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Income mobility in Russia (2000 – 2005)

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Although much research has been conducted on annual income inequality in Russia, little has been know about longer-run measures of income inequality and on income mobility. Using the data from the Russian Longitudinal Monitoring Survey, this paper investigates income mobility in Russia during the period of rapid economic growth. Employing a broad set of mobility indices, we show that there is much mobility in household incomes from one year to the next in Russia. There is some evidence of greater mobility for those in the tails of the income distribution relative to the middle. However, income movements in Russia over this period are largely associated with transitory rather than permanent changes.

Keywords. Income inequality, income mobility, pro-poor growth, Russia, RLMS

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NON-TECHNICAL SUMMARY

Most ordinary people and many policy-makers in Russia believe that Russian society resembles a layer-cake: the rich (the 'top' layer) stay rich; the poor (the 'bottom' layer) stay poor. Our study shows that this is not the truth. Russian society proves to be highly dynamic. In making our conclusions we rely on the Russian longitudinal monitoring survey (RLMS), using information on the households that were interviewed repeatedly over the period from 2000 to 2005.

It appears that most poverty is short-term; many people enter poverty and leave soon. For example, about 70-80% of those who started in the bottom tenth of the income distribution in 2000 leaved this position by 2005. Things were much the same at the top end. The rich mostly did not stay rich, although they were a slightly more stable group than the poor: about 30% of those in the top tenth of the income distribution in 2000 preserved their positions by 2005. This in fact means that it is easier to get rich than to stay rich. There is another way to think about it. If incomes fluctuated completely randomly, half of those who started in the bottom tenth would finish the period in the top half of the income distribution and vice versa. In no-mobility case this fraction would be equal to zero. In Russia, 20% of those who started in the bottom tenth ended up in the top half five years later, and nearly the same percentage of those who started at the top tenth ended up in the bottom half. These figures suggest that inequalities are not fixed and people have chances to change their fortunes.

Russia is notoriously known for reaching one of the highest levels of income inequality among middle income countries during the transition period. However, all the estimates cited in the inequality literature are based on cross-sectional data and are essentially the snapshots of the income distribution in a single time point. In a longer run mobility can effectively work to offset a larger part of inequality. If there is a lot of churning in the distribution as households move relative to one another, incomes averaged over longer time periods may be much more equally distributed than incomes from any single year. If we sum incomes over two consecutive years, then inequality goes down by 8-25%, depending on the measure of inequality used. Mobility does not operate equally at all points of the distribution: mobility smoothes out income differences mostly at the very top and the very bottom of the distribution. Over six-year period, due no mobility, inequality declines by almost 50% at the top, by 40% at the bottom and by 20% in the middle of the distribution.

In assessing mobility one has to remember that high mobility is not necessarily a good thing which reduces differences in living standards, rather it is a double-edged sword. High mobility sometimes takes the form of large volatility in real incomes when significant shares of

population experience absolute declines or large increases in real incomes. This may result in economic insecurity and higher risks of dropping into poverty for the many. Significant reductions in inequality over longer time periods prove that the apparent high level of mobility is largely driven by transitory events. In other words, the high measured income mobility may be a sign of income instability. Income instability, in turn, may affect incentives to support economic reforms, accumulate human capital and start new businesses which may have negative long-term consequences for economic growth.

Clearly, poor families and families just above the poverty line are especially vulnerable to income fluctuations because they often lack assets and access to credits to smooth their consumption. Therefore, improved social assistance can play a significant role in reducing income inequality. The decomposition of income changes by changes in income sources demonstrates that social transfers (except for pensions) to do not contribute much to stabilize variability of incomes over time. Most people of working age who escape poverty do so through the labour market rather than with government help.

During the period under study (2000-2005), the Russian economy was enjoying a period of strong growth. The international empirical evidence on the effects of growth on inequality and relative position of the poor suggests that incomes of the poor rise at the same as average incomes do. We also find that (after correcting for short-term fluctuations in the data) Russian economic growth in the early 2000s in fact strong favored low-income individuals. However, this inequality-reducing effect was almost exactly offset by the effect of reranking. This means that with pro-poor income growth a number of individuals who were poor in the initial year moved out of low income, but were replaced at the bottom of the income distribution by individuals who were non-poor initially and who had slightly higher relative incomes in the final year of the period than those whom they replaced. Therefore, an overall reduction in cross-sectional inequality was only modest.

1. INTRODUCTION

The degree of income mobility is an important characteristic of how societies function. It determines the extent to which inequality in the short term translates into inequality over a longer time period and in life-time inequality. A higher level of cross-sectional inequality is of less concern if people can move up and down the economic ladder relatively easily. Higher income mobility suggests more equal opportunities and higher efficiency of various social 'lifts'. Empirical analysis of income mobility may help understand why people's incomes follow different trajectories and be a guide for policy response.

Understanding the levels of income mobility in Russia is especially relevant and of interest. Russia is notoriously known for reaching one of the highest levels of income inequality among middle income countries in the early transition period. Starting from relatively low levels in the pre-transition era, inequality peaked in the mid-1990s with Gini reaching 0.37-0.40 (Mitra and Yemtsov, 2006). This rapid increase of income inequality has received heightened attention among researchers (Buckley and Gurenko, 1997; Flemming and Micklewright, 1999; Commander et al., 1999; Kiruta and Sheviakov, 2001; Aivazian and Kolenikov, 2001). In later years inequality slightly declined with economic recovery. World Bank (2005) emphasizes that economic growth in Russia has been pro-poor and hence a major force of inequality reduction.

Over the previous decade, some scholars studying Russian income ineaqulity turned from static to dynamic analysis, particularly regarding income mobility and poverty duration. Lokshin and Popkin (1999) show that a small percentage of Russia families are persistently poor; a sizable share of poverty is transitory and shallow, arising from income churning. Following this work, Lokshin and Ravallion (2004) use a non-linear model of distribution-dependent growth and find no evidence that short-lived shocks during the Russian trabsition caused permanent impoverishment and create poverty traps. Denisova (2007) demonstrates that economic growth importantly changes in- and out-of-poverty movements: it lowers risks to slip into poverty but also reduces chances to escape from poverty. Summing up the results of these poverty duration studies we conclude that there is substantial mobility in the low end of the Russian income distribution but the percentage of chronically poor among the poor seems to have grown in the recent years.

Apart from studies focused on dynamic poverty analysis there are some papers investigating income mobility throughout the distribution. Bogomolova and Topilina (1999) study relative income mobility in 1994-1996 and report that about 40% of Russian households remained in their original income quintiles from year to year, while roughly 30% moved up and the same percentage moved down. Other studies listed below are mainly concerned with absolute income mobility and its decompositions. Jovanovich (2001) finds that, in spite of very modest

changes in the measured inequality in 1994-1998, Russian households experienced considerable fluctuations in their expenditures with the median absolute annual change in expenditures exceeding 50%. This suggests considerable amount of income churning from one year to the next. Luttmer (2000) declares that around half of these fluctuations reflect measurement error or transitory shocks. Gorodnichenko et al. (2008) extend analysis to 2005 and thus cover the period of economic recovery. They find that the measured fall in inequality since 2000 is largely attributable to the moderation of transitory shocks.

Up to now and to the best of our knowledge there are no comprehensive studies that have tried to measure the degree and the pattern of mobility within the Russian income distribution. Moreover, existing studies, with the notable exception of Denisova (2007) and Gorodnichenko et al (2008), do not include the period of economic recovery. The aim of this paper is to establish some facts about income mobility in Russia in 2000-2005 filling the information vacuum which currently exists.

We study in detail two aspects of mobility: relative mobility (reranking of individuals in the distribution) and absolute mobility (real income movements) with special emphasis on low-income groups. However, our approach is very different from the one taken in classical "poverty" studies. Rather than tracking income changes for income groups defined as the poor (which is common in poverty literature), we track income changes for individuals. The composition of the poor group changes over time because some individuals fall into poverty and some escape it. The individuals classified as poor in 2000 might have experienced a diversity of income growth rates and few of these individuals are likely to be among poor in 2005. Our paper is also different from "chronic poverty" studies. Rather than dividing the sample into two groups: poor and non-poor and analyzing the movement between these two states, we take a broader approach in assessing the fortunes of the poor and look at the distributional effects of income growth of the poor. We follow Jenkins and Kerm (2006) who decompose the change in inequality into two components: the reshuffling of individuals in the income pecking order and the progressivity in income growth. The latter component indicates whether income growth is pro-poor, neutral or pro-rich.

The main variable in our research are per adult equivalent incomes, but we use expenditure aggregates as alternative indicators of household well-being. To date, there are still very few papers on the implications of the choice of welfare aggregate on distributional dynamics (e.g., Gradin *et al*, 2008)[1]. Due to household's ability to smooth consumption the use of income-based

[1] However, contrary to their initial expectations, Gradin et al (2008) report that for Spanish household data incomes show less mobility than expenditures. This finding suggests that expenditures are not sufficiently smoothed which authors attribute to liquidity constraints. Alternative explanation is that most irregular incomes are the ones mostly underreported.

indicators would overstate mobility, especially in the short run. Moreover, different income groups are known to have different abilities to smooth consumption. Poor households and those vulnerable to poverty (e.g. young adults with children) often lack saving and financial assets to finance consumption during low income periods while richer households smooth consumption more effectively. Finally, data on consumption are believed to be more reliable than data on incomes. Households and individuals usually wittingly tend to underreport their incomes. Due to consumption smoothing recall errors among respondents tend to be inequality-reducing for expenditures and inequality-enhancing for incomes (Bound et al., (2001). Some households with diverse sources of income may feel difficult to recall all of them accurately. The net income from some activities (e.g. self-employment) may not be known. Income measures also do not include some non-income consumption items, the major item being consumption of own production.

The remainder of the paper is organized as follows. Section 2 describes the data and explains the construction of welfare aggregates. Section 3 estimates the effect of mobility on inequality reduction comparing different parts of the income distribution. Section 4 compares relative mobility of different incomes groups using transition matrices. Section 5 assesses absolute mobility and gives the estimates of relative contribution of different income groups to the overall mobility. Section 6 attempts to link changes in inequality with relative mobility and pro-poor growth. Section 7 sheds some light on the determinants of income mobility. It identifies socio-demographic household types and kinds of income which contribute the most to the overall mobility. Finally, Section 8 provides a summary and conclusion.

2. DATA, MEASUREMENT ISSUES AND DESCRIPTIVE STATISTICS

Data description

The data used in this project come from the 2000-2005 waves of the Russian Longitudinal Monitoring Survey (RLMS). The RLMS is a unique panel survey of Russian households based on the national probability sample. It has been previously used by a number of researchers to analyze income mobility, poverty dynamics and consumption smoothing by Russian households. In 2000-2005 the survey was held in each year of the period. Following a long tradition of mobility studies, we restrict the sample to the households interviewed and reported non-missing incomes in all six waves. This yields a sample of 2317 households for incomes and 2716 households for expenditures.

As any panel survey, the RLMS suffers from sample attrition. Table 1 presents basic descriptive statistics of the households and individuals for the balanced panel and cross-sections. Attrition rate is actually high. However, the panel has been significantly replenished in 2001 to restore the sample for Moscow and St. Petersburg and for technical reasons the RLMS team had

to replace one of the primary sample units. Thus, the real drop-out rate is not that high. Mu (2006) analyzing sample attrition in the RLMS reports that those who stayed in the panel over 1994-2003 were, on average, poorer and larger with more children and more senior members. Those leaving the panel were more likely to have a more educated household head and lived in Moscow and St. Petersburg. His tests show that attrition was non-random in a sense that households with higher incomes and more resources were leaving the sample. In this case the right tail of income distribution is likely to be underestimated causing potential biases in mobility measures. However, correction for attrition in his paper on consumption smoothing had no qualitative effect on the results.

Comparing of households characteristics for the balanced panel and separate cross-sections shows that our balanced panel heavily under-represents households from Moscow and St. Petersburg. Households in the balanced panel are of larger size in 2000 but become smaller by the end of the period. The average number of children per household is declining over time in a greater speed for the balanced panel than for cross-sections. Both regularities suggest that attrition may not be random. However, ageing can be another explanation for this discrepancy – newly formed households consisting of young people with kids do not enter the balanced panel. In what concerns incomes households in the balanced panel tend to report lower incomes but we do not find any significant deviation between the two samples in the dynamics of average incomes. In all years of the period all income measures for the balanced panel were at a level of about 90% of corresponding measures in cross-sections (Table 2). Therefore, attrition in fact may not be a big problem and since it is hard to estimate the consequences of sample attrition we do not attempt to account for this problem.

Construction of welfare aggregates

The main variable of interest in our research is per adult equivalent income computed as follows:

$$Y = \frac{Househould\_Income}{(1+\alpha*(N_{Adults}-1)+\beta*N_{Children})^{q}} \quad (1)$$

where Y refers to per adult equivalent income. Incomes are corrected for difference in the size and composition of the household applying equivalence scales: α and β refer to the weights of household members; q is the parameter of economies of scale.

Equivalence scales are the way to make comparable consumption aggregates of households with different demographic composition. They account for the fact that typically children consume less than adults and that some services and goods can be shared in consumption. Unfortunately, there are no generally accepted methods for calculating equivalence scales. Most commonly the effects of differences in consumption within households and economies of scale

are estimated using the methodology based on the Engel model. Parameter estimates are obtained from the regression of the share of food expenditures on the logarithm of per capita household income, the size of household and its demographic composition. This approach has been heavily criticized in (Deaton, 1997). Deaton and Zaidi (1999) argue that making relatively *ad hoc* corrections can do better job. In their particular example they suggest setting weights for all adults in the household at unity. Parameters β and q should depend on the level of economic development of a country. Since most of the literature shows that children are relatively more expensive in industrialized countries than in poor agrarian countries, β can be set close to unity for the US and Europe and about 0.3 for the poorest countries. On the contrary, since in the poorest countries most of the income is spent on food which is private consumption, the value of q must be relatively high (close to 1). In industrialized countries with high economies of scale q must be lower (about 0.75 or even 0.5).

Previous studies applied different equivalence scales often basing on arbitrary assumptions. Bogomolova and Topilina (1999) apply the OECD equivalence scale which weights the head of the household at 1 with each additional adult given the weight of 0.7 and each child – the weight of 0.5. Jovanovich (2001) and Luttmer (2000) do not correct for differences in household composition but their measures for the household size with q=0.75. For subjective measures of income Lokshin and Ravallion (1998) apply q as low as 0.4. Spryskov (2003) employs the Engel curve methodology for the pooled RLMS dataset for 1994-2000. He finds no economies of scale (q=1), but recommends applying low weights to children (0.62-0.67 of consumption of a working age male) and old males (0.53) and higher weights to working age females (1.2). The calculations of the RLMS team also suggest relatively modest economies of scale in Russian households (Popkin et al, 1995). Their equivalence scale is roughly equivalent to applying q=0.8. In this paper for sensitivity checks we use three equivalence scales: the OECD scale, q=1 and q=0.75.

Information on incomes is taken mainly from the "Incomes" section of the RLMS household questionnaire with cross-checks from the individual questionnaires for wages, pensions, unemployment benefits and reported total personal incomes. All measures refer to incomes received during last 30 days. Of course, an annual income definition would be superior on the grounds that a longer period measure is less likely to reflect transitory and seasonal variations. In the absence of annual income data, we are forced to assume that income status round about the time of interview is a proxy for annual income status. Besides, monthly data also have their particular advantages. Household composition is measured at the time of the interview. Thus with monthly data the numerator and denominator elements in (1) are more

likely to be consistent with each other (both depend on household composition which may change over the year).

