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Changes in the Perception of the Poverty Line During the Depression in Russia, 1993–96

Branko Milanovic and Branko Jovanovic

Economic transition in Russia was accompanied by a precipitous decline in real income for most of the population. This article analyzes how the decline affected people's perception of the minimum level of income needed to make ends meet. Individual-level data collected from repeated surveys between March 1993 and September 1996 reveal that the elasticity of subjective minimum income with respect to actual median income was 1.5 or that people's subjective estimate of the minimum income for an adult Russian fell about 1.7 percent each month. This sharp reduction in the face of a decrease in real income meant that the percentage of the population who felt that they were poor declined, even though poverty remained at a very high level (more than 60 percent of the population) throughout the period. This self-perception is in marked contrast to an "objective" measure of poverty: the percentage of the population whose income was less than a given real poverty line rose.

In the course of its transition to a market system, the Russian economy experienced a series of shocks. Its output fell sharply: gross domestic product (GDP) in 1997 was almost one-third less than it was in 1987. It suffered from rapid and continuing inflation: during the period under study here (March 1993 to September 1996) the price level increased 46 times. Open unemployment appeared, affecting about 10 percent of the labor force by 1997. Real wages and pensions declined to half their level before the transition, and delays in their payment became endemic. A few individuals who were politically well connected, enterprising, or lucky were able to amass considerable wealth. As a consequence, since the transition began, income inequality has risen by an unprecedented amount (the Gini coefficient increased four to five times faster in Russia than in the United States during the 1980s; see Milanovic 1998). The number of families living in poverty also increased rapidly.[1]

Given these developments, the population's views about what constitutes poverty and the minimum income needed to "make ends meet" likely evolved as well. Because the decline in income was so sharp, it reveals, within a very com-

pressed time period, how conceptions of well-being and deprivation respond to abrupt changes in income (see, for example, Kahneman and Thaler 1991). For most people in most countries these concepts remain relatively constant over considerable periods of time. It is therefore difficult to observe the impact of changes in external circumstances on the formation of attitudes or expectations. But the Russian experience allows us to do so. In addition, the question of what the population believes to be the minimum acceptable income has obvious political implications: if most people feel poor, they are unlikely to support reform. This article explores how the perception of the poverty line, among the population as a whole, changed in Russia during 1993–96.

I. The Model

In the literature on subjective welfare estimation the usual specification defines the minimum income necessary for a family to make ends meet (MY_f) as a dependent variable. MY_f may be considered a point on a household cost function related to a specific level of welfare u_{min}. In the most parsimonious formulation total household income (Y_f) and family size (n) are explanatory variables (Goedhart and others 1977; Hagenaars and van Praag 1985; van Praag and Van der Saar 1988):

(1) $$\ln MY_f = fct(\ln Y_f, \ln n).$$

The minimum income necessary for a family to make ends meet is obtained from a so-called minimum-income question, such as "What do you consider as an absolute minimum net income (per period of time) for a household such as yours?" (see Flik and van Praag 1991). Obviously, family size positively influences the minimum income or subjective poverty line—we use the terms interchangeably. In addition, the actual level of family income, which may be regarded as a proxy for the family's permanent income, positively influences the subjective poverty line. The rationale is that families accustomed to a higher standard of living will, everything else being the same, have higher aspirations and hence a higher estimate of their minimum income. van Praag (1971) calls this "the preference drift." Its value, in a double-log formulation such as equation 1, lies between 0 and 1. If the preference drift equals 0, then the subjective poverty line becomes an absolute poverty line. At the other extreme, when the preference drift equals 1, every increase in real income exacts the same percentage increase in what is perceived to be the poverty line. The poverty line then becomes fully relative. Not surprisingly, most research has yielded values of the preference drift between 0.4 and 0.7 (see, for example, Flik and van Praag 1991 and van Praag and Flik 1992). These values fit well with our intuitive perception that, as people get richer, they set the necessary minimum higher, but do not raise it (in percentage terms) as much as the rise in their income.

Answers to the minimum-income question yield several observations. We fit the regression based on these observations; the intersection of the regression and

45-degree lines is defined as the social subjective poverty line (see point *A* in figure 1). Households to the left of *A* have income below the regression line (that is, less than society deems needed). They are considered poor. Households to the right of *A* are not considered to be socially poor because their actual income is above the regression line—even if they may consider themselves to be poor (for example, their required minimum income may lie at *C*, much above their own income).

Writing equation 1 in log-linear form, we derive equation 2:

(2) $$\ln MY_f = \beta_0 + \beta_1 \ln Y_f + \beta_2 \ln n.$$

And letting $MY_f = Y_f$, we derive equation 3:

(3) $$(1 - \beta_1)\ln Y_f = \beta_0 + \beta_2 \ln n.$$

The elasticity of family size with respect to the subjective poverty line (that is, the parameter θ in the expression of the equivalent income, Y/n^θ, which is defined below) becomes $\frac{\beta_2}{1 - \beta_1}$.

Unfortunately, the data set that was available to us does not contain the minimum-income question as we have explained it (see section II). Instead of asking the household head for his or her opinion on the minimum income for the entire family, the enumerator asked, "What income, in your opinion, constitutes the subsistence minimum per person at the present time?" This is a very general minimum-income question, in effect asking for the respondent's view of the minimum income for an adult (since "person" is likely to be interpreted as "adult").

Figure 1. *The Social Poverty Line*
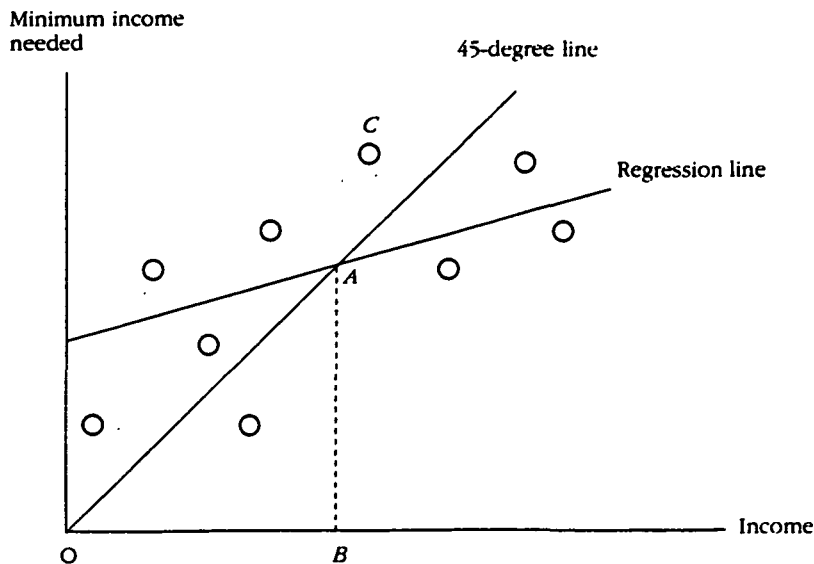
Note: The social subjective poverty line is defined by point *A*.

