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During the Transition

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Abstract

We exploit panel data from the second phase of the Russian Longitudinal Monitoring Survey (RLMS) to investigate the household characteristics that explain saving during a period of extreme dislocation. Among our more noteworthy findings, we find evidence of short-term consumption smoothing behavior as households respond to temporary income shocks. Conditional on income level, we find that savings rates are higher in households benefiting from non-standard (likely transitory) sources of support such as private transfers and sales of home produced food; savings rates are lower, moreover, in households suffering from unemployment or payment arrears. We also confirm the robustness of an atypical U-shaped age-savings relationship to multivariate specifications. And finally, we turn up strong support for an inverse relationship between the household's stock of durables and its saving rate.

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Household Savings in Russia during the Transition

Introduction

In this paper, we exploit panel data from the second phase of the Russian Longitudinal Monitoring Survey (RLMS)¹ to investigate the household characteristics that explain saving during a period of extreme dislocation. Our investigation starts from the pre-supposition that the savings behavior that has emerged in Russia may not conform to that found in more mature and stable market environments. The experience of price liberalization, just over a decade ago, offered an initial “lesson” of sorts in the futility of savings as Russians saw the real value of their ruble holdings, stashed “under the mattress” or held in the state savings bank, rapidly decline.² The subsequent period of hyperinflation, the widespread failures of large financial institutions and the unexpected devaluation of the ruble in 1998 also provided similarly discouraging “lessons” as to the value of traditional forms of saving. Consider, furthermore, that Russians have been forced to learn other sorts of “lessons” in their country’s nascent labor and consumer goods markets. For the first time in generations, they have had to deal with uncertainties associated with payment arrears and unemployment. But as income streams have become less predictable, marketization has rendered the distribution and availability of consumer goods much more so.

¹ The Russian Longitudinal Monitoring Survey (RLMS) is the first nationally representative sample of households in the Russian Federation. Faculty at the Carolina Population Center at the University of North Carolina at Chapel Hill headed up the collaborative effort. In phase 2, approximately 4000 households were surveyed. See <http://www.cpc.unc.edu/rlms> for details.

² We should note that many commentators have exaggerated this decline by disregarding the *real* price of consumer goods in the pre-reform setting, which included the opportunity cost of queuing

What sort of saving patterns have been produced in such a potentially disorienting period of transition? The confluence and shear magnitude of these changes leads us, in some sense, to expect the unexpected. Finding inter-household variation that appears to contradict experiences elsewhere should not surprise us. Gregory *et al.* (1999), for instance, report a U-shaped relationship between the age of the household head and savings rates in one round of the RLMS. This finding is at odds with both the age-savings relationship found in other countries and the inverted U predicted by the standard life-cycle hypothesis.³

We build upon this and other work, investigating the relationship between household characteristics and savings in a panel setting from 1994 to 2001. Among our more noteworthy findings, we confirm the robustness of the U-shaped savings-age relationship to multivariate specifications. Although this might be interpreted as evidence against consumption smoothing over the long run, we do find evidence of short-term smoothing behavior in that savings rates are lower for households suffering from unemployment or payment arrears. We also show how the composition of household income influences the propensity to save; specifically, those households that benefit disproportionately from non-standard (informal) sources of support, which is likely to be transitory or irregular, tend to

for shortage goods. For the elderly, however, this cost of queuing was likely to be low so the impact of this “lesson” was most likely the greatest for them.

³ “Life-cycle” and “permanent income” hypotheses consider saving and dis-saving as ways to smooth consumption over the long term. Consumption, from this perspective, does not respond to transitory fluctuations in current income. Rather, households adjust savings in order to keep consumption relatively constant. For instance, a household may dis-save early on when its income is relatively low, then, in its middle years with higher income, it can build up a stock of savings to finance consumption later in life as it reaches retirement and income declines. In general, the empirical support for this sort of dis-association of consumption from current income over the long term is rather weak.. Consumption, in most contexts, is more sensitive to income than the standard model would predict. Effectively, younger and elderly households consume too little, the middle-aged too much (Thaler 1990).

save more. And finally, we turn up strong evidence for an inverse relationship between the size of a household's stock of durable goods and its saving rate.

These findings bear upon two important aspects of Russia's economic transition. Since household savings can be a critical source of support for new investment projects, the relationships highlighted here could suggest how certain developments or policies would influence the aggregate savings rate and thus the pace of economic restructuring and development.⁴ On another level, our conclusions may suggest that the savings pattern across households is, in good part, a function of the institutional under-development of the Russian economy. For instance, if the behavior suggests that Russian households have adapted to an anemic market for consumer credit or the general absence of social insurance programs, we may be better placed to predict the savings-related consequences of the development in those institutions.

Our paper is structured as follows. In the next section, we discuss how we use the RLMS to estimate household savings rates in Russia. Then, after exploring bivariate relationships between savings rates and various household characteristics, we estimate the determinants of household savings in a panel regression. We conclude with a discussion of the results and their implications.

Measuring Household Savings in Russia

Since the RLMS provides a detailed accounting of household budgetary flows and only minimal information on wealth, by default, we compute savings as the difference

⁴ While most post-socialist economies experienced a decline from the relatively high savings (and investment) rates of the socialist era, household savings rose, both as a share of total domestic savings and household disposable income (EBRD, 1996).

between monthly income and consumption flows.⁵ This measure, as opposed to a first difference of assets, directly reflects decisions about how much households consume and save and indicates the resources that households have set aside that could be used to finance investment.

We proceed with an accounting of the sub-components that are included in these two flows. Income is measured as the sum of multiple cash and non-cash payments received by all adults in a household during the month preceding the survey. Wages, which constitute the largest share of household income, include both cash and (the respondent's estimated value of) in-kind payments from primary and any secondary jobs. As shown in Figure 1, by Round X in 2001, employment income amounts to almost half of total household income. Wage arrears, although an important element of the Russian story, present difficulties of interpretation. Even though they could be construed as future income, the RLMS does not allow us to determine the rate at which a household might discount a ruble's IOU since that would be a function of its particular beliefs about if and when the debt would be settled.⁶ For these reasons, we have excluded them from our calculations.⁷

⁵ The RLMS household questionnaire does contain a question that reads "How much money did your family save in the last 30 days?" The answer, we feel, would be an unreliable measure of savings for several reasons. For one, the wording leaves the definition of "save" to the interpretation of the respondent. Since it asks for a response in rubles, households might not factor in any increase in hard currency savings (which for many households are more significant in stock terms than rubles). Also, since it follows a question explicitly asking about the purchase of stocks, bonds or other valuable papers, the household is likely to consider these mutually exclusive from savings. Lastly, it cannot be expected to measure dis-saving properly.

⁶ The RLMS data do not provide information as to the flow of arrears, only the stock.

⁷ Gregory *et al.* (1999) compute their RLMS-based estimate of the savings rate to account for wage arrears. Inclusion of arrears as unspent current income, they note, has a significant effect on the calculation.

Public transfers, the second largest component of household income (consistently around thirty percent), are primarily composed of pensions but also include unemployment and child benefits as well as housing and utility subsidies.⁸ The rent and interest income generated, respectively, by a households' real and financial assets, have consistently been negligible in aggregate terms; as shown in Figure 1, in no single round does this "investment income" account for more than half a percentage point of average household income.

Non-standard sources of income figure prominently in the transitional context. A large number of households, for instance, benefit significantly from monies received from family, friends and non-public philanthropic organizations (Kuhn and Stillman, 2002). On average, these private transfers have consistently amounted to one twelfth of household income. A slightly larger share of income originates from self-produced food products, which include the sale of livestock and wild foods.⁹ Much of this "home production" amounts to autoconsumption (*i.e.*, food products produced and consumed by the same household), but a non-trivial portion is sold for cash. With the exception of Round VIII, which was administered soon after the 1998 crisis, the relative importance of home production seems to be in decline.

In Figure 2, we separate out household expenditures into several sub-components. Autoconsumption gets recorded as (home produced) consumption in addition to income

⁸ Housing and utility subsidies are not included in Round V responses.

⁹ We refer here to the net income generated from home production. That is, the cost of land and other inputs has been subtracted out. It is, therefore, possible for this component of total household income to be negative.

(Deaton, 1997).¹⁰ Non-home-produced food products, we find, have consistently constituted about half of all household expenditures. A catchall category (“other”) that captures expenditures on services and utilities has increased in relative size since Round V.

The final category reflected in Figure 2 is “durables.” Since they provide a stream of benefits over a sustained period of time, it is understandable to discount the contribution of expenditures on refrigerators, cars, dachas, *etc* to current consumption. Moreover, since they may serve as an adequate store of value, they might be regarded as an important form of saving, particularly in an economy, like Russia’s, that has experienced hyperinflation, unexpected currency devaluations and massive failures of financial institutions all within the past decade. Russians, that is, might understandably consider themselves to have few other reliable alternatives for saving. Indeed, sociological research has turned up evidence that suggests that households self-interpret their purchases of durables in just this manner (Shevchenko, 2002). Therefore, in the analysis that follows we record two measures of savings, one inclusive and one exclusive of durables.

Having now laid out the two streams whose difference constitutes savings, it is straightforward to note that the savings rate is simply computed as savings divided by income.¹¹ In the estimates and analysis that follow, we purge the data of acute dis-savers –

¹⁰ For the purposes of calculating a household savings rate, home produced food products enter “income” net of production costs but enter “expenditure” in terms of their market value. Autoconsumption in the presence of non-zero production costs, that is, contributes negatively (by definition) to household savings. For instance, a household whose only source of “income” and “expenditure” is home produced food would see its wealth decline, through dis-saving, in proportion to the costs of growing food.

¹¹ We should note that there are actually two household savings rates that can produce different estimates even when applying the same definition for savings: the “per capita” or aggregate rate which is per capita household savings divided by per capita income and the average rate which is $1/n (S_1/Y_1 + S_2/Y_2 + \dots S_n/Y_n)$ where S is savings, Y is income and n is the number of households.

i.e., households with either negative net income or that report spending more than twice the value of their income.¹² These acute dis-savers, we feel, simply follow a different behavioral model than the rest of the population. We should also note that it is not unusual for household surveys, such as the RLMS, to turn out estimates of income that are substantially less than those for consumption, even when national income estimates suggest that households save large portions of their income (Deaton, 1999). Eliminating those households on the far left hand side of the distribution, therefore, is likely to give us a household savings rate more in line with national estimates.

