

Welfare impacts of the 1998 financial crisis in Russia and the response of the public safety net¹

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Abstract

We compare welfare indicators for a nationally-representative sample of Russians interviewed shortly after the 1998 financial crisis with data on the same people two years earlier. Both objective and subjective measures reveal a widespread, though not universal, deterioration in welfare. Current expenditures generally contracted more than incomes. Inequality fell. There were both gainers and losers at all levels. The safety net's response fell far short of what was needed to protect living standards, but it did help prevent even greater poverty. Even without better targeting, a modest expansion of the safety net could have prevented an increase in income poverty in the aftermath of the crisis.

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Keywords: Russia, financial crisis, household welfare, safety net, panel data.

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1. Introduction

By mid 1998, the Russian economy was showing signs of recovery after several years of aggregate economic decline, and rising inequality and poverty (Milanovic, 1998a; World Bank, 1995, 1998; Commander *et al.*, 1999). Inflation fell from 800 per cent per annum in 1993 to 15 per cent in 1996–7, and dropped to an annual 6 per cent by July 1998. GDP stabilized too, growing slightly in 1997 (0.4 per cent, the first case of positive GDP growth since reforms began) and dropping only 0.2 per cent in the first five months of 1998 (Government of Russia, 1998).

Then a severe financial crisis hit in August 1998. The crisis combined a devaluation of the rouble, default on both domestic and foreign debts, and a collapse of the stock market (Brown, 1999; Buchs, 1999; Sapit, 1999; Slay, 1999). Several events preceded the crisis. In October of 1997, world commodity prices – commodities account for about 70 per cent of Russia's merchandise trade – started to fall, partly due to lower demand from Asia. In real terms, the commodity price index sank to the lowest level in history by August 1998. The Russian trade balance deteriorated sharply.

Turmoil in the Asian markets in August 1998, stimulated anxiety about the possibility of a new round of devaluations of the Asian currencies. These concerns spread to other emerging markets and led to capital flight. The effort to shore up the rouble had increased the domestic bond yield and depleted foreign reserves. Taxes could pay for only one-half of the T-bills that fell due each month.

On August 17, 1998, the Russian government devalued the rouble by more than 70 per cent and defaulted on its domestic debt (GKO).² The rouble fell from around 6 per \$US in the first half of August to about 21 at the end of 1998. Russian GDP contracted by 5 per cent in 1998. The collapse of the major commercial banks effectively deprived most Russians of their savings and once again undermined the trust of the population in financial institutions.

For many Russians, hopes for positive change in the mid-1990s turned into a deep sense of despair in the wake of the 1998 crisis. And the events in the fall of 1998 were no doubt seen by many as a sign of even worse to come. In addition to the immediate wealth effects, the financial collapse would no doubt have led to concerns about the future, though some positive effects could also have been anticipated.

However, there were signs of macroeconomic recovery in the year following the crisis. IMF statistics indicate that industrial production grew by 6 per cent for the first nine months of 1999 and, in comparison to September 1998, Russian industrial production grew by 20 per cent (*Economist*, 1999). The devaluation improved incentives for export-oriented producers. The Russian labour market would have started to be more attractive for producers in labour-intensive industries, though this was the other side of the coin to a sharp decline in real

² GKO (Gosudarstvennue Kratkosrochnue Obyazatelstva) are Russian Treasury bills with maturity of less than a year.

wages. The disappearance of the domestic bond market appears also to have helped redirect private investment to the real economy (Zimine and Bradshaw, 1999).

This paper studies the welfare impacts and social policy responses to the 1998 financial crisis. The paper has two main aims. Firstly it attempts to measure the impact of the crisis on various indicators of the economic well-being of Russian households and to identify the subgroups that were most affected by the crisis. We compare welfare indicators for households that were interviewed in 1998 with those from two years earlier for the same households, drawing on the Russia Longitudinal Monitoring Survey (RLMS). We use both objective and subjective (attitudinal) indicators of household and individual welfare. For the objective welfare indicators, we study both consumption expenditures and incomes; given that this was a financial crisis it is not implausible that there would have been effects on savings behaviour, so incomes and expenditures may suggest different things about the welfare impacts.

The paper's second aim is to assess how well the public safety net performed in protecting living standards during the crisis. Russia's public safety net comprises various forms of cash transfers including labour pensions, family allowances, unemployment compensation, sickness and maternity benefits, and housing allowances (Foley and Klugman, 1997; World Bank, 1995, 1998). Past work has suggested that these transfers helped Russia's poor in the 1990s, though most observers agree that they could have helped more (Mroz and Popkin, 1995; Milanovic, 1998b; Braithwaite, 1998).

Here we focus on the response of the safety net to the crisis. We find appreciable changes to the safety net when comparing 1998 and 1996. We ask how many more people would have been poor in the aftermath of the crisis without these changes. Following the methods proposed in Ravallion *et al.* (1995), we assess the safety net's performance in protecting non-poor people from poverty, and promoting poor people from poverty.

The following section discusses the data and main welfare indicators we use. Section 3 provides an overview of the changes observed in both objective and subjective welfare indicators over a period embracing the crisis. Section 4 examines the performance of the public safety net. Section 5 concludes.

2. Data

The Russian Longitudinal Monitoring Survey (RLMS) is a comprehensive socioeconomic survey of a nationally-representative sample of the Russian Federation.³ The data for this paper are drawn from the two rounds of RLMS

³ The weights and other issues related to the sample design and data collection are explained in the documents that can be found at: www.cpc.unc.edu/projects/rlms/rlms_home.html. Lokshin and Popkin (1999), and Lokshin, Harris and Popkin (1999) give additional information on the sample and dataset.

conducted in October 1996 (round VII, total sample size of 3,750 households) and November 1998 (round VIII, total sample size 3,831 households); there was no survey round between these two dates. We use the panel sample of 2,875 households for whom we have complete information on expenditure, income, household composition and individual characteristics for both rounds of the survey. We can track 6,869 adults over the rounds of 1996 and 1998.

