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Alcohol use in modern Russia: factors of demand and consumption patterns

SUMMARY

The goal of this project is to find out the influence of some economic and social factors on the demand for different beverages and on the choice of consumption pattern in modern Russia. The number of regression models is estimated on the base of "The Russia Longitudinal Monitoring Survey (RLMS-HSE)" 1994-2011. There are classic models of demand for alcohol of Becker and Murphy (1988): static, myopic and rational addiction models. We use two-step way of estimation because of two-step consumer decision ("to drink or not to drink" and how much to drink). This way let it possible to find out the factors of every decision separately. The idea of this research is to use as independent variables not only economic parameters (as prices and incomes of respondent and his\her family members) but some social characteristics such as educational level, gender, age, nationality, optimism level, alcohol use by other family members, and other. The first results have demonstrated that some social factors (education, marital status, alcohol use by other family members) are more important that the economic ones (as price for alcohol), as for the demand for pure alcohol as for the demand for every beverage. Also 13 drinking patterns were found using the cluster analysis. They differ by the structure of consumption, habits and social and demographic characteristics.

JEL Classification: Z13, I12, D11, D12

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1. Why alcohol consumption is so much discussed?

From the one point of view, alcohol is the consumer good. So it could be said that its use is regulated by the same principles that the use of the other commodities. But consumption of alcohol, tobacco and drugs has some particularity: in great dose it causes the black-out and badly controlled behavior; the more people use them the more they need it; and the intake during the long term and in great amount produce the great harm for the health. Consumption of substances changing of consciousness and producing the dependence effect (in particular alcohol, cigarettes, drug) is named "addictive behavior".

To reduce the alcohol consumption not only some measure of market regulation are commonly used, such as prices increase due to the taxation, limitation of accessibility and other, but it is also necessary to inform people about the consequences of alcoholism and more general to change the culture of alcohol use [WHO (2012)]. This idea is due to the fact that alcohol consumption is influenced not only by economic but at the great degree by social factors. It is very well known that if alcoholic beverages became more expensive some people does not stop to drink or even to drink less, but they choose other brand of the same type of drinks (cheaper) or change the beverage (for example beer instead of spirits, of even moonshine).

The problem is that the quality of cheaper or especially illicit alcohol is much poorer and so it is more harmful for the health. There is also the difference between the consequences of various patterns of alcohol use. The most dangerous is the pattern oriented to the predominance of spirits (like vodka) and moonshine (like samogon) combined with a drinking binge (heavy episodic drinking)². This way of alcohol use is typical for Russia.

The features of alcohol use in modern Russian society make it possible to consider the problem of alcoholism as a very dangerous. Many key parameters of alcohol use and its consequences have dramatically rose during the last 20 years (volume of alcohol consumption, morbidity and mortality rates, criminality because of abusing spirits, susceptibility to alcoholism of various socially-demographic groups and population strata). World health organization (WHO) experts assert that every fifth man in Russia and the CIS countries dies of the illnesses due to alcohol consumption [Gogitidze (2011)]. "The Concept of a Demographic Policy of the Russian Federation for the Period till 2025" [Concepts (2007)] provides working out of the measures directed on decrease of alcohol consumption. Among them are regulation of alcohol production, sales and consumption and realization of the preventive programs in schools directed on exception of alcohol and tobacco consumption by children and teenagers.

² Usually defined as person who has drunk at least 60 grams or more of pure alcohol on one occasion in the past 7 days [WHO 2010].

During the last 5-7 years in Russia there were adopted some measures aiming to reduce alcohol consumption. Among them are some restrictions on producers, advertising and sales, minimum price on vodka, increasing in tax rates, and some other. Really, statistics shows, that the sales of alcohol and its estimated consumption decreased during the second half of 2000th. But it is necessary to know if the growth of price can reduce alcohol consumption in Russia even greater or it will lead to the change of structure of consumption (in favor of more cheap beverages and moonshine). That is why we need to know economics (such as prices and income) and social (such as culture) factors of demand for alcohol.

2. What do different theoretical approaches and empirical research say about alcohol consumption?³

2.1. Economic and social theories explaining alcohol consumption.

It is obvious that consumption of some goods have the "predilection" effect (smoking, alcohol, drugs etc.) and their consumption increase with time. This effect is often explained by *change* of tastes. In case of consumption of alcohol, nicotine, drugs the doubtless effect is due to the medical dependence to the given substances. However economists Becker and Stigler (1977) explain such predilection without argument about change of tastes: "The essence of our explanation lies in the accumulation of what might be termed "consumption capital" by the consumer, and we distinguish "beneficial" addiction like Marshall's good music from "harmful" addiction like heroin." [Becker and Stigler (1977), p.78]

According to their theory, «the consumer good» is pleasure (or appreciation) due to consumption (instead of the good itself), and the amount of appreciation produced at any moment would depend on the time allocated to consumption and the specific consumption capital. An increase of the amount of such consumption capital rise the productivity of time spent on the consumption. According to this point of view, the relative consumption of given addictive good would arise at each next moment not because tastes shift in favor of it, but because its shadow price (equals the marginal cost of adding a unit of commodity output) declines, as skill and experience in the appreciation of given good are acquired with exposure. So the marginal utility of the time spent on consumption grows with the rise of amount of consumption capital even if tastes are unchanged.

Specificity of demand for alcohol consists in addiction effect, i.e. in dependence of the present consumption on the consumption in the past. The explanation of demand for alcohol has been given in the theory of rational addiction of Becker and Murphy [Becker and Murphy

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(1988), Becker, Grossman, and Murphy (1994)]. The main feature of this model is that past consumption of some goods influences their current consumption by affecting the marginal utility of current and future consumption. This model was also generalized by Cook and Moore (2000). In the other variant of model on demand for alcohol the consumer is "nonrational" or "myopic" [Becker, Grossman and Murphy (1994)], so the consumption depends only on the past but not on the future. The static model excludes both lagged and leaded consumption. But the model of rational addiction is the generalized case of "myopic" and static models.

There are at least two sociological explanations of people propensity to alcohol consumption, despite its fatal consequences. The first one considers drinking as the form of deviant behavior, when the individual do not respect social norms and rules (the theory of social hoops [Hirschi (1969)] and concept of the differentiated association [Sutherland 1924]).

The second approach believes that drinking is a way of psychological state changing, mood raising, removal of pressure, weariness, leaving from problems etc. As Peirce (1994) and his colleagues have shown that personal resources could act as the counteraction; among them there are a level of self-estimation and self-trust level, and also social contacts and perceived social support. Parker and Brody (1982) have found the following factors positively influencing alcohol consumption: work parameters causing a bad emotional state; inaccessibility of social dialogue on a workplace; the low social control.

Besides addictive effect there is also an effect of "collective consumption" of alcohol, because it is a social action and drinking with friends is much more pleasantly for people that do it alone. Thus, consumption of alcoholic beverages depends not only on individual preferences, but also on social environment.

2.2. What determine the amount of alcohol consumed?

As a rule, the majority of economic empirical researches on alcohol and tobacco consumption consider influence of such parameters as education and consumer income, and also the prices on these addictive goods (and a corresponding tax policy).

Empirical researches confirmed that educational level of the consumer influences alcohol and tobacco consumption negatively. It has been shown that the influence of educational level on health is mediated by addictive goods consumption what can be treated as negative investments into health. The rise in prices is the other important factor reducing consumption of alcohol and cigarettes. The curve of demand on addictive goods depending on the price is decreasing as it was found by Clements, Yang and Zheng (1997). The same conclusion has been made by Andrienko and Nemtsov (2005) for Russia in 1994-2003, including their estimation of

cross prices elasticity. It means that tax policy measures can be effective in reduction of alcohol and tobacco consumption.

Alcohol is the normal good, i.e. alcohol consumption (in its physical amount) increases with income growth. At the same time some researchers have shown a nonlinear form of dependence between incomes and alcohol consumption. One other important fact is the essential growth of expenditures on alcoholic beverages with income increase. Thus, more rich individuals prefer to increase not the amount of alcohol consumption, but its quality, buying more expensive and qualitative beverages.

For Russia Demianova (2005) has also found out the influence of some social factors, in particular, alcohol consumption by other family members, on RLMS data in 2000. Differentiation between alcohol consumption of different groups of population (by age, gender, residence, income level, education) were presented on RLMS data for 1994-2002 by Tapilina (2006) and for 2006-2008 by Denisova (2010b). They found out that gender, educational level and age are more influencing than income. Some interesting results for Russia were found by Kossova T.V., Kossova E.V., Sukhodoev V.V. (2012): at the regional level the average amount of consumed vodka and beer depend on the income per capita, percentage of men and unemployment rate.

2.3. What factors influence consumption of different beverages, including illicit alcohol?

The curve of demand for alcohol has a classical negative inclination, i.e. consumption of alcoholic beverages decreases with growth of the price for them. Besides the decreases of consumption of given alcoholic beverage with growth of its price, alcohol consumption as a whole decreases with a rise in price of all alcoholic beverages. Nevertheless, price elasticity of different alcoholic drinks differs strongly. Price elasticity of beer consumption is the smallest, elasticity of spirits consumption is the greatest. According to some researches for Australia, Canada, New Zealand, Norway, the United Kingdom, Finland and Sweden, price elasticity is equal -0,35 for beer, -0,68 for wine and -0,98 for strong spirits [Clements, Yang and Zheng 1997].

The estimation of regression models has shown that the dependence of demand on price vary in two groups of beverages - high and low quality [Gruenewald et al, 2006]. The most important fact is that the increase in prices on high-quality alcohol causes the growth of demand on the low-quality alcohol. That is why legal spirits could be substitute for moonshine. Research of Doran and Digiusto (2011) also shows that the increase of price leads more likely to the change of structure of alcohol consumption than to the decline of pure alcohol use.

