Labour and Poverty in Russia Self-Rated Perceptions and Monetary Evaluations

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This paper contributes to the understanding of poverty determinants in Russia. We analyzed two methods of poverty measurement: the monetary one in absolute terms and the self-rated subjective measure. We compare these two approaches in order to understand the main differences between *being poor* and *feeling poor*. A particular attention was paid to various forms of employment status on the Russian labour market and their impact on poverty. Using *five* waves of RLMS (Russia Longitudinal Monitoring Survey, 1994−2000) individual panel data we conclude that working in undeclared additional activities (informal sector) helps individuals to avoid *monetary* poverty and even feel richer in spite of instability of informal sector. Individuals, having only one declared activity, have the highest probability *to be poor* and *to feel poor*.

Introduction

During the previous 10 years, transition countries, especially those of the Community of the Independent States (CIS), experienced a gross domestic product (GDP) sharp fall. In Russia, the level of real GDP in 1999 was 55 if we take 100 as an index for 1989[1] (EBRD [2000]). This GDP decline was preceded or followed by a high inflation (the World Bank [1996]). Inflation exceeded 1000 % on average in the countries of the CIS during three consecutive years (1992, 1993 and 1994)[2]. Inflation directly affected real wages and income inequality and poverty raised considerably (in Russia for example, poverty rate reached 30% in 1998). Since 1999, macroeconomic indicators look better (GDP growth in 1999 and 2000, and lower unemployment[3] in

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[1] For CIS countries index reached 53 in 1998, where for Central and Eastern Europe countries it was 95 for the same year.

[2] For the CIS inflation's calculation, based on price index measured at the end of the year (EBRD [2001]), was for these three consecutive years on average 1672%, 4585%, 1391% respectively.

[3] Unemployment rate according to ILO definition was lower than in the RLMS data (i.e. 8.4 % of working age population).

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2000, see appendix I). However this macroeconomic growth didn't reduce poverty and inequality indicators. The share of the population below the poverty line remains close to 30 %. The incomes of the richest 10% exceed those of the poorest 10% by almost 14 times. The Gini coefficient and the level of poverty are still very high and real incomes continue to decrease compared to the previous years (see table 2 in appendix I, Goskomstat[4] 2001). Russian social protection system does not respond to the most vulnerable persons needs. The system is not efficient in spite of various attempts of Russian authorities to reform it. It is characterized by a very low level of social benefits and a lack of mean testing transfers (see social benefits level in appendix I, table 3).

For the analysed period (*i.e.* 1994−2000) the economic environment remained very unstable in Russia, even if it looks somehow stabilised in 2000 in macroeconomic terms. Russian microeconomic data (construct using individual and household surveys form *RLMS*, *Russia Longitudinal Monitoring Survey*) allow us to evaluate the share and the changes in poverty. Our objective is to study poverty considering it as an objective and a subjective phenomenon. In fact, monetary poverty measurement (in terms of subsistence level) doesn't correspond to people's self-rated poverty perception. The data used in this paper come from RLMS[5] survey waves five to nine (conducted respectively in 1994, 1995, 1996, 1998 and 2000). It allows us to evaluate both the objective and subjective poverty determinants. For subjective poverty the analysed question is the following: "Please imagine a 9-step ladder where on the bottom, the first step, stand the poorest people, and on the highest step, the ninth, stand the rich. On which step are you today?"

Using two poverty measurement methods (objective and subjective) we obtain, in our database, rather close poverty percentages. However, individuals who are poor objectively and subjectively are not the same. This result incited us to analyse in a more detailed manner the characteristics of two types of persons: on one hand, individuals who declared themselves poor and on the other hand, individuals with revenues lower than a certain threshold in monetary terms.

In particular we underline the links between poverty and individual labour market situations. We show that in Russia, in a context of considerable incomes' shortfall in the formal sector (wage earning crisis), the evaluation of poverty should control for various types of individual activities taking place on the Russian labour market (formal, informal sector and multi-activity). Additional activities (informal sector and multi-activity) improve the individual material situation and their perception of welfare. Furthermore, working only in informal sector decreases the probability of being and feeling poor with regard to working exclusively in the formal sector.

Our article is inspired by the Ravallion and Lokshin works (Lokshin, Ravallion 2000; Ravallion, Lokshin 2002) on subjective poverty in Russia. In their paper "Self-Rated Economic Welfare in Russia" (2002), they analysed the causes of the differences between objective and subjective poverty. Individuals who are poor according to objective poverty measure don't consider themselves as poor. The authors elaborate two hypotheses: the wrong weights hypothesis and the low dimensionality hy-

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[4] Goskomstat − State Committee of the Russian Federation on Statistics.

[5] All necessary information could be found on the RLMS project WEB page: see http://www.cpc.unc.edu/rlms.

pothesis. The wrong weights hypothesis corresponds to the fact that regional cost-of-living differences and equivalence scales used in Russian objective poverty line may be not correctly weighted and "an alternative weighting may give a much better fit". The second hypothesis is that objective indicator is a very narrow measure of "economic welfare", so the researches should include in their analysis more variables of various nature: health, past incomes, education etc. In their work the authors confirmed these two hypothesis.

In order to explain the divergence between subjective and objective poverty measure, we propose to study these two measures focusing especially on individual's labour market status. In present economic situation in Russia it is very important to take into account the diversity of different labour market activities (informal sector, secondary employment).

The paper contains five sections. In the following section we briefly present some theoretic foundations of subjective method of poverty measurement. Then we show the descriptive statistics on the subjective and objective poverty variables. We propose two econometric models and explain our methodology (fixed effect logit and bivariate probit models). In the fourth section we discuss the regressions results over the impact of the labour market on poverty. Finally, the last section concludes.

I. Some Theoretic Foundations to Subjective Poverty Measurement

Subjective approach to poverty measurement is relatively recent. This method is neither based on "objective" subsistence minimum (absolute concept) nor on the life conditions (relative concept) but on individual self-perception of economic welfare. Here we would like to briefly analyse three kind of "subjective" questions[6]:

The Income Evaluation Question (IEQ)

The "Leiden" poverty line was constructed using the income evaluation question by a research group working at the University of Leyden in the seventies and the eighties (Van Praag [1968, 1971]). They underlined the crucial role of individuals' poverty perceptions, considering individuals themselves as the best judges of their own material situations. For example the exact question asked in Goedhart at al. [1977] is: "Taking into account my (our) present living circumstances, I would regard a net weekly/monthly/yearly (encircle period) family income as: excellent, good,..., bad, very bad." The answers to this question is used to construct the so-called individual welfare function of income.

The Minimum Income Question

This methodology consists in asking people what they consider as a minimum level of income for themselves or for the "representative family". For example Van Praag at al. [1980], define a poor family when its after-tax income restricts consumption so severely that its members feel that they cannot make ends meet for their family. The exact question is: "We would like you to tell us the absolute minimum income of money for a household such as yours − in other words, a sum below which you couldn't make ends meet."

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[6] You can see Ravaillon, Lokshin [2002] for more detailed analysis.

The Economic Ladder Question

And finally in our paper we use the Economic Ladder Question that is derived from Cantril-type question about whole economic welfare. A. Ferrer-i-Carbonell and B. van Praag (2001) called this question as subjective well-being (SWB). Initially the Cantril question was a following: "*How satisfied are you with your life as a whole?*

	0	1	2	3	4	5	6	7	8	9	10
$\alpha_0=-\infty$		α_1	α_2	α_3	α_4	α_5	α_6	α_7	α_8	α_9	$\alpha_{10}=+\infty$

Not at all satisfied   *Very satisfied*"

This type of question helps to understand people's self-rated welfare. In the RLMS data we used the following question: "Please imagine a 9-step ladder where on the bottom, the first step, stand the poorest people, and on the highest step, the ninth, stand the rich. On which step are you today?"

The widely used critique for this kind of question focus on the understanding of what is a "step"; the respondent doesn't know the meaning of every step. For example, in the RLMS database there is also a life satisfaction question: "To what extent are you satisfied with your life in general at the present time?" The possible answers are the following: "fully satisfied", "rather satisfied", "both yes and no", "less than satisfied", "not at all satisfied". Here individuals are more precise in their answers and they could point their rank more adequately. We are aware of this problem in the formulation of the question and however we assume that people understand adequately the ladder steps.

