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SENSITIVITY OF POVERTY AND INEQUALITY STATISTICS TO ALTERNATIVE DEFINITIONS OF HOUSEHOLD WELFARE

ILLUSTRATION USING THE NOBUS SURVEY[1]

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Abstract

In Russia, ROSSTAT, the Statistical Agency of the Federation, monitors poverty based on the annual Household Budget Survey. Although the HBS collects very detailed information on household consumption, the information on other dimensions of well-being is very limited. This has restricted both the analyses that can be undertaken with HBS, and the methodological choices for the construction of the welfare aggregate. Aware of these limitations, ROSSTAT revised the HBS questionnaire in the last quarter of 2005.

In this paper, we use a multi-topic household survey, NOBUS, which collects a richer set of data on consumption and household characteristics, to illustrate two points. First, we show how household welfare and poverty can be measured with a survey specially designed for this purpose. Second, we investigate the impact of alternative methodological choices on poverty and inequality, such as accounting for the consumption of durables, housing, subsidies for privileged citizens and rural-urban differences in the cost of living. We compare different welfare aggregates – constructed to take into account the data limitations of HBS or the methodological choices currently endorsed by ROSSTAT – with a benchmark aggregate constructed according to the recommendations of renowned international experts, and highlight those situations with substantial loss of precision. We use simulations to highlight those changes in the official methodology for poverty measurement that will generate the highest payoffs in terms of precision, and indicate what additional data is required. We also point toward second-best solutions – methodological changes with smaller loss of precision – that can be implemented even without changing the HBS questionnaire.

The simulations suggest that only the current treatment of durable goods – whose purchase price, not user-value, is included in the welfare aggregate estimated by ROSSTAT – results in an artificially large increase in inequality. The Gini index goes up from 0.28 to 0.41, placing Russia as an outlier in terms of inequality within all transition economies, and close to high-inequality countries in Latin America. Such imprecision can be eliminated, this paper illustrates, by collecting better information on durables and housing to estimate the user-value of these goods. If such an option is not endorsed, the next-best alternative would be to exclude the consumption of durable goods and housing from the welfare aggregate.

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Summary

1. Key Messages

Since 1992, when the Russian government adopted its first official poverty methodology, poverty is measured and monitored using two indicators derived from the Household Budget Survey (HBS) – income and consumption –, and an absolute poverty line. The consumption and income aggregates are derived from HBS, which collects information from a nationally- and regionally-representative sample of 49,000 households. The absolute poverty line is based on a normative basket for both food and non-food goods. Initially, the composition of this basked was the same across Russia and it was valued at prices in each region. Since 2000, this basket is adopted by the legislatures of each region or republic. While this allows adapting the definition of poverty to regional circumstances, it introduces inconsistency in poverty measurement: two persons earning the same real income may be classified poor in one region but not in another (Ravallion and Lokshin, 2003).

The main purpose of the HBS is to provide information about the average consumption pattern of the population to provide weights for the consumer price indices and calibrate the household account from the system of national accounts (Gibson, 2004). It was not designed for poverty measurement and analysis. HBS collects detailed information on household purchases, consumption and capital transactions, plus a limited set of information about household composition. Compared to surveys designed to measure and analyze poverty, such as the Living Standard Measurement (LSM) surveys[2], the information from HBS was pretty limited. The small range of household characteristics captured by HBS was limiting, in turn, the ability of ROSSTAT or other researchers to investigate the factors associated with poverty, i.e. limiting the depth of the poverty profile that can be derived from the survey data.

In 2003, ROSSTAT implemented a multi-topic survey, "*The Sample Survey of Household Welfare and Participation in Social Programs*" or NOBUS[3], for its Russian acronym. The NOBUS is a cross-section survey, with a sample of about 45,000 households, representative for 46 out of the 89 regions of the Russian Federation. NOBUS has two features which set it apart from the HBS:

(i) It is a multi-topic household survey. By multi-topic survey, we mean that the survey collects detailed information on household consumption (and, to a lesser extent, income), together with information on household demographics, education, labor market participation, access to health, education and social programs, and subjective perceptions of household welfare[4]. Its multi-topic character gave impetus to a broad range of economic analyses looking into the association between poverty and other dimensions of well-being, by Russian and international researchers[5].

(ii) It includes well-designed modules that collect consumption information following international best-practice (Grosh and Gleewe, 2000; United Nations, 2005). The NOBUS has specially designed modules measuring household consumption, including the welfare derived from durables, housing or from the goods and services provided at subsidized prices to poor or privileged citizens. These are important elements of household well-being in Russia, probably

[2] The LSM surveys are multi-topic surveys especially designed to measure and analyze living standards and poverty. Typically, these surveys collect detailed information on household access to education, health, basic services and other aspects of well-being.

[3] Data, documentation and a selection of papers based on the NOBUS data are available on-line at: http://nobus.worldbank.org.ru.

[4] NOBUS is not the only multi-topic household survey implemented in Russia; another example is the Russian Longitudinal Monitoring Survey (RLMS). Data, documentation and a selection of papers based on the RLSM data are available on-line at: http://www.cpc.unc.edu/projects/rlms/home.html.

[5] Gimpelson et al. (2005), Hamilton et al. (2005), IISP(2005), Ovtcharova and Pishnyak (2003a, 2003b), Ovtcharova and Prokofieva (2004), Ovtcharova and Popova (2005), UNDP (2005), World Bank (2005).

more so compared to many other countries. Taking these dimensions into account is important for a more precise estimation of household welfare.

With the NOBUS, researchers can build a more comprehensive and precise consumption aggregate than with the HBS, allowing a better ranking of household in terms of monetary welfare. While not comparable with the HBS (for key differences, see Box 1), the NOBUS can be used to illustrate and measure the difference between an "ideal" welfare indicator and the one constructed according to the official methodology[6].

Box 1. Key differences between consumption information in HBS and NOBUS

The consumption information collected by the HBS and the NOBUS survey differs with respect to:

- The data collection method. To collect information on household consumption or purchases, the HBS uses the diary method, while NOBUS uses the recall method. In the HBS, each participating household fills in a diary all items bought or consumed during a period of one month during the quarter, and records in a log-book the non-food or services purchased during the rest of the quarter. In the NOBUS, the most knowledgeable person is interviewed by the survey staff on the spending or consumption from a given period.
- The coverage of the consumption information. The NOBUS collects information on 67 food and beverages, 39 non-food items and 23 durable goods. The spending on housing and utility services, education or health is recorded in special modules. The level of detail is higher in the HBS, and varied from year to year. During 1997-2000, HBS collected information on 85 food and beverage items, 116 non-food (including utilities and purchase of durable goods) and 64 types of services. The level of detail changed in 2001 (less detailed) and then again in 2002 (more detailed: 160 food items, 202 non-food items and 80 types of services). As documented in the household survey literature (Lanjouw and Lanjouw, 2001), the higher level of detail in HBS would help household recall or record more transactions compared to NOBUS, and would result in a higher reported consumption aggregate, ceteris paribus.
- The recall period for different commodity groups. In line with the LSMS practice, the recall period in the NOBUS varies with the frequency with which the items are consumed or purchased: 14 days for food items, 30 days for high-frequency non-food items (such as personal care items), three months for services and 12 months for low-frequency non-food items (such as clothing). In HBS, all items purchased or consumed (food, non-food and services) are recorded into a diary held by the household for one month, while non-food and services purchased in the rest of the quarter are recorded in a log-book.

In this paper, we use the NOBUS as an experimental laboratory to test how sensitive poverty, inequality and distributional statistics are to alternative definitions of the consumption aggregate and poverty lines, all benchmarked against a preferred definition of consumption in line with the international best-practice. We construct a preferred, benchmark consumption aggregate, following the recommendation of Deaton and Zaidi (1999), Hentchel and Lajouw (1996), Gibson and Poduzov (2003). For the estimation of the poverty lines, we follow the methodology outlined in Kakwani and Sajaia (2004), as well as Ravallion (1994, 1998). The paper complements earlier work by IISP (2005) to develop welfare aggregate and poverty counts based on the NOBUS.

[6] For a description and a critical review of the official methodology used to estimate poverty in Russia, see World Bank (2005).

The following sensitivity tests are considered in the paper[7]: How much poverty and inequality would change, on aggregate and for selected population subgroups, if:

- Certain consumption items, such as durable goods, housing, the subsidized consumption of privileged citizens, would not be included in the consumption aggregate;
- The method to estimate the contribution of certain commodity groups to household welfare would diverge from the international best-practice (using different methods to estimate the contribution of durable goods and housing services to total household welfare);
- Finer adjustments are made for regional price variation, such as accounting for region- *and* area-specific price differences.

These sensitivity tests inform the research and academic community in Russia, and ROSSTAT in particular, on the value added of improving the coverage of the consumption aggregate and adjusting the methodology used to construct the welfare indicator. The paper highlights what changes to the HBS questionnaire are required to implement these methodological improvements. We also point toward second-best solutions – methodological changes with smaller loss of precision – that can be implemented with the current (as of 2005) questionnaire design.

The main findings and recommendations of the paper can be summarized as follows:

(i) **The treatment of durables in the official methodology artificially increases inequality, while having a modest impact on poverty numbers**. Our simulation with the NOBUS data suggests that, by including the purchases of recent durable goods instead of the user-value of the whole stock of durables, the Gini index goes up from 0.28 to 0.38. Gibson (2004) finds a similar result using HBS 2002, with Gini index falling from 0.45 to 0.36 when the purchase of durables is excluded from the consumption aggregate. Similarly, a regional study of poverty in transition economies which uses a comparable consumption indicator (World Bank, 2005) reports a Gini index of 0.37 for the Russian Federation. To obtain accurate inequality statistics, ROSSTAT has two options: to collect the data required to estimate the user value of the stock of durables, or to exclude all durable information from the household consumption.

(ii) **Properly accounting for the welfare derived by homeowners and tenants from the houses they live in results in a higher consumption and welfare level**, about 20% on average, although it is difficult to precisely measure this component. The unfinished privatization of the housing stock and of communal and housing services pose substantial difficulties in obtaining a market-based measure of the household welfare derived from housing in Russia. Market-based rents are still rare (up to 2% of the dwelling stock), while subsidized "social rent" dominate the market (Hamilton et al, 2005). The rents paid on the private market, and those estimated by owners, are both consistent and substantially higher. The paper illustrates that ignoring the rental value of the housing stock underestimates the true level of household welfare in Russia by 20%.

(iii) **The treatment of housing in the official methodology** – where reported rents (often below-market value) are included in the consumption of tenants, while the rental value of the dwelling is omitted from the welfare of the homeowners – **has a modest impact on overall poverty or inequality numbers, but distorts the relative poverty ranking between homeowners and tenants.** Compared to the preferred, benchmark methodology to estimate poverty, the incidence of poverty among homeowners is overestimated by seven percentage points (30.3 instead of 23.5

[7] There are other aspects that are likely to have important consequences on the reliability of official poverty statistics derived from HBS in Russia, such as the seasonality of consumption and use of an imitation model to calibrate the micro data to its mean value derived from the national accounts. These issues, although important, are not explored in this paper.

in the benchmark), while poverty among tenants' is underestimated by 8 percentage points (15.0% compared to 23.1% in the benchmark). This distortion is higher for the subgroup of residents living in large cities. The paper illustrates different ways to account for the full value of the housing services in the estimation of household welfare.

(iv) **The HBS data collection procedures for the consumption of subsidized goods or services by privileged or poor citizens do not affect the overall poverty or inequality numbers substantially, although underestimates the welfare of this category of the population**. As of 2003, the welfare derived from consumer subsidies was an important component of household welfare in Russia. The fiscal and quasi-fiscal cost of these services was estimated at 4.4% of GDP in 2002 (World Bank, 2005), of which 2.4% of GDP was in explicit subsidies. Asking households to estimate the value of these explicit subsidies – the HBS practice up to 2005 – produces estimates which are severely biased downwards (equivalent to 0.5% of GDP). The NOBUS uses an improved module to collect information on the value of subsidized consumption, which eliminates the bias. However, the impact on the overall poverty and inequality numbers is small and non-significant, reflecting the fact that the bulk of these subsidies are not targeted to the poorest Russian, but distributed across the whole income spectrum.

(v) **The current treatment of food price differences across areas of residence exacerbates the rural-urban poverty differential, but not by a large amount.** Ignoring rural-urban price differences makes rural poverty appear worse. In particular, the level of poverty in the Southern federal region – predominantly rural – is overestimated.

2. Theoretical and Practical Considerations in the Choice of the Welfare Aggregate

The analysis of poverty requires some measure of welfare. Ideally, such a measure would capture the multi-dimensional aspects of poverty and be observable and measurable in a consistent way across households, space and time. Two composite indicators which attempt to capture the multi-dimensionality of poverty are the UNDP' Human Development Index or the *basic needs indices*[8]. One-dimensional welfare measures, monetary or non-monetary, are more common. Monetary indicators include income, consumption or assets. Non-monetary indicators of poverty and living conditions include malnutrition; access to health, education and basic services; and perceptions of poverty or deprivation. Since no single measure fully captures all such features, living conditions should be monitored over time using a battery of indicators rather than with a single measure. At the same time, there is a widespread agreement and empirical evidence that monetary indicators are able to capture well non-monetary dimensions of deprivation.

The two monetary indicators which top the preferences of researchers as indices of household welfare are consumption and income. Most countries in OECD or Latin America use income to assess household well-being and poverty. In contrast, transition economies, as well as countries from Asia and Africa primarily use consumption. The Russian Federation uses both income and consumption, although only consumption data are reliably collected.

[8] Indices of basic needs aggregate different dimensions of deprivation (such as poor quality housing or lack of adequate education). Both the method of aggregation and the level where needs are adequately fulfilled are arbitrarily set.

This paper considers only one monetary indicator of well-being, household consumption. It focuses on consumption because (a) it is fairly comprehensive;[9] (b) consumption data tends to be more reliable than income data due to incomplete measurement or underreporting; (c) it tends to fluctuate less than income (which can even go to zero in certain months due to seasonality), making it a better indicator of living standards; and (d) consumption is less subjective than basic needs indices, which rely on some form of subjective weighting across their components. Thus, consumption reflects better than income a household's actual standard of living and its ability to meet basic needs. Unlike income, consumption reflects the ability of a household to borrow or mobilize other resources in time of economic stress. In many instances, consumption will capture better than income questions of access to and availability of goods and services.

Our preference to use consumption as welfare indicator is also dictated by country-specific considerations. In Russia, consumption data is collected more reliably than income data. The latter tends to suffer from incomplete measurement[10], underreporting, and seasonality. This is true for HBS (see Gibson and Poduzov, 2003 for a review), and it also true for the NOBUS. Some regular (non-seasonal) sources of income, such as wages and transfers, are quite accurately measured by the survey. Unfortunately, more volatile sources, such as farm or some types of self-employment income cannot be determined at the household level, given the three-month recall-period.

3. Data Sources

The main data source for poverty measurement used in the paper is the Sample Survey of Household Welfare and Participation in Social Programs, also known as the NOBUS for its Russian acronym. The NOBUS is a multi-purpose survey administered by the ROSSTAT and designed with the technical assistance of the World Bank. The survey was administered in the second quarter of 2003. The survey has a sample of about 44,529 households, which ensures both national and limited regional representativity[11]. These households provide detailed information regarding demographics, education, employment, and access to social protection programs, housing conditions, farm activities, household consumption and income. The information is collected using a household questionnaire, administered in two visits by trained interviewers.

We use the NOBUS data and a general methodology outlined in Deaton and Zaidi (1999) and Kakwani and Sajaia (2004) to estimate the level of consumption poverty and inequality in Russia. This methodology proceeds in four steps:

- *First*, we aggregate the various sub-components of consumption at household level.
- *Second*, we adjust household consumption for regional price differences.
- *Third*, we estimate household-specific poverty lines. Each poverty line is adjusted for household composition, reflecting the economies of scale in consumption achieved by larger households, and the differential cost of children versus adults.

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[9] The indicator of consumption used in this study covers different sources of consumption: purchased and non-purchased including consumption of own-produced products. It also provides wide coverage of the multiple dimensions of welfare, including basic material necessities (such as food, clothing) and the consumption of basic services (e.g., water, energy), health and education. Other measures, particularly basic needs indices, consider only a fraction of these components (e.g., excluding basic material items such as food and clothing).

[10] Income from farming, small business or other informal income is poorly captured by surveys.

[11] The survey is representative for 47 out of 89 subjects (regions) of the Russian Federation. These are the most populous regions, accounting for 72% of the total population of the country. Each representative region has a sample size of about 830 to 950 households, except Moscow oblast with 400 households.

- *Fourth*, households are ranked from the poorest to the richest using a welfare ratio, an indicator derived by dividing household consumption by the poverty line, as suggested by Blackorby and Donaldson (1978).

Box 2. Are the observed changes in poverty statistically significant?
The survey design and the precision of the poverty estimates

The poverty and inequality figures derived from the NOBUS are sample estimates. They are not derived from a census or any other exhaustive research on household welfare. They are estimated from surveys, with some known (im)precision. This precision improves with the stratification of the survey, and worsens with the degree of clustering of the sampled households. Knowing the inverse of the probability of selection of each household in the sample, the survey strata and clusters, confidence intervals having a given statistical significance (typically 5%) can be constructed. A 95% confidence interval, for instance, guarantees that the true poverty rate or inequality index will be found in this range in 95 out of 100 trials, where by trials we mean a different survey implemented at the same time, under the same design, but on a different sample of households.

When estimating standard errors, testing or performing other inference with the survey data, we have taken into account the key characteristics of the sample frame, such as clustering, stratification and weighting. The sample frame of the NOBUS is based on a two-stage design. In the first stage, enumeration areas are randomly chosen. In the second stage, groups of households – called clusters – are extracted from within each enumeration area. The selection of areas and households was done independently for each of the eight types of settlement. We use the following survey design parameters to generate the standard errors (and hence, the confidence intervals) of the poverty and inequality statistics reported in the paper:

- *Clustering*: Individuals have not been sampled independently in the NOBUS. In each enumeration area, groups of 10 households have been randomly selected from 4576 areas, usually called primary sampling units (PSUs). Sampling by cluster implies that sample-to-sample variability of the resulting statistics (poverty, inequality, mean age, etc.) is usually greater than obtained through simple random sampling (STATA Survey Data Manual, 2005).
- *Stratification*: Independent samples have been drawn from eight strata. The eight strata correspond to seven types of urban settlements (from large to small) plus a rural stratum. When individual strata are more homogenous compared to the total population, the homogeneity can be exploited to produce smaller estimates of the standard errors (STATA Survey Data Manual, 2005).
- *Weighting:* We use the set of expansion weights produced by ROSSTAT to extrapolate the results from the sample to the total population.

A detailed description of the NOBUS sampling procedures and an evaluation of the reliability of the survey estimates can be found at http://nobus.worldbank.org.ru.

The guidance offered by these authors is far from being complete; there are many decisions taken by the analyst for which there is no optimal or even right answer. This paper spells out these choices, and assesses the sensitivity of the results to these choices.

The paper reports estimates for the average level of poverty and inequality, together with their standard errors (adjusted for survey design, see Box 2), to facilitate correct statistical inference.

4. The Household Consumption Aggregate

Total household consumption is the sum of four main components: (i) food items, (ii) nonfood items and services, (iii) consumer durables, and (iv) housing. The non-food and housing components include an estimate of the value of the subsidies received by privileged or poor households. To arrive at this aggregate, we use the data on individual items, adjust them from the recall period to a monthly figure, and clean the data for implausibly large or small values (outliers). The procedures applied to each component of the consumption aggregate are described in the following subsection. The estimation follows the

recommendations from Deaton and Zaidi (1999) for the construction of the consumption aggregate, summarized in Box 3.