The data are not ideal. While the 1998 survey was carried out shortly after the crisis, it may well have been too soon to capture the full impact, as we will see when we come to the results. Also, to assess the welfare impact of the crisis, one would ideally compare results of the 1998 survey with a survey of the same households immediately before the crisis.⁴ The fact that the 1996 survey was two years earlier means that the comparison with 1998 will include changes between 1996 and immediately prior to the crisis, as well as changes brought on by the crisis itself. Possibly there was a slight improvement in living standards in the two years prior to the 1998 crisis, for the reasons noted in the introduction. This would mean that our analysis will underestimate the impact of the crisis.

As an objective household welfare indicator we use the welfare ratios given by total household income or total household expenditure as a proportion of a household-specific poverty line. Total monthly disposable income includes wages and salaries, social security transfers, private transfers, in-kind income and income from home production.

In any discussion of wages and cash benefits in Russia during this period, it is important to consider the problem of arrears. The value of wage arrears consistently increased between 1992 and 1998. As a percentage of the monthly wage bill, the wage arrears in industry rose from 5 per cent in 1992 to 111 per cent by the end of 1996 and reached 120 per cent in the November-December of 1998 (*Russian Economic Trends*, 1999). Pension arrears increased less, but still by 1996 government pensioners received about 34 per cent of the monthly entitlement (Romanova, 1999). The situation improved by 1998, by which time the value of pension arrears was about 15 per cent of the monthly pension bill. Arrears of similar magnitudes also existed in other (non-pension) government transfers. Such significant transfer arrears could well affect the distribution of income and cash benefits. Even if the system of social protection was perfectly targeted without arrears, the outcome on the ground could be very different.

In this paper we analyse the 'realized' (post-arrears) system of government transfers as revealed by the household survey responses. That is appropriate under the assumption that it is the realized transfers that matter to the welfare of the households. We will not be able to distinguish official design changes in cash benefits from realized changes due to arrears; since the payment of arrears is itself a government decision (at some level), the distinction is somewhat artificial.

⁴ In the terminology of programme evaluation, this would be a 'reflexive comparison'. This cannot isolate the effect of the crisis from other events at the same time – that would require a comparison group sample that did not experience the crisis, which is, of course, impossible.

Table 1. Characteristics of all households interviewed in 1996 and the households re-interviewed in 1998

Characteristics in 1996	Sample of 1996	Panel sample 1996-98
Expenditure as a proportion of poverty line	2.73	2.62(*)
Income as a proportion of poverty line	1.91	1.85
Demographics		
Household size	2.85	2.92(**)
Number of children 0-7 years	0.23	0.23
Number of children 7-18 years	0.49	0.52(*)
Number of pensioners	0.61	0.64
Regional characteristics		
Urban	0.68	0.67
Rural	0.32	0.34(**)
Characteristics of the head		
High school	0.52	0.52
Technical or vocational	0.30	0.31
University diploma	0.17	0.16
Age in years	46.65	46.81
Head unemployed	0.093	0.094

Note: Means based on data collected in 1996; (*) means that the difference between 1996 and 1998 averages is significant at 5 per cent level, (**) is significant at 1 per cent level.

We use the RLMS poverty lines, that were developed based on the region-specific food prices to cost the age-gender specific food baskets necessary to meet dietary intake levels that approximate WHO/FAO recommended daily allowances (Popkin *et al.*, 1992). Specific poverty lines have been calculated for each age and gender grouping and these poverty lines were used to construct a household-specific poverty line according to the size and demographic composition of the household.⁵

We also use individual subjective welfare indicators. All adults in the survey

⁵ An alternative exists to the RLMS poverty lines, namely those estimated by Goskomstat (State Committee on Statistics of Russian Federation). The methodology of the two sets of poverty lines differs. While the RLMS poverty lines allow for variation of prices within each region, the Goskomstat lines do not cover rural areas. The Goskomstat prices were collected at 200 observation points solely in cities, and mostly in shops. (The weight given to market prices is significantly below their actual importance as a channel for purchases.) The RLMS prices were collected in each population point of the survey and the prices are registered both in stores and on the markets. Goskomstat estimates of poverty are consistently higher than those based on the RLMS data. For a comparison of poverty measures based on RLMS and the official Russian poverty lines see Commander *et al.* (1999) and Yemtsov (1999).

sample were asked a series of Cantril ladder questions about their perceptions of their own welfare. We use 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, the rich. On which step are you today?'* We call this the Economic Ladder Question (ELQ).⁶ The question focuses on a concept of economic welfare without imposing any assumptions about how that is measured; that is left up to the respondent.

In 1998, 77 per cent of the 1996 sample were re-interviewed. To assess the magnitude of the possible attrition bias, we compare the observed characteristics of the households that were re-interviewed in 1998 with the characteristics of all households from the 1996 sample. Table 1 presents the results for some key household characteristics. Households that were re-interviewed in 1998 tended to have slightly higher expenditure per-equivalent-adult in 1996, more household members, and were more likely to reside in rural areas. While the characteristics of the two samples are quite similar, we cannot rule out the possibility of non-random attrition such that some of the poorest in 1996 dropped out of the second round, and this may well have been due to the crisis. So this is another reason why the following results based on the panel sample might well underestimate the welfare impact of the crisis.

3. Welfare, before and after the crisis

The changes in average income and expenditures suggest that the crisis had a sizeable impact on welfare. Average household income was 20 per cent lower in real terms (relative to the poverty line) at the time of the 1998 financial crisis than two years earlier (Table 2). The share of wages in total income fell from 41 per cent to 36 per cent. This was accompanied by a higher share of income from government transfers (pensions, child and unemployment benefits, stipends and other transfers).

However, the average amount of government transfers decreased by 18 per cent in real terms. The share of home production in income increased from 15 per cent to 21 per cent, and the real value of income from this source also rose; this was evidently part of a private coping mechanism. Help from relatives was 40 per cent lower in absolute terms during the crisis, as compared to two years earlier. The covariate nature of this shock (which will be borne out further by our later results) clearly made it hard for the private safety net to help.

⁶ Ravallion and Lokshin (1999) discuss this question and alternatives in further detail.

