NATIONAL RESEARCH UNIVERSITY
HIGHER SCHOOL OF ECONOMICS

Kseniya Abanokova and Michael Lokshin

CHANGES IN HOUSEHOLD COMPOSITION AS A SHOCK-MITIGATING STRATEGY

BASIC RESEARCH PROGRAM

WORKING PAPERS

SERIES: ECONOMICS
WP BRP 38/EC/2013

Kseniya Abanokova[1] *and Michael Lokshin*

CHANGES IN HOUSEHOLD COMPOSITION AS A SHOCK-MITIGATING STRATEGY

This paper uses data from the Russian Longitudinal Survey that span the two recent economic recessions of 1998 and 2008 to study the effect of declining incomes on household composition. We hypothesize that individuals face a tradeoff between taking advantages of economies of scale and specialization when living with others and individual privacy. Consumption smoothing is achieved by forgoing privacy during a crisis and results in an increase in household size. Our empirical results suggest that members of the households that experienced negative income shocks are more likely to move in with others than households whose income remained the same or increased.

Keywords: household structure, coping strategy, macroeconomic shocks, Russia

JEL Classification: J10

---

[1] Michael M. Lokshin (World Bank and NRU Higher School of Economics, Moscow), Kseniya R. Abanokova (NRU Higher School of Economics, Moscow). This work is an output of a research project implemented as a part of the Basic Research Program at the National Research University HSE. These are the views of the authors, and should not be attributed to the NRU HSE, World Bank or any affiliated organization. We are grateful to Vladimir Gimpelson, Sergey Roshchin and Sergey Popov for their comments and support. We acknowledge the comments of colleagues at seminars in CLMS and LLMS Moscow and RLMS-HSE Users Conference in Moscow.

1. Introduction

During the last 15 years, the Russian economy experienced two recessions that caused a significant decline in the wellbeing of the Russian population. Russia's 1998 public sector and currency crisis led to the devaluation of the ruble and a decline in household incomes. When the crisis peaked in early 1999, real incomes were at their lowest levels since January 1992 (World Bank, 2009). After a decade of high growth between 1999-2008 the Russian economy entered another recession. The 2008 private sector crisis affected employment, wages and incomes. The unemployment rate grew from 6.1 percent in 2007 to 8.4 percent in 2009. Real incomes declined by 5.8 percent at the end of 2008, and dropped by another 10.2 percent at the beginning of 2009, mainly due to rising wage arrears and unemployment (World Bank, 2009, 2012).

In the face of such economic setbacks, Russian households struggled to find ways to avoid a decline in their standards of living. There are many mechanisms households employ to adapt to shocks. Households may respond to shocks by using their savings and selling assets (Lee and Sawada, 2010; Lusardi et al., 2011), utilizing formal and informal borrowing (Heltberg and Lund, 2009), reallocating resources between or within households through public or private transfers (Fafchamps and Gubert, 2007; Alvi and Dendir, 2009), reverting to migration (Rozenzweig and Stark, 1989), adjusting labor market activity and turning to subsistence agriculture (Frankenberg et al., 2003; Skoufias, 2003).

A coping strategy that receives little attention in the literature is the adaptation of household size and structure in response to changing economic conditions. This paper provides new empirical evidence on how households may respond to economic shocks, focusing on the role of changes in household size and composition. We develop a simple theoretical model that describes how individuals cope with shocks by taking advantage of economies of scale and intra-household specialization arising from cohabitation. Consumption smoothing is achieved by forgoing individual privacy and, on aggregate, results in larger households. In that, gains from cohabitation depend on complementarity and substitutability of characteristics of household members. Frakenberg et al. (2003) outlined that the 'reallocation of different types of members across different households' is an important insurance mechanism allowing households to smooth their consumption.

This paper is organized as follows: in section 2 we discuss the theoretical background of consumption smoothing. Section 3 specifies the theoretical model of consumption smoothing abilities. Section 4 sets out the estimation strategy. Section 5 describes the main trends in consumption and household composition. Section 6 reports the results from the regression analyses. Section 7 concludes.

2. Literature review

Adverse changes in the labor market such as falling real wages and worsening employment opportunities and higher rents can increase the likelihood of sharing housing through marriage, cohabitation or living with other relatives. Mykyta and Macartney (2011) documented a dramatic increase in the proportion of double-up households[2] in US during the recession of 2007. Using 2008 and 2010 snapshots of the US Census data they found a significant correlation between changes in demographic trends and the timing of the recession. Lee and Painter (2013) analyzed the effect of recessions on the propensity to form new households and on the rate of overcrowding.[3] They found that the likelihood of the formation of new independent households falls in response to increased unemployment rates and families are more likely to move in with others. Matsudaira (2010), using the US Census data and the variation in labor market conditions across the American Community Survey over the period of 1960 to 2007, demonstrated that changes in the labor market caused by economic declines might lead young adults to remain at home after 'age deadlines for leaving home' or move back with their parents. Weimers (2011) used panel data from the Survey of Income and Program Participation to show that the job loss of a household member doubles the probability of a household moving in with others. Kaplan (2009, 2010) investigated the phenomenon of 'boomerang kids'.[4] He used monthly data on employment and living arrangements of non-college youth from the National Longitudinal Survey of Youth in US and found that becoming unemployed increases the hazard of moving back home by up to 72 percent. Kaplan also showed that the ability of young adults to move back home might play the role of insurance against economic shocks. Didra et al. (2012) found strong cyclical adjustments in household composition for young adults in the US.

Empirical evidence on the impact of economic conditions on household formation in Europe and other countries is scarce. Examining British households, Ermisch (1999) reports that an increase in housing prices delays the decision of young adults to leave the parental home. Using European Community Panel data Aassve et al. (2002) found that employment and income growth increase the hazard of leaving home for adults in Southern European countries (Italy, Spain, Greece, Portugal), France and Germany and these factors have no effect on adults in UK. The role of changes in household structure as a mechanism of consumption smoothing has been analyzed in a study by Frankenberg et al. (2003). They found that the Indonesian crises of the late 1990s led to

[2] Mykyta and Macartney (2011) defined doubling up as adding an adult that is not the household head, spouse or cohabiting partner of the household head.
[3] Lee and Painter (2013) defined overcrowding as having more than one person per room in a household.
[4] Young people who moved back home with their parents after a period of living away from home.

increases in household size. The paper suggests that as wages and incomes fall, households change living arrangements in order to capture the benefits of economies of scale.

