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Subjective Wealth, Life Satisfaction and Adaptation to Poverty and Vulnerability: Evidence from Long-run Russian Panel Data

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1. Introduction

If poor individuals adapt their subjective well-being to poverty, it has much policy relevance. Indeed, if this is true, once people fall into poverty, they may become content with their undesirable welfare status over time. They may consequently lose incentives to escape poverty and would be trapped in chronic poverty. The distinction between temporary and chronic poverty is very important from a policy perspective: if poverty is more persistent, then more resources should be shifted to address structural issues such as building schools or infrastructure, if poverty is more transient, then policies should be aimed at stabilizing short-term income fluctuations. As the poverty is an ex post measure of wellbeing, it is also important to assess the ex ante risk that an individual will poor in the future.

Although the nature and dynamics of poverty have received a lot of attention in literature, still little evidence exists over adaptation to different forms of income deprivation, including poverty and vulnerability, most likely due to the lack of panel survey data. Clark *et al.* (2016) offers the first study that rigorously shows life satisfaction to fall with the incidence and intensity of poverty among Germans, and individuals do not adapt to living in poverty. This contrasts with established findings in the happiness literature that individuals generally adapt to their higher incomes (Di Tella *et al.* 2010; Vendrik 2013; Galiani *et al.* 2018). A recent study also finds limited adaptation for life satisfaction and no adaptation for financial satisfaction using Swiss Household Panel Data (Luo 2018). Caria and Falco (2018) also provide the evidence on the connection of life satisfaction and vulnerability, though not in terms of adaptation, showing life satisfaction falls with risk of income poverty among urban workers in Ghana.

We make several new contributions to the nascent literature on poverty adaptation. First, we offer analysis using long-run panel data for the past two decades from Russia, a transition economy. To our knowledge, we offer the first study on poverty adaptation in a middle-income country context. Second, we examine poverty that is defined with both absolute and relative income thresholds. Finally, we also make new contribution to the literature on adaptation to vulnerability, as our study goes beyond the simple connection of vulnerability with happiness, because we investigate if there is an adaptation to this. Adaptation to vulnerability is important area of research for countries with transition economies, such as Russia, where frequent labor market shocks make the risk of future income poverty important for both poor and nonpoor

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households. Our panel data cover sufficiently long time period to properly identify inter-temporal variance in income which is important to define vulnerable individuals and are long enough to control for unobserved heterogeneity which is necessary to avoid potential biases from personality traits in the happiness regression.

We found no adaption to poverty or vulnerability for life satisfaction and subjective wealth for Russians, with longer poverty/vulnerability spells being associated with more dissatisfaction. This also holds for other outcomes, including satisfaction with one's overall economic conditions and for poverty defined using absolute or relative thresholds. Some evidence indicates that while those living in rural areas or born outside of Russia have similar levels of poverty adaptation for life satisfaction, they may adapt less regarding subjective wealth. There is some evidence that women may be less adaptive to poverty than men, particularly for longer poverty duration.

This paper consists of four sections. We discuss our empirical strategy and data in the next two sections, before offering the estimation results in Section 4. We finally conclude in Section 5.

2. Empirical Strategy

2.1 Analysis of Adaptation

Relationship of happiness and different forms of income deprivation can be estimated with the following linear model with individual fixed effects:

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

where W_{it} represents individual i's subjective well-being outcomes in year t, and P_{it} is a vector of poverty/vulnerability measures indicating poverty or vulnerability duration (i.e., how long an individual has lived in any of these conditions). Our coefficients of interest are β, which, if statistically significant and do not reduce in size as the duration in poverty/vulnerability grows, indicate no adaptation.

Furthermore, to measure the general correlation between poverty, vulnerability and subjective well-being, we also offer estimates where P_{it} includes the headcount poverty rate (i.e., poverty incidence), the poverty gap (i.e., poverty intensity) and vulnerability measures. X_{it} includes the control variables, including employment, age groups, education achievement, marital status, number of children, employment characteristics and regional dummy variables; η_i and τ_t are respectively the individual fixed effects and year dummy variables. Equation (1) is the standard model used in the happiness literature (e.g., Ferrer-i-Carbonell and Frijters 2004) and is the same as that in Clark *et al.* (2016) and in Caria and Falco (2018).

2.2 Measurement of Vulnerability

We follow common approach in identifying vulnerability as expected poverty, where individual`s vulnerability depends on the parameters of its specific income distribution (Chaudhuri et al, 2002; 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:

$$V_{it} = \Pr\left(y_{it+1} < Z\right) \quad (2)$$

The probability distribution of an individual`s future income can be specified as an income function of the individual/household characteristics and the income risk factors it faces:

$$\ln(y_{it}) = X_{it-}\ \beta + S_{it}\gamma + \theta_i + \mu_t + \varepsilon_{it} \quad (3)$$

where X_{it-1} is an observable characteristics at time *t-1*, S_{it} are observable idiosyncratic shocks experienced by individual between *t-1* and *t*, θ_i is an individual unobservable effect, μ_t captures time effects and covariate shocks that are common across individuals. Following Christiaensen and Subbarao (2005), we incorporate information on idiosyncratic shocks to account for the variation in income.

From Equation (3), 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, a individual level fixed effects model could be applied which would require at least a three-period level 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 using lagged levels of individual and household characteristics can be used for allowing strict exogeneity.