To check for sensitivity we use several income measures. More specifically, for each individual we first take the sum of reported wages from all jobs (including in-kind payments), pensions and unemployment benefits. After that we compare this constructed measure of personal incomes with reported total personal incomes and take a high of the two income indicators as a measure of total personal incomes (if both measures are available). Then we sum total personal incomes for all household members within each household which produces what we call a measure of household incomes based on individual incomes.

The second measure is taken from direct question about total monetary income of the household received during last 30 days. We call it the reported household incomes. The third income aggregate is calculated summarizing the incomes from various sources reported by the household. This measure includes wages, in-kind payments, pensions, stipends, subsidies for housing and fuel, transfers from the government, other households and various private donations. We also include some incomes from financial operations such as investment and interest payments received as well as incomes from renting out one's assets. However, we exclude incomes from borrowing, receiving debt repayments, selling securities, foreign exchange and other 'lumpy' incomes. We also exclude incomes from selling home-produced goods because the RLMS lacks adequate information on production costs.

As the last step we compare all three income measures and for each household take a high of them as a measure of total household incomes assuming that households tend to underreport their incomes. This measure is used as the basic income aggregate in this study. All other measures are employed mostly for sensitivity checks.

Construction of expenditure aggregate is not straightforward. We follow the guidelines in Deaton and Zaidi (1999) and employ the "Expenditures" section of the RLMS household questionnaire. All expenditures are converted to monthly reference period.

In principle, consumption can be aggregated into four main classes: (i) food items, (ii) nonfood items, (iii) consumer durables, and (iv) housing. For food consumption sub-aggregate the major difficulties are with home produced goods. In "Expenditure" section people are asked in great detail about their purchases of various food items during last 7 days. In the "Agriculture" section they are asked about the quantities home-produced goods during 12 months. The problem here is how to impute the prices for home produced goods. As the best approximation we construct prices from the data for other households and use the median price paid by other households in the same locality. However, these pries are likely to overestimate real expenditures. First of all, market prices include transportation and trading costs and, thus, are

higher than "farm-gate" prices. Seond, home-produced food items consumed by the household may not be comparable in quality to items traded in the market place.

For non-food items the reference period in the RLMS is either 30 days or 3 months. We exclude "lumpy" expenditures such as payments for ritual services. The "Expenditures" section also allows collecting health and education expenditures, we simply add them to the total.

According to Deaton and Zaidi (1999), durables should be included into consumption aggregate. The authors propose a simple method how to measure the consumption of durables as the value of services that the household receives from their possession over the relevant time period. We would be glad to follow these recommendations, but the RLMS data does not contain information concerning the age and value and/or replacement value of durables that a household possesses. Households were only asked whether they bought any durables in the last 3 months and for what price. Even so, groups, by which durables are divided in this question, are mixed. Jovanovic (2001) and Spryskov (2003) do not include them expenditures on durables into consumption aggregate, and we follow their practice.[2]

Housing is the most problematic of all the consumption sub-aggregates. As for other consumer durables what really matters is the value of services that the household receives from living in the dwelling. For those who rent dwellings the value of services is equal to the amount of rent they pay. For those who own the dwelling or get the dwelling free of charge or at subsidized prices one has to impute rents. Imputing rents can be a troublesome exercise in a country where rental markets are extremely thin. Unfortunately, in the RLMS only 6% of household reported renting their dwellings in 2000-2005. In our work we do not take into account housing services when calculating expenditure aggregates.[3] The calculation of another part of housing expenditures - expenditures on housing utilities – using RLMS data is straightforward.

When calculating expenditure aggregates we imputed the amount of a purchase if a household purchased an item, but the information on its amount was missing. Taking such missings equal to zeros clearly leads to the underestimation of expenditures. Imputations were made for each expenditure item. We imputed zeros in place of missings only if a household did not purchase an item. Imputed amounts were calculated on the base of regressions estimated by simple OLS on the sample of households, which purchased corresponding items. The dependent variable was an amount of purchase. Independent variables were status of location (4 categories), interaction of year and region, the size of household (5 categories), the number of children under

[2] We present inequality and mobility measures with and without expenditures on durables and house construction and refurbishment.

[3] According to Gorodnichenko et al., (2008), housing services may have an equalizing effect on consumption distribution, so we should bear in mind that omitting them may increase expenditure inequality

15 (4 categories) and the number of adults elder than 60 (4 categories). For the balanced panel the imputation led to increase in the number of observations by a factor of 5, rise in expenditures aggregates and inequality measures by about 20% and 10% respectively. At the same time the structure of expenditures across deciles did not change significantly.

All income and expenditure measures are deflated by annual regional consumer price deflators indexed to 100 at October 2000. However, we do not correct for inflation within rounds because inflation was relatively low in 2000-2005. Zero incomes are treated as erroneous responses. Cowell and Schluter (1998) demonstrate that the majority of mobility indicators are very sensitive to the presence of data contamination. Thus, to avoid disturbances caused by outliers we trimmed the sample deleting 0.25% records at the bottom and the top of the distribution for each of income and expenditure measures. For certain decompositions we need to determine a head of each household. Unfortunately, in the RLMS respondents are not asked about personal ownership or tenancy of dwellings. Neither are they asked a direct question about who is the head of the household. We use a very straight-forward procedure in defining the sex of household heads. A household is deemed to be headed by a male if it has one or more working-age males. If there no working age males in a household but there are working age females the household is treated as headed by a female. In households with no working age members, a male elderly is treated as a head of a household. If none, a household is treated as being headed by a female.

Basic descriptive statistics on incomes, expenditures and cross-sectional inequality

Before turning to the analysis of income dynamics, we provide some basic descriptive statistics for incomes and expenditures (Table I.2[4]). Our calculations demonstrate spectacular rise in real household incomes. From 2000 to 2005 real incomes increased on average by 85-90%. All income aggregates demonstrate similar trends with incomes rising in all years of the period. Income growth was especially rapid in 2001 when real incomes increased on average by 25%. Over the period income growth was larger in the low end of the distribution (see Figure 1).

Real expenditures exhibit a qualitatively similar dynamis. Figure 2 presents the evolution of average per adult equivalent incomes and expenditures using q=0.75. As comes from the graph expenditure averages have a flatter path compared to incomes. Between 2000 and 2005 expenditures increased on average only by 30-35%. Expenditures were above incomes in the initial year of the period, but due to faster growth incomes caught up expenditures by 2004 and even exceeded them in 2005.

[4] Tables marked with letter I refer to incomes. Tables marked with letter E refer to expenditures.

Table I.2 compares the means of various income aggregates for three different equivalence scales. Per adult equivalent incomes were calculated on the basis of total household incomes. By construction the latter measure is on average larger than any other income aggregate. Thus justifiable comparisons in the table are either among mean per capita incomes based on different income aggregates or among measures of equivalent incomes. Reported household incomes generally should be larger than measures based on summation of different types of income. This is because reported household incomes may include some incomes which were excluded from summation procedure such as incomes from selling home-produced goods, incomes from financial operations, etc. However probably due to recall or measurement errors it is not true for 2002-2003 (but the difference is small). In all years household incomes based on individual incomes are on average lower than the income measures calculated from the household questionnaire. It is an expected result because some incomes such as housing subsidies cannot be attributed to a single household member and are only found in the household questionnaire.

Comparing equivalence scales we see that the scale, which only accounts for economies of scale (q=0.75), produces the largest mean. However, mean equivalent incomes based on the OECD-type equivalence scale are only slightly lower. Mere division of total incomes by the household size gives the lowest mean. Dynamics of all three measures of equivalent income are very similar because the household structures have not changed much over the six-year period. Table E.2 shows that similar relationship between different equivalence scales holds for real expenditures as well.

Table 3 presents inequality measures based on different income and expenditure aggregates. We report three measures of inequality which are particularly sensitive to income variation in different parts of the distribution. Mean log deviation which is also called generalized entropy measure with $\alpha=0$ – GE(0) – more heavily weights differences in incomes in the low end of the distribution. The Gini coefficient is more sensitive to variation in the middle of the distribution. Generalized entropy measure with $\alpha=2$ – GE(2) – which is equal to a half of the coefficient of variation squared gives more weight to income differences at the top of the distribution.

All income inequality measures agree on the trend of declining dispersion of monetary incomes over the period. For incomes both Gini and GE(2) were about 7-10% lower in the 2005 than in 2000. The GE(0) coefficient dropped by 16% over the period. Among income aggregates inequality is generally larger for reported incomes especially at the top of the distribution probably reflecting measurement errors. Inequality also appears to be large when measured on the basis of household incomes summed from individual questionnaires. High dispersion of this income aggregate may be due to the fact some of the household members skipped filling

individual questionnaires. Thus, this indicator may not be a reliable measure of household incomes. On the other hand, income aggregate based on the sum of components of household incomes is likely to understate the true level of inequality for the upper half of the distribution and overstate it for the bottom of the distribution if we have been too restrictive in selecting the types of income to include in this income aggregate. Total household incomes indicator (which was constructed as a high of all income measures available for each household) appears to behave in a more balanced and credible manner. It shows less cross-sectional variability of incomes at both tails of the distribution while for the middle of the distribution it sufficiently well conforms to other income aggregates. Equivalence scales somewhat alter the standing of large households relative to small households, or households with large numbers of children relative to those with none, but this has only minor effect on inequality measures.

Concerning expenditures, as we expected, the exclusion of lumpy expenditures from expenditures aggregates results in the lower levels of expenditure inequality. Inequality in expenditures hardly changed over the period for the middle of the distribution but demonstrated moves in different directions at the bottom and at the top of the distribution. Inequality declined for a broad definition of expenditures which includes durables and house renovation, but increased for non-durable consumption. Within the period there is no clear trend in expenditure inequality. All measures both with and without durables indicate that inequality decreased in 2001-2003, but it rose afterwards (Figure 3). It is worth noting that the level of income inequality was higher than the level of non-durable expenditure inequality for most of the period. However, by 2005 their levels became similar as a result of a lower decline in expenditure inequality.

3. Mobility and long-term inequality

High cross-sectional inequality can be partly offset by mobility. If there is a lot of churning in the distribution as households move relative to one another, incomes averaged over longer time periods will be much more equally distributed than incomes from any single year. Similarly, rising inequality could be partly offset by rising mobility. Shorrocks (Shorrocks, 1978) proposed a so-called rigidity index to measure the extent to which relative mobility reduces longer-run inequality. This index makes a connection between cross-sectional inequality and permanent inequality.

Shorrocks rigidity index is defined as the ratio of some inequality index of the total income in the two periods to the weighted average of the same inequality index in each period:

$$R = \frac{I_{x+y}}{(\mu_x I_x + \mu_y I_y)/(\mu_x + \mu_y)} \tag{2}$$

where I refers to the inequality index, x+y to the sum of incomes in the two periods, μ_x and μ_y to the mean incomes in the first and the second period. The Gini coefficient is commonly used in calculating Shorrocks index. Following Jarvis and Jenkins (1998) we will also use inequality indices from the GE(α) family which are sensitive (depending on α) to changes in different parts of the distribution.

The value of Shorrocks rigidity index cannot be greater than unity since inequality in annual incomes is always greater than inequality in total incomes for a longer time period. A value of 1 means no mobility at all suggesting that even in the long run individuals do not change their relative ranks in the income distribution. Shorrocks index decreases (albeit at diminishing rate) as duration of the underlying time period grows. This regularity reflects the fact that chances for income mobility are higher in the long run. Instead of Shorrocks rigidity index we employ a measure of (1-R) which is easy to interpret. It is often referred to as Shorrocks mobility index. In percentage terms it shows a percentage reduction in income inequality when incomes are averaged over longer periods.

Of course, these calculations provide a tentative and incomplete measure of income mobility. On the one hand, because the available data cover only six years, the full equalizing effect of mobility over the life-cycle is not captured. It is understated as only a modest share of life-cycle related differences in incomes "averages out" in such a short period. In another sense the equalizing effects of mobility are overstated. On the other hand, averaging household incomes over an extended period assumes that households are able to maintain a living standard based on a complete or near-complete smoothing of their consumption, no matter how volatile their income paths may be. Because it assumes that a stable income path provides the same welfare as a widely and unpredictably fluctuating path with the same average income, it is clear that Shorrocks mobility index gives an upper-bound estimate of how mobility reduces inequality. It is not possible to assess the quantitative importance of these factors and we can't know to what extent they offset each other.

In assessing mobility one has to remember that mobility is not necessarily a good thing that reduces differences in living standards, rather it is a double-edged sword. Mobility sometimes takes the form of large volatility in real incomes when significant shares of population experience absolute declines or large increases in real incomes. This can result economic insecurity.

The estimates of Shorrocks mobility index for one-year sub-periods are shown in Tables I.4 and E.4. In the last column mobility is measured over longer time period, but even for longer periods we match samples for the initial and the final years and ignore what has happened between two time points. In fact, income inequality falls if we sum incomes for two time periods.

Even if we take two consecutive years, inequality is reduced by 8-25%. Over longer time period the equalizing effect normally increases but the reduction associated with expanding of the time horizon is much smaller than in the first year. It is the case because most of transitory movements in monthly incomes fade out in the course of a single year.

Another important finding is that the choice of inequality index matters. Mobility does not operate equally at all points of the distribution. For all years and income aggregates the Gini coefficient indicates much weaker reduction in inequality than two other indices. It appears, therefore, that households in the middle of the distribution tend to have relatively stable incomes and, hence, more persistent income differences. Mobility smoothes out income differences mostly in the tails of the distribution. This result is partly predictable because of monthly reference period.

The peak of mobility was observed in 2001 and 2002, after that mobility slows. For 2005 there are some signs of recovery in mobility rates. Mobility is generally higher for those aggregates that less equally distributed, probably, due to larger contribution of transitory incomes and measurement errors. Again the results are not very sensitive to the choice of equivalence scale. Mobility is roughly of the same magnitude for incomes and non-durable expenditures but it is slightly more stable for expenditures (Figure 4). In a line with what would be expected, when we include durable expenditures mobility shows almost no change for GE(0), increases slightly for the Gini coefficient and rises considerably for GE(2). This finding reflects the fact that non-durable expenditures are more stable than total expenditures due to infrequency of durables purchases. The difference between the two grows with the level of income and, hence, differences are larger for those measures which are more sensitive to expenditure differences in the upper tail of distribution.

Up to this point we ignored what happened between the beginning and the end of time horizon. Figure 5 shows how mobility changes for incomes and expenditures cumulated over various time horizons. To draw this picture we used a sub-sample of individuals who participated in all six waves of the survey. Mobility is calculated on the basis per adult equivalent incomes and expenditures with q=0.75. The horizontal axis R=0 represents a completely immobile structure. If the mobility curves show a sharp initial jump, but then remain more or less horizontal, the structure suggests large transitory variations in incomes. Structures are considered more egalitarian if the initial rise is not very sharp, but increase in R continues as the time horizon is extended. The mobility profiles depicted in Figure 5 indicate that the initial rise is high, but it levels out as we add additional periods. This means that transitory variation in incomes and expenditures is extremely high. However, there is no indication that mobility curves flatten out so that the full equalizing effect of mobility is exhausted within the first six years. For

longer periods we are likely to have even larger reductions in inequality due to mobility because relatively little of the life-cycle income differences balances out in such a short period.

Due to mobility, over six-year period inequality declined by almost 40-50% at the top, by 35-40% at the bottom and by 16-20% in the middle of the distribution (here we give the range of estimates from different welfare aggregates). This means that much of poverty in Russia is only transitory and much of richness is very unstable. Another conclusion is that inequality is more persistent in the low end than in the top the distribution. Note that mobility profiles for incomes and expenditures are almost identical for Gini and GE(0), but for GE(2) there is a sizable difference unless the accounting period is extended to six years. This result is consistent the idea that richer individuals have more opportunities to smooth their consumption. High-income people do not spend all their incomes but save part of their incomes for future periods. For lower income groups who lack savings and are affected by borrowing constraints incomes and expenditures are highly correlated and mobility measures show more similarity for both indicators.