It does not ask what the minimum income per person would be for that family.[2] Therefore, we cannot apply our theory in a straightforward fashion; we must use an alternative approach.

Equation 4 shows the effective formulation based on the question as asked and introduces other control variables that may be relevant:

(4) $\ln AMY = fct(\ln Y^*, age, age^2, SETTLEMENT, REGION, time)$.

AMY represents answers to the question about the minimum income for an adult. The other variables are Y^*, the true income level of the household (income per equivalent adult in the household), age of the respondent, size of the settlement (a dummy variable), region where the family lives (a dummy variable), and time. The crucial variable is true income. In trying to determine what people believe to be the minimum income for an adult in Russia based on their own income, we must define Y^* so that it accurately reflects the household's economic welfare. Clearly, Y^* is unlikely to be total family income because total family income does not take into account the number of people in the family. But it could be per capita income or income per equivalent adult, which accounts for economies of size. Therefore, we define Y^* as Y/n^θ, where θ is a parameter for economies of size ranging from 0 (full economies of size) to 1 (no economies of size or per capita measurement).

Determining the right θ is problematic. We argue that the right θ (θ^*) will make the sign of the variable for household size (n) not significantly different from 0. The rationale is as follows. Once we identify true household income, there is no reason why a household's size or composition should affect what people regard as the minimum income for an adult. Therefore, we try different values of $Y(\theta^*)$ and choose the $\theta = \theta^*$ that makes the coefficient on $\ln n$ equal to 0 in equation 3. For values of $\theta < \theta^*$ we expect the coefficient on $\ln n$ to be negative because the economic welfare of large households is overestimated (they are not as rich as they seem). Their estimate of minimum income (AMY) is systematically biased downward, which in turn leads to a negative correlation between AMY and $\ln n$ and to a negative regression coefficient. For values of $\theta > \theta^*$ the opposite is true, and we expect the regression coefficient to be positive.

Including the age and age^2 variables accounts for the (parabolic) life-cycle effect whereby perceived needs increase until they reach a peak and decrease thereafter. We have to be careful with the interpretation of these variables because they record the age of the respondent and not necessarily the age of the household head.

We capture the importance of the environment on the perception of the poverty line by introducing a dummy variable for the size of the settlement and a dummy variable for the region where the settlement is located. People living in big cities or richer regions (for example, Moscow or St. Petersburg) face higher

2. If respondents are rational, there is no difference between asking them the minimum total income for their family and the minimum per capita income for their family. The answers to the latter can simply be multiplied by the number of family members to obtain the minimum family income.

prices and would be expected to pitch their poverty line higher.[3] The social reference (demonstration) effect may also be important in larger cities, as people seeing the wealth of others come to expect more. Living in a harsh climate might also increase people's perception of the necessary minimum income.

Finally, we introduce a variable for time in our model in order to capture changes in the perception of the poverty line over time. Our hypothesis is that the subjective poverty line will fall as time passes and people adapt to worsening conditions. Our data span March 1993 to September 1996, during which time the real income of the Russian population declined severely. The decline is estimated at 14 percent based on our survey results or at almost 20 percent based on official (*Goskomstat*) monthly estimates of population income over the same period (see figure 2). Note from figure 2 that our data underestimate income by about 40 percent compared with the official data, but also that the underestimation diminishes with time. Most of the difference is due to the omission of income in kind from the survey data. Both official and survey data almost certainly underestimate the gray or black economy.

We ask whether, in addition to the income effect, the passage of time and the realization of what seem to be ever-worsening circumstances lead the public to scale down its expectation of the minimum tolerable income. As adaptation to less-fortunate circumstances proceeds, we expect the *time* variable to enter negatively in equation 3.
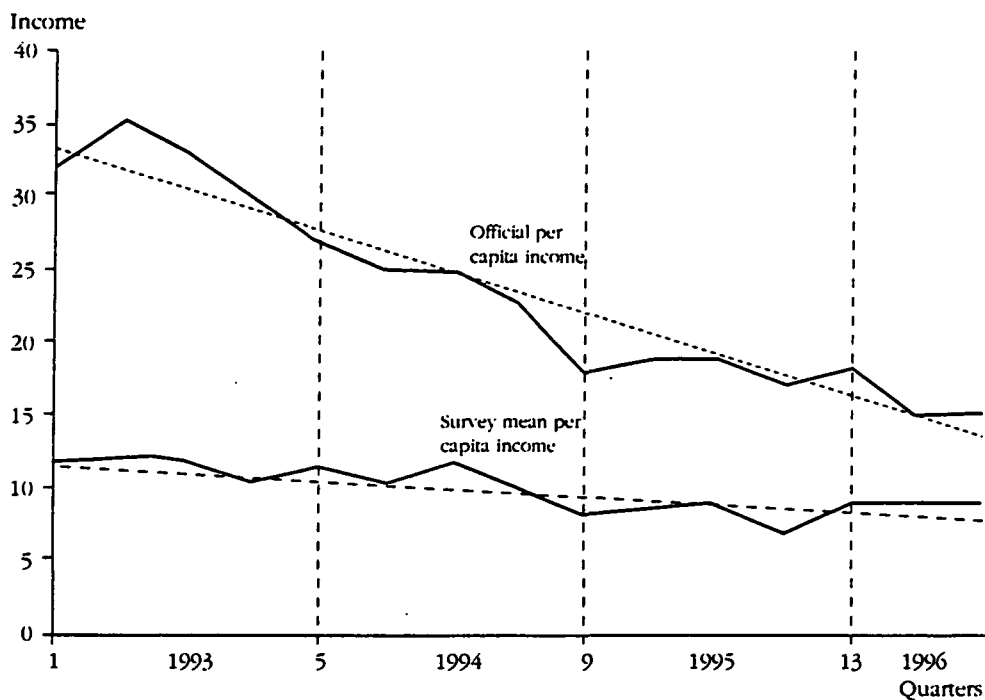
II. The Data

We use the 29 cross-sectional data sets from the All-Russian Centre for Public Opinion Research (VCIOM by its Russian abbreviation), covering the period from March 1993 to September 1996. The survey is a representative sample of Russian households. It was conducted monthly between March 1993 and January 1994, and approximately every second month since then. Although most of the survey questions are concerned with the household (family), some questions target individuals. These variables include, among others, gender, age, and education. In most surveys such questions are targeted specifically to the head of the household. Here, however, the respondent is not necessarily the household head. The fact that the respondent need not be the household head might jeopardize the accuracy of some data (for example, the respondent may not be fully aware of all the components of household income).

The original data set consisted of 91,090 observations spread over 29 cross sections. We reduced the number of observations to 80,826 after omitting those that did not contain information on family income (total or by components). Individual cross sections contained between 3,626 (January 1994) and 2,034 (September 1996) observations. The reduction of the sample size over time was

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3. Our database is not deflated for regional price differences because regional consumer price indexes are not available.