Table 2. Components of total household income in 1996 and 1998

	Panel sample				Non-panel samples			
	1996		1998		1996		1998	
	Share (%)	Mean	Share (%)	Mean	Share (%)	Mean	Share (%)	Mean
Salary	40.14	3074	35.63	2022	40.92	3225	37.18	2099
Government benefits	27.01	1024	30.82	876	27.14	1025	29.50	835
Income from home production	16.14	657	20.12	874	15.06	637	19.14	829
Help from relatives	9.40	470	7.63	286	9.46	525	8.40	327
Other income	7.28	635	5.78	789	7.40	673	5.76	713
Total	100.0	5881	100.0	4846	100.0	6086	100.0	4804

Note: Means are calculated in 1992 roubles.

Table 3. Household expenditures 1996 and 1998

		Total household expenditure		Household expenditure per equivalent adult		Poverty rate (%)
		Mean	Std. dev.	Mean	Std. dev.	
All Russia (n = 2,875)	1996	6996	6610	2.57	2.61	21.9
	1998	5249	5264	1.94	1.94	32.7
	Change (%)	-1747 (-24.9)		-0.63 (-24.5)		10.5 (49.3)
Urban (n = 1,866)	1996	7442	7143	2.52	2.32	18.6
	1998	5431	5511	1.87	1.68	32.1
	Change (%)	-2011 (-27.0)		-0.65 (-25.8)		13.5 (72.6)
Rural (n = 1,009)	1996	6269	5561	2.29	1.97	28.1
	1998	4951	4822	1.85	1.73	34.1
	Change (%)	-1317 (-21.0)		-0.43 (-18.8)		6.0 (21.4)

Note: Household expenditure estimates are converted to monthly equivalents in 1992 roubles using the region-specific price indices. Based on the panel sample; see Addendum for corresponding Table for non-panel sample.

Table 3 reports the levels and changes in mean expenditures and expenditure-based poverty rates in 1996 and 1998 for the panel sample. Total household expenditure fell by 25 per cent, while the expenditure per equivalent adult

dropped by 23 per cent. The poverty rate increased sharply, from 22 per cent in 1996 to 33 per cent just after the crisis. Results were similar for the non-panel households. Details are contained in a statistical addendum, available from the authors.

The data suggest that households living in urban areas were more seriously affected by the crisis than rural households (Table 3). The fall in mean expenditure in urban areas was about 27 per cent while in rural areas it was 21 per cent. The proportionate increase in rural poverty incidence was considerably smaller than for urban areas (Table 3).

3.1 Joint distributions

Table 4a gives points on the base-line distributions of incomes normalized by the household-specific poverty lines; Table 4b gives the results using expenditures. The tables also give the joint distributions over the two dates. The cell in row i and column j gives the percentage of the total population who were in the i 'th group in 1996 and the j 'th in 1998. The column and row totals are the marginal welfare-ratio distributions for corresponding years.

The overall income poverty rate was two percentage points higher in 1998 than 1996 (Table 4a). However, there is not first-order dominance (whereby the 1998 cumulative distribution lies everywhere above that for 1996). There was actually a decrease in extreme income poverty; while 19 per cent of the population had incomes below half the poverty line in 1996, this fell to 16 per cent in 1998. Considerable churning is indicated (echoing the findings of Commander *et al.*, 1999, comparing early rounds of the RLMS.) One-third of the 36 per cent of people with incomes below the poverty line in 1996 had incomes above the poverty line in 1998. Seventeen per cent of the households whose income was three times greater than the poverty line in 1996 became poor in 1998, followed by 25 per cent of the households from the next highest income group.

Turning to expenditures (Table 4b), first-order dominance is indicated (i.e., the 1998 poverty incidence is higher than 1996 at each proportion of the poverty line, comparing the cumulative column and row total in Table 4b). The conclusion that expenditure poverty rose is robust to the poverty line and choice of poverty measure within a broad class (Atkinson, 1987; Ravallion, 1999). There was also considerable churning in expenditures. Of the 22 per cent of households whose expenditures were below the poverty line in 1996, 9 per cent (representing 42 per cent of the poor in 1996) escaped poverty by 1998. At the same time, the proportion of people living in poor households increased by almost 50 per cent with 20 per cent of total population falling below the poverty line at the time of the crisis. The composition of the households that became poor in the crisis was heterogeneous in terms of their welfare levels two years earlier; for example, 14 per cent of the households that belonged to the top expenditure group in 1996 had measured expenditures below the poverty line in 1998.

Table 4a. Joint distribution of incomes as a proportion of poverty line

		Income/poverty line 1998						% change in mean	Total [Cumulative]
		<0.5	0.5-1	1-1.5	1.5-2	2-3	3+		
Income/poverty line 1996	<0.5	5.57	5.15	3.83	2.47	1.25	0.56	83.1	18.82 [18.82]
	0.5-1	4.10	5.32	3.30	2.02	1.22	0.90	36.1	16.87 [35.69]
	1-1.5	2.19	4.35	4.07	2.05	1.77	0.94	11.6	15.37 [51.06]
	1.5-2	1.29	2.40	4.49	3.03	1.98	1.18	-8.7	14.37 [65.43]
	2-3	1.50	3.20	4.21	4.03	3.69	1.63	-43.2	18.26 [83.69]
	3+	1.04	1.63	2.68	2.43	4.03	4.49	-94.0	16.31 [100.00]
	Total [Cumulative]	15.69 [15.69]	22.05 [37.74]	22.57 [60.31]	16.03 [76.34]	13.95 [90.29]	9.70 [100.00]	-18.6	100.00