Comparing the evidence for 2000-2005 with Jovanovic's (2000) estimates for 1994-1998, it appears that mobility has declined (albeit by a small amount) at the bottom and at the middle of the distribution (Table 6)[5]. This happened mostly due to the moderation of transitory shocks since one-year mobility measures have declined most substantially.

Next we assess Russian mobility rates in the international perspective (Table 6). In all countries listed in the table mobility leads to significantly lower reductions in inequality no matter what inequality indicator is chosen. According to Gangl (2005), only Italy, Denmark, Netherlands and Greece approaches the lower bound of our mobility estimates for Russia. Unfortunately, we lack transition countries among the comparators in Table 6. The only developing country in the table is South Africa with inequality persistence only slightly less than in developed countries.

The difference between Russia and other countries is hard to explain because Shorrocks mobility indices tend to be pretty similar for countries with very different levels of inequality. The answer may be related to higher inflation rates in Russia. Studying income mobility in Argentina, Beccaria and Groisman (2008) report that equalizing effect of mobility was significantly lower during the periods of low inflation and increased with rise of inflation. Transition-specific factors could be another driving force of mobility. Khor and Pencavel (2006) study mobility of labor incomes in urban China in the early 1990s and find that for this indicator relative mobility was higher in China than in the USA or other high-income countries. The

[5] However, Jovanovic (2000) does his calculations for households (not for individuals as we do). Therefore, our results are not strictly comparable.

observed cross-national differences in mobility may reflect differences in institutions and access to credit. Incomes of individuals, who experience temporary hardship, would be more variable in a country with weak social safety net and limited access to credit. Previous studies have shown that in Russia there are severe constraints on the availability of resources that could help to smooth incomes and consumption as access to credit is limited and public social safety net is ineffective. Specificities of the survey design namely monthly reference period for incomes, sample attrition and measurement errors could also contribute to upward bias in Russian mobility rates.

4. Transition matrices

The calculations of Shorrocks indices allowed all movements in incomes to affect mobility. This mobility measure does not, however, reveal who is moving where in the distribution. In this subsection we address this by examining transitions between the deciles of the income distribution. More specifically, we construct transition matrices. Each cell of transition matrix is the probability p_{ij} of transferring from decile i (D_i) to decile j (A_j)[6] in period between time periods t and $t+k$. We also compute and discuss various summary indicators of relative income mobility based on transition matrices. Among these mobility measures we distinguish the immobility ratio (called immobility ratio-1 in this paper) which is defined as the average percentage of people staying in the same decile of the distribution and the average absolute jump which measures the amplitude of the movements – i.e. the number of deciles the typical individual "jumps over" between two time periods. All mobility measures can be compared with the "perfect mobility" case, when the probability of being in each decile is independent of the starting point. We also differentiate between upward and downward movements and calculate proportions of those moving up and down. Our data allows computing mobility indices for the six-year interval (2000-2005) and then turn to short-term (year-to-year) transitions. Since mobility has proven to be very similar for various income and expenditure aggregates, hereafter we confine ourselves to per adult equivalent measures with q=0.75 and pay more attention to comparison of mobility patterns between incomes and non-durable expenditures.

Tables I.7 and E.7 describe mobility over the whole period 2000-2005. Both incomes and expenditures demonstrate high mobility in Russia, which is indicated by large numbers off the main diagonal. On average, just 15-17% stayed in the same decile by the end of the six-year period while more than 80% experienced some changes in their relative positions. Incomes register less mobility than expenditures. Probability of changing the state is lower for the extreme deciles than for the middle deciles. The higher degree of immobility observed in the

[6] Letters D and A abbreviate departure and arrival.

bottom and top deciles relative to the middle deciles is not surprising since the bottom tenth have no where to go but to move up, and the top tenth have no where to go but to move down.

Large part of mobility consists of moves to adjacent deciles and contains purely exchange mobility. Thus, we recalculated the immobility ratio (see immobility ratio-2) to include the band given by the main diagonal of the transition matrix and the adjacent elements. Nonetheless, 40-45% of individuals remained on or close to the diagonal. However, mobility is still very high – at least 55-60% of individuals experienced significant – in excess of 10 percentage points – move in their relative positions.

For expenditures the highest staying probability is at the very top decile. This indicates that individuals at very top of the distribution are more likely to stay there than the individuals at the lower end of the distribution. However, this does not hold for incomes. For incomes the probability of staying in the very bottom of the distribution is higher that the probability of preserving a high-income position. This discrepancy may be due to differences in accounting home-produced goods which are especially important for the poorest deciles. Our income measure does not include incomes from subsistence agricultural activities while our expenditure measure includes monetary equivalents of consumption of home-produced goods. About 30% in of those in the lowest income decile in 2000 were also in the lowest income decile in 2005 suggesting that they may be trapped in poverty. Expenditures measure suggests less degree of extreme poverty persistence: about 21% of those in the lowest decile in 2000 were also in the lowest decile in 2005. In other words, 70-80% of the most poor managed to escape extreme poverty in the course of the six-year period. A quarter of them moved to the next-poorest decile, but about 30% jumped into the upper half of the distribution. If we define poverty as being in the poorest fifth, then 44% (35% for expenditures) of those in the lowest income quintile were still there six years later and 65% (for both incomes and expenditures) are either in the poorest or next-poorest quintile. Taking these figures together they suggest that around one half of low income is in some sense transient, but another half is not.

There is a moderate asymmetry in upward and downward movements. However, income and expenditures disagree on the direction of such asymmetry. According to our income measure, we find that 40.9% – independently from the magnitude of the jump – were better off at the end of the period. Conversely, when downward mobility is considered, 41.7% of individuals were worse off in terms of their relative standing. Considering expenditures we find that the percentage of upward movers was higher than the percentage of downward movers: 43.5% of individuals experienced an upward jump in the income hierarchy over the period, compared to 41.6% who moved down in the distribution. All these figures have to be compared with 45% under perfect mobility leading to a conclusion of very high mobility in Russia.

Besides the frequency and the direction of movements, it is interesting to investigate the amplitude of the jumps. Over the period, the average magnitude of a jump for a typical individual is equal to 2.26-2.47, which corresponds to a move of about a quartile in the distribution. In the perfect mobility case the jump is equal to 3.3 deciles. Expenditures demonstrate higher incidence of large upward (more than 2 deciles up) jumps and lower incidence of large downward (more than 2 deciles down) jumps.

Table 8 tracks short-term mobility measures inside the period of analysis. About 75-80% of individuals change their relative positions in the distribution each year with mobility being higher for expenditures. Over one half of the poorest decile is moving up the income distribution each year. About a half of the richest decile is moving down the income ladder each year. The time trend is similar to one revealed by Shorrocks indices. Both the frequency of movements and the average magnitude of the jump were larger in 2001 and 2002. In the international perspective Russia stands out to have the lowest immobility rates among the countries presented in Figure 6. In most developed countries the immobility ratio-1 is in the range of 35-50% compared to 20-25% in the RLMS.

5. Absolute mobility

The analysis of income mobility across deciles of the income distribution undertaken in the previous sub-section is an analysis of movement across income thresholds. The degree to which these thresholds are exceeded or not exceeded is neglected. Moreover, the movement across income deciles describes relative movement and is consistent with the real income of all people falling or rising. Therefore, in order to show a comprehensive picture of income mobility, we should measure not only the relative mobility but also the absolute mobility.

We employ the index proposed by Fields and Ok (1999), which is formulated as follows,

$$m(x, y) = \frac{1}{n}\sum_{i=1} | \log x_i - \log y_i | \qquad (3)$$

where n is the number of individuals, x refers to the base year income and y is the final year income. This index is the aggregate of the change in each individual's income. It can be used for international comparisons as it can be interpreted as the mean percentage income changes between these two years.

One important feature of (3) is that total mobility is decomposable into two sources, one that reflects income changes due to economic growth and the other that reflects income changes due to transfer of income among individuals, holding the mean constant. In a growing economy,

where $\sum_{i=1}^{n} y_i \geq \sum_{i=1}^{n} x_i$, with L (losers) individuals who lost their incomes over time ($i \in L : x > y$), equation (3) can be broken down into two components[7]:

$$m(x, y) = M_G + M_T = \frac{1}{n}\sum_{i=1}^{n}(\log y_i - \log x_i) + \frac{2}{n}\sum_{i \in L}(\log x_i - \log y_i) \qquad (4)$$

Table 9 provides the estimates of Fields-Ok mobility index, M, and the dual components (M_G and M_T) for the entire period 2000-2005 and for one-year sub-periods. Yearly indices show that the peak of absolute mobility was observed in the first years of the period and it was steadily declining in later years. In terms of underlying sources, a massive portion of income mobility was accounted for by people moving up or down within the income distribution from one year to another (i.e. transfers of income). Income growth was generally less important in determining one-year mobility. For incomes this component contributed to about 20-30% of total income changes and only in 2000-2001 the share of the growth component exceeded 40%. The dynamics of the growth component is closely related to average rates of income growth. Figure 7 illustrates this point. The relative contribution of growth is higher in the periods of higher income growth. When the observed time period is extended to six years, mobility increases so as the contribution of economic growth. This finding is consistent with most other papers using Fields-Ok mobility index which also report that the contribution of economic growth to income mobility is higher in the longer term. This picture is consistent with the view that improvements in macroeconomic situation have raised incomes of most individuals as 'a rising tide lifts all boats'.

The pattern of absolute mobility appears to be dependent on the welfare aggregate chosen. For expenditures the picture is quite different from that for incomes. Average expenditures have not grown as much as incomes did which is reflected in lower values of Fields-Ok mobility index for most of one-year sub-periods and for the whole period. However, there is a significant difference in the relative contributions of the growth and transfer components between incomes and expenditures. Expenditures suggest much higher importance of transfers, i.e. the degree to which the income growth of the winners (those whose incomes increased over the period) offsets the income losses by the losers. The contribution of growth component is equal to 38% for the whole period. For one-year sub-periods it varies from 2% to 20%. In fact, closer inspection of the sample demonstrates that the fraction of those who experienced declines in real incomes between 2000 and 2005 is significantly higher in our expenditures data than in our incomes data (35% vs 14%). This may be caused by the imputation procedure employed (see Section 2). Another possible explanation is that some kinds of expenditures which are normally treated as non-durable and quite regular (such as clothing) in fact require savings from low-income

[7] For derivation see Fields and Ok (1999).

households. They can bring additional longitudinal variability to the expenditure measure. In any case estimates based on income aggregates that are free of imputation interventions seem to be more reliable and should be used for international comparisons.

Table 10 compares Russian Fields-Ok mobility indices with those for other countries. Among the listed countries only China demonstrates similar mobility rates while other countries lag behind. The contribution of economic growth is also larger in Russia. In other countries economic growth explains 0-40% of absolute mobility over five-year periods compared to 83% in Russia (for the six-year period). However, neither of these countries experienced such high rates of economic growth in the period under consideration. Figure 8 demonstrates that over time the rates of absolute mobility were converging to the lower levels observed in developed countries.

Our next question is who and to what extent benefits from economic growth. We wonder whether income growth was pro-poor or pro-rich and what income group contributed the most to income mobility. Cross-sectional evidence suggests that inequality declined to some extent over the period. Incomes at the bottom of the distribution were growing faster than at top. In our sample average incomes of the lowest quintile increased by a factor of 2.2 between 2000 and 2005 while those of the highest quintile increased by a factor of 1.8. These estimates suggest that income growth has favored the poor. However, these estimates are not very informative because they refer to groups of individuals rather than to individuals themselves. Composition of both extreme income groups substantially changed over time (see transition matrices in the previous section). People in the lowest income category in 2005 are not the same individuals as were in it in 2000. Relatively few of those in the highest income category in 2000 remained there by 2005. Longitudinal data allows us to track the same individuals.

Fields and Ok (1999) proposed a simple decomposition technique that considers the aggregate income variations as a weighted average of the specific movements of different population sub-groups. The decomposition builds upon the Fields-Ok mobility index. It can be used to break down the aggregate income movement *m(x,y)* by income groups:

$$m(x,y) = \sum_{j=1}^{J} \left(\frac{n^j}{n} \right) \left[\frac{1}{n^j} \sum_{i=1} | \log x_i^j - \log y_i^j | \right] \tag{5}$$

where J is the number of groups, n^j is the number of people in group j, x and y are incomes in the initial and the final year of the period, respectively.

Columns (1)-(3) of Table I.11 provide a summary of income dynamics for the whole sample and at different points of the distribution. From 2000 to 2005 absolute incomes rose by 84%. Mobility was higher for lower deciles. On average, those at the lower tail of the income distribution in 2000 experienced larger income changes by 2005 than those who started at the

upper tail of the income distribution. Each decile has a certain fraction of individuals who experienced falls in real income over the period. The fraction of losers is almost negligible in the lowest decile, but it grows monotonically along the income scale and reaches 54.4% in the highest decile. Low fraction of losers in the bottom half of the distribution together with high values of Fields-Ok mobility index suggests that income growth over the period is likely to be pro-poor.

It is important to note that estimates shown in columns (1)-(3) of Table I.11 are likely to overstate real income increases at the low end of the distribution and understate them at the upper tail of the distribution. The decile position in 2000 could be affected by measurement errors or transitory shocks that place some people above their permanent income and other people below their permanent income. Those temporarily below their steady-state income in 2000 will tend to experience a larger increase in their income from 2000 to 2005 while those temporarily above their steady-state income in 2000 will tend to experience a smaller increase in their income from 2000 to 2005.

The relevance of these considerations is suggested by the relationship shown in columns (4)-(6) of Table I.11, which relate income growth not to initial income but to final income. Income gains appear to be the largest to those who happened to be at the top of the income distribution in 2005. Conversely, those at the bottom of the distribution in 2005 are those who experienced the lowest real income growth or even income losses over the period. Again this is consistent with a permanent-transitory income explanation: those in 2005 temporarily below their steady-state income will tend to have a smaller increase in their income from 2000 to 2005, while those in 2005 temporarily above their steady-state income will record a larger increase in their income over the period.

The conclusion is that the relationship between incomes and changes in incomes is strongly affected by measurement errors and transitory shocks to incomes. We are in a risk to heavily over-exaggerate income growth at the bottom of the distribution. The only way to solve this puzzle is to relate changes in incomes to some measure of permanent income. For each individual we averaged equivalent incomes longitudinally over all six years to obtain a measure of permanent incomes. Next we ordered permanent incomes by deciles and computed average absolute changes in log incomes between 2000 and 2005. The result is presented in columns (7)-(9) of Table I.11. These results indicate that lower decile groups had only slightly larger relative contributions to overall mobility while incidence of income losses was more equally distributed across the deciles of the distribution.

Changes in log incomes (not absolute values) are depicted in Figure 9A. The blue line relates changes in log-incomes to the rank of individual in the permanent income distribution.

The red line relates changes in log-incomes to the rank of individual in initial (2000) income distribution. It is a graphical version of column (1) of Table I.11 for log incomes. This line demonstrates substantial catching up by the poorest individuals. Note that the income growth of those who were in the lowest decile in 2000 is well above the increase registered for the group of poor (160% vs 120%). Those initially in the top decile of distribution on average experienced a loss in their incomes. This is to be compared with the income growth of 80% for the top decile as a group. Graphical analogue of column (4) for log incomes is given by the green line. Those the poorest in 2005 had their incomes hardly changed between 2000 and 2005 while incomes of those at the top of the distribution in 2005 have increased by a factor of 2.4 since 2000. It relates changes in log-incomes to the rank of individual in the final (2005) income distribution. The solid line is nearly flat suggesting no relationship between permanent income percentile and income growth.