Box 3 Recommendations for Constructing the Consumption Aggregate

Food Consumption

Include:

- Food purchased from market: amount spent in the typical month x 12 (or number of months typically consumed)
- Food that is home-produced: quantity in typical month x farm gate price x number of months typically consumed
- Food received as gift or in-kind payment: total value for a year
- Meals consumed outside the home: Amount spent in restaurants; Amount spent on prepared foods; Amount spent on meals at work, at school or on vacation

Issues:

Missing prices or unit values, first choice is price (unit value) reported by the household; if not available, use as a proxy the median – not mean – price paid by 'similar' households in the neighborhood, subject to checks that such prices are plausible. Check data for outliers; miscoding or misunderstanding of units for quantities causes errors in unit values.

Non-Food Consumption

Include:

- Daily use items, annualize the value
- Clothing and housewares, annualize the value
- Health expenses should only be included if they have high income elasticity in relation to their transitory variance or measurement error
- Education expenses: Typically measured quite accurately in most surveys -- our recommendation is to include them
- Work-related expenses: To the extent possible, purely work-related expenditures should be excluded. This recommendation does not include transport to work or work clothing.

Exclude:

- taxes paid, purchase of assets, repayment of loans, expenditure on durable goods and housing, as well as other lumpy expenditures such as marriages and dowries.

Durable Goods

Calculate an annual rental equivalent using an appropriate real rate of interest and median depreciation values for each item calculated across all households owning that item.

Housing

If a household pays rent, annualize the amount of rent paid. Even if the dwelling is owned by the household or received free of charge, an estimate of the annual rental equivalent must be included in the consumption aggregate. In countries where few households pay rent, rental equivalents are potentially inaccurate, and the benefits of completeness need to be weighted against the costs of error.

Source: Deaton and Zaidi (1999)

4.1 Food consumption

Constructing a food consumption aggregate is, to a large extent, a straightforward aggregation exercise. Quoting Deaton and Zaidi (1999): *"All that is needed are data on the total value of the various food consumed in the reference period, or else on the total quantities of different food items consumed as well as a reference set of prices at which to value them. In practice, however, households consume food obtained from a variety of different sources, and so in computing a measure of total food consumption to include as part of the aggregate welfare measure, it is important to include food consumed by the household from all possible sources. In particular, this measure should include not just (i) food*

purchased in the market place, including meals purchased away from home for consumption at or away from home, but also (ii) food that is home-produced, (iii) food items received as gifts or remittances from other households, as well as (iv) food received from employers as payment in-kind for services rendered."

The information on food consumption collected with NOBUS is comprehensive, covering all the sources mentioned above. All food information is collected in two modules of the questionnaire. One module (Section 4A, question A) collects information about the consumption of 67 types of food and beverages in the two weeks preceding the survey. This level of disaggregation is quite common, similar to the Russian HBS, or to the surveys administered in Romania or Bulgaria, but lower compared to Belarus (who collects information on 325 individual food items). This module of the questionnaire collects information on three elements of food consumption: purchases (amount and total cost), food produced by the household, and food received in gift from third parties (only the quantity consumed is recorded for the last two sources). Another module inquires about the food consumed away from home, in restaurants or canteens, also during the last two weeks. According to Deaton and Zaidi (1999), this conforms with good practice: "*The total value of meals consumed outside the household (restaurants, prepared foods purchased from the market place) should also be included in the food consumption aggregate, as should the value of meals taken by household members at school, work, during vacations, etc. Almost all LSMS surveys ask explicitly about the total value of meals taken outside the home by all household members; this amount should also be included in the food consumption aggregate*."

On average, the price and per capita consumption information at item level is well behaved – we observed in the data the same correlations reported in many other studies (see Deaton and Zaidi, 1999, for examples). The average per capita consumption of rural population is slightly higher compared to urban, especially for unprocessed food. Average prices, however, tend to be systematically higher in urban areas (Table A1, statistical appendix). And, when households are ranked into quintiles using the benchmark welfare indicator constructed in the paper, we observe that richer households consume higher quantities of food (with the exception of bread, flour or cereals) and pay higher unit values (possibly, because the items they consume are of better quality) (Table A2, statistical appendix).

To derive the food consumption aggregate, the first step is to estimate the value of the food produced by the household or received in gift. For these two elements, the survey records only the quantity consumed over the last two weeks. We price these elements at prices who offer the closest approximation to the amount actually paid, such as the unit values reported by the same households on purchases, or by other households from the same cluster. These unit values would approximate better the prices faced by that household than, say, the market prices collected from a separate price survey, if only because they record actual and contemporaneous, not hypothetical transactions (Deaton and Tarozzi, 2000). When such data are not available, we construct prices from the data for other households, and use the median (in preference to the mean, which is more sensitive to outliers) price paid by other households in the same cluster. When these data are not available, we use the prices reported by other households in the same area or region, depending on whichever is the next higher level of aggregation for which price information is available.

Table 1. Imputation of the Missing Unit Values for Food Items

Missing unit values imputed with the median value from:	Number	% of transactions
primary sampling unit (PSU)	58,460	6.2
region and strata	48,767	5.2
region	4,900	0.5
national	535	0.1
Total # of transactions	946,169	100

Source: authors' estimations based on NOBUS 2003

Before proceeding with the aggregation of all components of food expenditure, we have cleaned the data for outliers, observations which are too far away from what the large majority of other households have reported. We have chosen to "clean" the data for two reasons. *First*, there is a high likelihood that extremely large or small outlier values are due to coding errors. *Second*, NOBUS does not distinguish "food consumed" from "food purchased" (see Box 4). In principle, it is the value of the former that should go into the consumption aggregate. A household that stocks up on cereals once every few months, and whose purchase is caught by the survey, should not be thereby counted as well-off, nor should someone who did not stock up in the survey period be counted as poor. The second type of outlier would affect the quantity reported by the household, while the first type would affect both quantity and price.

Box 4. How to account for differences between food consumption and food purchases

The preferred welfare indicator for poverty analysis is some measure of consumption, but the HBS is designed to capture expenditures. In principle, household expenditures will provide an acceptable proxy for consumption if items are consumed within the household very soon after they are acquired. … However, any good that is storable for long periods of time has the potential to cause a discrepancy between measured expenditures and the household's unobserved level of consumption. In order for an expenditure survey to provide a good measure of consumption, it must have reasonable measures of all five components of the following formula:

Initial Stock + Purchases + Own-production + Gifts/subsidies received
=
Consumption + Gifts/transfers given + Final stock

Very few surveys measure the changes in household stocks, which is needed to properly derive consumption from data on the flow of goods into and out of the household. Consequently, consumption is exaggerated for households who are stocking up on an item, and understated when stocks are drawn down. In principle, this error can be avoided if the period over which household's are observed is long enough to observe both the stock accumulation and stock draw down phases because the high spending in the accumulation phase will be balanced by low spending in the phase when consumption is out of the stocks. For example, Russian households may record large purchases of potatoes in their expenditure diaries in the fall months and no purchases for the rest of the year. As long as the same household is observed over a full year, there should be no error caused by this 'lumpy' or temporally concentrated expenditure behavior because the high spending on potatoes in the Fall will be balanced by low spending in the other months. Of course, if households carry significant stocks of foods and other goods from year to year, errors in measuring the level of consumption will occur. In fact, the annual questionnaire in the HBS includes questions on ending stocks of food items although there does not seem to be a similar question for starting stocks. These data could therefore be used to assess the significance of food stock-holding, although the question seems to exclude the stock of potatoes which may be one of the more important storable foods.

Source: Gibson (2004)

We assumed that prices which are either five times higher or less than 20% of the median price in a given region and area are outliers, and we replaced them with the upper or lower bound of the interval. For a total of 833,000 transactions, we got 1,632 cases of implausibly large values – less than 0.2% of the total. The corresponding figure for implausibly small price outliers was 2870, or 0.3% of the total number of food transaction). We assumed that those transactions where per capita consumption (from all sources) is five times or more than the average per capita consumption of a given item, region and area are outliers. We adjusted 21,995 transactions according to this rule, or about 2.6% of the total number of transactions. In tables A3-A5 from the Statistical appendix we report the frequency of outlier correction item by item.

The value of total food consumption is derived by multiplying the quantity consumed from item i (from purchases, own production or gifts) by the household-specific unit value, summing up across all food items, and adding the spending for restaurants or canteens. We separated out the consumption of alcohol,

as the poverty line does not include this item. The total food aggregate was adjusted upwards from two weeks to one month, by multiplying it with a coefficient of 2.14.

On average, the largest share of "food and beverages" consists of food prepared in the household; about 89% of total (see Table 2). The expenditures for eating out represent about 9% of the total and for alcohol 2%. As expected, these types of expenditure are larger in urban compared to rural areas, and income elastic.

Table 2. Per capita food consumption by area or residence and quintile

Rubles (constant purchasing power) per capita per month

	Urban				Rural				National			
Quintile	**Food**	**Alcohol**	**Eating out**	**Total**	**Food**	**Alcohol**	**Eating out**	**Total**	**Food**	**Alcohol**	**Eating out**	**Total**
Poorest Q	521	9	22	552	552	8	16	576	537	9	19	564
Q2	768	13	51	832	937	14	27	978	821	13	44	877
Q3	973	19	86	1079	1189	22	48	1258	1023	20	77	1120
Q4	1206	26	121	1353	1500	26	72	1597	1257	26	113	1395
Richest Q	1769	47	305	2122	2056	56	183	2294	1804	48	290	2143
Total	1117	25	131	1273	1010	18	47	1074	1088	23	109	1220
Share of total	88	2	10	100	94	2	4	100	89	2	9	100

Source: authors' estimations based on NOBUS 2003

4.2 Other Non-Food and Services

Like food consumption, the actual computation of an annual non-food consumption aggregate is a straightforward aggregation exercise. The main difficulty is choosing which items to include, a decision that depends not only on the data availability, but also on the analytic objectives of the study being undertaken. As a general rule, non-food items which are consumed during the year should be included. For those items which are purchased during the reference period but consumed over a longer period (many years), the nonfood aggregate should include only their user- or rental-value. Two prime examples are expenditures for durables and housing – addressed in the following subsections. Other items, which correspond to cash outflows not for consumption, should be excluded.

Which non-food "expenditures" should be excluded from the consumption aggregates? Guided by the recommendations of Deaton and Zaidi (1999), the following items currently included in the expenditure indicators used by ROSSTAT should be excluded: taxes, repayment of loans, interest payments, loans given to others; purchases of financial assets, infrequent and lumpy expenditures (like dowries), remittances (both cash and in-kind), purchases of durables and housing (while in turn including the user cost/rent equivalent of these services). Quoting again from Deaton (1999): "*Expenditures on taxes and levies are not part of consumption, but a deduction from income, and should not be included in the consumption total. … Another group of expenditures are gifts, charitable contributions, and remittances to other households. … Their inclusion in the consumption aggregate would involve double-counting if, as one would expect, the transfers show up in the consumption of other households. Average living standards could be increased without limit if each household were simply encouraged to donate its income to another household, and so on; nothing would have changed except our measure of welfare. We therefore recommend excluding gifts and transfers, counting them as they are spent by their recipients*." Making an analogy with the system of national accounts, the following items belong to the capital account of the household, not to its current account: repayment of loans, interest payments, loans given to others; purchases of financial assets. Thus, they should not be included into a consumption indicator.

Infrequent or lumpy expenditures, like marriages and dowries, births, and funerals, should be excluded because they represent transitory spending, while the consumption aggregate we want to construct attempts to approximate the permanent income. Deaton et al. (1999) mentions: "*While almost all households incur relatively large expenditures on these at some stage, only a relatively small proportion of households are likely to make such expenditures during the reference period typically covered by the survey. … Ideally, we would want to "smooth" these lumpy expenditures, spreading them over several years, but lacking the information to do so—which might come, for example, by incorporating multi-year reference periods for such items—we recommend leaving them out of the consumption aggregate. Note the analogy with measurement error. Although transitory expenditures are real enough, consumption aggregates that include them can be thought of as "noisy" measures of the longer-run averaged totals that we would really like to measure.*"

Two other technical issues that emerge when aggregating nonfood information are adjusting for different recall period and cleaning the data. As mentioned in Deaton: "*Data on purchases of non food items are often collected for different recall periods, for example over the past 30 days, the past 3 months, or the past 12 months, depending on how frequently the items concerned are typically purchased. Constructing the non-food aggregate thus entails converting all these reported amounts to a uniform reference period—say one year—, and then aggregating across the various items.*" NOBUS follows the general LSMS practice.

Some of the nonfood information collected in the NOBUS requires an adjustment to a "monthly" equivalent: less frequently purchased items, education and services. Less frequently purchased items such as clothing, footwear, kitchen equipment, household textiles such as sheets, curtains, bedcovers, etc., and other household use items are collected in Section B8 using a recall period of 12 months. Data on education expenditures are collected in Section 1B for the last school year. The use of services over the last three months in recorded in Section C10. Section B7 collects information on consumption of daily-use items such as soap and cleaning supplies, petrol, newspapers, tobacco, stationary and supplies, recreational expenses and miscellaneous personal care items during the last 30 days. Expenditures on household utilities (both out of pocket and the estimated subsidy) during the last month are collected in the housing module (Section 2, Questions 17-23). No adjustment for the recall period is required for the last two groups.

For data cleaning, we apply the same formula as to the food items, this time to the value of individual non-food items. Purchases which are five times greater or smaller than the median value per item and region are considered outliers and replaced with the end-value of the interval. About 60,000 individual transactions are corrected as outliers, representing 8.7% of the total number of transactions. This number is equally split between large and small outliers. In the case of rents, outlier values higher than 10,000 Rubles per month have been replaced with 10,000 Rubles per month – for 13 households out of a total of 44,500.

Individual non-food and service items are finally aggregated in 11 groups which, according to Kakwani and Sajaya (2004) exhibit different economies of scale (Table 3). The 11 groups are alcoholic beverages and tobacco; clothing and footwear; housing, water, electricity, gas and other fuels; furnishings, household equipment and routine household maintenance; health; transport; communication; recreation and culture; education; restaurants and hotels; and miscellaneous goods and services. Table A6 in the Statistical appendix lists which individual items have been included in each non-food group, as well as the recall period used in the NOBUS. The non-food consumption indicators presented in Table 3 do not include the following elements which will be treated in the remaining sections: durables, rent and subsidized consumption (for transport, medical, housing and utility services).

Table 3. Per capita non-food consumption, by area and quintile

Rubles (constant purchasing power) per capita per month

	Urban					Average	Rural					Average	National					Average
	Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5	
Alcoholic beverages and tobacco	29	39	51	61	98	59	27	39	50	57	100	44	28	39	51	60	98	55
Clothing and footwear	63	106	148	203	352	190	59	100	140	178	264	117	61	104	147	198	342	170
Housing, water, electricity, gas	139	215	267	321	389	281	90	153	209	249	331	168	114	196	254	309	382	251
Furnishings, household equipment	37	61	83	117	219	113	37	68	96	138	224	84	37	63	86	121	220	105
Health	62	99	140	220	483	222	58	125	176	269	619	172	60	107	148	228	500	209
Transport	36	74	100	144	282	140	26	62	97	154	304	89	31	70	100	146	284	126
Communication	1	3	7	12	28	12	1	3	6	7	15	4	1	3	7	11	27	10
Recreation and culture	15	25	35	47	81	44	12	22	26	37	47	23	13	24	33	45	77	38
Education	17	30	38	58	87	50	14	21	32	40	72	27	15	27	37	55	85	44
Restaurants and hotels	21	51	86	122	305	131	16	26	47	64	167	44	19	43	77	112	288	108
Miscellaneous goods and services	21	40	57	78	146	75	14	27	39	57	93	34	17	36	53	74	139	64
Total	441	743	1014	1383	2471	1318	354	646	917	1251	2235	805	397	713	991	1360	2442	1181
Share of total	7	11	15	21	37	100	9	16	23	31	55	100	7	12	17	23	41	100

Source: authors' estimations based on NOBUS 2003

4.3 Durable goods

The treatment of durables is not as straightforward as the treatment of the other items considered so far. We quote again from Deaton: "*Because durable goods last for several years, and because it is clearly not the purchase of durables that is the relevant component of household welfare, they require special treatment when calculating total expenditure. It is the use of a durable good that contributes to welfare, but since use is rarely observed directly, it is typically assumed to be proportional to the stock of the good held by the household. In consequence, when we add up total household expenditures during the year, we add to expenditures on non-durables the annual cost of holding the stock of each durable. This cost is estimated from a conceptual experiment in which we imagine the household buying the durable good at the beginning of each year, and then selling it again at year's end. The costs of doing this depend on the price at the beginning of the year,* p_t *say, its price at the end of the year,* p_{t+1} *on the nominal interest rate,* r_t *, which is the cost of having money tied up in the good for the year, and on the extent to which the durable good deteriorates during the year. Deterioration is modeled by means of the simple assumption that the quantity of the good is subject to "radioactive decay" so that, if the household starts off the year with the amount* S_t *it will have an amount* $(1-\delta)S_t$ *to sell back at the end of the year. Seen from the beginning of the year, the sales at the end of the year must be deflated to put them on discounted present value terms so that, in today's money, the discounted present cost (negative profit) of the transaction is:*

$$S_t \left(p_t - p_{t+1} \frac{1-\delta}{1+r_t} \right) \qquad (1)$$

so that the cost of maintaining the stock—which is what we need to add up total expenditure—is approximately (provided the interest rate and depreciation rate are small)

$$S_t p_t (r_t - \pi_t + \delta) \qquad (2)$$

where r_t *is the rate of inflation of the durable good price. If it is assumed that the rate of inflation of the durable good is the same as that of other goods, the first two terms in the bracket give the real rate of interest, so that the "price" for the use of the durable good for a year is its current price multiplied by the sum of the real interest rate and its rate of deterioration. This is typically referred to as "user cost" or, since it would be the rental charge for the durable in a competitive market, as the "rental equivalent."*"

Thus, from the point of view of household welfare, rather than using expenditure on purchase of durable goods during the recall period, the appropriate measure of consumption of durable goods is the value of services that the household receives from all the durable goods in its possession over the relevant time period. This recommendation is not followed in the official methodology: instead of the user value of the stock of durables, the purchases of durables during the last year (recall period) are included in the

consumption aggregate. We will illustrate that this methodological choice, although it has benign consequences for the poverty numbers, inflates substantially and artificially the level of inequality.

To estimate the user-value of the stock of durables using equation (2) we need the following three terms: the current resale price of the durable good, its depreciation rate, and the real rate of interest[12]. NOBUS collects detailed information about a stock of 23 durable goods owned by the household: their number and date of purchase and, for those purchases after 1997, their purchase price and the estimated resale value. The information on the resale price of the durable good is collected only for items purchased after 1997 – for the older portion of the stock, it has to be imputed. The depreciation rate is estimated from the data, based on the information on the purchase price and the resale price. The real rate of interest is assumed to be 5% per annum, equal to the interest rate at which the Russian Federation borrowed foreign exchange during the period 1998-2002.

