Russian Roulette- Expenditure Inequality and Instability in Russia, 1994-1998

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Abstract

This paper uses the second phase of the Russian Longitudinal Monitoring Survey to investigate the changes in expenditure inequality and instability in Russia between the autumn of 1994 and the autumn of 1998. The expenditure distribution is stable in spite of the economic and political turmoil Russia is going through. However, that does not imply much economic stability. Households' expenditure fluctuated considerably, with over 60 percent of the population's expenditure either more than doubling or falling to less than half their previous levels. Only about 10 percent of all households experienced an expenditure shock of less than 10 percent. The measured level of expenditure mobility is very high. This raises the question whether the observed mobility is in fact the expenditure instability. Distinguishing between the two is crucial for policy makers. While the mobility is often viewed as favorable, the high instability may affect the incentives of Russians to support the economic reforms, acquire human capital, and undertake entrepreneurial activities.

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Non-technical summary:

This paper investigates the changes in expenditure inequality and instability between of 1994 and of 1998, using the Russian Longitudinal Monitoring Survey. Although the expenditure distribution has remained stable in spite of the economic and political turmoil Russia has been going through, the individual household's expenditure has been quite unstable. The measured level of expenditure mobility is very high, suggesting that expenditure instability is also high. While mobility is often viewed as favorable, high instability may affect the incentives of Russians to support economic reforms, to acquire human capital, and to undertake entrepreneurial activities.

Key words: expenditure, inequality, mobility, transition, Russia

There is little doubt that the transition from a centrally planned economy to a market economy in Russia affected the lives of many. It was recognized early on that privatization could benefit certain people more than others, and that macro-economic adjustments would be borne more heavily by some groups (Atkinson and Micklewright, 1992). This raises a number of questions: how did the transition affect inequality; were households and individuals able to take advantage of new opportunities; who was left behind? This paper looks into inequality and mobility in Russia in years following the advent of the transition. The data used in this paper span the time period from the fall of 1994 to the fall of 1998, when the initial effects of the 1992 privatization and price liberalization are likely to have faded and the market economy had a chance to take root.

I find that the emergence of a market economy in Russia does not imply high inequality levels. After an initial increase in inequality, the trend of increasing inequality, measured in terms of household expenditure, slowed and even reversed between the fall of 1994 and the fall of 1998. Although the household expenditure distribution changed its shape only modestly, the position of the households in the expenditure distribution changed dramatically. Households experienced considerable fluctuations in their expenditure, with over 60 percent of the population's expenditure either more than doubling or falling to less than half their previous levels. While such high fluctuations may indicate that even in Russia there is a chance for an American dream, it may as well be a sign of a high instability. The high instability may affect the incentives of Russians, who seem to be caught in the game of Russian roulette, to support the economic reforms, acquire human capital, and undertake entrepreneurial activities.

This paper is organized in five sections. The first section offers a brief literature review. The following section discusses the data and main welfare indicators I used. Section three provides an

overview of the levels and changes observed in equivalent household expenditure. Section four examines the issue of household mobility (instability) within the expenditure distribution. Section five concludes.

1. Previous Contributions

Although some level of inequality existed prior to the economic reforms, income distributions in communist countries were among the most equal in the world (Milanovic, 1998). Milanovic (1999) attributes the increase in inequality to changes in composition of employment - the state-sector middle class moves into either the 'rich' private sector or the 'poor' unemployed sector. Ferreira (1997) lists privatization of public assets, development of new markets for privately provided substitutes to public services, and changes in the returns on different skills as the main reasons for the observed increase in inequality.

The increase in inequality during the first years of transition is well documented. While most of the literature deals with income and wage inequality, recent contributions investigate household consumption inequality and dynamics. Flemming and Micklewright (1997) reported that the wage decile ratio tripled in only three years, increasing from 3.3 in 1992 to 10 in 1995. Based on official statistics, the Gini coefficient for the Russian wage bill increased from 0.22 in 1989 to 0.5 in 1996. Findings based on the Russian Longitudinal Monitoring Survey (RLMS) suggest that the rise in wage inequality for full-time workers measured by the Gini coefficient and the decile ratio was even greater, with the former measure increasing from 0.42 in 1992 to 0.51 in 1996, and the latter increasing from 7 to 13 during the same period (Yemtsov and Lokshin, 1999). While it is evident that the increase in inequality was substantial, few attempts have been made to measure the precision of these numbers. The majority of studies utilized cross sectional data for their

inquiry which do not distinguish between permanent changes in well-being and transitory shocks to which some of the reported increases in inequality may be attributed.

Two recent papers use the RLMS panel to address the question of expenditure inequality. Both papers address the large fluctuations in expenditure in Russia. Giles (2000) reports real per capita consumption became more unequal between 1994 and 1996, but that measured inequality fell substantially between 1996 and 1998. Giles investigates the correlation between the external aggregate shocks to the household and per-capita household consumption, and finds that the consumption of the households with household head employed in the private sector is not as correlated with the aggregate shock as the consumption of the households with a head employed in the state or employee-owned firms. Luttmer (2000) demonstrates that accounting for noise in the data significantly reduces the measures inequality. While individuals face much uncertainty, half of these fluctuations in expenditure reflect transitory shocks or measurement error. The contribution of this paper to the ongoing debate on the dynamics of inequality in Russia is an emphasis on the mobility and instability of expenditures among Russian households. The results suggest that the level of instability in economic well-being, measured by household expenditure, is very high, and cannot be explained by characteristics of the household.

2. Data

The data for this study come from the Russian Longitudinal Monitoring Survey (RLMS)[1]. The RLMS is the first nationally representative random sample for Russia. The RLMS has been carried out in two phases, with each phase based on a separate nationally representative sample of

[1] The issues related to sample design and data collection are described in great detail on the North Carolina population center web page (www.cpc.unc.edu/projects/rlms/rlms_home.html), and in the Zohoori, N., et al. 1998 article. Phase I consists of surveys conducted in September 1992 (Round 1), February 1993 (Round 2), August 1993 (Round 3), and November 1993 (Round 4), while Phase II consists of surveys in December 1994 (Round 5), October 1995 (Round 6), October 1996 (Round 7), and November 1998 (Round 8).

the Russian population. This paper uses rounds 5 through 8 from Phase II of RLMS. The individual rounds sampled 3,763 households in 1994, 3,560 in 1995, 3,562 in 1996, and 3,622 households in 1998. This yields a sample of 2,390 households present in all four rounds. The analysis is performed on the individual rounds as well as on the sample restricted to households interviewed in all four rounds (hence forth referred to as balanced panel). In addition to the household characteristics, I use the demographic and labor market characteristics of the household heads. All monetary variables are expressed in 1992 prices. The monthly Consumer Price Index reported by the Russian Economic Trends (RET), published by Stockholm Institute of Transition Economics and East European Economies serves for comparing prices. Although the difference in regional prices was present, a reliable regional monthly CPI is not available.

The main measure of economic well-being used in this paper is the logarithm of real monthly consumption expenditure excluding expenditure on durable goods but including that on home production. The expenditure is adjusted for household size using an equivalence scale[2] of 0.75. The focus on household expenditure is only partly due to the notion that household expenditure is a better proxy for household resources than income and wages. The turbulent times in Russia during the period covered with the data increased the importance of informal economic activities and income from these activities is unlikely to be reported truthfully[3]. Income from wages constitutes only a third of the total household income in all four years. Further, there has been a remarkable expansion of wage arrears: the share of workers affected increased from over 10

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[2] The adult equivalent expenditure is defined as $E_{eq.adult} = \frac{E_{household}}{fam.size^{0.75}}$. There is hardly an agreement on which value of theta one should use. Milanovic and Jovanovic (1999) estimate the theta to be 0.62, close to the value of 0.5 reported by Frijters and van Praag (1994) and 0.42 reported by Ravallion and Lokshin (1996). The analysis was repeated for per capita household expenditure (theta equal to one), and the results did not differ in any significant way.

[3] The household income in all four rounds was only 75 percent of household expenditure, which points to the possibility that the household income was under-reported.

percent in 1993 to over 60 percent in 1998, with only 25 percent of the working population receiving their full wages on time (Yemtsov and Lokshin, 1999.)

The expenditure survey was part of the RLMS household questionnaire, which includes information about the purchases of a specific good, the quantity of the purchase, and the amount paid. The reference period is different for different categories of goods: For food expenditure, the reference period was one week prior to the survey; for services and utilities it is one month prior to the survey; and for shoes and clothes, and durable goods and home production it is three months prior to the survey. Assuming that the expenditure is uniformly distributed throughout the reference period, total expenditure was calculated by a summation of all the categories, and using the appropriate weights (4.2 for food expenditure, and 0.33 for durables, shoes and clothes.)