However, there may be a problem with this definition of permanent incomes during the period of rapid income growth. Longitudinal averaging puts equal weights to incomes in all six years. If income growth is fast then the value of permanent incomes would be largely driven by incomes in the late years of the period. Therefore, we perform two other sensitivity checks to test our tentative conclusion about no relationship between position in the income distribution and the rate of income growth.

First, we look at the duration of poverty and richness. Table 12 presents frequencies for incidence of poverty and richness measured in number of years in the bottom and the top quintile, respectively. It comes from the table that 53.2% of individuals in the panel never experienced poverty while 50.6% of individuals in the panel never found themselves in the top quintile. We are interested in individuals who were poor or rich for only one year: 16.4% of individuals were poor for only one year and 19.5% were rich for only one year. We speculate that these experiences are most likely to result from measurement errors or from some transitory fortunes or misfortunes. We excluded these individuals from the sample and redraw the graph for the remainder of the sample (Figure 9B). This graph clearly contradicts the conclusion based on permanent incomes analysis. If we exclude the individuals who are most suspicious for measurement errors and sharp transitory income fluctuations we still have that incomes of the poor has grown faster than incomes of the rich over the period. For another sensitivity check we averaged incomes for two 3-year sub-periods in order to minimize the influence of transitory income variation and measurement error. Figure 9C depicts log income changes between these sub-periods. Again the picture is consistent with the story of pro-poor growth with especially high growth rates for the lowest decile.

So we have to conclude that after correcting for short-term fluctuations in the data Russian economic growth in the early 2000s sufficiently strongly favored low-income individuals and real incomes of the poor grew faster than incomes in other parts of the distribution. This finding is consistent with the recent estimates of the World Bank (World Bank, 2005).

6. Income mobility and pro-poor growth

In the previous section we showed that economic growth brought dramatic improvement to the positions of poorest in the society. Why than in cross-sections we see only modest reduction in inequality? Jenkins and Kerm (2006) proposed the way of resolving this potential paradox. They developed an analytical framework within which changes in income inequality over time are related to the pattern of income growth across the income range and the changing individual rankings in the distribution. This methodology can be applied to any measure from the generalized Gini class of indices, including a commonly-used Gini coefficient. They prove that the change in the Gini coefficient between two time points can be broken down into two components – one summarizing changes in relative positions of individuals and one summarizing progressivity in income growth. The decomposition is derived by adding and subtracting the concentration coefficient ($C_1^{(0)}$) to the change in Gini index (*ΔGini*):

$$\Delta Gini \equiv Gini_1 - Gini_0 = \underbrace{(Gini_1 - C_1^{(0)})}_{reranking} - \underbrace{(Gini_0 - C_1^{(0)})}_{pro-poor\ growth} \tag{6}$$

where $C_1^{(0)}$ is the concentration coefficient for year 1 incomes which uses year 0 income ranking. In geometrical terms it is twice the area between the concentration and the line of perfect equality. The idea of concentration curve is similar to Gini. The Gini coefficient is twice the area between the Lorenz curve and the line of perfect equality. The Lorenz curve shows for the cumulative proportion *x%* of ordered individuals, what cumulative proportion *y%* of the total income they have. Both values refer to the same period. The concentration curve derived from the Gini but differs, as the *x* variable is based on year 0 income order and the *y* variable is year 1 incomes. The concentration curve $C_1^{(0)}$ shows the cumulative proportion of year 1 incomes where individuals are ordered according to year 0 incomes.

Figure 10 depicts the Lorenz and concentration curves for Russia taking 2000 as year 0 and 2005 as year 1. The decreasing inequality over the period is depicted by the inward shift in the Lorenz curve. Twice the area between two Lorenz curves is the change in the Gini coefficient (*ΔGini*). According to equation (6), the difference between the two Lorenz curves can be decomposed into two parts. The first part is the difference the difference between the 2000 Lorenz curve and the 2005 concentration curve based on the 2000 income ranks. This

summarizes the effect of pro-poor growth and is equal ($Gini_0 - C_1^{(0)}$)/2. The second part is the difference between the 2005 Lorenz curve and the 2005 concentration curve. It summarizes the effect of re-ranking and is equal to ($Gini_1 - C_1^{(0)}$)/2. This picture suggests that income growth in Russia was strongly pro-poor, as the 2005 concentration curve lies everywhere above the Lorenz curve for 2000 incomes. This means that incomes of relatively poor were actually growing faster than incomes of relatively rich. However, this inequality-reducing effect was almost exactly offset by the effect of re-ranking. With pro-poor income growth, the number of individuals who were poor in the initial year moved out of low income, but were replaced at the bottom of the income distribution by individuals who were non-poor initially and who had slightly higher relative incomes in the final year of the period than those whom they replaced. Therefore, an overall reduction in cross-sectional inequality was only modest.

Tables I.13 and E.13 present these conclusions in a more formal manner for incomes and non-durable expenditures, respectively. Over the whole period 2000-2005 inequality decreased for incomes but not for expenditures. The first rows of these tables provide the results of the decomposition for the entire period. They show that pro-poor growth potentially can lead to a tremendous cut in equality. Had there been no re-ranking, and other things being equal, over 2000-2005 pro-poor income growth would have reduced the Gini coefficient by about 60(!)% for both incomes and expenditures. But the equalizing effect of pro-poor income growth was counterbalanced by the disequalizing effect of re-ranking (we have seen substantial re-ranking in our transition matrices). For incomes the effect of pro-poor growth was slightly higher than the effect of re-ranking bringing about a 7% decline in the Gini coefficient. For expenditures the progressivity of income growth was more than offset by the re-ranking effect leading to 2% increase in Gini.

Since yearly values of income may be contaminated by measurement errors and transitory variation, we averaged incomes and expenditures for two 3-year periods: 2000-2002 and 2003-2005 and studied changes in inequality of these averages between two sub-periods. Another advantage of this procedure is that it allows direct comparisons with the results for the USA and West Germany presented in Jenkins and Kerm (2006). They adopt a similar procedure for 6-year moving window, averaging incomes for 3-year sub-periods. For incomes the reduction in inequality is obviously much smaller when we turn to 3-year averages, but for expenditures increase in inequality is also more moderate. However, in what concerns the decomposition the results are qualitatively the same. Two effects are of roughly the same magnitude and the effect of pro-poor growth only marginally dominates the effect of re-ranking for incomes. And the opposite is true for expenditures.

For international comparisons Jenkins and Kerm (2006) normalize both effects by initial values of the Gini coefficient. In our data the normalized re-ranking and pro-poor growth index are equal to 0.30-0.32 and 0.30-0.34, respectively. This by far exceeds the estimates for the USA and Germany reported by Jenkins and Kerm. According to their estimates, in the 1980-90s the normalized effect of pro-poor growth was equal to approximately 0.12 for the USA and 0.22 for West Germany. The normalized effect of re-ranking was in the range of 0.18-0.22 for the USA and 0.21-0.27 for West Germany. Both effects are well below our estimates. This finding is consistent with other international comparisons presented elsewhere in the paper. Russia demonstrates high levels of relative and absolute mobility. Russian society proves to be highly dynamic.

The remainder rows of the tables refer to yearly changes in inequality. For incomes in all years except 2000-2001 the effect of pro-poor growth exceeded the effect of re-ranking (in most cases by a very small amount) and therefore inequality was declining. For expenditures the effect of pro-poor growth exceeded the effect of re-ranking only in 2001-2002. In other years reranking played more important role and inequality was rising. For both incomes and expenditures the effects of pro-poor growth and re-ranking were larger in the beginning of the period and were decreasing over time until 2005 when we see some reversal of the trend. The largest reduction in inequality was in 2001-2002 when growth was most favorable for the poor.

7. Decomposition of longitudinal variability of incomes by income sources

Previous sections have quantified the extent and contributions of relative and absolute income mobility in Russia but we have not described the mechanisms through which this mobility is realized. This sub-section is aimed to shed some light on this issue. We are not going to give a detailed picture of mobility determinants but rather to identify perspective direction for the future research. We do this by examining the variance of individual incomes over multiple years. The variance of longitudinal income can be decomposed into various income components to understand the underlying sources of mobility. The methodology is borrowed from Jenkins (2000).

Let y^k denote the income of household from source k. Then total income $y=\Sigma y^k$. For each household the variance of total income over T-year period is:

$$Var(y) = \sigma_y^2 = \sum_k \sigma_k^2 + \sum_{j \neq k} \sum_k \rho_{jk} \sigma_j \sigma_k \tag{7}$$

where ρ_{jk} is the correlation coefficient between income components y^j and y^k. For each component, the contribution to total income equals to:

$$\sigma_{ky}^2 = Cov(y^k, y) = \sigma_k^2 + \sum_{j \neq k} \rho_{jk} \sigma_j \sigma_k \tag{8}$$

The proportion of total variability contributed by component k is given by:

$$s_k(\sigma^2) = \frac{\sigma_{ky}^2}{\sigma_y^2} = \frac{Cov(y^k, y)}{Var(y)} \tag{9}$$

For each person this is the same as the slope coefficient from regression of the given income component on total net income. The average contribution is simply the average of individual slope coefficients.

All income components were classified in 8 groups: private transfers (which includes all transfers from relatives, friends and other people; international, religious and other organizations), child allowances, alimony, earnings of all household members, pensions, benefit income (which includes stipends, unemployment benefits and other type of social assistance from the state), investment income (which includes incomes from renting out household assets, dividends and interest payments received), and subsidies (which includes fuel and housing subsidies).

Table I.14 provides some longitudinal statistics about per adult equivalent incomes and changes in its elements. Household incomes are in the numerator in formula (1). Note these are not individual incomes but total incomes of the households. Here we use the definition based on the sum of various income components. Household size and equivalence scale are in the denominator of (1). They reflect demographic differences between households and subgroups of households as well as demographic changes within households over time. The statistics are based on incomes averaged over all six periods for each person. The first column of Table I.14 shows the averages for the whole sub-sample under consideration. Other columns refer to specific population subgroups defined by the type of household. Households are classified into household types according to their status in the 2000 wave (which may subsequently change).

Longitudinally average household incomes for the whole sample are equal to 4882 rubles resulting in 2035 rubles of equivalent incomes. Table I.14 shows that for typical household earnings constitute the largest part of total incomes. They contribute about three fourth of total household incomes. Pensions are also essential: the share of pensions is equal to 17%. All other income sources are of minor importance. Private transfers with the share of 2.4% are the largest among them.

Relative importance of each income component varies by household types. These differences tell us about which income sources are likely to be most relevant in explaining the differential dynamics of equivalent incomes. Incomes of the households comprise of the elderly are mostly formed by pensions (73-75% of total incomes) with earnings adding just 14-17% of the total. Their income structures are also characterized by larger shares of private transfers (particularly, for those who live alone) and greater role played by subsidies. Earnings are by far

more important for other types of households especially if kids are present in the households. In the latter case the share incomes approaches to 85% of the total. These are mostly households composed of kids and young or middle-aged adults, grandfathers and grandmothers are rarely present. The number of kids does not affect the structure of incomes.

Single parents and households without kids have more diverse income structures. Single parents rely more to a greater extent on private transfers, alimony and child allowances. Households without kids have higher share of their incomes coming from pensions. This is because a significant fraction of such households are couples in which one spouse has already retired and another spouse is still in pre-retirement age. It worth noting that in spite of a low share of private transfers in total incomes, for all household types except households with 2 or more kids they constitute a larger share than benefits, subsidies and child allowances taken together. Informal social nets seem to be more effective in providing income support and insurance than the public safety net.

Next we turn to the decomposition of longitudinal variability of incomes. What parts of incomes are more volatile and sensitive to shocks? What income components are more likely to generate transitory fluctuations? Table I.15 gives some answers to these questions. Firstly, it provides information about variability of equivalent incomes, household incomes and household composition which is summarized in the coefficients of variation for all these indicators. Coefficients of variation were calculated longitudinally for each person and then averaged across persons. Secondly, it reports the proportionate contributions of each income component to the total variability of household incomes employing formula (9). The contribution of each income component depends on its share in total household incomes, its own longitudinal variability and its covariance with other income sources.

As it comes from the table, equivalent incomes are only slightly less volatile than total household incomes suggesting that demographic events are not the major source of longitudinal variation of equivalent incomes and hence they do not contribute much to shape the mobility patterns. Longitudinal variation itself is quite large and considerably differs across household types. At the one pole there are households composed of the elderly with relatively stable incomes. At the other pole there are households with 2 or more kids and single parents whose incomes are highly volatile incomes. The conclusion is that future research on mobility should put more stress on these groups.

The middle rows of Table I.15 show the proportionate contributions of income components to longitudinal income variability. They are nearly equal to income shares but it is what normally happens because more important income sources are also more likely to contribute more to longitudinal variability of incomes. For the whole sample the greatest contribution is that of

labor incomes – 70% of overall longitudinal variation is explained by variation in earnings. However, it is lower than the share of earnings in total incomes (77%). On the contrary, the contribution of pensions (23%) is larger than their share in incomes (17%). Our explanation for this discrepancy is that in households that receive both pensions and earnings, pensions were less than stable over the period than earnings. This finding does not equally apply to all types of households. Pensions have considerably higher contributions compared to their share in incomes for two types of households: households without kids and, to a lesser extent, households with one kid. These particular subgroups form the pattern of contributions for the whole sample. Therefore, an important topic for future studies is income mobility by the elderly, especially work-to-retirement transition. High contribution of labour incomes into longitudinal variability calls for studies on earnings mobility and the mechanisms which speed up earnings growth.

Private transfers account 2-8% of total longitudinal variation and are extremely volatile. We find no evidence of strong stabilizing effect of social benefits and subsidies. Surprisingly, but investment incomes and rents better play this role for most household types. In other words, social safety net in Russia does not help households to cope with shocks and lift families out of poverty. Benefit entitlements are often very small and claiming procedures are very complex, and so people take a rational decision that it is not worth claiming the benefits. However, more detailed policy-oriented research is needed to assess the effect of public transfers on income dynamics.

8. Conclusion

In this paper we investigate the issue of individual income mobility in Russia during the period of rapid economic growth in 2000-2005. Incomes are defined as adult equivalent incomes using three variants of equivalence scales (q=1, q=0.75 and the OECD equivalence scale) in other to make a check of sensitivity of our results on mobility to different economies of scale. We repeated analysis for adult equivalent expenditures (total and non-durable) because data on expenditures are generally believed to be more reliable than data on incomes.

Our results may be briefly summarized as follows. Our main finding concerning relative income mobility in Russia is that it is roughly of the same magnitude for incomes and expenditures both for year-to-year mobility and for mobility over longer periods. Another important finding is that relative and absolute mobility in Russia is significantly higher than in developed countries. We demonstrate that income growth in Russia was strongly pro-poor in 2000-2005. Incomes of relatively poor were growing faster than incomes of relatively rich. However, this inequality-reducing effect was almost exactly offset by the effect of re-ranking and overall reduction in cross-sectional inequality was only modest. Finally, the analysis of

longitudinal income variation by income sources reveals that earnings mobility is lower than overall income mobility but still is the larger contributor to the latter among all sources of income.

Appendix.