Table 4: The stock of durable goods: Descriptive statistics

	Share of households with:	of which, reporting		Age of the durable good					Total
		the purchase price	the resale price	Purchased in 2003	1-5 years old	6-10 years old	11-15 years old	over 15 years old	
TV	85.5	32.3	20.8	4	32	34	15	16	100
Video recorder	30.8	34.9	22.3	3	37	50	9	2	100
Video camera	2.5	41.7	28.2	5	44	46	4	2	100
Radio	16.8	15.5	9.6	3	15	16	18	47	100
Music center	13.4	63.5	41.4	9	59	26	4	1	100
Tape recorder	29.1	37.9	23.6	5	37	36	14	7	100
Refrigerator	79.6	15.4	9.7	2	16	22	20	40	100
Freezer	4.6	25.7	15.9	3	26	38	20	14	100
Washing machine	66.9	23.0	14.2	3	22	22	19	34	100
Microwawe owen	6.7	61.3	37.5	11	58	26	4	1	100
Dishwasher	0.1	64.6	41.7	4	65	27	2	2	100
Vacuum cleaner	52.1	26.3	16.3	4	25	25	19	27	100
Sewing machine	36.2	3.4	2.2	0	4	11	14	70	100
Knitting machine	1.0	6.9	4.0	0	8	26	33	33	100
Air-conditioner	0.9	42.4	28.3	5	42	28	12	13	100
PC	5.4	78.9	51.1	16	69	13	1	0	100
Mobile telephone	6.9	90.4	59.4	36	63	1	0	0	100
Bicycle	14.9	42.2	27.8	7	38	20	14	20	100
Passenger car	18.5	39.1	26.2	6	38	24	11	21	100
Motorcycle	4.8	16.4	11.2	3	15	20	23	39	100
Truck, bus	1.3	34.5	24.9	4	37	30	14	15	100
Motor boat	0.5	14.5	10.6	2	16	24	14	45	100
Other vechicles	0.7	30.6	21.6	7	29	28	18	18	100

Source: own estimations based on NOBUS 2003

The household's endowment with durable goods and the age of the durable varies substantially from one type of durable to another (Table 4). Four in five households own a TV, refrigerator or washing machine; half of the households have vacuum cleaners and one in four households own a motorized vehicle (car, motorcycle, or truck). The penetration of modern electronic equipment is still incipient, with 5% of the households owning a PC and 7% a mobile telephone. With few exceptions, a large share of the stock of durables is more than 10 years old: as much as 85% of the sewing machines, 62% of the motorbikes, 60% of the refrigerators, and 53% of the washing machines. The items who have only recently penetrated the Russian market are mobile telephones, PCs, microwave owens, dishwashers, video cameras or music

[12] In equation (2) the difference between rt (the average nominal interest rate over the lifetime of the durable t) and πt (the inflation rate for each durable good during its lifetime t) is the real rate of interest. While in theory, we would estimate such a quantity for each durable good, in practice we use only one real interest rate for all durable goods, taken as an average over several years.

centers, with 50- 85% of the stock being purchased after 1997. The overall endowment with such goods is relatively low.

The features of the durable stock impose a number of limitations on the estimation of the user value of the stock of durables. *First*, NOBUS collected price information only on the durable purchased recently, after 1997. As illustrated in the Table 4, these items represent 30% to 60% of the stock for most durables, with few exceptions (sewing or knitting machines). For older durables there is no price information – this information has to be imputed. The same imputation has to be applied to those recently produced durable goods that have not been purchased by the household, but received as gift.

Second, the NOBUS collected two types of price information: the acquisition price and the current resale value of the item as estimated by the household respondent. Not all households have been able to estimate the resale value of their goods; on average, only about two thirds of those who reported the purchase price were also providing an estimate for the resale price. For most items, we have to impute the resale prices.

Imputing the resale price. To estimate the resale prices for those durables where such information is missing[13] we use a Tobit model[14] of the (logarithm of the) price of durables on a time trend, which accounts for the theoretical model of a multiplicative depreciation rate and the censoring of the price variable for durables purchased before 1998.

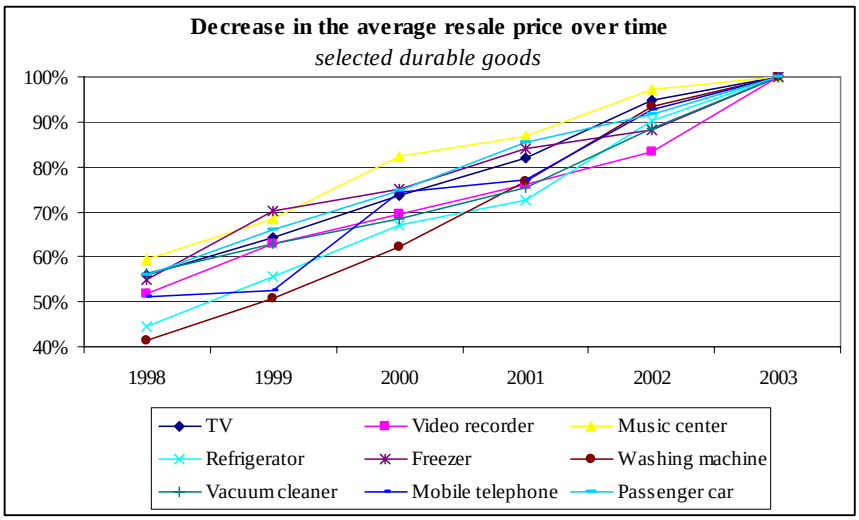
- In a first step, we inspect the information from the NOBUS to see if it is consistent with such a model. For most durable goods, the relationship between the average resale price and the year of purchase is negative, as expected. As illustrated in Figure 1, the reported resale price of a 2-year old TV represents about 80% of the price of a new TV. After five years, the corresponding ratio falls to 55%. We found exceptions from this rule for dishwashers, trucks, boats or other vehicles, due to the small number of transactions and the heterogeneity of the group. We will use a different algorithm for this group.

- However, even for the goods for which the relationship between the age of the durable and its resale price is negative, as expected, there is a lot of variation. This price variation is illustrated graphically in Figure 2, left panel, using a set of yearly boxplots. In part, this variation is due to the heterogeneous nature of the items included in each category. For instance, the stock of TVs includes items of different qualities and hence prices, such as black and white versus color TV, small versus large TVs, from different manufacturers etc.

[13] Either because the durable was purchased before 1998, of because the respondent did not provide an estimation of its resale value.

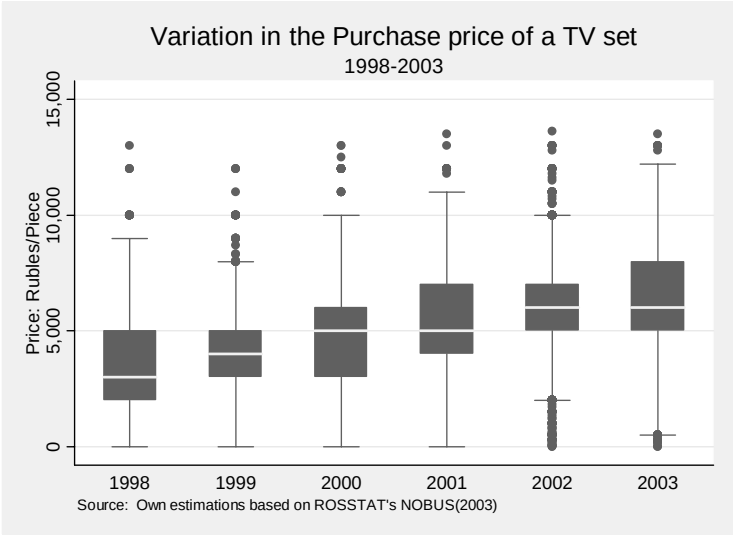
[14] In the simple regression model of the price function of a time trend, the information in truncated for time T greater than 5 (years). Simple OLS regression will produce biased coefficient. The Tobit procedure corrects this bias.

Figure 1



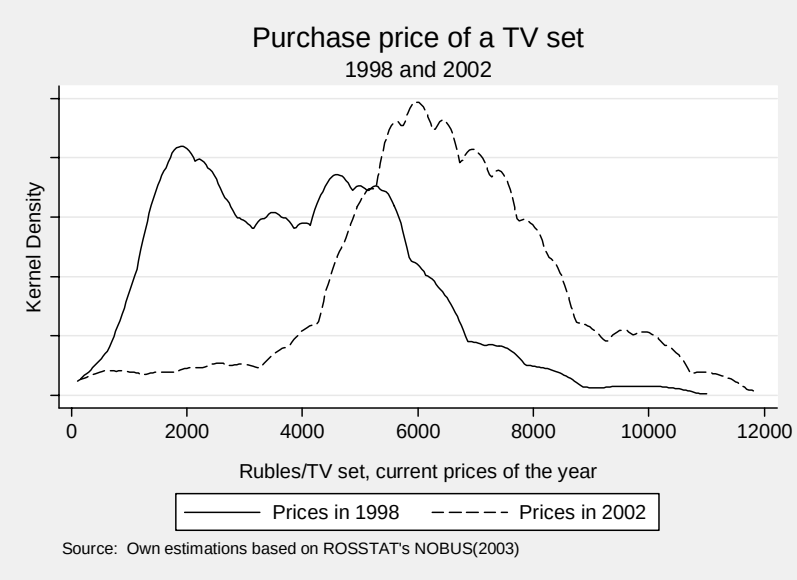
Source: Own estimations based on ROSSTAT's NOBUS 2003

Figure 2



- One can visually inspect the data for such heterogeneity. If the durable group will include only one, homogenous product, then the histogram of that product would approximate normal distribution, and the spread of actual prices around the median price will be small. To some extent, this is the case with the TVs purchased in 2002, illustrated by the dotted line histogram from the right panel in Figure 3. When the product group lumps together products of different qualities and prices, the histogram will exhibit more peaks. In a simple case where the key price difference would be dictated by one binary characteristic – such as between the black and white versus color TVs – one would expect a histogram with two peaks. To some extent, this is the case with the TVs purchased in 1998, illustrated by the solid line histogram from the right panel in Figure 3. A possible story behind these numbers may be that in 1998 households purchased both B&W and color TVs, while in 2002 most TVs being purchased are color TVs.

Figure 3



- This heterogeneity reduces predictive power of our regression model. However, our assessment is that simply ignoring the accumulated stock of durables would result in a less precise consumption aggregate compared to the one resulting from this imputation process.
- For 19 out of the 23 durable goods, we use a Tobit time-trend model to predict the resale price of the durables owned by households. To avoid cases with negative, implausibly small or missing resale values, we place a minimum threshold equal to 10% of the value of a new item (purchased in 2002 or 2003). Such correction was applied to one third of the cases.
- For four durable items where the price information was not "well-behaved" due to small samples and product heterogeneity within the group – dishwashers, trucks, motor boats or other vehicles – we imputed the missing price information with the median resale value reported for 1998-2003.

Estimating the depreciation rate. For each type of durable good (except for dishwashers, trucks, motor boats or other vehicles) , the depreciation rate δ was calculated using the following formula:

$$\delta - \pi = 1 - \left(\frac{p_t}{p_{t-T}} \right)^{1/T} \quad (3)$$

where Pt is the resale price as of 2003, and P_{t-T} is the purchase price in 2003 Rubles, and T is the age of the durable (reported in NOBUS for all purchased goods). We used the CPI component for durable goods reported by ROSSTAT to calculate indices that bring the original purchase prices into 2003 values. This correction is quite important – the average price of a durable good went up, in nominal terms, 2.2 times between 1998 and 2003 (Table 5).

Table 5. Index used to inflate the purchase price of the durable goods into 2003 prices

Year	1998	1999	2000	2001	2002	2003
Index	2.22	1.17	1.06	1.06	1.02	1.00

Source: RosStat

In Table 6, we compare the median depreciation rate estimated based on an exponential function (using equation 3) with a simple, linear depreciation model. In the linear model, we assume that each year, a certain fraction of the stock of durable is scrapped and replaced. The lifetime of such durable would be equal to twice its median age – a quantity estimated from the survey. The annual depreciation rate would be equal to the inverse of the lifetime of the durable. We use this model to test how sensitive the depreciation rate would be to different assumptions about the shape of the depreciation flow, and we found that in general the two values are reasonably close. We prefer using the exponential model, which is more flexible, except for the four durable goods where the price information is of doubtful quality, for which we will use the linear depreciation rate.

Table 6. Annual depreciation rate estimated through different methods

	Annual depreciation rate	
Id Durable	Exponential	Linear
TV	9.3%	7.1%
Video recorder	13.1%	8.3%
Video camera	6.3%	8.3%
Radio	14.4%	3.6%
Music center	9.7%	16.7%
Tape recorder	14.3%	8.3%
Refrigerator	8.0%	3.8%
Freezer	7.5%	6.3%
Washing machine	9.5%	4.5%
Microwawe owen	11.8%	16.7%
Dishwasher	18.6%	12.5%
Vacuum cleaner	13.1%	5.0%
Sewing machine	5.5%	2.2%
Knitting machine	6.3%	3.8%
Air-conditioner	7.8%	8.3%
PC	9.0%	25.0%
Mobile telephone	19.2%	50.0%
Bicycle	13.3%	8.3%
Passenger car	3.8%	8.3%
Motorcycle	3.9%	3.8%
Truck, bus	2.0%	8.3%
Motor boat	2.5%	3.8%
Other vechicles	1.5%	7.1%

Source: Own estimations based on ROSSTAT's NOBUS 2003

The contribution of the stock of durables to household welfare is simply the sum of the user value for each durable item in stock. The monthly user value associated with the possession of each durable item is estimated using a variant of equation (2):

$$User\_value = \frac{(resale\_price) * (depreciation\_rate + 0.05)}{(1 - depreciation\_rate) * 12} \qquad (4)$$

The results reported in Table 7 indicate the increase in household welfare derived from the ownership of each type of durable goods, on average as well as the 5^{th} and 95^{th} percentile. For example, the welfare of a household owning a TV with average characteristics will increase by 33 Rubles per month.

Table 7. Monthly user value for 23 types of durable goods

Type of durable	The user-value of the durable (Rubles/month)		
	5th percentile	average	95th percentile
TV	8	33	86
Video recorder	5	25	53
Video camera	10	57	140
Radio	1	3	7
Music center	7	48	108
Tape recorder	2	14	38
Refrigerator	10	22	83
Freezer	8	30	79
Washing machine	11	23	94
Microwawe owen	6	40	79
Dishwasher	72	182	338
Vacuum cleaner	4	13	37
Sewing machine	3	5	12
Knitting machine	1	8	14
Air-conditioner	6	31	92
PC	26	189	385
Mobile telephone	8	70	137
Bicycle	3	12	35
Passenger car	46	249	766
Motorcycle	3	11	30
Truck, bus	38	258	713
Motor boat	26	33	26
Other vechicles	27	115	219

Source: Own estimations based on ROSSTAT's NOBUS 2003

Between the welfare level of the household and the welfare derived from owning durables there is a significant, but weak, correlation (Table 8). The Pearson correlation coefficient of the consumption and user value vectors is 0.17 (significant at 0.01 level). Households which are richer in terms of the goods they consume (less durables) derive, on average, more than four times more utility from the larger stock of durables they own. However, the correlation between consumption and the stock of durables tends to be smaller in Russia compared to some market economies, most likely because many households inherited a stock of durables during the socialist period, when such goods were marketed at below-market prices and/or were allocated through non-market criteria.

Table 8. Welfare level derived from the stock of durables per month by quintile

Consumption Quintiles	Level of the welfare level derived from the stock of durables (Rubles/Month)		
	5th percentile	mean	95th percentile
Poorest	11	82	256
2	18	116	379
3	21	150	491
4	28	205	619
Richest	35	358	1,121

Source: Own estimations based on NOBUS 2003

4.4 Housing

Measuring the welfare derived by households from occupying their dwelling is conceptually similar to durables. Quoting Deaton and Zaidi (1999): "*The underlying principle is the same as for other consumer durables; what is required is a measure in monetary terms of the flow of services that the household receives from occupying its dwelling. Because house purchase is such a large and relatively rare expenditure, under no circumstances should expenditures for purchase be included in the consumption aggregate. In the hypothetical case where rental markets function perfectly and all households rent their dwellings, the rent paid is the obvious choice to include in the consumption aggregate. Whenever such rental data are available, and provided the rents are a reasonable reflection of fair market value, they should be used for constructing the housing sub-aggregate and the consumption total.*"

Table 9. Characteristics of the housing stock by area of residence

	Urban	Rural	Total
Total	100.0	100.0	100
Dwelling owned by:			
Government or municipal authorities	37.3	14.6	31.4
Household (private)	58.6	78.8	63.9
Other private owner	0.7	2.9	1.3
Other form of ownership	0.6	2.7	1.1
Leased from a private owner	2.8	1.0	2.32
Type of dwelling			
Apartment	80.3	26.1	66.1
Multi-family apartment	3.0	1.3	2.5
Hostel	3.3	0.4	2.5
Family house	10.8	61.0	23.9
Part of house	2.5	11.0	4.7
Other	0.2	0.3	0.2

Source: Own estimations based on NOBUS 2003

The unfinished privatization of the housing stock and of communal and housing services pose substantial difficulties in obtaining a market-based measure of the household welfare derived from housing in Russia. The Russian rental market diverges in important ways from the example of a large and frictionless market (Table 9). First, only few households rent their dwellings and pay market-based rents. Market-based transactions are a minority: less than 5% of the tenants rent their dwellings from other private agents (households or companies). Of these, only half of them have reported the monthly rent they pay. Second, the majority of households (64% nationwide, of which 59% in urban and 79% in rural areas) own the dwellings they are living in and do not pay rent. The rest of the households – 31.4% nationwide – rent their dwellings from government of municipal authorities and pay "social rent", a controlled price set well below the private market price (Hamilton et al, 2005).

In the NOBUS survey, the households who own their dwellings have been asked to estimate the rental value of their dwelling – the amount of money they would have to pay if they would have to rent such a dwelling from a third party. An important question is how reliable the information about estimated rental values is. If plausible, such "implicit rental value" can be used in place of actual rent. However, such measures must be treated with caution and carefully inspected prior to use. Quoting Deaton et al. (1999): "*Implicit rent is a hypothetical concept, perhaps to the interviewer as well as to the respondent, and the numbers reported may not always be credible or usable. Even when people are apparently confident about their estimates, they may do a very poor job of reporting market rents.*" To our surprise, however, these rents were in the same range as the private market range, and substantially above the "social rents"

paid by the tenants of government or municipal housing. Both market-based rents and estimated rents have been, on average, five times higher than "social rent" payments.