Table 1: Shares of Expenditure Categories

Year	*Food*	*Home pr.*	*Services*	*Durables*	*Luxuries*	*Other*
1994	0.522	0.164	0.054	0.027	0.016	0.217
	(0.006)	(0.005)	(0.002)	(0.002)	(0.002)	(0.004)
1995	0.536	0.143	0.082	0.015	0.010	0.213
	(0.005)	(0.004)	(0.002)	(0.001)	(0.001)	(0.004)
1996	0.525	0.128	0.085	0.018	0.011	0.233
	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.004)
1998	0.474	0.188	0.093	0.012	0.011	0.223
	(0.005)	(0.005)	(0.003)	(0.001)	(0.002)	(0.004)

Category "Other goods" includes clothes, shoes, fuel engine, and different categories of payments (medical expenses, child care, travel, insurance, purchase of valuable papers, alimony, credits, debts and loans, and travel).

The share of expenditure categories is given in the Table 1. Given the economic situation in the country, in particular the reemergence of high inflation, it would be reasonable to expect that the households increased the purchase of durable goods in order to store the value of their incomes and smooth their consumption[4]. Table 1, however, does not offer much support to that hypothesis. The share of durables fell by 15 percentage points between 1994 and 1998. The

[4] As an alternative, Russian households may have attempted to store the values of their incomes by purchasing foreign currency. However, the data on foreign currency holdings is not available.

share of categories other than durables appears to be roughly stable between 1994 and 1996. Between 1996 and 1998 however, share of food decreases by over 5 and durables by 5 percentage points, the share of home production increased by 6 points. Expenditure on services marked a modest one-percentage point increase, while the share of luxuries remained stable in the same period.

As in any panel data set, the RLMS suffers from the pitfalls of sample attrition. The University of North Carolina website reports that households with better economic positions and households in urban areas are more likely to drop out of the sample. The basic characteristics of the households and household heads for the balanced panel (households present in all four rounds) and for individual rounds are presented in Table A1 in the appendix.

The attrition rate is high, over 32 % of the households who are present on three or less individual rounds are not in the balanced panel. Households from the early rounds that were not present in the same dwelling in the later rounds were not followed, which explains the high attrition rates in the first two rounds. The panel has been replenished in rounds seven and eight, which accounts for the high attrition in the last two rounds. At the same time, households that were not in the earlier rounds, but were living at the address of the household that was in the sample are simply added to the sample. Comparing only the last two rounds of the RLMS, Ravallion and Lokshin (2000) report that the 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. They speculate that the attrition may be non-random in a sense that the poorest households are the one leaving the sample.

A simple comparison between the household characteristics for the balanced sample and the individual rounds indicates that the households from Moscow and St. Petersburg are indeed more

likely to leave the sample. The share of household heads with higher education is significantly higher in the individual rounds. If the attrition is non-random, the results obtained using the balanced sample may be biased. In particular, if the households with better economic position are leaving the sample, the right tail of the expenditure distribution is likely to be underestimated. For that reason the next section of this paper, which assesses the changes in the expenditure distribution, uses both individual rounds and the balanced panel.

3. Expenditure Distribution and Shocks

Based on the economic situation in Russia during the period covered by the data, one would expect that household welfare was depreciating at a relatively stable rate prior to the crisis, and decreased significantly in the fall of 1998. Adult equivalent household expenditure decreased by more than 17 percent annually between 1994 and 1996. In 1998, expenditure contracted by almost 30 percent. Between the fall of 1994 and fall of 1998, the mean (and median) expenditure dropped by about 64 percent. This decrease of the mean log equivalent adult household expenditure (LEAHE) is depicted in Figure 1, which plots distribution of the log equivalent adult expenditure in 1994 through 1998.

Figure 2 plots the expenditure distribution centered at zero. It appears that in spite of the sharp decline in mean expenditure, the shape of the distribution changed modestly. Table 2 reports the mean, median, log mean and variance, Gini coefficient, and major percentile ratios for real equivalent expenditure for individual rounds and balanced panel (Table A2 in Appendix reports the statistics for the Per Capita Equivalent Household Expenditure as a part of sensitivity study). In order to add measures of precision, the bootstrapping method is used to compute the corresponding standard errors. These standard errors may be understated as the estimation technique ignores the sample clusters. Nevertheless, with due caution these standard errors can provide a good idea on the accuracy of the estimates.

Figure 1: Probability Density Kernel Estimates of the LEAHE

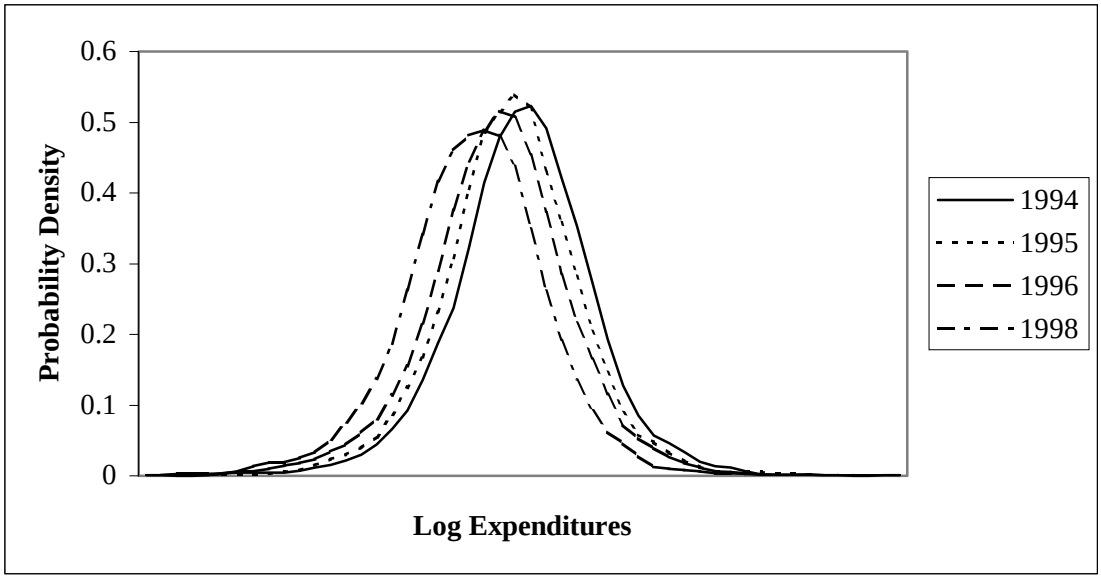
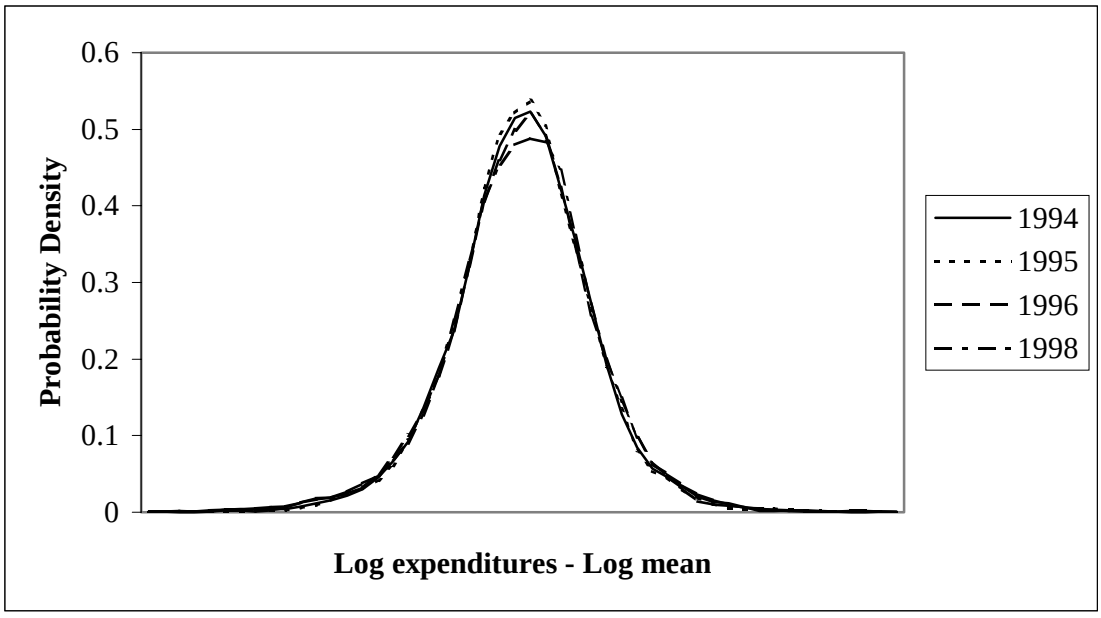


Figure 2: Probability Density Kernel Estimates of the LEAHE centered at zero



Using Lorenz curves to compare the distributions, we find that the distribution of LEAHE exhibits greater inequality than in 1994, with the curve for 1995 below the curve for 1994. The distribution of LEAHE for 1996 (1998) is more equal than the one for 1995 (1996). Finally, comparing the beginning and the end of the period we cannot say with certainty which

distribution carries more inequality since the Lorenz curves cross[5]. Based on the individual rounds, the Gini coefficient suggested that inequality remained roughly the same between 1994 and 1998. Gini coefficient increased from 0.48 to 0.49. There has been movement of the 10th and the 90th percentile relative to the median. Between 1994 and 1998 both the left and right tail of the distribution became more prominent, with more spread in the left tail. Focusing only on the beginning and the end of the period, the 75th and 25th percentiles relative to the median remained remarkably stable given the severity of the financial crisis that occurred in the fall of 1998, only a few of months before the data was collected.