The main advantage of subjective method is that it defines the poverty line trusting individuals in their financial situation judgement. However, this method also presents some "new" disadvantages. Individual's answers could be influenced by different factors, for instance, attitudes and anticipations. Individuals may estimate themselves by the means of comparison with socially accepted norms and rules, their group of reference etc. That is why the subjective poverty estimations in percentage are usually higher than objective ones. People consider themselves poorer than they actually are.

In the following section, we present the descriptive statistics and analyse the two methods of poverty measurement: subjective (self-rated) and objective (subsistence minimum).

II. Descriptive Statistics of Objective and Subjective Poverty

Indicators of objective poverty threshold were taken from the RLMS data. The estimate of poverty in RLMS is based on total nominal household income which includes wages and salaries, social security, private transfers, income in-kind and from home production. We used the regional poverty lines already built within the framework of RLMS project and available on its Web site. This poverty line is inspired by Popkin and *al.* 1992 and 1995 researches, which are based on the calculation of calories necessary "to survive" (*i.e.* nutritional definition). This method so called "absolute" computes the poverty line as the value of the minimum consump-

tion basket (basket of goods and services). The food basket was elaborated separately for the following demographic groups: children aged from 0 to 6 years, from 7 to 17 years, adult males and females, 60 years' and more males' pensioners, 55 years' and more females pensioners. Then the regional specific prices are used to calculate the costs of these baskets. This methodology was retained as the guideline for the official Russian poverty line calculations[7].

RLMS absolute poverty line is defined below. An individual is considered as poor if his total nominal household income is lower than the household poverty line (also in nominal terms). This household poverty line is the sum of all individual poverty lines within the household adjusted for regional prices and household demographic composition. Individual poverty line is a representative regional subsistence food basket for each demographic group multiplied by a regional price series.

Our objective poverty variable has two modalities: it is equal to one if individual is poor according to the absolute method of poverty measurement and to zero if not.

For the poverty subjective perception the question, present in the RLMS questionnaire, is the following: "Please imagine a 9-step ladder where on the bottom, the first step, stand the poorest people, and on the highest step, the ninth, stand the rich. On which step are you today?"

First of all, to analyse the subjective perception of poverty, we aggregated the highest 6, 7, 8, and 9 ranks of the ladder into one due to a very small number of respondents who considered themselves as richest. Therefore, in our analysis, the category number 6 is regarded as the category of extreme subjective richness.

It appears that the subjective estimates of poverty (ranks 1 and 2) give practically the same percentages as the objective poverty (see table 1, below). For comparison and estimation purposes we changed the perception variable (our six ranks of subjective ladder) into a dummy variable. This variable is equal to one when the respondent is placed in categories 1 or 2 (feel poor), and equal to zero if not (not poor).

Table 1.

Comparison of subjective and objective poverty estimations

Year	Objective poverty (%)	Ranks 1 and 2 of subjective poverty ladder (%)
1994	15,2	28,1
1995	28,7	30,6
1996	34,7	30,2
1998	38,8	35,5
2000	27,9	24,1

Sources: RLMS, round 5–9.

However we observe that the subjective perceptions do not correspond to the objective estimates. In table 2, we present the results for the year 2000. Among 2045 people who placed themselves on rank 1 or 2 of our subjective ladder, 1264 (more than 60%) are not poor according to the objective criteria of poverty. Thus, we ob-

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[7] See appendix IV, frame 1 for details on Goskomstat methodology.

serve that the objective and subjective poor are not the same individuals. This result requires some comments. As a matter of fact, the objective poverty measure is calculated on the household level whereas the subjective measure is determined on the individual level so every individual has his proper poverty estimation. Consequently, the results could diverge.

Table 2.

Subjective and objective poverty in 2000

Subjective estimation	Objective estimation		
	Not Poor	Poor	Total
Not Poor	4758 (73,93)	1678 (26,07)	6436 (100,00)
Poor	1264 (61,81)	781 (38,19)	2045 (100,00)
Total	6022 (71,01)	2459 (28,99)	8481 (100,00)

Sources: RLMS, round 9.

If we analysed the dynamic of subjective and objective poverty indicators over two consecutive years (see appendix II), we observe a high mobility for poor and on the contrary a relative stability for non poor. The effective probability of remaining poor both objectively and subjectively depends considerably on economic conjecture (macroeconomic situation). Between 1998 and 2000 (a relative growth appears after the financial crisis) the effective probability of remaining poor objectively is lower (44,3) than that of becoming not poor (55,7); whereas between 1994 and 1996 (a sharp GDP decline) we can see the opposite situation. The same results are true for subjective poverty measure.

From tables 1 and 2, we observe a considerable mobility from poor to non-poor and as we said the percentages of poverty seem to be similar for subjective and objective methods, however it is not the same individuals. So it would be useful to analyse the determinants of these two approaches by using fixed effects logit as well as bivariate probit models. What are the differences between being poor and feeling poor? We ask ourselves if the employment (especially what kind of employment) allows individuals to escape the poverty, not only monetary poverty but the self-rated one?

First of all, in the next section, we present our variables and our first econometric model (fixed effects logit model). Then, we try to cope with the endogeneity problem between the poverty and labour market status using the bivariate probit model.

III. Models and Methods

Here we decided to concentrate on the links between poverty status and labour market activities types. We elaborated several individual labour types taking into account the Russian labour market particularities.

We define exclusive different activities on the Russian labour market[8]:

– Formal activity: individuals having only one legally paid work in an organisations, enterprises, or administrations. This category also includes entrepreneurs.

– Informal activity: individuals having small undeclared activities as well as individuals working out of legal institutional structure[9] (an organisations, enterprises, or administrations).

– Multi-activity (moonlighting): individuals having at least two activities. They could combine their principal work with secondary activity[10] formal and/or informal.

In Russia *many* individuals have to hold several jobs (see the development of multi-activity, Najman, 2000) due to the very low wages and considerable wage arrears in some sectors of the economy. According to the International Labour Office (ILO) estimates, 11.6% of the active population take part in the informal sector. This type of activity is a mean of tax evasion and provides an additional income when official wages are too weak. Additionally, the practice of paying the employees "illegally" is very widespread even in the legal companies. According to the ILO estimates, 1/5 of the employees working in officially registered companies actually earn more than their wages indicated in their work contracts.

The informal employment and home production (which in sum represent 19 % of the total household income, RLMS, 2000) alleviate considerably the social consequences of market reforms and largely contribute to the adaptation process of population to new economic conditions. These undeclared activities challenged monetary methods of poverty measurement; obviously it is difficult to estimate informal incomes in a proper manner in the household income calculations. It is also one of the reasons why we decided to use the subjective poverty estimates. The descriptive statistics on time of work and wage differences between labor market activities are shown in table 3.

Table 3.

Time of work, rate of formal and informal salary and household incomes

	Multi activities		Mono activities		Informal activities (occasional activities)	
	Women	Men	Women	Men	Women	Men
Formal activity Time of work	144,2 (53,2)	168,0 (60,4)	154,5 (51,2)	176,8 (57,6)		
Hourly Wage	11,6 (13,8)	15,4 (17,1)	12,1 (14,4)	15,5 (16,8)		
Time of work zero	0,12	0,09	0,12	0,06		
Wage zero	0,17	0,22	0,21	0,24		
Informal activity Time of work	51,8 (57,2)	46,2 (59,4)			111,4 (89,8)	119,7 (98,1)

[8] We are grateful to Jérémie Gignoux for his help in elaborating these statuses.

[9] The exact question is: "Tell me, please, in the last 30 days did you engage in some additional kind of work for which you go paid? Maybe you sewed someone a dress, gave someone a ride in a car, assisted someone with apartment or car repairs, purchased and delivered food, looked after a sick person, or did something else that you were paid for?"

[10] Principal and secondary activities correspond to RLMS definitions.

Continued

	Multi activities		Mono activities		Informal activities (occasional activities)	
	Women	Men	Women	Men	Women	Men
Hourly Wage	33,5 (44,0)	63,5 (61,1)			22,2 (32,3)	32,5 (44,8)
Time of work zero	0,03	0,03			0,03	0,02
Wage zero	0,18	0,11			0,17	0,16
Total real house-hold income	5580 (6500)	7035 (20655)	4935 (5240)	5145 (5790)	5290 (6950)	5440 (7065)
concluded: formal incomes	0,47	0,50	0,60	0,62	0,22	0,18
informal incomes	0,25	0,26	0,05	0,03	0,43	0,40

Legend: *time of work (hours per month) and wage rate (hourly wages in Roubles of December 2000) in formal activity and informal activity for individuals having several activities, formal unique activity and informal (occasional) activity; income in Roubles of December 2000; household income of inactive: total 2745(3000), formal sector 1540 (2360), informal 150 (635).*
Sample: *working population (female 15–54, male 15–59); RLMS, rounds 5–9.*
Sources: *Jérémie Gignoux, Boris Najman [2002] "Offre de travail familiale et secteur informel en Russie, 1994–2000".*

     This table results show that wage rate in informal sector is considerably higher than in formal one − 3 times both for men and women. This result was also observed by Kolev (1998) and Roshin, Razumova (2002) (see table 4). The sex differences are higher in informal sector, especially for multi activity.