Table 1. Basic descriptive statistics for the balanced panel and for cross-sections

	2000		2001		2002		2003		2004		2005	
	U	B	U	B	U	B	U	B	U	B	U	B
Households												
Household size	2.79	2.82	2.76	2.80	2.75	2.79	2.74	2.77	2.74	2.72	2.74	2.69
Number of children	0.55	0.56	0.53	0.54	0.52	0.52	0.51	0.49	0.50	0.45	0.49	0.43
Region												
Centre	24.3	23.4	27.0	23.4	28.0	23.4	26.8	23.4	26.4	23.4	25.7	23.4
North-West	9.5	8.2	12.4	8.2	12.2	8.2	11.0	8.2	11.3	8.2	11.0	8.2
South	15.0	15.3	14.2	15.3	14.5	15.3	14.2	15.3	14.2	15.3	14.7	15.3
Volga	23.6	26.9	21.6	26.9	21.7	26.9	22.6	26.9	22.4	26.9	22.4	26.9
Urals	9.6	7.4	7.9	7.4	7.3	7.4	6.1	7.4	6.6	7.4	6.6	7.4
Siberia	13.1	14.5	12.4	14.5	12.0	14.5	14.7	14.5	14.7	14.5	15.3	14.5
Far East	4.9	4.2	4.7	4.2	4.3	4.2	4.5	4.2	4.4	4.2	4.4	4.2
Settlement type												
Moscow and St. Petersburg	5.5	2.8	14.0	2.8	14.6	2.8	12.5	2.8	12.5	2.8	11.6	2.8
Regional capital	34.1	32.7	30.3	32.7	29.7	32.7	29.5	32.7	29.8	32.7	29.5	32.7
Other towns	28.2	28.7	25.3	28.7	25.1	28.7	26.8	28.7	26.9	28.7	27.1	28.7
Rural and semi-urban	32.3	35.9	30.4	35.9	30.6	35.9	31.1	35.9	30.8	35.9	31.8	35.9
% of jobless households	28.1	28.0	28.0	28.4	28.0	29.7	26.9	28.9	25.8	29.3	26.2	30.1
% households headed by females	25.6	25.3	26.2	25.2	26.6	26.5	26.6	27.3	26.0	26.8	26.4	27.5
Household types												
Single elderly	13.4	13.0	13.6	13.0	13.4	13.9	13.9	14.9	13.6	15.6	13.8	16.4
Multiple elderly	9.9	11.2	9.6	11.9	9.7	11.9	8.9	11.2	8.8	11.5	7.9	10.7
Other without kids	33.8	32.5	35.0	32.5	35.9	33.0	36.9	34.3	37.6	36.0	38.8	38.4
Single parent	3.6	3.2	3.7	3.4	4.0	3.6	3.7	3.0	3.4	2.7	3.3	2.6
Other with 1 kid	26.1	26.7	25.9	26.5	25.4	25.4	25.5	24.9	25.7	23.7	25.4	22.3
Other with 2 or more kids	13.3	13.4	12.2	12.9	11.6	12.4	11.2	11.7	11.0	10.4	10.7	9.6
Average per capita incomes	1370	1222	1785	1526	1968	1690	2094	1848	2257	2007	2546	2316
N of households	3782	2317	4270	2317	4441	2317	4460	2317	4489	2317	4397	2317
Individuals												
Age, years	37.1	37.7	37.4	38.3	37.4	38.7	37.3	39.1	37.3	39.8	37.3	40.3
Gender: % of males	45.0	44.5	44.7	44.4	44.7	44.2	44.6	43.7	44.6	43.6	44.6	43.8
Education												
Primary	8.3	8.9	7.2	8.4	6.4	7.7	6.3	7.8	6.0	7.8	5.6	7.4
Incomplete secondary	23.7	24.6	22.7	24.2	22.9	24.5	23.0	23.9	22.7	23.6	22.0	22.5
Complete secondary	33.5	33.4	34.9	34.0	35.0	34.3	35.1	34.3	34.6	34.2	35.5	35.2
College	19.5	19.6	19.2	19.5	19.3	19.4	19.1	19.8	19.9	19.5	19.5	19.5
University	15.0	13.6	16.1	14.1	16.4	14.1	16.6	14.2	16.9	15.0	17.5	15.5
N of individuals	10537	6544	11794	6494	12210	6469	12211	6408	12303	6296	12039	6236

Note: U – cross-sections, B-balanced panels. All samples are restricted to households with non-missing incomes

Table I.2. Income aggregates in the balanced panel and for cross-sections

	2000	2001	2002	2003	2004	2005
Cross-sections						
Mean household income, in current rubles	3615	5662	7012	8551	10515	13156
Mean household incomes, in October 2000 rubles	3615	4710	5045	5419	5940	6643
Mean per capita income for various income aggregates:						
Household incomes based on individual incomes	1140	1469	1638	1770	1904	2165
Reported household incomes	1238	1582	1741	1911	2072	2345
Household incomes based on the sum of components of household incomes	1215	1600	1801	1931	2066	2310
Total household incomes (per adult equivalent income with q=1)	1370	1785	1968	2094	2257	2546
Mean per adult equivalent income (q=0.75)	1705	2223	2431	2594	2807	3158
Mean per adult equivalent income (OECD scale)	1693	2202	2406	2567	2772	3118
Balanced panel						
Mean household income, in current rubles	3287	4968	6211	7739	9365	11909
Mean household incomes, in October 2000 rubles	3287	4132	4480	4894	5269	5989
Mean per capita income for various income aggregates:						
Household incomes based on individual incomes	1032	1269	1424	1564	1716	1975
Reported household incomes	1106	1364	1523	1691	1839	2127
Household incomes based on the sum of components of household incomes	1077	1363	1567	1701	1830	2107
Total household incomes (per adult equivalent income with q=1)	1222	1526	1690	1848	2007	2316
Mean per adult equivalent income (q=0.75)	1532	1918	2110	2306	2496	2869
Mean per adult equivalent income (OECD scale)	1518	1899	2087	2277	2460	2825

Table E2. Expenditure aggregates in the balanced panel and for cross-sections

	2000	2001	2002	2003	2004	2005
Cross-sections						
Including durables and house restoration						
Mean household expenditures	4578	5035	5176	5421	5876	6057
Mean per capita expenditures	1692	1909	1999	2115	2276	2368
Mean per adult equivalent expenditures (q=0.75)	2121	2376	2475	2611	2815	2923
Mean per adult equivalent expenditures (OECD scale)	2098	2352	2449	2581	2782	2890
Excluding durables and house restoration						
Mean household expenditures	3472	3919	4110	4070	4604	4694
Mean per capita expenditures (q=1)	1276	1474	1534	1484	1676	1740
Mean per adult equivalent expenditures (q=0.75)	1601	1836	1916	1863	2105	2173
Mean per adult equivalent expenditures (OECD scale)	1594	1827	1908	1855	2093	2164
Number of households	3968	4492	4649	4679	4687	4555
Balanced panel						
Including durables and house restoration						
Mean household expenditures	4341	4696	4765	5009	5325	5576
Mean per capita expenditures (q = 1)	1542	1701	1765	1871	2021	2152
Mean per adult equivalent expenditures (q=0.75)	1952	2143	2213	2338	2516	2664
Mean per adult equivalent expenditures (OECD scale)	1927	2117	2187	2304	2480	2624
Excluding durables and house restoration						
Mean household expenditures	3729	4078	4103	4263	4524	4667
Mean per capita expenditures (q=1)	1357	1497	1538	1602	1738	1838
Mean per adult equivalent expenditures (q=0.75)	1707	1878	1921	1997	2156	2263
Mean per adult equivalent expenditures (OECD scale)	1685	1853	1897	1966	2124	2226
Number of households	2716	2716	2716	2716	2716	2716

Table 3. Inequality measures for incomes and expenditures, individuals

	Mean log deviation - GE(0)						Gini coefficient						Half of CV^2 - GE(2)					
	2000	2001	2002	2003	2004	2005	2000	2001	2002	2003	2004	2005	2000	2001	2002	2003	2004	2005
Incomes																		
Mean per capita income:																		
Household incomes based on individual incomes	0.313	0.321	0.284	0.282	0.258	0.255	0.409	0.407	0.387	0.388	0.375	0.368	0.416	0.447	0.370	0.351	0.318	0.347
Reported household incomes	0.311	0.316	0.285	0.276	0.249	0.260	0.410	0.408	0.392	0.389	0.374	0.374	0.437	0.449	0.399	0.358	0.353	0.382
Household incomes based on the sum of components of household incomes	0.297	0.309	0.289	0.261	0.232	0.248	0.395	0.400	0.386	0.374	0.360	0.366	0.346	0.396	0.388	0.280	0.273	0.312
Total household incomes	0.281	0.297	0.266	0.256	0.232	0.235	0.394	0.404	0.382	0.378	0.366	0.365	0.394	0.438	0.374	0.329	0.320	0.371
Mean per adult equivalent income (q=0.75)	0.274	0.292	0.257	0.249	0.229	0.230	0.392	0.404	0.379	0.376	0.365	0.363	0.371	0.438	0.351	0.315	0.301	0.342
Mean per adult equivalent income (OECD scale)	0.273	0.290	0.257	0.249	0.226	0.230	0.391	0.403	0.378	0.375	0.363	0.363	0.374	0.439	0.356	0.317	0.300	0.344
Expenditures																		
All items (including durables and house restoration)																		
Mean per capita expenditures (q=1)	0.310	0.295	0.296	0.297	0.298	0.316	0.422	0.413	0.411	0.412	0.414	0.423	0.683	0.571	0.505	0.531	0.498	0.541
Mean per adult equivalent expenditures (q=0.75)	0.307	0.289	0.283	0.287	0.287	0.303	0.421	0.409	0.402	0.406	0.408	0.416	0.712	0.561	0.475	0.505	0.465	0.510
Mean per adult equivalent expenditures (OECD scale)	0.307	0.291	0.288	0.289	0.291	0.309	0.421	0.410	0.405	0.407	0.411	0.419	0.690	0.572	0.491	0.508	0.478	0.535
Excluding durables and house restoration																		
Mean per capita expenditures (q=1)	0.231	0.233	0.235	0.229	0.239	0.252	0.364	0.367	0.364	0.362	0.372	0.377	0.301	0.332	0.338	0.279	0.324	0.369
Mean per adult equivalent expenditures (q=0.75)	0.222	0.225	0.221	0.219	0.226	0.236	0.358	0.361	0.353	0.355	0.362	0.366	0.281	0.323	0.299	0.262	0.293	0.326
Mean per adult equivalent expenditures (OECD scale)	0.222	0.225	0.225	0.220	0.229	0.240	0.358	0.360	0.355	0.355	0.364	0.368	0.277	0.322	0.309	0.261	0.299	0.337

Table I.4. Mobility measures for income aggregates, matched samples of individuals within the balanced panel of households

	One-year periods					5 years
	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2000-2005*
Mean log deviation - GE(0)						
Mean per capita income						
Household incomes based on individual incomes	0.214	0.211	0.190	0.179	0.179	0.256
Reported household incomes	0.198	0.216	0.212	0.200	0.205	0.265
Household incomes based on the sum of components of household incomes	0.204	0.198	0.193	0.174	0.165	0.242
Total household incomes	0.205	0.217	0.197	0.182	0.171	0.250
Mean per adult equivalent income (q=0.75)	0.208	0.221	0.203	0.184	0.173	0.255
Mean per adult equivalent income (OECD scale)	0.209	0.221	0.202	0.186	0.174	0.256
Gini coefficient						
Mean per capita income						
Household incomes based on individual incomes	0.089	0.090	0.081	0.071	0.069	0.113
Reported household incomes	0.088	0.098	0.092	0.082	0.081	0.118
Household incomes based on the sum of components of household incomes	0.088	0.084	0.073	0.068	0.067	0.111
Total household incomes	0.094	0.097	0.088	0.078	0.075	0.119
Mean per adult equivalent income (q=0.75)	0.094	0.099	0.091	0.080	0.077	0.121
Mean per adult equivalent income (OECD scale)	0.095	0.100	0.091	0.081	0.077	0.121
Half of CV^2 - GE(2)						
Mean per capita income						
Household incomes based on individual incomes	0.257	0.269	0.217	0.203	0.229	0.317
Reported household incomes	0.272	0.297	0.266	0.248	0.273	0.318
Household incomes based on the sum of components of household incomes	0.237	0.252	0.209	0.167	0.200	0.284
Total household incomes	0.270	0.297	0.254	0.233	0.267	0.321
Mean per adult equivalent income (q=0.75)	0.268	0.299	0.256	0.232	0.259	0.319
Mean per adult equivalent income (OECD scale)	0.268	0.299	0.257	0.234	0.261	0.322

Note: * incomes only in two years (2000 and 2005) are taken into account.

Table E.4. Mobility measures for expenditure aggregates, matched samples of individuals within the balanced panel of households

	One-year periods					
	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005	2000-2005*
Mean log deviation - GE(0)						
All items (including durables and house restoration)						
Mean per capita expenditures (q=1)	0.199	0.193	0.177	0.188	0.193	0.284
Mean per adult equivalent expenditures (q=0,75)	0.201	0.198	0.182	0.192	0.198	0.287
Mean per adult equivalent expenditures (OECD scale)	0.201	0.196	0.180	0.190	0.196	0.286
Excluding durables and house restoration						
Mean per capita expenditures (q=1)	0.215	0.208	0.182	0.193	0.190	0.295
Mean per adult equivalent expenditures (q=0,75)	0.219	0.215	0.190	0.199	0.199	0.306
Mean per adult equivalent expenditures (OECD scale)	0.220	0.215	0.188	0.198	0.197	0.305
Gini coefficient						
All items (including durables and house restoration)						
Mean per capita expenditures (q=1)	0.094	0.091	0.083	0.090	0.092	0.133
Mean per adult equivalent expenditures (q=0,75)	0.095	0.093	0.086	0.092	0.094	0.136
Mean per adult equivalent expenditures (OECD scale)	0.094	0.093	0.085	0.091	0.092	0.135
Excluding durables and house restoration						
Mean per capita expenditures (q=1)	0.104	0.099	0.086	0.093	0.089	0.139
Mean per adult equivalent expenditures (q=0,75)	0.106	0.101	0.089	0.096	0.094	0.146
Mean per adult equivalent expenditures (OECD scale)	0.106	0.102	0.089	0.095	0.093	0.145
Half of CV2 - GE(2)						
All items (including durables and house restoration)						
Mean per capita expenditures (q=1)	0.353	0.293	0.312	0.312	0.313	0.403
Mean per adult equivalent expenditures (q=0,75)	0.357	0.309	0.318	0.317	0.316	0.417
Mean per adult equivalent expenditures (OECD scale)	0.358	0.306	0.316	0.316	0.316	0.411
Excluding durables and house restoration						
Mean per capita expenditures (q=1)	0.255	0.276	0.257	0.253	0.257	0.342
Mean per adult equivalent expenditures (q=0,75)	0.246	0.288	0.261	0.255	0.251	0.349
Mean per adult equivalent expenditures (OECD scale)	0.253	0.287	0.259	0.252	0.249	0.345

Note: * expenditures only in two years (2000 and 2005) are taken into account.