Figure 2. *Real Population Income, 1993–96*
(thousands of constant March 1993 rubles per capita per month)

Income

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      │           │                    │                        │
35 ┤      ╱╲      │                    │                        │
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   1      1993     5       1994         9       1995        13    1996
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                                                                   Quarters

Note: Broken lines show trends.

Source: Survey per capita income calculated from VCIOM surveys. Official per capita income from monthly *Goskomstat* statistics.

considerable; however, according to the VCIOM staff, it did not make the sample less representative because the sampling procedures were improved.[4]

Table 1 gives summary statistics for the basic characteristics of the households and respondents surveyed.[5] Total family income is computed as the sum of income components: main income and income from a second job, private sector activities, pensions, other social transfers (including family, unemployment, and disability benefits), stipends, alimony, income from financial papers (stocks and bonds, vouchers, interest from savings accounts), sale of self-produced goods, and other monetary income (appendix A provides details). We use the all-Russia monthly consumer price index (CPI), with March 1993 as the base, to deflate all the monetary variables. We assume that inflation affects all regions equally (regional CPIs are not available).

In real terms the subjective minimum income for an adult (*AMY*)—calculated as an individual-weighted average of *AMY*s over all households—decreased dramatically between March 1993 and September 1996. It started out higher than

4. We owe this information to Jeanine Braithwaite.
5. More detailed statistics are available from the authors.

Table 1. *Summary Descriptive Statistics, 1993–96*

Variable	1993	1994	1995	1996
Women (percent)	60.06	60.12	57.04	56.65
Age of respondent (years)	42.71	42.40	42.58	43.29
Education attained by respondent (percent)				
Primary or less	6.10	5.85	5.82	5.51
Secondary, incomplete	8.08	8.15	8.75	8.56
Secondary, completed with no diploma	2.69	2.58	2.31	2.53
Technical school, less than secondary	4.44	4.07	3.99	4.45
Secondary, completed with diploma	15.34	14.88	15.16	13.79
Technical school and secondary	9.80	10.22	9.87	10.29
Vocational school	27.57	28.33	27.34	27.19
University, 3–4 years	3.20	3.44	3.81	3.90
University, completed	22.77	22.49	22.96	23.78
Number of observations	34,759	23,040	12,189	10,298

Note: Values are averages of the monthly averages, with 10 months for 1993, 8 months for 1994, 6 months for 1995, and 5 months for 1996.

Source: Authors' calculations from the VCIOM data.

Rs35,000 (rubles) in the early surveys and ended at Rs15,000 (see figure 3). The Ministry of Labor's official minimum income for an adult (*prozhitochnyi minimum*) remained constant in real terms at around Rs10,000.[6] The gap between the subjective and the official minimum diminished steadily, as the public perception of the minimum income for an adult Russian gradually approached the official minimum.

The composition of households, as well as the demographic characteristics of the respondents, stayed roughly the same over time (see tables 1 and 2). Over the entire survey period the average household consisted of 3.1 members, with 0.7 children (table 2). For comparison, according to the all-Russia official statistics for 1994, the average household size was 2.84 members (Goskomstat Rossii 1995). The average survey respondent was 42.7 years old and spent 11.2 years in school (table 1). The average duration of schooling of the population over 15 years of age calculated from the 1993 Russian Longitudinal Monitoring Survey was a little over nine years. Of all the respondents, 59.2 percent were women; according to official statistics, women made up 53 percent of the Russian population in 1995.

Most of the respondents (76.5 percent) lived in urban areas, a percentage close to the official 1995 statistics (73 percent). A plurality of respondents (46 percent) lived in cities with populations less than 100,000, followed by 25.1 percent who lived in cities with populations over 1 million.

In order to check for possible outliers in the data, especially in Y_f and AMY, we create a flag variable. We compute the variable for each cross section sepa-

6. The official minimum is composed of a given bundle of food and nonfood goods. Its slight oscillations around Rs10,000 in March 1993 prices are due to the fact that the CPI we use to deflate the nominal monthly values of the official minimum at times might have increased faster or slower than the cost of the minimum bundle of goods.

Figure 3. *The Average Subjective Poverty Line for an Adult, the Official Poverty Minimum for an Adult, and Average Per Capita Income, 1993–96*
(thousands of March 1993 rubles per month)

Poverty lines, income
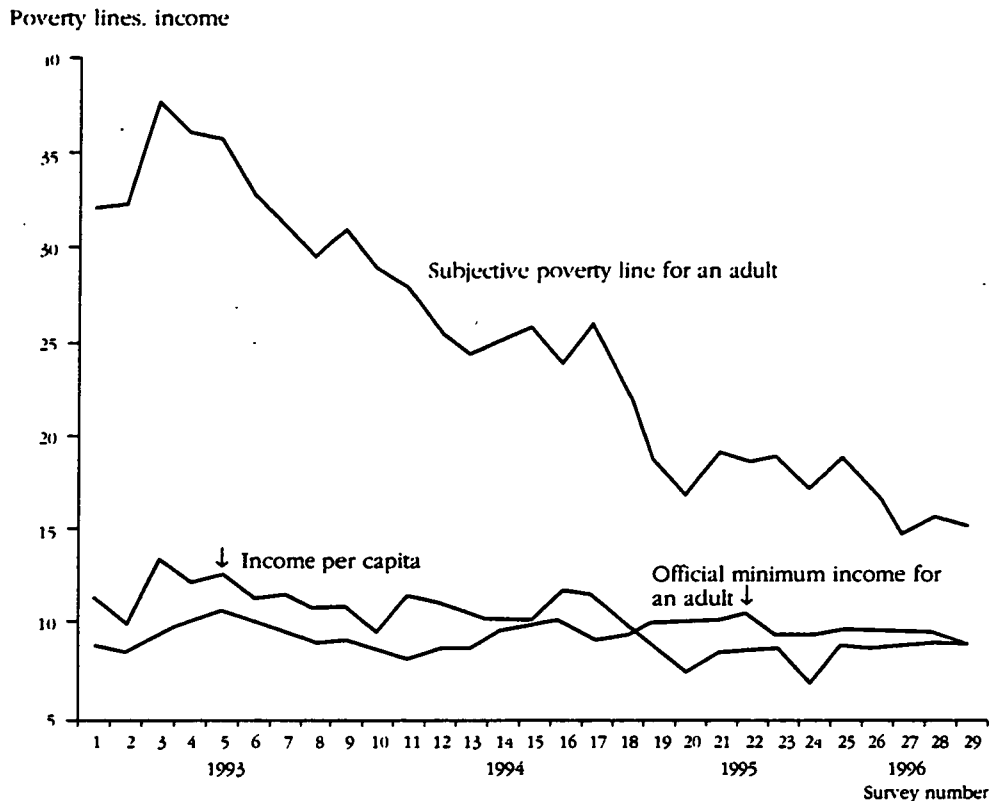
Note: The average subjective poverty line for an adult is the simple individual-weighted average of poverty lines (*AMY*) in the surveys: the official poverty line for an adult is the all-Russia official poverty line (*MinTruda RossiI*); the average per capita income is the average income from vciom surveys (as in figure 2).