ICAP (2010) notes that there are at list two causes of noncommercial alcohol use: high-quality artisanal drinks could be a prominent part of local culture; and the low rice on these beverages. "Since such products are untaxed and their producers can use low-cost ingredients and production methods, they tend to be cheaper (volume for volume) than commercial drinks" [ICAP (2010)].

For Russia Andrienko and Nemtsov (2005) have found that day dose of moonshine depend negatively on the income although for the other types of drinks the dependence is inverse. They also note the expected impact of prices on consumption of different alcoholic drinks. Demand for moonshine has been found to be influenced by sugar and vodka price positively and by prices on beer, wine and tobacco - negatively. Thess results were obtained only in the static models.

2.4. What about the patterns of alcohol consumption?

To distinguish the manner of drinking there are at list two ways: "quantitative" and "qualitative". The second one is interested on the difference in the volume of alcohol consumption and the frequency of use, and the other - on the structure of consumption, that is on the question what beverages people drink.

To measure the volume of alcohol consumption the "standard drink" concept is very popular (Dawson 2003, Gmel, Rehm 2004). "A standard drink is the amount of an alcoholic beverage that contains a fixed amount of pure alcohol (i.e., ethanol)." (Dawson 2003). This way helps to estimate the consumption within the reference period, asking people about the frequency of alcohol consumption and about the usual number of drinks per day (when the respondent drank alcohol). This method is named "*quantity/frequency (QF)*". This "usual number of drinks" (or the mode) is useful to better appreciate the risk because seven standard drinks in one day are worth that one standard drink a day during a week. A little bit more complicated method of asking is "*graduated frequency (GF)*", needing a set of questions about the frequency of different number of "standard drinks" during the reference period (Dawson 2003). But the both ways are used to estimate the alcohol consumption from the point of view of the risk for the heath.

National Institute on Alcohol Abuse and Alcoholism (NIAAA, USA) found some norms of moderate or "low-risk" drinking. "Research shows that people who drink moderately may be less likely to experience an alcohol use disorder (AUD). These drinking levels, which differ for men and women, are: for men - no more than 4 drinks on any single day and no more than 14 drinks per week; for women - no more than 3 drinks on any single day and no more than 7 drinks per week. Binge drinking means drinking so much within about 2 hours that blood

alcohol concentration (BAC) levels reach 0.08g/dL. For women, this usually occurs after about 4 drinks, and for men, after about 5."⁴ One "standard" drink in the USA contains 14 grams of pure alcohol, which is found in: 12 ounces (about 340 g) of regular beer, which is usually about 5% alcohol; 5 ounces (about 140 g) of wine, which is typically about 12% alcohol; 1.5 ounces (about 40 g) of distilled spirits, which is about 40% alcohol.⁵ So, this way can be useful to differentiate people in two groups: moderate drinkers and heavy (or binge) drinkers.

Some research propose to define more groups depending on the amount of alcohol used [Brennan et al., 2009]. "Until recently, drinkers in England were classified in three drinking categories based on their mean intake per week":

- Moderate drinkers
- Hazardous drinkers
- Harmful drinkers.

The other concept is to find out some "typical" patterns of drinking depending on the structure of beverages consumed. The most popular idea is the differentiation between countries. Really, the volume of spirits, wine and beer consumed by people in different regions are not the same. For example, in Europe it is possible to distinguish three types of consumption (Popova et all 2007):

- the Mediterranean (or Southern) pattern, oriented especially on regular wine consumption with rare fruit brandy use (France, Italy, Spain, Hungary, etc.);
- the Central European pattern, with beer-drinking people (Germany, Czech Republic, Slovakia);
- the Northern European pattern, traditional for vodka reference and irregular binge drinking episodes (Ukraine, Russia, Poland, Denmark, Finland, Norway, Sweden).

Bloomfield et all (2003) also examine different drinking patterns in the national level, using a set of variables measuring frequency and amount consumed. But they interpret them as the "wet" and "dry" culture (similar to the Southern and Northern patterns). In Russia, Ukraine and some other countries the consumption of vodka is completed by the samogon drinking. In the whole, the Northern European drinking pattern is considered as the most harmful.

Bentzen and Smith (2009) proposed rather interesting way to measure the structure of alcohol consumption. "An alternative measure of total alcohol consumption might be the length of the vector (B, W, S) defined from the respective beverages" [Bentzen and Smith 2009]. Here B is the consumption of beer, W - of wine and S - of spirits. The length of the vector is measured with the help of the Pythagorean Formula. Authors also evaluate the structural

⁴ <http://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking>

⁵ <http://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/standard-drink>

component by 'measuring' the angle between the vector $b = (B,W,S)$ and a vector of unit values $a = (1,1,1)$.

But the difference in drinking patterns is rather rarely analyzed on the micro level. Distinctions in predilection of different social groups for certain kinds of beverages are analyzed within the structural approach in sociology. In particular, the studies of Thornton (1987) in Austria have shown that consumption of a hard liquor (of vodka type) is typical for a social stratum of the farmers who are connected by close network interactions and dialogue. Champagne consumption is typical for the "professionals" who are very individualized and connected by conventional attitudes. In Russia champagne and cognac are also more "official" beverages (used on work or on the occasion of official holidays, for example, New Year). The close friends gathering simply to communicate will prefer more likely, depending on tastes, vodka or beer.

One of the most influencing results about the correlation between social position and alcoholic beverages consumption were found out by French sociologist P.Bourdieu. In his research "The distinction" [Bourdieu 1979] he has shown that every status group prefers food and beverages with different qualities: poorer people consume more heavy and fat food, and rich class consume more healthy and refined food. These differences in consumption are consequences of differences in tastes due to the structure of capitals (economic and cultural) and conditions of existence of every social class. In result habitus as a sort of mental structure is the system of classification of goods helping to choose some of them typical for this social class and differencing it from another social class. Data about consumption in France in the sixties and the seventies of the past century confirmed that workers consumed more beer and wine, clerks more drink aperitif, upper class prefer cognac and champagne. But some recent research have shown that now this principle of link between the social class and consumption, including alcoholic beverages, is demolished due to the new type of society named "postmodern" where the lifestyle become fragmentary and mosaic, including the traits of consumption of different status groups [Herpen, Verger 2008]. That is why individual is able to drink wine or beer one day and cognac or champagne - another day.

3. Methodology of empirical research.

3.1. The goal of the research and the empirical data used.

The purpose of this research is to find out the economic and social factors influencing consumption of different alcoholic beverages by Russians in 2006-2011. Russian population at the age over 15 years is its object.

Research problems are following:

- To estimate and compare the influence of economic and social factors on the decision about to drink or not to drink;
- To estimate the models of demand for different type of alcoholic beverages;
- To find out some patterns of alcohol consumption depending on volume of different beverages consumed;
- To estimate and compare the influence of economic and social factors on the choice of the pattern of alcohol consumption;

"The Russia Longitudinal Monitoring Survey (RLMS, RLMS-HSE)⁶" is the first empirical basis of this project. RLMS is a series of nationally representative surveys designed to monitor the effects of Russian reforms on the health and economic welfare of households and individuals in the Russian Federation. It represents a number of annual national representative inquiries on the basis of the likelihood stratified multistage territorial sample developed with the assistance of leading world experts in this area. Data have been collected 20 times since 1994. RLMS has been run jointly by the Carolina Population Center at the University of North Carolina at Chapel Hill, and the Demoscope team in Russia. Till 2006 this project is also managed and financed by National Research University Higher School of Economics, and since 2010 its name has been changed to "RLMS-HSE".

The most important here is the panel nature of the data that allow to use lagged variables and to test panel regressions. Besides, we have the information about other members of a family, in particular, their incomes and alcohol consumption. In the database there is information about each family member and also about household as a whole. In the samples of 1994-2009 there were nearby 4000 households and about 12-15 thousand individuals. In 2010 the sample has been expanded in 1,5 times. Data about alcohol consumption by the people over 15 years are used in all further calculations. Weighted representative data are used for estimation of alcohol use, panel data - for regression analysis.

3.2. How we estimate the demand for alcohol: the methodology.

In this paper, we will follow the methodology of estimation of demand for addictive goods offered by Becker, Grossman and Murphy (1994) and then developed by Labeaga (1999). Their base theoretical approach is based on the model of rational addiction. Sometimes, in different papers, however, the myopic or static models are tested which use the same basic

⁶ "The Russia Longitudinal Monitoring Survey of NRU-HSE (RLMS-HSE)", accomplished by the National research university Higher school of economics and Joint-Stock Company "Demoscop" with the assistance of the Carolina Population Center at the University of North Carolina at Chapel Hill and Institute of Sociology of the Russian Academy of Sciences. (Sites of RLMS-HSE survey: <http://www.hse.ru/rlms>, <http://www.cpc.unc.edu/projects/rlms>)

principles. This depends on the availability of data sets. But Becker, Grossman and Murphy (1994) tested the demand for tobacco on aggregate data, using information about expenditure on tobacco. They also offered a way to estimate the model with lagged and lead consumption using the IV (instrumental variables) of tobacco past and future prices as they are not correlated with the error term. But this solution of the problem of endogenous regressors is not so easy for micro level analysis because individual past and future consumptions depend on many other parameters except prices. Only the change of price and price differences between residences can not explain the individual demand.

In addition to the problem of estimation of past and future consumptions (though these variables are available in panel data they are often considered as data with measurement error) micro data on alcohol (and tobacco) consumption are usually censored at two levels. Firstly, we can assume that an individual makes a decision on participation in the consumption, i.e. "to drink or not to drink". The model on participation is usually tested with use of probit regression. In a similar case related to a labor supply, this equation can be used for correcting the selection bias in the model for working hours using the Heckman procedure. It is appropriate as those people who have decided to work must allocate some time for their work. Drinkers or smokers, however, might have their consumption on a zero level, depending on the time of survey. When Labeaga (1999) analyzed the consumption of tobacco in Spain he used variable of weekly expenditure on tobacco as a depending variable. Due to the short period when surveys were conducted there were many observations equal to zero (due to the "infrequency of purchase"). That is why he proposed to use the Tobit model for the estimation of demand using the Mills inverse ratio for correction bias. This methodological approach is based on the idea of double-hurdle theoretical model.