Joint residence is associated with higher individual well-being than living independently because of increasing returns to scale in household production and consumption (Foster and Rosenzweig, 2002). Households may also benefit from scale economies arising from bulk discounts (Nelson, 1988). Benefits from intra-household specialization arise when one family member is relatively more productive in producing certain goods than the others. However, gains from specialization and economies of scale can be offset by decreasing return to scale in joint production because substituting assets are under-utilized (Foster and Rosenzweig, 2002).

In the presence of credit constraints joint residence might affect the ability of individuals to insure against risks and help overcome credit constraints through intra- and inter-household resource allocation (Fafchamps and Lund, 2003). Moreover, a separate residence offers more privacy and autonomy but less power or authority (Karlsson and Borell, 2002).

While several papers analyze the consumption smoothing behavior in Russia, including some related to the 1998 crisis (for example, Gerry & Li, 2010), we are not aware of any study that looks at how Russian households respond to an economic crisis by changing their composition.

3. The theoretical framework

Suppose an individual consumes goods purchased on the market and produced at home. The home goods can be produced more efficiently by two or more individuals. Two individuals can share their budget and achieve higher consumption because of economies of scale or specialization that arises due to sharing common goods within a household. Each individual values his/her privacy that is inversely related to the share of income that individual allocates to a common budget. In a more formal setup, the individual utility function (U) is:

$$\begin{aligned} &U = U(C(s), R(s), X); \\ &U_c > 0;\ U_{cc} < 0 \\ &U_r > 0;\ U_{rr} < 0 \\ &C_s > 0;\ R_s < 0 \\ &s \in [0,1] \end{aligned} \tag{1}$$

where utility is a function of individual consumption (C), privacy (R), a vector of taste shifters (X) and s is a share of individual income allocated to a family budget. An individual maximizes his/her utility subject to a budget constraint:

$$\max_{C,R} U(C,R,X)$$
$$s.t. C = \Omega(w,s); \Omega(w,0) = w, \Omega(w,1) > w \tag{2}$$

where w is an individual's income and Ω is a function that maps individual income onto consumption. At the optimum, a utility gain from consuming an extra dollar of goods is equal to a utility loss because of the loss of privacy. If an individual experiences a negative income shock, that is his/her income declines from w to w_L, his/her consumption declines. Then:

$$\frac{\partial U}{\partial C(w_L,s)} > \frac{\partial U}{\partial R} \text{ because } \frac{\partial_2 U}{\partial C^2} < 0 \tag{3}$$

To reach a new equilibrium, the individual increases the share of income allocated to the family budget, and as a consequence, losses some of his/her privacy.

An increase in the share of individual income in the total household budget leads to larger benefits from economies of scale and specialization. However, this does not necessarily result in cohabitation. For example, young parents might ask grandparents to take care of their children, instead of sending them to the kindergarten, while continuing to live separately from the grandparents. However, the highest return from economies of scale occur when members of a household reside together.

We can think of some threshold value s^* that causes an individual to physically move in with others. That share of income s^* depends on the household and individual characteristics. In a linearized form this relation can be represented as: $s_i^* = X_i\beta + \varepsilon_i$.

An individual decides to live together with other household members if the latent variable s^* is positive. The observed states of cohabitation (M) could be described as follows:

$$\begin{array}{ll} M=1 \text{ if } s^*>0 & \textit{move in with other members} \\ M=0 \text{ if } s^*<=0 & \textit{live separately} \end{array} \tag{4}$$

Assuming that the error terms ε are i.i.d and normally distributed, the probability of an individual choosing M=1 can be estimated by a probit.

Our model predicts that gains from cohabitation will depend on the complementarity and substitutability of individual characteristics of household members. We should expect that, for example, males will be more likely to join households with a larger share of females, those individuals who are unemployed may combine with those who are earners. The problem of congestion will put a limit on the economies of scale, thus making it less likely for individuals to joint very large households.

4. Data and definitions

The analysis in our paper uses data from RLMS-HSE. The RLMS-HSE contains nationally representative samples of households and includes information on measures of household structure for each household member. Information about household structure is obtained through the household roster which records the relationship to the individual of all the members living in his/her household at the time of the interview. The RLMS-HSE is collected annually, and we use panel data on households including 16 waves of the survey during the period from 1994 to 2011, with the exception of 1997 and 1999, when the survey was not conducted. From 1996 the RLMS-HSE followed households in the panel even if they moved away from the sample address or split into several households each of which is inducted into the panel. However, households that moved out of primary sampling units were not tracked in subsequent surveys. The longitudinal sample consists of 16789 households, 50 percent of which are observed for at least two consecutive years and 25 percent are observed for at least seven consecutive years.[5]

4.1 Description of dependent variables

We define two types of changes in the household structure. A household is categorized as having an increase in its size if that household added new members over the period from before to after the crisis. A household that added one or several new members who are adults is classified as a household that moved together with several adults. The important distinction between the first and the second categories is that in the later we are excluding new births. The descriptive statistics for our dependent variables are shown in Table 1.

Table 1: Summary statistics for the main dependent variables

	Mean	*Robust Std. Error*
Increase in size in 1996-2000	0.209	*0.010*
Move in with adults in 1996-2000	0.202	*0.010*
Increase in size in 2007-2009	0.162	*0.006*
Move in with adults in 2007-2009	0.151	*0.006*

Notes: Robust Std. Err. adjusted for 38 clusters in primary sampling unit

[5] The temporal representativeness of the RLMS-HSE data has a critical impact on the validity of our results. We compare trends in per capita consumption expenditure and household size between the RLMS-HSE and the nationally representative Household Budget Survey and Census conducted by RosStat. Overall, we find a good correspondence in consumption and household size trends between these datasets. The detailed results of this comparison are available from the authors on request.