Table 4b. Joint distribution of expenditures as a proportion of poverty line

		Expenditure/poverty line 1998							% change in mean	Total [cumulative]
		<0.5	0.5-1	1-1.5	1.5-2	2-3	3+			
Expenditure/poverty line 1996	<0.5	2.40	2.64	0.97	0.35	0.42	0.45	70.1	7.23 [7.23]	
	0.5-1	2.92	4.80	3.23	1.84	0.94	0.94	35.1	14.68 [21.91]	
	1-1.5	2.02	5.01	3.93	2.50	2.05	1.50	15.9	17.01 [38.92]	
	1.5-2	1.15	3.83	3.44	2.30	2.61	1.36	-5.4	14.68 [53.60]	
	2-3	1.04	3.41	3.90	3.41	4.42	3.30	-19.2	19.48 [73.08]	
	3+	1.01	2.54	3.76	4.42	6.26	8.94	-89.0	26.92 [100.00]	
	Total [Cumulative]	10.54 [10.54]	22.23 [32.77]	19.23 [52.00]	14.82 [66.82]	16.70 [83.52]	16.49 [100.00]	-24.5	100.00	

Tables 4a and 4b also give the percentage changes in mean income and expenditure by groups ranked by their 1996 income or expenditure relative to the poverty line. Both mean income and expenditure rose for the poor, and fell for the rich. The Gini index of income inequality fell from 0.48 to 0.42, while for expenditure it fell from 0.44 to 0.42.⁷ Of course, this only confirms how deceptive these aggregate statistics can be: given the amount of re-ranking that occurred, these comparisons are deceptive. While there were gains on average amongst the 1996 poor, there were sufficient losses amongst the 1996 non-poor to increase overall poverty.

The difference in the impacts on incomes *versus* expenditures is notable. Mean expenditures fell more (25 per cent) than incomes (18 per cent). This could reflect the negative shock to consumer wealth associated with the financial crisis. It is also possible that many households thought things would get even worse; the expected full impact on incomes might not yet have been realized at the time of the 1998 survey. Whether one concludes that expenditures give a better indication of the welfare impact of the crisis depends in part on whether the expectations of worse to come were realized. We will return to this point.

3.2 Characterizing the winners and losers

Who suffered most during the crisis? Who gained? Table 5 compares household characteristics for different types of poverty dynamics. For this purpose, we divide our sample into four groups based on their expenditure poverty status, which we call the 'poverty dynamics groups'. The groups are as follows:

Persistently poor households: below the poverty line in both surveys;

Households that fell into poverty: above the line in 1996 but below it in 1998;

Households that escaped poverty: below the line in 1996 and above it in 1998;

Persistently non-poor households: above the poverty line in both years.

We implement these definitions using both expenditures and incomes. The differences between these groups tend to be larger using incomes than expenditures (details are in the Addendum available from the authors). This can be due to the fact that income does not (of course) include initial liquid-wealth balances of the households. Households can use pre-crisis cash, for example, to buffer to some degree their current living standards. Shocks, such as an interruption in work or a cut in wages, can have quite different effects on households that have some reserves than on those without any savings to fall back on. A welfare measure based on household consumption will reflect this difference better than the measure based on household income.

Persistently poor households were larger, had more children, and were more likely to live in rural areas. The heads of such households were younger, less likely to be pensioners and tended to be less well educated than persistently non-poor households (Table 5).

⁷ Kolenikov and Yudaeva (1999) found that both income and inequality reduced after the crisis, with expenditure inequality dropping from 0.404 in 1996 to 0.399 in 1998. A detailed discussion of the trends in Russian inequality can be found in Commander and Lee (2000).

Also in comparison to the persistently non-poor, households that fell into poverty in the crisis, tended to be younger, less likely to be pensioners, more likely to be male-headed, less likely to live in Moscow and St. Petersburg, and tended to be less well educated. When compared to the persistently poor, the households that fell into poverty were not as young (in terms of the age of the head and the demographic composition) more likely to be pensioners and to live in Moscow and St. Petersburg.

Table 5. Comparison of characteristics of households with different poverty dynamics

	1	2	3	4
	Persistently poor	Fell into poverty	Escaped poverty	Persistently non-poor
Demographic characteristics				
Household size	3.12 [4]	2.88	2.84	2.79 [1]
Number of children 0–7 years old	0.30 [4]	0.27 [4]	0.26	0.20 [1,2]
Number of children 7–18 years old	0.70 [2,4]	0.49 [1]	0.56	0.47 [1]
Number of pensioners	0.44 [2,3,4]	0.59 [1,4]	0.63 [1]	0.71 [1,2]
Male headed households	0.70 [3,4]	0.66 [3,4]	0.56 [2]	0.57 [1,2]
Female headed households	0.17 [2,4]	0.11 [1]	0.13	0.11 [1]
Households headed by pensioners	0.13 [2,3,4]	0.24 [1,3,4]	0.30 [1,2]	0.32 [1,2]
Geographic characteristics				
Moscow & St. Petersburg	0.02 [2,4]	0.06 [1,3,4]	0.02 [2,4]	0.09 [1,2,3]
Other urban areas	0.57	0.60 [3]	0.47 [2,4]	0.59 [3]
Rural areas	0.40 [4]	0.34 [3]	0.51 [2,4]	0.32 [1,3]
Characteristics of the head				
Age	42.94 [2,3]	46.97 [1]	47.29 [1]	47.92
Education				
High school diploma or lower	0.62 [4]	0.54 [3,4]	0.62 [2,4]	0.48 [1,2,3]
Technical or vocational	0.29	0.34	0.28	0.30
University degree or higher	0.08 [4]	0.10	0.09 [4]	0.21 [1,3]

Note: [] indicate columns where such values are statistically different. Poverty status is calculated based on household expenditure.

When compared to the households that escaped poverty in the aftermath of the crisis, those that fell into poverty were more likely to be male headed, slightly less likely to be pensioners, more likely to live in Moscow and St. Petersburg or other urban areas, and slightly less likely to have had no more than a high school education (Table 5).

3.3 Subjective economic welfare

The objective measures of welfare used so far are known to have problems. Time varying measurement error may appear as off-diagonal elements in the joint distributions. Even without measurement errors, when interpreted as money metrics of household utility, the objective measures of economic welfare such as real-per-equivalent-adult income or expenditure, are known to be under-identified from consumer demand behaviour (Pollak and Wales, 1979). So, the assessments of the changes in individual welfare due to the crisis may disagree with peoples' own assessments. Also, these household-level measures do not tell us about the distribution of income within the household; changes in economic circumstances may well have different impacts on women *versus* men.