We believe that a two-step consumer decision (to drink or not to drink and that how much drink) requires a two-step model. Firstly, we will estimate the equation of participation with a binary depending variable ($=0$ for an abstainers and $=1$ for a drinkers). Then we will calculate the Mills inverse ratio to introduce it in the Tobit model. This one is estimated for drinkers only, but the consumption of "light drinkers" is equal to zero (as it is assumed in double-hurdle model).

The problem is that in both myopic and rational addiction models there is the endogeneity of explanatory variables being equal to the lagged and lead dependent variable. As noted Ebbes (2007), this is one of five sources of endogeneity. Some researchers used lagged and lead prices as the instrumental variables in this case (Becker, Grossman and Murphy 1994, Andrienko and Nemtsov 2005). We also try to use regional prices as well as the variable measuring pure alcohol sales in liter (both at the regional level, for past and future) as

instruments, but the results were confusing. So we decided to use as instruments following variables: income in the past (income in the future can not be used because it should be dependent on the present alcohol consumption), smoking in the past and in the future (smoking status as the instrument for drinking status and number of cigarettes used as the instrument for alcohol consumption), and prices and sales of pure alcohol in the past and in the future. In the model of demand for different beverages corresponding volume of consumption, sales and prices are used. All pooled regressions are estimated as clustered by individuals.

3.3. What questions let us possible to measure alcohol consumption in RLMS-HSE data.

The correct estimation of the percentage of alcohol abstainers in RLMS-HSE data became possible since 2006, when the new question has been included in the questionnaire: "Do you consume alcoholic beverages, including beer, at least sometimes?" We will use this question to construct dummy variable for the participation equation (1 - drinker, 0 - abstainer). The next question is about consumption of different alcoholic beverages in the last 30 days. This question made it possible to separate alcohol abstainers from "light consumers", who drink alcohol but did not do it in the last 30 days and so their pure alcohol consumption is equal to zero.

In 1994-2005 there were two questions about every kind of alcoholic beverages: "Did you drink it in the last 30 days?", and "For those you drank how many grams you usually consumed in a day". Considering a difference of the maintenance of ethanol in various drinks (beer - 4-6%, wine dry - 10-12%, fortified wine - 15-18%, vodka and moonshine - about 40%, alcoholic cocktails - 5-15%), it is possible to estimate approximately the daily average dose of consumed ethanol as it was made in [Andrienko and Nemtsov (2005)]. Since 2006 an additional question "How many days did you consume this beverage in the last 30 days?" about each kind of beverages was introduced. Therefore it is possible to estimate the amount of pure alcohol consumed (by multiplication of day dose of each kind of beverages by the quantity of corresponding days, and then summation) and the amount of ethanol consumed in every alcoholic beverage. These variables will be used as the dependent variables (with log) in the models of demand for different drinks (tobit model). Pure alcohol consumption of "light consumers" (who drink but did not drink in last 30 days) is assumed to be 1 g.

3.4. How to measure the explanatory variables?

In its classic form the model of rational addiction use only past and future consumption, prices and income (or wage) as necessary determinants of present consumption. Other

influencing factors may be not so important at the macro level. But the individual demand for addictive goods, including alcohol, depends also of some social and demographic characteristics as it was shown above. In his estimation of households demand for tobacco Labeaga (1999) and Jones and Labeaga (2003) besides income and prices used such variables as family size, parameters of the head of household, regional dummies and others.

We also included in our model the prices on different alcoholic beverages as independent variables. The information about prices on different alcoholic beverages in 2006-2011 on regional level was found in Rosstat Data⁷. All prices were deflated to the 2011 level of prices with the Consumer Price Index (CPI). We also calculated the "regional price on pure alcohol" by dividing the sales of all alcoholic beverages in rubles by it's volume in pure alcohol.

Some variables measuring income are used. First of all it is the real income per capita (log). Second, there are two variables: log of personal income and log of income of all other family members. Third, we try to test the square-law dependence on income but it was not confirmed. All of these income variables are also deflated to the price level of 2011 (using CPI).

Surely we take as the determinants gender, age and squared age and dummies for residence type. Our general hypothesis is that besides economic factors like prices and income alcohol consumption is greatly influenced by some social characteristics, as it is predicted by sociological approach. That is why we will introduce in our model the following independent variables: marital status, number of children in different age and number of adult (over 15 years old), dummies for nationality, labor force participation, educational level, smoking, optimism in the past, measured as the satisfaction with life and the anxiety about future income, health self-estimation and body mass index in the past. We also use the drinking status of spouse and other family members (in the participation model), and pure alcohol consumption by all other family members because of collective character of addictive goods consumption. In our model we include the variable about regional unemployment level because we believe that the unfavorable economic or social environment can stimulate the alcohol use as the way of problems escape; for the same reason we use the information from the file on infrastructure characteristics, such as whether there was some State enterprise closed in the last 12 month in the site; whether there are some cafes, restaurants, police post and parks or stadium. Descriptive statistics of independent and dependent variables could be found in the table 7.

4. Demand for alcoholic beverages and patterns of alcohol use: empirical results.

⁷ Unified interdepartmental statistical information system <http://www.fedstat.ru/indicator/data.do>
<http://www.fedstat.ru/indicator/data.do?id=31448&referrerType=0&referrerId=1293294>

4.1. "To drink or not to drink" - which social groups are subject: estimation of the participation model.

Now we pass to the principal part of our study: estimation of model of demand for alcohol, including a set of social variables. Here we will discuss the results of modeling the equation of participation (table 1), for all population and for men and women separately. As it include as the independent variable the drinking status in the past (lagged variable), the IV probit was estimated with instruments log income per capita, smoking status of the respondent, log regional price on the pure alcohol, regional sales of pure alcohol in liters (all in the past period, T-1).

It was found out that the risk to be drinker is higher for men, people of middle age and those who live in the regional centers. Our estimation has shown that income per capita is insignificant but log of individual income influence the participation decision positively. At the same time the effect of incomes of all other family members is negative. We use here total income but not the income per capita as we control the number of household member (separately adults and children). All these results correspond to the theoretical hypothesis.

Now we turn our attention to other additional variable included in the model. First of all there are variables on drinking status of respondent in the past and of his\her relatives in the present. As one can see, to be drinker in the past strongly increase the risk to not be abstainer in the present. This fact also corresponds to the theory of the "myopic" consumer. If respondent's spouse use alcohol, it has the positive impact on the decision to be drinker, as for as the presence of other drinkers in the household. At the same time the abstainer status of spouse is the important factor of the same status of respondent. Here, as one can conclude, we see the cross influence of two variables: marital status and whether spouse is drinker. In general, married people have more chances to drink alcohol. But it is the truth only for those whose spouse is not abstainer.

Family structure also influences the addictive behavior. There are few drinkers in the large households (taking into account adults only). It should be expected that baby is a good argument for woman for not to drink. But it is difficult to explain why women from households, were there are children of 1-2 years old, are more disposed to be drinkers than that ones from family without kids. Men are drinker less probably in the families with children of 7-15 years.

The educational level is a negative factor of drinking alcohol (but in static model without past drinking status it is positive). Some theoretical approach and empirical estimation have shown that for some reason more educated people should be less disposed to use alcohol. In the matter of fact, last medical researches confirmed that the moderate alcohol consumption is even favorable for health. This can explain why educated individuals do not refuse drinking. At the

same time the most important harm to the health is caused not by the alcohol use, but amount of consumption. And demand model estimation shows that more educated people drink less of pure ethanol. But the university diploma is significant only for women, and technical school diploma - only for men. Employment status in the past is also a significant factor of alcohol use. The chance of drinking is higher for unemployed. We believe that unemployed Russian men should be more stressed than employed ones because of their fidelity to the stereotype that man must be the breadwinner. May be it confirms the social theory considering alcohol use as the escape from some problems and bad emotional state.

As it was foreseen, nationality is the important factor of alcohol use. Unfortunately, we have no information about people religion in these rounds; that is why nationality can be used as a proxy. As social theory says, religion creates serious barriers for some social action, including alcohol prohibition. That is why it is not surprisingly that Tatars (most of them are Muslim) both men and women are less liable to weakness for alcohol than Russians. But such dependence was not confirmed for people of North Caucasus and Volga and Russian North.

It was expected that the bad health (measured as self-estimation in the past) is a serious argument for to be abstainer, besides the influence of the great age. It was confirmed for static choice model, but in this myopic model it is insignificant. We also noted that some fact confirms the concept of alcohol use as the some sort of escape; but it is not confirmed for the variable, measuring the anxiety (in the past) about future income (as well as for the life satisfaction).

Finally, let look on the prices impact. In the model using the calculated price on pure alcohol any dependence was not found. If we include regional prices on different beverages we found some confirmation of the economic theory, because the prices on vodka and wine have the negative effect, but only for women. But the prices on beer have the positive effect on the decision to be drinker that looks not corresponding to the theory. If so all measures of tax politics aimed on reducing of alcohol use will have controversial effect.

We see here at list two possible explanations. The first one appeals to the theory of demand and supply where prices result the balance of demand and supply. Thus the higher demand on beer (i.e. the percent of drinkers) would increase the price on it. This may express the differences as between regions as between years. As a matter of fact, real prices on vodka and fortified wine were diminishing and beer price were increasing in 2006-2011 according Rosstat data. At the same time the percentage of drinkers among Russians has fallen. But the average price on beer has increase by 15%, and the average price on vodka has decrease by only 5%: at the same time the regional difference in prices was much higher. For example, in 2011 the average price on the one liter of vodka in Tatarstan was 208 rubles (the lowest), and in

Kamchatka - 415 rubles (the highest), i.e. more than 2 times. The same difference was found in the beer prices (minimum - 48 rubles, maximum - 100 rubles). So, we can expect the greater impact of regional difference in price on the alcohol use.

