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## **Consumer lending in Russia: prospects and risks based on household finance survey**

**Analytical note of the  
Bank of Russia Research and  
Forecasting Department**

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*Lower oil prices, Russian households' reduced real income, and the marked slowdown in their growth relative to the 2010-2012 period do not prompt expectations of a boom in consumer lending, which, at the time, necessitated the regulator's intervention by means of tighter prudential policy. However, our analysis of the microdata of household finance surveys<sup>1</sup> suggests that even modest consumer lending growth in the new environment may entail the accumulation of significant risks in this segment.*

*This is linked to the higher risk profile of borrowers among individuals with below-median income currently showing demand for credit, relative to the period of 2010-2012. This category of borrowers already possesses a high debt burden exceeding maximum estimates, according to a 2015 survey. They are characterised by not only low, but also volatile incomes and a high likelihood of job loss in the event of unfavourable shocks. They are also more inclined to further expand their debt burden than high-income borrowers, and, for them, higher loan interest rates are less of a limitation to applying for credit.<sup>2</sup> The nature of this behaviour, as indicated by the survey data, may be explained in part by their appetite for risk (borrowers with low incomes have negative net assets and thus have nothing to lose). Another factor may be poor risk assessment, e.g. due to excessively high inflation and salary expectations, along with low levels of financial literacy.*

*What are banks' options in this situation? Banks and other non-bank financial institutions can target the category of high-risk borrowers, who ensure businesses high profit margins. The survey data indicate that banks issue loans to borrowers with low incomes and high debt burdens at interest rates higher than the median (market) interest rate for consumer credit. Thus, high loan interest rates aim to compensate the high risk of lending to these borrowers. High interest rates, reflecting banks' chosen business model, make credit unattractive to reliable borrowers due to the latter's unwillingness to pay for banks' losses in loans to risky borrowers. The higher risk profile of customers lowers the sustainability of this business model, especially if creditors do not adequately assess new developments faced by borrowers.*

*As our calculations show, borrowers with incomes above the median level, who did not apply for loans earlier, could represent 2/3 of extensive growth in the volume of consumer lending.<sup>3</sup> But in the new environment it is difficult to rely on individuals who did not apply for loans even during the boom period of 2010-2012, in the context of rising oil prices and growing incomes. Banks' choice of this area will necessitate additional costs that will make credit more expensive and thus less attractive to this group. As regards intensive credit growth,<sup>4</sup> the debt burden of borrowers with incomes below the median level has growth potential. Due to the interest-rate sensitivity of this group's demand for credit, the Bank of Russia's transition to a neutral key rate may provide some support to credit growth, provided that banks are willing to choose business models with lower profit margins. Macroprudential policy measures can incentivise banks to adapt less risky business models, helping them lower interest rates and thus making loans more attractive to creditworthy borrowers.*

*The identified structural features of loan supply and demand make it possible to draw a number of conclusions for the regulator's policy:*

***1. The transmission of monetary policy to consumer lending may prove weaker than commonly assumed.*** *First, the reduction of the key rate by the Bank of Russia may modestly translate to a decline in banks' interest rates due to the fact that high interest rates reflect the particularity of banks' business models, which target high-risk borrowers. In order to enhance the trans-*

<sup>1</sup> This survey, commissioned by the Russian Ministry of Finance, was conducted by the Demoscope Research Centre in 2013 and 2015. For details, see [Results of the first wave of the All-Russian survey of household consumer finances](#). The authors express their appreciation to their colleagues at the Russian Ministry of Finance for the anonymised data provided for analysis.

<sup>2</sup> In other words, they are characterised by low price elasticity of demand for credit.

<sup>3</sup> We will understand extensive credit growth as the growth of credit through individuals who have not previously applied for loans (the survey limits this term to the previous five years).

<sup>4</sup> We will understand intensive credit growth as the expansion of the debt burden of banks' borrowers.

*mission, banks will have to adapt to a different model. Second, the level of loan interest rates per se has only a limited impact on demand for loans of this kind, the structures of which are governed to a significant extent by demand from low-income borrowers who are largely insensitive to interest rate levels.*

***2. The growth of lending in a context of magnified inflation expectations facilitates the accumulation of vulnerabilities in the consumer lending segment, posing risks to financial stability and requiring macroprudential policy adjustment.*** *Magnified inflation expectations can prompt borrowers who evaluate real interest rates as extremely low to take further risks and accumulate excess debt. When these borrowers possess predominantly low and unstable incomes that are sensitive to macroeconomic shocks, banks find themselves exposed to increased credit risks, which, in certain circumstances, can have systemic consequences. In these situations, macroprudential policy measures are capable of protecting both banks and borrowers from taking excess risks, directing banks towards less risky groups of borrowers and thus increasing their resilience in the new environment.*

## 1. Introduction

This analytical note analyses the growth prospects of consumer lending in Russia.

Our analysis is based on microdata of a household finance survey commissioned by the Ministry of Finance of the Russian Federation and conducted by the Demoscope Research Centre in 2013 and 2015.

The advantage of working with microeconomic data consists in the possibility of accounting for household diversity (heterogeneity), monitoring ongoing structural changes, and measuring and analysing the force of changes in individual household groups (according to income, age, employment, etc.).

We have analysed incomes, accumulated net assets, debt burden and the characteristics of separate individual and household loans in order to identify the most significant and easily activated drivers of lending growth and understand the consequences this growth may have for the banking sector (and non-bank lending), as well as the consequences it will have for regulator policy. We have also compared 2015 survey data with 2013 data, making it possible to identify changes in households' economic characteristics, the driving force of which could be the powerful macroeconomic shocks observed between 2013 and 2015; the halving of oil prices constituted the key factor.

First, we will present a brief description of the data. Then we will examine the prospects of extensive and intensive credit demand growth and the conditions for their realisation. Subsequently, we will consider the changes in banks' business models necessary to expand supply for this demand.

## 2. Description of data

We used data from the All-Russian household survey *Study of Financial Behaviours and Savings Habits of the Russian Population* (hereinafter, Household Finance Survey, or HFS), conducted by the Demoscope Research Centre for the Ministry of Finance of the Russian Federation in September-October 2013 and April-May 2015. The survey was a longitudinal study, that is, both waves constitute a sample from the same households. In 2013, 6,103 households and 12,650 individuals participated in the survey. In 2015, 6,027 households and 12,443 individuals participated in the survey.

The household survey questionnaire includes a broad range of questions: expenses, incomes, household savings, housing conditions, financial and non-financial assets (property, vehicles), and loan commitments. The individual survey focuses on the socio-economic characteristics of adult members of households and their financial assets. The questionnaire on financial matters is very detailed and takes into account not only all types of current financial assets (bank deposits, stocks, bonds, unit investment funds, etc.) and liabilities (bank loans, borrowings), but also examines the structure of assets and liabilities in detail. For example, questions on bank deposits include an indication of each bank, the deposit currency, amount and maturity. A brief description of all question groups in the questionnaire is provided in Appendix 1. An important distinctive feature of the survey relative to the main survey in Russia, RLMS, consists in its detailed household finance profiles.