Table 2: Distribution of the Equivalent Adult Household Expenditure

	Year	*Mean*	*Median*	*Lg Mean*	*Lg Var.*	*Gini*	*90th-10th*	*50th-10th*	*90th-50th*	*75th-50th*	*50th-25th*
Individual Rounds	***94***	4934.52	3368.97	8.11	0.74	0.47	7.62	2.87	2.65	1.66	1.68
		(112.11)	(53.55)	(0.01)	(0.02)	(0.01)	(0.27)	(0.07)	(0.07)	(0.03)	(0.03)
	95	4158.96	2903.03	7.96	0.71	0.46	7.47	2.78	2.69	1.62	1.65
		(94.38)	(50.42)	(0.01)	(0.03)	(0.01)	(0.32)	(0.08)	(0.08)	(0.03)	(0.03)
	96	3634.55	2489.74	7.80	0.80	0.47	8.56	3.00	2.85	1.67	1.70
		(89.98)	(41.27)	(0.01)	(0.02)	(0.01)	(0.29)	(0.07)	(0.07)	(0.03)	(0.03)
	98	2769.38	1872.19	7.51	0.78	0.48	8.03	2.93	2.74	1.69	1.72
		(78.02)	(36.84)	(0.02)	(0.02)	(0.01)	(0.32)	(0.09)	(0.07)	(0.03)	(0.03)
Balanced Panel	***94***	4681.74	3334.84	8.09	0.69	0.44	7.12	2.73	2.61	1.63	1.65
		(161.02)	(78.25)	(0.02)	(0.03)	(0.02)	(0.24)	(0.07)	(0.07)	(0.03)	(0.03)
	95	3954.25	2810.01	7.94	0.64	0.44	7.01	2.67	2.62	1.61	1.62
		(102.29)	(56.44)	(0.02)	(0.03)	(0.01)	(0.30)	(0.08)	(0.08)	(0.03)	(0.03)
	96	3403.10	2429.65	7.76	0.75	0.45	8.09	2.99	2.71	1.64	1.69
		(92.53)	(45.35)	(0.02)	(0.03)	(0.01)	(0.36)	(0.08)	(0.09)	(0.03)	(0.03)
	98	2510.57	1803.77	7.47	0.71	0.44	7.63	2.84	2.69	1.66	1.68
		(58.63)	(34.59)	(0.02)	(0.02)	(0.01)	(0.33)	(0.10)	(0.07)	(0.03)	(0.03)

Standard errors in parenthesis.

Since the remaining discussion in this paper relies on the household in all four rounds of the RLMS, it is important to understand how does the attrition affect the results. The results based on the balanced sample show lower inequality, with Gini coefficient of 0.44 at the beginning and at

[5] Lorenz curves are plotted in Figure A1 in the Appendix. It is very hard to eyeball whether distributions actually cross or not, since all the curves are very close to one another. In order to check if one cure is above (under) the other, I subtract the share of expenditures for each population percentile (vertical distance between the two curves).

the end of the period, while the log variance shows a very modest increase in inequality[6]. Both tails of the distribution are more prominent in individual rounds than in the balanced panel, but the 90th to 10th decile ratio is especially underestimated when using the balanced panel. In 1998, the ratio was 8.03 when using individual rounds and only 7.3 in the balanced panel. Figure A2 plots the probability density kernel estimates for each individual year for the balanced panel and individual rounds.

Even though the expenditure distribution appears to be stable, the changes in equivalent expenditure at the household level are quite dramatic. Table 3 shows the percentage change in measured equivalent household expenditure between the reference month and the identical month one year later[7]. The percentage changes are expressed in terms of the deviations from the national mean. The reference month for Russia is November or December 1994. Households experienced considerable fluctuations in their expenditure, with over 60 percent of the population's expenditure either more than doubling or falling to less than half their previous levels. Only about 10 percent of all households experienced an expenditure shock of less than 10 percent.

As Ferreira (1997) suggested, individual's skills and use of certain public services should be able to predict (the direction of) if the individual is likely to improve or lose his economic status. In order to show if the fortunes of the household were related to their demographic characteristics and individual characteristics of the household heads, a regression of year-to-year change in the log real equivalent expenditure on a set of dummy variables depicting the characteristics of the

[6] Although these findings may appear contradictory, different inequality measures are more sensitive to inequality in different parts of the distribution. If inequality in one part of the distribution (say the bottom tail) increases while it decreases elsewhere (say the top tail), it is quite possible for different inequality statistics to give different results.

[7] The actual distribution is calculated in logs, and then translated into percentage change. The log shock distribution plot is given in Figures A3a and A3b in Appendix.

household and household's decile position in 1994 (the reference year) is used. Following Ferreira's context, education of the household head is used as a proxy for skill, while a group of regional and settlement type dummy variables serve as proxies for access to public services. The decile position in reference year is included to account for the fact that those in the left tail of the distribution are more likely to experience gains, while those in the right tail are more prone to losses. The results for the 1996 to 1998 difference are added, since these results have potential to shed light on the characteristics of the households that might have caused gains or losses after the 1998 crisis. The results of this exercise are given in the Appendix (Table A3).

Table 3: Percentage change of the EAHE

	94-95		***95-96***		***96-98***		***94-96***		***94-98***	
% change	*Freq.*	*Percent*	*Freq.*	*Percent*	*Freq.*	*Percent*	*Freq.*	*Percent*	*Freq.*	*Percent*
-67 -	193	8.08	204	8.53	214	8.96	240	10.04	237	9.92
-33 to -67	490	20.5	469	19.63	516	21.59	457	19.13	509	21.3
-10 to -33	347	14.51	363	15.19	328	13.73	364	15.23	305	12.76
-10 to 10	281	11.76	233	9.75	246	10.29	255	10.67	236	9.88
10 to 25	167	6.99	181	7.57	173	7.24	150	6.28	153	6.4
25 to 50	205	8.58	235	9.83	209	8.74	184	7.7	205	8.58
50 to 100	293	12.26	319	13.35	238	9.96	265	11.09	253	10.59
100+	414	17.32	386	16.14	466	19.5	475	19.88	492	20.58
Log mean	-0.171		-0.176		-0.291		-0.347		-0.637	

There appears to be some evidence in support of Fereira's proposition that individual skills are a good predictor of the change in economic status during the transition. The only individual characteristic significant in all regression equations is a dummy variable for whether the household head obtained higher education. Households with a highly educated household head experienced gains compared to those headed by a head with inferior education. The age of the household head, as well as the household composition, is not significant. Households that did not reside in metropolitan areas (Moscow and St. Petersburg) experienced higher losses when compared to Moscow and St. Petersburg residents, suggesting that residents of metropolitan areas

have better access to public services. Regional dummies are significant (all but Ural in the last specification) at the 10 percent confidence level. This, however, does not imply that the demographic characteristics of the household explain much of the change in expenditure. As we shall see, the regression to the mean is the main force behind the results. Once the decile position in the reference year is accounted for, the explanatory power of the demographic characteristics is very low. The variation in household characteristics explains less than 4 percent of the variation in the estimated residuals from regression of year-to-year change on decile position in the reference year.

Although these fluctuations in economic fortunes appear to be enormous, many of these changes might reflect transitory events that do not affect underlying well-being. Moreover, much of the fluctuation may not reflect real events but simply measurement error in the data. Luttmer (2000) reports large temporary shocks in the Russian economy. Luttmer used a model that describes the expenditure as a sum of an underlying level (which evolves subject to a common trend and a persistent shock) and a transitory shock. The persistent shock is persistent in the sense that it persists for at least two periods. This model allows for decomposition of the change of the expenditure (expenditure "shock") on persistent and transitory shocks. Using the same data set used in this paper, Luttmer estimates the transitory shock to constitute 86 percent of the total shock in expenditure, and 90 percent in income. For example, a Russian household who once earned 2,000 Rubles per month and whose income increased to 3,000 Rubles in the current month should expect their income to fall back to 2,100 Rubles in the same month one year later. Only 10 percent of the shock will persist, while the remaining 90 percent of the gain will disappear.

4. Expenditure Instability

This section concerns itself with changes in households' position in the adult equivalent expenditure distribution over time. Even though the stability of the expenditure distribution may suggest the overall levels of well-being were maintained over the four years covered with the survey, it may also mask significant movements of individual households within the distribution. As demonstrated above, the changes in the expenditure level over the period were quite dramatic. The question is whether these changes are implying high levels of expenditure mobility or expenditure instability.