According to the data, there is a significant correlation between prices on all alcoholic beverages, and also between prices, regional level of average income per capita and the probability to be drinker. So, in more wealthy regions the prices on all alcoholic beverages are higher as well as the percentage of drinkers, but at the same time the relative price of beer in comparison to vodka (beer price divided to vodka price) is lower. That is why the influence of prices on decision to be drinker in the model estimated is relative: for the average vodka price the influence on beer price is positive, and for the average beer price the influence of vodka price is negative. The influence of prices on the decision to drink vodka or/and beer in Russia was found by Yakovlev (2012), but it was estimated as negative. But the most important should be the influence of prices not on the decision to be drinker, but on the volume of alcohol consumed because the alcohol abuse and not the use is the threat to the health and violence. Let us now to pass to the results of the estimation of the demand model.

4.2. Estimation of demand for different alcoholic beverages: does the increase of price on vodka stimulate the demand for moonshine?

We estimated the set of demand model (static and myopic) for different beverages (tables 2-6). We used the general participation model to calculate Mills inverse ratio and to correct the selection biases. In the myopic model the past consumption of every beverage was instrumented by the income in the past, the amount of cigarettes smoked, and by the sales and price on this beverage in the region.

In the static models the influence of the most important social and economic factor on the demand was found out. For all beverages (except the fortified wine) the positive effect of the consumption of other family members was discovered. Men are more inclined to drink all beverages except the dry wine. Age is also significant variable but its effect differs for some beverages. For all beverages the dependence is square, but consumption of vodka and samogon first increase with age and than decline. Use of beer and wine (women only) is the highest among young people and quickly decrease among older (age square coefficient is negative and significant but age is not). Fortified wine consumption of women first decreases with age and than rises. Square effect of income is typical for the demand for wine (reverse U-shape) and samogon (U-shape, men only). The dependence of vodka consumption on the income is linear and positive for men.

Beer and vodka is less consumed by women with university diploma. The amount of wine consumed is higher among more educated people; the contrary case is for samogon use. In the demand model for fortified wine education is insignificant. Married women drink less beer and vodka and married men drink less wine and more vodka. Samogon consumption does not depend on marital status. There are some interesting dependences of consumption on nationality. Both men and women of North Caucasus nationalities (as compared to Russians) consume less beer, samogon and fortified wine. Women of this ethnical status drink less wine and vodka, but drinking men use more vodka (than Russians). Tatars drink less all beverages except vodka. Samogon is preferred by women of Volga and Russian North nationalities (in comparison with Russian women).

Number of adults in the household influences negatively the consumption of all alcoholic beverages except fortified wine (in this case its effect is positive). Babies stimulate women to drink less beer, wine and vodka, but not samogon. Health self-estimation in the past has no effect on alcohol consumption. Life satisfaction in the past influences negatively the consumption of samogon by both men and women, and of beer and vodka by women. This fact can confirm the hypothesis that alcohol use can be the attempt to flight from some psychological problems. But life satisfaction has positive effect on the consumption of wine: this can be explained by the different social meaning of this alcoholic beverage. Employment in the past positively influences the consumption of vodka, beer (for men) and wine (for women), but negatively - samogon use. All alcoholic beverages except moonshine are less consumed in villages (than in regional centers). Samogon use is higher in villages and small towns, and in poorer regions (with lower income per capita). All this confirm that moonshine consumption to a considerable degree can be explained by low income and the habits, i.e. by both economic and cultural factors.

It seems to be important that some influence of prices was found. The demand for beer looks to be dependent negatively on the beer price (only for the whole sample, not for men and women separately) and on the vodka price. The predictable effect has the dry wine price on its consumption. Some idea about the substitution of vodka by wine can be generated by the fact of negative elasticity of demand for wine on vodka price. But effect of prices on vodka consumption (only negative effect of champagne price) and on samogon consumption was found to be insignificant. That is why we can not insist that the rise of vodka prices will cause the effect of its substitution by the moonshine; more probable is the transition to cheaper kinds of vodka. Sugar price influence the samogon use negatively as one could expect.

But if we look at the all myopic model we can see that the consumption of all beverages is really addictive, because it is strongly influenced by its volume used in the past. The influence

of some social characteristics remains (such as gender, age, alcohol consumption of other family members, and other), but the prices became insignificant. This result confirms the main conclusion of the general demand model that the demand for alcohol in Russia is more influenced by social factors than by economic ones.

4.3. Are there some "typical" Russian drinkers by their structure of consumption?

To find out some typical way of drinking we use the information about the volume of consumption of different types of beverages. To distinguish "moderate" and "heavy" drinkers for each beverage the dummy variable was constructed: it was equal to 1, if the amount of alcohol consumed exceeds the harmful level (800 g of pure alcohol monthly for men and 400 g for women). For the abstainers all these variables are missing. The cluster analysis (K-means method) with specified initial cluster centers let it possible to divide all the sample of drinkers on 13 groups (table 8):

1. Moderate consumers of all beverages (54,8%, N=24382)
2. Beer heavy consumers (3,9%, N=1719)
3. Beer moderate consumers (10,4%, N=4628)
4. Vodka heavy consumers (6,4%, N=2840)
5. Vodka moderate consumers (12,5%, N=5574)
6. Samogon heavy consumers (1,5%, N=670)
7. Samogon moderate consumers (1,6%, N=702)
8. Fortified wine heavy consumers (0,4%, N=197)
9. Fortified wine moderate consumers (1,0%, N=440)
10. Dry wine heavy consumers (0,4%, N=195)
11. Dry wine moderate consumers (2,0%, N=910)
12. Beer and vodka heavy consumers (1,6%, N=693)
13. Beer and vodka moderate consumers (3,5%, N=1568).

They differ by the amount of every beverage consumed during the reference period (table 8) and by the volume of pure alcohol consumption. The greatest group is the group of moderate consumers. More than 15% of drinkers are heavy consumers, but among them there are lovers of beer (3,9%), vodka (6,4%), samogon (1,5%), combination of vodka and beer (1,6%), and wine (0,8%). The same patterns can be found among moderate consumers.

These drinking patterns differ also by their drinking preferences (where to drink and whether to drink with meal or not, table 9). It gives us the possibility to say that all patterns of heavy consumption are very risky for the health (they are connected with smoking, drinking without meal) and for the society (drinking at public places). It is also obvious that there is a

difference between representatives of all patterns by social and demographic characteristics (table 10).

54,8% of drinkers are "moderate consumers". Average monthly consumption of ethanol by men is only 126 g (basically beer and vodka) and by women - 57 g (dry wine, vodka and beer). Men drink alcohol about three times a month and women about two times a month. Social and demographic characteristics of this group are similar to the sample of all drinkers except gender: only 41% of them are men (in comparison with 51% among all drinkers). Average age is 42 years. They are also a little bit more educated (28% have university diploma) and less rich. 89% are Russians; 27% live in villages. Only 9% estimate their health as bad. Among them 32% smoke, 21% drink before meal and 15% - without meal. 82% consume alcohol at home, 70% - at a party, 20% - in restaurants and bars, 4,6% - at public places like street and park.

Two rather big groups are moderate consumers of vodka (12,5%) and beer (10,4%). The men in the first group drink about 300 g of vodka (pure ethanol is calculated) monthly and neglectful low amount of other beverages. The men in the second one drink rather the same amount of ethanol but in beer. Women drink about two times less than men. Consumers in both groups drink about 1-2 times a week. There are some differences in consumer patterns and social parameters between these groups. The percentage of men among vodka moderate consumers is higher (64%) than among beer moderate consumers (59%). Vodka consumers are older (average age is 45) than beer consumers (average age is 33). The bigger percent of them lives in villages and small towns (58% in comparison with 50%). Three fourth of vodka consumers are married (66% of beer consumers are). The percentage of Russians is the highest among beer moderate consumer (92%). Among them there are more people who drink before meal (35%) and without meal (43%), and who use alcohol at restaurants and bars (31%) and in the public places (15%). People who consume beer and vodka concurrently in moderate amount are not so numerous (3,5%). 79% of them are male, but other social and economic characteristics (except age) are similar to the vodka moderate consumers. On the contrary their consumption patterns are close to those of beer moderate consumers: the great part of them drinks before and without meal, in the bars and in the public places.

6,5% of all drinkers are vodka heavy consumers. Men drink more than 1,44 l of ethanol (mostly as vodka) and women drink more than 0,66 l of ethanol. Among them there are more men (72%) than among vodka moderate consumers, they are less educated (19% have university diploma) and have lower income. Only 83% of them are Russians (it is the lowest percentage of Russians among all groups; this fact does not correspond to the stereotype that Russians are the heaviest drinkers of vodka). Beer heavy consumers are less numerous (3,9%). Their consumption of ethanol is a little bit lower than that of vodka heavy consumers. But they differ

by some social parameters as from vodka heavy consumers as from beer moderate consumer. This group is less educated than beer moderate consumers but has higher income. 58% of them live in regional centers, including Moscow and St.-Petersburg. Only 1,6% are heavy consumers of vodka and beer. But they consume the greatest amount of ethanol (men - more than 3 l, women - nearly 2 l). The most of this volume is divided between vodka and beer, but they also drink samogon, fortified wine (women) and other beverages. 80% of this group are men, only 11% have university diploma, 49% live in regional centers, their income is lower than income of vodka heavy consumers. All these three groups of heavy consumers have very dangerous pattern of alcohol use. Men drink more than 10 times a month (among vodka & beer consumers - 17 times a month), women drink more than 6 times a month (among vodka & beer consumers - 12 times a month). More than 70% smoke; 48% of beer heavy consumers drink before meal and 60% - without meal (among vodka & beer heavy consumers corresponding percentages are 45% and 39%). 24% of beer heavy consumers use alcohol in public places. But only 5% of beer heavy consumers believe that their health is bad; this percentage among vodka heavy consumers is 10,5%.