Using the estimates $\hat{\beta}$ and $\hat{\theta}$ from Equation (3), we can define individual`s expected income in terms of its future income prospects conditional on its previous observed time-varying and unobserved time-invariant characteristics[1] :

$$\mathrm{E}[\ln(y_{it})] = X_{it-1}\hat{\beta} + \hat{\theta}_i + \hat{\mu}_t \quad (4)$$

The variance of ε_{it} from Equation (3) is considered as a measure of individual`s income variability that depends on its individual and household characteristics:

$$Var(\ln(y_{it})|X_{it-1}) = \hat{\varepsilon}_{it} = X_{it-1}\varphi + S_{it}\gamma + \tau_i + \omega_{it} \quad (5)$$

To improve the precision of estimates, we include observable idiosyncratic shocks S_{it} in Equation (5). The next step is to use the estimated mean from Equation (4) and variance from Equation (5) to calculate the vulnerability to poverty assuming log-normal probability distribution of income:

$$V_{it} = \Pr(y_{it+1} < Z) = \Phi\left[\frac{Z-\hat{y}_{it}}{\sqrt{\widehat{Var}_{it}}}\right] \quad (6)$$

where $\hat{y}_{it}$ denotes the predicted value of (log) income from Equation (3) and $\sqrt{\widehat{Var}_{it}}$ the square root of predicted variance from Equation (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*.

3. Data

We analyze long-run individual panel data from the Russian Longitudinal Monitoring Survey (RLMS), which is currently 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

[1] We follow Ward (2016) and did not include the shocks when we generate our estimates of conditional expected income

in 1997 and 1999. The survey also underwent a major sample replenishment in 2000, which resulted in a higher non-response rate in this year (Gerry and Papadopoulos 2015; Kozyreva et al. 2016). Consequently, we restrict our analysis to the period 2001-2017 (and to the period 2004-2017 for vulnerability analysis since employment characteristics are available after 2003) to ensure that the data are comparable over time and data quality is consistent (but we also offer a robustness check using all the years available). The RLMS collects nationally representative data on subjective well-being and various topics including household demographics, income and consumption, and occupation characteristics. The sample size consists of around 38,000 panel individuals between 2001 and 2017, 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.To generate a measure of income shocks, we use the following questions available in RLMS:

1. "At the present time, does your place of work owe you any money that, for various reasons, has not been paid on time?"
2. "In the course of the last 12 months has your salary or have your work hours been cut without your demand for it?"
3. "In the last 12 months has the administration sent you on compulsory unpaid leave?"

Life and economic satisfaction are 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.

4. Estimation Results

4.1 Analysis of Poverty

Estimation results, provided in Table 1, show that both poverty incidence and intensity are statistically significant and are negatively correlated with life satisfaction and subjective wealth. Controlling for other factors, a poor person would be 0.079 points less satisfied (column 1) and 0.011 points feeling less rich (column 4) than a non-poor person. For comparison, completing a university education degree or higher is negatively and statistically significantly associated with life satisfaction and has a somewhat similar magnitude of association; but this relationship doesn't generally hold for subjective wealth.

Furthermore, a poor person with an income half of the poverty line (i.e., the poverty gap variable equal to 0.5) would be 0.252 points (=0.079+ 0.345*0.5) less satisfied than the same person when not poor (Table 1, first column). These impacts are smaller than those in Clark et al. (2016), but hold for both men and women. Similar results apply for subjective wealth, where the same poor person with an income half of the poverty line is 0.254 points feeling less rich than his/ her non-poor peer (Table 1, fourth column).[2]

[2] Multicolinearity among some variables can be an issue with the regressions in Table 2 if, say, the poor are more likely to be less educated and therefore poor. To check on this concern, we implement variance inflation factors (VIF) tests for all the control variables. The VIF tests (available upon request) range from 1.27 (for the dummy variable indicating whether the individual is divorced/widowed/separated) to 2.58 (for the variable poverty gap). These test values are far less than the rule-of-thumb value of 10 given for harmful collinearity by Kennedy (2008).

Table 1. Life satisfaction/subjective wealth and poverty incidence and intensity, fixed-effects regressions, RLMS 2001-2017

Variables	Life satisfaction			Subjective wealth		
	Whole sample	Men	Women	Whole sample	Men	Women
Poor	-0.079***	-0.066***	-0.086***	-0.111***	-0.098***	-0.117***
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.01)*
Poverty gap	-0.345***	-0.359***	-0.330***	-0.286***	-0.308***	-0.265***
	(0.02)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.04)*	*(0.04)*
Individual Characteristics						
Unemployed/out of labour force	-0.204***	-0.290***	-0.150***	-0.198***	-0.288***	-0.141***
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Age 16–20	0.305***	0.307***	0.280***	0.336***	0.277***	0.377***
	(0.02)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.04)*
Age 21–30	0.030*	-0.023	0.054**	0.136***	0.049	0.194***
	(0.02)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.03)*
Age 31–40	-0.017	-0.042**	-0.003	0.060***	0.017	0.088***
	(0.01)	*(0.02)*	*(0.01)*	*(0.02)*	*(0.02)*	*(0.02)*
Age 51–60	0.064***	0.047***	0.079***	-0.019	-0.043**	-0.002
	(0.01)	*(0.02)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.02)*
Age 61–70	0.142***	0.184***	0.125***	0.033	0.077**	0.017
	(0.02)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*
Age 71–80	0.138***	0.157***	0.124***	0.060**	0.128***	0.033
	(0.02)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.04)*	*(0.03)*
Age 80+	0.155***	0.207***	0.120***	0.313***	0.320***	0.303***
	(0.02)	*(0.05)*	*(0.03)*	*(0.03)*	*(0.06)*	*(0.04)*
Education						
Complete secondary	-0.044***	-0.040***	-0.052***	-0.004	-0.007	-0.003
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.02)*
Secondary+vocational	-0.073***	-0.072***	-0.076***	-0.036**	-0.040	-0.033
	(0.01)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*
University and higher	-0.091***	-0.091***	-0.103***	0.007	0.027	-0.004
	(0.02)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.04)*	*(0.03)*
Single	-0.165***	-0.138***	-0.186***	-0.028	0.001	-0.046**
	(0.01)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*
Divorced/widowed/separated	-0.260***	-0.311***	-0.249***	-0.182***	-0.161***	-0.190***
	(0.01)	*(0.02)*	*(0.01)*	*(0.01)*	*(0.03)*	*(0.02)*
Number of children	0.014**	0.016**	0.009	0.019**	0.015	0.021**
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*	*(0.01)*
Constant	2.949***	3.409***	2.832***	4.032***	3.925***	3.773***
	(0.05)	*(0.09)*	*(0.05)*	*(0.08)*	*(0.11)*	*(0.08)*
Mean of dependent variable	3.11	3.18	3.06	3.93	4.01	3.87
(Standard deviation)	*(1.11)*	*(1.11)*	*(1.12)*	*(1.44)*	*(1.45)*	*(1.44)*
R2	0.032	0.032	0.034	0.019	0.021	0.018
Number of observations	215 443	90 784	124 659	212 593	89 403	123 190
Number of individuals	38 696	17 284	21 412	38 483	17 177	21 306