Table I.5. Mobility measures for cumulated incomes, the balanced panel of individuals

CUMULATED INCOMES	Time horizon				
	2000-2001	2000-2002	2000-2003	2000-2004	2000-2005
Mean log deviation - GE(0)					
Mean per capita income					
Household incomes based on individual incomes	0.214	0.297	0.336	0.356	0.377
Reported household incomes	0.201	0.293	0.345	0.379	0.406
Household incomes based on the sum of components of household incomes	0.211	0.287	0.326	0.341	0.356
Total household incomes	0.206	0.298	0.345	0.372	0.392
Mean per adult equivalent income (q=0.75)	0.209	0.304	0.350	0.376	0.397
Mean per adult equivalent income (OECD scale)	0.210	0.304	0.351	0.378	0.398
Gini coefficient					
Mean per capita income					
Household incomes based on individual incomes	0.088	0.135	0.156	0.167	0.179
Reported household incomes	0.089	0.139	0.165	0.180	0.195
Household incomes based on the sum of components of household incomes	0.090	0.125	0.145	0.154	0.163
Total household incomes	0.094	0.144	0.168	0.181	0.194
Mean per adult equivalent income (q=0.75)	0.096	0.146	0.171	0.185	0.198
Mean per adult equivalent income (OECD scale)	0.096	0.147	0.172	0.185	0.199
Half of CV^2 - GE(2)					
Mean per capita income					
Household incomes based on individual incomes	0.260	0.355	0.382	0.403	0.445
Reported household incomes	0.280	0.394	0.441	0.468	0.504
Household incomes based on the sum of components of household incomes	0.238	0.338	0.368	0.384	0.418
Total household incomes	0.275	0.394	0.438	0.460	0.498
Mean per adult equivalent income (q=0.75)	0.273	0.395	0.440	0.463	0.497
Mean per adult equivalent income (OECD scale)	0.273	0.395	0.441	0.464	0.499

Table E.5. Mobility measures for cumulated expenditure aggregates, the balanced panel of individuals

CUMULATED EXPENDITURES	Time horizon				
	2000-2001	2000-2002	2000-2003	2000-2004	2000-2005
Mean log deviation - GE(0)					
All items (including durables and house restoration)					
Mean per capita expenditures (q=1)	0.200	0.277	0.318	0.360	0.401
Mean per adult equivalent expenditures (q=0.75)	0.201	0.281	0.323	0.365	0.408
Mean per adult equivalent expenditures (OECD scale)	0.201	0.280	0.322	0.364	0.405
Excluding durables and house restoration					
Mean per capita expenditures (q=1)	0.215	0.293	0.328	0.364	0.400
Mean per adult equivalent expenditures (q=0,75)	0.219	0.301	0.337	0.373	0.412
Mean per adult equivalent expenditures (OECD scale)	0.220	0.301	0.337	0.374	0.411
Gini coefficient					
All items (including durables and house restoration)					
Mean per capita expenditures (q=1)	0.094	0.135	0.157	0.183	0.205
Mean per adult equivalent expenditures (q=0.75)	0.095	0.136	0.159	0.185	0.209
Mean per adult equivalent expenditures (OECD scale)	0.094	0.136	0.158	0.184	0.207
Excluding durables and house restoration					
Mean per capita expenditures (q=1)	0.104	0.145	0.165	0.186	0.204
Mean per adult equivalent expenditures (q=0,75)	0.106	0.149	0.168	0.191	0.211
Mean per adult equivalent expenditures (OECD scale)	0.106	0.149	0.169	0.191	0.211
Half of CV^2 - GE(2)					
All items (including durables and house restoration)					
Mean per capita expenditures (q=1)	0.356	0.449	0.502	0.539	0.574
Mean per adult equivalent expenditures (q=0,75)	0.357	0.460	0.513	0.551	0.586
Mean per adult equivalent expenditures (OECD scale)	0.358	0.458	0.511	0.549	0.583
Excluding durables and house restoration					
Mean per capita expenditures (q=1)	0.255	0.362	0.403	0.442	0.484
Mean per adult equivalent expenditures (q=0,75)	0.246	0.365	0.406	0.447	0.488
Mean per adult equivalent expenditures (OECD scale)	0.253	0.367	0.408	0.446	0.485

Table 6. International comparisons

Country	Period	MLD	Gini	GE(2)	Source	Note
Russia	1994-1998	0.429	0.217	0.410	Jovanovic (2000)	Per adult equivalent non-durable expenditures (q=0.75), households
	2000-2005	0.356	0.163	0.418	Authors' calculations	Per capita incomes based on the sum of components of household incomes
	2000-2005	0.397	0.198	0.497	Authors' calculations	Per adult equivalent incomes (q=0.75)
	2000-2005	0.412	0.211	0.488	Authors' calculations	Per adult equivalent non-durable expenditures (q=0.75)
Belgium	1994-1999	0.301	0.145		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Canada	1993-1998	0.199	0.091	0.187	Chen (2006)	Per adult equivalent incomes (q=0.5)
Denmark	1994-1999	0.333	0.153		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
	1986-1990		0.054		Aaberge et al (2002)	Administrative data
France	1994-1999	0.274	0.093		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Germany	1993-1998	0.241	0.109	0.203	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1994-1999	0.252	0.100		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Greece	1994-1999	0.322	0.131		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Ireland	1994-1999	0.169	0.073		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Italy	1994-1999	0.345	0.119		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Netherlands	1994-1999	0.325	0.112		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Norway	1986-1990		0.075		Aaberge et al (2002)	Administrative data
Portugal	1994-1999	0.228	0.079		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
South Africa	1993, 1998		0.093-0.116		Woolard and Klasen (2005)	Per adult equivalent incomes (α=1, β=0.5, q=0.9)
Spain	1994-1999	0.309	0.101		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
Sweden	1986-1990		0.097		Aaberge et al (2002)	Administrative data
UK	1991-1994	0.20	0.09	0.29	Jarvis and Jenkins (1998)	
	1993-1998	0.294	0.124	0.240	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1994-1999	0.251	0.103		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
USA	1993-1998	0.242	0.107	0.230	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1992-1997	0.254	0.092		Gangl (2005)	Population aged 25 to 55 (α=0.5 for the 2nd adult, 0.3 for other hh members)
	1986-1990		0.060		Aaberge et al (2002)	

Table I.7. Transition matrix, per adult equivalent income (q=0.75), individuals: 2000-2005

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Total
D1	30.3	17.2	9.4	12.3	9.0	5.3	4.9	2.9	3.7	5.1	100.0
D2	23.9	15.8	12.1	9.3	13.6	7.9	5.7	4.9	3.4	3.4	100.0
D3	12.4	19.7	15.9	15.6	9.5	7.7	5.5	3.2	6.7	3.9	100.0
D4	7.7	14.9	18.9	13.2	11.0	11.8	8.5	4.3	6.3	3.5	100.0
D5	3.1	7.0	16.0	12.9	11.1	12.7	11.9	11.3	7.6	6.4	100.0
D6	4.9	6.1	9.1	10.5	11.5	11.5	14.8	12.3	11.3	8.1	100.0
D7	6.5	4.3	6.1	7.1	12.4	11.0	13.8	17.3	10.0	11.4	100.0
D8	4.3	3.5	6.1	7.8	8.4	17.7	10.6	15.3	16.3	10.0	100.0
D9	3.2	4.2	5.0	6.9	4.0	6.9	15.8	14.5	19.0	20.6	100.0
D10	3.9	6.9	1.6	4.7	9.3	7.7	8.5	14.2	15.6	27.6	100.0

Immobility ratio-1 (%) = 17.3
Immobility ratio-2 (%) = 44.9
Moving up (%) = 40.9
Moving more than 2 deciles up (%) = 18.8
Moving down (%) = 41.7
Moving more than 2 deciles down (%) = 16.5
Average absolute jump = 2.26

Table E.7. Transition matrix, per adult equivalent non-durable expenditures (q=0.75), individuals: 2000-2005

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	Total
D1	20.8	20.5	18.5	10.6	5.9	7.6	6.8	2.4	3.0	3.7	100
D2	14.1	14.8	13.9	15.6	10.4	10.2	7.2	5.7	5.7	2.6	100
D3	13.7	17.9	7.0	13.0	12.4	11.0	7.3	7.5	6.9	3.4	100
D4	12.0	10.8	10.8	12.4	13.3	9.8	14.0	6.3	7.9	2.7	100
D5	8.8	8.5	9.9	9.6	12.5	14.3	9.1	9.7	9.3	8.2	100
D6	6.3	8.6	11.6	13.0	12.4	8.7	8.9	11.3	9.0	10.2	100
D7	7.5	5.3	8.5	6.9	11.4	12.2	11.3	14.3	13.3	9.3	100
D8	7.4	4.5	7.9	6.2	11.3	8.0	15.0	12.4	12.8	14.5	100
D9	4.1	6.4	6.0	5.5	5.4	10.7	12.1	16.4	18.9	14.4	100
D10	5.5	2.3	6.0	7.2	5.4	7.0	8.3	14.6	13.0	30.8	100

Immobility ratio-1(%) = 14.9
Immobility ratio-2 (%) = 39.6
Moving up (%) = 43.5
Moving more than 2 deciles up (%) = 20.5
Moving down (%) = 41.6
Moving more than 2 deciles down (%) = 10.9
Average absolute jump = 2.47

Table 8. Transition matrices: summary measures (year-to-year), individuals – per adult equivalents

	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
Incomes					
Immobility ratio-1 (%)	25.8	24.5	26.6	25.8	26.5
Immobility ratio-2 (%)	55.8	54.0	57.8	57.4	59.2
% moving up	37.0	38.0	36.2	35.5	37.2
% moving more than 2 deciles up	14.5	14.5	12.3	12.9	12.2
% moving down	37.1	37.5	37.3	38.7	36.3
% moving more than 2 deciles down	14.2	14.2	12.5	12.0	12.3
Average absolute jump	1.87	1.92	1.78	1.73	1.66
Non-durable expenditures					
Immobility ratio-1 (%)	18.8	19.0	20.9	21.4	21.8
Immobility ratio-2 (%)	48.3	48.4	49.3	51.7	51.2
% moving up	40.2	41.2	38.6	38.9	39.3
% moving more than 2 deciles up	16.1	15.8	14.1	15.1	14.9
% moving down	41.0	39.8	40.4	39.7	38.8
% moving more than 2 deciles down	7.8	8.4	7.4	7.7	8.0
Average absolute jump	2.07	2.04	1.91	1.93	1.95

Table 9. Absolute mobility: Fields-Ok index, per adult equivalents (q=0.75)

Time period	Incomes			Non-durable expenditures		
	M	M_G(%)	M_T(%)	M	M_G(%)	M_T(%)
2000-2001	0.551	41.9	58.1	0.501	19.9	80.1
2001-2002	0.525	22.9	77.1	0.480	1.9	98.1
2002-2003	0.472	25.0	75.0	0.452	11.4	88.6
2003-2004	0.433	24.6	75.4	0.458	12.4	87.6
2004-2005	0.425	31.3	68.7	0.465	5.5	94.5
2000-2005	0.844	82.7	17.3	0.638	38.1	61.9

Table 10. Absolute log income movements: international comparisons, longer periods

Country	Period	Fields-OK index	MG	MT	Source	Note
Russia	2000-05	0.844	82.7	17.3	Authors' calculations	Per adult equivalent incomes (q=0.75)
Canada	1996-00	0.332	39.7	60.3	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1999-03	0.317	26.6	73.4	Chen (2006)	Per adult equivalent incomes (q=0.5)
USA	1996-00	0.444	30.0	70.0	Chen (2006)	Per adult equivalent incomes (q=0.5)
UK	1993-97	0.373	27.4	72.6	Ayala & Sastre (2008)	Modified OECD equivalence scale (α=0.5, β=0.3, q=1)
	1993-97	0.392	22.5	77.5	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1996-00	0.388	26.9	73.1	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1998-02	0.416	30.0	70.0	Chen (2006)	Per adult equivalent incomes (q=0.5)
Germany	1993-97	0.254	1.8	98.2	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1993-97	0.309	19.1	80.9	Ayala & Sastre (2008)	Modified OECD equivalence scale (α=0.5, β=0.3, q=1)
	1996-00	0.269	23.7	76.3	Chen (2006)	Per adult equivalent incomes (q=0.5)
	1998-02	0.270	24.9	75.1	Chen (2006)	Per adult equivalent incomes (q=0.5)
China	1993-97	0.847			Ding & Wang (2008)	Household incomes
	1997-00	0.757			Ding & Wang (2008)	Household incomes
France	1993-97	0.250	33.5	66.5	Ayala & Sastre (2008)	Modified OECD equivalence scale (α=0.5, β=0.3, q=1)
Italy	1993-97	0.360	4.6	95.4	Ayala & Sastre (2008)	Modified OECD equivalence scale (α=0.5, β=0.3, q=1)
Spain	1993-97	0.390	1.4	98.6	Ayala & Sastre (2008)	Modified OECD equivalence scale (α=0.5, β=0.3, q=1)

Table I.11. Absolute log income movements (2000-2005) by deciles of income distribution, Fields-Ok index (the balanced panel of individuals)

Decile position	Decile position defined in 2000	Relative contribution to overall mobility	% of losers	Decile position defined in 2005	Relative contribution to overall mobility	% of losers	Decile position in the "permanent" incomes distribution	Relative contribution to overall mobility	% of losers
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Entire sample	*0.840*		*14.0*	*0.840*		*14.0*	*0.840*		*14.0*
1	1.658	19.8	1.4	0.706	8.4	40.2	0.992	11.8	12.9
2	1.070	12.8	4.1	0.637	7.5	24.9	0.881	10.5	13.9
3	0.912	10.9	4.1	0.611	7.3	15.8	0.845	10.0	11.5
4	0.804	9.6	4.7	0.746	8.9	17.6	0.806	9.6	16.8
5	0.824	9.9	3.7	0.828	9.9	11.7	0.847	10.1	14.0
6	0.757	8.9	10.2	0.774	9.2	9.6	0.852	10.2	12.9
7	0.701	8.4	13.7	0.840	10.0	7.4	0.759	9.0	15.0
8	0.535	6.4	20.1	0.872	10.3	9.3	0.891	10.6	14.1
9	0.554	6.6	23.7	1.014	12.0	2.5	0.735	8.8	13.7
10	0.583	6.9	54.4	1.374	16.3	0.8	0.794	9.4	15.1

Table 12. "Duration" of poverty and richness

Number of years in the bottom quintile	% of individuals	Number of years in the top quintile	% of individuals
0	53.2	0	50.6
1	16.4	1	19.5
2	10.0	2	11.7
3	7.6	3	6.6
4	5.6	4	4.5
5	4.5	5	3.5
6	2.7	6	3.6
N	4873		

Table I.13. Decomposition of changes in income inequality

Initial year	Final year	Initial Gini	Final Gini	ΔGini	Reranking	Pro-poor growth
Entire period						
2000	2005	0.387	0.360	-0.027	0.207	0.234
2000-02	2003-05	0.330	0.319	-0.011	0.101	0.112
Yearly						
2000	2001	0.387	0.397	0.010	0.173	0.164
2001	2002	0.397	0.378	-0.019	0.171	0.189
2002	2003	0.378	0.368	-0.010	0.148	0.157
2003	2004	0.368	0.362	-0.007	0.122	0.129
2004	2005	0.362	0.360	-0.002	0.124	0.126

Table E.13. Decomposition of changes in expenditures inequality (non-durables)

Initial year	Final year	Initial Gini	Final Gini	ΔGini	Reranking	Pro-poor growth
Entire period						
2000	2005	0.358	0.366	0.008	0.219	0.211
2000-02	2003-05	0.304	0.309	0.005	0.096	0.091
Yearly						
2000	2001	0.358	0.361	0.003	0.155	0.152
2001	2002	0.361	0.353	-0.008	0.146	0.154
2002	2003	0.353	0.355	0.002	0.132	0.130
2003	2004	0.355	0.362	0.007	0.138	0.130
2004	2005	0.362	0.366	0.003	0.145	0.141