Samogon heavy consumers consist 1,5% of all drinkers. The average volume of ethanol consumed is 2,3 l for men (including 1,7 l of moonshine) and 1 l for women (including 0,7 l of moonshine). They also drink vodka (340 g per men and 200 g per women) and sometimes beer. Men use alcohol every two days, women - two times a week. 76% of them are men. They are much less educated (only 3,4% have higher education) and elder (average age is 49) than moderate consumers, nearly 60% are rural. Their families are the poorest: income per capita is two times lower than this one of moderate consumers. 74% of them smoke that is why the harmful effect on health duplicates. Their pattern of alcohol use is also very dangerous: 70% of them drunk before meal, 57% - without meal. Also 90% consume alcohol at home and 70% - at a party, more than a quarter drunk at a public places and 12% - at the job place. 16,5% of samogon heavy consumers estimated their health as bad.

Rather the same share of drinkers are samogon moderate consumers (1,6%). Their average monthly pure ethanol consumption is about 460 g per men and 230 g per women. They also can drink vodka and beer. The difference with samogon heavy consumers in social parameters is that moonshine moderate consumers are a little bit more educated; the percent of women and of married person is higher; their income per capita also is larger almost 63% of them live in villages. Their harmful habits are less widespread: 61% smoke, 51% drunk before meal and 28% without meal, 11% use alcohol on the street or in the park. But their health self-estimation is the same as among samogon heavy consumers.

Only 2% of drinkers are wine (dry or sweet) moderate consumers. Men use about 0,5 l of ethanol monthly and women - about 0,2 l. But the quarter of ethanol is consumed by men as beer. Men drink every three days and women - one time a week. They do not use alcohol in the parks and streets, but 42% prefer to drink at restaurants and bars. 92% of this group are women, 44% have university diploma, 58% live in big cities, their income is 1,5 times bigger than the average income of all drinkers, and their average age is 37. The group of fortified wine moderate consumers is even less - only 1% of drinkers. The amount of their ethanol consumption is rather the same. But among them there are more men (26%), only 25% have university diploma, their income is 1,5 times lower, 53% of them live in small towns and villages. They also do not like to use alcohol in the streets, but only 22% drink at the bars and restaurants.

We found out only 0,4% of drinkers to be fortified wine heavy consumers and also 0,4% to be dry or sweet wine heavy consumers. Because of very small numbers of people in these two groups it is not possible to give some representative characteristics of them.

As we could see above in modern Russia there is the high correlation between the patterns of alcohol use and social status. Beer is the beverage of young men in the big cities; vodka is preferred by men of middle age in villages and small towns. Samogon is consumed by men in villages, who have the lowest education and income. On the contrary, wine is the beverage of young educated women this high income living in regional centers. We do not found the difference in regional average prices on each beverage among these groups that confirm our idea about the great influence of culture on alcohol use patterns.

5. Some conclusions.

So, we can conclude that we found the great influence of the set of social characteristics on the decision "to drink or not to drink". Income has the predictable impact, but the role of prices on alcoholic beverages is ambiguous. The significance of the variable in the selection models for men and women are similar (excluding education and some family parameters).

The static model of demand for alcoholic beverages also demonstrates the influence of many social parameters such as gender, age, family structure, nationality, life satisfaction and some other, as well as of the income per capita. Demand for different beverages depends on some social characteristics by the different way. Some influence of prices was found. The demand for beer looks to be dependent negatively on the beer price (only for the whole sample, not for men and women separately) and on the vodka price. The predictable effect has the dry wine price on its consumption. But effect of prices on vodka consumption (only negative effect of champagne price) and on samogon consumption was found to be insignificant. That is why

we can not insist that the rise of vodka prices will cause the effect of its substitution by the moonshine; more probable is the transition to cheaper kinds of vodka. Sugar price influence the samogon use negatively as one could expect.

In all myopic models the consumption of all beverages is really addictive, because it is strongly influenced by its volume used in the past. The influence of some social characteristics remains (such as gender, age, alcohol consumption of other family members, and other), but the prices became insignificant. This result confirms the main conclusion of the general demand model that the demand for alcohol in Russia is more influenced by social factors than by economic ones.

The cluster analysis let it possible to divide all the sample of drinkers on 13 groups. They differ by the amount of every beverage consumed during the reference period and by the volume of pure alcohol consumption. The greatest group is the group of moderate consumers. More than 15% of drinkers are heavy consumers, but among them there are lovers of beer (3,9%), vodka (6,4%), samogon (1,5%), combination of vodka and beer (1,6%), and wine (0,8%). The same patterns can be found among moderate consumers. These drinking patterns differ also by their drinking preferences (where to drink and whether to drink with meal or not). It give us the possibility to say that all patterns of heavy consumption are very risky for the health (they are connected with smoking, drinking without meal) and for the society (drinking at public places). It is also obvious that there is a difference between representatives of all patterns by social and demographic characteristics.

So the main conclusion of our research is that in modern Russia culture seems to be more important factors of alcohol consumption than the change in prices on alcoholic beverages. May be the one of the most important is the collective way of this practice. The influence of the consumer capital (i.e. the addiction) also is very high so we can not expect that the increase of prices on alcohol will stimulate it's consumption decrease. The most probable in this case is the change of the structure of consumption in favor of more cheap brands of moonshine or alcoholic surrogates. But the fall of alcohol consumption need some long-term measure aimed on the culture changing.

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APPENDIX

Table 1.

Estimation of the participation model (IV), probit, all population, 2007-2011.

	All	All	Male	Female
Drinker, T-1	2,663***	2,671***	2,840***	2,549***
There are other drinkers in the household	0,193***	0,188***	0,158***	0,214***
Spouse is drinker	0,167***	0,163***	0,228***	0,151***
Spouse is abstainer	-0,116***	-0,115***	-0,141***	-0,089***
Male =1	0,079***	0,077***		
Age/10	-0,066***	-0,068***	-0,057	-0,065**
Age square /100	0,004	0,005*	0,003	0,004
Technical school diploma	-0,022*	-0,024**	-0,042**	-0,011
University diploma	-0,042***	-0,043***	-0,024	-0,045***
Log of individual income	0,006***	0,006**	0,004	0,007**
Log of all other family income	-0,004**	-0,004**	-0,005	-0,004*
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	0,080*	0,127***	0,133*	0,071
People of Volga and Russian North	-0,039	-0,028	0,043	-0,041
Tatars	-0,069**	-0,079***	-0,084**	-0,080**
Number of adults (15+)	-0,040***	-0,037***	-0,030***	-0,045***
Number of children under 1 year	-0,096**	-0,094**	0,070	-0,172***
Number of children 1-2 year	0,065***	0,066***	0,035	0,078***
Number of children 3-6 year	0,018	0,019	-0,017	0,030
Number of children 7-15 year	0,021**	0,020**	0,033**	0,010
Employed, T-1	-0,054***	-0,056***	-0,077***	-0,049**
Health self-estimation, T-1	-0,006	-0,007	-0,001	-0,005
Anxiety about income, T-1	0,006	0,006	0,011	0,003
There are fast food in this place	-0,057***	-0,046**	-0,105***	-0,020
Some State enterprises were closed in 12 months	0,022	0,017	0,018	0,018
There are police office in this place	0,040**	0,056***	0,011	0,076***
Town non the regional center	-0,054***	-0,039**	-0,055*	-0,035
Village (Regional center is the base category)	-0,060***	-0,030	-0,083**	-0,008
Log regional income per capita	-0,009	-0,006	-0,063	0,025
Regional unemployment rate	-0,002	-0,004	-0,007	-0,003
Log pure alcohol price	-0,002			
Log fortified wine price		0,060	0,014	0,089*
Log wine price		-0,103**	-0,035	-0,148**
Log vodka price		-0,250***	-0,155	-0,293***
Log beer price		0,353***	0,400**	0,310***
Log sugar price	0,041	0,182**	0,138	0,217**
Log tobacco price	-0,116*	-0,348***	-0,339**	-0,350***
round17	0,046*	0,056**	0,040	0,065**
round18	0,133***	0,122***	0,110**	0,126***
round19	0,117***	0,075**	0,041	0,089*
round20	0,159***	0,189***	0,165**	0,200***
Const	-0,959***	-0,682**	-0,760	-0,571
rho	-0,628	-0,635	-0,581	-0,652
Number of observations	49486	49486	20272	29214
Prob > chi2	0,00	0,00	0,00	0,00
Wald test of exogeneity (Prob > chi2)	0,00	0,00	0,00	0,00

IV for lagged alcohol consumption (yes or no) are: log income per capita (T-1) and (T+1); smoking status of the respondent (T-1); log price on pure alcohol in the region (T-1); sales of pure alcohol in the region in liter (T-1). Dependent variable for all probit model: abstainer = 0, drinker = 1, all simple.

Table 2.

BEER: Estimation of the demand model, tobit with inverse Mills ratio, drinkers only, 2008-2011.