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). We deflate the (absolute) poverty line with annual (December to December) CPI for each of 32 regions. Estimation results for poverty are based on real total household income per capita. Estimation sample is restricted to individuals 16 years old or older.

The estimates for poverty adaptation in Table 1 show a contemporaneous relationship only, and do not tell whether the duration of stay in poverty is negatively correlated with subjective welfare. We further examine this relationship in Table 2. Following Clark *et al.* (2016), we restrict the estimation sample to those we can observe when they first entered poverty while in the panel (such that we know how long they have been poor). For the currently poor, we dissect their poverty status into four variables: whether they entered poverty within the past year, one to two years ago, and so on, up to three or more years ago. Poverty adaptation implies that individuals' subjective wellbeing has a weaker relationship with their poverty status over time. Yet, estimates (column 1) suggest no poverty adaptation, with the estimated coefficients on the poverty duration variables hovering around -0.2 or -0.3. Formal statistical tests show that the estimated coefficient on poverty duration of less than one year are not statistically significantly different at a 95% confidence level from those on poverty duration of greater than one year. Estimates are generally qualitatively similar for subjective wealth, although the estimated coefficient on poverty duration of over 3 years is not statistically significant (column 4).

Since the majority of the Russian population lives in urban areas, it can be useful to examine whether there is any difference in poverty adaption between urban residents and rural residents. We thus disaggregate the estimation samples and provide estimations separately by urban and rural areas. Estimation results shown in Table 2 suggest that poverty adaptation does not differ much between urban and rural areas in terms of life satisfaction, but is certainly weaker for rural areas in terms of subjective wealth (Table 2, last column).

Does one's ethnicity or birthplace affect poverty adaptation in any way? Unfortunately, the RLMS does not collect data on respondents' ethnicity, but it collects data on whether a respondent was born in any country outside of Russia. Since 2001, more than 80% of respondents in the RLMS report each year that they were born in the Russian Federation. While those who were born outside of Russia have similar levels of poverty adaptation for life satisfaction, they do not adapt as well regarding subjective wealth (Table 3, last column).

Individuals that stay in shorter poverty spells may not adapt and be different from those who stay in longer spells. To examine this hypothesis, we show estimates when restricting the estimation samples to those who stayed in poverty for two years or more, three years or more, and four years or more (Table 4, other columns). Estimates similarly suggest no poverty adaptation for both life satisfaction and subjective wealth, although the estimated coefficients are somewhat more negative.

Recent evidence suggests that Russia has witnessed more income growth for the poor during the past two decades (Dang et al. forthcoming). As such, a related issue is whether individuals that came into and out of poverty may adapt differently from those that were in poverty only once. Presumably, the former group of individuals may adapt better given their previous experience. Estimates, shown in Appendix 1, Table 1.1, however, suggest that there is no difference between these groups.

Table 2. Adaptation to poverty by urban/rural areas, fixed-effects regressions, RLMS 2001-2017

Variables	Life satisfaction			Subjective wealth		
	All	Urban	Rural	All	Urban	Rural
Less than 1 year in poverty	-0.178***	-0.180***	-0.181***	-0.143***	-0.098***	-0.257***
	(0.02)	*(0.02)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.05)*
1-2 years in poverty	-0.201***	-0.195***	-0.219***	-0.184***	-0.069	-0.410***
	(0.03)	*(0.04)*	*(0.06)*	*(0.05)*	*(0.06)*	*(0.08)*
2-3 years in poverty	-0.255***	-0.220***	-0.331***	-0.210***	-0.034	-0.542***
	(0.05)	*(0.06)*	*(0.08)*	*(0.07)*	*(0.08)*	*(0.11)*
Over 3 years in poverty	-0.155**	-0.138*	-0.215**	0.063	0.163	-0.168
	(0.06)	*(0.08)*	*(0.10)*	*(0.08)*	*(0.11)*	*(0.14)*
Mean of dependent variable	3.06	3.03	3.12	3.91	3.83	4.14
(*Standard deviation*)	*(1.14)*	*(1.14)*	*(1.16)*	*(1.47)*	*(1.43)*	*(1.54)*
R2	0.023	0.021	0.037	0.026	0.027	0.041
Number of observations	17,902	12,432	5,470	17,656	12,336	5,320
Number of individuals	4,860	3,401	1,461	4,848	3,400	1,450

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 1. Poverty spells are constructed at an annual basis, since income is collected once a year (but has a monthly 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 3. Adaptation to poverty by birthplace, fixed-effects regressions, RLMS 2001-2017