Table 4.

**Differences in wage rates (per hour) on main and second job
(corrected with respect to arrears and recounted by means of regional deflator
to the wage of 1998)**

	Wage rate on man job, W_1(Roubles)	Wage rate on second job, W_2(Roubles)	Share of the workers for whom $W_1>W_2$, in percent
	For any second work		
All	11,98	52,12	22,2
Men	13,50	68,92	16,1
Women	9,7	26,65	31,1
	For the second permanent job		
All	13,07	29,05	35,5
Men	16,65	42,4	32,7
Women	9,31	16,94	37,9
	For the second work in the form of additional earnings		
All	11,38	67,84	13,9
Men	12,08	82,26	8,6
Women	10,03	38,04	24,6

Source: Roshin, Razumova [2002] "Secondary employment: labour supply modeling".

From this table, you can see that on descriptive level, wage rate on the second job (formal and informal) exceeds wage on the main work (formal). So, one can suppose that the second job could be both a mean of coping with economic crisis and a lack of "formal money" on the main job as well as "continuous" mobility, when an individual is in process of transition from the first job to the second.

As we have mentioned earlier, first of all we use fixed effects logit model in order to explain the link between poverty status and individual labour market activity. Our poverty equation is the following:

(1) $P_{it}^* = X_{it}\beta + T_{it}\gamma + \alpha_i + \varepsilon_{it}$ (poverty equation)

(2) $P_{it} = 1$ if $P_{it}^* > 0$, $P = 0$ if not

– where P is subjective or objective poverty (two modalities);
– T, a series of dummy variables characterising labour market activity types: formal activity, informal activity, multi- activity;
– X, is a vector of other control variables : age, household composition, education;
– α_i , is an individual effect;
– ε_{it}, an error term.

We especially privileged the link between poverty status and labour market activities. Our labour activity categories allow us to take into account Russian labour market particularities i.e. informal sector and secondary employment.

In order to analyse our subjective questions, we created a *pooled* panel from 1994 to 2000 which includes *all* people who participated in one of the 5 rounds. Our panel contains 48071 persons. The RLMS survey statistic representativity compared to the Goskomstat labour force survey was checked in several recent works (for example see Najman et al. 2001). As the subjective poverty measure is determined on the individual level, we have included all individuals who answered to the subjective question.

For our objective poverty measure, we decided to distinguish a household head, as this poverty method is defined on the household level. So that all individuals in the household could be only poor or not poor all together. As a household head, we chose a working aged female[11]. If there is no working age female in the household, we took a working age male. If the household consists of elder couple, we took a female etc.

The analyse of the labour market impact on poverty point out several problems. First of all, we have a very considerable heterogeneity of the Russian labour market. As we have mentioned just above, we constructed our labour market activity categories taking into account Russian transition economy particularities − very developed informal sector and multi-activity. These two activities (informal work and multi-activity) could be considered as household adaptation means in the conditions of unstable economic situation in the country. One of our hypotheses is that individuals having only one legal activity are the poorest in objective terms, but they could feel richer with comparison to other activities especially to informal sector. In fact the informal activities (in the sense defined in our article) are very risky

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[11] We effectuated the same regressions with working aged male as a household head. Our results and conclusions remain the same.

and unstable. Individual have no income security and could face possible administrative controls. So we could suppose that individuals working in informal sector overestimate their subjective poverty even if objectively they are not poor.

We experience also a "technical" problem. In fact, our labour activities status could be endogenous to the poverty. So, one could explain poverty by labour market activities, and vice et versa, labour market activities choices may be explained by poverty status. In the following section, we present a bivariate probit model that is considered to help in resolving this problem.

Labour market activities endogeneity problems

In order to test our endogeneity problems, we chose a bivariate probit model. Our first model consists of equations (1) and (2) and the second model − (3) and (4).

(1) $P^* = X\beta + T\gamma + \varepsilon_1$ (poverty equation)

(2) $P = 1$ if $P^* > 0$, $P = 0$ otherwise

(3) $T^* = Z\theta + \varepsilon_2$ (labour market participation equation)

(4) $T = 1$ if $T^* > 0$, $T = 0$ otherwise

with:

$$E[\varepsilon_1] = E[\varepsilon_2] = 0, \ Var[\varepsilon_1] = Var[\varepsilon_2] = 1, \ Cov[\varepsilon_1, \varepsilon_2] = \rho$$

Then the likelihood to be maximized is :

(6) $L(\beta, \gamma, \theta, \rho) = P_{11}{}^{PT} \, P_{10}{}^{P(1-T)} \, P_{01}{}^{(1-P)T} \, P_{00}{}^{(1-P)(1-T)}$

$P_{11} = Prob(P=1, T=1)$, $P_{10} = Prob(P=1, T=0)$, $P_{01} = Prob(P=0, T=1)$, $P_{00} = Prob(P=0, T=0)$

$$- \ Pr(P=1, T=0) = \int_{-X\beta}^{\infty} \int_{-\infty}^{-Z\theta} N(\varepsilon_1, \varepsilon_2, \rho) d\varepsilon_1 d\varepsilon_2$$

$$- \ Pr(P=1, T=1) = \int_{-X\beta-\gamma}^{\infty} \int_{-Z\theta}^{\infty} N(\varepsilon_1, \varepsilon_2, \rho) d\varepsilon_1 d\varepsilon_2$$

$$- \ Pr(P=0, T=0) = \int_{-\infty}^{-X\beta} \int_{-\infty}^{-Z\theta} N(\varepsilon_1, \varepsilon_2, \rho) d\varepsilon_1 d\varepsilon_2$$

$$- \ Pr(P=0, T=1) = \int_{-\infty}^{-X\beta-\gamma} \int_{-Z\theta}^{\infty} N(\varepsilon_1, \varepsilon_2, \rho) d\varepsilon_1 d\varepsilon_2$$

This simple model[12] allows us to understand if the fact of working and labour market categories are endogenous to poverty or not. This model (bivariate probit) could include only dichotomous dependent variables (poor or not poor, have any job or not, formal activity or informal activity etc.). So, we've been obliged to simplify

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[12] In subsequent version of this paper we'll try to elaborate more sophisticated models in order to cope with endogeneity (simultaneous simulation of simple probit for poverty and multinomial logit for labour market participation).

our labour market diversity and we present the following schema of comparison analysis (figure 1).

First of all, we compared the probability of being and feeling poor according to the fact of having an unspecified job. The question is: "Does the fact of working decrease or not the probability of being and feeling poor?". Then we analyse two different groups inside the working population: individuals having only one activity (that could be formal or informal) versus individuals having multi-activity (that could be formal or informal) and finally individuals working in formal sector versus individuals working in informal sector.

The second problem concerns the selection bias. It is inevitable if we compare the different sectors in the sub sample of working population. That's why in subsequent version of this paper we'll try to solve this problem too, using login multinomial model for labour market participation types.
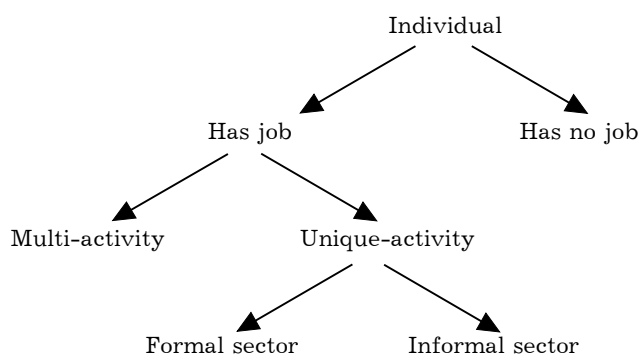
Fig.1. Russian labour market structure: comparisons groups

Who are the individuals who are poor objectively and subjectively? Are they in the formal or the informal sector? Does someone can observe a real difference between objective and subjective poverty according to labour categories?