The main descriptive statistics that allow to draw an initial 'portrait' of Russian households in terms of their incomes, expenses, savings, financial assets and debt burden are provided in the materials published by the Ministry of Finance.<sup>5</sup>

With respect to household distribution according to decile income groups, the survey data closely reflect comparable Rosstat data (Figure 1). That is, both HFS and Rosstat analyse ap-

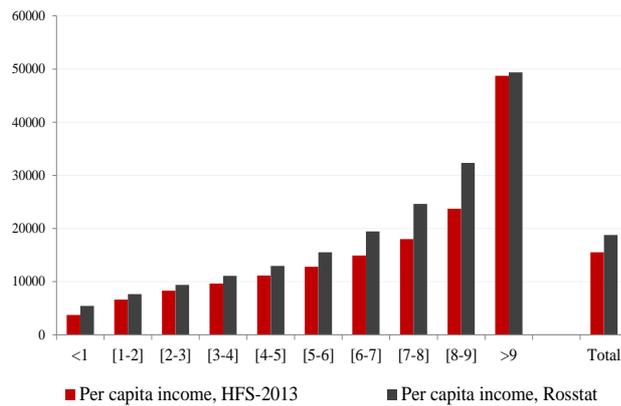
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<sup>5</sup> [Results of the first wave of the All-Russian survey of household consumer finances.](#)

proximately the same households, though, as the HFS survey shows, households with a monthly income of over 400 thousand rubles are hardly represented.

An important observation concerns the descending share of expenditures on goods and services by income group (Figure 2<sup>6</sup>). This means that the availability of sources of funding for expenses plays a greater role for low-income relative to high-income groups. As will be shown below, this group is characterised by increased credit risks, which is important for lending growth prospects and risks to financial stability.

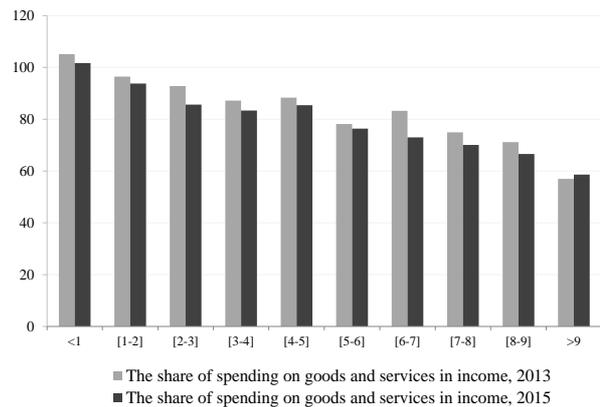
**Figure 1.** Average per capita (18+) household money income according to Rosstat and HFS-2013 data



Sources: Rosstat, household finance survey, authors' calculations.

Note: Here and below, unless otherwise specified, decile groups by income are presented on the horizontal axis.

**Figure 2.** Ratio of all expenditures on goods and services per month to monthly income, by decile group



Sources: HFS, Bank of Russia calculations.

### 3. Demand for credit: extensive and intensive growth prospects

#### 3.1. Extensive growth: potential borrowers

In analysing lending, particularly consumer credit, it is important to take into account that demand for credit does not ultimately arise from separate individuals, but households, with the expectation of satisfying the needs of all members of the household. For this reason, for the purposes of this analysis, we will often group the survey results of individual questionnaires to the household level.

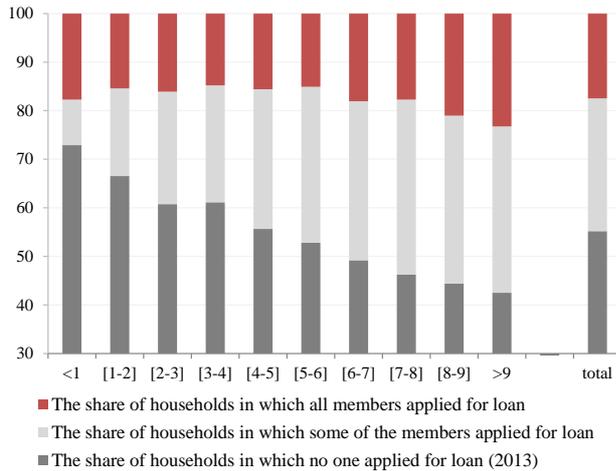
If we consider the entire range of households (both those with credit commitments and those with no indebtedness), *credit penetration* differs widely among different households grouped by income.

Out of all households in the survey, the share of households whose adult members did not apply for loans in the past five years (all kinds of loans are considered in this chapter, including credit cards) decreases with rising incomes (Figures 3-4). They represent 70% of households with low incomes and 40% of high-income households.

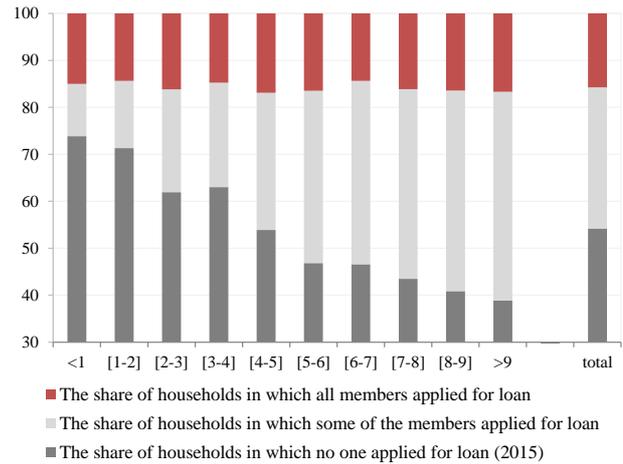
**Figure 3.** Household structure by application for loans in the last five years in 2013, % of each income group

**Figure 4.** Household structure by application for loans in the last five years in 2015, % of each income group

<sup>6</sup> A value exceeding 100 in the expenditures to income ratio indicates the use of other sources of funds (loans, savings) to finance expenditures.



Sources: HFS, authors' calculations.



Sources: HFS, authors' calculations.

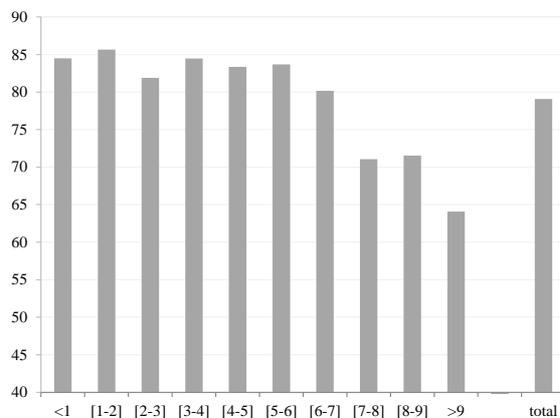
In the last five years, 55% or over half of all households never applied for loans.

Households where not all members applied for loans represent a greater proportion of households with higher incomes. A similar distribution by income group can be observed upon examination of the data of individual questionnaires on consumer loans (Figure 5).

Therefore, in terms of the *number* of customers, the greatest potential for extensive credit growth is seen for households with incomes below the median level, households where neither of the adult members has loan commitments, or where there are partial loan commitments. However, in terms of *new lending volumes*, a different pattern arises. Figure 6 provides the median amount of extended consumer loans (credit cards excluded) of decile income groups by individual questionnaire data from the 2015 survey.

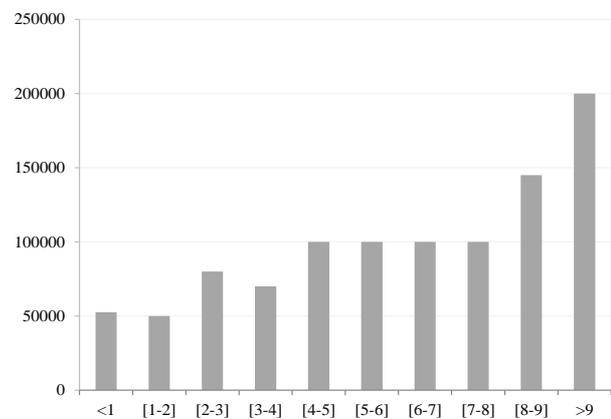
Using the data on the amount of a single loan (Figure 6) and on the potential for extensive credit growth at the level of individual borrowers (a top-down assessment of the potential) (Figure 5), we can assess the share of new loans within each income group. A part of each income group has no loans, while the other part already has loans and, as assumed for the purposes of calculation, will not apply for them.