4.2 Measures of economic shocks

In our analysis we use three measures of economic shocks. The simple measure of the economic shock is the difference between the post and pre-crisis observed household consumption. The main problem with such a measure is that the post-crisis consumption level is the result of a combined impact of the crisis, the overall macro-economic trend, the household's shock mitigation strategies, and the effects of other factors that might affect household consumption. We offer two approaches for separating the effect of the crisis from the effects of other components.

We derive the counterfactual post-crisis consumption based on the pre-crisis consumption trend for a particular household. That counterfactual consumption shows the level of consumption a household would have in the absence of the crisis had the overall trend continued as it was for several years prior to the crisis year. In particular, for each household we regress the household per capita consumption on a time indicator for panel observations covering the period before the crisis. So, the counterfactual post-1998 crisis consumption is predicted based on observations from 1994 to 1998; the counterfactual post-2008 crisis consumption is predicted based on the panel of 2004 to 2008 rounds.

Thus, we can measure the impact of the crisis on household wellbeing as the difference between the actual and predicted counterfactual consumptions after the crisis. Similarly, we can predict the post-crisis consumption from a regression based on post-crisis panel. The idea here is that a shock moves households to a different consumption trajectory. The consumption regression predicts the post-crisis consumption net of idiosyncratic shocks. The impact of a shock can then be measured as the difference in the post-crisis counterfactual consumptions predicted based on pre- and post-crisis panels.

Formally, let Y_{it}^{pre} be the observed post crisis value of household *i* per capita consumption at date *t*. Let Y_{it}^{post} be the counterfactual consumption that a pre-crisis regression predicts would have been observed in the absence of the crisis. We define the proportional impact of the crisis as:

$$I_{it}^{Y} \equiv \ln(Y_{it}^{post} / Y_{it}^{pre}) \qquad (5)$$

We assume that consumption for household *i* follows a log-linear trend with a structural break in the year of the crisis.[6] The models describing the pre- and post-crisis trends are:

$$\ln Y_{it}^{pre} = \alpha_i^Y + \beta_i^Y t + \mu_{it}^Y \quad \text{for } (\mathrm{t}<\mathrm{T}_{\mathrm{crisis}}) \qquad (6)$$

$$\ln Y_{it}^{post} = \alpha_i^{Y^*} + \beta_i^{Y^*} t + \mu_{it}^{Y^*} \quad for\ (t \geq T_{crisis}) \qquad (7)$$

[6] We tested both linear and log-linear specifications and found that for the majority of households the log-linear specification performed better.

where the α_i's and β_i's are parameters and the μ_i's are the residual terms that might include both the idiosyncratic and measurement errors. Setting residuals to zero, the estimate of the impact of the crisis would be:

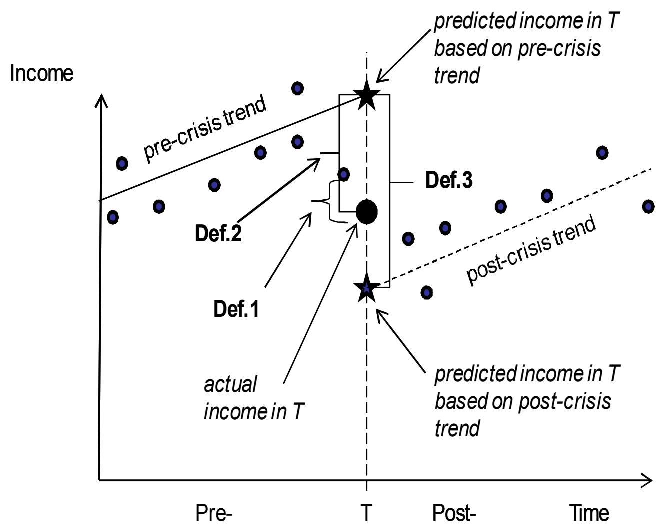
$$\hat{I}_{it}^{Y} = \ln Y_{it}^{post} - \hat{a}_i^{Y} - \hat{\beta}_i^{Y} t \tag{8}$$

However, setting the error term to zero ignores the effects of various factors on household consumption in the absence of the crisis. To account for these effects we include the observed error term in the counterfactual for each household. Then the estimate of the impact of the crisis can be expressed as the difference in the predicted values:

$$\hat{I}_{it}^{Y} = \hat{a}_i^{Y^*} - \hat{a}_i^{Y} - (\hat{\beta}_i^{Y^*} - \hat{\beta}_i^{Y})t \;\; for\, t \geq T_{crisis} \tag{9}$$

A graphical illustration of our approach is shown in Figure 1.

Figure 1: Schematic explanation of the algorithm for constructing the three measures of consumption shocks.