Table 10. Estimation of imputed rent using a hedonic regression model

Dependent variable: (logarithm of) estimated rent			
Dwelling type (reference: family-apartment)		**Heating source (reference: district central-heating)**	
a multi-family apartment	-0.31	gas mains	-0.18
	(7.69)**		(8.38)**
a hostel	-0.223	wood or coal	-0.566
	(2.24)*		(25.02)**
a family house	0.131	other	-0.488
	(6.99)**		(7.33)**
part of a house, with separate entrance	0.108	**Drinking water supply (reference: running water in apartment)**	
	(4.61)**	Well, water pump in courtyard	-0.037
other	-0.654		(2.09)*
	(4.29)**	Water pump in collective use	-0.073
Main building material (reference: brick)			(3.74)**
concrete panels	0.052	Well in collective use	-0.118
	(4.55)**		(4.55)**
stone	-0.011	River, lake, pond, spring	-0.042
	-0.33		-1.07
timber	-0.174	Water truck	-0.067
	(11.38)**		-1.82
other material	-0.068	Other	0.035
	(3.32)**		-0.29
Has elevator?	0.083	**Has sewage?**	0.085
	(5.68)**		(2.16)*
Living area of the dwelling (sq meters)	0.007	**Has hot water supply?**	0.154
	(26.44)**		(10.04)**
Has electricity?	0.389	**Has lavatory inside the building?**	0.065
	(2.62)**		-1.71
Has electric stove?	0.152	**Has bath or shower?**	0.055
	(9.52)**		(2.41)*
Has telephone?	0.151	**Has gas mains?**	0.074
	(15.80)**		(5.27)**
Observations			27341
R-squared			66%

Note: Log-linear model with region and area-of-residence fixed effects.
Source: Own estimations based on the NOBUS 2003

We use a hedonic rent regression impute the predicted value of housing consumption for all households in our sample. The idea behind this approach is to estimate an econometric model in which rents reported by a subset of the population (in our case, market-based or estimated rents) are regressed on a set of housing characteristics including the number of rooms and measures of quality of the dwelling such as type of roof, floors, construction material of walls, type of sanitation, etc. as well as regional and area dummies. This model is similar with a demand equation for rents. With the NOBUS, we estimate a model of the logarithm of rent (including any rent subsidy) on the following dwelling characteristics (see Table 10): type of dwelling; type of ownership; type of building materials, type of amenities available, as well as regional and area dummies capturing the unobservable characteristics of the local market. The model has a reasonable fit, explaining 66% of the variation in rents. Also, the coefficients of the model have the expected sign.

Next, the parameter estimates obtained from this model were used to predict rental values for all households, under the assumption that the rents "estimated" by homeowners include a non-systematic error term which is eliminated by our model. We imputed this predicted rental value to all households unable to estimate the rental value of the dwelling they occupy.

How important are rental expenditures, when properly accounted for, in total household consumption? Our model suggests that they are quite substantial. Not accounting for the market-value of the housing consumption would underestimate the true level of household welfare in Russia by 20% (Table 12). As expected, this effect would be larger in urban areas, where the welfare derived from housing accounts for 21% of the household consumption, compared to only 16% in rural areas. Including only the value of rent paid by tenants (mostly subsidized social rents) would underestimate the derived from housing by 62%, respectively by 58% in urban areas and by 80% in rural areas (where the tenancy rate is very low).

4.5 Subsidized consumption of privileged or poor citizens

Russia inherited from the socialist system a complex system of consumer subsidies for privileged citizens (l'gotniki). As of 2003, the importance of consumer subsidies for the household welfare was still strong, both in terms of coverage and generosity:

- About half of the population in Russia consume subsidized transport, medical, housing and communal services, thanks to their privileged status or because they are poor. Privileged citizens – war veterans, the disabled, or labor veterans – enjoy subsidized or free access to a wide range of services and goods, such as discounts for rent or utility payments (20% of the population in 2003 according to NOBUS); telephone services (11%); medicines, medical appliances or medical services (9%); urban, commuter or long-distance transport (20%); vouchers for sanatoriums, spas, child care facilities, or summer camps (1%). In addition, poor households benefit from housing allowances – a subsidy to their housing and communal services bill. When aggregated at household level, about half of the population enjoys some type of subsidies. Of these, about 42% of the households report receiving housing subsidies, about 24% transport subsidies and 11% report receiving medical discounts.
- The subsidies enjoyed by these categories of the population are also substantial, amounting to 4.4% of GDP[15] in 2002 (World Bank, 2005). One portion of these subsidies, estimated at 2% of GDP, was quasi-fiscal in nature: Utility providers charged tariffs below their cost of production, providing an implicit subsidy to all households consuming the service. It is difficult to estimate the value of quasi-fiscal subsidies enjoyed by households without information on the quantity of subsidized service consumed by each household. However, as long as all or most households benefit from these subsidies, the welfare rankings are not affected and we can ignore them. The remaining subsidies, amounting to 2.4% of GDP, were transparently budgeted and captured only by certain households: those enjoying privileged status or some of the poor. Unlike the quasi-fiscal ones, this type of subsidy will affect the welfare rankings. A careful welfare analysis should take such explicit consumer subsidies into account.

The NOBUS uses an improved module to collect the information on the value of subsidized consumption of transport, medical, housing and communal services (compared to the HBS 2003, which asked the household to estimate the value of subsidies received in the previous quarter). For transport subsidies, privileged citizens are asked to report the number of trips (local, inter-city or long distance) they took, and estimate the value of the subsidy. Similarly, those who purchased medicines or used medical or hospitalization services are asked to estimate the value of the services paid by the enterprise or their employer, on account of their privileged status. Finally, all households are asked to report the value of the subsidy their enjoyed on their housing and communal services bill, either because they are privileged or because they benefited from housing allowances (for poor households).

[15] Housing and utility subsidies have the largest share (70%), while transport or medical subsidies account each of about 15% of the total value of subsidies.

We inspect the data for missing value and we found that households were able to place a value for most subsidies associated with transport and housing and communal services, but not for medicines. About half of the privileged population who purchased medicines could not estimate the value of the subsidy. For these households, we impute the median value of the subsidy reported by the other half of the sample.

The consumption derived from subsidized services represents about 3% of the total household consumption, similar for urban and rural inhabitants (Table 12).

Thanks to the improved data collection module for subsidies in the NOBUS, the underreporting of the welfare derived by households from explicit consumer subsidies was eliminated. The value of explicit subsidies reported in the HBS amounted only to 0.5% of GDP in 2002, only about a fifth of the total volume of such subsidies reported in administrative sources (2.4% of GDP). In the NOBUS, the value of subsidized consumption accounts for 3% of the total household consumption in the second quarter of 2003 (Table 12), equivalent to 1.5% of GDP[16]. Once this figure is adjusted for seasonality – taking into account that in the second quarter such expenditures and subsidies were at their seasonal low – we got an estimate which was very close to the administrative figures.

4.6 Total household consumption

At this stage, the construction of the consumption aggregate requires only a straightforward aggregation procedure of the food, non-food, durable and rental sub-aggregates. Table 11 present the results of such aggregation by area, quintiles and broad commodity groups: food and non-food and services, the later with the exception of durables and rent, which are presented separately. By construction, per capita consumption is higher for the households from the upper (national) quintiles. On average, households from the riches quintile (Q5) spent 4.3 times more on per capita terms than those in the poorest quintile (Q1); this relative proportion is similar in urban (4.1 times) and rural (4.3 times) areas. As predicted by economic theory, we found that non-food and services have the largest income elasticity (6.1 times higher for Q5 compared to Q1 nationwide), while food has the lowest (3.4 times, respectively). Rent expenditures also exhibit a low income elasticity (3.4 times higher for Q5 compared to Q1 nationwide), the consequence of a tightly controlled market. The largest difference in the consumption of the richest and poorest quintile, however, is for subsidized services in urban areas for privileged citizens. The welfare derived from such subsidies by the richest urban households (from Q5) is ten times higher compared to the poorest urban consumers (from Q1).

Table 11. Average per capita consumption, by area

RUR per capita per month, constant purchasing power

	Urban						Rural						National					
	Quintiles					Average	Quintiles					Average	Quintiles					Average
	Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5		Q1	Q2	Q3	Q4	Q5	
Total consumption, of which:	1311	2015	2634	3413	5382	3174	1192	2003	2639	3392	5100	2268	1251	2011	2635	3410	5348	2931
Food	521	768	973	1206	1769	1117	552	937	1189	1500	2056	1010	537	821	1023	1257	1804	1088
Non-food & services	441	743	1014	1383	2471	1318	354	646	917	1251	2235	805	397	713	991	1360	2442	1181
Durables	30	43	60	78	130	74	30	50	67	81	132	57	30	45	62	78	130	69
Rent, ow which:	318	461	587	747	1012	665	255	370	466	560	678	396	287	432	559	715	971	593
Rent paid	163	227	267	315	350	276	62	78	101	82	136	82	112	181	229	275	324	224
Pro-Memoria: Consumer subsidies for privileged citizens*	36	66	89	113	157	99	17	39	58	92	168	52	26	58	82	110	158	87

*) The value of the consumer subsidies for privileged citizens is included in the non-food aggregate

Source: Own estimations based on the NOBUS 2003

16 Household consumption represents 48% of GDP in 2003.

Average per capita consumption is also 40% higher in urban compared to rural areas, in real terms (Table 12). Nominal differences are even larger. The largest disparities are, as expected, in the consumption of non-food and services, and of rent (1.64 and 1.68 times, respectively). Somewhat surprisingly, we do not found large difference in with respect to the endowment with durables.

Table 12. Average Per Capita Consumption by Area

	Area		National	Area		National	Urban / Rural
	Urban	Rural		Urban	Rural		
	RUR/ month	RUR/ month	RUR/ month	%	%	%	Index
Total consumption, of which:	**3174**	**2268**	**2931**	**100**	**100**	**100**	**1.40**
Food	1117	1010	1088	35	45	37	1.11
Non-food	1318	805	1181	42	36	40	1.64
Alcoholic beverages and tobacco	59	44	55	2	2	2	1.34
Clothing and footwear	190	117	170	6	5	6	1.63
Housing, water, electricity, gas	281	168	251	9	7	9	1.68
Furnishings, household equipment	113	84	105	4	4	4	1.34
Health	222	172	209	7	8	7	1.29
Transport	140	89	126	4	4	4	1.58
Communication	12	4	10	0	0	0	2.84
Recreation and culture	44	23	38	1	1	1	1.91
Education	50	27	44	2	1	1	1.84
Restaurants and hotels	131	44	108	4	2	4	3.02
Miscellaneous goods and services	75	34	64	2	2	2	2.19
Durables	74	57	69	2	3	2	1.29
Rent	665	396	593	21	17	20	1.68
Pro memoria:							
Consumer subsidies for privileged citizens	99	52	87	3	2	3	1.89

Source: Own estimations based on the NOBUS 2003

The commodity group with the largest weight in household consumption are non-food and services (40%), followed by food (37%) and rent (20%) (Table 12). Within the group of non-food consumption, housing and utility services represent a full 9%, emphasizing once again the important role of these services for the cold-climate Russia. The share of housing and utility spending would be substantially higher on an annual basis, with the inclusion of the winter seasons. The NOBUS estimate is biased downward, as it reflects the spending during the second quarter of 2003, when heating and other utility services are at their seasonal low.

To derive a household-level poverty line using the methodology proposed by Kakwani and Sajaia (2004), we aggregate individual consumption items into 12 commodity groups:

1. Food and non-alcoholic beverages
2. Alcoholic beverages and tobacco
3. Clothing and foot-wear
4. Housing, water, electricity, gas and other fuels
5. Durables and household maintenance
6. Health
7. Transport
8. Communication
9. Recreation and culture
10. Education
11. Restaurants and canteens

12. Miscellaneous goods and services

Table A6 from the Statistical appendix lists which NOBUS variables have been assigned to each component.

5. Adjustments for differences in the cost of living

The total consumption aggregate obtained in the previous section is measured in current, local prices, and hence not directly comparable. Two identical households in all respects, but located in two different regions, may enjoy different welfare levels if the prices they face differ substantially. Regional price differences arise because of imperfect arbitrage across regional markets, the existence of transport cost, or nature of some goods (notably services and perishable fresh food where regional arbitrage is impossible or very costly). Given the size of the Russian territory, large differences in regional prices are both expected and observed. As reported in the World Bank Poverty Assessment Report (2004), the average price level in Chukotka was 2.6 times higher in 2002 compared to Karachaevo-Cherkessiya Republic. Ignoring such price differences would overstate poverty in Karachaevo-Cherkessiya Republic and understate poverty in Chukotka.

5.1 Regional price differences

To arrive at a comparable indicator of household consumption, it is important to adjust nominal consumption for the regional price differences. Regional price differences are captured by spatial price indices, which measure the relative costs of living in different regions and communities. These indices are essential for poverty measurement because they allow one to take into account regional cost of living differences. Kakwani et al (2004) constructs such price index for 2002, using regional price information collected by ROSSTAT and expenditure shares from the HBS 2002 for 88 regions, using the Laspeyres method (see Box 5).

Box 5 Spatial price indices

Let p_{ij} be the average market price of the i^{th} commodity in the j^{th} oblast and a_j is the population share of the j^{th} oblast, then the average price of the i^{th} commodity in the Russian federation will be given by:

$$\bar{p}_i = \sum_{j=1}^{88} a_j p_{ij} \qquad (1)$$

There are n commodities for which the average market prices were available at the level of detailed captured in the HBS 2002. Using the HBS 2002, an average basket consisting of n commodities is constructed. Let s_i be the share of the i^{th} commodity in our basket of n commodities, then the spatial price index for the j^{th} region is calculated as

$$P_j = 100 \times [\sum s_i p_{ij} / \bar{p}_i] \qquad (2)$$

which can be compared with the spatial price index of 100 for the Russian federation.

Using this methodology, Kakwani et al. (2004) computed the spatial price indices separately for food, non-food and both food and non-food. These indices for 88 oblasts are presented in Table Axx in the Appendix. The spatial price indices given in Table Axx show the cost of living varies widely across the oblasts. In general, the oblasts in the extreme north of Russia have much higher cost of living in both food and non-food items of consumption.

Adapted from Kakwani et al (2004)

We use these spatial price indices, calculated separately for food and non-food, to adjust the two components of household consumption from nominal to real values.

5.2 A Price Index for the "Consumption" of Housing

Constructing Laspeyres housing price indices was a slightly more complicated undertaking. In principle, analogous to the case of the food price indices, we need to identify a reference "housing bundle" as such, and then determine the average price of this reference bundle in each of the six groups. However, in practice, defining a reference bundle for housing is much more difficult than in the case of food. While it is straightforward to calculate the price of a bundle comprising "6 kg. of wheat, 20 kg. of rice, 3 kg. of cooking oil, etc." in different parts of the country, the task of doing the same for housing is complicated by the fact that housing is in fact a heterogeneous bundle of goods and services comprising a number of different attributes (number of rooms, quality of construction material, accessibility of services, location, etc.). In order to derive a price index for housing using the same methodology as for food, we have to identify housing units in each of the groups that were exactly alike in terms of all conceivable attributes, and then compare average rental values across groups to derive the housing price index. This would be impossible to implement in practice.

The methodology used to derive a housing price index is very similar to the one used to obtain a measure of housing consumption: a hedonic housing regression model (presented in Table 10) was used to predict rental values for those households in the sample that had reported zero rents (the dependent variable in this model was the rental value reported by households in the sample (those that reported non-zero rents), and the set of explanatory variables included a wide range of housing characteristics, measures of quality of housing, regional dummy variables and other factors that helped determine the rental value of dwellings). To derive the housing price index, we used the parameter estimates of this model to get a measure of the "price" of housing in each region and area of residence.

The model was used to estimate the cost of renting a house with average characteristics. The characteristics of this average dwelling (house with characteristics that are prevalent among Russian dwellers) are: a one family apartment, privatized or bought, with a total living area of 35 sq m, with walls from concrete panels (blocks, monolith), with electricity, district central heating, in-door running water, sewage, hot water supply, lavatory, bath or shower, gas mains and telephone; without an electric stove or elevator. Table A9 in the Statistical appendix presents the cost of renting the "modal dwelling" by region and area in constant (PPP adjusted) and current (nominal) prices, as well as the housing price index used to deflate the rents. The desired housing price index was then obtained by taking the ratio of the cost of renting a house in a particular region and area of residence, to the "average" cost of renting the same house.

5.3 Price differences between rural and urban areas

Substantial price differences may also occur across areas of residence, such as between rural and urban areas. Like differences in prices across regions, a lower price level in rural compared to urban areas would overstate rural poverty and understate it for urban areas.

All studies investigating poverty in Russia have found higher poverty in rural areas. Many analysts and policy-makers, however, expressed doubts about the magnitude of these differences, considered too high. Can a part of this difference be attributed to systematic price differences across areas? This is ultimately an empirical question, which – to our knowledge – was not yet addressed, probably because of lack of

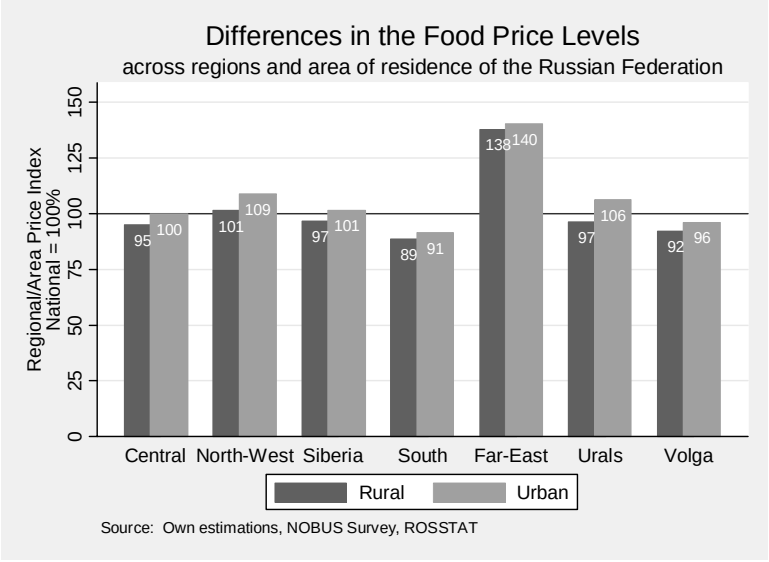
disaggregated price information collected by region *and* area. ROSSTAT price statistics, for instance, is collecting average consumer prices only at oblast level.

For food consumption, regional and area specific price information is available from the household surveys. Both HBS and the NOBUS record millions of food transactions, collecting information on both the value and the quantity purchased. By dividing the value by the quantity we obtain the unit value of that transaction which, if the commodity is of homogenous quality, is its price. Compared to the price information collected via the price statistics, unit values have both advantages and disadvantages. Deaton and Tarozzi (2000) argue that unit values are more reliable compared to price statistics, because they record actual transactions, not "posted prices" in shops and other points of sale. On the minus side, the unit values recorded in the survey are defined for broad commodity groups (such as poultry meat), and not for homogenous products (such as particular cuts of meat). Given that richer households tend to buy high quality products, unit values would confound the price and quality of a food item, which in turn may bias the price indices. However, as argued in Deaton and Tarozzi (2000), using median unit values by region and area may circumvent this problem.

We use the NOBUS 2003 data to construct regional *and* area specific food price indices, similar with Kakwani et al (2004). We use the same vector of food consumption shares, this time multiplied with a vector of *median unit values* by region, and by region and area of residence. We price this bundle first at national prices, then at the prices of each region, and finally at the prices of each region and area. By dividing the cost of each food basket by the value of the basket evaluated at national prices we derive a set of price indices.

To test how plausible these indices are, we compare the regional price index based on the NOBUS 2003 unit values with the 2002 index based on ROSSTAT price statistics. We expect to find a significant and high correlation between the two vectors, but not perfect. Both time and seasonality effects may have affected food prices between 2002 and the second quarter of 2003. The correlation between the two vectors is indeed found very high and significant, with a Pearson correlation coefficient of 0.94.

Figure 4.



Food prices are, on average, 4% lower in rural than in urban areas (see Figure 4), more pronounced in the Urals and less pronounced in the Far-East. This magnitude, while not as large as regional price differences, is quite substantial. And, at oblast level, the differences are even more pronounced.

In section 8, we will assess how sensitive is the rural-urban poverty differential to the differences in purchasing power across areas with respect to food. For this exercise, we construct an alternative indicator of real consumption, where food consumption is adjusted the region and area specific food deflator derived from the NOBUS data.