**Figure 5.** Share of individuals with no consumer loan or credit card, according to 2015 survey data, % of all respondents in this income group



Sources: HFS, authors' calculations.

**Figure 6.** Median amount of consumer loan by income group, rubles



Sources: HFS, authors' calculations.

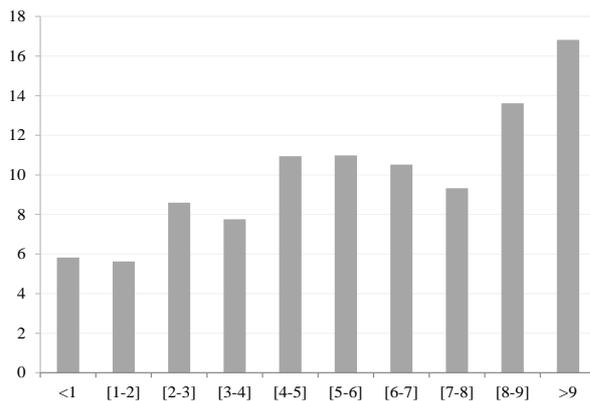
The results of the assessment (Figure 7) show that a third of all new loans is concentrated in the latter two—and most prosperous—groups. Another third covers the group with incomes below the median, while the rest belong to the group with incomes near or slightly higher than the median. Thus, banks possess three target groups, varying by income, which constitute a nearly identical amount of loans issued, but with different levels of risk. Figure 8 provides the ratio of the median consumer loan to the average per capita income (according to the individual database). The diagram suggests that banks assume substantial risks already at the time of issue of consumer loans to low-income groups, as loans are over 10 times larger than median incomes.

In order to understand the possibilities to boost demand for credit in each group, it is important to analyse the reasons why individual respondents in households<sup>7</sup> did not apply for loans.

The survey designates four sets of reasons:

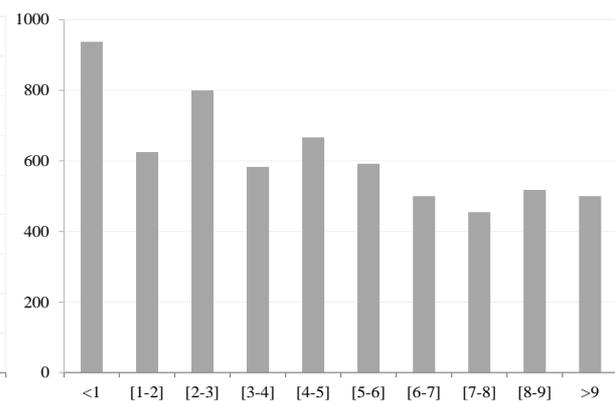
1. Did not apply due to expected refusal of loan issue.
2. Did not apply due to lack of loan necessity.
3. Did not apply due to excessively high payments for loans (the equivalent of high interest rates).
4. Did not apply due to distrust of lending institutions or a negative attitude towards loans on principle, which may also reflect the high cost of loans.

**Figure 7.** Breakdown of estimated amount of potential extensive credit growth by income group, % of total



Sources: HFS, authors' calculations.

**Figure 8.** Median of loan amount to per capita income ratio by income group, %

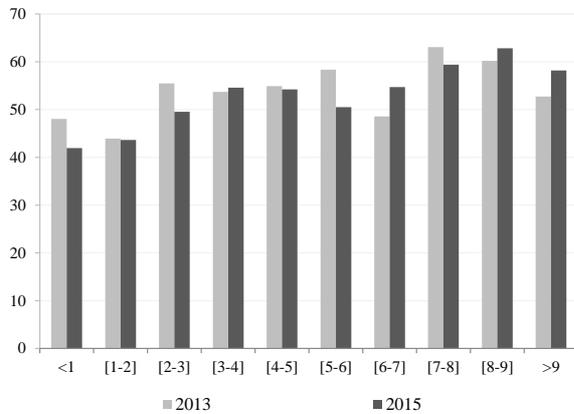


Sources: HFS, authors' calculations.

The primary reason for not applying for loans in all household income groups was lack of necessity (Figure 9). This share predictably rises with rising incomes. It represents 40% of households who did not apply for loans in the low-income group and approximately 60% in the high-income group; on average, half of all non-applications can be attributed precisely to this reason. In two years, the share of those who didn't apply for loans due to the lack of necessity declined, but very insignificantly.

<sup>7</sup> In this case, we considered only households where no adult member had applied for loans in the five years preceding the survey.

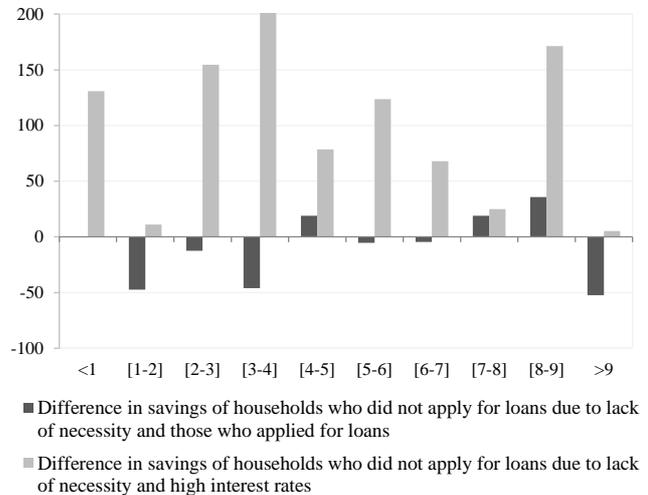
**Figure 9.** Households who did not apply for loans due to lack of necessity, according to surveys in 2013 and 2015, % of all households who did not apply for loans previously



Sources: HFS, authors' calculations.

Note: For households where all adult members did not apply for loans.

**Figure 10.** Comparison of the amount of savings of households who did and did not apply for loans



Sources: HFS, authors' calculations.

Households' lack of demand for credit indicates that households are 'self-sufficient' in financing their consumption, or that they are not inclined to assume risks associated with fulfilling credit obligations. They sense and accurately assess risks to the growth of their future nominal incomes, e.g. due to expectations of lower income growth than previously, before the crisis of 2008, or lower inflation. 'Self-sufficiency' in financing their own consumption indicates that for households that did and did not apply for loans due to lack of necessity, we expect to see a difference in net assets. The survey data confirm this.

First, we compare the amount of savings (stock variable, not flow) of households that do not have need for loans, with households that applied for loans (Figure 10). Those who did not apply for loans have systematically higher levels of accumulated savings than those who applied for loans in the last five years (according to the 2015 survey; a similar pattern also characterises the 2013 survey).

It should be noted that such a disparity in savings has not been found for households that did not apply for loans due to high interest rates or due to lack of necessity. This may suggest that 'lack of credit necessity' is not an absolute factor, but depends on interest rate levels. Certain individuals did not apply due to high interest rates, while others with the same level of savings did not because there was no need.

The reason next in importance for the absence of (any) loan applications is high interest rates. In the 2013 survey, this reason was noted by approximately 20% of low-income households that had not applied for loans and approximately 25% of high-income households, around 30% on average (Figure 11). In the 2015 survey, this reason played a greater role, but by a maximum of 5 pp (which indicates the rising share of households noting this factor), while the significance of this factor even declined for low-income households.