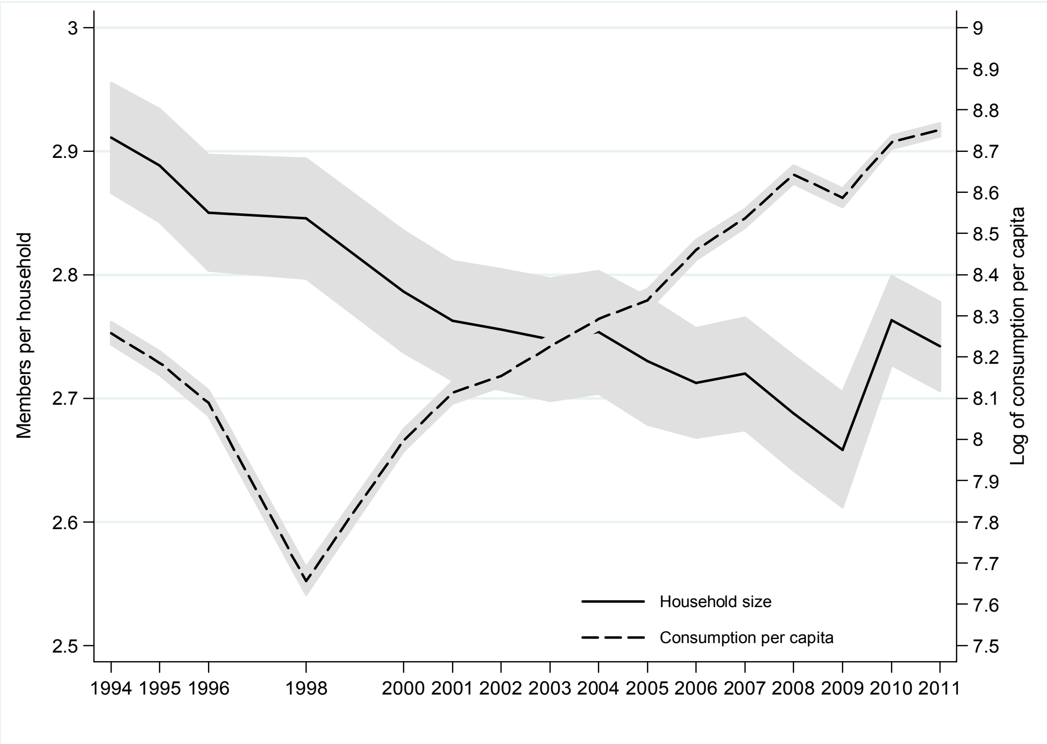
5. Changes in household size and consumption in Russia during two crises

Figure 2 plots the changes in household size and household consumption over the period of 1994 to 2011.[7] On average, household per capita consumption declined by about 26 percent during 1998 and by 7 percent during the 2008 crisis. The average household size has been declining steadily from 2.9 members per household in mid-1990s to 2.7 members in 2011. The financial crisis of 1998 just slowed that decline, but the crisis of 2008 resulted in a sharp increase in the average household

[7] The reported consumption expenditure and size are estimated using the RLMS-HSE nationally representative cross-sections.

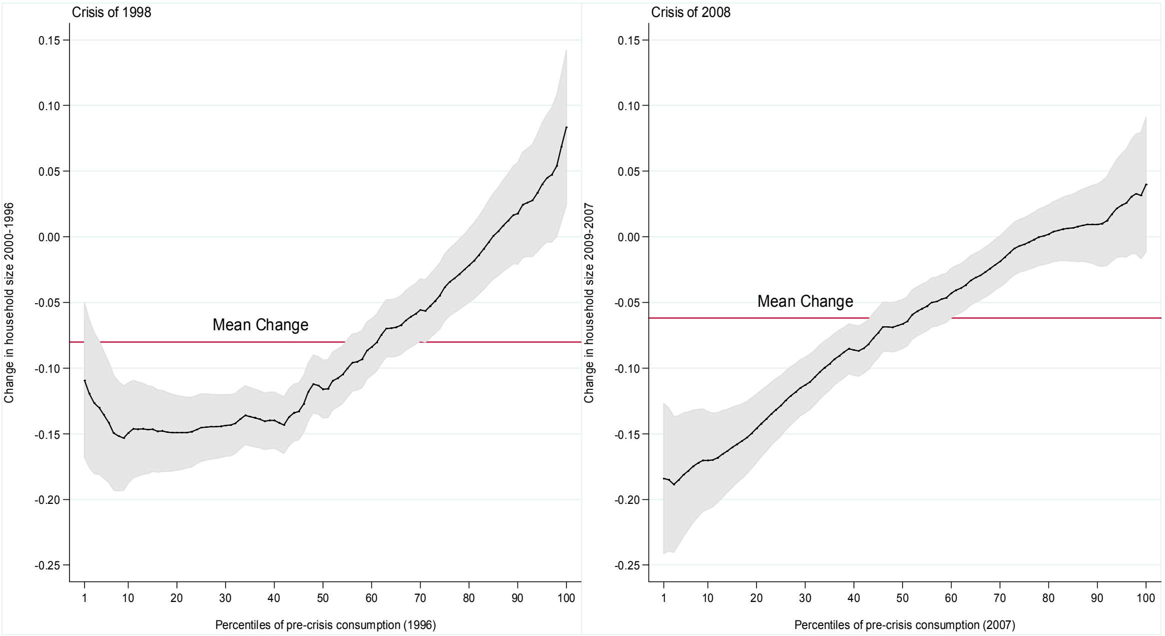
size in Russia. The impacts of the crises varied for Russian households: while for many Russian the 1998 and 2008 crises had devastating consequences, some households ended up being better off. About 42 percent of households reported higher levels of per capita consumption after the 1998 crisis, and 51 percent of households improved their standards of living after 2008 crisis.

Figure 2: Household size and consumption, 1994-2011



The left panel of Figure 3 plots changes in household size against percentiles of 1998 pre-crisis consumption distribution. On average, the household size declined after the crisis of 1998. In 2000, the size of households in the lower and middle part of income distribution declined more compared to the richest households in the sample. The right panel of Figure 3 shows changes in household size between 2007 and 2009. The post-crisis decrease was largest for households with the lowest levels of pre-crisis consumption. The size of the richer households stayed unchanged after the 2008 crisis.

Figure 3: Changes in household size after the crises for households with different levels of pre-crisis per capita consumption.



The first row of graphs in Figure 4 shows the proportion of households that increased their size after the crisis by the intensity of the income shocks. For households that experienced large negative shocks (measured as a before-and-after difference in observed consumption (Definition 1)) this proportion is almost 30 percent, compared to less than 10 percent for households whose income grew after the crisis. A similar relation is observed for the two other measures of income shocks: the difference of the post-crisis observed and predicted consumption (Definition 2), and when shocks are measured as a difference between consumption levels predicted based on the pre- and post-crisis trends (Definition 3).