Table I.14. Composition of incomes by income source

	All persons	Household type					
		Single elderly	Multiple elderly	Other without kids	Single parent	Other with 1 kid	Other with 2 or more kids
Per adult equivalent income (average for 2000-2005)	2035	1413	1838	2358	1954	2191	1620
Household income (average for 2000-2005)	4882	1536	3082	5024	4119	5654	4871
Income source as % of household income							
Private transfers	0.02	0.08	0.04	0.02	0.05	0.02	0.02
Child allowances	0.01	0.00	0.00	0.00	0.02	0.01	0.01
Earnings	0.77	0.14	0.17	0.74	0.77	0.85	0.84
Pensions	0.17	0.73	0.75	0.22	0.11	0.10	0.10
Benefit income	0.01	0.00	0.00	0.01	0.01	0.01	0.01
Investment income and rents	0.00	0.01	0.00	0.00	0.00	0.01	0.00
Alimony	0.01	0.00	0.00	0.00	0.03	0.01	0.01
Subsidies	0.01	0.04	0.03	0.01	0.01	0.01	0.01
Household size	3.34	1.12	2.00	2.79	2.59	3.60	4.54
Equivalence scale (hh size^0.75)	2.43	1.08	1.68	2.13	2.02	2.59	3.09
Number of persons	3812	160	291	1059	103	1290	909
As % of all persons	100.0%	4.2%	7.6%	27.8%	2.7%	33.8%	23.8%

Table I.15. Longitudinal variability of income and household size, and the proportionate contribution of income components to longitudinal income variability

	All persons	Household type					
		Single elderly	Multiple elderly	Other without kids	Single parent	Other with 1 kid	Other with 2 or more kids
CV (per adult equivalent income)	0.44	0.31	0.30	0.43	0.49	0.45	0.50
CV (household income)	0.45	0.34	0.32	0.44	0.51	0.46	0.51
Proportionate contribution of income component to longitudinal income variability							
Private transfers	0.03	0.08	0.05	0.03	0.05	0.02	0.03
Child allowances	0.01	0.00	0.00	0.00	0.01	0.01	0.01
Earnings	0.70	0.10	0.14	0.68	0.74	0.83	0.83
Pensions	0.23	0.77	0.77	0.27	0.12	0.11	0.10
Benefit income	0.01	0.00	0.00	0.01	0.01	0.01	0.01
Investment income and rents	0.00	0.01	0.00	0.00	0.00	0.01	0.00
Alimony	0.01	0.00	0.00	0.00	0.05	0.01	0.01
Subsidies	0.01	0.05	0.03	0.01	0.02	0.01	0.01
CV (household size)	0.11	0.09	0.08	0.13	0.13	0.11	0.08
CV (equivalence scale=hh size^0.75)	0.08	0.07	0.06	0.10	0.10	0.08	0.06
Number of persons	3812	160	291	1059	103	1290	909
As % of all persons	100.0%	4.2%	7.6%	27.8%	2.7%	33.8%	23.8%

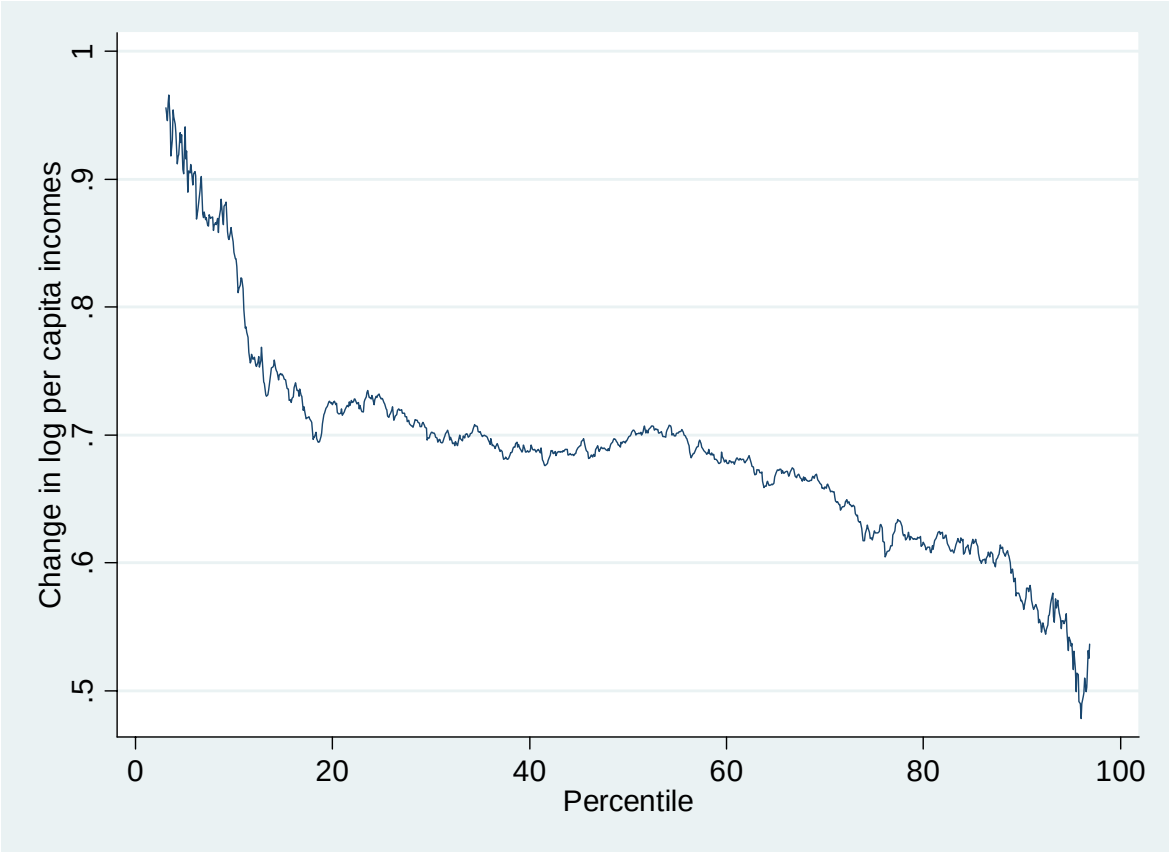
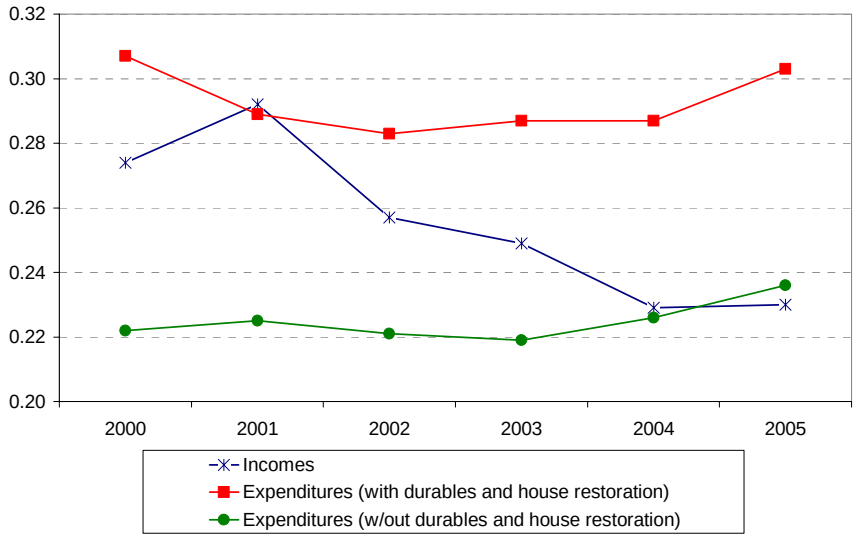
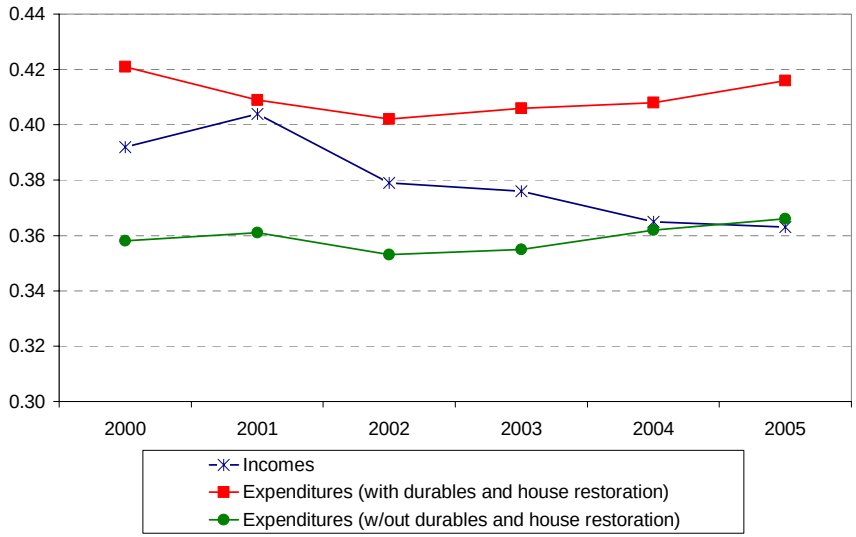


Figure 1. Changes in log per capita incomes: 2000-2005 (the balanced panel)

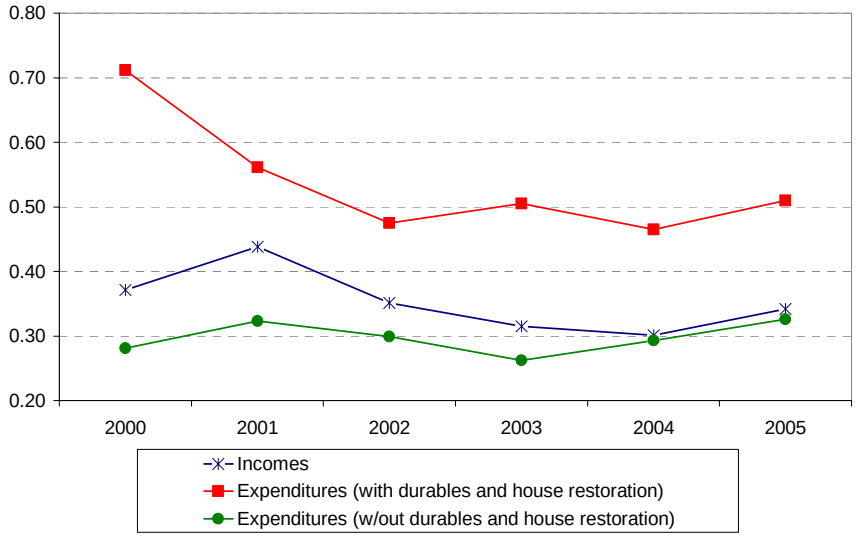
Figure 2. Dynamics of per adult equivalent incomes and expenditures (q=0.75)



a. Mean log deviation – GE(0)



b. Gini coefficient



c. Half of CV^2 - GE(2)

Figure 3. Evolution of inequality: per adult equivalents (q=0.75)

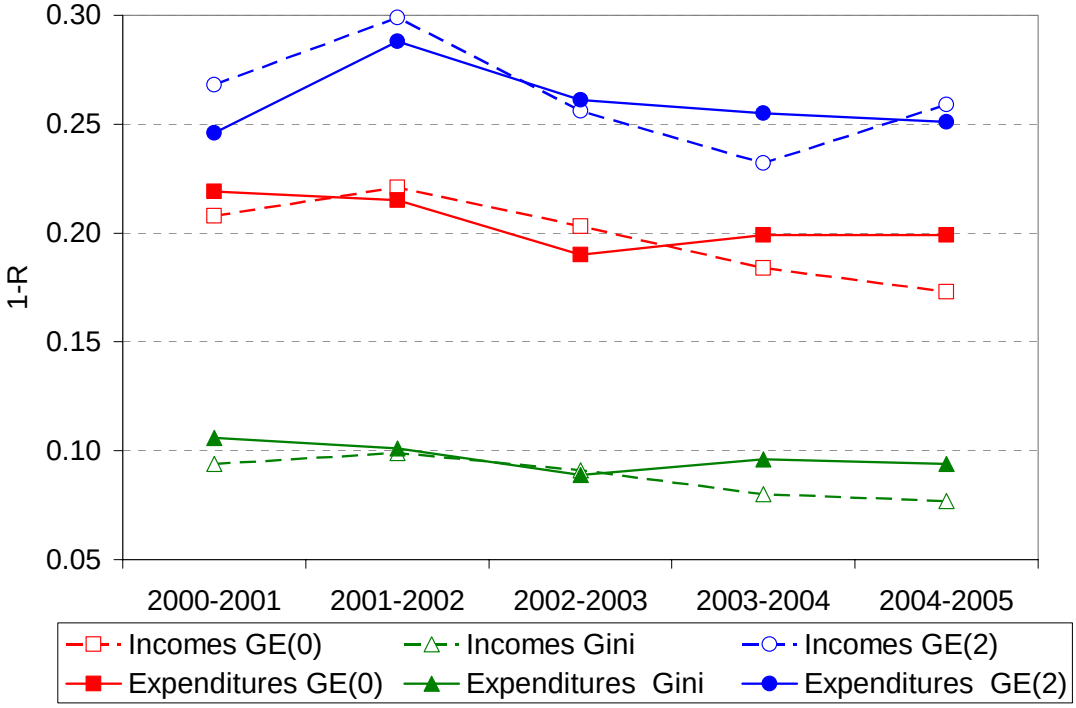


Figure 4. Year-to-year mobility of per adult equivalent incomes and non-durable expenditures (q=0.75)

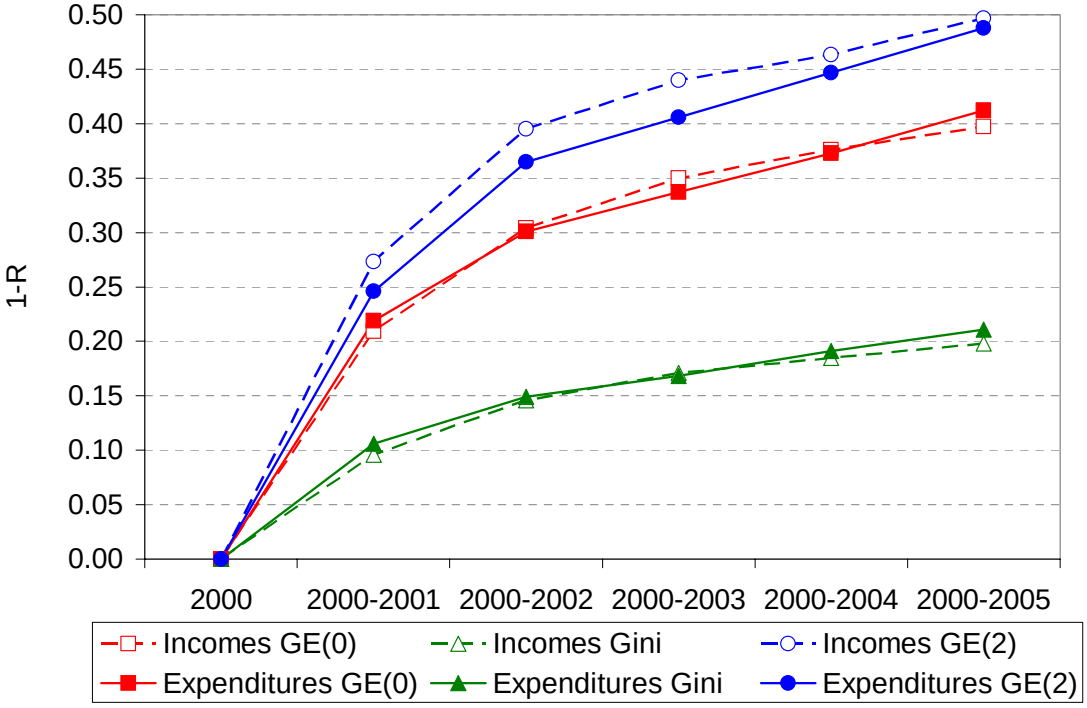


Figure 5. Mobility of cumulated per adult equivalent incomes and non-durable expenditures (q=0.75)