In order to answer these questions, after having estimated the regressions coefficients, we calculated the conditional probabilities of being and feeling poor given individual labour market situation:
- if an individual has a job,
- if an individual has only one job or he(she) is moonlighting,
- if an individual works in formal or informal sector.

In the following section we present and comment the regressions results of probability of being and feeling poor using fixed effect logit model. Then we analyse bivatiate probit calculations.

IV. Results

The regressions are presented in appendix III (tables 8−15). There we give the detailed results of subjective and objective poverty fixed effects logit estimations as well as bivariate probit model of subjective and objective poverty. All the estimates are based on RLMS pooled panel data between 1996 and 2000.

Results for the fixed effects logit model: impact of labour market participation
on probability of being and feeling poor

If we did the regressions on the whole panel sample (table 8 appendix 3), the inactive population is the reference category for the labour market participation variables. All the job variables (formal sector, informal sector, multi-activity) are very highly negatively correlated with the poverty. However, this result doesn't show the impact of different labour sectors on poverty.

So we analyse the results of the regressions on a sub sample of the working population (table 9 appendix 3) we can see that individuals with several jobs have the lowest probability of being and of feeling poor. However, having only one legal job with regard to informal one and vise versa is not significant both for objective and subjective poverty.

This result suggests that individuals having several activities are better off than individuals having only one activity. But these results don't allow us to say that informal activities are better than formal.

These regressions also clearly show the presence of endogeneity problem between labour market participation and poverty. We will try to verify this result in the next section.

Biprobit regressions: poverty and labour market participation

First of all, we find that the correlation coefficient was very significant over all the regressions both in subjective and objective poverty (if we except the objective poverty regression on formal sector compared to informal sector). It means that the endogeneity problem that we have mentioned earlier is confirmed and this procedure (bivariate probit estimation) was necessary. This correlation coefficient, once significant, shows that the two equations residuals (poverty and labour market participation) are correlated. In this case, if we had used the simple probit procedure, results would have been biased.

In the first place, we compare the probabilities of being and feeling poor for individuals having a job unspecified versus unemployed. For objective poverty estimation, we have predictable results: individuals with a job have lower probability of being poor. However, for subjective poverty the results are interesting. The probabilities of feeling poor for individuals having a job versus individual without a job are almost similar (0,30 versus 0,29). It means that individuals having a job don't feel themselves much better than individuals without any job. From our point of view, it proves the assumption that in Russia one should take into account different types of labour market activity in order to better understand the real impact of labour market participation on poverty.

In the case of individuals having several activities the probability of being and feeling poor is much lower with comparison to individuals having only one activity (formal or informal), (objective poverty: 0,049 versus 0,32; subjective poverty: 0,043 versus 0,27).

Finally, the most surprising result concerns comparison between formal and informal sectors. Individuals having only one job in the formal sector have higher probability of being and feeling poor with regards to informal sector (objective poverty: 0,382 versus 0,288; subjective poverty: 0,432 versus 0,238). The informal sector is often characterised by instability and insecurity. That is why our initial hypothesis

was the following: may be you earn more in the informal sector but you feel more vulnerable and poor than you neighbour working in a more stable formal sector. Our empirical result could be explained by macroeconomic conjuncture. Russia suffered a really sharp decline of real wages in formal sector (appendix 1) as well as disappearance of social benefits (advantages) linked to individual's work place (kinder gardens etc). On the other hand our result confirms the assumption that the informal activities play very important role in Russia to escape from poverty.

V. Conclusion

Our paper results clearly show the necessity of a detail analysis of Russian labour market particularities. Heterogeneity of different individual possibilities determines the real impact of labour market participation on poverty. In order to understand this impact, it is not sufficient to study only the fact of having a job but one should distinguish the types of job.

Working in the formal sector in Russia doesn't allow individuals to feel richer and to be richer. It's the multi activity and informal job that could be considered as the means of escaping from poverty.

Our hypothesis concerning informal sector isn't confirmed with regard to subjective poverty. Individuals working in informal sector have the lower probability of being and especially feeling poor in spite of generally considered vulnerable characteristics of the informal sector. In our case, formal jobs provide individuals neither with monetary revenue nor with security feeling.

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APPENDIX I.

Table 1.

Evolution of employment, prices, GDP and wages in real terms
(% to last year)

	Russia				
	GDP evolution in real terms (1)	Unemployment (%), age 15−72 (2)	Employment evolution (3)	Inflation (4)	Real salary evolution (5)
1991	–5,0		–2,0		-
1992	–14,5		–2,3		-
1993	–8,5		–1,7	840,0	5,4
1994	–12,7	8,1	–3,4	204,4	–6,5
1995	–4,1	9,5	–3,1	128,6	–29,0
1996	–3,4	9,7	–0,6	21,8	14,2
1997	0,9	11,8	–2,0	10,9	4,9
1998	–4,9	13,2	–2,1	84,5	–10,5
1999	5,4	12,6	2,8	36,8	–24,8
2000	8,3	9,7		20,1	
2001 (estimation)	*5,5*			*17,5*	
Variation 99/93	**–26,6**		**–11,8**		**–43,6**

Sources : *Transition report* 2001 (EBRD), Russian Economic Trends (R.E.T.) [2000].

Official indicators characterising poverty and inequality

	Gini coefficient	Income ratio between D1 and D10	Real per capita incomes (1995=100)	Ratio between minimum salary and average salary (%)	Poverty rate. % of individuals below the subsistence minimum
	(1)	(2)	(3)	(4)	(5)
1994	0,409	15,1	–	6,6	22,4
1995	0,381	13,5	100	4,3	24,7
1996	0,387	13,0	101,3	8,0	22,0
1997	0,401	13,5	108,2	8,8	20,7
1998	0,399	13,8	91,4	7,9	23,3
1999	0,400	14,0	78,5	5,5	29,9
2000	0,399	13,8	87,3	3,8	29,1

Source: Goskomstat, Institute of transition period problems, Russian economic trends, December 2001
* The subsistence minimum calculations are based on official Goskomstat methodology adopted by the Russian Labour Ministry in 1992. From 2000, new methodology was created (see appendix VI for official poverty line methodology).

Minimum social guarantees relative to the subsistence level

	1994	1995	1996	1997	1998	1999
Minimum wages	28	10	16	19	18	10
Minimum pensions benefits (old age pensions)	44	27	26	25	29	15
Social pensions : disability since childhood						
First category	73	54	52	50	57	30
Second category	44	27	26	25	29	15
Monthly benefits for each child aged:						
Under 6	21	8	–	–	–	–
6 to 16 (from 1996 unique benefits for children under 16 were paid)	18	7	13	15	14	7
Minimum stipends paid to students of higher education establishments	28	10	16	38	36	19

Source: Goskomstat (2001).

APPENDIX II.

Evolution of Objective and Subjective Poverty

Table 4.
Subjective poverty changes (1994−1996)

		1996		
		Not poor	Poor	Total
1994	Not poor	3073 *(77,31)*	902 *(22,69)*	3975 *(100,00)*
	Poor	757 *(47,14)*	849 *(52,86)*	1606 *(100,00)*
	Total	3830 *(68,63)*	1751 *(31,37)*	5581 *(100,00)*

Table 5.
Subjective poverty changes (1998−2000)

		2000		
		Not poor	Poor	Total
1998	Not poor	3481 *(85,40)*	595 *(14,60)*	4076 *(100,00)*
	Poor	1243 *(55,74)*	987 *(44,26)*	2230 *(100,00)*
	Total	4724 *(74,91)*	1582 *(25,09)*	6306 *(100,00)*

Table 6.
Objective poverty changes (1994−1996)

		1996		
		Not poor	Poor	Total
1994	Not poor	1470 *(69,83)*	635 *(30,17)*	2105 *(100,00)*
	Poor	161 *(43,05)*	213 *(56,95)*	374 *(100,00)*
	Total	1631 *(65,79)*	848 *(34,21)*	2479 *(100,00)*

Table 7.
Objective poverty changes (1998-2000)

		2000		
		Not poor	Poor	Total
1998	Not poor	1387 *(84,37)*	257 *(15,63)*	1644 *(100,00)*
	Poor	591 *(55,70)*	470 *(44,30)*	1061 *(100,00)*
	Total	1978 *(73,12)*	727 *(26,88)*	2705 *(100,00)*

APPENDIX III.