To help address these concerns, Table 6 provides data on individual subjective welfare rankings in 1996 and 1998. We combined the highest three rungs of the ELQ due to the small number of respondents who assigned themselves to these rungs.

Changes in welfare perceptions went in both directions. Some individuals who ranked themselves among the richest in 1996 placed themselves in the lower rungs of the ladder at the time of the 1998 crisis. Some people from the lowest rungs in 1996 put themselves at the top of the subjective welfare ladder in 1998. More than 60 per cent of the respondents who assigned themselves to the lowest two rungs in 1996 upgraded their perceptions in 1998. In general, however, we observe a shift in the subjective perceptions toward lower welfare rankings (continuing a trend in the 1990s; see Rose and McAllister, 1996, and Ravallion and Lokshin, 1999). The proportion of individuals that reported their subjective welfare rankings in the lowest two rungs of the comparison ladder increased from 30.5 per cent in 1996 to 37.3 per cent in 1998. The number of individuals on the highest two rungs fell from 5.8 per cent in 1996 to 3.1 per cent in 1998. First-order dominance is indicated. It is clear that the subjective welfare question is not just reflecting relative positions, but is also capturing changes in absolute levels.

The results based on individual subjective welfare perceptions are broadly similar to the income and expenditure dynamics observed at the household level.

We repeated these calculations separately for males and females (Tables 7a and 7b). Subjective personal welfare assessments of females were lower than those of males in 1996; for example, 32 per cent of women assigned themselves to the lowest two rungs of the ELQ compared to 28 per cent of men. The proportion of individuals placing themselves on one of the lowest two rungs increased in 1998 for both men and women, but that increase was larger for women, for whom it grew by 26 per cent, while the number of men who ranked themselves this way increased by 18 per cent. However, the percentage of respondents on the top two rungs of the ladder dropped more for males.

Table 6. Comparison of the individual subjective welfare rankings in 1996 and 1998

		Subjective welfare ranking 1998							
		1	2	3	4	5	6	7	Total [Cumulative]
Subjective welfare ranking 1996	1	6.62	3.15	2.04	1.04	0.92	0.09	0.00	13.86 [13.86]
	2	3.91	5.18	4.12	2.04	1.09	0.21	0.11	16.66 [30.52]
	3	3.15	5.09	7.45	4.19	2.80	0.41	0.02	23.10 [53.62]
	4	2.06	3.36	5.53	5.51	3.38	0.51	0.11	20.46 [74.08]
	5	1.66	2.31	4.28	5.07	5.78	0.99	0.05	20.13 [94.21]
	6	0.16	0.48	0.72	1.07	1.27	0.33	0.00	4.03 [98.24]
	7	0.02	0.14	0.41	0.37	0.51	0.19	0.12	1.76 [100.00]
	Total	17.57	19.70	24.55	19.30	15.74	2.73	0.41	100.00
	[Cumulative]	[17.57]	[37.27]	[61.82]	[81.12]	[96.86]	[99.59]	[100.00]	

Table 7a. Comparison of male subjective welfare rankings in 1996 and 1998

		Subjective welfare ranking 1998							
		1	2	3	4	5	6	7	Total [Cumulative]
Subjective welfare ranking 1996	1	5.40	2.83	2.58	1.00	0.87	0.08	0.00	12.75 [12.75]
	2	3.45	3.95	4.15	2.12	1.25	0.17	0.12	15.21 [27.96]
	3	2.91	4.61	7.06	4.20	3.07	0.50	0.04	22.39 [50.35]
	4	2.20	3.49	5.48	6.07	3.78	0.46	0.12	21.60 [71.95]
	5	1.29	2.16	4.69	5.07	6.56	1.04	0.08	20.90 [92.85]
	6	0.17	0.54	0.87	1.41	1.74	0.46	0.00	5.19 [98.04]
	7	0.04	0.08	0.42	0.50	0.54	0.21	0.17	1.95 [100.00]
	Total [Cumulative]	15.45 [15.45]	17.66 [33.11]	25.26 [58.37]	20.36 [78.73]	17.82 [96.55]	2.91 [99.46]	0.54 [100.00]	100.00

Table 7b. Comparison of female subjective welfare rankings in 1996 and 1998

		Subjective welfare ranking 1998							
		1	2	3	4	5	6	7	Total [Cumulative]
Subjective welfare ranking 1996	1	7.52	3.39	1.65	1.07	0.95	0.09	0.00	14.67 [14.67]
	2	4.25	6.08	4.10	1.99	0.98	0.24	0.09	17.73 [32.40]
	3	3.33	5.44	7.73	4.19	2.60	0.34	0.00	23.62 [56.02]
	4	1.96	3.27	5.56	5.10	3.09	0.55	0.09	19.62 [75.64]
	5	1.93	2.41	3.97	5.07	5.20	0.95	0.03	19.56 [95.20]
	6	0.15	0.43	0.61	0.83	0.92	0.24	0.00	3.18 [98.38]
	7	0.00	0.18	0.40	0.28	0.49	0.18	0.09	1.62 [100.00]
	Total	19.13	21.21	24.02	18.52	14.21	2.60	0.31	100.00
	[Cumulative]	[19.13]	[40.34]	[64.36]	[82.88]	[97.09]	[99.69]	[100.00]	

4. The response of the public safety net

It is beyond the scope of this paper to evaluate the safety net as a whole; we do not attempt to simulate what would have happened if there had been no government transfers. Nor do we attempt to assess specific features of the existing safety net, such as eligibility conditions. A more feasible, but still interesting, task is to assess to what extent the changes to the safety net over the two year period helped buffer the welfare impact of the crisis.

Table 8 gives the amounts received of various cash transfers by expenditure and income. Mean benefits rise with both expenditure and income, though the ratio of total cash benefits to expenditures rises with expenditures, yet the proportion of benefits to incomes tends to fall. On average, government transfers fell by 18 per cent between 1996 and 1998. Targeting improved, however. Transfers increased by almost 100 per cent for the households with expenditures less than half the poverty line, despite the fact that the number of households in this welfare group doubled. Payments to other poor households also grew appreciably. Roughly speaking, resources were redistributed from the most well-off benefit recipients (the top two welfare groups, say) to those in the lowest two welfare groups; transfers to the middle income households did not change much.