Variables	Life satisfaction		Subjective wealth	
	Born in Russian Federation	Born in other country	Born in Russian Federation	Born in other country
Less than 1 year in poverty	-0.181***	-0.269***	-0.173***	-0.245***
	(0.03)	*(0.07)*	*(0.04)*	*(0.09)*
1-2 years in poverty	-0.211***	-0.305**	-0.119	-0.383**
	(0.06)	*(0.12)*	*(0.08)*	*(0.16)*
2-3 years in poverty	-0.153*	-0.305*	-0.160	-0.206
	(0.08)	*(0.16)*	*(0.11)*	*(0.24)*
Over 3 years in poverty	-0.106	-0.278	0.162	0.088
	(0.11)	*(0.22)*	*(0.13)*	*(0.29)*
Mean of dependent variable	2.92	2.97	3.79	3.89
(*Standard deviation*)	*(1.16)*	*(1.14)*	*(1.45)*	*(1.39)*

R2	0.025	0.087	0.027	0.070
Number of observations	6,018	1,117	5,962	1,109
Number of individuals	1,961	375	1,953	374

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 1. Poverty spells are constructed at an annual basis, since income is collected once a year (but has a monthly basis).

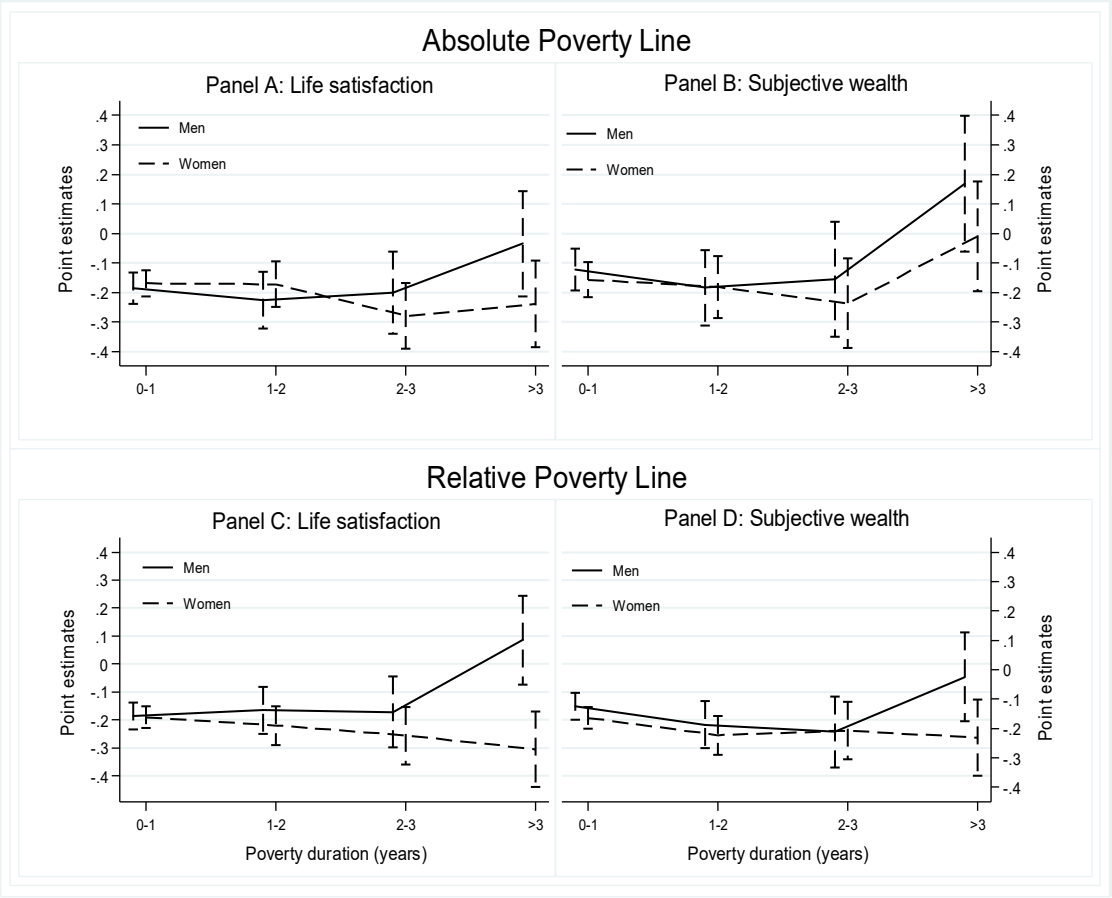
Table 4. Adaptation to poverty and duration of the poverty spell, fixed-effects regressions, RLMS 2001-2017

Variables	**Life satisfaction**				**Subjective wealth**			
	All	**Spells of over 2 years only**	**Spells of over 3 years only**	**Spells of over 4 years only**	**All**	**Spells of over 2 years only**	**Spells of over 3 years only**	**Spells of over 4 years only**
Less than 1 year in poverty	-0.178***	-0.303***	-0.371***	-0.239*	-0.143***	-0.434***	-0.406***	-0.529***
	(0.02)	*(0.06)*	*(0.09)*	*(0.12)*	*(0.03)*	*(0.09)*	*(0.12)*	*(0.15)*
1-2 years in poverty	-0.201***	-0.294***	-0.409***	-0.446***	-0.184***	-0.472***	-0.451***	-0.575***
	(0.03)	*(0.08)*	*(0.11)*	*(0.14)*	*(0.05)*	*(0.10)*	*(0.14)*	*(0.17)*
2-3 years in poverty	-0.255***	-0.373***	-0.467***	-0.385**	-0.210***	-0.496***	-0.560***	-0.604***
	(0.05)	*(0.09)*	*(0.12)*	*(0.16)*	*(0.07)*	*(0.12)*	*(0.16)*	*(0.20)*
Over 3 years in poverty	-0.155**	-0.351***	-0.607***	-0.546***	0.063	-0.294*	-0.402**	-0.582**
	(0.06)	*(0.13)*	*(0.16)*	*(0.19)*	*(0.08)*	*(0.15)*	*(0.19)*	*(0.23)*
Mean of dependent variable	3.06	2.79	2.70	2.65	3.91	3.67	3.66	3.65
(*Standard deviation*)	*(1.14)*	*(1.17)*	*(1.16)*	*(1.18)*	*(1.47)*	*(1.50)*	*(1.50)*	*(1.52)*
R2	0.023	0.031	0.039	0.066	0.026	0.046	0.039	0.058
Number of observations	17 902	3 488	1 875	1 156	17 656	3 442	1 857	1 144
Number of individuals	4 860	611	283	154	4 848	611	283	154