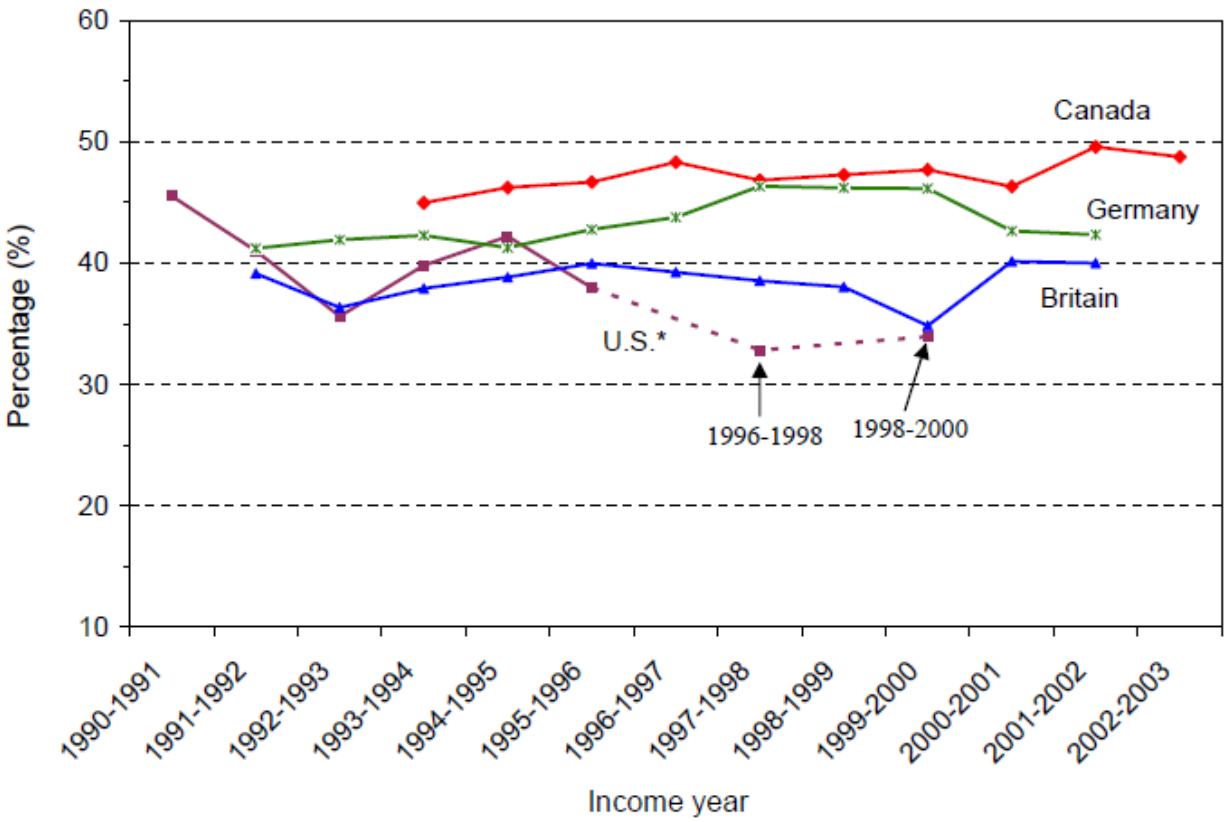


Figure 6. Percentage of staying in the same decile group (immobility ratio -1)
Source: Chen (2006).

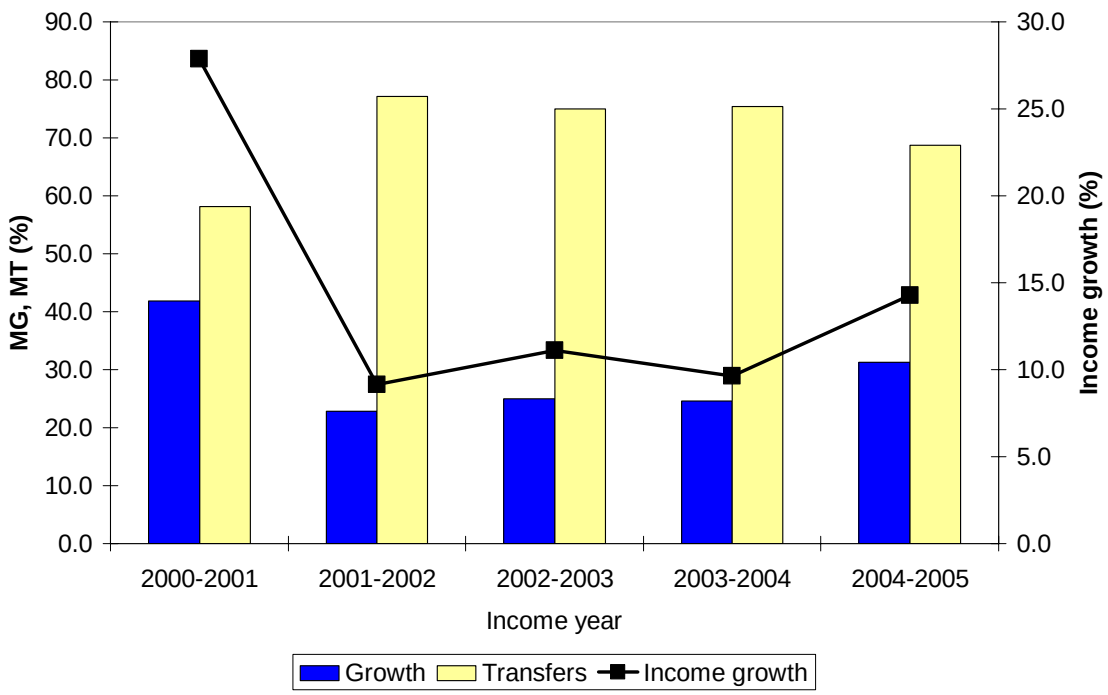


Figure 7. Fields-Ok index

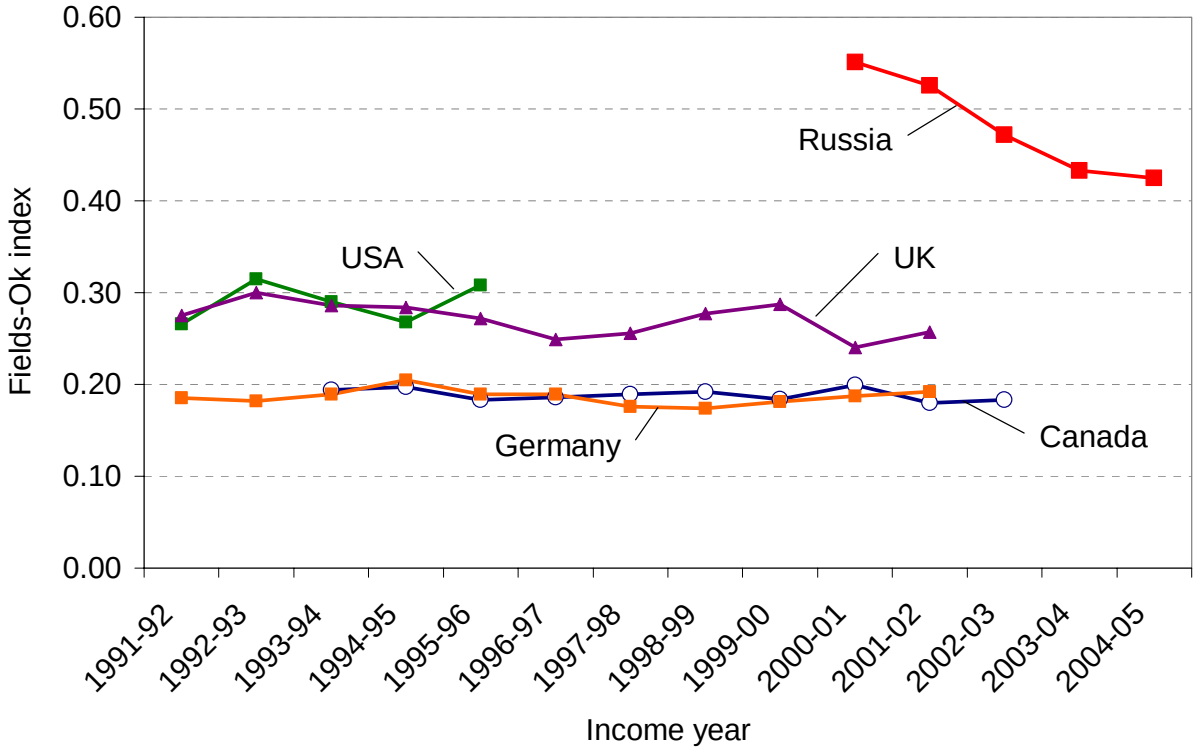
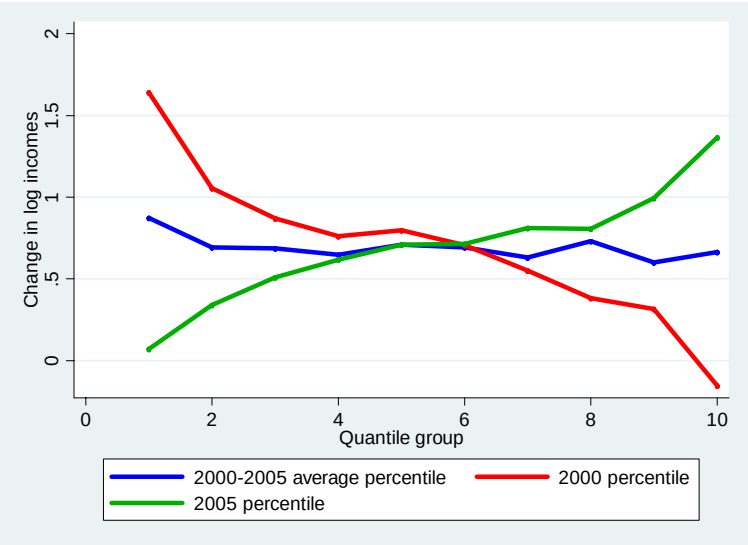
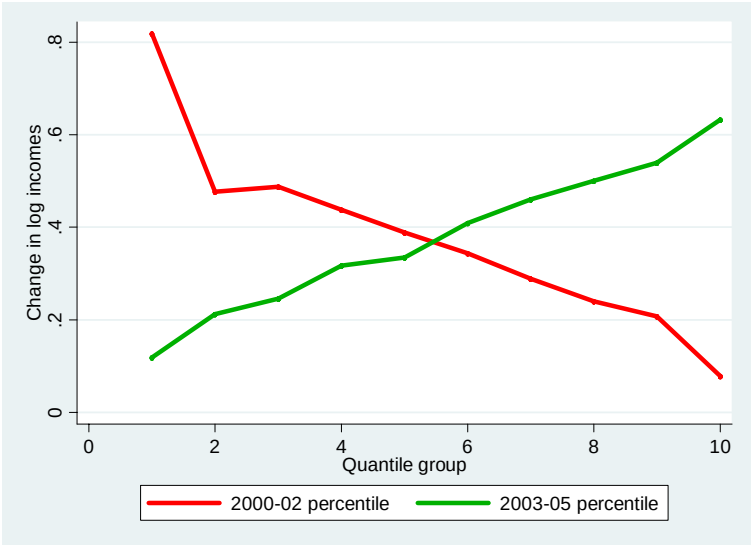


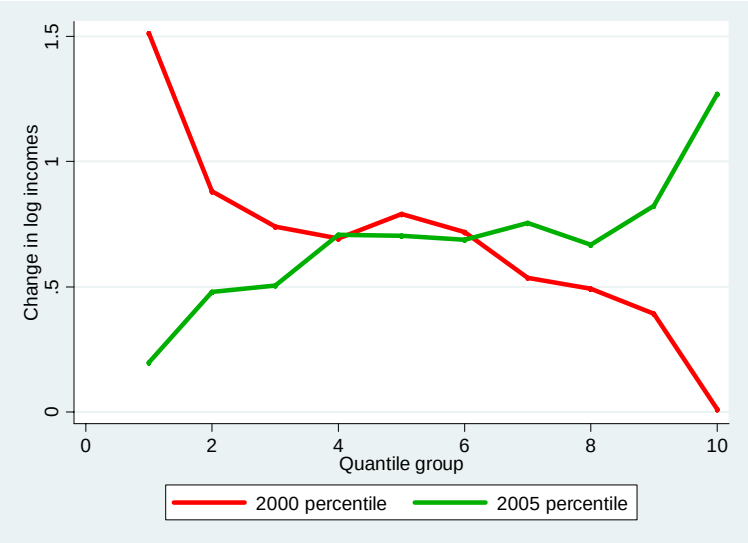
Figure 8. Fields-Ok index: international comparisons
Source: Russia – authors' calculations: Canada, Germany, UK, USA - Chen (2006).



A. All individuals



C. Incomes averaged over 3-year sub-periods



B. Excluding those only one year poor or rich over the period

Figure 9. Change in log-incomes between 2000 and 2005

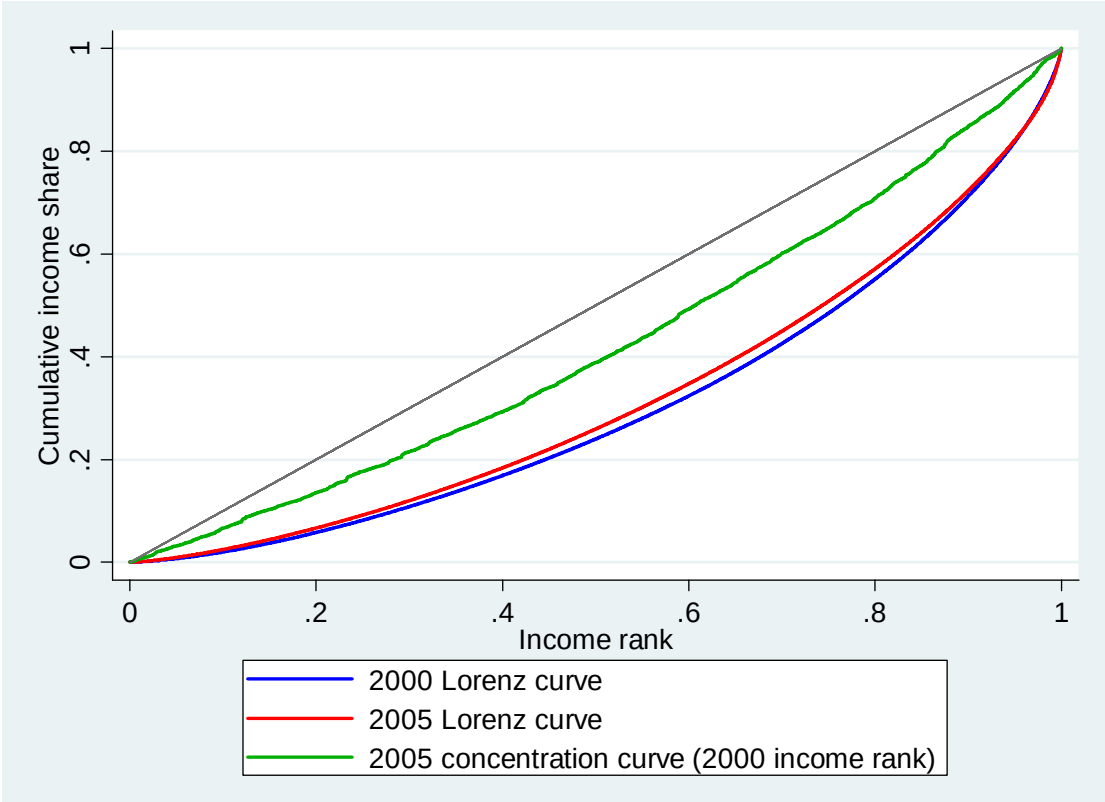


Figure 10. Decomposition of inequality change

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