The main increases in the cash benefits of poor households were through pensions. The average pension received by households from the poorest group rose from 28 roubles per month in 1996 to 142 roubles per month in 1998, more than a five-fold increase in real terms. Pensions of the households from the next welfare group also grew by almost 50 per cent. At the same time the amount of family allowance and social aid to poor households declined, though not enough to make up for the gains in pensions.

Clearly then, the Russian social safety net changed during this period. The total amount of cash benefits declined and transfers were distributed differently.

How did these changes affect poverty? To answer this we want to simulate the joint distributions of expenditures and incomes while setting to zero all changes in cash benefits between 1996 and 1998.

4.1 Testing for behavioural responses

Modelling the impact of these changes requires an assumption about the response of pre-transfer incomes and expenditures. A common assumption in benefit incidence studies is that there are no behavioural responses affecting pre-transfer incomes in response to actual changes in transfers. Thus, income net of transfers is assumed to be unaffected. This assumption would not hold if, for example, private transfers increased to compensate for a loss of public transfers.

To test for such behavioural responses, we regressed the change in real income net of government transfers on the change in transfers. There is of course heterogeneity in other household characteristics, possibly correlated with transfers received through purposive targeting or behavioural responses. So we

included controls for changes in a reasonably wide range of household attributes; the controls included changes in household size and demographic composition, changes in employment status, whether the household head was female or a pensioner, age and age squared of the head, education and occupation of the head, household assets owned, and region of residence (details are in the addendum). The regression coefficient on the change in cash benefits was -0.183 with a standard error of 0.096 . This is almost significantly different from zero at the 5 per cent level ($t = 1.91$, significant at the 6 per cent level). The negative coefficient is suggestive of some displacement of pre-transfer incomes when transfers rise.

This changed dramatically when we regressed the changes in expenditure on the changes in cash benefits, including the same controls. The regression coefficient on the change in cash benefits was 0.134 with a standard error of 0.147 . The fact that this was not significantly different from zero implies that expenditures were unaffected by changes in cash benefits i.e., the transfer gains were saved, and losses in transfers were made up from past savings or borrowing. Possibly the changes in transfers from the government were seen by survey respondents as relatively transient, in the presence of more worrying concerns about their longer-term incomes.

Purposive targeting of transfers to households with falling pre-transfer income (conditional on the control variables) will create an endogeneity bias in these tests. It is unclear that such targeting would have been informationally feasible for the government, though it might arise from the efforts of households to secure help. This could be responsible for some or all of the negative effect we find of transfer gains on income net of transfers. Also, the negative effect on net incomes is not robust to the choice of deflators.⁸

On the basis of these tests, we decided to simply subtract the gain in transfers from gross incomes to determine what the joint distribution of income would have been without the changes in the safety net. But it is not clear what one should do for expenditures. If one accepts the implication of the regression that expenditures were unaffected (at least in the short term) by the changes in cash benefits then the answer to the question of what effect the safety net changes had is easy: nothing. That is one extreme. At the other extreme, we simply deduct the gain in transfers, as for incomes. The truth undoubtedly lies somewhere between these extremes, though (as we shall soon see) the range is fairly narrow.

⁸ We also tried using the change in net income normalized by the poverty line as the dependent variable. The coefficient on the change in transfers (similarly normalized) was -0.086 ($t = 1.37$). However, using expenditure the effect was robust to the choice of deflators.

Table 8. Incidence of cash benefits

	1996				1998			
	Pensions	Family allowances	Social aid	Total benefits	Pensions	Family allowances	Social aid	Total benefits
	Ranked by income/poverty line							
<0.5	63.4	48.9	8.7	121.0	165.9	43.2	10.5	219.6
0.5-1	382.3	105.0	35.9	523.2	510.4	61.4	25.1	596.9
1-1.5	776.9	131.6	34.1	942.6	829.7	78.1	13.9	921.7
1.5-2	1148.3	157.8	25.7	1331.8	1054.8	87.9	13.6	1156.3
2-3	1308.3	140.2	30.4	1478.9	1155.4	110.7	26.9	1293.0
3+	1223.7	219.2	65.4	1508.3	1062.5	273.1	19.7	1355.0
	Ranked by expenditure/poverty line							
<0.5	27.6	64.0	2.0	93.6	141.8	24.2	8.3	174.4
0.5-1	287.5	105.6	20.9	414.0	419.9	61.1	14.3	495.4
1-1.5	510.3	135.3	29.5	675.0	621.2	84.2	42.5	747.9
1.5-2	688.2	118.3	37.6	844.0	734.7	74.7	9.9	819.4
2-3	908.2	123.1	61.9	1093.2	894.8	55.1	19.3	969.2
3+	1055.7	134.3	32.5	1222.5	955.3	151.1	10.1	1117.0

Note: 'Pensions' include labour pensions paid to the people above the age of retirement and disability pensions; 'family allowances' include birth grants and child care allowances; 'social aid' includes unemployment benefits, apartment and fuel benefits.

Table 9a. Comparison of the actual and simulated distributions of household income as a proportion of poverty line in 1998 with no change in cash benefits since 1996

		Simulated income (net of transfer gain)/poverty line 1998						
		<0.5	0.5-1	1-1.5	1.5-2	2-3	3+	Total [Cumulative]
Income /poverty line 1996	<0.5	9.63	5.18	2.09	0.87	0.80	0.24	18.82 [18.82]
	0.5-1	3.93	6.37	3.06	1.74	1.15	0.63	16.87 [35.69]
	1-1.5	1.91	4.00	4.63	2.40	1.46	0.97	15.37 [51.06]
	1.5-2	1.18	1.60	3.17	4.00	3.23	1.18	14.37 [65.43]
	2-3	1.32	2.64	3.41	3.23	5.74	1.91	18.26 [83.69]
	3+	1.18	1.32	1.81	2.26	4.07	5.67	16.31 [100.00]
	Total	19.17 [19.17]	21.11 [40.28]	18.16 [58.44]	14.50 [72.94]	16.45 [89.39]	10.61 [100.00]	100.00