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 1. Poverty spells are constructed at an annual basis, since income is collected once a year (but has a monthly basis). Column 1 shows the overall adaptation estimates using the whole sample. Column 2 then drops information on all completed poverty spells of two years or less. Columns 3 and 4 drop information on poverty spells of 3 years or less and 4 years or less respectively.

Our previous results use the national absolute poverty line, but estimation results also hold when we switch to using a relative poverty line, which is set at 60 percent of the median per capita household income. Figure 1 plots the estimated coefficients for men against those for women for different duration lengths in poverty, using both the absolute poverty line (Panels A and B) and the relative poverty line (Panels C and D). Men and women have similar levels of adapation for life satisfaction when we use the absolute poverty lines (Panels A and B) and and subjective wealth when we use the relative poverty lines (Panel D). Yet, life satisfaction appears to diverge over time for men and women for the relative poverty line. Indeed, after three years or more in relative poverty, the estimated coefficients for women become more negative and statistically significantly different from those for men (Panel C). Figure 1 thus suggests that women may be less adaptive than men, particularly for longer poverty duration.

Figure 1. Differences in poverty adaptation between men and women, RLMS 2001-2017

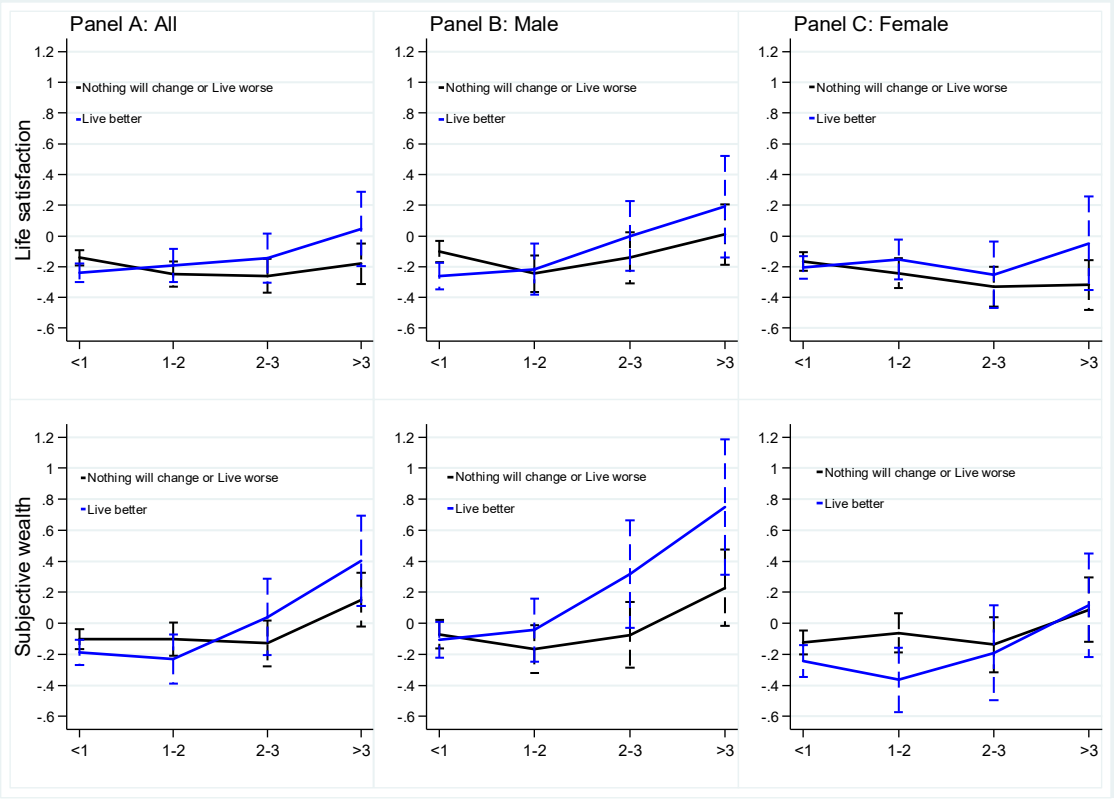


Note: The relative poverty line was set at 60% of the country-level median per capita household income for each year and deflated with annual (December to December) regional CPIs.

Poverty adaptation can also depend on individuals' expectations and their concerns about their economic prospects in the future. We analyze individual expectations using the question: "Do you think that in the next 12 months you and your family will live better than today or worse?". We divide the population in two groups, depending on whether they answer that their families will live better, or nothing will change/will live worse (i.e. we aggregate the multiple answer categories in order to obtain a dichotomic variable). Figure 2 shows differences in

marginal effects of being in poverty on satisfaction levels for individuals with different income expectations. We do not find adaptation to poverty if individuals expect their incomes will be increasing/decreasing next year.