Subjective and Objective Estimation of Poverty
(fixed effects logit and biprobit)

Table 8.

Subjective and objective estimations of whole panel
(fixed effect logit)

	Subjective estimation	*Standard error*	Objective estimation	*Standard error*
Age	–0,042*	*0,022*	0,245***	*0,035*
Age squared/100	0,032	*0,022*	–0,192***	*0,037*
Primary education	0,041	*0,080*	0,206	*0,148*
Professional education	0,042	*0,076*	0,290***	*0,110*
Technical education	0,139	*0,089*	0,011	*0,124*
Higher education	–0,077	*0,154*	0,130	*0,239*
Having only one legal job	–0,295***	*0,064*	–0,464***	*0,098*
Multi-activity	–0,576***	*0,107*	–0,904***	*0,161*
Informal sector	–0,205**	*0,091*	–0,469***	*0,137*
Unemployed	0,353***	*0,099*	0,434***	*0,153*
Log of household size	–0,145	*0,106*	–0,020	*0,198*
Single	0,428***	*0,136*	0,008	*0,233*
Single-parent family	0,220*	*0,123*	0,467**	*0,195*
Couple with children	–0,086	*0,109*	0,270	*0,185*
Single with parents	0,442*	*0,234*	0,128	*0,468*
Single with parents and children	0,501**	*0,215*	0,189	*0,336*
Couple with parents	0,257	*0,200*	–0,411	*0,400*
Couple with parents and children	–0,141	*0,182*	0,169	*0,291*
Log Likelihood	–7054,13		–3184,8	
Number of observations	*18730*		*8680*	
$\chi^2(18)$	*118,95*		*165,98*	
Prob.> χ^2	*0,0000*		*0,0000*	

Source: Panel data from RLMS, Round V–IX.
Dependent variable:
y = 1 if the person is poor (objectively or subjectively),
y = 0 if the person is not poor (objectively or subjectively).
Legend: * = statistically significant at the 10% level;
          ** = statistically significant at the 5% level;
          *** = statistically significant at the 1%.
    Reference variables: inactive, secondary education, couple without children, urban, Central region, round VII.

Subjective and objective estimations on the working population sub sample of (fixed effect logit)

	Subjective estimation	*Standard error*	Objective estimation	*Standard error*
Age	–0,042	*0,044*	0,275***	*0,075*
Age squared/100	0,020	*0,052*	–0,200**	*0,094*
Primary education	–0,020	*0,128*	0,276	*0,201*
Professional education	0,073	*0,098*	0,380***	*0,136*
Technical education	–0,022	*0,125*	0,005	*0,158*
Higher education	–0,152	*0,210*	0,113	*0,295*
Having only one legal job	0,271***	*0,095*	0,487***	*0,143*
Informal sector	0,443***	*0,136*	0,533***	*0,207*
Log of household size	–0,099	*0,160*	–0,286	*0,263*
Single	0,517**	*0,237*	–0,083	*0,356*
Single-parent family	0,116	*0,178*	0,432*	*0,246*
Couple with children	–0,171	*0,155*	0,332	*0,235*
Single with parents	0,011	*0,444*	0,199	*0,630*
Single with parents and children	0,197	*0,308*	0,257	*0,406*
Couple with parents	0,463	*0,305*	–0,186	*0,542*
Couple with parents and children	–0,289	*0,241*	0,361	*0,366*
Log Likelihood	*–3314,44*		*–1783,55*	
Number of observation	*8842*		*4865*	
$\chi^2(15)$	*40,29*		*103,91*	
Prob.> χ^2	*0,0007*		*0,0000*	

Reference variable: multi-activity.

	Subjective estimation	*Standard error*	Objective estimation	*Standard error*
Age	–0,042	*0,044*	0,275***	*0,075*
Age squared/100	0,020	*0,052*	–0,200**	*0,094*
Primary education	–0,020	*0,128*	0,276	*0,201*
Professional education	0,073	*0,098*	0,380***	*0,136*
Technical education	–0,022	*0,125*	0,005	*0,158*
Higher education	–0,152	*0,210*	0,113	*0,295*
Multi-activity	–0,271***	*0,095*	–0,487***	*0,143*
Informal sector	0,172*	*0,110*	0,045	*0,165*
Log of household size	–0,099	*0,160*	–0,286	*0,263*
Single	0,517**	*0,237*	–0,083	*0,356*
Single-parent family	0,116	*0,178*	0,432*	*0,246*
Couple with children	–0,171	*0,155*	0,332	*0,235*
Single with parents	0,011	*0,444*	0,199	*0,630*
Single with parents and children	0,197	*0,308*	0,257	*0,406*
Couple with parents	0,463	*0,305*	–0,186	*0,542*
Couple with parents and children	–0,289	*0,241*	0,361	*0,366*
Log Likelihood	*–3314,44*		*–1783,55*	
Number of observation	*8842*		*4865*	
$\chi^2(15)$	*40,29*		*103,91*	
Prob.> χ^2	*0,0007*		*0,0000*	

Reference variable: having only one legal job.

Table 10.

Objective poverty. Probability of being poor and having a job (bivariate probit estimation)

	Objective estimation		Having a job	
	Coefficient	*Standard error*	Coefficient	*Standard error*
Sex	0,098***	0,033	0,356***	0,033
Age 15−19	0,072	0,129	−0,070	0,135
Age 20−24	0,180***	0,062	0,365***	0,062
Age 35−44	0,056	0,040	0,621***	0,032
Age 45−49	0,008	0,045	0,767***	0,038
Age 50−54	0,015	0,046	0,818***	0,039
Age 55−59	−0,097**	0,047	0,851***	0,042
Age 60−64	−0,140***	0,046	0,386***	0,044
Primary education	0,045	0,034	−0,459***	0,032
Professional education	−0,038	0,037	0,212***	0,040
Technical education	−0,332***	0,029	0,284***	0,031
Higher education	−0,607***	0,034	0,482***	0,035
Having job	0,814***	0,076		
Log of household size	0,043*	0,026		
Single			−0,125***	0,032
Single-parent family			0,606***	0,037
Couple with children			0,696***	0,030
Single with parents			−0,028	0,072
Single with parents and children			0,713***	0,084
Couple with parents			0,723***	0,095
Couple with parents and children			0,596***	0,057
Rural	0,192***	0,023	−0,161***	0,025
Moscow St-Pet	−0,233***	0,048	0,047	0,048
North West	−0,034	0,041	0,076*	0,043
Volga	0,218***	0,030	−0,093***	0,032
Caucasus	0,235***	0,034	−0,226***	0,036
Ural	0,058*	0,032	0,030	0,035
Western Siberia	0,183***	0,037	−0,112***	0,040
Eastern Siberia	0,200***	0,037	−0,029	0,040
Round 5	−0,613***	0,033	0,083**	0,034
Round 6	−0,177***	0,031	0,056*	0,034
Round 8	0,102***	0,030	−0,020	0,034
Round 9	−0,208***	0,031	0,032	0,034
Constant	−0,894***	0,043	−0,509***	0,045
Log Likelihood	*-19395,29*			
Number of observation	*18315*			
Disturbance correlation (Rho)	*-0,550*			
χ^2(Rho)	*88,18*			
Prob. > χ^2 (hypothesis Rho=0)	*0,0000*			

Source: Panel data from RLMS, Round V−IX.
Dependent variable:
Poverty:
y = 1 if the person is poor (objective estimation),
y = 0 if the person is not poor.
Having job:
t=1 if the person has a job,
t=0 otherwise.
Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.
Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.

Probability of being poor if the person doesn't work: Pr(P=1|T=0)=0,42.
Probability of being poor if the person works: Pr(P=1|T=1)=0,237.

Table 11.