Source: Authors' calculations.

rately according to the method developed by Hadi (1992, 1994) using the *hadimvo* procedure in STATA; 2,634 observations are identified as possible outliers, representing 3.28 percent of the total sample.

III. ESTIMATING THE SUBJECTIVE POVERTY LINE

We first try to estimate true household income using different values of θ. To do so, we run the basic model, equation 3, including in addition ln n as the control variable for household size. Figure 4 shows how the coefficient on ln n changes as θ in $Y(\theta^*)$ varies from 0 to 1. For $\theta = 0.62$, the coefficient equals 0. (It is insignificantly different from 0 for a few other values around 0.6, but takes its lowest value for $\theta = 0.62$.)

Table 2. *Poverty Lines and Household Characteristics, 1993-96*
(thousands of rubles per month at March 1993 prices)

Variable	1993	1994	1995	1996
Total real family income				
Average	35.29	34.14	25.11	27.22
Bottom quartile	8.42	7.44	6.16	6.61
Top quartile	90.45	88.93	61.38	68.44
Per capita real family income[a]				
Average	12.51	11.97	8.89	9.75
Bottom quartile	3.42	3.02	2.48	2.55
Top quartile	32.38	31.48	21.92	24.52
Subjective per adult poverty line	32.63	25.30	18.24	16.27
Size of household	3.08	3.13	3.07	3.07
Children per household	0.69	0.72	0.68	0.65
Share of pensions in household income (percent)	15.8	20.6	22.9	22.7
Gini coefficient (all Russia)	44.6	45.4	41.4	45.2
Number of observations	34,759	23,040	12,189	10,258

Note: Values are averages of the monthly averages, with 10 months for 1993, 8 months for 1994, 6 months for 1995, and 5 months for 1996.

a. Per capita real family income is calculated using number of people per household as weights.

Source: Authors' calculations from VCIOM data.

Figure 4. *Household Size and the Elasticity of Household Size with Respect to the Subjective Poverty Line*

Regression coefficient
on household size

Elasticity of household
size with respect to the
subjective poverty line. θ
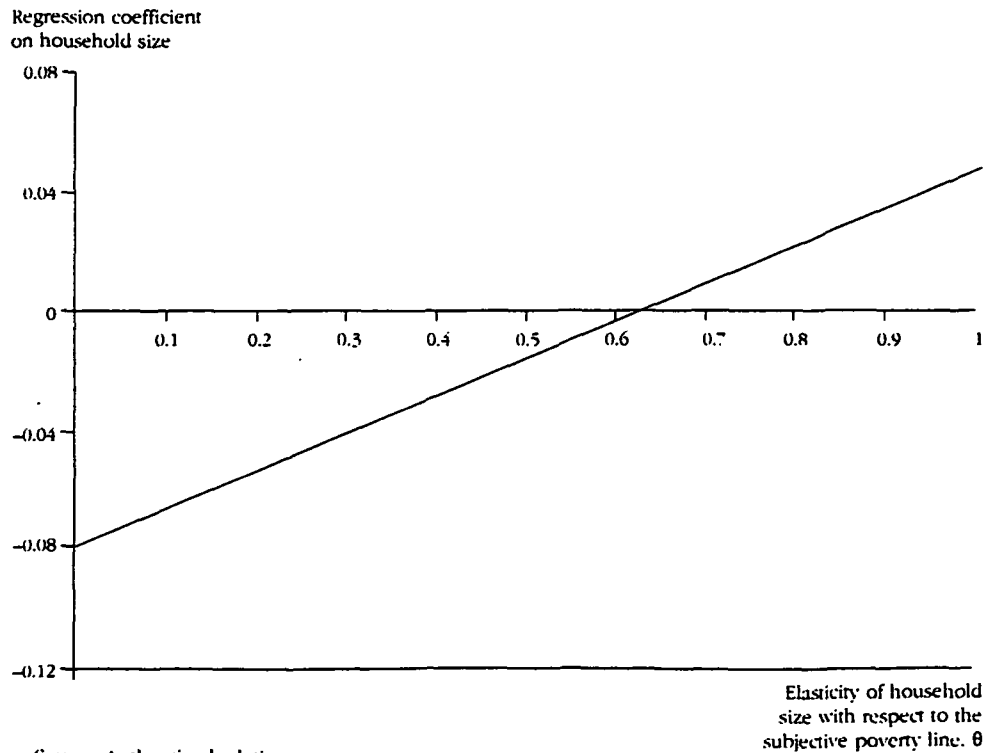
Source: Authors' calculations.

We then directly estimate equation 3 using $Y^* = \dfrac{Y}{N^{0.62}}$ (table 3).[7] All the regressions are run with Huber (robust) variances to adjust for the fact that the observations are drawn from different time clusters (that is, from the 29 surveys). The Huber correction also adjusts for the fact that the variability of the observations within each survey is less than it would be if all observations were randomly drawn from the population at large. That is, the variability of the observations from the pooled cross sections is less than what it would be if all 80,000 of our observations were drawn from one cross section. Nevertheless, the *t*-values in table 3 show that most of the coefficients are significant at a probability greater than 99 percent.

The elasticity of the subjective poverty line for an adult with respect to income is 0.144 for the overall sample and 0.132 in a regression that excludes Hadi outliers (see appendix B on the *hadimvo* procedure). These values are significantly lower than those reported by Frijters and van Praag (1994) in their study of the former Soviet Union and Russia. Frijters and van Praag report preference drift values of 0.62 and 0.64 for Russia in 1993 and 1994, respectively. For the Soviet Union in 1991, they report a value of 0.41. However, our results and their results are not entirely comparable. Frijters and van Praag use a variant of the so-called income evaluation question in order to obtain the left-side variable (the Leyden poverty line).[8] We use the income level that people consider the minimum value for an adult.

We calculate a value for preference drift that is significantly lower than the value found in some Western countries. Flik and van Praag (1991), for example, report a value of 0.59 for the Netherlands. Hagenaars and van Praag (1985) report a value of 0.54 for a collection of West European countries. Part of the difference may be due to the richer choice of control variables included here (regional and size of settlement dummies), as well as to the introduction of the *time* variable. In effect, if we run a very parsimonious formulation, such as equation 1, which is basically what Hagenaars and van Praag (1985) do (without a control variable for household size), the preference drift increases from 0.14 to 0.23.

The latter value (0.23) is almost identical to the preference drift of 0.223 obtained by Ravallion and Lokshin (1999). Ravallion and Lokshin use what they dub the economic ladder question, whereby individuals rank their own subjective level of living from 1 (the poorest) to 9 (the richest). Similar to the rest of the subjective poverty literature, underlying differences in real income explain the rankings. Ravallion and Lokshin use a representative sample of the Russian population in 1996 from the Russian Longitudinal Monitoring Survey.