Most of the literature uses the data from the developed economies to address issues of mobility within the distribution, and are based upon the premise that income is a measure of well-being. In a developed economy with competitive and dynamic labor market and established social safety nets, movement within the distribution is viewed as favorable sign of mobility. In a country with little stability in any aspect of political and economic life, the same movements can be viewed as a sign of instability, especially if they are large and appear to be random. A high level of instability in economic well-being can generate potential political behavior that weakens the government's commitment to promote the economic reforms.

I will assess the movement of households within the expenditure distribution using several different approaches. First, I will use the method described by Welch (1999) to construct adjacent year changes in the percentile of the expenditure distribution. The second approach decomposes the variation in the expenditure into permanent and transitory components, and uses the share of the permanent component in total variation as a mobility–instability-measure. The third way is to compute Shorrock's Index R for the four different measures of inequality (Gini coefficient, Square of Coefficient of Variation, Theil Index, and Theil Entropy Index), and see how it changes as we extend the accounting period. Finally, the changes of households' position in the

expenditure distribution are analyzed using transition matrices. In this part of the paper only the balanced panel will be used, since it is essential to observe households at multiple points in time.

4.1 Adjacent year changes

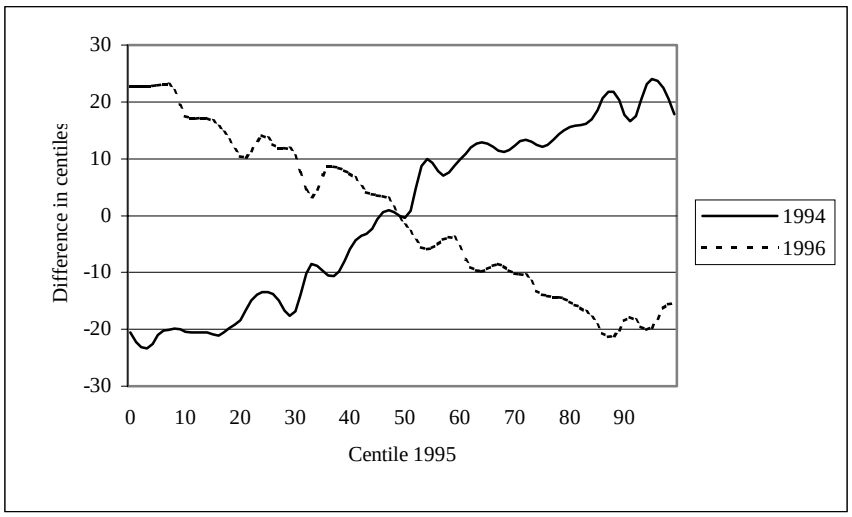
This approach enables us to see how, on average, the percentile position of the household changed over time, and what are average percentile gains and losses. Each household is assigned its percentile value in each year. Taking 1995 as the base year, at each percentile of the base year, I calculate the average percentile position in the previous and succeeding year for all households and average the results for a series of triplets (Figure 3). Among those in the 10^{th} percentile in 1995, the expected loss from 1994 to 1995 is roughly 20 percentile points, meaning that in 1994 these households were, on average, in the approximately 30^{th} percentile. These households (in the 10^{th} percentile) are expected to gain 20 percentage points in 1996, thus finding themselves in the 30^{th} percentile of household expenditure. Similarly, households located at the 90^{th} percentile in 1995 on average experienced almost a 20 percentile points gain compared to the previous year, and are expected to lose 20 percentile points in the succeeding year. On average, the richer are getting poorer, and poorer are getting richer. These averages, however, may be misleading. Although the adjacent year changes are exhibiting the expected regression to the mean feature, the changes in percentile positions indicate very high levels of expenditure instability. Some of the changes in household's position can be attributed to transitory events, or alternatively, to very noisy data.

4.2 The share of permanent in total variation

Gittlerman and Joyce (1996) use the share of permanent in total variation (correlation coefficient ρ) as a mobility (instability) measure. A low positive correlation coefficient implies that households experienced substantial changes in their relative positions within a given expenditure distribution, and can be viewed as evidence of a high degree of short-term expenditure instability.

Households may have a difficult time attempting to maintain their economic status. On the other hand, as Gittlerman and Joyce point out, the low correlation coefficient may also be interpreted as an indicator of high expenditure mobility, which may be viewed as favorable because it connotes the opportunity to change one's relative economic position.

Figure 3: Adjacent Year Changes in LEAHE



In order to isolate the transitory component (including measurement error) in expenditure, I use the methodology described in Gottschalk and Moffit's 1994 and 1995 papers. Gottschalk and Moffit (1994) use the simple canonical permanent-transitory model with white-noise transitory component to investigate the growth of earnings instability in the U.S. labor market. The model calls upon the traditional distinction between the permanent and transitory components of a variable. The permanent component depicts the characteristics of the households, such as household type and composition, labor market status of the household members and other demographic characteristics. The transitory component consists of the idiosyncratic part and the possible contamination of the data due to the measurement error. Since the idiosyncratic

component is observationally equivalent to the measurement error, it is hard to distinguish between the two.

Derivation of the transitory and permanent components is explained in detail in the Appendix. The results of the decomposition above are reported in Table 4. I find the variance of the transitory component to account for 60.3 percent of the total variance of the log equivalent expenditure[8]. The decomposition was also performed on three alternative definitions of the expenditure: total expenditure including expenditure in durable goods, food expenditure only, and food expenditure and home production. The share of the transitory component for food expenditure and food expenditure with home production is higher – 67.8 and 69.3 percent respectively. It is clear that not accounting for transitory component leads to overstating the measured inequality.

Table 4: Decomposition of the Equivalent Expenditure Variation

Variable	*Variance*	*Permanent*	*Transitory*	*Tran. Share*	*Perm. Share*
Total expenditures	0.767	0.305	0.463	0.603	0.397
	(0.017)	(0.017)	(0.007)	(0.014)	(0.012)
Tot. Exp. w/o durables	0.750	0.296	0.453	0.605	0.395
	(0.018)	(0.015)	(0.008)	(0.011)	(0.012)
Food Expenditures	1.060	0.341	0.719	0.678	0.322
	(0.023)	(0.022)	(0.013)	(0.015)	(0.014)
Food Exp. & Home Prod.	0.786	0.242	0.545	0.693	0.307
	(0.020)	(0.016)	(0.012)	(0.015)	(0.012)

The correlation coefficient is below 40 percent[9]. The number of rounds available in the RLMS does not allow for comparison between two sub-periods, therefore whether the degree of instability is higher or lower than it used to be cannot be determined, and simple comparison with

[8] Gottschalk and Moffit report the transitory variance to be 34 percent of the total variation of annual income for both 1970-78 and 1979-87 sub periods.
[9] Gittleman and Joyce report the mean correlation coefficient of over 70 percent for the CPS Matched earnings data.

developed countries would not do justice to the Russian economy. Yet, such a low value for the correlation coefficient suggests a high expenditure instability rather than mobility.

4.3 Shorrock's Index R

It is common to measure inequality in living standards by inequality in income or expenditure across households in a given month (see Shorrocs, 1978 among others). Both income and expenditure are only imprecise measures of the living standard of a household, and could be misreported or could reflect transitory even. The inequality in measured income or expenditure will exceed the inequality in underlying living standards. Perhaps the most intuitive way to reduce the role of transitory events and measurement error is to examine inequality in average income and expenditure (Shorrocks, 1978). Together with idiosyncratic components of expenditure and measurement error, this method also averages out some true mobility – movements in the underlying level of material well-being. Nevertheless, the inequality of average expenditure over several periods is likely to be a better approximation of underlying inequality, than the one based on income in a single month. Transitory changes in economic well-being will imply relatively large changes as we move from one period to two period accounting, but the consequent addition of an accounting period would not contribute to large decreases in inequality measures On the other hand, if the changes in permanent well-being are taking place, the sharp decline in measured inequality will continue to take place as we extend the accounting period.

In his 1978 and 1981 papers, Anthony Shorrocks investigated the degree to which measured income inequality is affected by the choice of accounting period, and spells out the procedure for assessing the correct procedure for establishing the empirical relationship between the inequality measures and accounting period. Shorrocks proposes using index R that measures the degree to

which incomes are equalized as the account period is extended. The index R takes values between zero (compete equalization) and one (no equalization over time).