==========

The indicator derived in this section – total household consumption expressed in real terms – is comparable only across similar households. However, we are ultimately interested in *individual* welfare, a concept which is both hard to define from standard microeconomic theory and hard to measure empirically[17]. To make welfare comparisons across households with different size and demographic composition, we need some way of adjusting aggregate consumption measures to make them comparable across households. The best that can be done is to adjust total household expenditure by some measure of the number of people in the household, and to assign the resulting welfare measure to each household member as an individual.

In practice, equivalence scales are used to make comparable consumption aggregates of households with different demographic composition, in a similar way as price indices are used in order to make comparable consumption levels of households with different cost-of-living. The basic idea is that various members of a household have "differing needs". These differences originate mainly from two causes. *First*, there are differences in nutritional needs by different members of the households based on their age, sex, and other such demographic characteristics. *Second*, larger households require less consumption to achieve levels of well-being similar to the ones of smaller households because they consume goods which are non-excludable in consumption and enjoy economies of scale. While differences in household needs may arise from many other reasons[18], these two aspects -- the costs of children relative to adults and the extent of economies of scale – are of first-order importance for poverty and welfare calculations.

Unfortunately, there are no generally accepted methods for calculating equivalence scales, either for the relative costs of children, or for economies of scale. There are three main approaches to deriving equivalence scales: (i) one relying on behavioral analysis to estimate equivalence scales, (ii) one using direct questions to obtain subjective estimates, and (iii) one that simply sets scales in some reasonable, but essentially arbitrary, way. Deaton et al. (1999) recommends the use of the arbitrary method in parallel with the use of per capita expenditure. Under the arbitrary method, the household size is transformed into an adult-equivalent size using a parametric formula, such as the one recommended by the US National Research Council:

$$AE = \left(A + \alpha C\right)^{\theta} \qquad (4)$$

where α represents the "cost" of children relative to adults and θ captures economies of scale. Deaton recommends choosing the value of the parameters based on the country context, essentially by using low α and high θ in poor countries, and the reverse in richer countries.

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[17] Deaton et al (1999) points out to the following difficulties: "*If it were possible to gather data on consumption by individual family members, we could move directly from the data to individual welfare, but except for a few goods, such data are not available, even conceptually—think of public goods that are shared by all household members*".

[18] Consider, for instance, two households similar in all respects except health status of a member. In section xx we briefly discussed the difficult choice of including health expenditures in the overall consumption aggregate.

6. The poverty lines

Kakwani and Sajaia (2004) recommend the use of household-specific poverty lines to adjust for the differences in needs of different households *and* classify households into poor and non-poor. Their recommendations are somehow similar to the official methodology for determining poverty lines, which estimates a minimum subsistence level function of the demographic composition and location of each household (Box 6).

In addition, the methodology suggested by Kakwani corrects a number of inconsistencies in the official methodology. The official poverty methodology diverges from international best-practice in four key aspects. *First*, the official food baskets are normative, selected by nutritional experts rather than on the basis of household consumption patterns[19]. *Second*, the official non-food baskets are normative, chosen by experts rather than on the basis of household behavior[20]. *Thirdly*, the official food poverty line is inconsistent across regions[21]. *Finally*, the non-food component of the official poverty line does not capture economies of scale that result from individuals living together[22].

[19] One implication of the expert choice is that children appear to have higher calorie cost than adults. When the underlying average calorie costs for each region and each individual are calculated using the estimated population share, the calorie costs of children are 20 to 30 percent higher than those of the adults in the same region. This is because the food basket for the children is overly lavish, even for the non-poor, not taking into account the actual consumption patterns of the population. The food baskets should be based on what people are actually consuming.

[20] The Ministry of Labor and Social Development (MLSD) has constructed the official basket on a purely normative basis. The basket provides very detailed quantities of non-food items that should be consumed by different types of individuals. This process obviously entails substantial value judgment because different people have different judgments about the needs. Whose judgment should be adopted? While it is not an easy task, poverty measurement should be as objective as possible. To achieve this objective, it would be best to rely on people's consumption patterns that are readily observable through the household budget surveys.

[21] Each region's determination of its subsistence minimum is subject to federal guidelines and approval. In order to make legitimate inter-regional comparisons of poverty, the poverty lines should be consistent across regions. This means that two individuals with the same standard of living but living in different regions should be identified as either poor or non-poor, depending on the region they live in. The people on the poverty line should have exactly the same standard of living irrespective of where they live, but this is not found to be the case, given the prevailing regional poverty lines.

[22] The non-food goods and services are defined on a per capita basis, and thus do not capture any savings from these individuals living together and sharing the consumption of such public goods as housing or durable goods. International experience suggests that households can save up to a third of their income due to these economies of scale. This should lead to a declining per capita poverty line with household size, but this is not the case with the official non-food component. Thus, official estimates will be biased toward showing greater poverty for larger households.

Box 6 The Minimum Subsistence Level – Official Poverty Line of the Russian Federation

Since 1992, Russia has an official poverty line known as "minimum subsistence level". The revised version of the poverty line was established under guidelines developed by the Ministry of Labor and Social Development in 2000. The poverty line is defined as the cost of specific baskets of goods and services that are deemed necessary for an individual to maintain health and minimum activity levels, both personal and social, taking into account the geographic setting (notably climate). The food baskets are defined based on nutritional requirements for calories, proteins, fats, and carbohydrates for six groups of individuals: infants, children aged 1 to 6, children 7 to 15, adult males 16 to 59, adult females 16 to 54, and retired people (males 60 years of age and older and females 55 and older).

The baskets vary across the 16 geographical zones of Russia, to account for calorific differences by climatic zones and for regional differences in food consumption patterns. Nutritional requirements are higher by about 15% for the coldest arctic regions, compared to the more temperate southern regions. Three zones for non-food goods and three zones for services/utility baskets are defined according to climatic conditions in Russia. The basket for non-food goods provides detailed expert-specified quantities to be consumed by various groups of individuals. These groups are similar to the groups used in the construction of the food basket, except that separate baskets for non-food goods are defined for elderly men and women. The service basket consists of consumption norms for seven main utilities. While the food and non-food baskets are defined at the individual level, the service baskets are defined on a per capita basis. Every item in the non-food bundle has an approximate usage time that varies for different age-gender groups.

The actual compositions of goods and services that enter the regional baskets are determined by local governments. An inter-ministry expert committee reviews the draft consumer baskets submitted by the local governments and provides recommendations to the Federal Government, which makes the final decision on the composition of the regional baskets. The expert committee evaluates the nutritional composition of every regional basket as well as the composition of the non-food components.

The overall specific subsistence minimum is calculated for each quarter, using prices collected by Goskomstat from 200 cities. In the fourth quarter of 2000, the components of the subsistence minimum were: 50% for food, 25% for other goods, 19% for services, and 6% for mandatory payments.

Adapted from PAR 2004

The poverty line has two components: food and non-food.

- The food poverty line is based on the nutritional requirements of each household and the average cost of a calorie for households from the 2nd quintile of the income distribution.
- The non-food poverty line is based on the consumption of seven commodity groups[23] by households who consumed as much food per capita as the food poverty line. This component of the line takes into account the difference in needs between children, elderly and adults, and economies of scale in consumption.

The next two sections describe the main assumptions used in setting the line, and how the lines were determined using the NOBUS data.

6.1 The Food Poverty lines

The food poverty lines are constructed using the same calorie requirements (norms) as in the official methodology (Table 13). The official approach specifies the calorie requirements for six types of

[23] Clothing and footwear; Housing, water, electricity, gas and other fuels; Furnishings, household equipment and routine household maintenance; Health; Transport; Communication; Education.

individuals: active males in the age group 16 to 59 years; active females in the age group 16 to 54 years; retired persons (males 60 years and over and females 55 years and over); babies less than 1 year old; children 1 to 6 years old and children 7 to 15 years old. These requirements differ between Arctic (cold) zones and the rest of Russia. The Arctic zones have been given special attention in the determination of the official poverty lines because they are the coldest regions and therefore their caloric requirements are higher than the other regions by about 15%.

Table 13. Caloric requirements, per person, per day

	Arctic zones	Rest of Russia
Active male	3100	2730
Active female	2400	2100
Retired male and female	2300	2000
Babies (less than one year)	797	797
Children 1 to 6 years	1820	1610
Children 7 to 15 years	2710	2360
Average	2636	2279
Share of the population living in:	1.2	98.8

In estimating the poverty lines based on NOBUS, we take into account only the caloric requirements for the non-Arctic region. We are not able to identify with NOBUS what parts of a given region or oblasts are located in the Arctic region. However, this omission is unlikely to have any significant influence on our results, given the small share of the population living in those areas. Using the 2002 HBS, Kakwani et al (2004) estimated the share of population living in the Arctic zones to be about 1.2%.

For each household, we estimate the "minimum required caloric intake" based on the individual caloric requirements specified in Table 13, and the age and gender composition of the household as recorded in the NOBUS. Thus, every household from the NOBUS would have different caloric requirements as a function of the composition of household by age and sex.

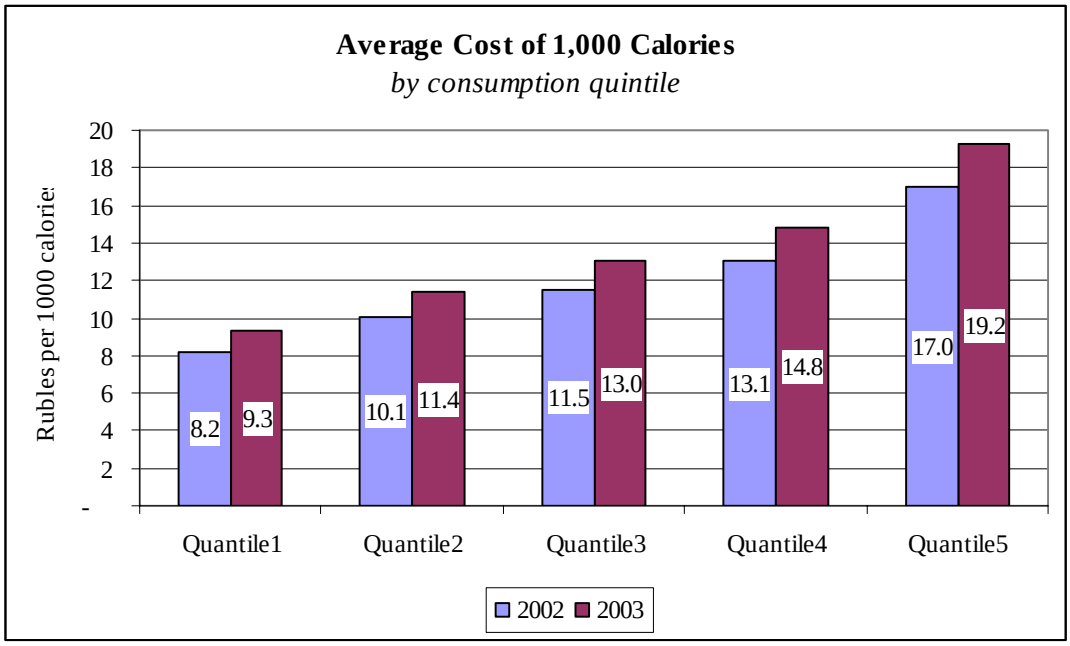
The next step is to convert required calories into a food poverty line, which is the expenditure on food that is required to meet the exogenously determined calorie requirements. If we know the cost of buying the calories, then the food poverty line will be equal to calorie requirements multiplied by the cost of calories.

Kakwani et al (2004) estimate the average cost per calorie for each population quintile based on the HBS 2002. The HBS 2002 survey provides information on type and quantities of food consumed by the households, which were converted into calories using the caloric content of each type of food. These costs are presented in Figure 5, for each consumption quintile and separately for 2002 and 2003. As expected, the calorie cost increases monotonically as we move from a lower quintile to a higher quintile. The richer households have greater calorie cost than the poorer households because they tend to consume richer food, which is more expensive.

In setting up the food poverty line, the international practice is to use the caloric cost of a reference group containing the population that can generally be regarded as poor. Kakwani et al (2004), in line with the international practice, used the caloric costs of the households from the poorest quintile as the benchmark cost for the estimation of the poverty line. In 2002, the households belonging to the first quintile spend 8.2 Rubles on a basket of food generating 1000 calories. The cost of such basket in 2003 was 9.3

Rubles[24]. This caloric cost is expressed in average prices – to determine the level of consumption required in a particular region, the analyst should multiply this cost with the regional price index.

Figure 5



Given that the NOBUS – and HBS – record the food consumption of those members who are present in the household and share the "common pot", for consistency we need to adjust the caloric requirement for absenteeism. The consumption of the household members that are absent during the reference period is not included in the food consumption aggregate. In determining if a household is "food poor", food consumption should be compared with a caloric requirement adjusted for the number of person-days who shared that pot. NOBUS records the number of days each household member was away from the household during the last three months. We use the percentage of the time each member was absent to correct the caloric requirement: if a person was absent half of the time, we include only half of its full-month caloric requirement in the estimation of the food poverty line[25]. About 6% of the sample of individuals report being absent during the last three months, of which 4.5 percentage points for less than a month, and 1.5 percentage points for 2 to 3 months. Correcting for absenteeism is thus important.

The food poverty line is estimated as the cost of the caloric requirement per household per month. The cost of achieving the minimum caloric requirement is obtained by multiplying the cost of 1,000 calories (RUR 9.3 per day) with the caloric requirement of any given household (adjusted for absenteeism) multiplied by 30 (to express it monthly instead of daily). To estimate a per capita poverty line, we divide the cost of achieving a minimum caloric requirement to the household size.

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[24] The average cost of 1,000 calories in 2003 is computed by inflating the 2002 cost determined by Kakwani et al (2004) with the food inflation between the two years, of 13.11%.

[25] We acknowledge that this correction is not precise. The reference period for the food consumption is the last month, while the information on absent members is for the last three months. One person away from the household 1/3rd of the time may have been away for a fraction that ranges from 0 to 100%. Collecting information on absenteeism during the last month would greatly improve the correction for absenteeism.

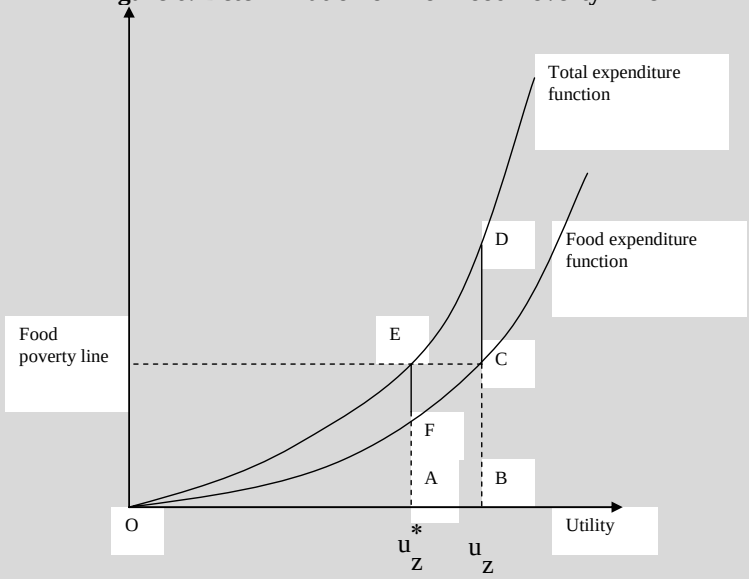
6.2 The nonfood poverty lines

The estimation of the non-food poverty line is less straightforward. There is no agreement on what constitutes a minimum or adequate level of clothing, shelter, education and medical services, some similar standard with the role that minimum caloric intake is playing for food consumption. Kakwani et al (2004) propose to use standard consumer theory to determine the non-food poverty line. Similar with Ravallion (1994), Kakwani recommends setting the non-food poverty line based on the observed consumption of the households whose food consumption equals the food poverty line, i.e. those households who are at the border of being food-poor (Box 7).

Box 7. Estimating the non-food poverty line

Suppose we have obtained the food poverty line F on the basis of nutritional requirements. … In Figure 7, the horizontal axis represents the utility level and the vertical axis represents the expenditures. The figure depicts the food and the total expenditure function, both of which are the increasing functions of the utility level. C is the point that corresponds to the food poverty line on the food expenditure function. Corresponding to point C, we obtain B on the x-axis, which gives the utility level u_z that is consistent with the food poverty line. Corresponding to point B on the x-axis, we obtain point D on the total expenditure function, which gives BD as the total poverty line that is consistent with the utility level u_z. … CD will be the non-food poverty line. The non-food poverty line so obtained will be consistent with the standard consumer theory.

Figure 6: Determination of Non-food Poverty Line



Once the food poverty line is determined, one can then estimate the non-food poverty line …. This method avoids making many difficult normative judgments that have been made in the construction of the official non-food poverty line. It utilizes the consumption patterns of the population as given in the household budget survey. The method involves calculating the non-food poverty line at the point where the per capita food expenditure is equal to the per capita poverty line. Since the food poverty line is different for different households, we constructed a variable called the food welfare, which takes value 100 when per capita food expenditure is equal to the per capita food poverty line. The per capita non-food expenditure at this point will be the average per capita non-food poverty line.

Adapted from Kakwani et al (2004)

To make methodology presented in Box nr. 7 operational when the food poverty line varies across households depending on the household composition, the following procedure is used:

(i) Calculate the ratio of a household's per capita food expenditure to the household's per capita food poverty line multiplied by 100. We call this ratio "food ratio". This ratio will be equal to 100 when the household's per capita food expenditure is equal to the household's per capita food poverty line.

(ii) Arrange the households in ascending order of the food poverty line ratio (in (i)) using the survey data.

(iii) Select the households whose food- poverty line ratio lies between 95 and 105.

(iv) Calculate the average non-food poverty line for the individuals belonging to these households.

Similar with the official methodology, not all reported non-food consumption is included in the non-food poverty line. From ten groups of non-food and services, only seven are included. Items excluded on account that they are not necessities are expenditures for recreation and culture, restaurant and hotels and other miscellaneous goods or services not included elsewhere. Another excluded group is consumption of alcoholic beverages and tobacco. Furthermore, some commodity groups are added to the poverty line only if certain categories of household members are present (children, adults or elderly).

Table 14. Commodity groups included in the estimation of non-food poverty line

Commodity groups	Included in the poverty line?	Allowance made for:		
		Children	Adults	Elderly
Alcohol and tobacco	No	No	No	No
Clothing and footwear	Yes	Yes	Yes	Yes
Housing, water, elect & gas	Yes	Yes	Yes	Yes
Furniture & household equipment	Yes	Yes	Yes	Yes
Health	Yes	Yes	Yes	Yes
Transport	Yes	No	Yes	No
Communication	Yes	No	Yes	No
Recreation and culture	No	No	No	No
Education	Yes	Yes	No	No
Restaurant and hotels	No	No	No	No
Miscellaneous other goods	No	No	No	No

Note: We use the following age cut-offs to distinguish between age-groups: children 0-15 years old; adults 16-55 years old if female or 16-60 years old if male; elderly over 60 (55) if male (female).

Kakwani et al (2004) take a step further in tailoring the non-food poverty lines to the characteristics of each household. For each of the seven groups of commodities included in the non-food poverty line, they specify a parameter to account for economies of scale. The idea behind this parameter is straightforward. While food consumption is a private, non-excludable commodity, some non-food goods may be "consumed" by all household members without excluding others. This happens when household members consume goods with public good character, which can be shared among all members without diminishing the individual welfare, such as watching TV, listening to radio or using a washing machine.