7. We also estimate equation 3 for each individual year using θ calculated for that year. The results are available on request. The coefficients of equation 3 are stable regardless of whether we use yearly cross sections or pooled data.

8. Under the income evaluation question methodology a respondent is asked to write the level of income that the respondent's family would consider to be very bad, bad, middling, good, and very good. The mean of the five answers is defined as the Leyden poverty line. For more on the methodology see Hagenaars and van Praag (1985) and Flik and van Praag (1991).

Table 3. *Regression Results for the Subjective Minimum Income for an Adult*

Variable	(1) Basic equation with Huber (robust) variances	(2) Regression without Hadi outliers	(3) Regression with Gini coefficient	(4) Regression with median survey income
Ln equivalent income (Y*)[a]	0.144	0.132	0.132	0.126
	(24.0)	(22.3)	(22.3)	(21.3)
Age	0.016	0.017	0.017	0.017
	(14.0)	(17.1)	(17.1)	(16.6)
Age^2	−0.0002	−0.0002	−0.0002	−0.0002
	(−18.9)	(−20.5)	(−20.6)	(−20.8)
Small towns and villages (less than 100,000 people)	−0.062	−0.065	−0.066	−0.073
	(−4.2)	(−4.3)	(−4.4)	(−4.7)
Towns (100,000–500,000 people)	0.064	0.056	0.056	0.054
	(4.0)	(3.4)	(3.4)	(3.2)
Medium-size cities (500,000–1 million people)	0.058	0.059	0.058	0.059
	(4.7)	(4.8)	(4.9)	(5.0)
Northern region	−0.243	−0.220	−0.223	−0.226
	(−12.0)	(−11.7)	(−10.7)	(−11.8)
Central and Central Black Earth	−0.330	−0.307	−0.311	−0.328
	(−13.9)	(−13.0)	(−10.9)	(−12.1)
North Caucasus	−0.225	−0.210	−0.210	−0.209
	(−5.7)	(−5.6)	(−5.5)	(−5.6)
Volga-Vyatka	−0.324	−0.291	−0.295	−0.315
	(−13.1)	(−12.3)	(−10.6)	(−11.5)
Volga	−0.256	−0.236	−0.239	−0.253
	(−6.9)	(−6.9)	(−7.0)	(−7.7)
Urals	−0.194	−0.179	−0.182	−0.201
	(−7.8)	(−7.5)	(−6.7)	(−7.6)
West Siberia	−0.150	−0.131	−0.132	−0.139
	(−6.4)	(−6.0)	(−5.6)	(−6.2)
East Siberia and Far East	0.035	0.030**	0.028**	0.199**
	(1.6)	(1.4)	(1.3)	(1.0)
Time	−0.017	−0.017	−0.017	-
	(−17.7)	(−18.0)	(−17.3)	
Ln median income (by survey)				1.50
				(11.3)
Regional Gini coefficient (by survey)			−0.054**	−0.284**
			(−0.4)	(−1.9)
Constant	2.889	2.822	2.847	−1.93
	(82.7)	(97.8)	(40.0)	(−4.8)
Sample size	79,595	76,965	76,965	76,965
R^2	0.189	0.191	0.191	0.178
F-value	210.6	246.9	243.4	408.8

** Not significant.

Note: *t*-values are in parentheses. All coefficients are significant at the 1 percent level, unless noted. For size of settlement, the omitted category is larger cities (population over 1 million). For region, the omitted variable is the city of Moscow.

a. Defined as $Y/N^{0.62}$.

Source: Authors' calculations.

The fact that two independent studies using different surveys both derive very low values for preference drift in Russia requires explanation. There are, we believe, two possible reasons. First, people's views may vary less with income when they are asked what they consider to be a minimum amount for an adult in general (as in the VCIOM survey) than when they are asked the minimum for their own family. When referring to their own family, poor people may pitch their minimum fairly low, while the rich may find it hard to imagine living without a relatively high income. But the opinions of the poor and rich may not be so far apart in reference to an abstract (adult) individual.

Second, low preference drift may suggest relative homogeneity in people's perceptions. People at the top of the income scale may not evaluate the minimum income needed to make ends meet much differently than poor people. The relatively recent explosion of income inequality may explain this homogeneity. People who recently had similar incomes will not suddenly diverge very much in their perception of the poverty line. In countries such as those in Western Europe, income differences historically have been greater and income mobility lower (in the sense that people who currently have high incomes probably had high incomes five or ten years ago). In those countries rich and poor people's perceptions of the poverty line may differ significantly. By contrast, Russia, until recently, was very egalitarian and was then subjected to an almost random and huge income shock. Some people's incomes increased manifold, and other people's incomes dropped significantly, but both groups' perception of the minimum income may have remained similar.

The economies of scale parameter (θ) is 0.62. This result is close to the value of 0.5 reported by Frijters and van Praag (1994) for Russia in 1994 and 0.42 reported by Ravallion and Lokshin (1999) for Russia in 1996.[9] Compared with other methods, subjective methods yield a relatively low value for the equivalence scale (see Atkinson, Rainwater, and Smeeding 1995).

The parabolic age effect implies that the subjective poverty line rises with age until a certain point, after which needs decrease. The peak occurs at around 40 years, some four and a half years later than reported by Frijters and van Praag (1994). However, because the variable captures the respondent's age, it may not represent the age composition of the household.

The dummy variables adjust for the size of the settlement where the family lives and for the region. For the size of the settlement the omitted category is larger cities (with populations over 1 million). The subjective poverty line is lower in small towns and villages. Surprisingly, the perceived minimum income for an adult is higher in towns and medium-size cities than in very large metropolitan areas. We would expect that needs would increase monotonically with the size of the settlement, perhaps because the cost of living is higher or the demonstration effect is greater. The absence of this regularity for large metropolitan areas may be due to the fact that the regional variables are picking up some of the effect.

9. The standard error for the Ravallion-Lokshin estimate is 0.148.

For the regional variables the city of Moscow is the omitted category. Of course, subjective needs in all other regions except East Siberia and Far East are less than those in the city of Moscow. (The city of Moscow does not include the Moscow region, which is part of the Central and Central Black Earth region.) Compared with Moscow, the subjective poverty line is lower, ceteris paribus, by between 13 percent in West Siberia and 30 percent in the Central and Central Black Earth and Volga-Vyatka regions. In East Siberia and Far East the subjective needs are about the same as in Moscow. The high poverty line in East Siberia and Far East is explained by the harshness of the climate (which raises housing and energy expenditures) and the regions' remoteness (which means that prices of consumption goods are higher). We discuss the difference between the regional subjective and official poverty lines in section IV.