Table 9b. Simulated distributions of household expenditure as a proportion of poverty line in 1998 with no change in cash benefits since 1996

		Simulated expenditure/poverty line 1998						Total
		<0.5	0.5-1	1-1.5	1.5-2	2-3	3+	[Cumulative]
Expenditure/poverty line 1996	<0.5	2.78	2.40	0.97	0.31	0.42	0.35	7.23 [7.23]
	0.5-1	3.90	3.93	3.13	1.74	1.11	0.87	14.68 [21.91]
	1-1.5	2.78	4.38	3.34	2.68	2.33	1.50	17.01 [38.92]
	1.5-2	1.43	3.58	2.78	2.54	2.89	1.46	14.68 [56.60]
	2-3	1.53	2.78	3.37	3.30	4.52	3.97	19.48 [73.08]
	3+	1.88	2.12	3.27	4.17	5.43	10.05	26.92 [100.00]
	Total	14.30 [14.33]	19.20 [33.50]	16.87 [50.37]	14.75 [65.12]	16.70 [81.82]	18.19 [100.00]	100.00

4.2 Policy simulations

Tables 9a and 9b give the simulated joint distributions of incomes and expenditures between 1996 and 1998, corresponding to Tables 4a and 4b, respectively. If poverty is higher (lower) in 1998 under the simulated distribution in Table 9 than the actual in Table 4 then we can infer that the actual changes favoured the poor (non-poor).

Despite the smaller total transfer, the changes to the social safety net did achieve a reduction in the poverty rate, when compared to the counter-factual of no changes in government transfers between 1996 and 1998. Without the response of the safety net, the expenditure poverty rate would have been one percentage point higher (comparing Tables 4b and 9b). So we conclude that the changes to the safety net had a total effect of somewhere between zero and one percentage point. Based on expenditures net of transfer gains, the impact was higher amongst the poorest; the simulated poverty rate using half the poverty line is almost four percentage points higher without the changes in cash benefits.

We find that if there had been no changes in transfers then the proportion of households with income below half the poverty line would have been 19 per cent in the aftermath of the crisis, instead of 16 per cent (Table 4a). All of the reduction in income poverty (relative to half the poverty line) that we observed in Table 4a can be attributed to the changes in cash benefits. The proportion falling below the poverty line would have been 40 per cent instead of 38 per cent.

We have seen that there was a contraction in the safety net between 1996 and 1998, though somewhat better targeting helped compensate. Suppose instead that aggregate cash benefits had increased in response to the crisis. The impact on poverty will naturally depend on how this was allocated. Consider a *pro rata* increase, whereby all 1998 benefits increased by the same proportion (with no gain for those not receiving any benefits). We calculate that a 10 per cent increase in benefits (less than 2 per cent of total household income in 1998) would have returned the income poverty rate to 36 per cent, close to its 1996 level. For expenditure poverty, a much greater increase in benefits would have been required; a 50 per cent increase in all benefits would have been needed to bring the 1998 poverty rate down to its 1996 level of 22 per cent. Suppose that, instead of a constant percentage increase in all cash benefits, the extra spending was allocated equally across all households (whether or not they were receiving benefits). Then the cost of bringing the income poverty rate back to its 1996 level would only have been slightly higher, at a sum equivalent to 11 per cent of aggregate cash benefits in 1998. For expenditure poverty, the cost would have been slightly lower, at 48 per cent of 1998 aggregate benefits.

So, to avoid the higher poverty rates at the time of the crisis, a uniform lump-sum disbursement would have cost about the same as a pro-rata expansion of the existing system. This illustrates again that, despite some improvements over 1996, the cash benefit system in Russia at the time of the 1998 crisis was not particularly well targeted.

4.3 Protection versus promotion

The above discussion has focused solely on the effect of changes in the safety net on the aggregate poverty rate. However, the panel data has also allowed us to simulate the change in the joint distributions of incomes and expenditures. Thus we can also address the questions: How much did the response of the safety net help protect non-poor people from falling into poverty? And how much did it help promote poor people from poverty?

To test for differences between the actual and simulated joint distributions we use the PROT and PROM statistics proposed by Ravallion *et al.* (1995). PROT measures the impact of the simulation on the extent to which people fell into poverty ('protection'), while PROM measures its impact on how many people escaped poverty ('promotion'); the Appendix to this paper provides details.

Comparing the simulated joint distributions in Table 9a with the actual distribution in Table 4a, we find that the changes to the safety net diminished its performance in protecting non-poor people from falling into poverty in the aftermath of the crisis. Fewer non-poor people would have fallen into income poverty if the safety net had not changed. The actual joint distribution (Table 4a) indicates that 18 per cent of the sample fell into poverty in the aftermath of the crisis while 16 per cent escaped. We estimate that if there had been no change in the safety net then 15 per cent would have fallen below the line, and 11 per cent would have escaped poverty (Table 9a). The PROT and PROM statistics were -2.4 per cent and 5.0 per cent. For expenditures, more people would have fallen into poverty without the changes to the safety net, but the difference is small; the PROT and PROM statistics for expenditures are -0.5 per cent and 0.2 per cent, respectively. However, none of these are significantly different from zero. For incomes, the z-scores on the PROT and PROM statistics are 0.98 and 0.89, respectively. For expenditures, the z-scores are 1.06 and 0.81.

Using half the poverty line instead, the PROT and PROM statistics for income are -0.6 per cent and 4.1 per cent, with z-scores of 0.76 and 7.64. Again there is no significant protection, but now we find significant promotion from poverty. This is not what we find for expenditures using half the poverty line; the PROT and PROM statistics are 3.4 per cent and 0.4 per cent with z-scores of 4.30 and 0.68. For expenditures, there is significant protection from falling below half the poverty line; without the changes to the safety net, 11.5 per cent of Russians would have fallen below half the poverty line (Table 9b), instead of the figure of 8.1 per cent observed (Table 4b).