The index R compares long-run inequality and a weighted average of the annual inequality values, with the weight proportional to the mean expenditure in each of the years. Shorrocks (1981) proposes the following procedure to generate the index R: Let a population have *n* households observed in *m* periods, and let E_i^k denote the expenditure of the household *i* in period *k*. The total expenditure over the whole m-period is given by $E_i = \sum_k E_i^k$, with corresponding means $\mu^k = \frac{1}{n}\sum_i E_i^k$ and $\mu = \frac{1}{n}\sum_i E_i = \sum_k \mu^k$. Denote the inequality value as *I[E]*. The index R is computed as

$$R = \frac{I[Y]}{\sum_k w_k I[Y^k]} <= 1 \text{ , where } w_k = \frac{\mu^k}{\mu}.$$

In the case analyzed in this paper, there are four periods. Beginning with the first two periods, and then including the subsequent accounting periods (up to the total of four), values of R for different accounting periods are obtained. This generates a sequence $\{R_m\}$, which shows the trend towards equalization as the accounting period is progressively lengthened. Four different inequality indices are used to generate the sequence $\{R_m\}$: the Gini coefficient (G), the square of the coefficient of variation (C_2), the Theil coefficient (C_1), and Theil "entropy" index (C_0)[10].

$$C_2 = \frac{1}{n}\sum_i \left[\left(\frac{E_i}{\mu}\right)^2 - 1\right]$$

[10] $C_1 = \frac{1}{n}\sum_i \frac{E_i}{\mu}\log\frac{E_i}{\mu}$

$$C_0 = \frac{1}{n}\sum_i \log\frac{E_i}{\mu}$$

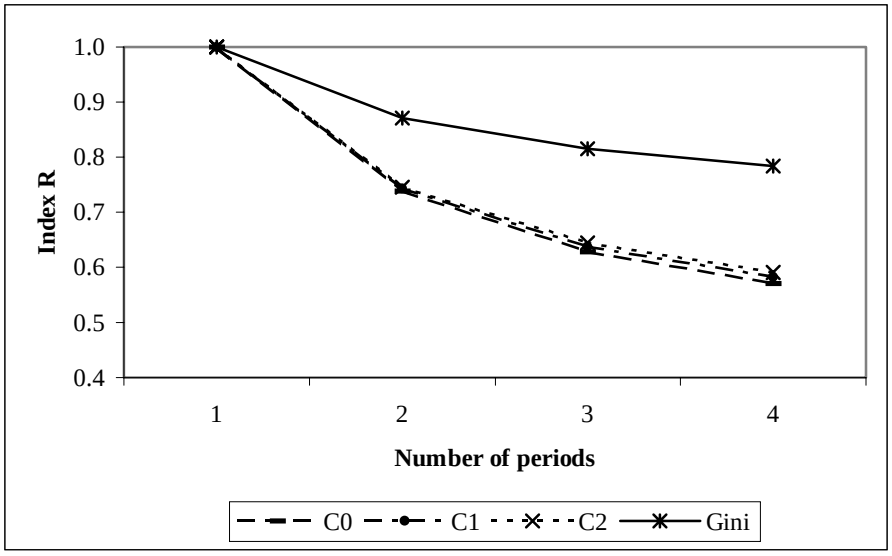
The values of index R based on these indices are given in Table 5. The indices $C_{2,}$ $C_{2\ and}$ C_2 are very close, and generate almost identical sequences $\{R_m\}$, while the Gini coefficient gives quite different sequences. The difference between the sequences generated by C indices and the Gini coefficient emerge because the Gini coefficient gives little weight to transfers in either tail of the distribution, which makes it less sensitive to the accounting period (Shorrocks 1981)

Table 5: Index R for LEAHE 1994-1998

Period	C_0	C_1	C_2	*Gini*
1994	1.000	1.000	1.000	1.000
1994-95	0.739	0.743	0.746	0.871
1994-96	0.628	0.638	0.644	0.815
1994-98	0.571	0.583	0.590	0.783

In addition to being interpreted as an index of the stability of the inequality value to changes in the accounting period, index R can be also interpreted as a measure of the degree to which individual incomes fluctuate over time – a measure of expenditure mobility or instability (Shorrocks 1981). The idea is similar to the one described earlier where the proportion of permanent in total variation was used as a measure of expenditure instability. The degree of expenditure stability can be represented with rigidity curves, where the values of index R are plotted against the size of the accounting period. The reference curve is the horizontal line R=1 which represents a completely immobile structure. If the rigidity curves show a sharp initial fall, but then remain more or less horizontal, the structure suggests transitory variations in expenditure. Structures are considered more egalitarian if the initial fall is not as sharp, but decline in R continues as we extend the accounting periods. The rigidity profiles depicted in Figure 4 indicate that the initial drop was high, but leveled out as we add additional periods. This again suggests high levels of transitory variation in the expenditure, and potentially high levels of instability.

Figure 4: Sequence of Index R for LEAHE 1994-1998



4.4 Transition Matrices

Mobility is often defined as a change in household ranks within a distribution[11]. Using the RLMS panel we are able to construct mobility tables. Each cell in the mobility table represents the probability p_{ij} of transferring to state j from the state i. Therefore, the sum of the rows and columns adds up to unity. The states that are commonly used are quintiles or deciles of the distribution of the well-being measures (wage, income, expenditure). In this paper, I use the quintiles of the expenditure distribution. The mobility tables (transition matrices) are given in Table 6, using the fall of 1994 as a reference. There are two sets of tables: the first ones use the LEAHE, while the second one uses the predicted LEAHE. The predicted LEAHE is based on a simple linear model (see Table A3 in Appendix), conditioned on any household or demographic characteristics for each individual round.

It is remarkable that at the upper and lower ends, the chance of changing the rank is in fact lower than for the middle deciles. In the top and bottom decile, the chance of maintaining the rank is

[11] Shorrocks (1978b) proposed generating number of measures based on transition matrices that would summarize the mobility structure and make it comparable over time and across economies, but concludes

approximately twice the chance of maintaining the position in the middle deciles. The main diagonal of the transition matrices seems to be quite weak. There is some symmetry in the mobility table, especially for the middle deciles, where a chance of movement decreases with the distance between the deciles. In comparison, Gottschalk and Moffit (1995) report one-year quintile mobility rates for log annual earnings. Individuals in the bottom and top quintiles have a two-thirds chance of changing their rank (33 percent for the bottom and 31 percent for the top quintile). Among individuals in the third quintile, 44 percent do not change their rank and about 20 percent moves to the adjacent quintile. The remaining individuals either slide to the bottom quintile (8 percent), or climb to the top one (7 percent). While it is usually assumed in the literature that the dynamic process governing transitions follows a Markov chain, a look at Table 6 reveals that the transition matrices for Russia were not generated by Markov process.

Table 6: Transition Matrices

		Unconditioned					***Conditioned***				
		1995 quintile					***1995 quintile***				
		1	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
1994 quintile	*1*	***0.45***	0.23	0.18	0.09	0.05	***0.72***	0.18	0.06	0.03	0.01
	2	0.22	***0.26***	0.24	0.18	0.10	0.22	***0.43***	0.26	0.08	0.01
	3	0.17	0.25	***0.23***	0.22	0.13	0.05	0.31	***0.38***	0.21	0.05
	4	0.10	0.15	0.20	***0.28***	0.27	0.01	0.07	0.26	***0.49***	0.17
	5	0.06	0.11	0.15	0.22	***0.45***	0.00	0.01	0.03	0.19	***0.76***
		1996 quintile					***1996 quintile***				
		1	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
1994 quintile	*1*	***0.39***	0.25	0.19	0.09	0.07	***0.70***	0.17	0.07	0.05	0.01
	2	0.23	***0.25***	0.21	0.18	0.12	0.20	***0.44***	0.21	0.09	0.05
	3	0.19	0.24	***0.23***	0.21	0.13	0.07	0.25	***0.41***	0.21	0.06
	4	0.12	0.15	0.23	***0.28***	0.22	0.03	0.10	0.24	***0.41***	0.21
	5	0.07	0.10	0.14	0.23	***0.45***	0.00	0.03	0.06	0.24	***0.67***
		1998 quintile					***1998 quintile***				
		1	*2*	*3*	*4*	*5*	*1*	*2*	*3*	*4*	*5*
1994 quintile	*1*	***0.40***	0.25	0.17	0.11	0.06	***0.59***	0.25	0.10	0.03	0.03
	2	0.23	***0.26***	0.20	0.21	0.11	0.23	***0.36***	0.22	0.14	0.05
	3	0.19	0.22	***0.21***	0.22	0.18	0.12	0.24	***0.32***	0.23	0.08
	4	0.11	0.17	0.23	***0.26***	0.23	0.05	0.12	0.27	***0.34***	0.22
	5	0.08	0.10	0.19	0.21	***0.42***	0.01	0.02	0.09	0.25	***0.62***

that none of the measures has the minimum requirements regarded as essential (period consistency and period invariance in particular).

After controlling for the household characteristics, the main diagonal of the transitional matrices becomes more prominent, meaning that less households change their decile position. Between 1994 and 1995, 72 percent of households remained in the first quintile, and 76 percent in the fifth quintile of the distribution. For the middle quintile, the chance of remaining in the same rank is below 40 percent, and the symmetry is still apparent. The fact that controlling for the household characteristics increases the share of households who change their rank position suggests that factors unaccounted for are the ones that cause the mobility. Table 7 presents the Cramer's V measure of association for both unconditioned (actual) and conditioned (predicted) transitional matrices. It shows that the association is higher for the predicted expenditure, with this relationship declining as the time period is extended.