	Static			Myopic		
	All	Male	Female	All	Male	Female
Log beer consumption T-1				1,290***	1,163***	1,761***
Log beer consumption of all other family members	0,479***	0,425***	0,579***	0,275***	0,223***	0,317***
Male =1	3,640***			1,286***		
Age/10	-0,229	0,077	-0,443	0,057	0,107	0,381
Age square /100	-0,075***	-0,094***	-0,077**	-0,050***	-0,045**	-0,089***
Technical school diploma	0,003	0,052	-0,144	-0,103	-0,060	-0,276
University diploma	-0,536***	-0,156	-1,024***	-0,185**	0,092	-0,499***
Married	-0,027	0,061	-0,355***	0,002	0,015	-0,290***
Income per capita (/ 10000)	0,010	0,096**	-0,044	-0,042	0,070	-0,144**
Income per capita square	0,000	-0,001	0,000	0,000	-0,003	0,002**
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	-2,367***	-1,962***	-4,211***	-1,197***	-0,984**	-2,583**
People of Volga and Russian North	-0,405**	-0,331	-0,516	-0,164	-0,241	0,080
Tatars	-0,490**	-0,353	-0,693	-0,102	0,027	-0,130
Number of adults (15+)	-0,492***	-0,399***	-0,605***	-0,231***	-0,176***	-0,236***
Number of children under 1 year	-0,159	0,331	-0,978***	-0,428**	0,230	-1,427***
Number of children 1-2 year	0,268***	0,153	0,395***	0,386***	0,178	0,717***
Number of children 3-6 year	0,090	-0,153	0,299**	-0,037	-0,184	0,034
Number of children 7-15 year	-0,154**	-0,299***	0,034	-0,034	-0,130	0,105
Employed, T-1	0,327***	0,492***	0,198	-0,181**	-0,019	-0,351***
Health self-estimation, T-1	0,080	0,126	0,015	0,006	-0,035	0,063
Life satisfaction, T-1	-0,156***	-0,060	-0,291***	-0,048	0,012	-0,088
There are cafes in this place	0,319	0,215	0,507**	0,138	-0,066	0,460**
There are restaurants	0,011	-0,136	0,147	-0,176	-0,261	-0,133
There are parks or stadium	-0,329**	-0,230	-0,496**	-0,197	-0,103	-0,291
Town non the regional center	-0,348***	-0,326**	-0,353**	-0,160**	-0,105	-0,177
Village (Regional center is the base category)	-0,473***	-0,529***	-0,330	-0,431	-0,469***	-0,283
Log regional income per capita	-0,151	-0,299	0,051	-0,133	-0,258	-0,032
Regional unemployment rate	-0,004	-0,061**	0,073**	-0,026	-0,041	-0,010
Log fortified wine price	-1,388***	-1,049***	-2,003***	-0,408	-0,269	-0,502
Log wine price	0,941***	0,751	1,371***	0,269	0,236	0,350
Log champagne price	0,802**	0,253	1,379**	0,240	0,279	-0,223
Log vodka price	-1,622***	-1,155**	-2,192***	-1,026***	-0,754	-0,935
Log beer price	-1,394**	-1,316	-1,609	-0,620	-0,379	-1,048
Log sugar price	1,618***	1,149**	2,095***	0,539	0,361	0,390
Log tobacco price	2,055***	0,627	4,289***	0,764	-0,136	2,132**
Mills inverse ratio	-1,036***	-0,811***	-1,297***	3,598***	2,338**	4,899**
round18	-0,832***	-0,283	-1,566***			
round19	-1,059***	-0,401	-1,953***	-0,088	-0,034	-0,115
round20	-0,995***	-0,246	-2,113***	-0,045	0,128	-0,374
Const	5,211**	13,432***	-1,108	2,638	5,403**	0,082
Number of observations	28316	12849	15467	18415	8556	9859
uncensored	11993	7400	4593	8013	4996	3017
Prob > chi2	0,000	0,000	0,000	0,000	0,000	0,000
Pseudo R2	0,096	0,056	0,087			
Wald test of exogeneity Prob > chi2				0,000	0,000	0,000

Table 3.
WINE: Estimation of the demand model, tobit with inverse Mills ratio, drinkers only, 2007-2011.

	static			myopic		
	All	Male	Female	All	Male	Female
Log sec wine consumption T-1				6,128***	7,816***	3,124***
Log sec wine consumption of all other family members	0,801***	1,206***	0,692***	0,317***	0,697***	0,339***
Male =1	-3,984***			0,505		
Age/10	-0,191	-1,314***	0,167	0,190	-0,568	0,315
Age square /100	-0,022***	0,110**	-0,060***	-0,014	0,052	-0,045**
Technical school diploma	0,451	0,234	0,490***	0,104	0,156	0,110
University diploma	1,771***	1,846***	1,686***	-1,157***	-0,407	-0,264
Married	-0,135	-0,722**	-0,104	-0,189	-0,467	-0,098
Income per capita (/ 10000)	0,374***	0,607***	0,389***	-0,370***	-0,297	-0,076
Income per capita square	-0,005***	-0,025**	-0,005***	0,004**	0,001	0,000
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	-2,475***	-1,785	-2,922***	-1,639**	-0,814	-1,735**
People of Volga and Russian North	-0,193	0,441	-0,320	0,062	0,611	-0,174
Tatars	-1,074***	-1,401	-1,003***	-0,164	-0,196	-0,640**
Number of adults (15+)	-0,342***	-0,487***	-0,313***	-0,148***	-0,275***	-0,138***
Number of children under 1 year	-0,814***	0,093	-1,029***	-0,584	-0,913	-0,807**
Number of children 1-2 year	-0,322***	-0,493	-0,166	0,519***	-0,057	0,462***
Number of children 3-6 year	-0,242**	-0,424	-0,128	-0,013	-0,004	-0,035
Number of children 7-15 year	-0,005	0,107	0,007	-0,199**	-0,024	-0,157
Employed, T-1	0,405***	0,322	0,448***	-0,241	0,375	-0,198
Health self-estimation, T-1	-0,034	-0,441**	0,099	-0,186	-0,383**	-0,114
Life satisfaction, T-1	0,312***	0,320***	0,314***	0,052	0,123	0,127**
There are cafes in this place	1,050***	1,779***	0,881***	0,295	1,187**	0,350
There are restaurants	-0,049	0,112	-0,081	0,394**	0,315	0,212
There are parks or stadium	-0,119	-1,268**	0,150	-0,246	-0,970**	-0,055
Town non the regional center	-0,383***	-0,717**	-0,330***	0,185	-0,082	-0,004
Village (Regional center is the base category)	-0,863***	-1,721***	-0,670***	0,625**	-0,334	0,318
Log regional income per capita	1,917***	2,743***	1,584***	-0,893**	-0,195	-0,064
Regional unemployment rate	0,031	0,020	0,031	-0,003	-0,006	0,017
Log fortified wine price	0,437	2,485***	-0,157	-0,427	0,420	-0,099
Log wine price	-2,062***	-4,934***	-1,349***	0,487	-2,397	0,073
Log champagne price	0,866	-1,112	1,370***	-1,144**	-1,167	-0,393
Log vodka price	1,715***	3,048**	1,361**	0,036	1,086	-0,099
Log beer price	-0,346	4,124**	-1,557	-0,746	2,909	-1,406
Log sugar price	-2,080***	-1,286	-2,253***	1,140	1,940	0,123
Log tobacco price	-0,676	-3,411	0,012	0,335	-2,710	0,286
Mills inverse ratio	-0,259***	-0,057	-0,280***	2,530	2,323	5,130***
round17	-0,115	-0,235	-0,108	-0,408	-0,412	-0,396
round18	0,372**	0,699	0,267	-1,108***	-0,336	-0,526
round19	0,520**	-0,002	0,657**	-1,016***	-1,186	-0,161
round20	0,046	-0,038	0,072	-0,707	-0,129	-0,175
Const	-17,161***	-33,296***	-12,634***	3,789	-7,745	0,838
Number of observations	35052	16000	19052	29613	13947	15666
uncensored	7060	1494	5566	6001	1299	4702
Prob > chi2	0,000	0,000	0,000	0,000	0,000	0,000
Pseudo R2	0,097	0,097	0,059			
Wald test of exogeneity Prob > chi2				0,000	0,000	0,000

Table 4.

FORTIFIED WINE: Estimation of the demand model, tobit with inverse Mills ratio, drinkers only, 2007-2011.

	static			myopic		
	All	Male	Female	All	Male	Female
Log fort.wine consumption T-1				7,896	9,679	9,377***
Log fort.wine consumption of all other family members	-	-	-			
Male =1	0,785***			-1,329		
Age/10	-0,781***	-0,245	-1,209***	0,272	-0,527	0,503
Age square /100	0,077***	0,007	0,126***	-0,006	0,085	-0,035
Technical school diploma	-0,247	-0,308	-0,135	0,255	0,284	0,083
University diploma	-0,286	-0,388	-0,028	0,549	0,522	0,211
Married	0,849***	1,001***	0,790***	0,235	-0,027	0,179
Income per capita (/ 10000)	0,071	0,133	0,056	0,038	0,185	0,260
Income per capita square	-0,002	-0,003	-0,014	0,000	-0,001	-0,047
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	-9,195***	-7,202***	11,049***	-1,531	0,348	-26,9***
People of Volga and Russian North	-0,254	-0,305	-0,303	0,252	0,857	0,030
Tatars	-0,973**	-0,947	-1,067	-1,179**	0,012	-1,797***
Number of adults (15+)	1,913***	1,462***	2,360***	0,136	0,060	0,175**
Number of children under 1 year	-1,097***	-1,458***	-0,814	-0,271	0,771	-1,053
Number of children 1-2 year	-0,137	-0,142	-0,275	0,255	-0,114	0,625
Number of children 3-6 year	0,047	0,236	-0,264	-0,016	0,394	-0,042
Number of children 7-15 year	0,004	0,121	-0,162	-0,084	-0,235	0,101
Employed, T-1	-0,161	-0,081	-0,394	-0,049	0,276	-0,352
Health self-estimation, T-1	-0,092	0,020	-0,236	0,265	0,250	0,281
Life satisfaction, T-1	0,058	0,267***	-0,171	-0,033	-0,130	0,058
There are cafes in this place	0,292	0,076	0,520	-0,062	-0,648	0,274
There are restaurants	0,127	0,332	-0,119	0,250	-0,197	0,343
There are parks or stadium	0,107	0,120	0,017	-0,170	0,206	-0,319
Town non the regional center	-1,014***	-0,408	-1,583***	0,032	-0,432	0,234
Village (Regional center is the base category)	-0,935***	-0,481	-1,359***	-0,090	-1,069	0,324
Log regional income per capita	-0,535	-0,580	-0,521	-0,595	-1,856	-0,102
Regional unemployment rate	0,005	-0,085	0,086	-0,065	-0,102	-0,022
Log fortified wine price	0,408	1,520**	-0,805	1,144	0,096	1,652**
Log wine price	-1,421**	-0,763	-1,862	-0,950	-0,389	-1,456
Log champagne price	-1,044	-1,795	-0,211	-0,246	2,409	-1,311
Log vodka price	-2,179**	-3,368***	-0,978	-1,347	1,150	-2,090
Log beer price	3,749***	2,233	5,141***	1,225	3,423	0,782
Log sugar price	1,747	2,020	1,261	1,408	1,109	2,521
Log tobacco price	-1,483	-1,946	-0,828	-1,454	-2,269	-0,410
Mills inverse ratio	-1,337***	-1,105***	-1,646***	-0,215	-4,796	3,835
round17	0,219	0,510	-0,069	0,648	1,116	0,624
round18	-0,265	-0,027	-0,425	0,109	0,719	-0,403
round19	-0,902**	-0,649	-1,070	-0,098	0,867	-0,983
round20	-0,087	0,386	-0,578	0,781	0,371	0,813
Const	-3,709	4,871	-11,349	-8,355	-27,54	-9,716
Number of observations	49636	20353	29283	29666	13941	15725
uncensored	3598	1785	1813	2183	756	1427
Prob > chi2	0,000	0,000	0,000	0,000	0,000	0,000
Pseudo R2	0,038	0,026	0,05			
Wald test of exogeneity Prob > chi2				0,54	0,59	0,007