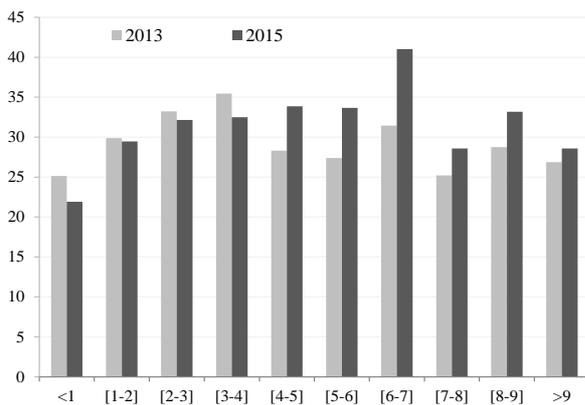
Thus, the observed growth of nominal and real interest rates between the surveys of 2013 and 2015 did not have a strong impact overall on households' perception of interest rates as limitations to loan applications. It must be noted that the survey assumed a response covering the previous five years. For the 2013 survey, real interest rates in the previous five years (2009-2013) were very low, and in the future it is unlikely that they will decline to the same level, based on the ob-

jective of supporting price stability. Apart from central bank policy, interest rates on loans are determined by banks' credit policies. Targeting high-risk borrowers and high profit margins, banks maintain high interest rates and make loans unattractive to borrowers with low risk levels.

Another important finding: in the 2015 survey, the limiting effect of interest rates on demand for credit in all groups below the median income level fell, while it rose for all above-median income groups. This may indicate that households with low incomes incorrectly evaluate (underestimate) the level of real interest rates, e.g. due to magnified inflation and salary expectations, as well as their characteristic heightened risk appetite (particularly due to low levels of net assets: they have nothing to lose).

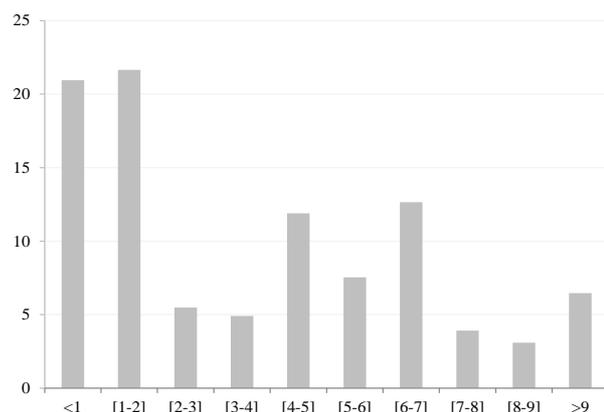
Distrust of credit and credit institutions constitutes the third reason for not applying for loans, representing approximately 15% of responses (10-20% for low-income groups and 5-15% for high-income groups) (Figure 12). This response undoubtedly reflects respondents' opinions on banks as institutions whose purpose is to deceive borrowers, issuing them loans at higher rates than was promised. That is, the role of high interest rates may directly or indirectly lie behind low levels of trust. This may explain why the responses of the lowest income groups clearly stand out from the rest: banks and other credit institutions offer these groups high interest rates, causing these households' resentment.

**Figure 11.** Households that did not apply for loans due to high interest rates in 2013 and 2015, % of all households that had not previously applied for loans



Sources: HFS, authors' calculations.

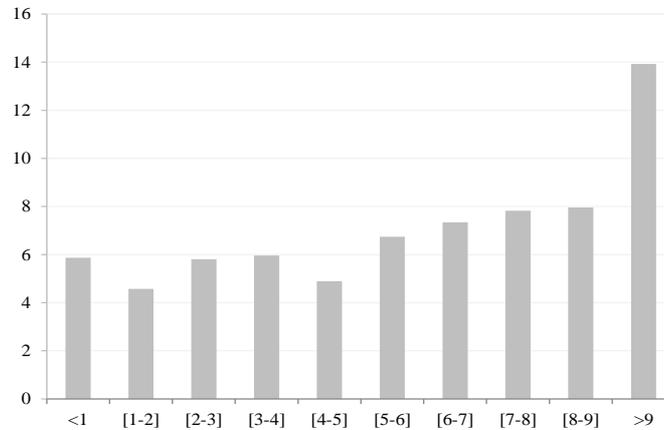
**Figure 12.** Other reasons for not applying for loans, including distrust of financial institutions



Sources: HFS, authors' calculations.

Approximately 6% of responses represent non-application due to expectations of refusal (Figure 13). Banks' lending policies and supply-side limitations play a significantly smaller role in not applying for loans, particularly for low-income groups compared to high-income ones. Thus, the data indicate that the financial system is sufficiently flexible and segmented, making it possible for borrowers with various levels of risk to rely on credit.

**Figure 13.** Share of households who had not applied for loans in the past five years (2013 survey) due to expected refusal, % of all households who did not apply for loans in this income group



Sources: HFS, authors' calculations.

Overall, the group of banks' potential (new) borrowers is numerous. However, in terms of evaluation of real prospects of extensive demand for credit, it is important to note the following.

First, the two decile groups with the largest incomes, capable of representing a third of extensive credit growth, on the one hand, possess high incomes and low risk, and on the other, do not particularly need loans or do not have appetite for risk.

Second, the troublesome factor for banks of targeting households with incomes below the median level, capable of representing a third of extensive credit growth: they are subject to elevated credit risks. In this regard, it is important to note that the lowest income group possesses a median income at 5 thousand rubles. For example, Figure 1 provides the average per capita income, close to the median. At the same time, this group's median loan exceeds its income by 10 times, compared to 5 times for the highest income group. A number of facts indicate that this group has begun to increasingly inaccurately assess risks: unlike their high-income counterparts, they did not consider rising interest rates between 2013 and 2015 as a factor limiting their demand for credit. Moreover, they did not apply for loans due to expected refusal to a lesser extent than higher-income households.

The group of potential borrowers with incomes close to, but higher than the median indicator constitutes an intermediate stage between the extreme groups. They have less of a need for credit than low-income borrowers, have proven to be more sensitive to the rising interest rates between the surveys and assess risks more accurately overall.

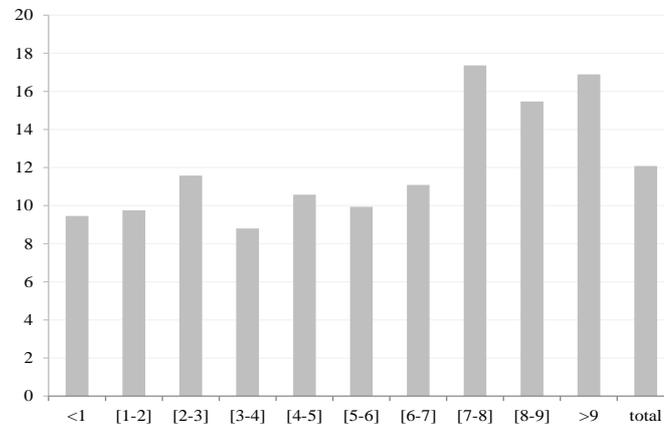
All of this suggests limited possibilities of extensive consumer credit growth in the Russian environment, as its realisation requires banks to change their business models.

### 3.2. Intensive growth: actual borrowers

We will now consider a different category of individuals: those who, according to the 2015 survey, are borrowers or were borrowers in the recent past (under five years ago). We will analyse the prospects of intensive growth of demand for credit. In this section, we will restrict the range of borrowers and analyse only ruble-denominated loans for consumer needs, with the exception of credit card loans, real estate loans, vehicles and dedicated education loans. In this section, we will examine not only households as a whole, but individuals as well. This is important to analyse specific loans: amounts, terms, interest rates and even banks issuing loans, which would be impossible to unify at the household level.