Table 1 reports our RLMS-based, round-by-round estimates of the household savings rate. In accordance with the norm in the savings literature, we report the “per capita” rate of savings as opposed to the average household rate even though the household serves as our subsequent unit of analysis. Table 1 also reports the official government estimates provided by *Goskomstat*. Note that our estimates are consistently lower even, for the first three rounds, when durables are included as savings.¹³ Moreover, our finding of a secular trend upward in the savings rate is generally at odds with the dynamics of the *Goskomstat* data.¹⁴ In addition to the different methodologies used to calculate these rates,

¹² This convention eliminates roughly one quarter of the respondents. In their investigation of savings in Eastern Europe, Denizer *et al.* (2002) applied an even more restrictive threshold, censoring households whose expenditure exceeded income by 50%.

¹³ Kashin’s estimates generally mirror those produced by *Goskomstat* (2000).

¹⁴ As highlighted by *Russian Economic Trends* (1997) and Gregory *et al.* (1999), *Goskomstat*’s “official savings rate” methodology is flawed. Unable to adequately measure consumption, *Goskomstat* measures household savings as the net increase of households’ holdings of securities, bank deposits, and currency (both domestic and foreign). But this methodology clearly over-states the actual savings rate. Notably, since increases in ruble holdings are taken to be the difference between currency emission and the increase of cash in banks and large enterprises, any increase in ruble holdings by small enterprises would be counted as a part of household savings. What is more, since the increase in hard currency savings is set equal to registered hard currency sales by commercial

we should point out again that the RLMS-based estimates are based upon a single month's data as opposed to the annualized flow data used by the Russian government agency. Along these lines, it is important to note that Zadorin *et al.* (2001) present evidence of substantial monthly and seasonal variation to savings patterns in Russia. Using only the Round V RLMS data, Gregory *et al.* (1999) derive an alternative estimate for the household savings rate. Although they report calculating their rates in much the same way as we do, they arrive at estimates of 12% and 22%, exclusive and inclusive, respectively, of durables. Unfortunately, they are not explicit as to how they have measure income and expenditure, so it is difficult to surmise why their estimate(s) should be so different from ours.

Because of likely reporting errors, we do not place great stock in the veracity of our level estimates, but so long as any such errors in recording income or expenditures are relatively constant within and across households, our estimated rates should be useful for identifying household-level patterns of saving.

Who Saves in Russia: An Initial Exploration

Clearly, the mix of motives bearing on households' savings decisions has shifted during the transition. Workers in socialist countries faced a relatively smooth and predictable lifetime income profile; wage differentials across age cohorts were kept relatively small, full employment was guaranteed and pensions tended to represent a relatively high percentage of pre-retirement income (Ickes, 1993). Households, therefore, did not need to adjust savings to smooth consumption or save for precautionary reasons for the same

banks, it overlooks that a portion of the purchased hard currency may be used for current consumption (*eg*, by tourists or shuttle traders). And as shown in Table 1, *Goskomstat's* high savings rates are largely the result of an increase in foreign currency purchases.

reasons as those in market settings.¹⁵ With the transition, however, this picture changed dramatically. Decreased job security, increased income variability, and an increased strain on publicly-financed pension systems are, in addition to the perceived insecurity of traditional savings mechanisms, the more noteworthy outcomes of the transition that we would expect might alter the motives for saving.

Gregory *et al.* (1999) made, perhaps, the most noteworthy initial contribution as to the discussion of how households of different types save in this new environment. In apparent contradiction to both the predictions of the standard life-cycle hypothesis and a large body of international evidence, they found a U-shaped relationship between savings and age of the household head. According to their findings, which were based solely on Round V of the RLMS, households with heads aged 30-49 had the lowest rates, whereas the highest rates were observed for those with heads are under 25 and over 60. In the subsequent section, we test the robustness of this finding to multivariate specifications. Initially, however, we extend Gregory *et al.*'s work by exploring the robustness of their finding along several other dimensions. We apply our (a different) definition of savings; we investigate how well the result holds up across rounds; and we investigate its sensitivity to a different definition of household age.

¹⁵ But just as there were some reasons for socialist households to save less than their market economy counterparts, there were other reasons for them to save more. For instance, uncertainty over expenditure flows could be higher in an economy with chronic shortages. Kim (1999) concludes based on empirical evidence that Soviet household savings were affected by consumer goods shortages. One could never be sure as to when a valued but hard-to-find good might suddenly become available, so households might choose to save for just such a contingency. Similarly, a lack of formal consumer financing could often lead households to build up their stock of savings in order to purchase durable goods. But as we will see later, the latter is also characteristic of the early transition period.

Using the head's age (or any other characteristic) to proxy for household-level demographics is common practice in empirical research.¹⁶ But the assumption that the head's characteristics are important for the outcome of interest is rarely investigated through careful sensitivity analysis. With regard to savings decisions, the "head" may be just one person in a household that makes budgetary choices collectively. The assumption that the head's characteristics drive outcomes may thus not be true if different members of the household have different savings propensities.

In the RLMS, "head of household" is defined through a fixed, sequential process. The oldest working-age male (18 to 59) present in the household is the head. If none exists, the oldest working-age female (18 to 54) is the head. If the head is still undefined, the oldest retirement-age male (greater than or equal to 60) is the head, and if none exists, it falls to the oldest retirement-age female (greater than or equal to 55). Finally, if there are no members 18 or older, then it is the oldest household member. This definition, we feel, can potentially lead to poor correlations between the outcomes of interest and age of the head. For example, imagine two households. Household A has 3 persons: a working-age male, a working-age female, and one child. Household B is the same as A with two additional persons: one elderly female and one more child. Which household will save more? The head in each case is the adult male. However, household B may have greater income since the elderly female might be working (Kolev and Pascal, 2002), or perhaps the presence of a grandmother enables both parents to work. Of course, larger households require larger

¹⁶ The term "head of household" was originally introduced in surveys to avoid double counting of household members (Rosenhouse, 1994).

expenses, but the point is that the resulting savings rates could be systematically different across households with similar heads.

Figures 3a-3f present savings rates for households of different age cohorts across the last six rounds of the RLMS. Whether the head or the average adult determines age, the evidence for the U-shaped relationship is rather weak. Younger households do consistently have the highest rates, but older households, whether characterized as such by the age of the household head or the average adult, have some of the lowest rates, particularly when savings are defined to include durables. The pictures change, however, when we present the relationship between age cohorts and the average household savings rate. In figures 4a-4f, we do see some evidence of a roughly U-shaped relationship between age and the average savings rate within the cohort. The pattern is clearest in Round V (figure 4a) when savings are calculated exclusive of durables. The evidence in later rounds, however, continues to be suggestive of a savings "trough" for middle-aged households. The elderly and the young have some of the highest savings rates.

As has often been found in other contexts (Browning and Lusardi, 1996), the distribution of saving across income groups shows a strong positive relationship between income and saving. We can tell from figures 5a-5b that a large share of total household saving is attributable to families in the top (fourth) quartile of the income distribution. Notably, average savings rates (exclusive of durables) in the bottom three quartiles remain negative across all six rounds; for the top quartile, however, they remain consistently above 8% and climb as high as 17% in some rounds. We might take this as strong support for the

presence of significant differences in the savings behaviors across households.¹⁷ But we should caution that some of this correlation might be attributable to measurement error in income. Moreover, we should note that consumption-smoothing households experiencing transitory income shocks could also give rise to the same correlation.

Another demographic factor often found to be associated with savings rates is the presence of children in a household (Browning and Lusardi, 1996). Rates are generally lower in households with children but in Russia this appears not to be the case. Indeed, as Table 2a shows, when savings are calculated inclusive of durables, rates are systematically higher in households in which children are present.

We also find that at any point in time, savings rates vary significantly across space in Russia. Few, if any, consistent patterns emerge across time, however. Household savings in cities exceeded those in rural areas over Rounds V – VII; but in Rounds VIII – X, despite vast differences in average income, rural households, which constitute roughly one quarter of the sample, saved more (see Table 2b). Across major regions of the country, despite large differences within rounds in savings rates, no single region emerges across all rounds as having one of the consistently highest or lowest rates (see figures 6a-6b). Regional variations, such as these, highlight the importance of financial sector development.

Panel Analysis and Discussion

We estimate a fixed-effects model of the following form:

$$s_{ht} = \alpha + X_{ht}\beta + \nu_t + \mu_h + \varepsilon_{ht} \quad (1)$$

¹⁷Rimashevskaja (1999) further found that the stock of savings is disproportionately concentrated among the wealthy and 41% of households reported having no stock of savings.

where s_{ht} is the savings rate by household h in time period t and X includes controls for various time-varying, household-level characteristics. In terms of the error structure, μ_h captures unobserved heterogeneity across households with a household fixed effect, ν_t represents unobserved time effects such as macroeconomic conditions and are modeled as time dummies, and ε_{ht} are idiosyncratic disturbances.¹⁸ While fixed-effects estimation can control for time-constant unobserved heterogeneity across households, its drawbacks include not controlling for time-varying unobserved heterogeneity across households and an inability to estimate the effects of covariates that do not vary over time, such as rural/urban status or region of residence. In addition, some parameters may be difficult to estimate accurately if they do not vary sufficiently over time, such as household size or education. Note that these are included in the panel regression since they do vary for some, but of course not all, households. Table 3 reports estimates from a fixed-effect panel model for rounds V through X. There are few substantive differences in the conclusions from the fixed-effect panel model relative to the round-by-round regressions presented in the appendix.¹⁹

We will discuss four main results, which emerge from the fixed-effects model. First, we confirm that the U-shaped, age-savings relationship is robust to multivariate

¹⁸ Hausman test rejected the null hypothesis of no correlation between a random error component and explanatory variables ($\chi^2 = 129.36$, p-value = 0.0000), thus we discuss the fixed effect results.

¹⁹ The Appendix tables reports estimates from round-by-round regressions of the household savings rate. In addition to the variables included in the panel, we also include controls for rural/urban status and region of residence. The U-shaped age-savings relationship documented earlier comes through in rounds V – VIII; however, in the final two rounds, though the age coefficients have the correct sign, they are not statistically significant..

specifications whether savings are inclusive or exclusive of durables. The two coefficients for the age variables confirm that, initially, savings rates fall with household age but then rise with the trough occurring at approximately 43 years. It is worth reiterating that age here refers to the average age of adults in the household, not the age of the head, as we feel this more realistically captures the influence of age on household savings behavior. This U-shaped pattern stands in contrast to the pattern predicted by the life cycle model and seems to be at odds with patterns in developing countries (Paxson, 1992) as well as mature market economies (Skinner, 1988). Interestingly, however, the finding is consistent with that from other transition countries (Denizer *et al.*, 2002).²⁰

Although this evidence does not necessarily conform to the pattern that one would expect from households engaged in long-term consumption smoothing, we should not be quick to interpret it as evidence against the life cycle hypothesis. Since we are tracking agents over a relatively limited period of time, the age-related findings here may be driven more by cohort effects than age. It is at least possible that the young and the middle-aged in Russia are saving based on very different expectations about their likely lifetime income streams. Given these potential differences, the saving patterns that emerge potentially could be in line with long-term consumption smoothing. In Appendix Tables 2 and 3, we present the results of the panel regression for three distinct age groups.