A significant positive relation between shock intensity and the proportion of households that added one or more adult members after the crisis is observed for all three measures of shocks (second row of graphs in Figure 4). In other words, the proportion of households that added one or more adults after the crisis is higher for households whose consumption declined the most after the crisis.

Figure 5 shows the relationship between the magnitude of income shocks and the changes in household composition after 2008 crisis. The proportion of households that increased their size and added new adults after the crisis is higher for households that experienced large negative income shocks after the crisis for all three shock measures.

Figure 4: The impact of consumption change (2000–1996) on the proportion of households that changed their composition after the 1998 crisis.

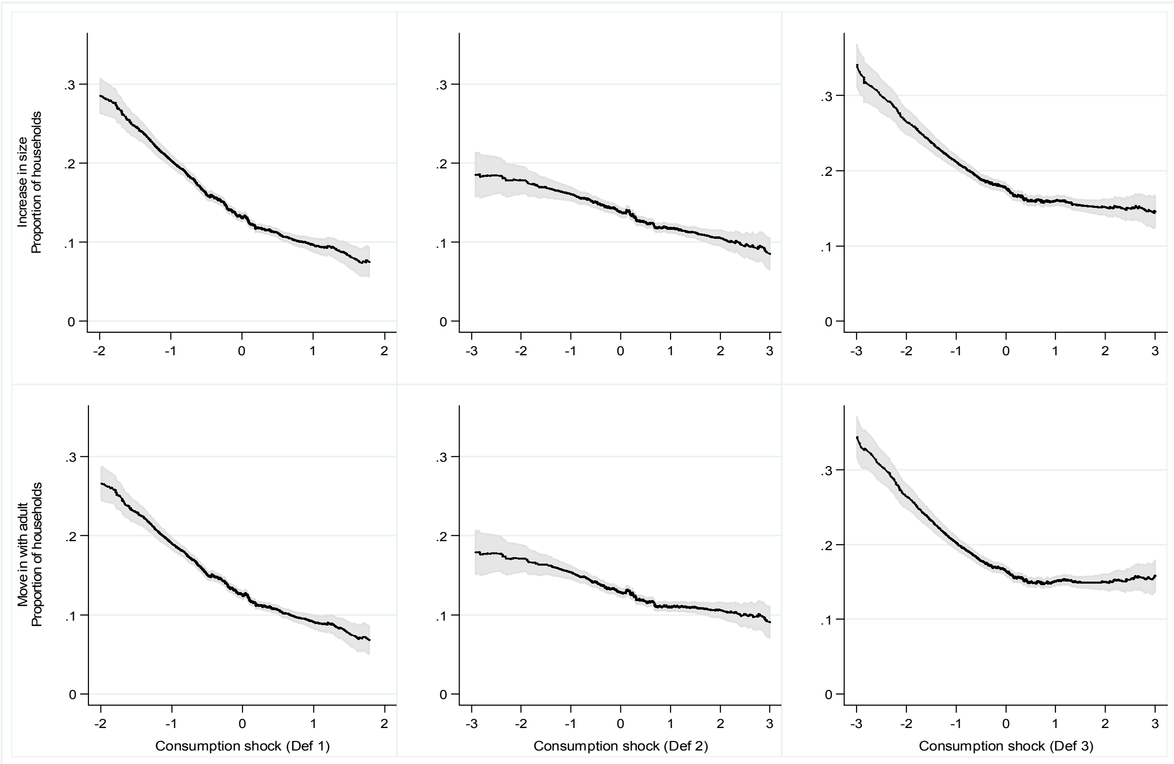
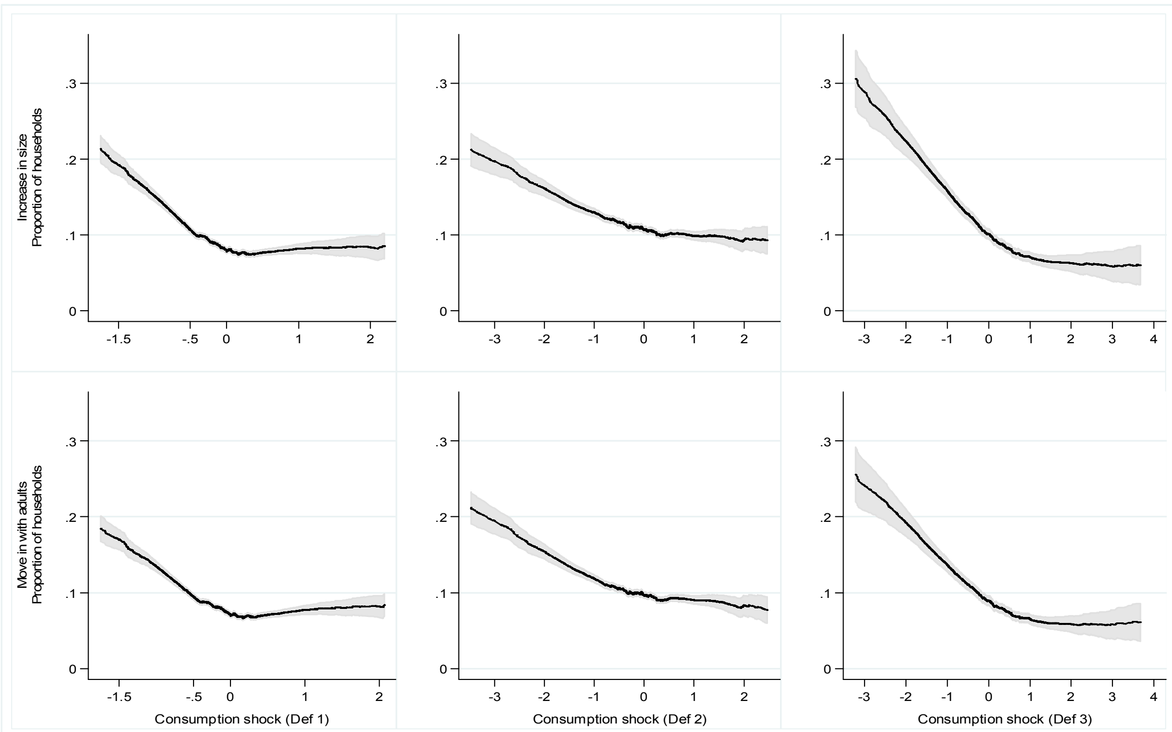


Figure 5: The impact of consumption change (2009-2007) on the proportion of households that changed their composition after the 2008 crisis.