The number of individuals possessing outstanding consumer loans in the 2015 survey represented 12% of the sample, or 20% in high-income groups (Figure 14).

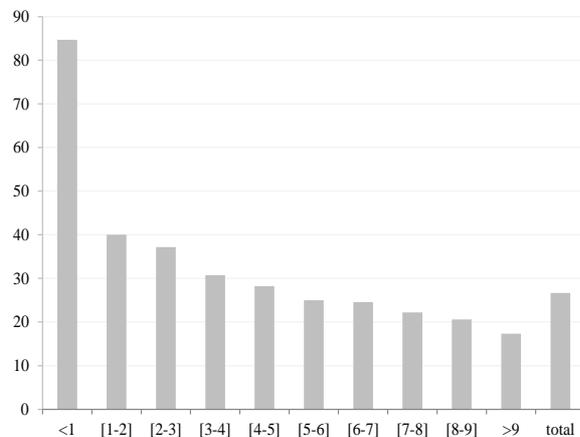
**Figure 14.** Share of individuals with consumer loans in 2015, % of size of income group



Sources: HFS, authors' calculations.

The breakdown of individual debt burden (not by household, but by individual earnings) of respondents with consumer loans in the 2015 survey provided in Figure 15.

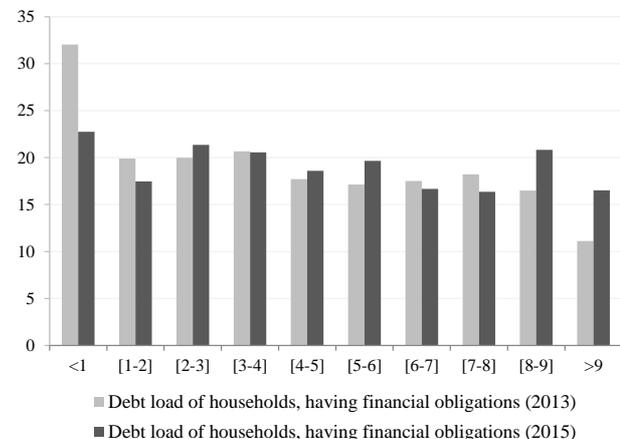
**Figure 15.** Median indicator of debt service ratio (DSR) of individual borrowers by income group, % of income



Sources: HFS, authors' calculations.

Note: The DSR indicator for individuals was calculated as the ratio of monthly payment *on consumer loan* to monthly income.

**Figure 16.** Median indicator of debt service ratio (DSR) of household borrowers by income group, % of income



Sources: HFS, authors' calculations.

Figure 16 presents the DSR<sup>8</sup> indicator for households overall (for all loans, not only consumer loans), as well as the values of this indicator according to the 2013 and 2015 surveys. The data are provided only for respondents with debt burdens.

In both cases, borrowers with low incomes are already deeply indebted. A debt burden per se does not necessarily imply high credit risks. Indeed, the greatest indebtedness may be characteristic of young borrowers, whose high debt burden will reflect not their current low incomes, but the growth of their future incomes. In order to make adjustments to the individual debt burden indicator and household debt burden indicator, we calculated an econometric model that takes into account the impact of borrower age and education level on the debt burden. It was accepted that

age had a non-linear impact on the debt burden, suggesting the possibility that the debt burden may peak at middle age, that is, grow during youth and, after its peak close to retirement, begin to diminish. The findings of the evaluation are provided in Appendix 2. On the whole, these factors differentiate the debt burden between income groups even more distinctly (Appendix 2). Individuals and households with low incomes have higher debt burdens than predicted by the model, while households with high incomes from the model's standpoint are not fully credited.

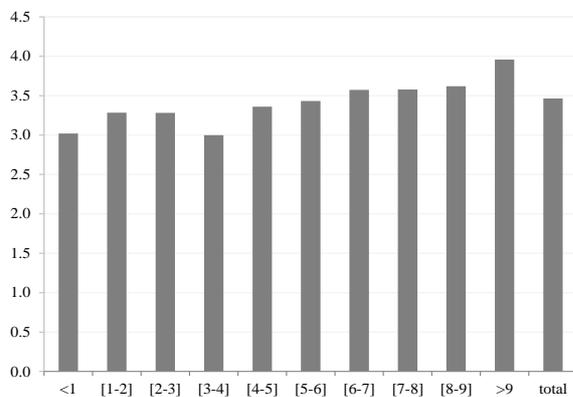
Low-income borrowers' high credit risks arise from the high volatility of their employment status and incomes. As the calculations show, borrowers (who took out loans in 2010-2013) who were employed in the 2013 survey and have a DSR value higher than the 2013 median conform to a 17% probability of losing (or not having) employment in 2015. Only 9% of borrowers who were employed in 2013 with debt burdens below the median show this likelihood.

The median consumer loan term constitutes 3.5 years and increases with rising incomes (Figure 17). The number of separate individuals' consumer loans has the following income distribution in the 2015 survey (Figure 18). Approximately 15-20% of borrowers with outstanding loans have more than one of these loans, and approximately 5% have three such loans, according to 2015 survey data.

This raises a key question of interest to us: to what extent are Russian borrowers willing to expand their demand for credit and how much does it depend on interest rates?

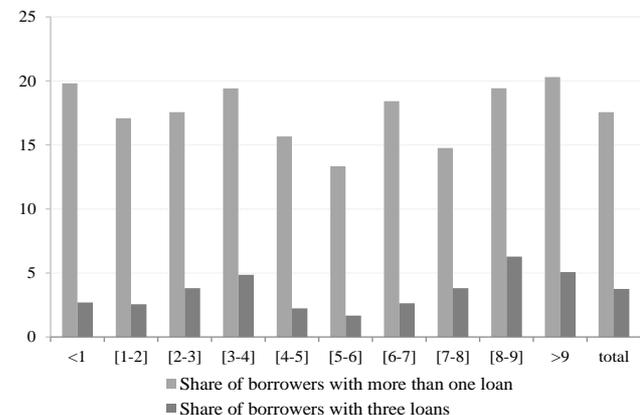
We have highlighted two categories of borrowers: those whose demand for loans is probably resilient to the interest rate, and those whose demand for loans is most likely not resilient to the interest rate (they have serious liquidity constraints and are willing to take out loans even at very high interest rates). Our objective is to analyse if there are principle differences in the risk profiles of these two categories of borrowers, and evaluate the growth prospects of credit demand for each of these groups.

**Figure 17.** Median consumer loan terms by income group, years



Sources: HFS, authors' calculations.

**Figure 18.** Share of borrowers with more than one loan, % of all borrowers in income group with outstanding loans in 2015



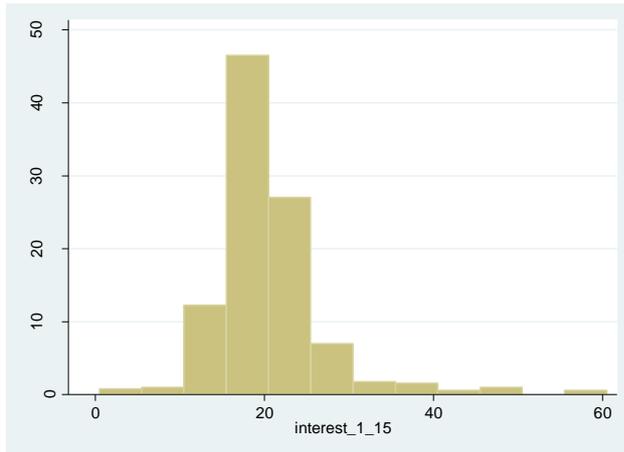
Sources: HFS, authors' calculations.