Table 7: Cramer's V Measure of Association

		Actual	***Predicted***	***Actual***	***Predicted***	***Actual***	***Predicted***
	Year	*1995*	*1995*	*1996*	*1996*	*1998*	*1998*
Quintiles	*1994*	0.246	0.524	0.221	0.471	0.208	0.395
	1995			0.269	0.508	0.228	0.406
	1996					0.236	0.492

5. Summary and Conclusions

This paper tried to assess inequality in Russia during the process of economic transition, and to distinguish between the expenditure mobility and expenditure instability. There are two main findings: the expenditure distribution is stable in spite of the economic and political turmoil Russia was (and still is) going through. However, that does not imply expenditure stability. The mobility of households within the expenditure distribution is high. The results were somewhat affected by the high attrition rates, although it is hard to say whether the attrition causes the expenditure instability was under or overestimated.

Individuals in Russia face much economic insecurity – the median absolute annual change in household expenditure is between 25 and 30 percent. However, more than half the fluctuations in household expenditure reflect measurement error or transitory shocks. The first part of the mobility inquiry suggested that in 1998 relative to 1994, on average, 'rich' were getting poorer, while the poor were getting richer. At the mean, 'rich' were losing 20 percentile points, while the 'poor' were gaining 20 percentile points. But, transition matrices showed that the results based on averages might be misleading. There seems to be a fragment of population that is trapped in the lowest quintile of the distribution. After controlling for the basic household characteristics, almost 70% of those in the first quintile in 1994 remained in it in 1995.

Some important aspects of mobility and expenditure dynamics were omitted in this paper, such as intergenerational mobility, and wage inequality and mobility. As Welch (1999) points out, inequality is destructive whenever the low-wage citizen views society as unfair, when he or she views individual efforts as not worthwhile, or when upward mobility is viewed as so unlikely that its pursuit is not worthwhile. It is hard to say whether the rise in inequality in Russia was destructive without looking closely into the returns to skill in the years that followed the advant of the transition. Changes in inequality in an economy that is experiencing turbulent times (a sharp decline in output and employment; high inflation, loss of markets due to the break of the Eastern Bloc, to mention but the few) should alone merit our interest. However, if one still needs an excuse to look into such inequality, a number of studies suggest that the changes in inequality may affect other aspects of an economy. An increase in inequality may lead to less political stability, and therefore to sub-optimal investment levels (Alesina & Perotti, 1996); higher violence levels (Fajnzylber et. al., 1998); the emergence of an underclass (Lokshin & Popkin, 1999); and under certain conditions, reduced economic growth through its impact on individual investment in human or physical capital (Aghion, et. al. 1999).

Distinguishing between mobility and instability is not an easy task in a transitional economy, but it is nonetheless a very important one. While the high levels of mobility may indicate that even in Russia there is a chance for an American dream, the high instability is worrisome, and may affect the incentives of Russians to support the economic reforms, acquire human capital, and undergo entrepreneurial efforts. Even though Russians may accept the game of the Russian roulette that they are caught in, the concern is that they do not find the game amusing.

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Appendix

Permanent-Transitory Model

Define E_{it} as the log of real monthly equivalent expenditure of household *i* in year *t*. A variable can be decomposed on its permanent, individual specific part, and transitory part, using the standard permanent-transitory decomposition:

$$E_{it} = \mu_i + \upsilon_{it},$$

Where μ_i is a permanent expenditure and does not vary over time, while υ_{it} is transitory expenditure, which does vary over time. The variance of the equivalent expenditure is equal to the sum of the variances of the permanent and transitory part, since the two are not correlated:

$$\sigma^2_{E_{it}} = \sigma^2_{\mu_i} + \sigma^2_{\upsilon_{it}}.$$

To compute permanent and transitory log expenditure variances, I calculate for each individual the mean of his log equivalent expenditure over all four years ($E_{i.} = \frac{1}{T}\sum_{t=1}^{T} E_{it}$) and deviation of his log expenditure from his mean in each year ($E_{it} - E_{i.}$).

The variance of random component is calculated by computing the variance of the four random components separately for each individual and then averaging then across individuals:

$$\sigma^2_{\upsilon} = \frac{1}{N}\sum_{i=1}^{N}\frac{1}{(T-1)}\sum_{t=1}^{T}\left(E_{it} - E_{i.}\right)^2.$$

The variance of the permanent component is then simply the difference between the log expenditure variance and the variance of random component

$$\sigma^2_{\mu_i} = \sigma^2_{E_{it}} - \sigma^2_{\upsilon_{it}}.$$

The bootstrapping method is used to calculate the standard error of the variance components.

Tables

Table A1: Descriptive Statistics for the Balanced Panel and Individual Rounds

	1994		1995		1996		1998	
	U	B	U	B	U	B	U	B
Age	46.5	47.0	47.1	47.7	46.8	47.9	46.8	48.7
Years of education	11.2	11.0	11.0	10.8	11.1	10.9	11.1	11.0
Gender								
Female	0.235	0.225	0.245	0.238	0.250	0.246	0.253	0.256
Male	0.765	0.775	0.755	0.762	0.750	0.754	0.747	0.744
Education Level								
Primary and less	0.011	0.008	0.007	0.006	0.008	0.007	0.009	0.010
Incomplete Vocational and Secondary	0.230	0.239	0.293	0.294	0.272	0.272	0.249	0.251
Attended vocational	0.162	0.174	0.162	0.174	0.158	0.167	0.158	0.167
Completed Vocational	0.098	0.107	0.083	0.089	0.089	0.095	0.098	0.105
Completed Secondary	0.145	0.148	0.128	0.127	0.137	0.137	0.147	0.148
Technical/Nursing	0.168	0.169	0.154	0.157	0.163	0.168	0.171	0.163
University	0.175	0.147	0.163	0.148	0.165	0.146	0.160	0.151
Graduate	0.012	0.008	0.010	0.006	0.008	0.007	0.008	0.006
Number of children in the household								
None	0.559	0.544	0.499	0.547	0.468	0.553	0.436	0.566
One	0.259	0.262	0.221	0.262	0.224	0.268	0.211	0.274
Two	0.153	0.159	0.134	0.159	0.120	0.147	0.094	0.123
Three and more	0.029	0.035	0.146	0.031	0.188	0.032	0.260	0.037
Number of elderly in the household								
None	0.548	0.527	0.540	0.513	0.541	0.505	0.548	0.496
One	0.299	0.302	0.305	0.312	0.307	0.326	0.299	0.330
Two	0.147	0.166	0.149	0.170	0.145	0.161	0.142	0.163
Three and more	0.006	0.005	0.006	0.006	0.006	0.008	0.010	0.011
Number of Income Earners								
None	0.055	0.040	0.042	0.036	0.042	0.039	0.039	0.051
One	0.363	0.325	0.320	0.338	0.298	0.343	0.264	0.336
Two	0.445	0.472	0.393	0.464	0.368	0.459	0.326	0.429
Three	0.109	0.125	0.096	0.125	0.097	0.118	0.098	0.129
Four and more	0.028	0.038	0.150	0.037	0.195	0.041	0.274	0.054
Household type								
Single Parent	0.095	0.074	0.100	0.080	0.106	0.083	0.116	0.085
Old man	0.440	0.460	0.430	0.449	0.425	0.432	0.416	0.406
Old woman	0.016	0.011	0.017	0.013	0.017	0.015	0.018	0.017
Multiple old	0.114	0.111	0.124	0.121	0.123	0.123	0.118	0.136
Other with children	0.101	0.113	0.103	0.116	0.101	0.113	0.105	0.123
Other without children	0.234	0.232	0.225	0.221	0.228	0.233	0.227	0.233
Region								
Moscow and St. Petersburg	0.099	0.059	0.089	0.059	0.079	0.059	0.070	0.059
Northern and North Western	0.070	0.067	0.069	0.067	0.070	0.067	0.069	0.067
Central and Central Black-Earth	0.197	0.210	0.195	0.210	0.203	0.210	0.201	0.210
Volga-Vaytski and Volga Basin	0.177	0.210	0.179	0.210	0.182	0.210	0.192	0.210
North Caucasian	0.117	0.112	0.119	0.112	0.120	0.112	0.118	0.112
Ural	0.145	0.164	0.150	0.164	0.151	0.164	0.155	0.164
Western Siberian	0.098	0.099	0.097	0.099	0.096	0.099	0.102	0.099
Eastern Siberian and Far Eastern	0.096	0.079	0.101	0.079	0.099	0.079	0.092	0.079
Settlement type								
Moscow and St. Petersburg	0.099	0.059	0.089	0.059	0.079	0.059	0.070	0.059
Urban	0.601	0.582	0.601	0.582	0.600	0.582	0.603	0.582
Semi-Urban	0.056	0.062	0.056	0.062	0.060	0.062	0.063	0.062
Rural	0.244	0.297	0.254	0.297	0.262	0.297	0.264	0.297
Number of Households	3,763	2,390	3,560	2,390	3,562	2,390	3,622	2,390
Attrition rate (compared to balanced panel)	36.5%		32.9%		32.9%		34.0%	