Objective poverty. Probability of being poor and being multi active (bivariate probit estimation)

	Objective estimation		Multi-activity	
	Coefficient	*Standard error*	Coefficient	*Standard error*
Sex	0,010	0,044	0,077	0,058
Age 15−19	-0,431*	0,246	-0,400	0,411
Age 20−24	0,072	0,079	-0,043	0,114
Age 35−44	0,144***	0,038	-0,025	0,052
Age 45−49	0,138***	0,043	-0,065	0,060
Age 50−54	0,136***	0,045	-0,028	0,062
Age 55−59	0,018	0,051	-0,005	0,069
Age 60−64	-0,099	0,069	-0,116	0,094
Primary education	0,106**	0,045	-0,234***	0,071
Professional education	0,051	0,044	0,011	0,064
Technical education	-0,249***	0,036	-0,026	0,050
Higher education	-0,538***	0,040	0,210***	0,050
Multi-activity	0,947***	0,278		
Log of household size	0,152***	0,031		
Single			0,365***	0,074
Single-parent family			0,435***	0,067
Couple with children			0,187***	0,062
Single with parents			0,496***	0,133
Single with parents and children			0,278**	0,128
Couple with parents			0,299**	0,152
Couple with parents and children			0,266***	0,094
Rural	0,191***	0,032	-0,168***	0,048
Moscow St-Pet	-0,262***	0,060	0,323***	0,066
North West	0,006	0,053	0,076	0,071
Volga	0,269***	0,039	-0,028	0,057
Caucasus	0,220***	0,046	0,038	0,065
Ural	0,091**	0,041	0,026	0,057
Western Siberia	0,109**	0,048	-0,002	0,069
Eastern Siberia	0,137***	0,049	0,275***	0,063
Round 5	-0,552***	0,043	0,059	0,056
Round 6	-0,122***	0,040	0,034	0,056
Round 8	0,203***	0,041	0,018	0,058
Round 9	-0,086**	0,041	0,056	0,058
Constant	-0,727***	0,062	-1,726***	0,089
Log Likelihood	*-9199,217*			
Number of observation	*11103*			
Disturbance correlation (Rho)	*-0,528*			
χ^2 (Rho)	*10,971*			
Prob. > χ^2 (hypothesis Rho=0)	*0,0009*			

Source: Panel data from RLMS, round V−IX.
Dependent variable:
Poverty:
y = 1 if the person is poor (objective estimation),
y = 0 if the person is not poor.
Having several activities:
t=1 if the person has several activities (formal or informal),
t=0 if the person has only one activity (formal or informal).
Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.
Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.
Probability of being poor if the person has only one activity (formal or informal): Pr(P=1|T=0)=0,32.
Probability of being poor if the person has several activities (formal or informal): Pr(P=1|T=1)=0,049.

Table 12.

Objective poverty. Probability of being poor and working in the informal sector versus working in the formal sector (bivariate probit estimation)

	Objective estimation		Having only one legal job	
	Coefficient	Standard error	Coefficient	Standard error
Sex	0,004	0,048	-0,199***	0,055
Age 15−19	-0,696***	0,265	-0,485**	0,238
Age 20−24	0,040	0,083	-0,084	0,097
Age 35−44	0,165***	0,040	0,071	0,052
Age 45−49	0,175***	0,046	0,222***	0,062
Age 50−54	0,150***	0,048	0,252***	0,065
Age 55−59	0,032	0,055	0,251***	0,075
Age 60−64	-0,095	0,072	0,016	0,088
Primary education	0,086*	0,047	0,009	0,059
Professional education	0,041	0,046	0,073	0,060
Technical education	-0,239***	0,040	0,304***	0,050
Higher education	-0,507***	0,047	0,431***	0,058
Having only one legal job	-0,505*	0,286		
Log of household size	0,177***	0,033		
Single			-0,420***	0,070
Single-parent family			-0,260***	0,071
Couple with children			-0,033	0,062
Single with parents			-0,373**	0,148
Single with parents and children			-0,348***	0,125
Couple with parents			-0,108	0,154
Couple with parents and children			0,270**	0,117
Rural	0,184***	0,033	0,090**	0,045
Moscow St-Pet	-0,278***	0,066	0,040	0,083
North West	0,048	0,055	0,008	0,072
Volga	0,302***	0,041	0,141**	0,060
Caucasus	0,190***	0,054	-0,432***	0,060
Ural	0,086**	0,043	-0,012	0,058
Western Siberia	0,091*	0,051	-0,120*	0,068
Eastern Siberia	0,193***	0,052	-0,166**	0,067
Round 5	-0,556***	0,045	0,017	0,063
Round 6	-0,134***	0,042	-0,110*	0,062
Round 8	0,185***	0,044	-0,273***	0,061
Round 9	-0,116**	0,046	-0,383**	0,059
Constant	-0,246	0,262	1,419***	0,089
Log Likelihood	-8636,4			
Number of observation	10215			
Disturbance correlation (Rho)	0,223			
χ^2 (Rho)	1,845			
Prob. > χ^2 (hypothesis Rho=0)	0,1744			

Source: Panel data from RLMS, round V−IX.

Dependent variable:

Poverty:

y = 1 if the person is poor (objective estimation),

y = 0 if the person is not poor.

Having several activities:

t=1 if the person has only one legal job (formal sector),

t=0 if the person has only one informal job.

Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.

Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.

Probability of being poor if the person has only one formal activity: Pr(P=1|T=0)=0,382.

Probability of being poor if the person has only one informal activity: Pr(P=1|T=1)=0,288.

Table 13.

Subjective poverty. Probability of feeling poor and having a job (bivariate probit estimation)

	Estimation subjective		Having a job	
	Coefficient	*Standard error*	Coefficient	*Standard error*
Sex	−0,091***	0,017	0,356***	0,015
Age 15−19	−0,457***	0,043	−0,370***	0,043
Age 20−24	−0,160***	0,040	0,520***	0,034
Age 35−44	0,235***	0,034	0,889***	0,022
Age 45−49	0,364***	0,038	0,960***	0,028
Age 50−54	0,375***	0,038	0,979***	0,029
Age 55−59	0,347***	0,037	0,878***	0,029
Age 60−64	0,212***	0,031	0,365***	0,029
Primary education	0,200***	0,025	−0,500***	0,020
Professional education	0,044*	0,026	0,266***	0,026
Technical education	−0,069***	0,023	0,290***	0,022
Higher education	−0,238***	0,026	0,397***	0,024
Having job	−0,504***	0,079		
Log of household size	−0,232***	0,016		
Single			−0,144***	0,028
Single-parent family			0,089***	0,023
Couple with children			0,542***	0,021
Single with parents			−0,311***	0,043
Single with parents and children			0,349***	0,049
Couple with parents			0,196***	0,043
Couple with parents and children			0,543***	0,040
Rural	0,076***	0,016	−0,135***	0,017
Moscow St-Pet	0,000	0,030	0,108***	0,032
North West	−0,003	0,028	0,129***	0,030
Volga	0,072***	0,020	−0,097***	0,022
Caucasus	−0,231***	0,024	−0,172***	0,024
Ural	−0,070***	0,022	0,005	0,024
Western Siberia	−0,066**	0,025	−0,059**	0,027
Eastern Siberia	−0,040	0,025	0,053**	0,027
Round 5	−0,047**	0,021	0,077***	0,023
Round 6	0,022	0,021	0,074***	0,023
Round 8	0,203***	0,022	−0,075***	0,023
Round 9	−0,126***	0,022	0,005	0,023
Constant	−0,113***	0,037	−0,552***	0,031
Log Likelihood	*−43747,73*			
Number of observation	*40645*			
Disturbance correlation (Rho)	*0,146*			
χ^2 (Rho)	*9,138*			
Prob. > χ^2 (hypothesis Rho=0)	*0,0025*			

Source: Panel data from RLMS, round V−IX.
Dependent variable:
Poverty:
y = 1 if the person is poor (subjective estimation),
y = 0 if the person is not poor.
Having job:
t=1 if the person has a job,
t=0 otherwise.
Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.
Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.

Probability of being poor if the person doesn't work: Pr(P=1|T=0)=0,299.
Probability of being poor if the person works: Pr(P=1|T=1)=0,301.

Table 14.