<sup>8</sup> The ratio of household monthly expenditures according to the item 'Expenditures in the past 30 days on repayment of any loans, including credit card payments, loan repayments and repayment of debts to private individuals' to household monthly income.

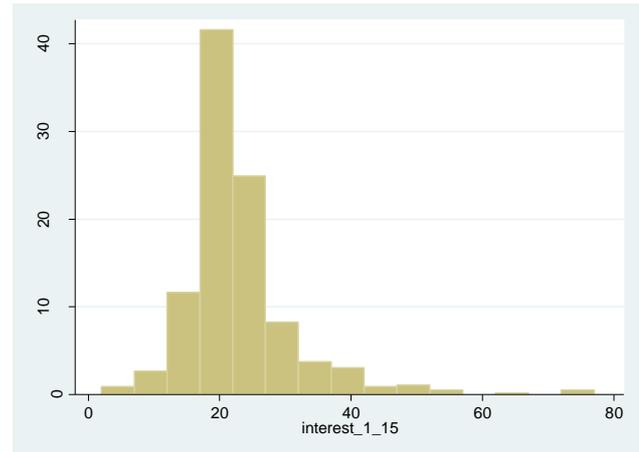
The first group comprises all borrowers (in this case, we are working with the individual questionnaire) who took out their *first* consumer loans in 2010-2013 at interest rates below the sample median, while the second group includes all borrowers who took out loans at interest rates above the median, according to the 2015 survey. We repeated this exercise for loans taken out in 2014-2015. The interest rates at which loans are taken out (above or below the median level by sample), in our opinion, reflect borrowers' sensitivity to the interest rate.

The breakdown of interest rates by consumer loans issued in 2010-2013 and 2014-2015 is as follows (Figures 19-20).

**Figure 19.** Interest rates on loans issued in 2010-2013



**Figure 20.** Interest rates on loans issued in 2014-2015

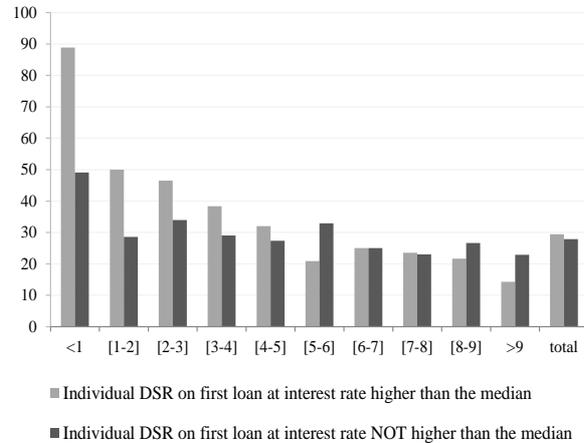


In the 2015 survey, the breakdown shifted somewhat to the right. The median interest rate for first loans issued in 2010-2013 amounted to 19%, while it was 21% for loans issued in 2014-2015. Figure 21 compares the debt burden profiles of borrowers whose first loans in 2010-2013 were at interest rates higher or lower than 19%.

An effect observed in low-income groups has been dubbed 'adverse selection' in financial literature. In deciding to issue loans to more risky borrowers, banks compensate for higher credit risks with increased interest rates. Meanwhile, higher interest rates repel borrowers with lower risk and a need for loans, thus attracting only higher-risk borrowers (characterised by higher debt burden as an indicator of default risk) whose demand loosely depends on interest rate levels. The presence of adverse selection reflects banks' rational choice, their wish to specialise in a specific risk category of borrowers.

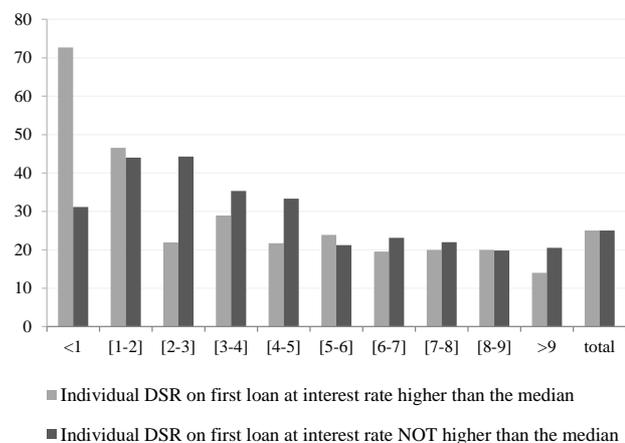
This effect is also clearly observed for first loans issued in 2014-2015 to individuals with the lowest level of income (Figure 22).

**Figure 21.** Value of median debt burden indicators by income group for loans issued at interest rates higher and lower than the median in 2010-2013, % of income



Sources: HFS, authors' calculations.

**Figure 22.** Value of median debt burden indicators by income group for loans issued at interest rates higher and lower than the median in 2014-2015, % of income



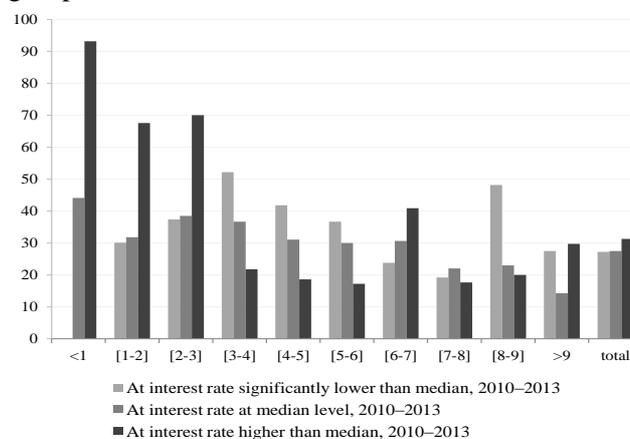
Sources: HFS, author's calculations.

At the level of specific banks, the interdependence of interest rates and borrower risk levels is even more evident. For example, Figure 23 provides a comparison of the DSR profile of customers of banks lending at near-median interest rates, banks lending at interest rates below the median and customers of banks and non-bank financial institutions with above-median interest rates.

Based on Figure 23, it is clear that banks issuing loans (to first-time borrowers) at interest rates far above the median had a more risky profile of customers from low-income groups than banks issuing loans at lower interest rates.<sup>9</sup>

Thus, we found that borrowers that take out loans at higher interest rates are characterised by higher debt levels and, consequently, credit risks. Approximately a fourth of all borrowers are willing to take out loans at very high interest rates, far (from a third to half) exceeding the median market values of interest rates on loans.

**Figure 23.** Value of median debt burden indicators by income group for loans issued at interest rates higher and lower than the median in 2010-2013, by bank group, % of income



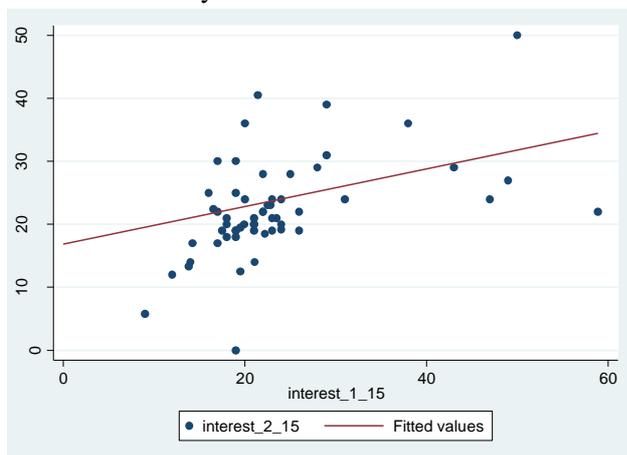
Sources: HFS, authors' calculations.