U: Individual rounds

B: Four-year balanced panel

Table A2: Distribution of the Per Capita Household Expenditure

		Mean	Median	Lg Mean	Lg Var.	Gini	90th-10th	50th-10th	90th-50th	75th-50th	50th-25th
Unbalanced	*1994*	3931.69	2644.19	7.88	0.75	0.47	7.97	2.83	2.81	1.68	1.69
		(87.63)	(44.75)	(0.01)	(0.02)	(0.01)	(0.25)	(0.06)	(0.07)	(0.03)	(0.03)
	1995	3363.77	2257.30	7.73	0.73	0.47	7.79	2.77	2.82	1.69	1.64
		(88.64)	(37.36)	(0.02)	(0.03)	(0.01)	(0.29)	(0.08)	(0.07)	(0.03)	(0.02)
	1996	2939.56	1975.68	7.57	0.81	0.48	8.59	2.98	2.89	1.67	1.74
		(76.98)	(26.76)	(0.01)	(0.03)	(0.01)	(0.38)	(0.10)	(0.08)	(0.02)	(0.02)
	1998	2227.62	1489.38	7.29	0.79	0.48	8.42	2.96	2.85	1.69	1.74
		(62.37)	(21.33)	(0.01)	(0.02)	(0.01)	(0.33)	(0.08)	(0.07)	(0.03)	(0.03)
Balanced	*1994*	3701.18	2580.79	7.85	0.70	0.45	7.49	2.76	2.71	1.66	1.66
		(109.81)	(51.35)	(0.02)	(0.03)	(0.01)	(0.33)	(0.08)	(0.09)	(0.04)	(0.04)
	1995	3172.04	2172.71	7.70	0.67	0.45	7.41	2.66	2.79	1.68	1.62
		(88.81)	(37.08)	(0.02)	(0.03)	(0.01)	(0.30)	(0.08)	(0.08)	(0.03)	(0.03)
	1996	2743.01	1908.80	7.52	0.77	0.46	8.34	2.97	2.81	1.67	1.71
		(98.85)	(36.83)	(0.02)	(0.03)	(0.02)	(0.35)	(0.08)	(0.10)	(0.03)	(0.03)
	1998	2012.44	1444.76	7.25	0.72	0.45	7.99	2.88	2.78	1.66	1.74
		(43.93)	(25.34)	(0.02)	(0.03)	(0.01)	(0.40)	(0.12)	(0.08)	(0.03)	(0.04)
4 year avg.		2894.87	2230.95	7.74	0.42	0.37	5.12	2.14	2.39	1.54	1.51
		(57.45)	(37.87)	(0.01)	(0.01)	(0.01)	(0.19)	(0.06)	(0.07)	(0.03)	(0.02)

Table A3: Regression Results-Change in Log Real Equivalent Expenditure

	1995-1994	*1996-1994*	*1998-1994*
Female household head	-0.033	-0.112 *	-0.078
	(0.041)	(0.047)	(0.045)
Age Groups			
Age 31-50	0.072	0.021	0.080
	(0.046)	(0.052)	(0.050)
Age 51-64	0.038	-0.042	0.075
	(0.054)	(0.061)	(0.059)
Age 65 and older	0.004	-0.041	-0.048
	(0.066)	(0.074)	(0.072)
Education			
Technical/Voccational	-0.020	0.019	0.019
	(0.035)	(0.039)	(0.038)
Higher Education	0.092 *	0.182 **	0.251 **
	(0.045)	(0.050)	(0.049)
Household Composition			
One child	-0.042	0.027	0.107 *
	(0.041)	(0.046)	(0.045)
Two children	-0.155 **	-0.131 *	-0.041
	(0.050)	(0.056)	(0.054)
Three and more children	-0.319 **	-0.166	-0.133
	(0.087)	(0.097)	(0.095)
One elderly	-0.061	-0.013	-0.052
	(0.041)	(0.046)	(0.045)
Two elderly	-0.050	-0.023	-0.092
	(0.050)	(0.057)	(0.055)
Three and more elderly	0.167	-0.076	-0.120

Table A3: Regression Results-Change in Log Real Equivalent Expenditure (cont.)

	1995-1994	***1996-1994***	***1998-1994***
Region			
Northern and North Western	-0.204 *	-0.249 **	-0.232 *
	(0.084)	(0.095)	(0.092)
Central and Central Black-Earth	-0.240 **	-0.361 **	-0.277 **
	(0.070)	(0.079)	(0.076)
Volga-Vaytski and Volga Basin	-0.397 **	-0.502 **	-0.378 **
	(0.070)	(0.079)	(0.077)
North Caucasian	-0.207 **	-0.419 **	-0.247 **
	(0.076)	(0.086)	(0.084)
Ural	-0.304 **	-0.469 **	-0.392 **
	(0.072)	(0.081)	(0.079)
Western Siberian	-0.313 **	-0.434 **	-0.273 **
	(0.078)	(0.088)	(0.085)
Eastern Siberian and Far Eastern	-0.133	-0.340	-0.017
	(0.081)	(0.092)	(0.089)
Initial position			
1st "decile"	1.024 **	1.236 **	1.192 **
	(0.070)	(0.079)	(0.077)
2nd "decile"	0.573 **	0.694 **	0.428 **
	(0.070)	(0.079)	(0.076)
3rd "decile"	0.437 **	0.629 **	0.391 **
	(0.070)	(0.079)	(0.076)
4the "decile"	0.269 **	0.402 **	0.311 **
	(0.070)	(0.078)	(0.076)
5the "decile"	0.137 *	0.182 *	0.160 *
	(0.070)	(0.079)	(0.076)
7th "decile"	-0.010	0.031	-0.096
	(0.070)	(0.079)	(0.076)
8th "decile"	-0.094	0.025	-0.150 *
	(0.070)	(0.078)	(0.076)
9the "decile"	-0.183 **	-0.158 *	-0.326 **
	(0.070)	(0.079)	(0.076)
10th "decile"	-0.382 **	-0.220 **	-0.405 **
	(0.070)	(0.079)	(0.077)
11th "decile"	-0.712 **	-0.634 **	-0.895 **
	(0.071)	(0.079)	(0.077)
Constant	0.023	-0.129	-0.481 **
	(0.091)	(0.103)	(0.100)
Observations	2,390	2,390	2,390
Adjusted R-squared	0.26	0.25	0.28

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

The dependent variable is year-to-year difference in log real equivalent expenditures.

Omitted category:

Household from Moscow/St. Petersburg, with a male head 15-30 years old, with secondary education ,

Table A4: Regression Results- Log Equivalent Adult Household Expenditure

	1994	***1995***	***1996***	***1998***
Female household head	-0.164 **	-0.144 **	-0.178 **	-0.190 **
	(0.045)	(0.042)	(0.045)	(0.045)
Age of the head	0.019 **	0.009	0.011	0.012
	(0.007)	(0.006)	(0.007)	(0.006)
Age square	-0.247 **	-0.132 *	-0.129	-0.148 *
	(0.007)	(0.007)	(0.007)	(0.007)
Education				
Technical/Voccational	0.171 **	0.092 *	0.131 **	0.019
	(0.038)	(0.038)	(0.040)	(0.039)
Higher Education	0.378 **	0.264 **	0.342 **	0.370 **
	(0.048)	(0.046)	(0.051)	(0.049)
Household composition				
One child	-0.212 **	-0.223 **	-0.128 **	-0.048
	(0.044)	(0.044)	(0.047)	(0.044)
Two children	-0.373 **	-0.363 **	-0.253 **	-0.159 **
	(0.053)	(0.052)	(0.057)	(0.058)
Three and more children	-0.678 **	-0.646 **	-0.640 **	-0.302 **
	(0.093)	(0.096)	(0.104)	(0.094)
One elderly	-0.227 **	-0.163 **	-0.143 **	-0.098 *
	(0.044)	(0.042)	(0.046)	(0.045)
Two elderly	-0.084	-0.097	-0.126 *	-0.079
	(0.054)	(0.052)	(0.058)	(0.056)
Three and more elderly	-0.321	0.061	-0.473 *	-0.270
	(0.232)	(0.210)	(0.202)	(0.162)
Region				
Northern and North Western	0.038	-0.182 *	-0.255 **	-0.242 *
	(0.092)	(0.090)	(0.098)	(0.095)
Central and Central Black-Earth	-0.199 **	-0.357 **	-0.500 **	-0.389 **
	(0.076)	(0.074)	(0.081)	(0.078)
Volga-Vaytski and Volga Basin	-0.329 **	-0.535 **	-0.657 **	-0.520 **
	(0.076)	(0.074)	(0.081)	(0.078)
North Caucasian	-0.118	-0.250 **	-0.461 **	-0.287 **
	(0.083)	(0.081)	(0.088)	(0.086)
Ural	-0.147	-0.367 **	-0.555 **	-0.464 **
	(0.078)	(0.077)	(0.083)	(0.081)
Western Siberian	0.010	-0.280 **	-0.434 **	-0.273 **
	(0.085)	(0.083)	(0.090)	(0.087)
Eastern Siberian and Far Eastern	0.141	-0.084	-0.334 **	-0.009
	(0.089)	(0.086)	(0.094)	(0.091)
Constant	8.096 **	8.330 **	8.157	7.718 **
	(0.170)	(0.170)	(0.181)	(0.169)
Observations	***2390***	***2390***	***2390***	***2390***
Adjusted R-squared	***0.11***	***0.09***	***0.09***	***0.09***