Figure 2. Differences in poverty adaptation between men and women by income prospects, RLMS 2001-2017, absolute poverty line



4.2 Analysis of Vulnerability to Poverty

Table 5 shows the results from estimating the earning model (Equation 3) and variance model (Equation 5) used to predict vulnerability later in the analysis.

Before calculating our estimates of vulnerability, we need to define a low-income threshold *Z* for our sample. Figure 3 shows the cumulative distribution of the vulnerability indexes with different income thresholds. If *Z* equals to official poverty line in Russia, the risk of poverty is small for sample of workers, for Z equals to one and half times of official poverty line, less than 10% workers, on average, have a chance of 50% or more of being poor in the next period. That is why our choice is to set Z at twice higher than official poverty line set by government. According to the Figure 3, 40% of workers in a given year have a chance of 50% or more of being poor in the next period.

Table 5. Estimation of vulnerability, fixed effect regressions, RLMS 2004-2017

VARIABLES	Log of individual labour income	Residuals Squared
Individual and household characteristics in T-1		
Age 16-20	-0.245***	0.134***
	(0.03)	*(0.03)*
Age 21-30	-0.097***	0.095***
	(0.02)	*(0.01)*
Age 31-40	-0.006	0.024**
	(0.01)	*(0.01)*
Age 51-60	-0.072***	-0.016**
	(0.01)	*(0.01)*
Age 61-70	-0.199***	-0.039***
	(0.02)	*(0.01)*
Age 71-80	-0.252***	-0.073**
	(0.05)	*(0.03)*
Age 80+	-0.179	0.139
	(0.12)	*(0.14)*
Complete secondary education	0.027**	0.001
	(0.01)	*(0.01)*
Secondary+vocational education	0.051***	-0.006
	(0.02)	*(0.02)*
University and higher education	0.128***	-0.025
	(0.02)	*(0.02)*
Always single	0.026	-0.015
	(0.02)	*(0.02)*
Divorced/widowed/separated	0.027**	-0.041***
	(0.01)	*(0.01)*
Number of children in household	-0.009	-0.004
	(0.01)	*(0.01)*
Professional groups	+	+
Job industry categories	+	+
Labour market shocks between T-1 and T		
Salary has not been paid on time	-0.181***	0.105***
	(0.02)	*(0.01)*
Salary or work hours have been cut involuntary	-0.089***	0.011
	(0.01)	*(0.01)*
Compulsory unpaid leave	-0.013	0.035**
	(0.02)	*(0.02)*
Area-specific and macro shocks		
Time # PSU dummies	+	
Time dummies	+	
Constant	9.694***	0.116***
	(0.06)	*(0.03)*
Number of observations	65,575	65,575
R-squared	0.118	0.008
Number of individuals	15,989	15,989

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). Estimation results are based on real individual labor income. Estimation sample is restricted to employed individuals 16 years old or older.

Figure 3. Cumulative distribution of vulnerability for different poverty lines, RLMS 2004-2017, absolute poverty line

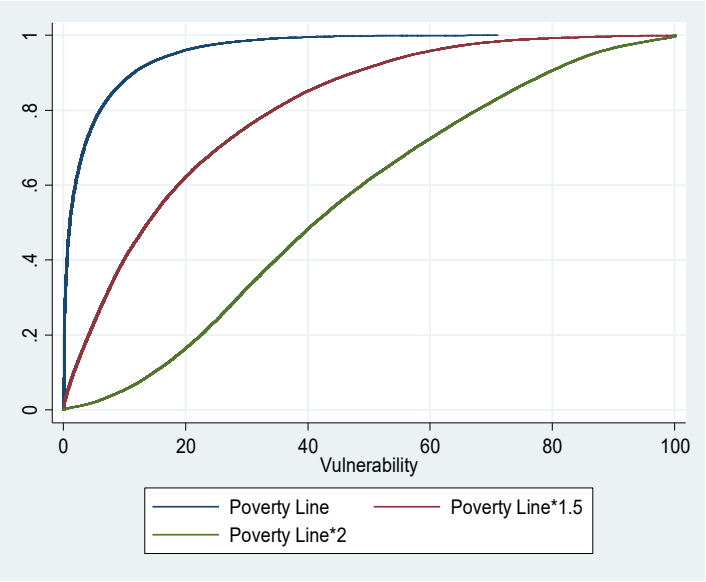


Table 6 shows results from model of happiness (Equation 1). Our first result is a positive and significant effect of absolute income on life satisfaction, in line with the existing literature. We also find a strong negative relationship between vulnerability and happiness. At the same time, we find differences in the vulnerability effect between men and women: poverty risk effect is lower and even not significant from males.

Given our estimates of vulnerability index, we can define different types of income deprivation using the categorization offered by Ward (2016). We can identify individuals who are chronically or transient poor or those who are not currently poor but have high/low vulnerability index. Although, there is no officially defined level of high vulnerability, the thresholds of 0.5 and 0.33 are the most commonly used in the empirical literature (Ward, 2016; Mina and Imai, 2017). Definition of chronically poor includes the vulnerable households who are currently poor and have a high probability of remaining poor in future. Table 7 shows results from model of happiness (Equation 1) when we adopt the standard vulnerability thresholds of 0.5 and 0.33.

As for poverty analysis, we restrict the estimation sample to those we can observe when they first under risk of poverty while in the panel (such that we know how long they have been vulnerable). For the currently vulnerable individuals, we dissect their status into four variables: whether they became vulnerable within the past year, one to two years ago, and so on, up to three or more years ago. Adaptation to vulnerability implies that individuals' subjective wellbeing has a weaker relationship with their vulnerability status over time. Estimates suggest no adaptation, with the estimated coefficients on the vulnerability duration variables hovering around -0.1 or -0.3 (Table 8).