6. Empirical Results

The coefficients for the main variables of interest from probit estimations of equation (4) are shown in Tables 2 and 3.[8] A set of regressors includes household characteristics such as age and age squared of the household head, educational dummies for the head, the share of the children 0 to 6 and 7-17 years of age, shares of pensioners, adult females (18-54) and males (18-59), number of generations in household, household size and household size squared; share of unemployed household members; type of settlement as well as geographical regional dummies.

Estimation results for the 1998 crisis. Table 2 reports the coefficients associated with three different measures of shock for the 1998 crisis. The top section of Table 2 presents estimates of the effect of the shock, measured using the "before and after" approach. The results show that households whose consumption declined after the crisis are more likely to change their structure. The middle section of Table 2 shows the specifications with a change in logs of the predicted and actual per capita consumption in 2000. We find a statistically significant effect of the change in the ratio of real consumption to predicted consumption on changes in household structure. The changes in the ratio of predicted consumption based on the post-trend to predicted consumption based on the pre-trend are significant and decrease the probability of structural changes in all categories.

Table 2: The effect of a decline in per capita consumption on the probability of a household changing its structure, RLMS rounds of 1996 and 2000 (Maximum likelihood estimations: average marginal effects)

	Increase in size	Move in with adults
Shock: *change in observed post- and pre-crisis*	-0.010^{*}	-0.004
log-consumption (2000 – 1996)	*(0.006)*	*(0.009)*
Shock: *change in predicted and observed after-crisis*	-0.013^{**}	-0.012^{**}
log-consumption	*(0.006)*	*(0.006)*
Shock: *change in predicted log-consumption based*	-0.052^{***}	-0.050^{***}
on pre- and post-crisis trends	*(0.008)*	*(0.008)*

Notes: Robust standard errors in parentheses (with clustering by 38 primary sampling units). *** indicates p-value < 0.01, ** p-value < 0.05, *p-value < 0.1 Control variables are included but not reported.

Estimation results for the 2008 crisis. Table 3 shows the impact of changes in consumption between 2007 and 2009 on household composition. Households that experienced negative consumption shocks are more likely to increase their size and are more likely to add one or more adults after the crisis, compared to households whose consumption did not decline. The impact on

[8] The complete set of coefficients for Tables 2, 3, and 4 are available from authors and in the Appendix for reviewers only.

household composition is the strongest in specification where the magnitude of the shock is measured as a difference in log-consumption predicted, based on the pre- and post-crisis trends.[9]

Table 3: The effect of a decline in per capita consumption on the probability of a household changing its structure, RLMS rounds of 2007 and 2009 (Maximum likelihood estimations: average marginal effects)

	Increase in size	Move in with adults
Shock: *change in observed post- and pre-crisis log-consumption (2009 – 2007)*	-0.012^{*}	-0.005
	(0.007)	*(0.005)*
Shock: *change in predicted and observed after-crisis log-consumption*	-0.021^{***}	-0.015^{**}
	(0.007)	(0.007)
Shock: *change in predicted log-consumption based on pre- and post-crisis trends*	-0.067^{***}	-0.056^{***}
	(0.010)	(0.009)

Notes: Robust standard errors in parentheses (with clustering by 38 primary sampling units). *** indicates p-value < 0.01,** p-value < 0.05, *p-value < 0.1 Control variables are included but not reported.

6.1 Accounting for the endogeneity of consumption shock and sample attrition

Two issues with our estimations can bias our main results. First, there could be some factors that simultaneously affect the changes in household structure and the magnitude of the income shock. Second, there could be a non-random attrition of households in the rounds of RLMS-HSE spanning the crisis years.

We rely on the instrumental variables (IV) approach to deal with the endogeneity of consumption shocks in our model.[10] We use the post-crisis changes in the average wage rate in the locality as an instrument for consumption shock. The exclusion restriction for changes in wages is based on the assumption that the economic crises of 1998 and 2008 were unexpected for both employers and employees and that in Russia employers use changes in wages as a way of adjusting to the new economic conditions and this wage setting mechanism is exogenous to the employers (Gimpelson & Kapelushnikov, 2007). Under these assumptions, wages are correlated with household consumption but do not directly influence the household structure and size.

The key result from the first stage of our empirical model is the significance of our instrumental variable.[11] The Sargan's (1958) test of over-identifying restrictions fails to reject (χ^2 P-value of 0.643 for 1998 and 0.448 for 2008 crisis) the null hypothesis that our excluded

[9] We re-estimated the models of Tables 2 and 3 adding a squared measure of the shock. The results of these estimations are qualitatively and quantitatively similar to those obtain from the original specifications.
[10] Forster and Rosenzweig (2002) use differences in the rate of technical change across the areas of India as an IV in estimating the effect of income growth on household division.
[11] We used two definitions of average wage rates in our estimations. We calculated the hourly wage rates as a ratio of labor earnings in the month prior to the survey and the hours worked during that month. Alternatively, hourly wage rates were calculated by dividing contractual labor earnings per month by the usual hours of work per month. Our main results appear to be stable to the choice of the instrument.

instruments, the change in the average wage rates after the crisis, are uncorrelated with the error term and are correctly excluded from the household composition equations. The *F*-statistic on the excluded instruments (6.35 for 1998 and 6.74 for 2008 crisis) indicates that the first-stage estimates have strong predictive power, in other words, our instruments are not weak (Staiger & Stock, 1997). The Cragg–Donald test of weak instruments further confirms the power of our instruments: The Cragg–Donald statistics of 26.74 and 20.88 reject (with at least 95 percent confidence) the hypothesis that our system is only weakly identified. This result could be interpreted as another test for the presence of the weak instruments (Stock & Yogo, 2002).