Second, the negative and significant coefficient on the durable ownership index indicates that the fewer durables a family owns, the higher its contemporaneous savings

²⁰ Stillman (2001) also rejects the applicability of the life-cycle hypothesis for Russian households by presenting evidence from the RLMS that food and non-durable expenditures closely track transitory exogenous shocks to household income.

rate.²¹ This result holds up across all the rounds and, as above, appears to be a finding that is characteristic of transitioning economies (Denizer *et al.*, 2002). Conditional on income, asset-poor households may be more disposed to accumulate wealth so as to buffer themselves against future income shocks. Or alternatively, this finding could be explained by the combination of households' limited access to credit and a latent demand for consumer durables that has been released by the transition. Credit constrained households, that is, must finance from savings the purchase of goods that had been in chronically short supply in the prior era. Indeed, data collected by a Russian market research firm demonstrate that Russians have purchased durable goods at a rate that may be surprising for a country that has been through such a tumultuous economic period. In the past decade, 80% of Russian households have purchased a new television, 62% have bought a new refrigerator, and 37% have purchased a new VCR (Shevchenko, 2002).

Note, however, that the coefficient on the home ownership dummy is neither significant nor negative even though there is little formalized mortgage lending in Russia.²² How can this finding be squared with the evidence on durable goods? For one, we know that many tenants are non-owners by choice. Many turned down the opportunity to purchase their dwellings for a near zero price during the privatization drive of the 1990s. In part, this was a function of tenants being granted many of the rights and privileges of owners. For instance, they rarely face eviction if they fall into arrears and they can also pass

²¹ Households were asked whether or not they owned twelve durable goods (*eg.*, television, refrigerator, motor scooter, car) with the index being created by the number of questions to which they responded in the affirmative. The average was just under 4 (see Table 4).

²² Conversely, one might have expected households that now own their dwelling to save in order to invest in improvements. But as Lodahl (2001) points out, "flaws in the legal framework impede investment activities."

on occupancy rights to their children (Lodahl, 2001). So it unclear that formal ownership of one's dwelling has any impact on one's effective wealth.

Third, our results suggest that the composition of household income has an important impact on savings behavior. Relative to regular wage income (the omitted variable), a higher percentage of income from private transfers raises the savings rate, conditional on income levels. Support, that is, through informal networks of family and friends seems to give the recipient households the capacity to save more, at least over the short term.²³ Private transfers are likely to be a transitory and irregular source of support. So the finding that they are a relatively important contributor to savings suggests that households use them to engage in short-term consumption smoothing. Although this suggests that private transfers do not respond to immediate needs, since they do not appear to be financing current consumption at the same rate as other income streams, they may nevertheless be responding to need in the sense that they provide a security buffer for the recipient (Kuhn and Stillman, 2002).

²³ Although assistance from friends and family members accounts for roughly 7% of household income across the six RLMS rounds, it consistently accounted for roughly a quarter of the reported income of households with heads under 25 years of age. In fact, as Kuhn and Stillman (2002) document, there is a relatively clear inverse relationship between age and this type of assistance that remains stable over time. That is, until age 60, the percentage of income in the form of transfers from friends and family progressively diminishes. This trend then is reversed only slightly for households with heads older than 60. Perhaps not surprisingly, data on monies given to others shows a positive relationship between age and these kinds of transfers. These numbers suggest the presence of an informal, inter-generational support system in which monies flow from the more mature to the younger households. Clearly such external assistance would increase the ability of the latter to save at relatively high rates. This observation would thus seem to be an important contributor to the left-hand "peak" in the age-saving relationship. And the relatively high rates that are observed by elderly households, controlling for other factors, are in spite of these outflows.

A similar story might be told with respect to the percentage of household income earned from the sale (for cash) of home produced food products. Like private transfers, the proceeds from these sales likely provide the household an irregular income stream with a good deal of seasonal variation. Saving disproportionately from this source would thus be consistent with consumption smoothing.

We should note that the negative and significant coefficient on the percentage of income derived from non-cash home production (NCHP) is an expected function of its definition. That is, income from NCHP necessarily is less than expenditure since we subtract its gross value from its net value). A household with 100% of its income from NCHP thus would have a negative savings rate in which the absolute value of the numerator equals the costs associated with home production. All else equal, therefore, a higher percentage of income from NCHP leads to decreased savings.

We also find some support for consumption smoothing behavior over the short term among households experiencing negative income shocks. That is, those with more adults experiencing arrears, in both pension and wage payments, are shown to save significantly less. Similarly, those that have more unemployed individuals also have lower savings rates.

Fourth, the average level of economic concern (among adult household members) was included to investigate the precautionary saving motive.²⁴ Respondents were asked the

²⁴ Gregory *et al.* found that those who responded negatively to the question "Do you think that in twelve months you and your family will live better than today?" had a savings rate that was roughly four times higher than those who responded positively. They present these findings as evidence of precautionary savings.

following question: “How concerned are you about the possibility that you might not be able to provide yourself with the bare essentials in the next 12 months?” Answers were given on a five-point Likert scale, where 1 was “Very Concerned” and 5 was “Not At All Concerned.” The average level of concern was 1.9. Unexpectedly, less concern about the ability to provide over the next year was associated with greater savings rates. The subjective nature of this single question and strong measurement error could have contributed to this counterintuitive result, and we caution that this should not be taken as definitive support for the notion that Russian households do not hold savings for contingencies.

Conclusion

As we noted in the introduction, the household savings rate is related to at least two critical challenges faced by Russia in its current stage of transition. First, household savings are a potentially important resource for the country’s economic development. The evidence presented here suggests that household savings are not insignificant, particularly among the young and the relatively well off. So if the financial system is able (and willing) to re-capture the trust of Russian savers, the benefits with regard to economic restructuring could be significant. Second, as Russia changes and evolves over the longer term, we might expect to see change in the pattern of household savings. Some of the more anomalous relationships highlighted here may well be a function of the unique period of post-socialist flux. If Russia’s market-supporting institutions mature and evolve, if its financial sector becomes more stable, if its social insurance system becomes more comprehensive, household saving behavior will, no doubt, change as well, but in ways that the analysis here, at least at this preliminary stage, finds difficult to predict.

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Table 1. Household Savings Rates

Round	Year (RLMS Month*)	Households Responding	Savings Rate	Savings Rate (durables included)	<i>Goskomstat</i>
V	1994 (Dec.)	2843	4.3	17.1	28.7
VI	1995 (Oct.)	2494	0.2	12.5	23.8
VII	1996 (Oct.)	2409	8.6	21.3	25.1
VIII	1998 (Dec.)	2927	2.9	16.0	15.1
IX	2000 (Oct.)	2984	8.0	22.8	13.1
X	2001 (Oct.)	3362	7.7	21.8	11.8

* The majority of households in the round were interviewed during the month indicated. The remaining households were interviewed either in the previous or subsequent two months.

Source: Authors' calculations and *Russian Economic Trends* 11(4), 2002.

Table 2A. Average Savings Rates by Household Composition

	Round	V	VI	VII	VIII	IX	X
Durables included	No children	0.154	0.087	0.178	0.129	0.204	0.191
	Children	0.183	0.150	0.238	0.185	0.245	0.239
Durables excluded	No children	0.054	-0.004	0.085	0.049	0.108	0.093
	Children	0.035	0.006	0.088	0.014	0.059	0.064

Table 2B. Average Savings Rates by Type of Settlement

	Round	V	VI	VII	VIII	IX	X
Durables included	Rural	0.107	0.084	0.160	0.175	0.272	0.234
	Urban	0.189	0.137	0.224	0.155	0.212	0.213
Durables excluded	Rural	0.011	-0.018	0.062	0.079	0.164	0.109
	Urban	0.052	0.008	0.092	0.012	0.049	0.068

Table 3. Fixed Effects Panel Regression Results

	Durables not included as savings	Durables included as savings
Dependent variable = savings rate	(1)	(2)
Average age of adults \geq 18 years	-0.007 (2.15)**	-0.006 (2.00)**
(Average age of adults \geq 18 years) ² /100	0.008 (2.58)***	0.007 (2.29)**
Average level of economic concern of adults (1 = very concerned; 5 = not at all concerned)	0.010 (2.12)**	0.007 (1.64)
Total household income (/100)	0.000 (8.46)***	0.000 (10.61)***
Household size	0.013 (0.94)	0.010 (0.76)
Number of children (< 18 years)	-0.034 (2.07)**	-0.020 (1.32)
Number of elderly (\geq 60 for men, \geq 55 for women)	0.049 (2.90)***	0.054 (3.37)***
Number of working-age men (18 \leq age < 60)	0.015 (0.91)	0.012 (0.74)
Durable ownership index (number owned)	-0.019 (4.22)***	-0.027 (6.57)***
Home ownership dummy	0.006 (0.42)	0.008 (0.57)
Number of employed household members	0.001 (0.07)	0.022 (2.41)**
Number of unemployed household members	-0.043 (3.33)***	-0.042 (3.39)***
Number experiencing wage arrears	-0.034 (3.14)***	-0.051 (5.01)***
Number experiencing pension arrears	-0.075 (4.84)***	-0.064 (4.44)***
Number with university education	0.016 (0.97)	0.027 (1.68)*
Number with technical education	0.011 (1.29)	0.005 (0.65)
Percent of household income from pensions	-0.182 (6.03)***	-0.198 (6.83)***
Percent of household income from benefits	0.004 (0.07)	-0.067 (1.26)
Percent of household income from home production sold	0.238 (6.06)***	0.230 (6.15)***
Percent of household income from home production consumed or given away	-0.512 (16.20)***	-0.531 (17.91)***
Percent of household income from private transfers	0.122 (4.16)***	0.160 (5.82)***
Percent of household income from investments	0.266 (3.43)***	0.257 (3.47)***
Round 6 (1995)	-0.028 (2.16)**	-0.036 (2.94)***
Round 7 (1996)	0.035 (2.69)***	0.030 (2.47)**
Round 8 (1998)	0.054 (4.37)***	0.052 (4.38)***
Round 9 (2000)	0.002 (0.17)	0.019 (1.62)
Round 10 (2001)	0.011 (0.85)	0.018 (1.47)
Constant	0.288 (3.35)***	0.334 (4.18)***
Observations	9529	10543
R-squared		
Absolute value of t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%		
Excluded variables are number of working-age women (18 \leq age < 55), number with secondary education or less, percent of household income from wages, and Round 5 (1994).		