Table 5.

SAMOGON: Estimation of the demand model, tobit with inverse Mills ratio, drinkers only, 2007-2011.

	static			myopic		
	All	Male	Female	All	Male	Female
Log samogon consumption T-1				6,573***	6,728**	14,92***
Log samogon consumption of all other family members	1,932***	1,906***	1,973***	0,203	-0,621	-0,569
Male =1	6,969***			2,382***		
Age/10	5,279***	5,298***	4,823***	2,366***	1,508**	1,903**
Age square /100	-0,436***	-0,426***	-0,430***	-0,206***	-0,130**	-0,181**
Technical school diploma	-0,727*	-0,200	-1,744***	-0,006	0,299	0,176
University diploma	-3,119***	-2,658***	-4,016***	-1,542***	-0,862	-1,471
Married	-0,393	-0,302	-0,595	-0,469	-0,437	-1,004***
Income per capita (/ 10000)	-0,516	-1,040***	0,339	-0,090	-0,177	0,356
Income per capita square	0,002**	0,016***	-0,005	0,001	0,002	-0,007
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	-			-3,505	-2,931	
People of Volga and Russian North	1,639***	0,569	3,322***	-0,830	-2,017**	-0,999
Tatars	-2,763***	-3,311**	-1,201	-0,563	-0,309	-0,608
Number of adults (15+)	-0,838***	-0,749***	-1,153***	-0,462***	-0,236	-0,542***
Number of children under 1 year	0,911	-0,151	3,200**	1,237	0,880	0,831
Number of children 1-2 year	0,244	0,214	0,229	0,458	0,273	1,030
Number of children 3-6 year	0,031	-0,137	0,268	0,285	0,147	1,091
Number of children 7-15 year	0,276	0,107	0,525	0,278	0,287	0,419
Employed, T-1	-1,489***	-1,194***	-1,767***	0,095	0,768	-0,075
Health self-estimation, T-1	0,222	0,450	-0,489	-0,065	0,157	-0,621
Life satisfaction, T-1	-0,658***	-0,760***	-0,441**	-0,051	0,105	0,045
There are cafes in this place	-1,024**	-1,011**	-1,018	-0,158	0,260	-0,259
There are restaurants	-2,429***	-3,236***	-0,871	-0,912**	-0,712	-0,297
There are parks or stadium	0,005	-0,351	0,805	0,413	0,421	0,942
Town non the regional center	2,170***	1,752***	3,214***	0,681	-0,045	1,330**
Village (Regional center is the base category)	1,919***	0,977	3,758***	0,301	-0,763	2,055**
Log regional income per capita	-2,882***	-2,952***	-2,482**	-1,114	-0,908	0,272
Regional unemployment rate	0,169	0,052	0,359***	0,149**	0,151	0,271**
Log fortified wine price	2,825***	3,211***	2,819	-1,108	-2,081	-0,798
Log wine price	2,170	0,867	3,942	3,051***	3,447***	1,412
Log champagne price	0,948	1,377	0,673	-0,327	-0,381	-0,580
Log vodka price	-0,050	-0,814	0,844	2,047	2,641	1,673
Log beer price	1,449	2,353	-0,330	1,564	0,225	4,704
Log sugar price	-3,824	-6,652**	2,684	-1,827	-1,892	-0,075
Log tobacco price	-3,885	-5,338	-2,423	-1,063	0,311	-2,442
Mills inverse ratio	-2,593***	-2,840***	-2,187***	-5,305	-7,156	4,410
round17	0,065	-0,178	0,691	-0,302	-0,358	-0,176
round18	0,238	1,325	-1,784	-0,632	-0,539	-1,424
round19	1,381	2,524**	-0,650	0,375	0,376	-0,025
round20	0,202	0,524	0,249	-0,182	-0,009	-0,447
Const	-12,690	12,74	-48,04***	-26,8***	-24,6**	-46,9***
Number of observations	34998	15926	19072	29508	13824	15684
uncensored	1737	1279	458	1581	1179	402
Prob > chi2	0,000	0,000	0,000	0,000	0,000	0,000
Pseudo R2	0,182	0,140	0,220			
Wald test of exogeneity Prob > chi2				0,000	0,000	0,001

Table 6.

VODKA: Estimation of the demand model, tobit with inverse Mills ratio, drinkers only, 2007-2011.

	static			myopic		
	All	Male	Female	All	Male	Female
Log vodka consumption T-1				1,465***	1,332	2,144
Log vodka consumption of all other family members	0,506***	0,471***	0,632***	0,312***	0,248***	0,375***
Male =1	4,539***			1,622***		
Age/10	3,946***	3,533***	4,457***	1,308***	0,639**	1,583***
Age square /100	-0,356***	-0,322***	-0,408***	-0,123***	-0,060**	-0,152***
Technical school diploma	0,013	0,124	-0,196	0,023	0,087	-0,098
University diploma	-0,457***	0,028	-1,078***	-0,140	0,131	-0,455***
Married	-0,111	0,511***	-0,764***	-0,148**	0,201	-0,378***
Income per capita (/ 10000)	0,090***	0,159***	0,074	0,033	0,052	0,002
Income per capita square	0,000	-0,002	0,000	0,000	-0,001	0,000
Nationalities of North Caucasus (base cat. - Russians, Ukrainians)	0,536	1,041**	-2,584***	0,476	0,607	-1,286
People of Volga and Russian North	0,297	0,335	0,165	0,021	0,172	-0,318
Tatars	0,638**	-0,240	1,687***	0,192	-0,246	0,496
Number of adults (15+)	-0,545***	-0,490***	-0,619***	-0,321***	-0,248***	-0,367***
Number of children under 1 year	0,194	0,401	-0,673	-0,248	0,073	-1,481***
Number of children 1-2 year	0,213**	0,494***	-0,523**	0,360***	0,289***	0,465**
Number of children 3-6 year	0,288***	0,235	0,259	0,189**	0,148	0,292
Number of children 7-15 year	0,088	0,056	0,104	-0,001	-0,040	0,023
Employed, T-1	0,642***	0,569***	0,589***	0,139	0,024	0,099
Health self-estimation, T-1	0,080	0,090	0,047	0,022	0,038	-0,042
Life satisfaction, T-1	-0,194***	-0,100	-0,338***	-0,060**	0,040	-0,175***
There are cafes in this place	0,526***	0,570***	0,526	0,110	0,045	0,191
There are restaurants	0,246	0,359**	0,002	-0,069	-0,055	-0,130
There are parks or stadium	-0,623***	-0,358	-1,072***	-0,322**	-0,179	-0,471**
Town non the regional center	-0,011	-0,006	0,017	0,021	0,112	-0,057
Village (Regional center is the base category)	-0,410**	-0,128	-0,710**	-0,233	0,027	-0,459**
Log regional income per capita	0,146	0,513**	-0,187	-0,039	0,050	-0,026
Regional unemployment rate	0,028	-0,003	0,083**	-0,014	-0,035	-0,009
Log fortified wine price	-0,415	-1,094***	0,650	0,054	-0,429	1,059***
Log wine price	0,168	0,850**	-0,912	-0,141	0,463	-1,301***
Log champagne price	-1,339***	-1,359***	-1,354	-0,343	-0,411	0,084
Log vodka price	0,714	0,463	0,758	-0,137	-0,197	-0,457
Log beer price	0,230	-0,795	1,651	0,297	-0,150	0,769
Log sugar price	1,784***	-0,026	4,207***	0,890**	0,004	1,953**
Log tobacco price	1,096	1,883	0,164	-0,016	0,661	-1,406
Mills inverse ratio	-1,291***	-1,275***	-1,344***	4,004***	0,106	10,74***
round17	0,060	0,074	0,020	0,291**	0,362**	0,294
round18	-0,754***	-0,355	-1,388***	-0,114	-0,141	0,205
round19	-0,972***	-0,414	-1,836***	-0,020	0,040	0,270
round20	-0,841***	-0,806**	-1,035**	0,020	-0,161	0,609
Const	-18,571***	-8,128***	-27,022***	-8,339***	-2,422	-12,76***
Number of observations	34917	15874	19043	29388	13740	15648
uncensored	13683	8650	5033	12175	7775	4400
Prob > chi2	0,000	0,000	0,000	0,000	0,000	0,000
Pseudo R2	0,072	0,039	0,052			
Wald test of exogeneity Prob > chi2				0,000	0,000	0,000

Table 7.