Table 4 presents the results of Maximum Likelihood estimations of the impact of the crisis on household composition for both 1998 and 2008 crises. Compared to the specifications based on trends (shown in Tables 2 and 3), the coefficients of the instrumented consumption growth variables are higher for both the 1998 and 2008 crises and they support our hypothesis that the drop in household income causes household size to increase.[12]

Table 4: The instrumental variable estimation of the effect of a decline in per capita consumption on the probability of a household changing its structure (Maximum likelihood estimations; average marginal effects)

	Increase in size	Move in with adults
Shock 2000-1996: *change in predicted log-consumption based on pre- and post-crisis trends and instrumented by wage shock*	-0.205*** *(0.037)*	-0.200*** *(0.048)*
Shock 2009-2007: *change in predicted log-consumption based on pre- and post-crisis trends and instrumented by wage shock*	-0.189*** *(0.054)*	-0.108** *(0.052)*

Notes: Robust standard errors in parentheses (with clustering by 38 primary sampling units). *** indicates p-value < 0.01, ** p-value < 0.05, *p-value < 0.1. Control variables are included but not reported.

6.2 Controlling for sample attrition

The results presented above could also be biased due to non-random panel sample attrition. For example, if households that split after a crisis are less likely to participate in the survey, the effects of income shocks on changes in household size would be underestimated. The rates of attrition in the rounds of the RLMS-HSE spanning the crisis years are relatively high at about 30.7 percent for 1998 and 22.7 percent for 2008 crisis. To test for non-random sample attrition we estimate the probability of a household staying in the survey after a crisis as a function of its pre-crisis characteristics (shown in Table 5). Households with a higher level of pre-crisis consumption, those

[12] To account for the differences in consumption between adults and children we used OECD equivalence scale parameters of 0.9 for children and 0.6 for pensioners. We find a little change in our key results after applying this normalization.

with younger heads, residing in urban and metropolitan areas, as well as smaller households are more likely to drop out of the sample after the crisis.[13] The fact that the probability of dropping out of the panel depends on household size and on pre-crisis consumption indicate that our results might be biased.

Table 5: The effect of household characteristics on the probability of staying in the RLMS-HSE panel after the crises

Variables	Surveyed in 1996, but not in 2000		Surveyed in 2007, but not in 2009	
	Coefficient	*St. Error*	Coefficient	*St. Error*
Log per capita expenditure	0.064^{**}	*(0.032)*	0.021	*(0.031)*
Household characteristics				
Age of head	-0.070^{***}	*(0.009)*	-0.057^{***}	*(0.007)*
Age of head^2/100	0.063^{***}	*(0.008)*	0.051^{***}	*(0.007)*
Primary education	0.088	*(0.177)*	0.172	*(0.114)*
Secondary incomplete education	-0.045	*(0.073)*	-0.052	*(0.068)*
College	-0.072	*(0.061)*	0.057	*(0.050)*
University	-0.109	*(0.067)*	-0.051	*(0.056)*
Secondary complete education		*Omitted category*		
Share of children 0-7	-0.119	*(0.321)*	-0.168	*(0.262)*
Share of children 7-18	-0.380^{*}	*(0.225)*	-0.138	*(0.199)*
Share of female adults	0.002	*(0.136)*	0.032	*(0.109)*
Share of male adults	0.295^{**}	*(0.132)*	0.362^{***}	*(0.112)*
Share of pensioners		*Omitted category*		
Household size	-0.523^{***}	*(0.148)*	-0.512^{***}	*(0.127)*
Household size squared	0.241^{***}	*(0.085)*	0.143^{**}	*(0.070)*
One generation	0.208	*(0.139)*	-0.087	*(0.117)*
Two generations	0.103	*(0.101)*	-0.090	*(0.083)*
Three generations		*Omitted category*		
Share of unemployed persons	-0.984^{***}	*(0.261)*	-1.012^{***}	*(0.182)*
Geographical dummies				
Moscow or St. Petersburg	0.271^{**}	*(0.126)*	-0.027	*(0.106)*
City	0.371^{***}	*(0.067)*	0.355^{***}	*(0.058)*
Town	0.458^{***}	*(0.069)*	0.339^{***}	*(0.060)*
Small Town	0.156	*(0.112)*	-0.027	*(0.106)*
Villages		*Omitted category*		
Central	-0.650^{***}	*(0.113)*	-0.677^{***}	*(0.099)*
North-West	-0.648^{***}	*(0.131)*	-0.477^{***}	*(0.113)*
South	-0.484^{***}	*(0.116)*	-0.330^{***}	*(0.102)*
Volga	-0.750^{***}	*(0.113)*	-0.627^{***}	*(0.098)*
Ural	-0.609^{***}	*(0.124)*	-0.544^{***}	*(0.109)*
Siberia	-0.519^{***}	*(0.119)*	-0.479^{***}	*(0.103)*
Far East		*Omitted category*		
Constant	2.035^{***}	*(0.540)*	1.979^{***}	*(0.452)*
N. Observations	3,533		5,302	

Notes: Robust standard errors in parentheses. *** indicates p-value < 0.01, ** p-value < 0.05, * p-value <0.1

[13] Similar panel attrition patterns for RLMS-HSE were found by Friebel and Guriev (2005)

We failed to find a reasonable instrument to control for this non-random attrition. However, we might argue that members of smaller families, that are over-represented among households that dropped out of the sample after the crisis, are more likely to form larger households. If this is so, then our results represent the lower bounds for the actual impact of the crisis on the household size. Had these households stayed in the panel, the estimated effect of the negative income shock on household size would be even stronger than reported in our paper.