Table 4. Descriptive Statistics for Panel Regression					
Variable	Obs	Mean	Std. Dev.	Min	Max
Savings rate	9566	0.106	0.33	-0.500	0.974
Savings rate (including durables as savings)	9566	0.189	0.32	-0.500	1
Average age of adults ≥ 18 years	9565	48.986	15.34	18.017	95.617
(Average age of adults ≥ 18 years) ² /100	9565	26.350	16.03	3.246	91.425
Average level of economic concern of adults (1 = very concerned; 5 = not at all concerned)	9540	1.903	0.98	1	5
Total household income (/100)	9566	68.242	125.21	0.434	10078.97
Household size	9566	2.885	1.44	1	12
Number of children (< 18 years)	9566	0.702	0.92	0	8
Number of elderly (≥ 60 for men, ≥ 55 for women)	9566	0.688	0.79	0	4
Number of working-age men	9566	0.733	0.68	0	4
Durable ownership index (number owned)	9566	3.674	1.50	0	9
Home ownership dummy	9566	0.600	0.49	0	1
Number of employed household members	9566	1.309	1.03	0	7
Number of unemployed household members	9566	0.099	0.33	0	4
Number experiencing wage arrears	9566	0.150	0.41	0	4
Number experiencing pension arrears	9566	0.049	0.26	0	5
Number with university education	9566	0.335	0.65	0	5
Number with technical education	9566	0.887	0.89	0	5
Percent of household income from pensions	9566	0.290	0.35	0	2.148
Percent of household income from benefits	9566	0.027	0.07	0	1.000
Percent of household income from cash home production	9566	0.036	0.13	-0.194	1.241
Percent of household income from non-cash home production	9566	0.138	0.21	-1.694	1
Percent of household income from private transfers	9566	0.069	0.17	0	1.412
Percent of household income from investments	9566	0.005	0.05	0	0.992
Round 6 (1995)	9566	0.117	0.32	0	1
Round 7 (1996)	9566	0.133	0.34	0	1
Round 8 (1998)	9566	0.171	0.38	0	1
Round 9 (2000)	9566	0.213	0.41	0	1
Round 10 (2001)	9566	0.239	0.43	0	1

Figure 1. Structure of Household Income

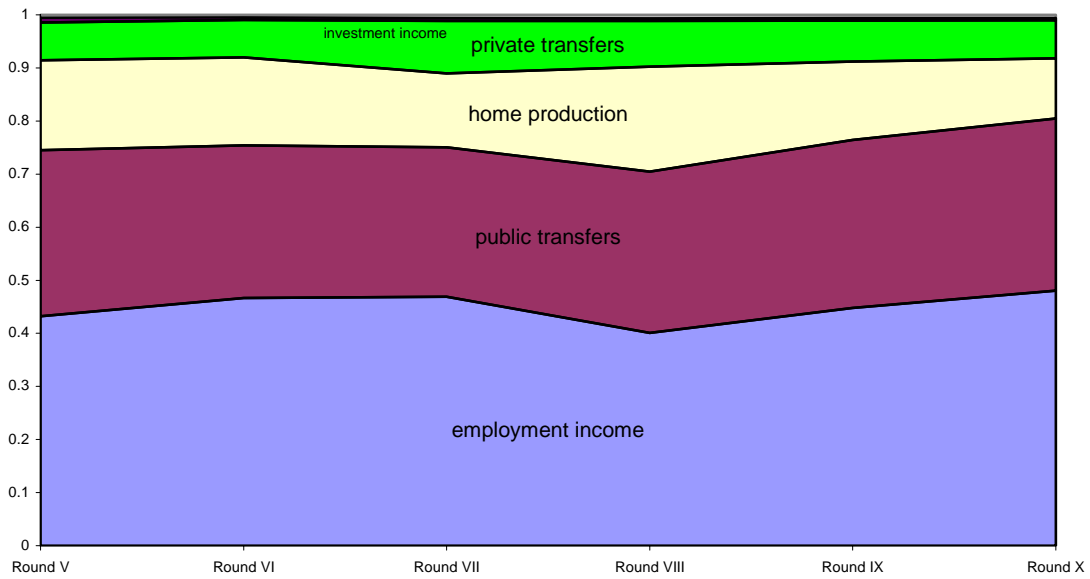


Figure 2. Structure of Household Expenditure

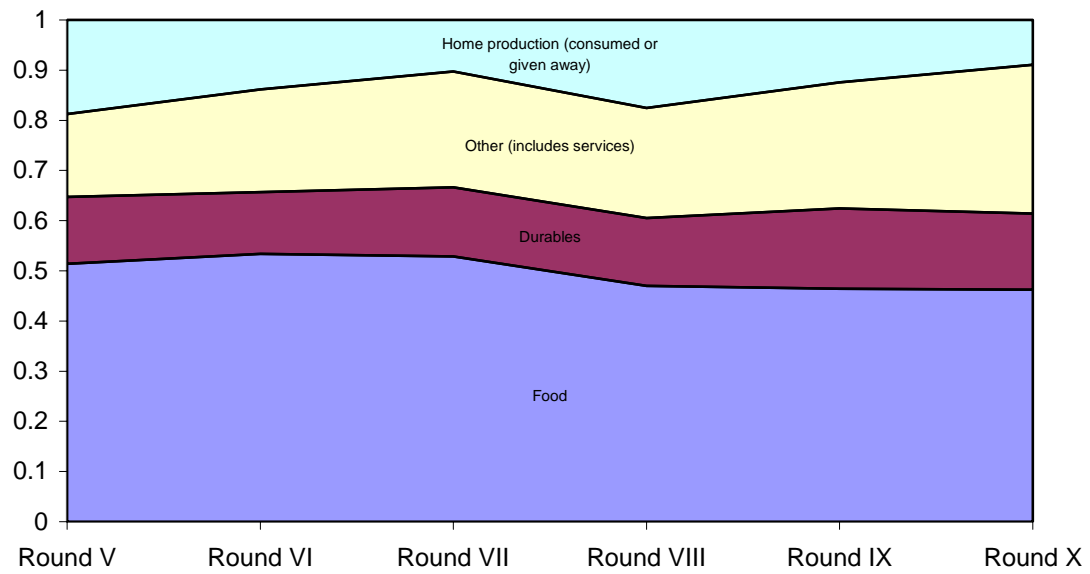


Figure 3a. Round V

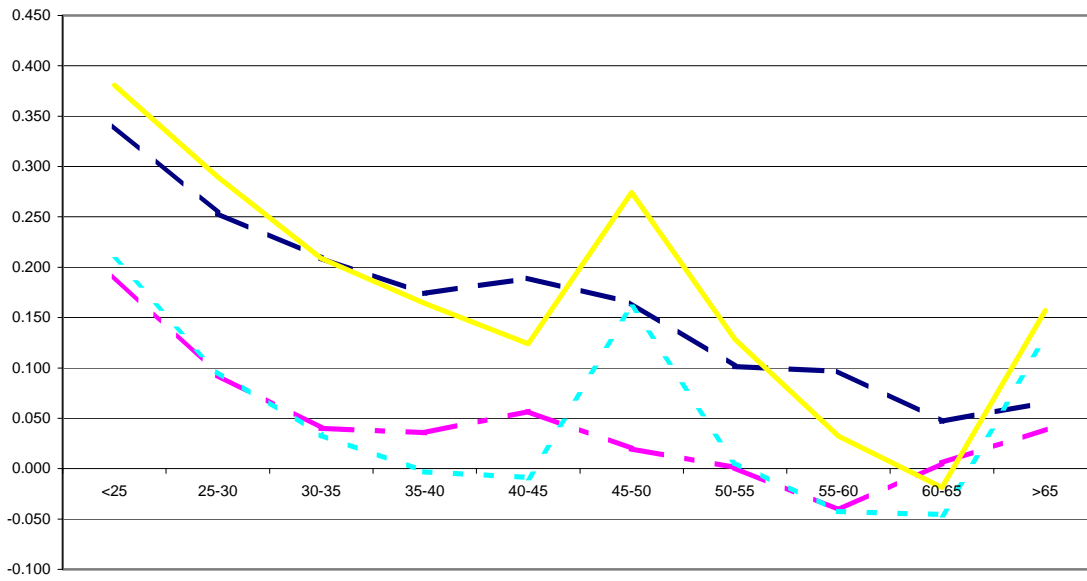
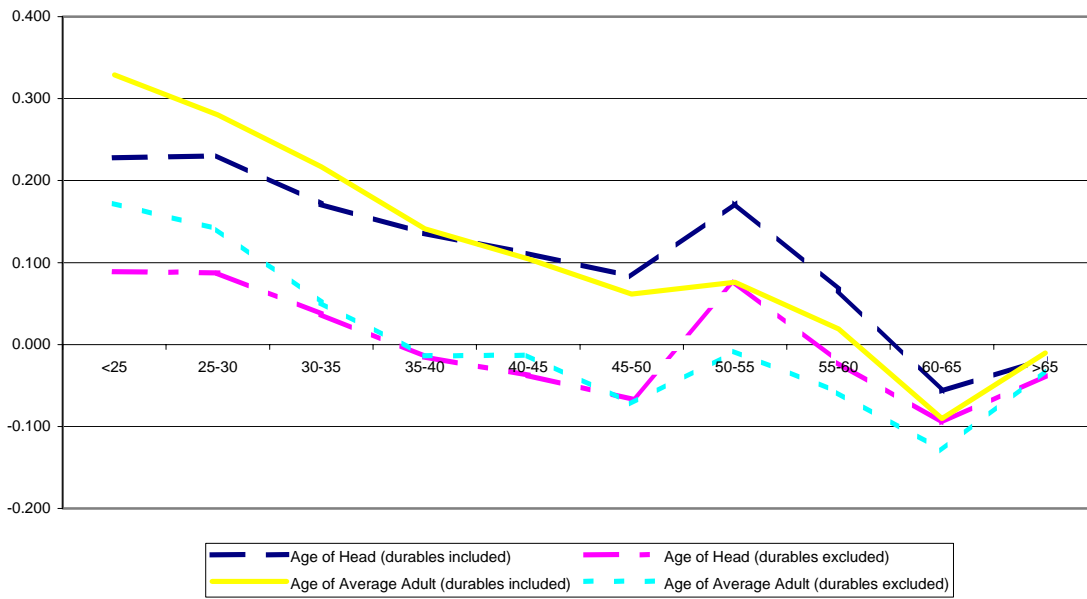


Figure 3b. Round VI



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) — Age of Average Adult (durables excluded)