Variables means, by drinker status, 2007-2010.

	abstainers	Light consumers	Drinker+consumer	Total
Drinker , T	,00	1,00	1,00	,70
Drinker , T-1	,31	,75	,88	,71
There are other drinkers in the household	,42	,47	,46	,45
Spouse is drinker	,23	,45	,52	,44
Spouse is abstainer	,24	,15	,14	,17
Ln of pure alcohol consumption		,00	3,90	3,90
Lagged log alcohol consumption	,7	1,8	3,6	2,7
Lead log alcohol consumption	,7	1,7	3,5	2,7
Log alc. cons. of all other family members	2,6	2,7	3,6	3,3
Male	,31	,30	,47	,42
Age/10	4,7	4,5	4,2	4,4
Technical school diploma	,33	,42	,44	,41
University diploma	,16	,21	,23	,21
Log income per capita	9,0	9,0	9,1	9,1
Income per capita (/ 10000)	1,0	1,0	1,2	1,1
Log of individual income	7,5	8,2	8,4	8,1
Log of all other family income	7,7	7,9	8,2	8,0
Russians, Ukrainians	,82	,87	,90	,88
Nationalities of North Caucasus	,08	,05	,02	,04
People of Volga and Russian North	,03	,03	,03	,03
Tatars	,04	,02	,02	,03
Number of adults (15+)	2,9	2,7	2,7	2,8
Number of children under 1 year	,04	,05	,04	,04
Number of children 1-2 year	,10	,11	,12	,12
Number of children 3-6 year	,08	,10	,11	,10
Number of children 7-15 year	,31	,31	,30	,31
Employed, T-1	,41	,60	,71	,62
Health self-estimation, T-1	3,1	3,2	3,2	3,2
Anxiety about income, T-1	3,8	3,8	3,8	3,8
Life satisfaction, T-1	3,0	3,0	3,1	3,1
There are fast food in this place	,39	,39	,43	,42
Some State enterprises were closed in 12 months	,16	,16	,16	,16
There are police office in this place	,88	,88	,91	,90
There are cafes in this place	,82	,83	,87	,86
There are restaurants	,66	,66	,73	,71
There are parks or stadium	,84	,86	,89	,88
Town non the regional center	,24	,24	,27	,26
Village (Regional center is the base category)	,40	,37	,30	,33
Log regional income per capita	9,7	9,7	9,8	9,7
Regional unemployment rate	7,3	7,0	6,7	6,9
Log fortified wine price	5,5	5,5	5,5	5,5
Log wine price	5,4	5,4	5,4	5,4
Log vodka price	5,5	5,5	5,5	5,5
Log beer price	4,0	4,0	4,0	4,0
Log sugar price	3,5	3,6	3,6	3,6
Log tobacco price	2,8	2,8	2,8	2,8
Log pure alcohol price	6,8	6,9	6,9	6,9

Table 8.

Average monthly consumption of different beverages by drinker patterns, drinkers only, 2006-2011.

Drinker patterns (clusters)	Beer and homebrew	Sec wine	Fortified wine	Samogon	vodka	other	Alc. cocktails	Total pure alcohol
MALE								
1. Moderate consumers	51	8	4	6	49	5	4	126
2. Beer heavy consumers	1107	9	9	8	125	13	22	1286
3. Beer moderate consumers	287	6	3	10	35	7	11	356
4. Vodka heavy consumers	124	8	11	10	1276	9	7	1443
5. Vodka moderate consumers	45	6	5	2	307	5	3	371
6. Samogon heavy consumers	195	3	12	1709	343	37	2	2300
7. Samogon moderate consumers	45	1	6	313	88	6	2	460
8. Fortified wine heavy consumers	343	6	1676	84	525	39	60	2718
9. Fortified wine moderate consumers	104	8	326	3	19	2	13	470
10. Wine heavy consumers	298	1092	4	0	338	61	45	1830
11. Wine moderate consumers	106	325	21	4	24	2	5	485
12. Beer and vodka heavy consumers	1231	29	56	202	1582	28	30	3146
13. Beer and vodka moderate consumers	299	10	8	12	327	4	9	667
TOTAL	187	12	18	57	265	8	7	550
FEMALE								
1. Moderate consumers	13	18	5	1	14	4	3	57
2. Beer heavy consumers	534	21	5	2	35	15	20	625
3. Beer moderate consumers	143	11	2	2	9	6	11	180
4. Vodka heavy consumers	42	12	4	2	591	7	8	663
5. Vodka moderate consumers	11	12	5	0	162	2	2	194
6. Samogon heavy consumers	59	0	3	760	200	23	1	1046
7. Samogon moderate consumers	12	2	2	167	44	1	0	229
8. Fortified wine heavy consumers	124	34	697	24	147	15	13	1049
9. Fortified wine moderate consumers	23	10	148	1	9	3	3	196
10. Wine heavy consumers	89	543	8	0	78	12	17	743
11. Wine moderate consumers	32	148	6	0	7	5	9	205
12. Beer and vodka heavy consumers	633	52	116	136	962	36	39	1962
13. Beer and vodka moderate consumers	147	14	5	3	172	4	6	349
TOTAL	47	25	10	9	59	5	5	159

Table 9.

Characteristics of alcohol use by drinker patterns, drinkers only, 2006-2011.

Drinker patterns (clusters)	Mean freq. of alc. use	smokes	alcohol before meal	alcohol with meal	alcohol without meal	at home	at restorans and bars	in the park, in the street	at the work	at a arty
1. Moderate consumers	3	31,63	21,3	88,6	15,2	82,1	20,3	4,6	6,5	70,1
2. Beer heavy consumers	13	74,35	48,0	76,0	59,8	92,8	32,1	24,3	10,8	76,5
3. Beer moderate consumers	6	59,61	35,3	78,8	43,2	88,9	31,3	14,8	6,8	75,9
4. Vodka heavy consumers	9	67,74	38,6	91,5	29,7	93,9	20,6	11,5	13,1	73,0
5. Vodka moderate consumers	4	54,52	25,8	94,0	13,3	89,8	20,9	3,9	10,0	78,4
6. Samogon heavy consumers	13	74,14	69,5	90,8	56,8	90,4	2,7	29,1	11,7	69,2
7. Samogon moderate consumers	5	61,25	51,3	94,5	28,1	92,3	6,0	11,2	13,1	79,9
8. Fortified wine heavy consumers	15	73,10	52,3	85,0	50,8	93,9	10,4	23,9	8,0	74,4
9. Fortified wine moderate consumers	5	38,50	28,7	92,0	18,2	88,0	21,5	7,9	13,0	74,2
10. Wine heavy consumers	12	44,62	27,6	91,7	29,7	96,0	46,6	8,0	17,3	80,5
11. Wine moderate consumers	5	26,43	22,0	94,9	14,3	89,0	42,0	3,3	13,9	84,1
12. Beer and vodka heavy consumers	16	79,94	63,2	91,6	64,4	96,6	31,7	33,1	17,4	82,8
13. Beer and vodka moderate consumers	7	71,36	45,2	91,0	38,6	94,3	33,4	16,7	12,9	86,3
TOTAL	5	44,82	28,4	88,4	23,2	86,2	22,7	8,2	8,4	73,5

Table 10.
Social and economic characteristics by drinker patterns, drinkers only, 2006-2011.

Drinker patterns (clusters)	N	%									MEAN	
		in the sample	male	higher educ.	married	Moscow, S- Petersbourg	Reguional centers	other towns	villages	Russian	age	income per capita, RUB
1. Moderate consumers	24382	54,8	41,1	27,6	64,6	12,0	33,4	27,6	27,0	89,4	42	12071
2. Beer heavy consumers	1719	3,9	67,4	18,3	69,8	12,6	45,8	24,8	16,9	90,7	35	14284
3. Beer moderate consumers	4628	10,4	59,0	20,5	66,4	11,4	39,0	26,8	22,8	92,1	33	12544
4. Vodka heavy consumers	2840	6,4	72,0	18,7	74,9	11,3	31,7	26,2	30,8	82,9	46	12095
5. Vodka moderate consumers	5574	12,5	64,1	22,2	75,5	10,5	31,8	30,1	27,6	85,7	45	13107
6. Samogon heavy consumers	670	1,5	76,4	3,4	70,2	1,3	7,2	32,5	59,0	88,6	49	6032
7. Samogon moderate consumers	702	1,6	71,1	5,3	79,7	1,1	8,4	27,4	63,1	84,0	50	7170
8. Fortified wine heavy consumers	197	,4	62,4	13,2	65,0	7,6	42,6	20,3	29,4	87,8	48	9301
9. Fortified wine moderate consumers	440	1,0	26,1	25,0	68,4	10,9	36,6	26,1	26,4	89,1	43	12829
10. Wine heavy consumers	195	,4	28,7	45,1	70,6	23,1	30,3	32,3	14,4	90,2	42	20390
11. Wine moderate consumers	910	2,0	9,8	43,7	64,7	21,2	36,8	26,7	15,3	92,0	37	18152
12. Beer and vodka heavy consumers	693	1,6	78,6	11,2	72,3	11,4	37,5	28,1	22,9	90,3	41	11445
13. Beer and vodka moderate consumers	1568	3,5	79,1	20,9	77,0	12,1	33,5	31,4	23,0	90,7	38	13007
TOTAL	44518	100,0	51,0	24,4	68,0	11,6	33,6	27,8	27,0	88,9	41	12343