Table 6. Life satisfaction/subjective wealth and vulnerability, RLMS 2005-2017, fixed effect regressions

	Life satisfaction			Subjective welfare			Satisfaction with economic conditions		
	All	**Male**	**Female**	**All**	**Male**	**Female**	**All**	**Male**	**Female**
Vulnerability index	-0.207***	-0.108**	-0.274***	-0.108**	-0.086	-0.120**	-0.183***	-0.078	-0.252***
	(0.03)	*(0.05)*	*(0.04)*	*(0.04)*	*(0.06)*	*(0.05)*	*(0.03)*	*(0.05)*	*(0.04)*
Log of income	0.147***	0.200***	0.111***	0.248***	0.314***	0.211***	0.372***	0.450***	0.324***
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.01)*
Informal employment at the main job	-0.111***	-0.142***	-0.075**	-0.111***	-0.160***	-0.055	-0.068***	-0.083***	-0.055*
	(0.02)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.04)*	*(0.04)*	*(0.02)*	*(0.03)*	*(0.03)*
Age 16–20	0.035	0.032	0.044	0.444***	0.349***	0.533***	0.462***	0.445***	0.479***
	(0.05)	*(0.08)*	*(0.07)*	*(0.07)*	*(0.11)*	*(0.09)*	*(0.07)*	*(0.10)*	*(0.08)*
Age 21–30	-0.031	-0.017	-0.041	0.361***	0.284***	0.418***	0.236***	0.180***	0.273***
	(0.02)	*(0.03)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.04)*	*(0.02)*	*(0.04)*	*(0.03)*
Age 31–40	-0.069***	-0.040*	-0.087***	0.187***	0.164***	0.200***	0.091***	0.060**	0.110***
	(0.02)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.03)*	*(0.02)*
Age 51–60	0.149***	0.091***	0.191***	-0.059***	-0.107***	-0.026	0.051***	-0.018	0.101***
	(0.02)	*(0.03)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.03)*	*(0.02)*
Age 61–70	0.389***	0.275***	0.475***	0.034	0.096	-0.008	0.356***	0.321***	0.387***
	(0.03)	*(0.05)*	*(0.04)*	*(0.04)*	*(0.07)*	*(0.06)*	*(0.03)*	*(0.05)*	*(0.04)*
Age 71–80	0.301***	0.342**	0.140	0.042	0.156	-0.067	0.503***	0.524***	0.456***
	(0.12)	*(0.17)*	*(0.12)*	*(0.13)*	*(0.17)*	*(0.19)*	*(0.11)*	*(0.15)*	*(0.17)*
Age 80+	1.055***	1.056***		-0.933***	-0.920***		1.103***	1.109***	
	(0.00)	*(0.01)*		*(0.00)*	*(0.01)*		*(0.00)*	*(0.01)*	
Education									
Complete secondary	0.003	-0.030	0.058*	-0.016	-0.070**	0.078*	0.016	-0.022	0.081**
	(0.02)	*(0.02)*	*(0.03)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.02)*	*(0.03)*	*(0.04)*
Secondary+vocational	-0.002	-0.016	0.034	-0.050	-0.089*	0.031	-0.035	-0.041	0.004
	(0.03)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.06)*	*(0.03)*	*(0.04)*	*(0.05)*
University and higher	0.027	0.005	0.069	-0.102**	-0.119*	-0.027	0.008	-0.084	0.101*
	(0.03)	*(0.05)*	*(0.05)*	*(0.05)*	*(0.07)*	*(0.07)*	*(0.04)*	*(0.05)*	*(0.06)*
Single	-0.167***	-0.111***	-0.201***	0.011	0.163***	-0.098**	0.088***	0.215***	0.003
	(0.02)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.05)*	*(0.04)*	*(0.03)*	*(0.04)*	*(0.04)*
Divorced/widowed/separated	-0.304***	-0.343***	-0.294***	-0.193***	-0.209***	-0.192***	-0.123***	-0.061	-0.145***
	(0.02)	*(0.04)*	*(0.03)*	*(0.03)*	*(0.06)*	*(0.03)*	*(0.02)*	*(0.05)*	*(0.02)*
Number of children in hh	0.004	0.015	-0.010	-0.006	-0.025	0.007	-0.007	-0.009	-0.007
	(0.01)	*(0.01)*	*(0.01)*	*(0.01)*	*(0.02)*	*(0.02)*	*(0.01)*	*(0.01)*	*(0.01)*
_cons	2.067***	1.565***	2.368***	1.795***	1.194***	2.071***	-1.118***	-1.899***	-0.671***
	(0.09)	*(0.14)*	*(0.12)*	*(0.12)*	*(0.19)*	*(0.15)*	*(0.10)*	*(0.16)*	*(0.13)*

R2	0.017	0.017	0.018	0.013	0.017	0.011	0.038	0.045	0.035
Number of observations	64,375	29,299	35,076	63,812	28,956	34,856	64,327	29,246	35,081
Number of individuals	15,864	7,544	8,320	15,808	7,513	8,295	15,853	7,535	8,318

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). Estimation results are based on real individual labor income. Estimation sample is restricted to employed individuals 16 years old or older. Poverty line is set as 2*Official Poverty Line

Table 7. Life satisfaction/subjective wealth and vulnerability by different poverty categories, RLMS 2005-2017, fixed effect regressions