Figure 3c. Round VII

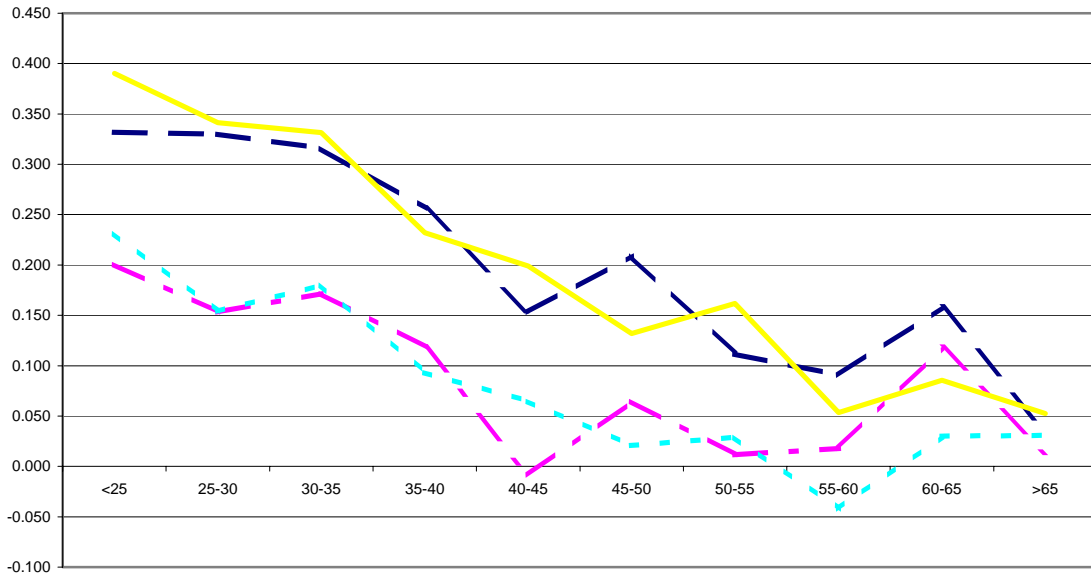
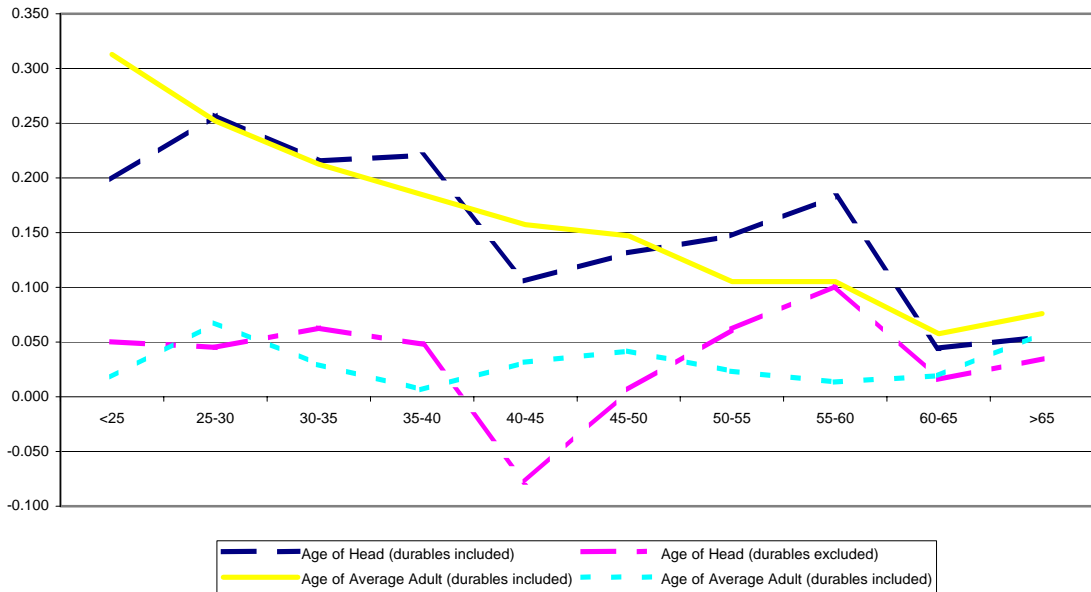


Figure 3d. Round VIII



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) - - - Age of Average Adult (durables excluded)

Figure 3e. Round IX

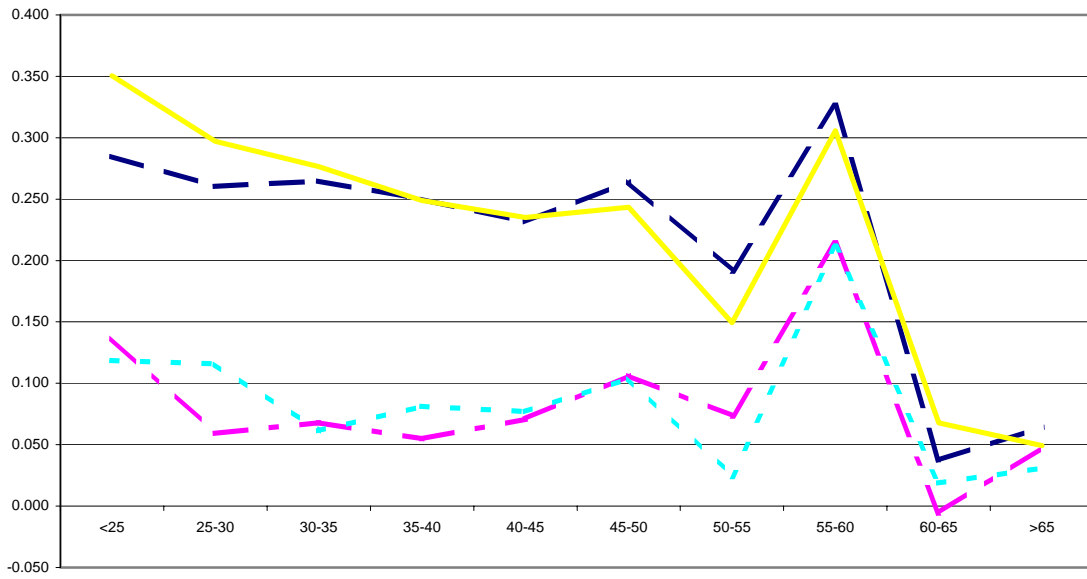
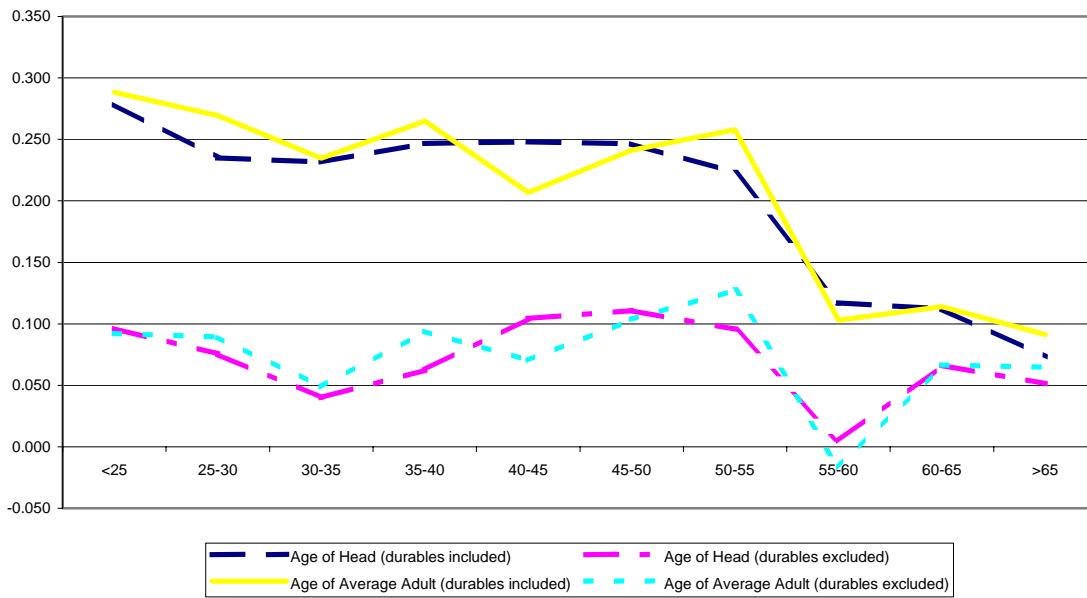


Figure 3f. Round X



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) — Age of Average Adult (durables excluded)

Figure 4a. Round V

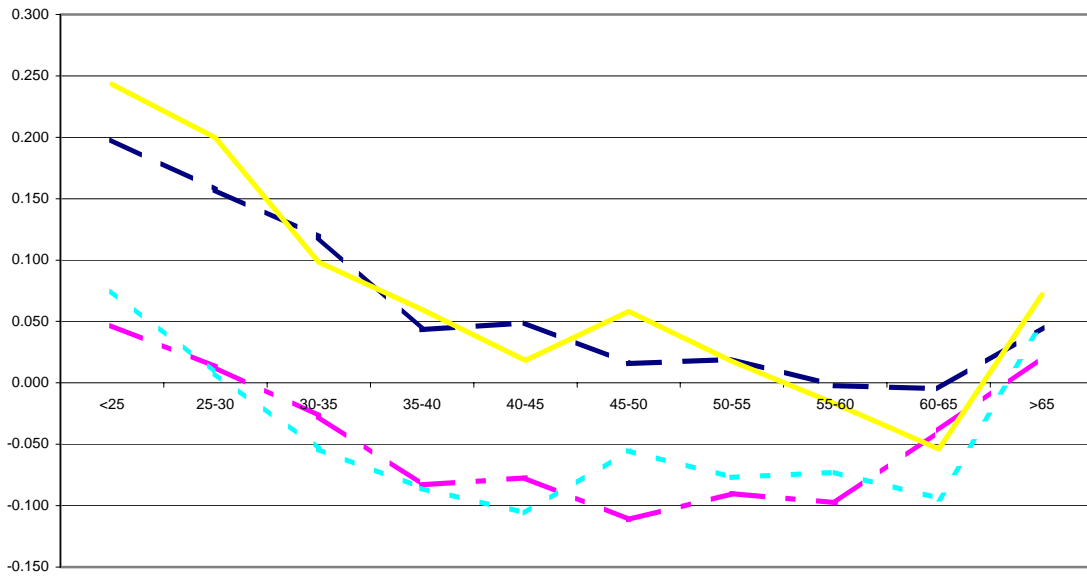
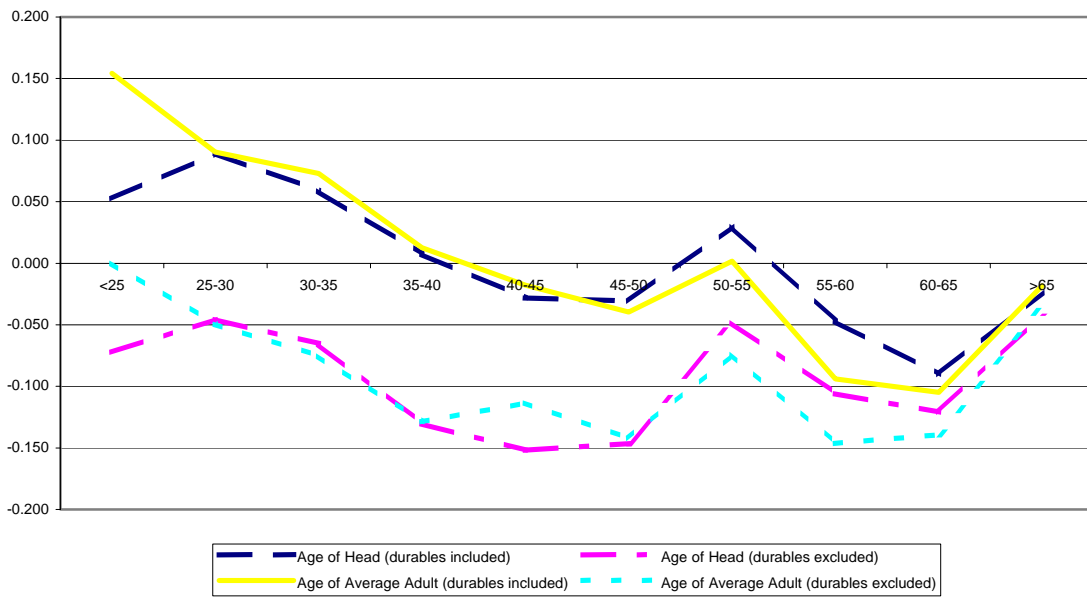