<sup>9</sup> With an adjustment for the only observation in the sample: a borrower in the low-income group, who has been granted a loan in the group of banks with interest rates below the median, is not shown in the diagram.

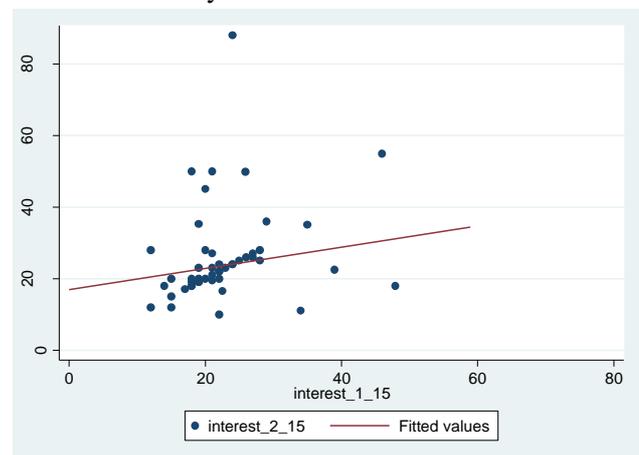
We now turn to the analysis of these borrowers' behaviour with respect to second loans. Out of those who have first loans (outstanding in the 2015 survey) taken out at interest rates above the median in 2010–2013, 17% of borrowers took out second loans in 2014–2015. Among the borrowers who, at the time of the survey, had current loans at interest rates below the median in 2010–2013, a mere 8% took out second loans in 2014–2015. Thus, the group we created of borrowers who are less resilient to the interest rate is also characterised by a strong inclination to further expand its debt burden.

It is important to note that interest rates on first loans issued in 2010–2013 and not repaid at the time of the survey, and on second loans issued in 2014–2015 and not repaid at the time of the survey, are positively correlated. This serves as additional confirmation that high-risk borrowers, in making decisions regarding additional debt burdens, are largely insensitive to interest rate levels (Figures 24–25). In this way, they justify their designation as 'less resilient to the interest rate'. The high cost of first loans does not restrict them from additionally taking on second, expensive loans.

**Figure 24.** Interest rates. First loan (2010–2013), second loan (2014–2015). Both loans outstanding at the time of survey



**Figure 25.** Interest rates. First loan (2014–2015), second loan (2014–2015). Both loans outstanding at the time of survey



Thus, among current borrowers one group (around a quarter) of borrowers stands out, whose demand for credit is weakly resilient to the interest rate. They are characterised by elevated risk levels and are more inclined to further expand their debt burdens. This group of borrowers consists primarily of representatives of the lowest income groups.

The potential of the group of borrowers taking out loans at interest rates below the median depends on the pace of interest rate reduction.

#### 4. Credit supply and credit risks

For the prospects of change in demand for loans noted in the previous section, it is important to analyse banks' capabilities in adapting their business models to this demand. Here too banks face difficulties.

**Which lending model is preferable?** In terms of intensive credit growth, loans are in greatest demand among borrowers with poor risk profiles, already fairly indebted. Extensive credit growth through borrowers with median incomes most likely requires reduced interest rates, while through borrowers with high incomes it requires easing of lending and non-price lending conditions, active sales of loans, which will require additional expenditures.

In the new environment, it is difficult to expect demand for loans from individuals who did not take out consumer loans during the credit boom of 2010-2012, in the context of rising oil prices and incomes.

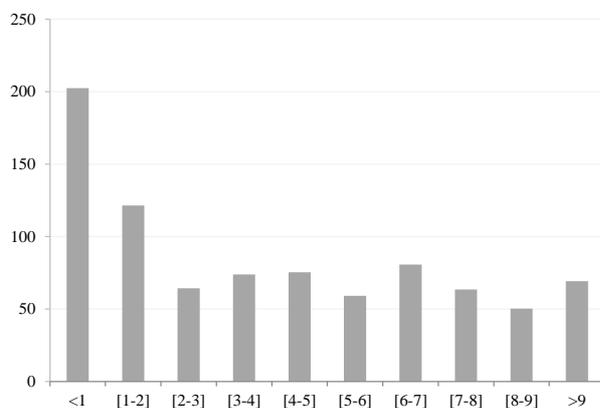
On the whole, Russian households have a high debt burden of consumer loans. In the debt structure, households with low incomes are, as previously shown, already highly indebted. The existing estimates of an equilibrium debt burden for the household sector<sup>10</sup> in terms of the ratio of loan payments to income for the period (PTI or DSR) suggest a debt service ratio of 10-15%, levels above which preceded banking crises in developed countries. For emerging market economies, the DSR median value, which can be considered as an indirect estimate of equilibrium, stood at 17% in 2013. Russian households are already approaching these debt burden indicators. Banks' approval of loans to new borrowers from low-income groups with a high inclination to consumption entails increased credit risks.

A major risk factor: low-income groups are characterised by very high income volatility (Figure 26). They are also characterised by less stable employment in the context of the macroeconomic shocks occurring in the period between the 2013 and 2015 surveys (Figure 27).

The development of this area of credit not only poses additional risks for banks, but also is a source of social tension.

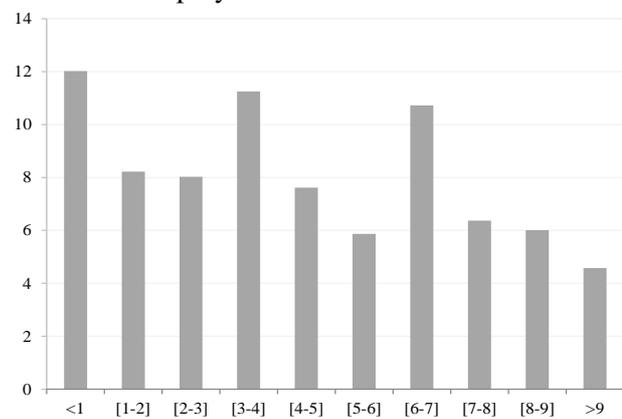
Banks' choice of expanding credit through high-risk borrowers will assist their maintenance of high interest rates. Furthermore, lower interest rates can stimulate extensive growth of credit to borrowers with average incomes and lower risks. Banks' choices also determine the risks assumed by the financial system. For specified loan growth, this level will likely prove to be higher than in 2010-2012.

**Figure 26.** Income volatility between the 2013 and 2015 surveys, by 2012 income group (the standard deviation of income percentage change between the surveys, pp of income growth)



Sources: HFS, authors' calculations.

**Figure 27.** Change in employment status between the two surveys: share of households whose members were unemployed in 2015 out of those who were employed in the 2013 survey, % of income group households employed in 2013



Sources: HFS, authors' calculations.

Two important conclusions for the Bank of Russia as a regulator, given the situation:

1. The monetary policy transmission to consumer lending may prove to be weaker than commonly assumed.
2. Lending growth in the context of magnified inflation expectations contributes to the accumulation of vulnerabilities in the consumer lending segment, posing risks to financial stability and requiring macroprudential policy adjustments.

<sup>10</sup> Drehmann, Mathias and Juselius, Mikael (2012), Donets S., Ponomarenko A. (2015).