The variable *time*, measured in months with March 1993 as the starting point, shows how the subjective poverty line for an adult changes as people downscale their expectations.[10] In principle, we would expect this effect to operate through the income variable—lower income would, through the preference drift, reduce the subjective poverty line. But given the rapid decline in real income in Russia during 1993–96, people downscaled their expectations even faster. Thus the passage of each month (after March 1993) reduced the subjective poverty line 1.7 percent. After more than three years of depression (by the fall of 1996), the public's perception of the minimum per capita income was about half of what it would have been had people maintained the same real income that they held at the beginning of the period (spring of 1993). We introduce the $time^2$ variable to determine whether the time effect subsided as the surveys progressed. It is not significantly different from 0.

In variant 3 in table 3 we introduce a measure of income inequality (the regional Gini coefficient) to account for a possible increase in the subjective poverty line due to higher inequality. Hagenaars and van Praag (1985) find that such an influence is explained by the demonstration effect (greater inequality and therefore the presence of higher incomes invite people to pitch their poverty lines higher). We calculate the Gini coefficient for per capita income for each region and for each survey and include it in the regression. However, we find no evidence that inequality influences the subjective poverty line.

Finally, we replace *time* by median per capita income (see variant 4 in table 3). We expect that the subjective poverty line will fall with people's real income. Indeed, figure 2 illustrates the decrease in mean per capita real income, and figure 3 illustrates the decrease in the subjective poverty line. We find the elasticity of the subjective poverty line with respect to survey median income to be very high: 1.5. Section V shows how this elasticity affects the calculation of the number of people who are subjectively poor. If the elasticity of the subjective poverty line with respect to mean or median income is greater than unity, the percentage

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10. An alternative formulation would be to use survey dummies. The results (available on request) suggest a decreasing subjective poverty line beginning at the end of 1993.

of people who feel poor will tend to decrease as income goes down. Paradoxically, (subjective) poverty would become less widespread as people's (objective) circumstances deteriorate.

The other coefficients in variant 4 in table 3 are stable, with one exception. The inequality variable (the regional Gini) increases, but is still not significant at the 5 percent level.

IV. Comparing Regional Subjective and Official Poverty Lines

We have already seen that the subjective poverty line for an adult is several times higher than the official poverty line (*prozhitochnyi minimum*) for an adult, although the gap between the two diminishes over time. Here we look at differences in the structure (rankings) of the regional official and subjective poverty lines. Table 4 shows the ruble amounts for the official and subjective regional poverty lines in 1996. As we would expect, subjective poverty lines are always higher, but the extent of the gap differs among regions: the official poverty line is less than half of the subjective line in North Caucasus, but is almost two-thirds of the subjective line in the North.

The regional differences imply that the official poverty lines do not accurately reflect the population's perception of the differences in subjective needs among the regions, even though the correlation coefficient between the official and subjective poverty lines is 0.85. Figure 5 shows that if the subjective and official poverty lines for the city of Moscow are set at 100, the relative subjective poverty lines for all but one region (North) are higher than official lines. This finding suggests a pro-Moscow bias in setting official poverty lines. For example, the official poverty line for an adult in the Caucasus is 40 percent lower than that for an adult in Moscow; but the public perception is that it should be only 20 percent less (figure 5).

Table 4. *Official and Subjective Regional Poverty Lines, 1996*
(thousands of March 1993 rubles)

Region	Official poverty line	Subjective poverty line	Ratio of official to subjective poverty line
North	8.30	12.7	0.65
Central and Central Black Earth	6.55	11.3	0.58
North Caucasus	6.17	12.9	0.48
Volga-Vyatka	6.82	11.5	0.59
Volga	6.84	12.4	0.55
Urals	7.47	13.4	0.56
West Siberia	8.79	14.1	0.62
East Siberia and Far East	9.06	16.8	0.54
Moscow	10.30	16.3	0.63

Note: The subjective poverty lines cover the period January–September 1996.

Source: Authors' calculations. Official poverty lines calculated from Goskomstat Rossii (1998, tables 2.7 and 4.20). Subjective poverty lines calculated from regression 2 (table 3).

Figure 5. *Official and Subjective Regional Poverty Lines Indexed to Moscow, 1996*
(Moscow = 100)
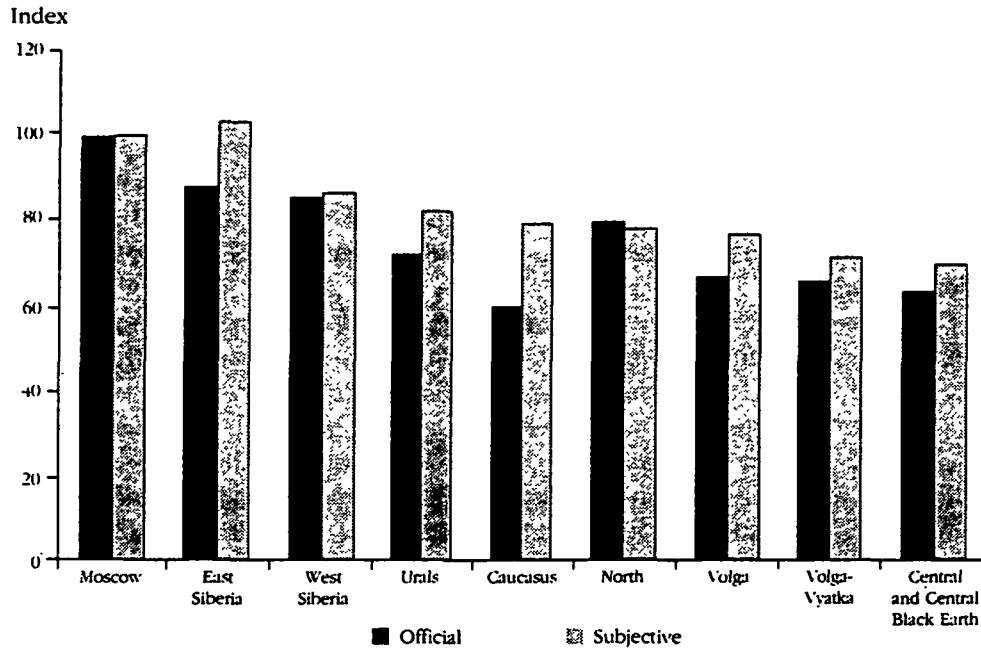
Source: Authors' calculations.

V. HOW MANY PEOPLE ARE POOR?

In this section we look at the proportion of people who are poor, defined according to three criteria. The first criterion labels "subjectively poor" those households that assess themselves as poor, that is, households whose view of the minimum income for an adult is greater than their actual adult equivalent income (AMY_f > Y_f^* for a given family). A problem with this criterion is that two identical households with the same income may be classified as poor and nonpoor, depending on how they perceive their own well-being.

For the second criterion, the "socially subjectively poor," we impose a social equivalence scale (θ = 0.62) that may not correspond to a household's own equivalence scale. This criterion defines as poor those households whose current income per equivalent adult (Y_f^* using θ = 0.62) is less than the social subjective minimum income (per adult) for such a household. Regression 3 (the variant with Huber-robust variances and excluding Hadi outliers) predicts this income measure.