Kakwani et al. (2004) assume that different non-food components have different degree of economies of scale depending on their degree of sharing among household members: "*Suppose θ_j is the economies of scale parameter for the j^{th} component of the non-food poverty line which takes value 1 if the j^{th} component is a purely private good and takes value 0 if the j^{th} component is a purely public good. Suppose n_i is the size of the i^{th} household, then the consumption of the j^{th} component by the i^{th} household will be given by:*

$$(NFPL)_{ij} = k\,(MNFPL)_j\, n_i^{(\theta_j - 1)}$$

where k is the constant of proportionality, $(MNFPL)_j$ is the average per capita non-food poverty line of commodity group j, and n_i is the household size. If θ_j is equal to 1, then every household will be allocated the same per capita expenditure of $(MNFPL)_j$ implying no economies of scale for the jth component. If θ_j is equal to 0, the i^{th} household will be allocated the per capita expenditure of $(MNFPL)_j/n_i$. The parameter k is determined so that the mean of $(NFPL)_{ij}$ across all households is equal to $(MNFPL)_j$, which ensures that the adjustment for economies of scale does not change the population mean of each non-food component."

The rationale supplied by Kakwani et al. (2004) is as follows: "*Although the clothing is generally a private good attributed to individual members of the household, some sharing of clothing does go on within the households. So we assume θ_j for clothing to be equal to 0.9, which means there is a saving of 10 percent because of economies of scale in clothing. Housing including utilities and furnishing and household equipment are public goods so we assume θ_j for these goods to be equal to 0. The health services can be regarded as a purely private good (because there cannot be sharing of health services) so we assume the economies of scale parameter for health to be equal to 1. The Households incur expenditure on education only because of presence of children in the household so we assume that expenditure on education is proportional to the number children in the household (divided by household size). Similarly, we assume that only working adults incur expenditure on transport so expenditure on transport is made proportional to number of working adults divided by household size similarly, expenditure on communication is made proportional working adults divided by household size.*"

Thus, each component of the non-food poverty line has a different degree of economies of scale, adjusted using an "*economies of scale parameter*" ranging from zero (non-excludable or public good) to one (individual or private good). The assumed scale parameters are: 0.9 for clothing and footwear; 0.0 housing, water, electricity & gas; 0.0 for furniture & household equipment; 1.0 for health. The parameter used for transportation and for communication is the number of working adults divided by household size; while that for education is the number of children divided by the household size. If the scale parameter is 1, every household will be allocated the same per capita expenditure of the mean non-food poverty line. If the parameter is equal to 0, each household is allocated the mean non-food poverty line divided by the household size. The formulas used to estimate each household-specific component of the non-food poverty line are explained in Table 15. In the Table A5 we present the ratio of the household-level mean non-food poverty line to the sample average for different household sizes, an intuitive statistic that spells out the assumed economies of scale for different commodity groups.

Table 15. Economies of scale in consumption for different categories of non-food items

Assumptions used by Kakwani et al. (2004)

Commodity group	Formula for per capita non-food poverty line	Extend of economies of scale	Added only to household with:
Clothing and footwear	MNFPL/hsize^.1	Small	All households
Housing, water, elect & gas	MNFLP/hsize	Full	All households
Furn & hhold equipment	MNFLP/hsize	Full	All households
Health	MNFPL	None	All households
Transport	MNFPL/hsize^(1-adults/hsize)	Moderate	Working-age adults
Communication	MNFPL/hsize^(1-adults/hsize)	Moderate	Working-age adults
Education	MNFPL/hsize^(1-children/hsize)	High	Children

The variables in the formula in the table have the following meaning: *MNFPL* is the "mean non-food poverty line"; *hsize* is the household size; *adults* is the share of adults; and *children* is the share of children in the household. Adults are persons 16 or older up to the retirement age. Children are persons up to 16 years old.

The total non-food poverty line is estimated by adding each of seven components.

6.3 Total poverty lines

For each household, we estimate a per capita poverty line summing up of the food and non-food poverty lines. This (total) poverty line represents 1832 Rubles as of the 2nd quarter of 2003. Food represents about on third of the poverty line (Table 16). The largest group of non-food necessities consists of rent, housing and communal services (38% of the total poverty line), followed by health, furniture and household equipment and, respectively, clothing and footwear (each contributing 7-8% to the total poverty line). Spending for education or communication services contributes little toward the total poverty line. The low share of private spending on education and health reflects the public provision of these services in the Russian Federation, and the high income elasticity of these goods.

How does the NOBUS-based poverty line compare to the HBS-based poverty line reported by Kakwani et al. (2004)? We would expect the two magnitudes to be of comparable size, but not similar (in real terms), given the differences that exist in terms of data collection techniques (see Box 1) and coverage of the consumption indicator. On the basis of the coverage of the consumption indicator we would expect the NOBUS-based poverty line to be higher. Compared to the NOBUS, the HBS-based poverty line, for instance, does not cover a important elements of household welfare, such as the one derived from durables and housing, primarily because such data is not adequately collected in the HBS.

Our expectations are confirmed. In 2003 (2nd quarter) prices, the HBS-based poverty line amounts to 1195 Rubles[26], is substantially lower compared to the NOBUS line (1832 Rubles). The composition of the two lines reveals that in the NOBUS the share of goods with public good character (housing, utilities, furniture and household equipment) is substantially larger compared to the HBS (45% compared to 14%). This is expected, given that the NOBUS includes detailed modules to capture such expenditures, and the methodology used in this paper captures well the consumption (*user value*) of such goods.

Table 16. Comparing the Poverty lines derived from the NOBUS and the HBS

	HBS 2002		Nobus 2003	
	Rubles/month	%	Rubles/month	%
Food	570	54	627	34
Clothing and footwear	197	19	122	7
Housing, water, elect & gas	130	12	694	38
Furniture & hhold equipment	20	2	122	7
Health	26	2	156	8
Transport	66	6	86	5
Communication	23	2	5	0
Education	24	2	20	1
Non-food	486	46	1205	66
Total	1056	100	1832	100

Source: Kakwani and Sajaia (2004), World Bank (2005) and own estimations for 2003

[26] The increase in consumer prices between 2002 and the 2nd quarter of 2003 was 1.1311 times.

7. Poverty Level and Profile

This paper does not aim to present a detailed profile of poverty in Russia, but to explore how poverty and inequality estimates will vary if we depart from the preferred methodology outlined in the preceding sections. However, before presenting the results of the sensitivity analysis (section 8), it is useful to highlight some of the key poverty figures.

According to this definition of poverty, we found out that one in four Russians suffered from material poverty in the second quarter of 2002 (Figure 7). For Russia as the whole, the poverty headcount was 24%. Consistent with other studies based on HBS or RLMS, we found that larger households face higher poverty risk. The increase in the relative poverty rate, however, manifests strongly only for households with 4 or more members, or with two or more children. But large households, or households with more than two children, are a small proportion of the whole population in Russia. The largest contribution to the poverty pool originates from "median" households, of 3-4 persons, without children or with only one child (Figure 8).

We classified all households into equal-sized quintiles based on the value of the stock of durables they own. Not surprisingly, we found a high correlation between the endowment with durables and the level of material poverty, but this correlation is not perfect. For instance, there is a small set of households which are generously endowed with durables (8% of the households from the highest "durables" quintile in Figure 7, representing only 6.7% of the total number of poor in Figure 8), but with a low level of consumption. They can be the households who lost during transition, well endowed with durable goods and housing at the start of the transition, but affected by economic shocks thereafter. Finally, the incidence of poverty is similar for homeowners or tenants, once we account for both rent paid and the rental value of the owner-occupied dwellings.

Figure 7. Poverty Headcount: Fraction of poor in each population subgroup
Share of the poor in each category, as % of the total population in each category

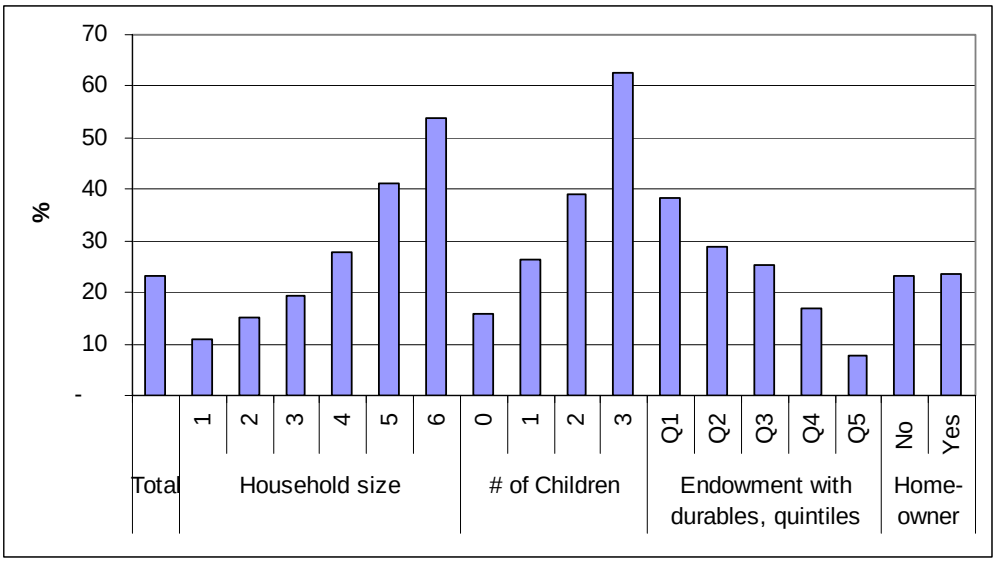
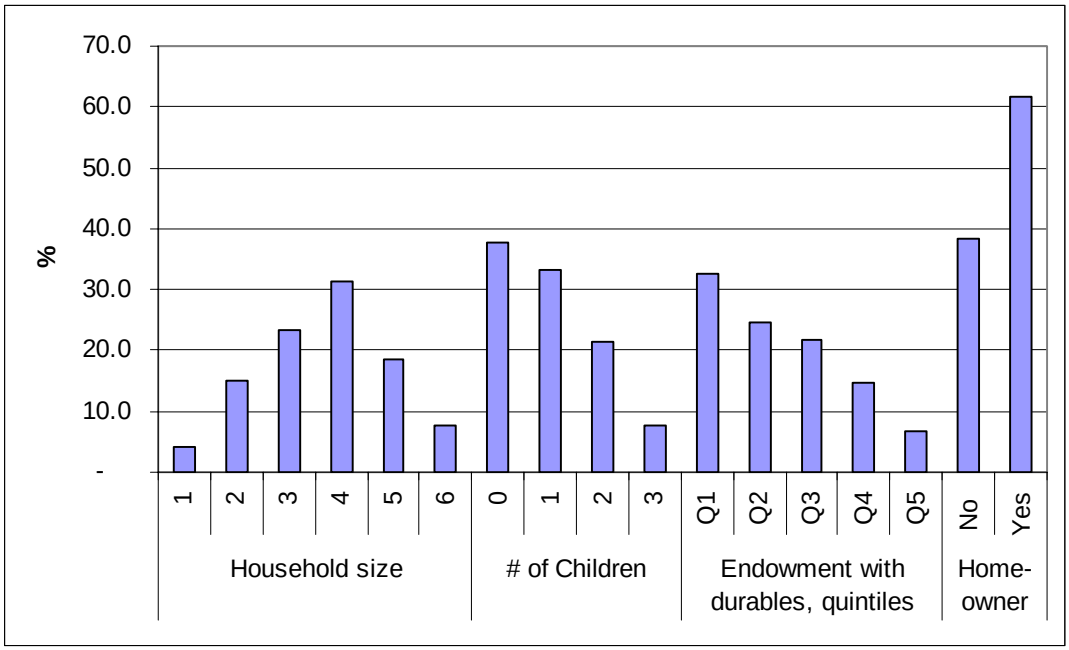


Figure 8. Contribution to total poverty

Share of the poor in each category, as % of the total number of poor



We also find substantial differences in poverty across regions and areas of residence (Table 17), not surprising for a country of the vastness of Russia. Although only a quarter of the population lives in rural areas, rural inhabitants represent 48.2% of the poor, with a heightened risk of poverty (41.9%) than the urban households (16.6%). Among the federal regions, poverty headcount is higher in the South and Far-East (30.3% and 29.3% respectively) and lowest in the North-West region (15.3%). In all other federal regions, the risk of poverty is close to the national average. This statistics are masking some of the variation in terms of poverty across the 78 regions and republics of the Russian Federation.

Table 17. Poverty profile

	Fraction poor	Share of the poor
Area of residence		
Urban	16.6	51.8
Rural	41.9	48.2
Federal region		
Central	18.9	20.6
North-West	15.3	6.6
Siberia	25.6	15.7
South	30.3	18.8
Far-East	29.3	6.2
Urals	26.4	9.8
Volga	23.7	22.3

8. Sensitivity analysis

So far, we constructed a consumption indicator and a set of household-level poverty lines following the recommendations of renowned international experts, adapted to data available in the NOBUS. This welfare indicator is our benchmark, the first-best solution for ranking households from the poorest to the richest. We prefer this indicator because it is comprehensive and methodologically sound. It includes all elements typically covered in surveys designed to measure consumption-poverty: food purchased, produced in the households or received in gift; non-food items of current use; services; durables and

housing. In accord with the consumer theory, the indicator include the flow of welfare derived by the households from the stock of durables and housing they posses, estimated as the user value of the stock of durables, and the rent paid or imputed for the dwelling each household is living in.

In this section, we address the following questions: How sensitive are the poverty and inequality statistics to different procedures of accounting for three elements of household welfare: durable goods; housing; and subsidized goods and services consumed by privileged citizens? By how much would the rural-urban differences in poverty be reduced if we take into account of the variation of purchasing power between areas of residence? How much would this impact on regions with a high density of rural population, such as the South?

We construct six alternative consumption indicators and corresponding poverty lines to the preferred method (A), presented briefly in Table 18. All indicators have a common component or basic consumption aggregate, consisting of all consumption of food, non-food and services, except the consumption of durables and housing (rental cost).

- The aggregate B includes the basic consumption aggregate, plus the value of durables purchased in 2003 and all rent, reported or imputed, associated with the main dwelling.
- The aggregate C includes the basic consumption aggregate, all rent, reported or imputed, associated with the main dwelling but exclude the consumption or purchase of durables.
- The aggregate D includes the basic consumption aggregate, the user value of the stock of durables owned by the household and the rent paid for the main dwelling.
- The aggregate E includes the basic consumption aggregate, the user value of the stock of durables owned by the household, but exclude rent (paid or imputed).
- The aggregate F is similar with the preferred consumption aggregate (aggregate A), except for the adjustment of food consumption using region- and area-specific price indices.
- The aggregate F is similar with the preferred consumption aggregate (aggregate A), except that it excludes the value of subsidies enjoyed by privileged citizens.

Table 18. Sensitivity analysis: Comparing alternative consumption indicators

Indicator	Basic consumption*	Durables			Rent		
		Uservalue	Purchases	None	Imputed	Paid	None
A. Gold standard	■	■			■		
B. With durables purchased in 2003	■		■		■		
C. Without including durables	■			■	■		
D. Including only rent paid	■	■				■	
E. Without including rent	■	■					■
F. Accounting for rural-urban price diffs	■	■			■		
G. Without subsidized consumption	■	■			■		

*) Basic consumption includes all food, non-food and services except durables and rents

For each alternative consumption indicator, we estimate another set of household-specific poverty lines according to the methodology described in section 6, and generate another set of welfare ratios. We estimate poverty and inequality statistics for these alternative welfare indicators, and we compare the resulting poverty profile with the benchmark one in few dimensions such as household size, endowment with durables, homeownership, and location.

8.1 Treatment of durable goods

Up to now, we illustrated how to estimate the welfare derived from the stock of durables following the guidelines of Deaton et al (1999) applied to the NOBUS 2003 data. The official poverty methodology, however, does not use this method, in part because the HBS does not collect information about ownership

of assets and their characteristics. The official methodology incorporates, instead, the value of the recently purchased durable goods in the consumption aggregate (though, not in the poverty line). Such methodological choice is not consistent with the consumer theory and the welfare concept we are trying to measure, which is an approximation of the long-term, smoothed income of the household. It has a number of negative consequences on the precision of the resulting poverty and inequality statistics:

(i) It treats differently two households which are identical in all respects, except the timing of the purchase of their durable. An important property in welfare measurement, consistency of welfare ranking, is not respected. An example below – a tale of two NOBUS households – helps to illustrate this point.

(ii) When aggregated for the whole sample, the inclusion of the purchases of recent durables instead of the user value of the stock of durable goods has a large and significant impact on reported inequality and poverty[27].

To illustrate this fact, we compare the following consumption aggregates and methods: A, the benchmark consumption aggregate, with B, the consumption aggregate with durables purchased in 2003, and with C, the consumption aggregate without durables. Let's note that method B is similar with the official methodology used by ROSSTAT to estimate the consumption aggregate[28].

Impact on the consistency of welfare ranking at household level.

First, we illustrate the impact of the methodological choice endorsed by ROSSTAT on the ranking of similar households. We identify in the NOBUS two similar households. They have the same level of consumption (not including the welfare derived from the durables), own only one TV set, and have the same household size. Both households have purchased one TV set for its median price of RUR 6500. The only difference is the timing of the purchase: one household purchased the TV in 2002, and the other one in 2003. Table 19 depicts the estimated rank (decile) and per capita consumption for the two households using three per capita consumption measures:

(iii) one that includes the user value of the stock of durables (welfare aggregate A);

(iv) one that includes the value of durables purchased in 2003 (welfare aggregate B); and

(v) one that ignores durables ownership or purchases altogether (welfare aggregate C)..

Table 19. A tale of two similar households who purchased the same TV set: What impact does the different treatment of the consumption of durables have on household welfare?

Household ID	Year purchased	Price	Deciles based on a consumption aggregate wich includes:			Ranks based on consumption aggregate which includes:		
			uservalue of the durable stock	purchase of durables	no durables	uservalue of the durable stock	purchase of durables	no durables
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7517630453	2003	6500	3	8	3	1839	3621	1799
1203230607	2002	6500	3	3	3	1821	1776	1776

Source: Own estimations based on ROSSTAT's NOBUS 2003

[27] The simulation in the main text of the paper illustrates what would happen with poverty and inequality if the cost of recently purchased durables will be included in the consumption aggregate AND in the poverty line. In this case, we will obtain artificially inflated poverty and inequality numbers. However, the official methodology includes the value of recently purchased durable goods in the consumption aggregate, but not in the poverty line. The poverty line includes only the "wear-and-tear" cost of a minimal stock of durable goods. This particular methodological choice results only in an artificial increase in inequality. The impact on poverty is relatively modest.

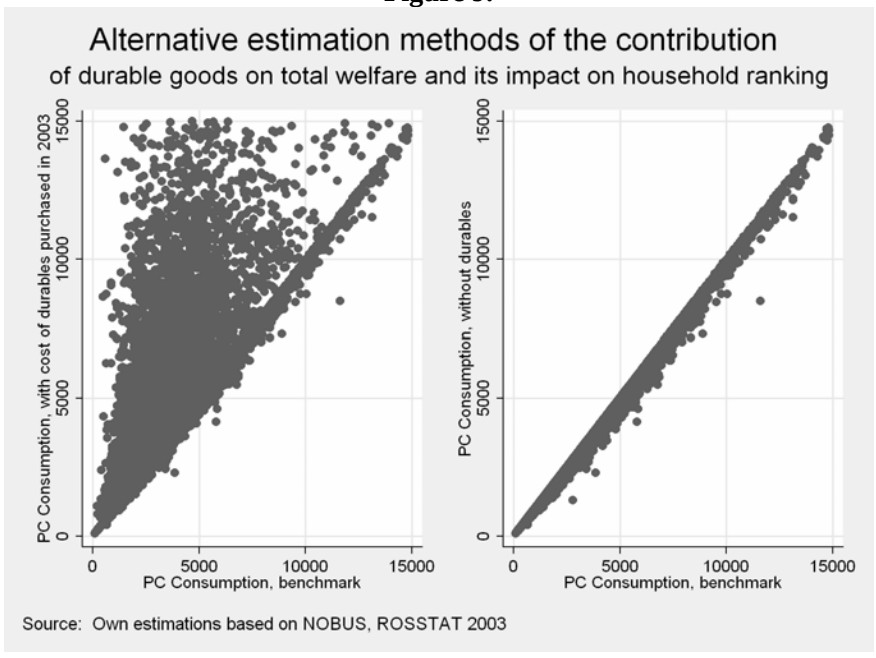
[28] Except for the treatment of housing (rent) expenses.