Figure 4b. Round VI



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) — Age of Average Adult (durables excluded)

Figure 4c. Round VII

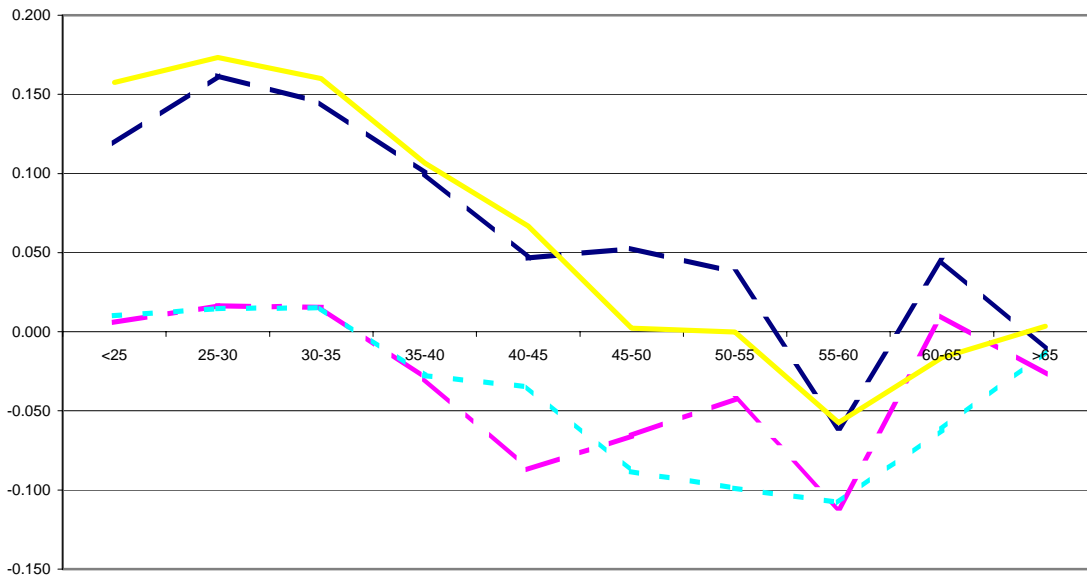
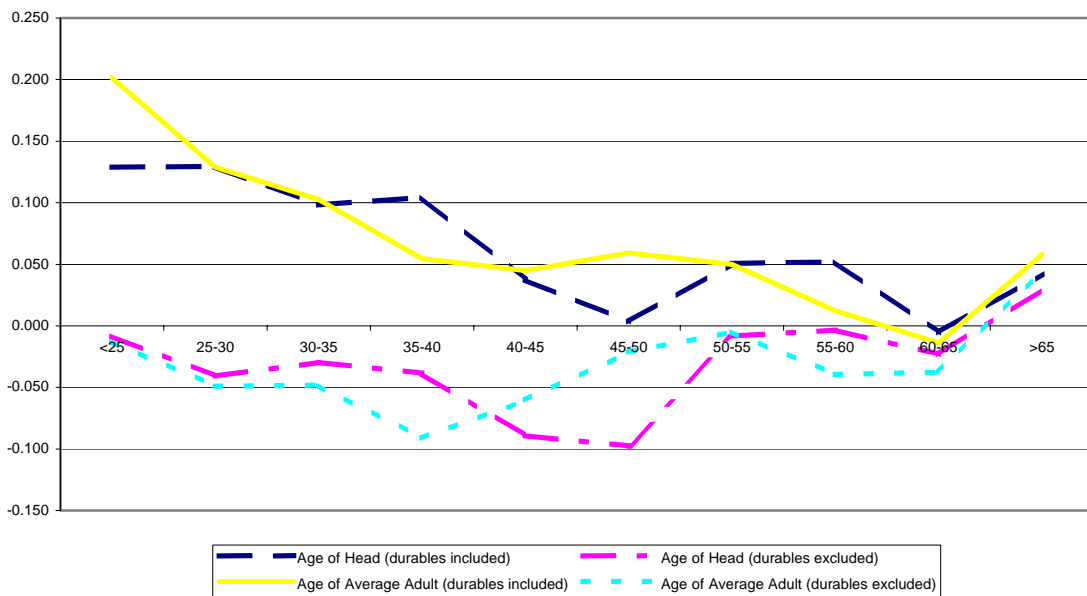


Figure 4d. Round VIII



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) - - - Age of Average Adult (durables excluded)

Figure 4e. Round IX

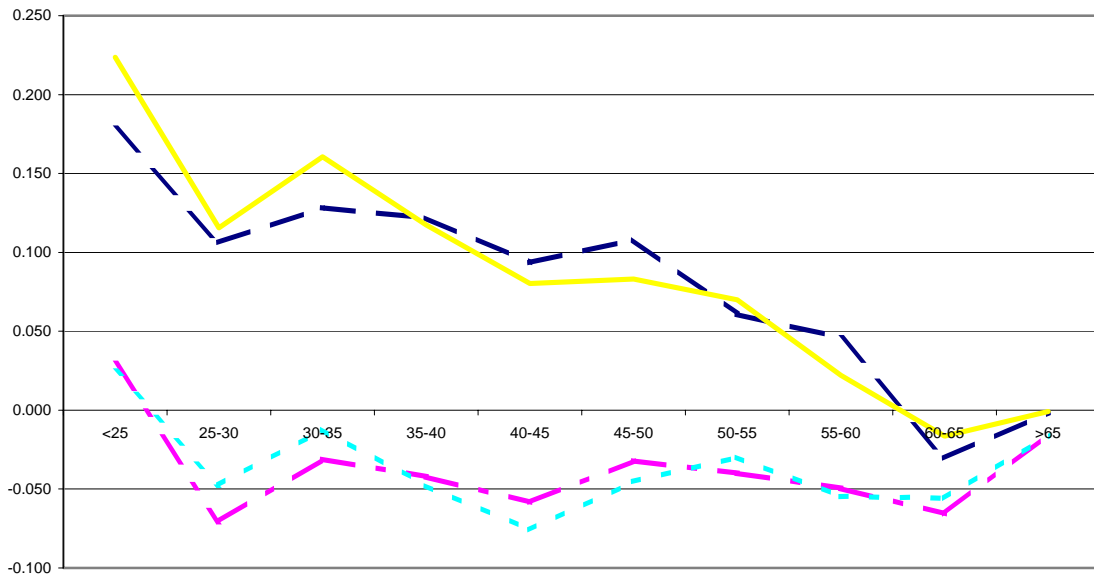
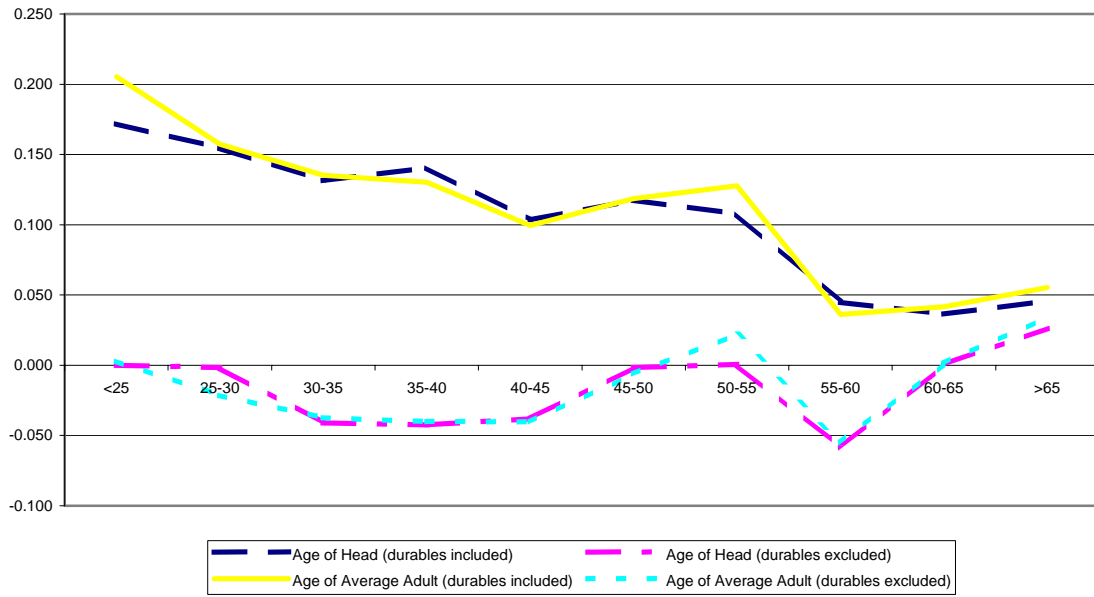


Figure 4f. Round X



— Age of Head (durables included) — Age of Head (durables excluded)
— Age of Average Adult (durables included) — Age of Average Adult (durables excluded)