According to the third criterion, the poor are those whose current income per equivalent adult (Y_f^* using θ = 0.62) is less than the official all-Russia poverty line (per working adult).

Figure 6 shows the share of individuals who are poor according to the three criteria. We can draw several conclusions. First, an extremely high percentage of the population (almost always greater than 60 percent) is subjectively poor, whatever (subjective) criterion is used. This percentage is consistently higher than the percentage judged to be poor by the official poverty line.

Second, there is a clear tendency for the subjective poverty headcounts to decrease with time. The subjective poverty line fell faster than real income, so that fewer people assessed themselves as poor. The percentage of the socially subjective poor dropped from 90 percent in March 1993 to less than 60 percent in September 1996. At the same time, real average per capita income decreased 14 percent.

Third, because real income fell while the official poverty line remained the same, the proportion of people whose income was less than the official poverty line increased from a third of the population in 1993 to more than half in 1995, before dropping to near 40 percent in late 1996.[11] Thus the decrease in real income has made more people poor according to an objective and fixed yardstick. Ironically, the same reduction in real income has reduced people's perception of the minimum income they need to survive and has made fewer of them feel poor. Figure 7 shows that the decrease in the percentage of self-assessed poor coincided with the decline in real income. The decline in the percentage of self-assessed poor decelerated only between mid-1994 and mid-1995, when current real income took another sharp dip: a larger than usual decrease in real income was required to keep the percentage of the self-assessed poor constant. Thus there are two circumstances under which fewer people feel poor: when their real incomes grow quickly or when their real incomes fall (equally) quickly. In Russia, unfortunately, it was the second alternative that occurred.

Fourth, in all but two surveys the social subjective poverty line yields higher poverty headcounts than do people's own assessments (figure 6). This means that some households that are socially considered poor do not view themselves as such.[12] These households fall in the triangle OAB in figure 1, to the left of the social poverty line AB. These households' assessment of their well-being is better than the "social" assessment, possibly indicating the presence of the much-discussed pockets of social resilience and patience often associated with the Russian population.

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11. We cannot compare this figure with the percentage of poor from the official Goskomstat statistics, which ranged between 22 and 31 percent over the same period (Goskomstat Rossii 1998: 79), or the percentage obtained from the Russian Longitudinal Monitoring Survey (see World Bank 1998: 5). Income in these surveys is defined to include noncash sources, while in the VCIOM income includes only cash sources.

12. A caveat is in order here. Since we assume that all households have the social equivalence scale reflected in $\theta = 0.62$, some households that classify themselves as poor may in fact have a lower θ and thus not regard themselves as poor. The opposite classification mistake is possible for nonpoor households whose θ is greater than 0.62.

Figure 6. *Share of Poor Individuals in the Total Population According to Three Concepts of Poverty, 1993–96*
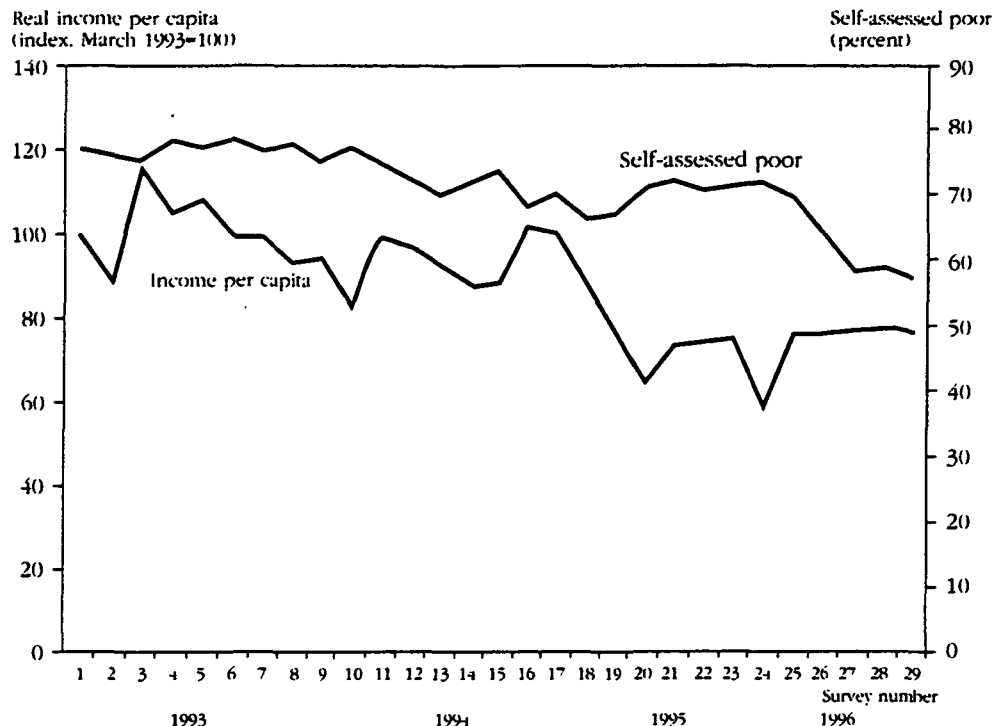
Percentage poor
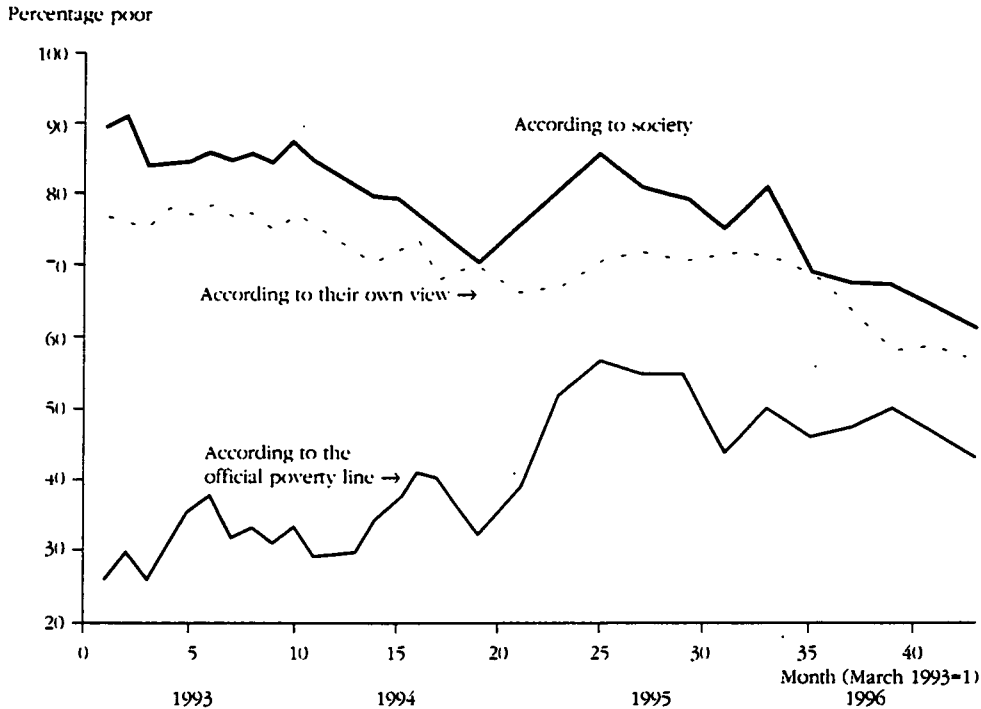
Note: All shares are individual-based
Source: Authors' calculations.