Using the methodology recommended in Deaton et all (1999), these two similar households are both located in the third decile (column 4 in Table 19). Using the practice followed in HBS, the household who purchased its only TV set in 2003 is "promoted" to decile 8th, in the top of the income distribution. In per capita terms, the first household exhibits a large increase in consumption (from 1839 to 3621), while the otherwise similar household who purchased a TV set of the same value one year before looses some ground (his consumption falls from 1821 to 1776, as we ignore the welfare she/he enjoys by owning the TV set and other durables purchased before 2003). Ignoring the information about ownership or purchases of durables altogether (column 6 in Table 19), both households are placed again in decile 3[29]. This example is not an exception. In Table Ax in the annex we list all households who purchased only one TV set in 2002 or 2003, 47 cases in total. Without exception, including the value of durable items purchased during the reference period (in the case of the NOBUS, in 2003) causes an artificial increase in the welfare ranks of the household.

This example foreshadows our key suggestion concerning the treatment of durables in estimating household welfare. To generate a comprehensive and consistent measure of household welfare, the HBS should collect all the information required to estimate the *user value* of a stock of key durable items. If this first-best solution is found too difficult to implement, then ignoring the ownership and purchases of durables altogether is preferred to including the purchases of durables bought in a reference period.

Impact on the precision of welfare ranking

Figure 9.



In Figure 9, we use a couple of scatter plots to illustrate the re-ranking that occurs when we depart from the benchmark method. The left panel compares the benchmark method (on the X axis) with the alternative B. When only the consumption of recent durables goods in included in the consumption aggregate, many households who own durables older than 2003 have their welfare level artificially pulled down, while few households who purchased durable during 2003 experience large artificial increases in their welfare. The Pearson correlation coefficient between the two series is only 0.63. Simply not including any information about durables, as in the right panel, would generate a set of welfare ranks which are very similar with the benchmark case. Excluding all information on the

[29] As expected, ignoring the information about the user value of the stock of durables result in a smaller per capita consumption, as illustrated in the last column in Table 9.

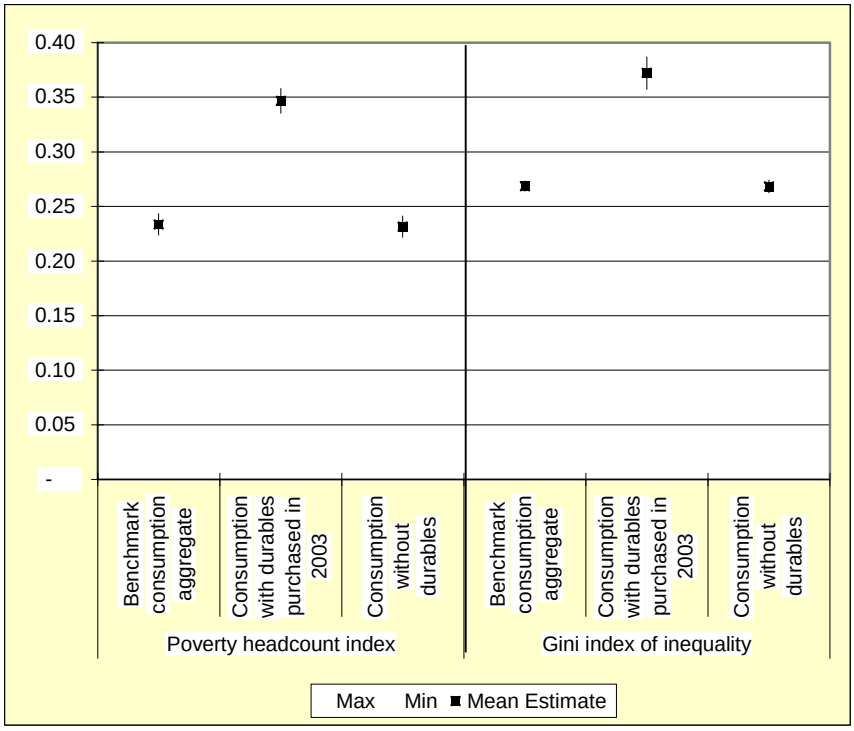
consumption associated with the stock of durable owned by the households will diminish the welfare aggregate, illustrated by the placement of the points bellow, but close, to the diagonal. The Pearson correlation coefficient between the aggregate A and C is only 0.96.

Impact on overall poverty and inequality numbers

The overall impact of the different treatment of durable goods on overall poverty and inequality is illustrated in Figure 10. The alternative method C – ignoring the all information on durables – gives similar poverty and inequality numbers with our preferred method. Poverty headcount is 23.1% using method C compared to 23.4% in the benchmark method. The Gini index of inequality in per capita consumption changes imperceptibly to 0.268 compared to 0.269 in the benchmark method. The discrepancies between the two set of statistics are not statistically significant.

Alternative B, where the cost of recently purchased durables is included in the consumption aggregate AND the poverty line, results in artificially inflated poverty and inequality statistics. Poverty headcount jumps up to 34.7% and the Gini index of inequality increases to 0.372. However, alternative B is not similar in all respect to the official methodology for poverty measurement. The official methodology treats the welfare derived from durable goods asymmetrically. While the consumption aggregate includes the value of recently purchased durable goods, the normative poverty line includes only the "wear-and-tear" cost of a minimal stock of durable goods. Under this combination, only inequality increases artificially. The impact on poverty is relatively modest. Tables A11 to A13 in the Statistical annex give the level of poverty and inequality statistics and their standard error for all three scenarios considered in this section.

Figure 10 Impact of the treatment of durable goods on poverty headcount and inequality



These results are fully compatible with those obtained by Gibson (2004) using the HBS. Note that, given the HBS data limitation, Gibson compared only alternatives B (the Cash expenditure variable estimated by ROSSTAT) and C (what he terms experimental consumption aggregate[30]). He notes: "One clear effect of amending the welfare indicators in the way illustrated here is that measured inequality would fall. The cash expenditures of the richest decile include several items that are excluded from the experimental indicator, while the converse holds for the poorest four deciles who see their measured welfare increase when the experimental indicator is used. The Gini coefficient for per capita cash expenditures is 0.446 (and for cash incomes it is 0.450), while for the experimental measure that excludes durables the Gini is only 0.362."

Based on the analysis of the NOBUS data, we have four suggestions for the improvement of HBS data collection procedures on durable goods:

- Improve data collection by adding a module on the stock of durable goods to the HBS questionnaire similar with the one in the NOBUS (annexed). This module should collect the following key variables: (i) whether the household has the durable good; (ii) how many pieces do the household own; (iii) for the most recently acquired good: indicate its purchase price, resale value and age.
- Compared with the NOBUS module, disaggregate some of the items, especially those items owned by the majority of households that are heterogeneous. One such example are the TV sets, where we recommend collecting more information about the quality of the item that may improve the imputation model (collecting information about the attributes of the good, such as color versus B&W TV; domestic or imported good).
- On the other hand, the survey can drop from the list of durables some items which are relatively cheap, such as radio sets, music centers, tape recorders or audio players. The possession of such items does not change the relative position of the household significantly.
- Collect information about the resale value for all durable items irrespective of their acquisition date. The NOBUS experiment suggests that a large fraction of households (2/3rd of those interviewed) were able to provide an answer to this question. Such a measure will reduce the scope for imputation of missing values.

8.2 Treatment of the housing costs

The treatment of housing consumption has a smaller impact on reported poverty and inequality, but results in a systematic downward bias in the welfare of homeowners compared to those who rent the dwelling in which they live. To illustrate these facts, we compare the following consumption aggregates and poverty methods:

- A, using the benchmark consumption aggregate and poverty methodology; with
- D, the method who uses a consumption aggregate which include rent only for tenants; and
- E, a method where the consumption aggregate does not include any rent, either for tenants or homeowners.

Let's note that method D is similar with the official methodology used by ROSSTAT, except for the treatment of durable goods. In the official methodology for poverty measurement, only the rent paid (and the self-reported subsidy) is included in the consumption aggregate. The consumption of households who occupy their dwellings is not adjusted upwards with the imputed rent.

[30] The experimental consumption aggregate is derived from the cash expenditure indicator, less intermediate consumption, taxes, food received as gift and purchases of durables.

One reason for such omission is the lack of data: up to 2004, the HBS did not collect information on dwelling characteristics that might be use to estimate imputed rent, not ask homeowners to estimate the rent they may get for their house. Including imputed rent in the consumption aggregate will enhance the comparability of survey and the system of national accounts (SNA) data. It is a standard practice in the National Accounts system to include an imputed rent component in the macro consumption aggregate.

Impact on the consistency of welfare ranking at household level

To highlight that omitting imputed rent from household consumption results in treating differently two otherwise identical households, we take two households which are similar in all respects (household size and composition, and the non-housing consumption), except for home ownership. A reasonable welfare measure would rank the household who owns its dwelling as better off, compared to the one who rents it. The official methodology, however, does exactly the opposite; by adding the rent paid to the consumption, hence welfare, of the household who does not own a house, but ignores the welfare derived from using its own dwelling by the homeowner household.

Table 20 tells a tale of two households from the NOBUS that are almost identical in all other characteristics except house ownership. Both households consist of one person, have a per capita consumption close to the national median (RUR 2200 per month), and live in similar dwellings worth rents close to the national median (RUR 180 per month). The only difference is that the first household owns the dwelling he lives in, while the second one rents it. We rank the two households on the basis of three per capita consumption aggregates:

- one that includes the actual or imputed value of the rent (column 7 in Table 20) (method A),
- another one who does not include any rent component (column 8) (method E) and
- a third one who includes only the value of rent paid (column 9) (method D).

Table 20: A tale of two similar households living in a similar apartment: What impact has the different treatment of the home ownership on household welfare?

Household ID	Owns the dwelling he/she is	Value of the nominal paid or imputed	paid	Deciles based on a consumption			Per capita consumption aggregate		
				rent paid or imputed	no rent	only paid rent	rent paid or imputed	no rent	only paid rent
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2506450090	Yes	1052	0	6	5	5	3732	2846	2846
5012120556	No	1062	1062	6	5	7	3705	2781	3705

Note: The difference between columns 7 and 8 does not equal column 2, because the per capita consumption aggregate was adjusted for regional price difference while the rent information is expressed in current / local prices.

Using the methodology recommended in Deaton et all (1999), these two (similar) households are both located in the 6th decile. Using the practice followed in HBS, the household who rents the dwelling would be promoted in the 7th decile, while the one who owns it would be "pushed back" to the 5th decile (columns 6 in Table 20). Ignoring the information about rents altogether (columns 5 in Table 20), both households are placed in the same fifth decile. While including the value of rents paid or imputed is the closest option to the theoretical ideal, absent the necessary information the second best solution is the ignore such information altogether.

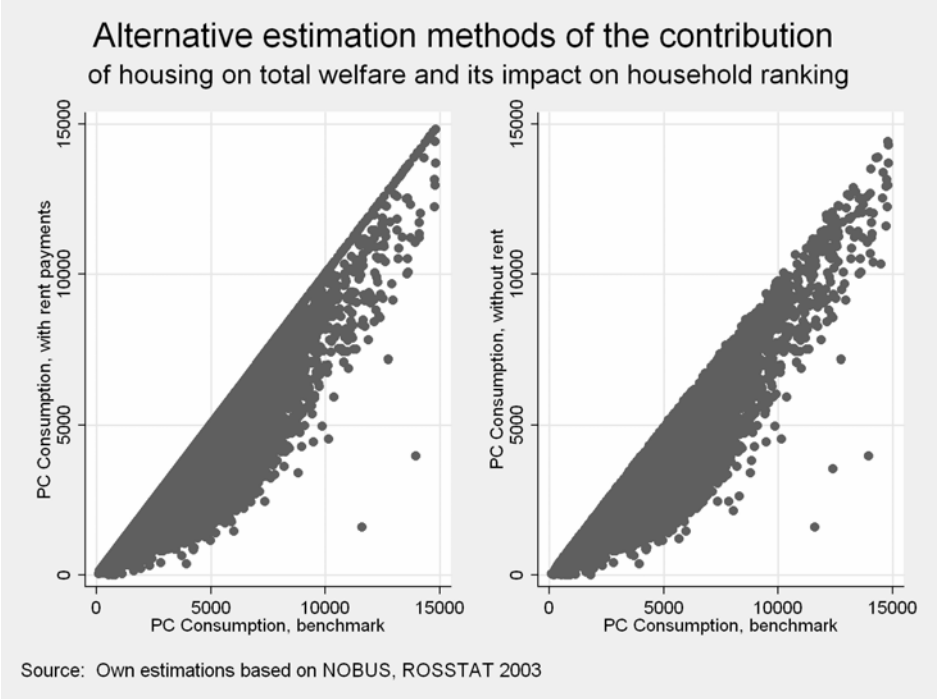
Impact on the precision of welfare ranking

In Figure 11, we use again two scatterplots to illustrate the re-ranking that occurs when we depart from the benchmark method. The left panel compares the benchmark method (on the X axis) with the

alternative D. On the vertical axis, the consumption aggregate E does not include imputed rent for homeowners and, as a consequence, these households see their welfare level artificially pulled down. The Pearson correlation coefficient between the two series is 0.95.

Simply not including any information about rent paid or imputed, as in the right panel, would generate a set of welfare ranks substantially lower than the benchmark case. The Pearson correlation coefficient between the aggregate A and E is 0.94. However, alternative E maintains the relative poverty ranking between households who own their dwelling and the ones who rent them, while alternative D is reversing it. On this account, we prefer alternative E to D.

Figure 11.



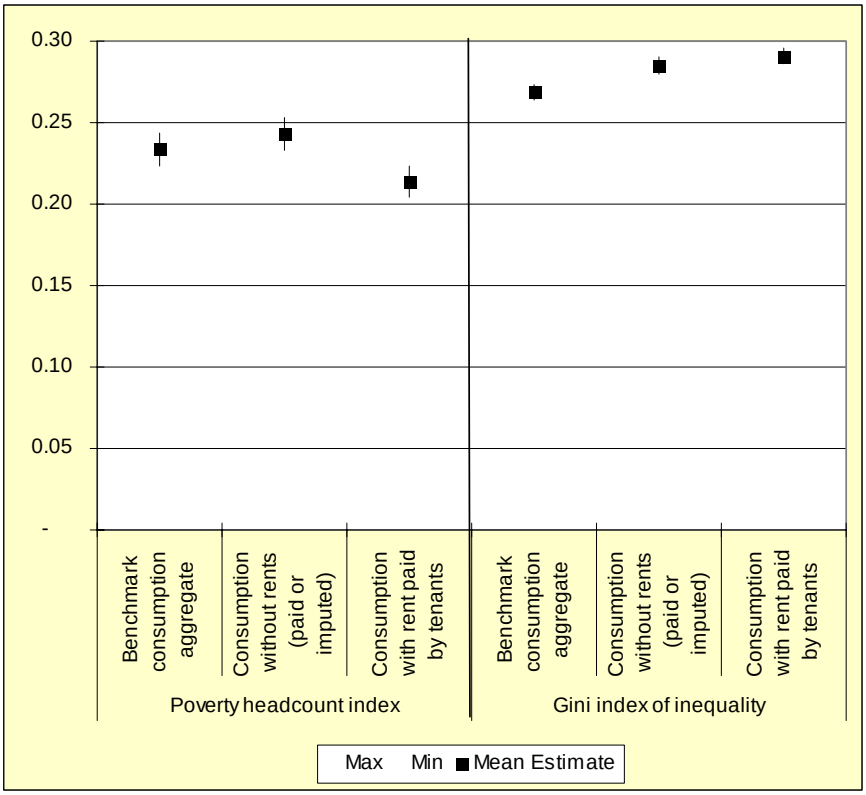
Impact on overall poverty and inequality numbers

The treatment of housing costs in the official methodology has a moderate impact on overall poverty or inequality numbers, as illustrated in Figure 12a. Accounting only rent paid (method D, similar with RosStat official methodology) would slightly increase the poverty headcount from 23.4% (method A) to 24.3%, and inequality from 0.269 to 0.285. Only the change in inequality is statistically significant. Ignoring all information on housing costs (Method E) reduces the poverty headcount to 21.4% but increase inequality to 0.291. Both changes in poverty and inequality are statistically significant. Thus, accounting for the welfare derived from housing reduces inequality, mainly because the characteristics of the housing are less unequally distributed than the other components of household welfare.

The relatively small impact of housing consumption on poverty and inequality levels is due to the low level of rents prevailing in 2003. This, however, is a temporary phenomenon. With the liberalization of the housing market, and advancement in the housing and communal services reform, rents are likely to increase above (consumer price) inflation. Such "inflationary expectation" are present, for instance, in the hypothetical value of rents that homeowners report for their dwellings. An increase in rents and in the

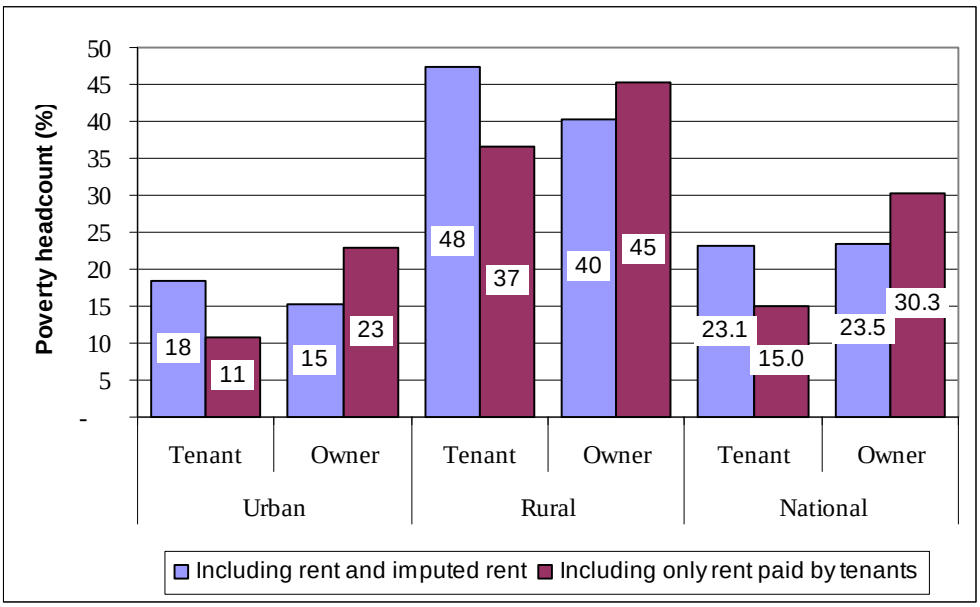
"housing component" of the welfare aggregate justifies increased data collection efforts of this element of household welfare.