7. Conclusion

This paper examines the impact of income shocks on changes in household structure. We use panel data from RLMS-HSE that span both the 1998 and 2008 crises. In our theoretical model we hypothesize that household decisions about structure are based on comparisons of the utility gained from economy of scale and the utility derived from individual privacy. We use two approaches to estimate the impact of income shocks on household structure. In our first approach we assume that the choice to move in with relatives is exogenous to income shock and view shock as a treatment. Our second approach controls for the endogeneity of household consumption with respect to household structure by using the instrumental variable method. Both methods demonstrate that households that experienced a decline in their incomes after the 1998 and 2008 crises are more likely to increase their size compared to households whose post-crisis income did not change or increased. Our empirical results indicate that a change in household structure is an important mechanism to cope with the negative impact of a crisis.

Policy measures that help households to implement their own coping strategies by reducing costs for households to vary their size and composition could be effective in improving the well-being of the Russian population. Such policies may include the simplification of procedures related to the geographical transfers of health insurance and pensions, the development of programs of part-time and temporary employment, and improvements in information services for individuals wishing to rent out their housing.

References

Aassve A., Billari F.C., Mazzuco S., Ongaro F. (2002). 'Leaving home: a comparative analysis of ECHP data', Journal of European Social Policy, 12/4, pp. 259-275

Alvi, E., Dendir, S. (2009). 'Private transfers, informal loans and risk sharing among poor urban households in Ethiopia', Journal of Development Studies, 45/8, pp.1325-1343

Dyrda, S., Kaplan G., RÌos-Rull J. (2012). 'Business Cycles and Household Formation: The Micro vs the Macro Labor Elasticity', NBER Working Paper No.17880

Ermisch, J. (1999). 'Prices, Parents and Young People's Household Formation', Journal of Urban Economics, 45/1, pp. 47–71

Fafchamps M., Lund S. (2003). 'Risk sharing networks in rural Philippines', Journal of Development Economics, 71, pp. 261–287

Fafchamps, M., Gubert F. (2007). 'The formation of risk sharing networks', Journal of Development Economics, 83/2, pp.326-350.

Foster, A.D., Rosenzweig, M.R. (2002). 'Household Division and Rural Economic Growth', The Review of Economic Studies, 69/4, pp 839-869

Frankenberg E., Smith J.P., Thomas D. (2003). 'Economic Shocks, Wealth, and Welfare', Journal of Human Resources, University of Wisconsin Press, 38/2, pp. 280-321.

Friebel, G., Guriev, S. (2005). 'Attaching workers through in-kind payments: Theory and evidence from Russia', World Bank Economic Review, 19/2, pp. 175–202.

Gerry, C. J., Li, C. A. (2010). 'Consumption smoothing and vulnerability in Russia', Applied Economics, 42, pp. 1995-2007

Gimpelson, V., Kapelyushnikov, R. (Eds.) (2007) Zarabotnaya plata v Rossii: evolutsia i differentsiatsia, Moscow: Higher School of Economics

Heltberg, R., Lund, N. (2009). 'Shocks, Coping, and Outcomes for Pakistan's Poor: Health Risks Predominate', Journal of Development Studies, 45/6, pp. 889-910

Kaplan, G. (2009). 'Boomerang Kids: Labor Market Dynamics and Moving Back Home', Working Paper No.675, Research Department, Federal Reserve Bank of Minneapolis

Kaplan, G. (2010). 'Moving Back Home: Insurance Against Labor Market Risk', Working Paper No.677, Research Department, Federal Reserve Bank of Minneapolis.

Karlsson S., Borell K. (2002). 'Intimacy and autonomy, gender and ageing: Living apart together', Ageing International, 27/4, pp. 11–26

Lee J.J., Sawada Y. (2010). 'Precautionary saving under liquidity constraints: Evidence from rural Pakistan', Journal of Development Economics, 91/1, pp.77-86.

Lee, K.Ok, Painter, G. (2013). 'What happens to household formation in a recession?', Journal of Urban Economics, 76, pp. 93–109

Lusardi, A., Schneider, D.J., Tufano, P. (2011). 'Financially Fragile Households: Evidence and Implications', NBER Working Paper No. 17072

Matsudaira, J. (2010). 'Economic Conditions and the Cyclical and Secular Changes in Parental Coresidence Among Young Adults: 1960 to 2007', SSRN Working Paper, Department of Public Policy Cornell University http://ssrn.com/abstract=1702573

Mykyta, L., Macartney, S. (2011). 'The Effects of Recession on Household Composition: "Doubling Up" and Economic Well-Being', SEHSD Working Paper No. 2011/4, U.S. Census Bureau, http://www.norwescap.org/pdf_public/recession-effects.pdf

Nelson J. A. (1988). 'Household Economies of Scale in Consumption: Theory and Evidence', Econometrica, 56/6, pp. 1301-1314

Rosenzweig, M., Stark O. (1989). 'Consumption Smoothing, Migration, and Marriage: Evidence from Rural India', Journal of Political Economy, 97/4 pp.905-926.

Sargan, J. (1958). 'The estimation of economic relationships using instrumental variables', Econometrica, 26, pp.393–415.

Skoufias E., (2003). ‘Consumption smoothing in Russia Evidence from the RLMS’, Economics of Transition, 11/1, pp. 67–91

Staiger, D., Stock, J. (1997). ‘Instrumental variables regression with weak instruments’, Econometrica, 65/3, pp. 557–586.

Stock, J., Yogo, M. (2002). ‘Testing for weak instruments in linear IV regression’, NBER Technical Working Paper No.284.

Wiemers, E.E. (2011). ‘The Effect of Unemployment on Household Composition and Doubling Up’, National Poverty Center Working Paper Series No.11/12

Worldbank, (2009), Russian Economic Report No.18

Worldbank, (2012), ‘Moderating Risks, Bolstering Growth’, Russian Economic Report No.27

Kseniya R. Abanokova
National Research University Higher School of Economics (Moscow, Russia).
Centre for Labour Market Studies (CLMS), Junior Research Fellow;
E-mail: kabanokova@hse.ru
Michael M. Lokshin
World Bank and National Research University Higher School of Economics (Moscow, Russia).
“Centre for Labour Market Studies (CLMS)”