Subjective poverty. Probability of feeling poor and being multi active (bivariate probit estimation)

	Estimation subjective		Multi-activity	
	Coefficient	*Standard error*	Coefficient	*Standard error*
Sex	-0,207***	0,019	0,261***	0,025
Age 15−19	-0,211**	0,093	-0,424***	0,157
Age 20−24	-0,194***	0,051	0,089	0,060
Age 35−44	0,123***	0,026	0,069**	0,033
Age 45−49	0,239***	0,030	0,024	0,040
Age 50−54	0,255***	0,032	0,050	0,042
Age 55−59	0,276***	0,034	-0,009	0,047
Age 60−64	0,164***	0,043	-0,085	0,059
Primary education	0,248***	0,029	-0,202***	0,043
Professional education	-0,012	0,030	0,103***	0,039
Technical education	-0,157***	0,026	0,086**	0,034
Higher education	-0,328***	0,028	0,246***	0,034
Multi-activity	0,950***	0,352		
Log of household size	-0,168***	0,022		
Single			0,178***	0,059
Single-parent family			0,207***	0,044
Couple with children			0,087**	0,038
Single with parents			0,288***	0,095
Single with parents and children			0,094	0,097
Couple with parents			0,081	0,079
Couple with parents and children			0,119**	0,058
Rural	0,192***	0,023	-0,178***	0,032
Moscow St-Pet	-0,017	0,040	0,226***	0,046
North West	0,032	0,038	0,089*	0,048
Volga	0,189***	0,028	-0,033	0,037
Caucasus	-0,171***	0,033	0,024	0,042
Ural	-0,033	0,030	-0,052	0,039
Western Siberia	-0,048	0,035	0,004	0,045
Eastern Siberia	-0,045	0,035	0,191***	0,043
Round 5	-0,026	0,029	0,089**	0,037
Round 6	0,063**	0,029	0,005	0,038
Round 8	0,238***	0,030	-0,013	0,040
Round 9	-0,104***	0,030	0,016	0,039
Constant	-0,596***	0,044	-1,697***	0,058
Log Likelihood	*-19134,42*			
Number of observation	*23016*			
Disturbance correlation (Rho)	*-0,491*			
χ^2 (Rho)	*5,407*			
Prob. > χ^2 (hypothesis Rho=0)	*0,0201*			

Source: Données de panel RLMS, Round V−IX.
Dependent variable:
Poverty:
y = 1 if the person is poor (subjective estimation),
y = 0 if the person is not poor.
Having several activities:
t=1 if the person has several activities (formal or informal),
t=0 if the person has only one activity (formal or informal).
Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.
Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.
Probability of being poor if the person has only one activity (formal or informal): Pr(P=1|T=0)=0,277.
Probability of being poor if the person has several activities (formal or informal): Pr(P=1|T=1)=0,043.

Table 15.

Subjective poverty. Probability of feeling poor and working in the informal sector versus working in the formal sector (bivariate probit estimation)

	Subjective estimation		Having only one legal job	
	Coefficient	Standard error	Coefficient	Standard error
Sex	-0,184***	0,020	-0,156***	0,025
Age 15−19	-0,433***	0,101	-0,608***	0,086
Age 20−24	-0,220***	0,053	-0,054	0,055
Age 35−44	0,145***	0,027	0,063*	0,033
Age 45−49	0,278***	0,032	0,189***	0,042
Age 50−54	0,297***	0,033	0,243***	0,045
Age 55−59	0,306***	0,036	0,274***	0,050
Age 60−64	0,178***	0,044	0,111**	0,057
Primary education	0,234***	0,030	0,025	0,036
Professional education	0,007	0,032	0,121***	0,038
Technical education	-0,110***	0,029	0,268***	0,035
Higher education	-0,265***	0,032	0,421***	0,039
Having only one legal job	-0,806***	0,166		
Log of household size	-0,146	0,024		
Single			-0,443***	0,053
Single-parent family			-0,282***	0,043
Couple with children			0,058	0,038
Single with parents			-0,323***	0,093
Single with parents and children			-0,296***	0,080
Couple with parents			0,073	0,080
Couple with parents and children			0,124**	0,063
Rural	0,175***	0,023	0,074**	0,030
Moscow St. Petersburg	0,009	0,042	-0,121**	0,051
North West	0,081**	0,039	0,075	0,049
Volga	0,201***	0,029	0,056	0,039
Caucasus	-0,215***	0,036	-0,417***	0,039
Ural	-0,031	0,031	0,024	0,039
Western Siberia	-0,035	0,036	0,011	0,046
Eastern Siberia	-0,016	0,036	-0,078*	0,045
Round 5	0,013	0,030	0,108***	0,040
Round 6	0,063**	0,030	-0,019	0,039
Round 8	0,216***	0,031	-0,155***	0,040
Round 9	-0,144***	0,032	-0,266***	0,038
Constant	0,121	0,152	1,257***	0,057
Log Likelihood	-18026,95			
Number of observation	20932			
Disturbance correlation (Rho)	0,364			
χ^2 (Rho)	14,2			
Prob. > χ^2 (hypothesis Rho=0)	0,0002			

Source: Données de panel RLMS, Round V−IX.
Dependent variable:
Poverty:
y = 1 if the person is poor (objective estimation),
y = 0 if the person is not poor.
Having several activities:
t=1 if the person has only one legal job (formal sector),
t=0 if the person has only one informal job.
Legend: * = statistically significant at the 10% level; ** = statistically significant at the 5% level; *** = statistically significant at the 1%.
Reference variables: age 25−34, secondary education, couple without children, urban, central region, Round VII.

Probability of being poor if the person has only one formal activity: Pr(P=1|T=0)=0,432.
Probability of being poor if the person has only one informal activity: Pr(P=1|T=1)=0,238.

<div align="right">**APPENDIX IV.**</div>

Methodology Frames

Frame I. The official poverty measurement in Russia

According to the Russian official methodology, the poverty line definition is the cost of the minimal consumption basket. During the period 1991−2000, the method of calculation of this basket was twice modified. The first time in 1992 after the price liberalisation during the high inflation period and a second time in 2000 in order to avoid certain obvious defects and to adjust the basket taking in account the changes happened since the 1992 in the consumption structure.

The 1992 poverty line methodology was the following. It was based on the expenditure structure of the 20% poorest population. The share of food and non food expenditures was estimated and in 1992, the share of the food expenditures of the poorest group was 70 percents. Then, the nutritionists defined the value of the basket guaranteeing contemporary standards of consumption of proteins, fats, carbohydrates etc. Finally, taking into account the value of the minimum food basket in the structure of minimum consumer expenditures the subsistence level was established. "The minimum food basket" is the only component defined with aid of normative method. The other components are then weighted using the real empirical estimates of the poorest group expenditure structure. Thus, the expenditure share for non food items, services, taxes and payments were estimated. In 1992, within the subsistence level value, the food expenditures accounted for 68,3%, non food items for 19,1%, services for 7,4% and taxes and payments for 5,2%. The subsistence level was elaborated separately for the following demographic groups: children under 6 years old, children from 7 to 15 years, working population and pensioners.

Why the poverty line was defined in such a way? And why the share of the food expenditures is so high in the subsistence level of 1992? During the Soviet Russia, the notion of a minimal consumption basket was already largely used. The measure was constructed in order to determine the socially accepted minimum standard of living, *i.e.* sufficient to lead a "decent" life. At that time, the subsistence level accounted for almost half of the average per capita income and it was elaborated in accordance with the international standards of poverty lines construction (see S. Clarke 1998, for example). The 1991−1995 high inflation reduced considerably individual incomes and increased the inequality. In 1992, the need of more adequate poverty line taking into account the difficult transition conditions was evident. With the international assistance (World bank, for example), the new notion of the subsistence level was defined as a level of minimum income sufficient for physical survival under the new crisis conditions. Consequently, the value of the subsistence income was considerably decreased. This subsistence level was elaborated as an extreme measure of poverty and the intention was to change it as soon as possible. But actually, it became the official Russian poverty line. Moreover, this minimum income was sufficient for the food and daily needs (rent payments, electricity), but not for the assets and durable goods (clothing, furniture, equipment etc). For these reasons, but also because of the price structure, the food expenditures accounted for the main part of the total expenditures at that time.

In April 2000, the Russian Ministry of Labour and the Statistics Committee (Goskomstat) determined a new method of subsistence level calculation. According to this new methodology, the share of the non food and services expenditures increased considerably. As a result the 2000 subsistence level exceeds the 1992 level by 15−20% (Ovcharova, 2001). The new subsistence level is defined using the complete list of goods and services included in the minimal consumption basket, then the cost of this list is calculated. The structure of the subsistence level is not fixed. It changes with the change in relative prices for all the components of the subsistence level value.

So, according to the poverty measurement Russian official methodology, the poor are those whose income is lower than the subsistence level. In figure 1, we show the percentage of poor population according to Russian official estimates.
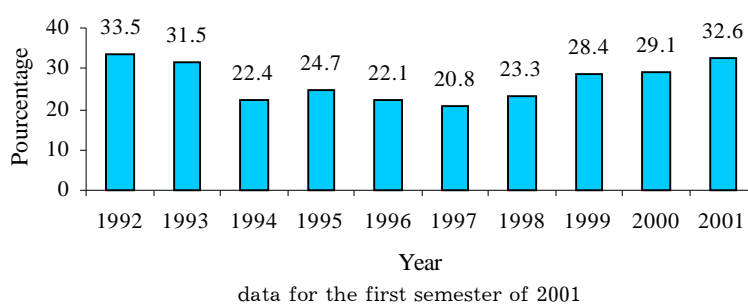

data for the first semester of 2001

Fig. 1. Share of the population with an income below the poverty line
Source: Goskomstat (2001), Ovcharova (2001).