We also simulated the effects of replacing the 1998 safety net by equal lump-sum transfers of the same total budget to all households. We did this with and without pensions, and for both incomes and expenditures. The results (analogous to Table 9) are available in the Addendum. A uniform allocation achieved a lower overall poverty rate, though the difference was not large (3.3 percentage points for expenditures and equalizing all cash benefits, and less than this for all other combinations). The effects on the aggregate headcount index were all quantitatively small and the PROT and PROM statistics were not significant in any case.

5. Conclusions

The expenditure-poverty rate in Russia rose by almost 50 per cent in the aftermath of the 1998 financial crisis, and there was a sharp attenuation in perceptions of economic well-being. Income poverty rose much less than expenditure poverty, however, and the proportion of Russians with incomes below half the poverty line was actually lower in the aftermath of the crisis than two years earlier. The financial crisis appears to have encouraged even poor households to cut back their spending relative to incomes, probably reflecting current wealth effects of the crisis and expectations of worse times ahead.

The 1996 poor were certainly not the only ones affected; indeed, we find that mean expenditures of the 1996 poor rose, and that 42 per cent of the 1996 poor (9 per cent of the whole sample) had escaped poverty in the aftermath of the crisis. Almost two-thirds (61 per cent) of the poor in the aftermath of the crisis had not been poor two years earlier; 20 per cent of the 1996 population fell into poverty.

Nonetheless, there were many losers amongst the 1996 poor. For example, 20 per cent of the 1996 poor who had expenditures more than half the poverty line saw their 1998 expenditures fall to less than half the poverty line.

One would hope that the safety net responded to such a shock in order to protect people from poverty. The distribution of government transfers around the time of the crisis was quite different to two years earlier; there were *lower* mean outlays on the public safety net at the time of the crisis, though with better targeting in certain respects. On balance, these changes to the safety net were poverty reducing. This was more marked amongst the poorest; indeed, without the better targeting of the safety net, we would have seen a rise in the proportion of Russians with incomes less than one half of the poverty line in the aftermath of the crisis.

The incidence of income poverty would have been two percentage points higher without the changes in the safety net. The reduction in poverty due to changes in cash benefits was not achieved by preventing people who were vulnerable falling into poverty; indeed, without the changes in the safety net, fewer non-poor families would have seen their incomes fall below the poverty line. Rather, the changes in the safety net reduced the impact of the crisis on poverty by helping some previously poor families escape poverty. This finding is not, however, robust to the choice of poverty line and welfare indicator; we find that the changes in the safety net did help protect people from falling below half the poverty line.

A seemingly modest expansion in total outlays on the safety net – less than would have been needed to restore aggregate outlays to their level two years earlier – would have been sufficient to avoid the immediate increase in income poverty. Even without better targeting, a 10 per cent increase in all current cash benefits would have avoided higher income poverty in the aftermath of the crisis, as compared to two years earlier.

Stabilizing the expenditure poverty rate would have been a far more expensive

task without much better targeting. To the extent that the proportionately greater contraction in consumer spending correctly anticipated subsequent income contractions, a further (possibly considerable) expansion of the safety net would have been required to prevent rising income poverty. However, it appears unlikely that household incomes fell further in 1999, at least on average. Indeed, there were signs of subsequent macroeconomic recovery in 1999. While we do not, of course, know the extent to which the poor shared in these gains, it would seem quite likely that many did, via the likely stimulus to labour-intensive production. So the cut backs in consumer spending may well have proved unnecessary. Even the modest expansion in the safety net required for stabilizing income poverty in the aftermath of the crisis might then have gone a long way toward ameliorating its welfare impact.

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Appendix: Testing the social safety net

This appendix summarizes the tests proposed in Ravallion *et al.* (1995). In comparing joint distributions – such as with and without policy changes – we use two tests: how well people are protected from poverty, and how well they are promoted from poverty. To define these, let x denote the welfare indicator, found in the interval $(0, x^{\max})$. Consider two possible joint distribution functions over dates 1 and 2, namely $F(x_1, x_2)$ and $G(x_1, x_2)$ (i.e., $F(x_1, x_2)$ is the proportion of the population with less than x_1 in period 1, and less than x_2 in period 2, and similarly for $G(x_1, x_2)$). The corresponding marginal distributions are $F_1(x_1) = F(x_1, x^{\max})$ and $F_2(x_2) = F(x^{\max}, x_2)$, and similarly for G . The poverty line is z , and so the proportion of the population who are poor in period 1 in the F distribution is $F_1(z)$, while a proportion $F_2(z)$ are poor at date 2. By construction, $F_2(z) - F(z, z)$ is the proportion of individuals in the F distribution who are poor in the second period but were not poor in the first. We will say that F protects from poverty better than G if and only if:

$$F_2(z) - F(z, z) < G_2(z) - G(z, z)$$

The extent of protection allowed by F relative to G will be measured by:

$$\text{PROT}(z) = G_2(z) - G(z, z) - F_2(z) + F(z, z)$$

Analogously, $F_1(z) - F(z, z)$ of the population were poor in the first period but not the second. F promotes the poor better than G if and only if:

$$F_1(z) - F(z, z) > G_1(z) - G(z, z)$$

And the extent of promotion due to F relative to G will be measured by:

$$\text{PROM}(z) = F_1(z) - F(z, z) - G_1(z) + G(z, z)$$

In all cases considered in this paper the marginal distributions in the first period are identical; $F_1(z) = G_1(z)$, which is simply the pre-intervention distribution. It follows that promotion is equivalent to requiring that $F(z, z) < G(z, z)$ i.e., PROM can be interpreted as a test of whether there is less persistent poverty in the F distribution, the persistently poor being defined as those who were poor in both periods. The residual, $F_2(z) - F(z, z)$, is then interpretable as the amount of transient poverty, which is precisely what PROT tests for. Another implication of identical first-period marginals is that if *both* PROT and PROM are positive then $F_2(z) < G_2(z)$ (i.e., the incidence of poverty is lower for the F distribution in period 2), though the converse is not true (lower poverty in period 2 is possible with only one of PROT or PROM holding).