Figure 5a. Savings Rates by Income Quartiles

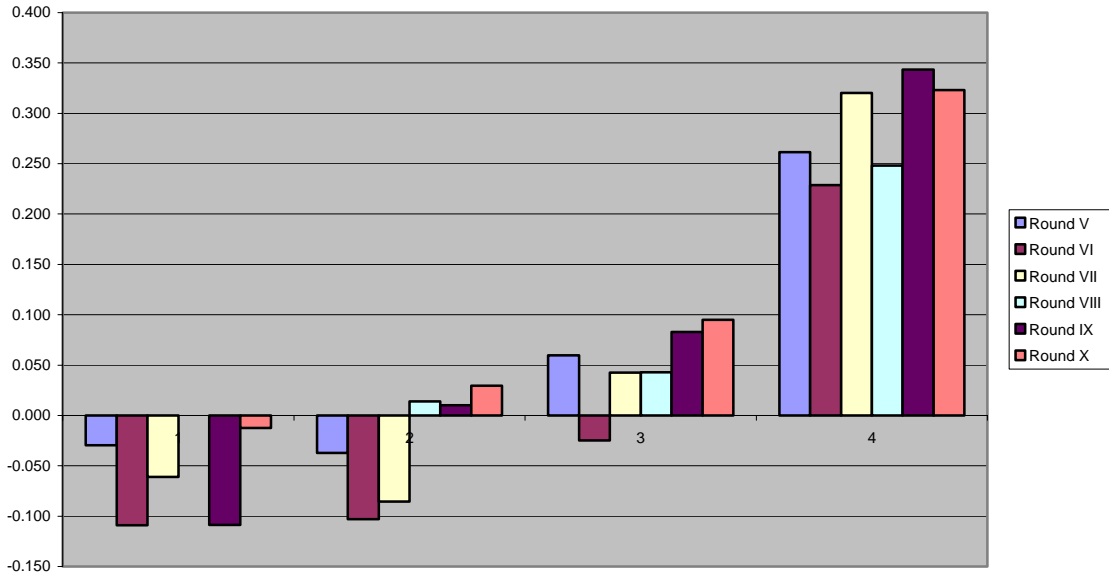


Figure 5b. Savings Rates by Income Quartiles (durables not included)

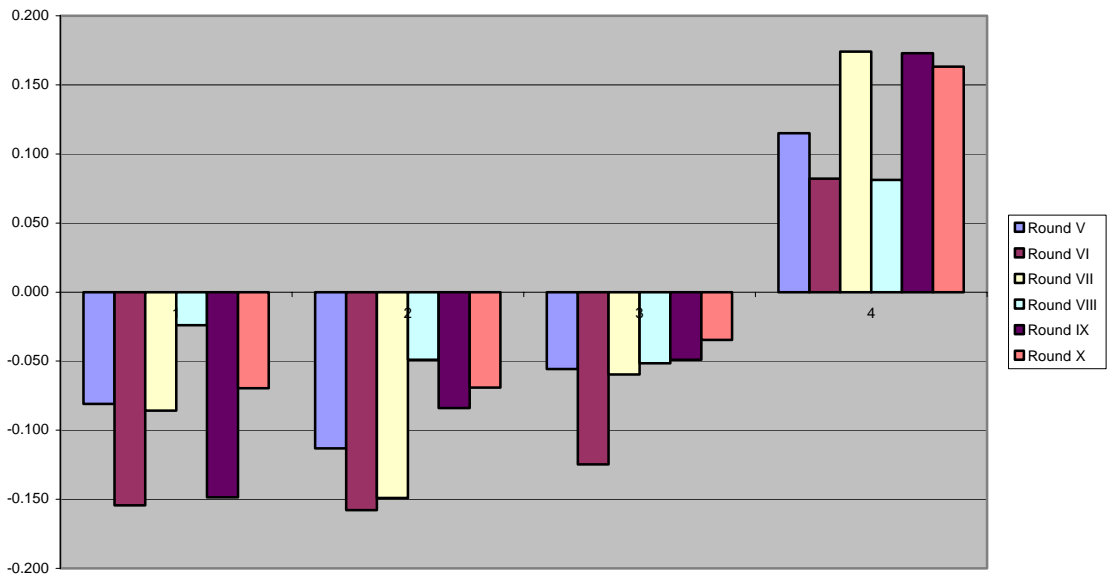


Figure 6a. Saving Rates by Region

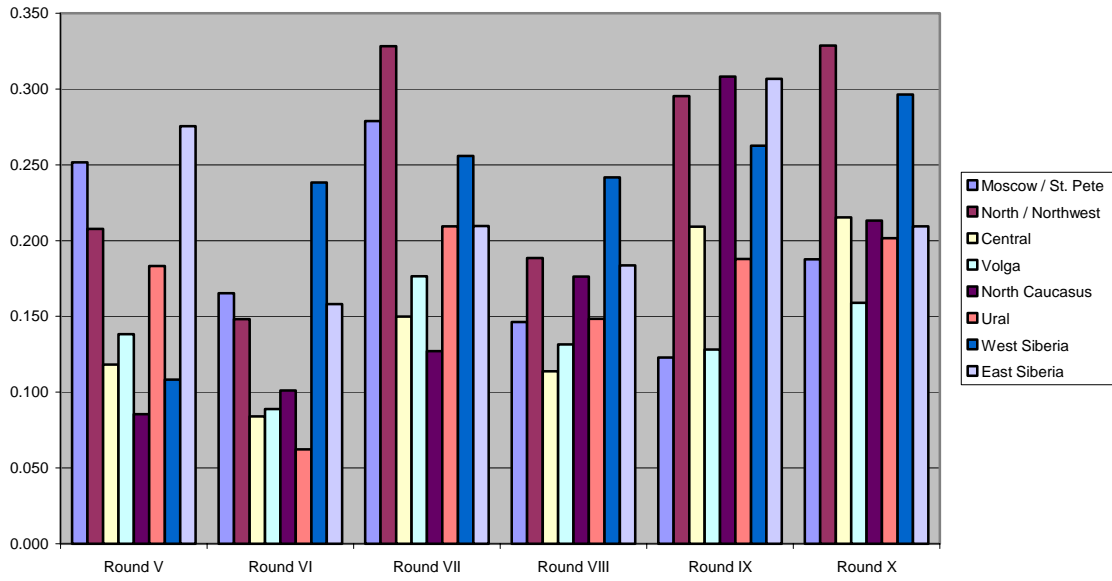
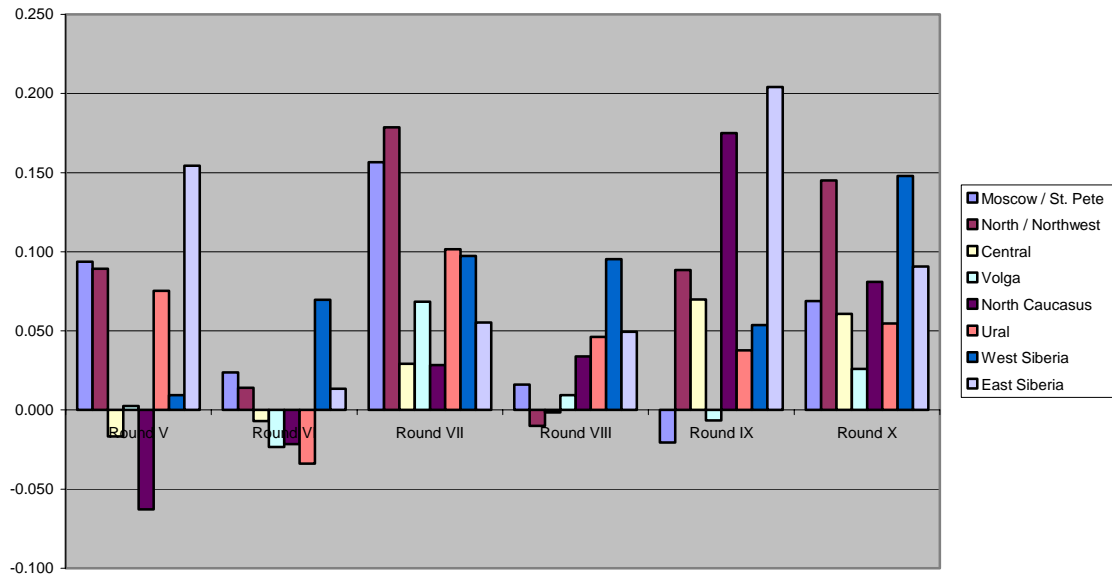


Figure 6b. Savings Rates by Region (durables not included)