In 1992−1993 because of the high inflation the real incomes dropped considerably (in 1992 real incomes were at 52,5% of 1991 real incomes). As a result the poverty increased. The 1998 financial crisis even worsened the situation.

However it is necessary to be careful using these data because the differences between the poverty levels could be related not only with real changes in poverty but also with the changes in Goskomstat methodology (Ovcharova 2001). For example, in 1994 the share of the population with an income below the poverty line dropped considerably (from 31,5% to 22,4%). However in fact, the Goskomstat changed his population income estimation method. Before 1994, population incomes were estimated using income answers in the household budget surveys. Since 1994, the annual poverty is estimated by comparing annual household's expenditures (from the household budget surveys) and the value of the annual subsistence level. If in 1994 the old methodology had been used, the poverty level would have been estimated at the much higher level of 34%. One can see that the methodology change caused a considerable fall in the poverty level. On the contrary, the change of methodology in 2000 provoked an increase in the poverty level.

It should be noted that the question of the poverty line definition remains controversial in Russia. For example, the choice between incomes and expenditure is very important. Unfortunately, the incomes in Russia don't reflect the real level of

consumption any more. There are informal incomes, incomes in kind, implicit incomes from domestic agriculture etc. The statistics show that the average income level was 1,5 times lower than the expenditure level. For example, according to the RLMS data, the difference between the average income and the average expenditure are estimated at 40 percents[13]. In such circumstances, since 1994 Goskomstat used the procedure of an additional evaluation of per capita household income based on the balance of incomes and expenditures (Ovcharova 2001). Thus the official poverty estimation is obtained not on the empirical measurements but from a constructed income distribution according to a lognormal model.

Several critics were addressed to this new Goskomstat estimation method. The average per capita income is overestimated while the share of the poor is underestimated. The main argument comes from the fact that not declared incomes are concentrated in richest groups, while the model fitted distribution series are constructed in such a way that the additionally estimated income is equally distributed along the entire distribution series. Moreover, the sample is biased towards a greater representation of the poor families: the families initially included in the sample may refuse to take part in it. And the probability of a refusal is higher for families with considerable incomes. It should be noted however that this defect is common to data based on random sample construction.

Frame 2. Russian statistical data

1. First of all it is necessary to underline the Goskomstat data "The Household Budget Survey". It is the principal source of statistical information on the standard of living in Russia. In fact the data base covers nearly 49000 households and it is representative for each area of Russia (which is nit the case for RLMS). The beginning of this study dates from the Soviet time, more precisely from 1922.

Many critics have been addressed in several fields. Initially, the sample was based on a list of individual full-time workers in enterprises. It didn't use standard probability procedures in the selection of the sample: the more employees were in the family, the higher was the probability for the family to be selected. Using the same methodology, the Goskomstat created a separate sample of pensioners, but there still, the pensioners of larger companies had a higher probability to be selected.

Before 1997 the Goskomstat included only information on monetary incomes and expenditure without taking into account the natural resources and the durable goods. Now, the system of indicators of the standard of living as well as the sample has been improved considerably. But the data are still criticised, in particular because of the considerable percentage of refusal. The households fill out the questionnaire by themselves, specifying each income and expenditure over a certain period of time and on a daily basis. This procedure is usually considered as more reliable for expenditure answers compared to RLMS methodology for example, where the questioned person should "remember" everything during the interview.

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[13] Denisova I., Kolenikov S., Yudaeva K. Child Benefits and Child Poverty / CEFIR Working Paper from Center for Economic and Financial Research, October 2000.

The Goskomstat data are more representative and reflect more exactly the structure of incomes and expenditure compared to the RLMS. According to various analyses, the data of Goskomstat represent the economic situation of 65−85% of population. However in the Goskomstat survey there is no possibility to follow the individual in a panel.

2. The other principal data source in Russia is the RLMS (The Russian Longitudinal Monitoring Survey) was already presented in the previous sections. Here we'll pay attention on principal disadvantages noted by different authors. The data of RLMS (Russia Longitudinal Monitoring Survey) is considered to be one of the principal data sources on Russia This project undertaken in 1992 already provided 9 rounds (1992−2000). There were two different phases: the phase I covers four first rounds between 1992 and 1994, and the phase II covers from V to IX rounds between 1994 and 2000. Phase I and phase II are not comparable because the population samples are different. Moreover, the quality of the data collection was considerably improved in phase II in comparison to phase I. For our analysis, we used five rounds of phase II, more exactly those in 1994, 1995, 1996, 1998 and 2000.

The data base is composed of two distinct questionnaires: household and individual. The first includes information on household structure, housing conditions, property, use of plots, domestic agriculture, household incomes and expenditures. The individual questionnaire consists of the individual information on employment, participation in informal sector, education, individual income, heath condition etc. The RLMS individual questionnaire has some subjective questions: reforms and individual self rated economic position estimations.

The great majority of papers (our article included) using the RLMS, indicate that the data has a structure of panel. However it is not a "pure" panel. Individual household members who moved away were not be followed. At each round, the RLMS interview was completed with the household and its members in the original sample dwelling unit. As Steven G Heeringa notice that rounds V−VII were designed to provide a repeated cross-section sampling while a true panel design means that sample households and individuals are followed and interviewed at each wave. So the RLMS is not intended to be a true panel. However, one can link households and individuals who remain in the original dwelling unit over time (as we have also done in this paper), but such a "panel" may be vulnerable to selection bias when reasons for moving are correlated with the dependent variable of interest[14]. Another defect underlined by the researchers is that the great part of incomes and expenditures data relates to only one month (normally, a year passes between two consecutive rounds, except for 1996−1998 and 1998−2000). So, it appears rather difficult to estimate the extent of the arrears, for example, and the seasonal character of certain incomes and expenditures. Moreover, as we have already indicated earlier the questioned individuals should "remember" during the interview the amounts of all incomes and expenditures on a monthly base. Therefore, there is certainly a risk

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[14] Russia Longitudinal Monitoring Survey. Sample Attrition, Replenishment, and Weighting in Rounds V−VII. Steven G. Heeringa, Director Survey Design and Analysis Unit, Institute for Social Research, University of Michigan, Ann Arbor, MI 48106−1248.

of individuals and interviews errors. In the next table we show the difference between the poverty estimations based on Goskomstat and RLMS methodology.

Table16.

Poverty level according to different data sources

	1994	1995	1996	1998	2000
Goskomstat data (additional estimation of average annual income)	22,4	24,7	22,1	23,4	34,7
Goskomstat (without additional estimation of average annual income)	34	42	47,9	58,8*	
RLMS	17,2	29,5	36,3	39,0	28,8

* the third semester.
Source: Goskomstat (2001), Ovcharova (2001), Mroz et al (2001).

It should be noted that the Goskomstat and RLMS estimations are not directly comparable because of the different methods used for incomes and expenditures calculations. The Goskomstat estimations are based on per capita incomes and expenditures while the RLMS estimations are based on the total household incomes using the specific equivalence scales. It is known that the evaluations based on the total equivalent household income should be lower than those based on the monetary incomes per capita. Therefore, the divergence between Goskomstat and RLMS measurements should be even larger if the results are presented in comparable form. A. Kiruta and A. Sheviakov[15] show that these two sources of the data are biased: if the Goskomstat estimations are too low, the estimations of the RLMS are, on the contrary, too high. The RLMS sample is very biased towards the poor population groups. For example, for rounds in 1992−1993 as well as in 1994−1996, the welfare transfers account for more than 30 percents of the total household incomes except for 1996 when this share dropped up to 27,1 percents. On the contrary, the corresponding figures of Goskomstat are between 13 and 17 percents. This means that the populations dependent on the welfare transfers are over-estimated in the sample of RLMS.

All the two data sources are biased towards the higher representation of low income groups of populations.

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[15] Kiruta A., Shevyakov A. Inequality, Standards of Living and Poverty. Methods of Measurement and Causality Analysis / Russian economic researches program, 2000.