## Appendix 1

Main sets of questions of the individual survey and household survey questionnaires

### Household questionnaire

#### Housing conditions

- Type of housing (how it was acquired, including purchases through loans/mortgages); price at the time of purchase and estimate at the time of survey; home insurance
- Other property (summer house / house / land plot / garage)
- Loans for real estate, construction and the purchase of land for construction (which banks, currency, term, amount, interest rate, balance of debt, arrears, refinancing, loans from family members)
  - Including loans for unowned real estate
- Supply of durable goods (refrigerator, satellite dish, power drill)

#### Household incomes

- Monetary and non-monetary income
- Monetary income from labour and other sources (pensions, grants, benefits, subsidies, incomes from investments and securities, from debt repayments, from rental, from property sales, from family members)
- Borrowed money (loans) in the past month
- Sales and consumption of goods produced for own use in the past 12 months

#### Savings

- Amount of savings (stock, no matter where and how they are kept)
- Amount of savings in foreign currency
- How long will savings last?
- Savings expenditure during the past month

#### Household expenditures

- How is money usually managed (is a portion saved or not, regularly or not, what happens with irregular earnings)
- Expenditures on foodstuffs (7 days and 30 days); durable goods (30 days and 90 days); food consumed outside the home, fuel, communications services, domestic and legal services, utilities (30 days)
- Education, taxes and travel (in the past year)
- Utilities arrears
- Medical expenses, expenditure on culture, debt settlement and loan repayment
- Foreign currency purchase for savings and travel; stocks and other securities
- Helping others
- Have you lent money in the past month (amount)?

#### Financial planning

- Decision-making timeframe on how much to spend, how much to save
- Savings goals

- Are major expenditures planned for the next 5-10 years?
- Were there savings in the past month? How much of them were in foreign currency?
- Voluntary health insurance policies for children

### Individual questionnaire

- General information (gender, year of birth, place of birth and residence, education level)
- Attitudes regarding savings and loans (responsible attitude to money, savings planning timeframe, attitude to purchases on credit)
- Assessment of the national economy and financial situation over the previous 12 months, and the following 12 months. Is it advantageous to save, to make big purchases?
- Employment status (profession, position, salary, form of ownership, is there an employment contract, full or part-time employment, compulsory leave in the past year). Wage depending on dollar exchange rate. Confidence in finding work if you lose your job. Have you considered becoming an individual entrepreneur? Second job
- Employment benefits at work and pension eligibility
- Unemployed and irregularly employed (registration, benefits received)
- Social transfers (pensions, benefits, stipends). What will you live on when you retire?
- Decision-making
  - Marital status, satisfaction with relationship with husband/wife
  - Decision-making on expenditures, consensus. Who manages money, savings?
  - Who has the final say in different issues: where to spend holidays, children's education; where and how to work, to take out loans
  - Women's employment (evaluation of husband and wife). Is it good or bad for mothers to work? Is it good or bad for families when women earn more?
- Financial assets (when were they acquired, amount, frequency of income generation)
  - Stocks in business, bonds
  - Units of unit investment funds
  - Savings in non-governmental pension funds / voluntary insurance policies
  - Insurance policies
  - Debit cards. How do you usually use them?
  - Time deposits and current accounts
  - Accounts with electronic payment systems
  - Metal bank accounts
  - Savings in cash, including share of foreign currency
  - Debts to private individuals
  - Maternal capital
- Financial liabilities
  - Consumer loans (Did you apply for credit? Why did you not apply? Credit refusals over the past five years. Reasons for refusals. Possession and quantity of outstanding loans. All about loans: term, currency, bank, interest rate, balance of debt, monthly payment, payment arrears)
  - Credit cards
  - Education loans
  - Pawnshop loans
- Vehicles
- Financial literacy

## Appendix 2

Model with censorship for household debt burden (censorship at the level of debt burden equal to zero). The following are employed as explanatory variables: average age of adult members of household, age squared, education level.

```
Tobit regression                               Number of obs   =      5102
                                                LR chi2(3)      =      421.65
                                                Prob > chi2     =      0.0000
Log likelihood = -9625.4062                    Pseudo R2      =      0.0214
```

dsr_13	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
av_age_hh_all_13	1.229362	.2424507	5.07	0.000	.7540548	1.70467
av_age_hh_all_13_sqred	-.0226426	.002774	-8.16	0.000	-.0280807	-.0172044
education_13	.1924822	.3791462	0.51	0.612	-.5508072	.9357716
_cons	-25.75077	5.221195	-4.93	0.000	-35.98655	-15.51498
/sigma	36.71043	.7382339			35.26318	38.15769

```
Obs. summary:      3501 left-censored observations at dsr_13<=0
                   1601 uncensored observations
                   0 right-censored observations
```

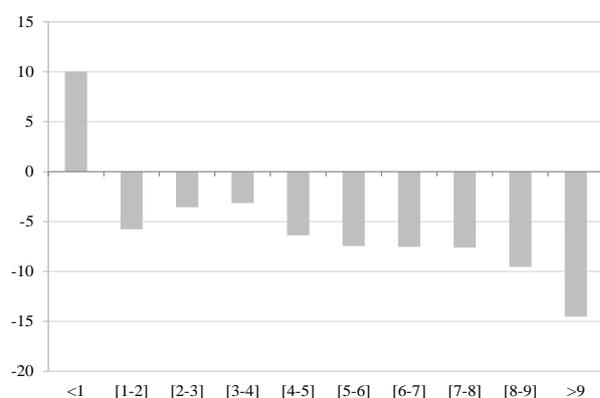
Model with censorship for individual debt burden (censorship at the level of debt burden equal to zero). The following are employed as explanatory variables: average age of individual (over 18 years old), age squared, education level.

```
Tobit regression                               Number of obs   =      12161
                                                LR chi2(3)      =      363.35
                                                Prob > chi2     =      0.0000
Log likelihood = -10135.546                    Pseudo R2      =      0.0176
```

dsr_3_15	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
age	6.92608	.4815061	14.38	0.000	5.982251	7.869909
age_sqred	-.0772974	.0051984	-14.87	0.000	-.0874872	-.0671077
education	.8130904	.5200375	1.56	0.118	-.2062658	1.832447
_cons	-224.3189	11.36672	-19.73	0.000	-246.5995	-202.0383
/sigma	68.12494	1.599705			64.98926	71.26061

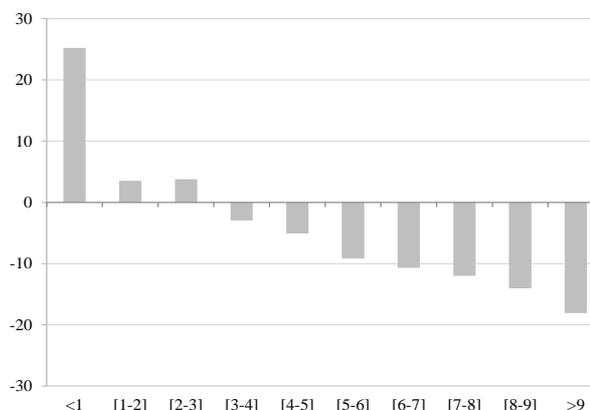
```
Obs. summary:      10814 left-censored observations at dsr_3_15<=0
                   1347 uncensored observations
                   0 right-censored observations
```

**Figure 9p.** Median residual debt burden of households in 2013, i.e. DSR unexplained by the regression model, by income group



Sources: HFS, authors' calculations.

**Figure 10p.** Median individual residual debt burden in 2015, i.e. DSR unexplained by the regression model, by income group



Sources: HFS, authors' calculations.

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