Standard errors in parentheses

* significant at 5% level; ** significant at 1% level

Ommited category:

Moscow/St. Ptersburg household with no children and no elderly, headed by a man with secondary education

Age Square=(Age^2)/1000

Figures

Figure A1: Lorenz Curves for Equivalent Adult Household Expenditure

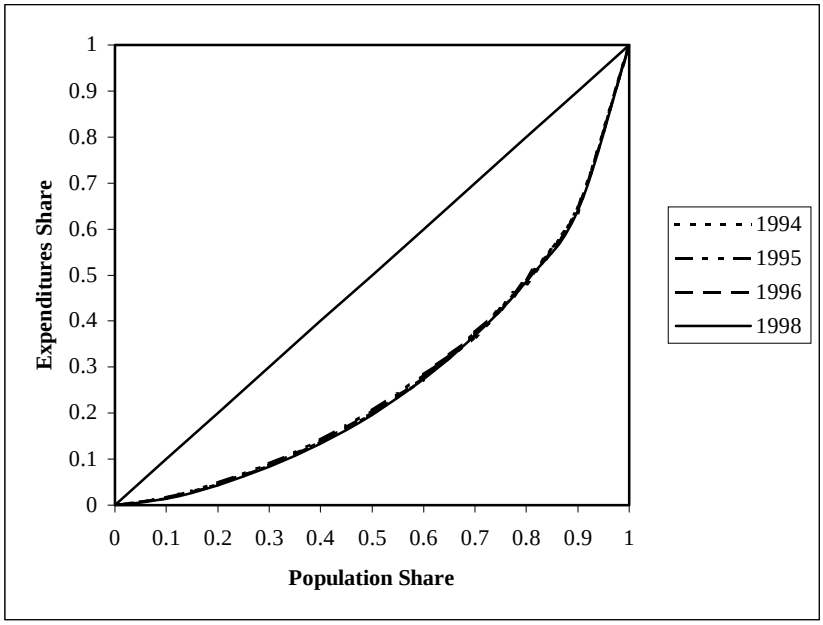


Figure A2: Probability Density Kernel Estimates of the LEAHE, individual rounds vs. balanced panel

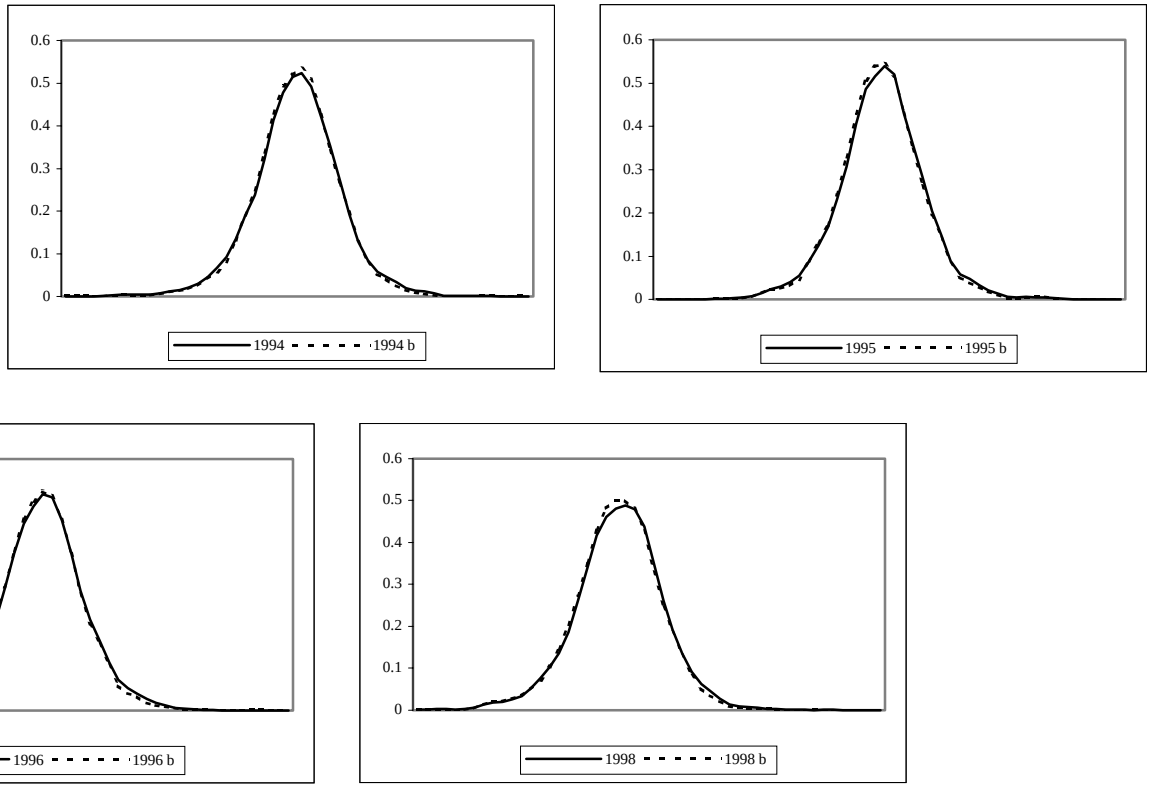


Figure A3a: Kernel Estimates of the Distribution of the Log Expenditure Shock

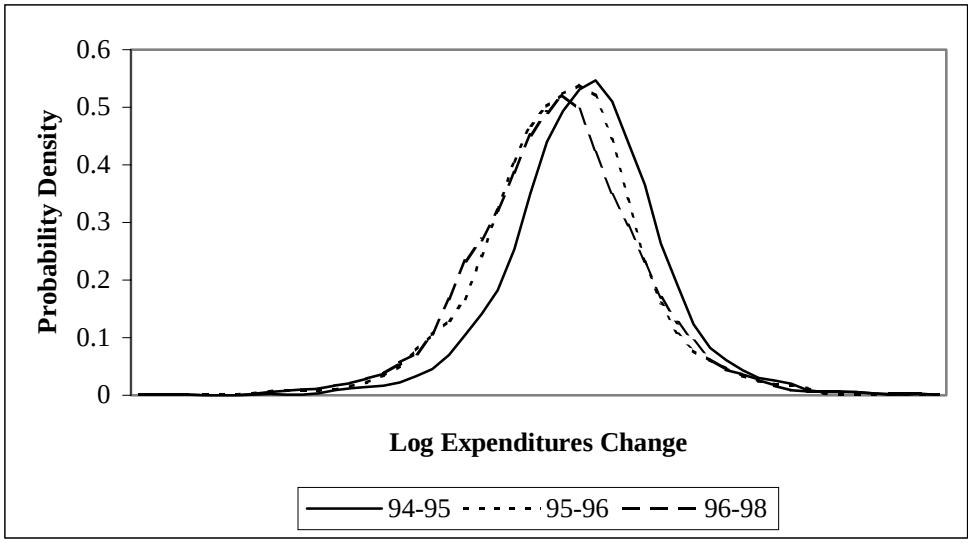
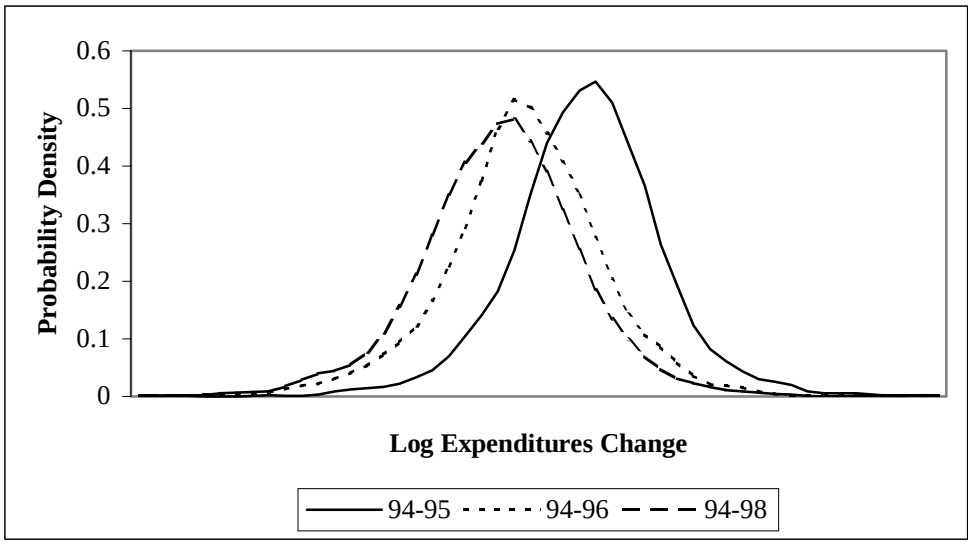
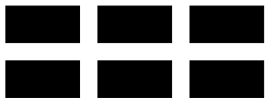


Figure A3b: Kernel Estimates of the Distribution of the Log Expenditure Shock





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