Appendix Table 1. Round-by-Round Regression Results

Dependent variable is savings rate (include durable purchases as savings)						
	1994	1995	1996	1998	2000	2001
Average age of adults ≥ 18 years	-0.020 (5.43)***	-0.013 (3.65)***	-0.012 (3.24)***	-0.013 (3.88)***	-0.004 (1.23)	-0.004 (1.28)
(Average age of adults ≥ 18 years) ² / 100	0.019 (5.28)***	0.014 (3.84)***	0.011 (2.94)***	0.012 (3.92)***	0.004 (1.21)	0.003 (1.07)
Rural dummy	0.079 (3.27)***	0.049 (2.05)**	0.085 (3.32)***	0.126 (5.74)***	0.088 (4.30)***	0.067 (3.46)***
Average level of economic concern of adults (1 = very concerned; 5 = not at all concerned)	0.015 (1.80)*	-0.004 (0.47)	0.011 (1.14)	-0.007 (0.75)	0.007 (0.95)	0.012 (1.79)*
Household size	0.038 (1.82)*	0.002 (0.09)	-0.008 (0.35)	0.025 (1.31)	0.027 (1.52)	0.022 (1.36)
Number of children (< 18 years)	-0.021 (0.91)	-0.005 (0.19)	0.020 (0.81)	-0.032 (1.47)	-0.032 (1.54)	-0.041 (2.11)**
Number of working-age men (18 ≤ age < 60)	-0.017 (0.71)	-0.037 (1.50)	-0.024 (0.97)	-0.029 (1.32)	-0.014 (0.66)	-0.002 (0.12)
Number of elderly (≥ 60 for men, ≥ 55 for women)	0.055 (2.36)**	0.004 (0.16)	0.038 (1.48)	0.011 (0.51)	0.037 (1.84)*	0.019 (1.00)
Total household income (/100)	0.000 (4.96)***	0.002 (13.66)***	0.002 (13.52)***	0.002 (11.68)***	0.001 (11.91)***	0.002 (13.86)***
Durable ownership index (number owned)	-0.022 (3.50)***	-0.036 (5.79)***	-0.028 (4.29)***	-0.034 (5.91)***	-0.033 (6.26)***	-0.029 (5.73)***
Home ownership dummy	0.017 (0.98)	0.004 (0.21)	0.011 (0.58)	0.015 (0.87)	-0.003 (0.16)	-0.012 (0.82)
Number of employed household members	0.005 (0.27)	0.034 (1.94)*	-0.000 (0.02)	0.020 (1.26)	-0.005 (0.36)	0.019 (1.38)
Number of unemployed household members	-0.011 (0.39)	-0.038 (1.42)	-0.001 (0.04)	0.009 (0.38)	-0.045 (1.88)*	-0.054 (2.26)**
Number experiencing wage arrears	-0.040 (1.79)*	-0.038 (1.79)*	0.004 (0.19)	-0.048 (2.43)**	-0.061 (2.66)***	-0.025 (1.07)
Number experiencing pension arrears	0.036 (0.64)	-0.040 (1.04)	-0.062 (2.66)***	-0.073 (2.90)***	-0.084 (1.52)	-0.139 (2.59)***
Number with university education	0.010 (0.74)	0.010 (0.73)	0.005 (0.36)	0.019 (1.35)	0.001 (0.10)	-0.045 (3.67)***
Number with technical education	0.004 (0.31)	0.024 (2.03)**	0.020 (1.60)	0.009 (0.79)	0.015 (1.48)	0.010 (0.98)
North-Northwest	-0.059 (1.50)	0.060 (1.49)	0.050 (1.14)	0.029 (0.73)	0.045 (1.08)	0.034 (1.03)
Central	-0.045 (1.49)	0.041 (1.29)	0.039 (1.16)	0.064 (1.96)*	0.015 (0.44)	0.016 (0.65)
Volga	-0.004 (0.13)	0.049 (1.51)	0.079 (2.21)**	0.105 (3.14)***	0.031 (0.85)	0.006 (0.22)
Caucasus	-0.061 (1.72)*	0.026 (0.71)	-0.026 (0.62)	-0.018 (0.46)	-0.062 (1.58)	-0.060 (2.01)**
Ural	-0.012 (0.36)	0.077 (2.31)**	0.081 (2.26)**	0.114 (3.35)***	0.057 (1.57)	0.034 (1.31)
Western Siberia	-0.020 (0.55)	0.094 (2.47)**	0.029 (0.71)	0.096 (2.52)**	0.043 (1.07)	0.019 (0.62)
Eastern Siberia	0.029 (0.80)	0.094 (2.53)**	0.062 (1.54)	0.013 (0.35)	0.114 (2.91)***	0.007 (0.23)
Percent of household income from pensions	-0.124 (2.58)***	-0.017 (0.35)	-0.115 (2.31)**	0.008 (0.18)	-0.225 (5.19)***	0.001 (0.03)
Percent of household income from benefits	-0.216 (1.78)*	0.017 (0.13)	-0.212 (2.02)**	0.163 (1.73)*	0.055 (0.50)	-0.039 (0.36)
Percent of household income from cash home production	0.249 (2.65)***	0.308 (3.78)***	0.199 (2.41)**	0.259 (3.48)***	0.264 (4.07)***	0.278 (4.31)***
Percent of household income from non-cash home production	-0.459 (8.50)***	-0.267 (5.46)***	-0.385 (6.96)***	-0.350 (7.54)***	-0.453 (8.75)***	-0.460 (8.00)***
Percent of household income from private transfers	0.200 (3.88)***	0.254 (4.94)***	0.049 (1.07)	0.249 (5.47)***	0.098 (2.13)**	0.164 (3.72)***
Percent of household income from investments	0.479 (4.11)***	0.193 (1.10)	-0.239 (1.39)	0.437 (2.87)***	-0.194 (1.30)	-0.005 (0.03)
Observations	2834	2488	2400	2736	2972	3341
R-squared	0.10	0.17	0.16	0.15	0.16	0.14

Appendix Table 2. Panel Regression Results by Age			
Dependent variable = savings rate, durables not included as savings			
	Age ≤ 35	35 < age ≤ 50	Age > 50
Average age of adults ≥ 18 years	-0.048	-0.022	-0.014
	(1.01)	(0.58)	(0.81)
(Average age of adults ≥ 18 years) ² /100	0.079	0.028	0.013
	(0.98)	(0.63)	(1.04)
Average level of economic concern of adults (1 = very concerned; 5 = not at all concerned)	0.025	-0.005	0.004
	(1.92)*	(0.58)	(0.65)
Total household income (/100)	0.001	0.002	0.000
	(7.15)***	(12.45)***	(2.43)**
Household size	-0.014	0.005	0.087
	(0.36)	(0.18)	(2.31)**
Number of children (< 18 years)	-0.018	-0.010	-0.103
	(0.42)	(0.36)	(2.01)**
Number of elderly (≥ 60 for men, ≥ 55 for women)	0.119	0.042	-0.009
	(0.69)	(1.19)	(0.25)
Number of working-age men (18 ≤ age < 60)	-0.033	0.039	-0.043
	(0.72)	(1.33)	(1.04)
Durable ownership index (number owned)	-0.005	-0.012	-0.024
	(0.49)	(1.51)	(3.00)***
Home ownership dummy	-0.066	0.001	0.046
	(1.85)*	(0.02)	(2.00)**
Number of employed household members	-0.002	0.003	-0.022
	(0.07)	(0.18)	(1.02)
Number of unemployed household members	-0.077	-0.035	-0.055
	(2.30)**	(1.82)*	(1.71)*
Number experiencing wage arrears	-0.029	-0.044	0.007
	(1.13)	(2.71)***	(0.25)
Number experiencing pension arrears	0.015	-0.042	-0.097
	(0.26)	(1.37)	(4.70)***
Number with university education	0.019	0.040	-0.037
	(0.40)	(1.45)	(0.99)
Number with technical education	0.046	0.017	-0.041
	(2.03)**	(1.21)	(2.23)**
Percent of household income from pensions	-0.010	-0.203	-0.228
	(0.05)	(3.08)***	(4.28)***
Percent of household income from benefits	-0.060	0.147	-0.209
	(0.50)	(1.53)	(1.80)*
Percent of household income from home production sold	0.372	0.122	0.225
	(3.79)***	(1.98)**	(2.75)***
Percent of household income from home production consumed or given away	-0.601	-0.483	-0.483
	(6.82)***	(8.76)***	(8.13)***
Percent of household income from private transfers	0.145	0.126	0.045
	(2.55)**	(2.37)**	(0.67)
Percent of household income from investments	0.117	0.100	0.170
	(0.61)	(0.66)	(1.42)
Round 6 (1995)	0.028	0.021	-0.062
	(0.87)	(0.94)	(3.10)***
Round 7 (1996)	0.113	0.094	-0.021
	(3.42)***	(4.14)***	(1.01)
Round 8 (1998)	0.106	0.127	0.035
	(2.89)***	(5.46)***	(1.79)*
Round 9 (2000)	0.037	0.059	-0.011
	(1.00)	(2.42)**	(0.53)
Round 10 (2001)	0.024	0.046	0.018
	(0.61)	(1.80)*	(0.83)
Constant	0.789	0.351	0.589
	(1.18)	(0.44)	(1.04)
Observations	1992	3490	4058
R-squared	0.21	0.20	0.10
Absolute value of t statistics in parentheses			
* significant at 10%; ** significant at 5%; *** significant at 1%			

Appendix Table 3. Panel Regression Results by Age

Dependent variable = savings rate, durables included as savings			
	Age ≤35	35 < age ≤ 50	Age > 50
Average age of adults ≥ 18 years	-0.095 (2.22)**	-0.033 (0.94)	-0.008 (0.49)
(Average age of adults ≥ 18 years) ² /100	0.157 (2.15)**	0.037 (0.91)	0.008 (0.61)
Average level of economic concern of adults (1 = very concerned; 5 = not at all concerned)	0.019 (1.62)	-0.004 (0.52)	0.000 (0.01)
Total household income (/100)	0.001 (10.91)***	0.002 (15.49)***	0.000 (2.36)**
Household size	0.011 (0.33)	-0.001 (0.03)	0.054 (1.50)
Number of children (< 18 years)	-0.022 (0.57)	0.005 (0.21)	-0.044 (0.90)
Number of elderly (≥ 60 for men, ≥ 55 for women)	0.096 (0.63)	0.062 (1.87)*	0.015 (0.46)
Number of working-age men (18 ≤ age < 60)	-0.037 (0.89)	0.028 (1.03)	-0.032 (0.80)
Durable ownership index (number owned)	-0.031 (3.25)***	-0.024 (3.34)***	-0.022 (2.82)***
Home ownership dummy	-0.055 (1.77)*	0.001 (0.04)	0.043 (1.88)*
Number of employed household members	0.010 (0.42)	0.005 (0.38)	-0.003 (0.16)
Number of unemployed household members	-0.068 (2.28)**	-0.042 (2.32)**	-0.051 (1.67)*
Number experiencing wage arrears	-0.050 (2.22)**	-0.038 (2.63)***	-0.015 (0.57)
Number experiencing pension arrears	0.040 (0.79)	-0.027 (0.99)	-0.105 (5.32)***
Number with university education	-0.007 (0.17)	0.045 (1.74)*	-0.023 (0.63)
Number with technical education	0.036 (1.76)*	0.009 (0.66)	-0.034 (1.94)*
Percent of household income from pensions	-0.055 (0.32)	-0.234 (3.79)***	-0.257 (5.04)***
Percent of household income from benefits	-0.016 (0.16)	-0.077 (0.91)	-0.231 (2.04)**
Percent of household income from home production sold	0.341 (3.87)***	0.066 (1.16)	0.229 (2.84)***
Percent of household income from home production consumed / given away	-0.666 (9.07)***	-0.525 (10.64)***	-0.512 (8.95)***
Percent of household income from private transfers	0.143 (2.92)***	0.099 (2.01)**	0.061 (0.94)
Percent of household income from investments	0.046 (0.27)	0.164 (1.17)	0.180 (1.54)
Round 6 (1995)	0.015 (0.52)	0.004 (0.21)	-0.059 (3.04)***
Round 7 (1996)	0.102 (3.48)***	0.081 (3.87)***	-0.015 (0.76)
Round 8 (1998)	0.113 (3.50)***	0.132 (6.17)***	0.039 (2.04)**
Round 9 (2000)	0.073 (2.20)**	0.082 (3.63)***	-0.000 (0.02)
Round 10 (2001)	0.041 (1.16)	0.057 (2.39)**	0.028 (1.35)
Constant	1.565 (2.58)***	0.770 (1.05)	0.504 (0.91)
Observations	2341	3978	4236
R-squared	0.26	0.23	0.11
Absolute value of t statistics in parentheses			
* significant at 10%; ** significant at 5%; *** significant at 1%			