576*** | 0.677*** |
| | *(0.08)* | *(0.11)* | *(0.11)* | *(0.11)* | *(0.16)* | *(0.14)* |
| Age 21–30 | 0.000 | -0.062 | 0.055 | 0.396*** | 0.316*** | 0.449*** |
| | *(0.04)* | *(0.06)* | *(0.05)* | *(0.05)* | *(0.08)* | *(0.07)* |
| Age 31–40 | -0.070*** | -0.071* | -0.070** | 0.203*** | 0.151*** | 0.229*** |
| | *(0.03)* | *(0.04)* | *(0.03)* | *(0.03)* | *(0.06)* | *(0.04)* |
| Age 51–60 | 0.137*** | 0.066* | 0.186*** | -0.065** | -0.144*** | -0.011 |
| | *(0.02)* | *(0.04)* | *(0.03)* | *(0.03)* | *(0.05)* | *(0.04)* |
| Age 61–70 | 0.383*** | 0.229*** | 0.483*** | -0.007 | 0.026 | -0.008 |
| | *(0.04)* | *(0.07)* | *(0.05)* | *(0.06)* | *(0.09)* | *(0.08)* |
| Age 71–80 | 0.345*** | 0.262 | 0.414*** | 0.002 | 0.104 | -0.020 |
| | *(0.11)* | *(0.19)* | *(0.12)* | *(0.14)* | *(0.19)* | *(0.19)* |
| Age 80+ | 0.104 | 0.549*** | -0.386 | 0.343 | 1.193*** | -0.463 |
| | *(0.28)* | *(0.15)* | *(0.43)* | *(0.38)* | *(0.19)* | *(0.34)* |
| Education | | | | | | |
| Complete secondary | -0.003 | -0.057 | 0.079 | -0.002 | -0.059 | 0.089 |
| | *(0.03)* | *(0.04)* | *(0.05)* | *(0.04)* | *(0.05)* | *(0.07)* |
| Secondary+vocational | -0.016 | -0.044 | 0.037 | -0.039 | -0.080 | 0.030 |
| | *(0.04)* | *(0.06)* | *(0.07)* | *(0.06)* | *(0.08)* | *(0.09)* |
| University and higher | 0.016 | -0.009 | 0.071 | -0.048 | -0.026 | -0.007 |
| | *(0.05)* | *(0.08)* | *(0.08)* | *(0.07)* | *(0.11)* | *(0.11)* |
| Single | -0.163*** | -0.113* | -0.194*** | 0.094* | 0.110 | 0.091 |
| | *(0.04)* | *(0.07)* | *(0.05)* | *(0.05)* | *(0.08)* | *(0.07)* |
| Divorced/widowed/separated | -0.272*** | -0.253*** | -0.281*** | -0.155*** | -0.164* | -0.148*** |
| | *(0.04)* | *(0.07)* | *(0.04)* | *(0.04)* | *(0.09)* | *(0.05)* |
| _cons | 1.801*** | 1.685*** | 1.825*** | 1.630*** | 1.235*** | 1.806*** |
| | *(0.17)* | *(0.29)* | *(0.21)* | *(0.23)* | *(0.38)* | *(0.29)* |
| R2 | 0.017 | 0.016 | 0.019 | 0.015 | 0.020 | 0.014 |
| Number of observations | 40,410 | 17,682 | 22,728 | 40,137 | 17,510 | 22,627 |
| Number of individuals | 9,108 | 4,186 | 4,922 | 9,095 | 4,178 | 4,917 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Estimation results are based on real individual labor income. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). Estimation sample is restricted to employed individuals 16 years old or older. Absolute poverty line is set as Official Poverty Line

**Table 2.2. Life satisfaction/subjective wealth and vulnerability, RLMS 2004-2017, fixed effect regressions**

| | Life satisfaction | | | Subjective wealth | | |
|---|---|---|---|---|---|---|
| | **All** | **Male** | **Female** | **All** | **Male** | **Female** |
| | | | ***Poverty Line = official poverty line*** | | | |
| Vulnerability index | -0.276*** | -0.130 | -0.338*** | -0.175* | -0.462*** | -0.077 |
| | *(0.07)* | *(0.12)* | *(0.08)* | *(0.09)* | *(0.16)* | *(0.11)* |
| Log of income | 0.167*** | 0.182*** | 0.158*** | 0.261*** | 0.308*** | 0.234*** |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* |
| | | | ***Poverty Line = official poverty line*1.5*** | | | |
| Vulnerability index | -0.123** | -0.169* | -0.108 | -0.082 | -0.190 | -0.038 |
| | *(0.06)* | *(0.10)* | *(0.07)* | *(0.07)* | *(0.12)* | *(0.09)* |
| Log of income | 0.173*** | 0.178*** | 0.169*** | 0.265*** | 0.316*** | 0.236*** |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* |
| | | | ***Poverty Line = official poverty line*2*** | | | |
| Vulnerability index | -0.127*** | -0.051 | -0.185*** | -0.107 | -0.130 | -0.086 |
| | *(0.05)* | *(0.08)* | *(0.06)* | *(0.07)* | *(0.10)* | *(0.09)* |
| Log of income | 0.173*** | 0.184*** | 0.165*** | 0.263*** | 0.317*** | 0.233*** |
| | *(0.02)* | *(0.03)* | *(0.02)* | *(0.03)* | *(0.04)* | *(0.03)* |
| Number of observations | 40,410 | 17,682 | 22,728 | 40,137 | 17,510 | 22,627 |
| Number of individuals | 9,108 | 4,186 | 4,922 | 9,095 | 4,178 | 4,917 |

**Note**: *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Estimation results are based on real individual labor income. Incomes are expressed in December prices of the 2011 year by using the annual (December to December) CPI for each of 32 regions (oblasts). Estimation sample is restricted to employed individuals 16 years old or older.