	Life satisfaction			**Subjective welfare**			**Satisfaction with economic conditions**		
	All	**Male**	**Female**	**All**	**Male**	**Female**	**All**	**Male**	**Female**
				Sample of currently poor workers					
Chronically poor = 1/	-0.077***	-0.050*	-0.089***	-0.044**	-0.044	-0.044*	-0.082***	-0.054*	-0.096***
Transient poor = 0	*(0.02)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.04)*	*(0.03)*	*(0.02)*	*(0.03)*	*(0.02)*
R2	0.014	0.013	0.017	0.007	0.011	0.007	0.016	0.022	0.015
Number of observations	28 812	8 877	19 935	28 459	8 696	19 763	28 803	8 854	19 949
Number of individuals	9 721	3 530	6 191	9 671	3 504	6 167	9 715	3 527	6 188
				Sample of currently non-poor workers, vulnerability line = 0.33					
High vulnerability = 1/ Low vulnerability = 0	-0.066***	-0.068***	-0.061***	-0.045**	-0.059**	-0.018	-0.066***	-0.069***	-0.061**
	(0.01)	*(0.02)*	*(0.02)*	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.02)*
R2	0.008	0.008	0.010	0.003	0.003	0.005	0.003	0.004	0.005
Number of observations	35 563	20 422	15 141	35 353	20 260	15 093	35 524	20 392	15 132
Number of individuals	10 893	6 036	4 857	10 848	6 008	4 840	10 883	6 029	4 854
				Sample of currently non-poor workers, vulnerability line = 0.5					
High vulnerability = 1/ Low	-0.067***	-0.069***	-0.062**	-0.006	0.026	-0.054	-0.083***	-0.049**	-0.133***
vulnerability = 0	*(0.02)*	*(0.02)*	*(0.03)*	*(0.02)*	*(0.03)*	*(0.03)*	*(0.02)*	*(0.02)*	*(0.03)*
R2	0.008	0.008	0.010	0.003	0.003	0.006	0.003	0.003	0.006
Number of observations	35 563	20 422	15 141	35 353	20 260	15 093	35 524	20 392	15 132
Number of individuals	10 893	6 036	4 857	10 848	6 008	4 840	10 883	6 029	4 854

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 6. 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). Estimation results are based on real individual labor income. Estimation sample is restricted to employed individuals 16 years old or older. Poverty line is set as 2*Official Poverty Line

Table 8. Adaptation to vulnerability, RLMS 2005-2017, fixed effect regressions

	Life satisfaction			Subjective welfare			Satisfaction with economic conditions		
	All	**Male**	**Female**	**All**	**Male**	**Female**	**All**	**Male**	**Female**
Less than 1 year in vulnerability	-0.057**	-0.139***	0.017	-0.091**	-0.076	-0.098**	-0.075***	-0.068	-0.080**
	(0.03)	*(0.04)*	*(0.04)*	*(0.04)*	*(0.05)*	*(0.05)*	*(0.03)*	*(0.04)*	*(0.04)*
1-2 years in vulnerability	-0.144***	-0.190***	-0.099	-0.287***	-0.281***	-0.295***	-0.090*	-0.091	-0.080
	(0.05)	*(0.07)*	*(0.06)*	*(0.07)*	*(0.09)*	*(0.09)*	*(0.05)*	*(0.07)*	*(0.07)*
Over 3 years in vulnerability	0.011	-0.154*	0.115	-0.135	-0.074	-0.161	-0.128*	-0.112	-0.137
	(0.06)	*(0.09)*	*(0.09)*	*(0.08)*	*(0.13)*	*(0.11)*	*(0.07)*	*(0.11)*	*(0.09)*
R2	0.017	0.026	0.027	0.015	0.022	0.027	0.012	0.019	0.015
Number of observations	3 900	1 779	2 121	3 874	1 766	2 108	3 895	1 774	2 121
Number of individuals	1 076	498	578	1 073	496	577	1 076	498	578

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 6. 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). Estimation results are based on real individual labor income. Estimation sample is restricted to employed individuals 16 years old or older. Poverty line is set as 2*Official Poverty Line

4. Conclusion

We offer the first study on life satisfaction adaptation to poverty and vulnerability using panel data from Russia, a middle-income transition country. We found no adaption to poverty or to vulnerability for life satisfaction and subjective wealth for Russians, with longer poverty/vulnerability spells being associated with more dissatisfaction. Our findings on no poverty adaptation are consistent with existing results for Germany, a high-income country, in Clark *et al.* (2016).Furthermore, our findings are robust to absolute and relative poverty, and further supported by richer analysis of other subjective well-being outcomes including own subjective wealth. We also find some evidence that those living in rural areas or born outside of Russia have similar levels of poverty adaptation for life satisfaction, but they may adapt less regarding subjective wealth. Furthermore, women may be less adaptive than men, particularly for longer poverty duration.

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Appendix 1. Additional Tables and Figures

Table 1.1. Adaptation to poverty and multiple entrance to poverty, RLMS 2001-2017, fixed effect regressions

	Life satisfaction		Subjective wealth	
	Multiple entrance	**Once**	**Multiple entrance**	**Once**
Less than 1 year in poverty	-0.135***	-0.184***	-0.207***	-0.120***
	(0.04)	*(0.02)*	*(0.06)*	*(0.03)*
1-2 years in poverty	-0.217***	-0.198***	-0.190*	-0.167***
	(0.07)	*(0.04)*	*(0.1)*	*(0.05)*
2-3 years in poverty	-0.212**	-0.248***	-0.297**	-0.141*
	(0.11)	*(0.05)*	*(0.14)*	*(0.08)*
Over 3 years in poverty	-0.222	-0.098	0.229	0.068
	(0.14)	*(0.07)*	*(0.18)*	*(0.09)*
R2	0.027	0.026	0.034	0.027
Number of observations	3,808	13,887	3,777	13,672
Number of individuals	1,062	3,764	1,060	3,754

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. Poverty spells are constructed at an annual basis, since income is collected once a year (but has a monthly basis).