VI. CONCLUSIONS

In the three and a half years (March 1993 to September 1996) covered by the VCIOM surveys of the Russian population, real per capita income fell 15–20 percent. This decrease came on top of severe income contractions in 1991 and 1992. Thus the Russian population experienced one of the worst peacetime depressions in the twentieth century. At the same time, income inequality increased substantially. In this article we have analyzed what happened to the public's perception of the minimum income needed to make ends meet under these exceptional conditions.

We would expect the subjective poverty line to decrease as well. Indeed, the elasticity of the subjective poverty line with respect to median population income is above unity—a very high 1.5. The *time* variable is significant, as the subjective poverty line fell 1.7 percent each month. Thus after more than three years of depression, the public's perception of the minimum income an adult would need to survive was about half of what it would have been had real incomes remained what they were at the beginning of the period.

Figure 7. *Real per Capita Income and the Self-Assessed Poor, 1993–96*

Real income per capita
(index. March 1993=100)

Self-assessed poor
(percent)

Note: Real per capita income is calculated from VCIOM surveys.
Source: Authors' calculations.

At the same time, the cross-sectional preference (income) drift parameter is relatively low, at slightly less than 0.15: each percentage point fall in real income, on average, reduces the public's perception of the poverty line by 0.15 percent. Even after dropping the *time* variable, income drift remains low (0.23) compared to West European countries, where it ranges from 0.4 to 0.7. This seems to suggest that people's perception of the subjective poverty line in Russia was relatively homogeneous. Those at the top of the income scale did not evaluate the minimum income needed to survive much differently than did the poor. We explain this result in that the poverty line question may have been formulated so as to address implicitly the needs of an adult or that income inequality had exploded relatively recently. The poverty line question might have influenced the answers in the sense that the rich and the poor might differ less in their responses when asked to assess how much the general person needs to survive than when asked how much they themselves need. The recent increase in inequality might mean that people who had similar incomes until only recently will not suddenly diverge very much in their perception of the poverty line.

We also find that subjective needs vary across regions. The poverty line is highest in East Siberia, Far East, and the city of Moscow. The poverty line in other regions is between 13 percent (West Siberia) and 30 percent (Central and

Central Black Earth, and Volga-Vyatka) less than that in the city of Moscow. These differences are smaller than the differences in the official regional poverty lines, suggesting the existence of a pro-Moscow bias in setting the official lines.

During the time period studied, a very high percentage of the population (always more than 60 percent) considered itself poor according to the social subjective poverty line. The percentage of the subjectively poor tended to decline more than proportionately with the decline in real income. We thus face a somewhat unusual situation in that the percentage of the subjectively poor decreased more or less in step with the reduction in people's real income. Only larger than usual declines in income kept the percentage of the poor unchanged.

It is also noteworthy that the percentage of the self-assessed poor was always lower than the percentage of the socially subjective poor. Thus part of the population regarded their own income as adequate, although they were deemed poor according to the public's perception of minimum income. These last two findings—the decline in the percentage of the subjectively poor as real income fell and the lower percentage of self-assessed poor than socially subjective poor—suggest that to adapt to the worsening circumstances, people sharply reduced their perception of the minimum income needed for survival.

APPENDIX A. CONSTRUCTION OF THE INCOME VARIABLES

The VCIOM data set contains several income variables that are measured on both the individual and household levels. Two reported income variables are individual main income and individual income from a second job. Household (family) income components include family income from a main job, family income from a second job, income from private sector activities, pensions, other social transfers, stipends, alimony, income from financial assets (stocks, bonds, vouchers, interest income), income from sale of self-produced goods, and other monetary income.

The total family income variable is also included in the data set, and it is supposed to equal the sum of the family income components, but rarely does. In some cases total family income was reported missing, although the income components were available. Also, in some cases, even though all the income components were missing, total family income took a positive value. Furthermore, there were inconsistencies in reported individual and family main income, as well as between individual and family income from a second job.

We computed total family income as the sum of the family income components, that is, as the sum of main job income, income from a second job, and income from private sector activities, pensions, benefits and subsidies, stipends, alimony, income from financial assets, income from sale of self-produced goods, and other monetary income. This was done as follows:

- The individual main income variable before April 1994 corresponds to the variable *main_inc*, and to the variable *main_in2* thereafter (the two variables

have the same definition, only the name has been changed). Thus for any survey after April 1994, we replace the value of *main_inc* with *main_in2*. However, no data are available for November 1995 because that survey did not ask a question concerning the main income; therefore we do not have observations on the main individual income for that survey.

- The variables family income from a main job and from a second job are at least equal to the corresponding variables for the individual. Therefore, where the data on family income are missing or less than the individual income, we replace the value of family income with the observation on individual income.

In cases where all the income components are missing, we replace our total income with VCIOM-computed total income. Also, where our total income is less than the VCIOM-computed total income, we take the VCIOM value. Although the code book reports that a value of zero should be treated as a missing variable, both true zero and missing responses seem to be coded as zero. We do not attempt to distinguish between the two because efforts in that direction are unlikely to be fruitful.

APPENDIX B. THE HADI PROCEDURE

The basic outline of the Hadi (1992, 1994) procedure is as follows. We define a measure of distance from an observation to a set (cluster) of points. The points are scatter plots, with one variable on the x-axis and one on the y-axis. Initially, we have only three points because we operate with only two variables (we assume explicitly that outliers are in the income variables and not in human capital or other categorical variables). We introduce an additional point (observation of total income and *pov_line*) and measure the distance between that point and the initial group of points. Once the base cluster is established, a more standard mean-based center of the r-observations cluster is defined, and the $r + 1$ observations closest in the covariance-matrix sense are chosen as a new base cluster. This is repeated until the base cluster has a certain number of points, and when it reaches the critical size, the distance rule changes. A base cluster of r points is selected (r is defined as $k + 1$, where k is the number of variables), and then that cluster is continually redefined by taking the $r + 1$ point "closest" to the cluster as the new base cluster. The distance rule used in the STATA *hadimvo* procedure is based on a matrix of second moments, with the median of variables removed). In this article we use variables *tot* (total income) and *pov_line* to flag the Hadi outlier.

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