Figure 12a. Sensitivity of poverty statistics to different treatments of the "consumption of housing"



The treatment of housing in the official methodology – where reported rents (often well below market value) are included in the consumption of tenants, while the rental value of the dwelling is omitted from the welfare of the homeowners – distorts the relative poverty ranking between homeowners and tenants (Figure 12b). Compared to the preferred, benchmark methodology to estimate poverty, the incidence of poverty among homeowners is overestimated by seven percentage points (30.3 instead of 23.5 in the benchmark), while poverty among tenants' is underestimated by 8 percentage points (15.0% compared to 23.1% in the benchmark). This distortion is higher for the subgroup of residents living in large cities. The paper illustrates different ways to account for the full value of the housing services in the estimation of household welfare.

Figure 12b. Poverty among homeowners and tenants: A distorted picture



To correct the negative bias against homeowners, ROSSTAT has two options: (i) to improve data collection practices to allow for the estimation of imputed rent; or (ii) to exclude the information on rent paid from the consumption aggregate and poverty line.

The implement the first option, HBS questionnaire should collect a minimal set of dwelling characteristics to predict rent and use rent plus imputed rent. To identify a parsimonious set of characteristics which have the highest predictive power in the NOBUS dataset, we use a step-wise regression algorithm. The following variables are excluded: if the household has electricity, gas mains or lavatory inside the dwelling. Other variables (such as oblast, type of locality, type of dwelling and ownership of the dwelling) are already collected in the HBS. The question we suggest adding are: the living area of the dwelling; the building material of the house; and availability of a set of amenities such as elevator, sewage, water supply, bath, electric stove, telephone as well as the source for heating and water supply.

8.3 Accounting for differences in food prices across areas of residence

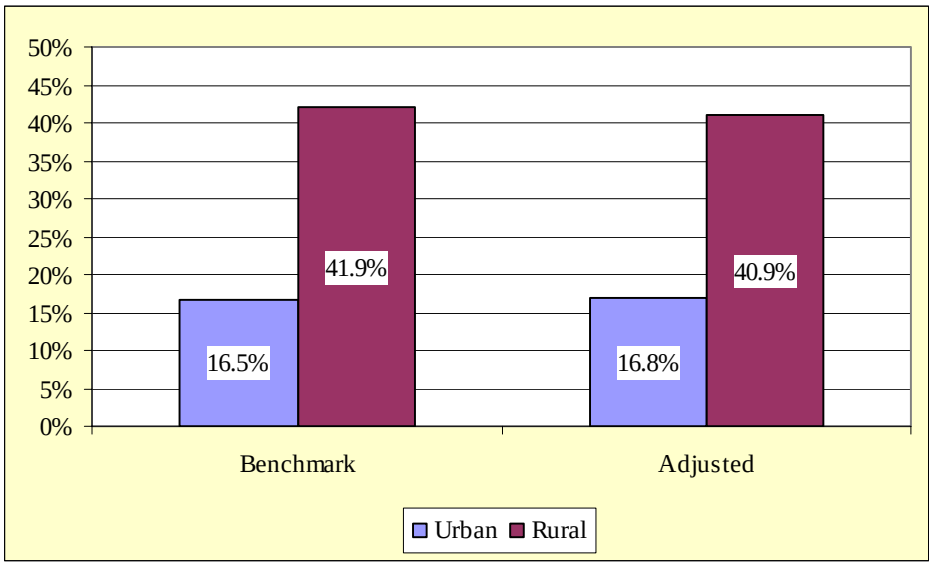
Adjusting for rural-urban food price differences reduces the rural-urban poverty differential, but not substantially; the impact on reported poverty and inequality is small and not statistically significant. To illustrate this fact, we compare two consumption aggregates and methods:

- Method A, based on the benchmark consumption aggregate; with
- Method F, based on a consumption aggregate where the food consumption is deflated by regional AND area-specific price deflators.

In section 5.1, we estimated that food prices in rural areas tend to be, on average, 4 percentage points lower in rural than urban areas. Thus, we expect that correcting for these price differences, poverty will be higher in urban areas compared to the benchmark method, and lower in rural areas. Figure 13 present the estimates. In rural areas, overall poverty falls from 41.9% under benchmark, to 40.9% when we adjust for food price differences. In urban areas, the increase is very small, from 16.5% to 16.8%.

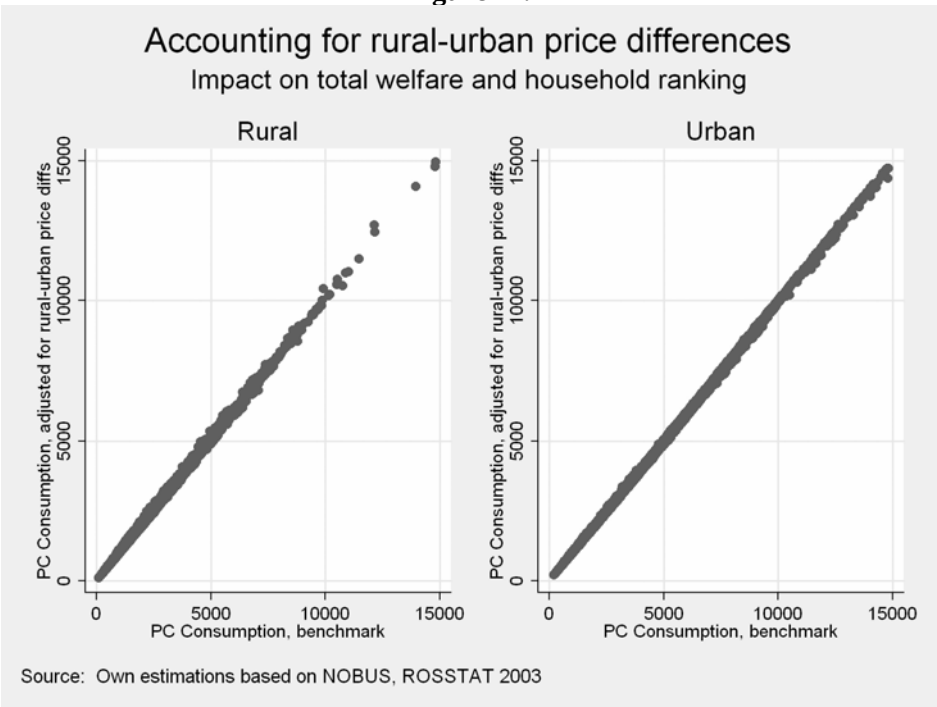
Overall, adjusting for food price differences narrows the rural-urban poverty by 1.3 percentage points. The difference is not statistically significant. Changes in the level of inequality are even smaller.

Figure 13. Changes in poverty headcount when accounting for rural-urban food price differences



Comparing the two welfare aggregates – with and without correction for differences between rural and urban food prices – produces a similar result. We illustrate this graphically in Figure 14, through two scatter plots of the two consumption aggregate (benchmark vs. adjusted for food price differences), separately for rural and urban areas. The correlation coefficient between the two series of welfare ratio is 0.99.

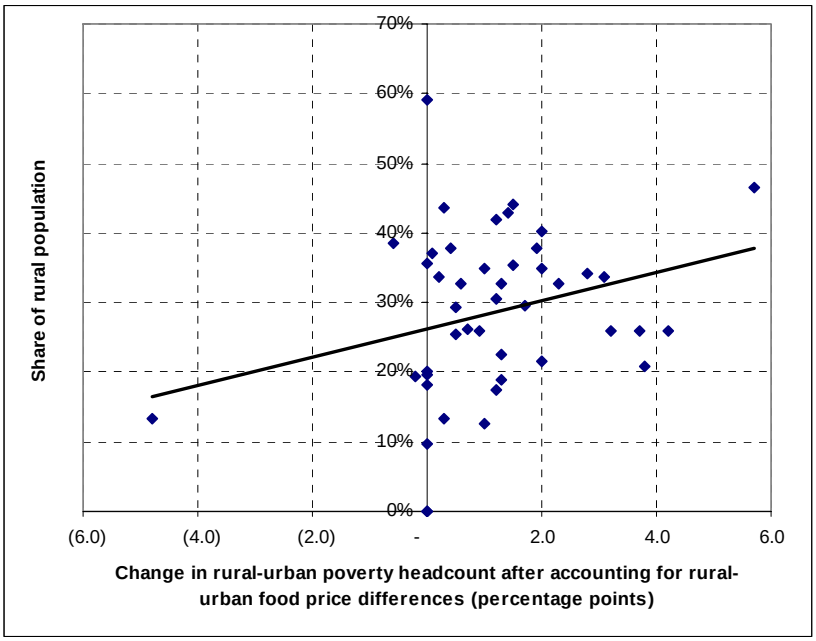
Figure 14.



Why are observed differences so small? Primarily, this small effect is due to a relatively low discrepancy between urban and rural food prices, and a moderate share of food in total consumption (37%).

Taking rural-urban food price differences into account does not change substantially the level of poverty and inequality nationwide. However, for some regions – especially the regions with a higher share of rural population – the adjustments can be substantial (2 to 6 percentage points reduction in the rural-urban poverty differences compared to the benchmark scenario). Thus, taking such differences into account is important to obtain accurate regional poverty statistics.

Figure 15. Accounting for rural-urban food price differences results in a smaller rural-urban poverty differential in regions with high share of rural population



8.4 Accounting for the welfare derived by privileged citizens from subsidized consumption

Surprisingly, although Russia spends a large share of GDP on consumer subsidies (6% in 2002), the impact on poverty and inequality is very small, and not statistically significant. Eliminating such subsidies will reduce the poverty headcount from 23.4% to 23.3%, a statistically not significant difference (Figure 16). Similarly, inequality falls imperceptibly from 0.269 to 0.271. This is due to the fact that the bulk of such subsidies are not targeted to the poorest Russians, but distributed to privileged citizens, who are not poor. This particular system of consumer subsidies – for privileged citizens – is more regressive than the typical, universal consumer subsidy, where all consumers enjoy lower prices.

The impact that such consumer subsidies have on poverty and inequality was estimated by compare two consumption aggregates and methods:

- Method A, based on the benchmark consumption aggregate, which includes consumer subsidies; with
- Method G, based on a consumption aggregate where consumer subsidies are excluded.

Figure 16. Changes in poverty headcount when excluding subsidized consumption

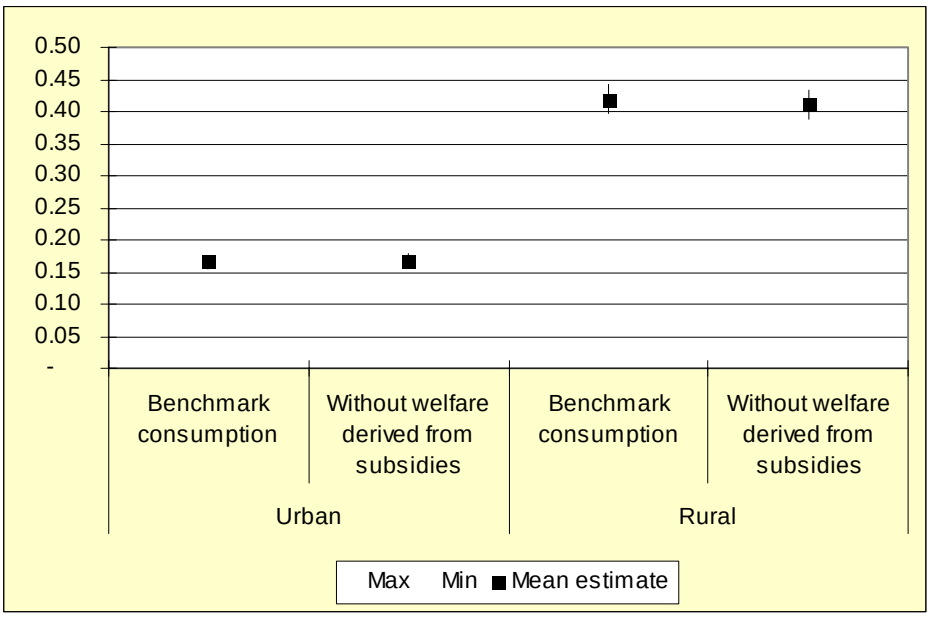
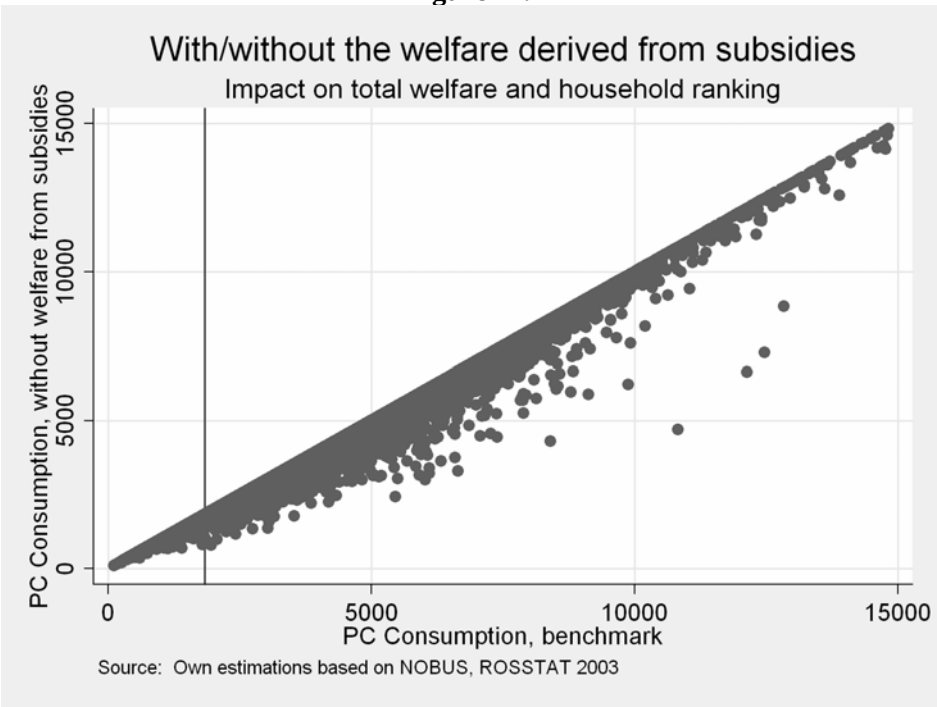


Figure 17 illustrates why the poverty impact of such a large volume of spending is small. First, note that without such subsidies, the welfare of some privileged households will fall. On the graph, this is illustrated by the cloud of points bellow the 45 degree line. Second, note that the mass of household who will be affected by the elimination of such subsidies lies to the right of the vertical line – the poverty line of 1832 Rubles per capita per month. Very few poor households receive such subsidies in the first place, so discontinuing such a policy will leave their welfare unaffected.

Figure 17.



8.5 Data cleaning and imputation of missing values

The paper illustrated few techniques routinely used by other statistical offices, not currently used by ROSSTAT, such as treatment of implausibly small or large values (outliers) and imputation of missing data (in the case of durable goods and housing).

9. KEY FINDINGS AND RECOMMENDATIONS

9.1 Main findings

The main findings and recommendations of the paper can be summarized as follows:

(i) **The treatment of durables in the official methodology artificially increases inequality, while having a modest impact on poverty numbers**. Our simulation with the NOBUS data suggests that, by including the purchases of recent durable goods instead of the user-value of the whole stock of durables, the Gini index goes up from 0.28 to 0.38. Gibson (2004) finds a similar result using HBS 2002, with Gini index falling from 0.45 to 0.36 when the purchase of durables is excluded from the consumption aggregate. Similarly, a regional study of poverty in transition economies which uses a comparable consumption indicator (World Bank, 2005) reports a Gini index of 0.37 for the Russian Federation. To obtain accurate inequality statistics, ROSSTAT has two options: to collect the data required to estimate the user value of the stock of durables, or to exclude all durable information from the household consumption.

(ii) **Properly accounting for the welfare derived by homeowners and tenants from the houses they live in results in a higher consumption and welfare level**, about 20% on average, although it is difficult to precisely measure this component. The unfinished privatization of the housing stock and of communal and housing services pose substantial difficulties in obtaining a market-based measure of the household welfare derived from housing in Russia. Market-based rents are still rare (up to 2% of the dwelling stock), while subsidized "social rent" dominate the market (Hamilton et al, 2005). The rents paid on the private market, and those estimated by owners, are both consistent and substantially higher. The paper illustrates that ignoring the rental value of the housing stock underestimates the true level of household welfare in Russia by 20%.

(iii) **The treatment of housing in the official methodology** – where reported rents (often below-market value) are included in the consumption of tenants, while the rental value of the dwelling is omitted from the welfare of the homeowners – **has a modest impact on overall poverty or inequality numbers, but distorts the relative poverty ranking between homeowners and tenants.** Compared to the preferred, benchmark methodology to estimate poverty, the incidence of poverty among homeowners is overestimated by seven percentage points (30.3 instead of 23.5 in the benchmark), while poverty among tenants' is underestimated by 8 percentage points (15.0% compared to 23.1% in the benchmark). This distortion is higher for the subgroup of residents living in large cities. The paper illustrates different ways to account for the full value of the housing services in the estimation of household welfare.

(iv) **The HBS data collection procedures for the consumption of subsidized goods or services by privileged or poor citizens do not affect the overall poverty or inequality numbers**

substantially, although underestimates the welfare of this category of the population. As of 2003, the welfare derived from consumer subsidies was an important component of household welfare in Russia. The fiscal and quasi-fiscal cost of these services was estimated at 4.4% of GDP in 2002 (World Bank, 2005), of which 2.4% of GDP was in explicit subsidies. Asking households to estimate the value of these explicit subsidies – the HBS practice up to 2005 – produces estimates which are severely biased downwards (equivalent to 0.5% of GDP). The NOBUS uses an improved module to collect information on the value of subsidized consumption, which eliminates the bias. However, the impact on the overall poverty and inequality numbers is small and non-significant, reflecting the fact that the bulk of these subsidies are not targeted to the poorest Russian, but distributed across the whole income spectrum.

(v) **The current treatment of food price differences across areas of residence exacerbates the rural-urban poverty differential, but not by a large amount.** Ignoring rural-urban price differences makes rural poverty appear worse. In particular, the level of poverty in the Southern federal region – predominantly rural – is overestimated.

9.2 Recommendations for improving data collection and the methodology for poverty measurement

Durable goods. Based on the analysis of the NOBUS data, we have four suggestions for the improvement of HBS data collection procedures on durable goods:

- Improve data collection by adding a module on the stock of durable goods to the HBS questionnaire similar with the one in the NOBUS (annexed). This module should collect the following key variables: (i) whether the household has the durable good; (ii) how many pieces do the household own; (iii) for the most recently acquired good: indicate its purchase price, resale value and age.
- Compared with the NOBUS module, disaggregate some of the items, especially those items owned by the majority of households that are heterogeneous. One such example are the TV sets, where we recommend collecting more information about the quality of the item that may improve the imputation model (collecting information about the attributes of the good, such as color versus B&W TV; domestic or imported good).
- On the other hand, the survey can drop from the list of durables some items which are relatively cheap, such as radio sets, music centers, tape recorders or audio players. The possession of such items does not change the relative position of the household significantly.
- Collect information about the resale value for all durable items irrespective of their acquisition date. The NOBUS experiment suggests that a large fraction of households (2/3rd of those interviewed) were able to provide an answer to this question. Such a measure will reduce the scope for imputation of missing values.

Housing. The treatment of housing costs in the official methodology has a modest impact on overall poverty or inequality numbers, as illustrated in Figure 12. However, it distorts the relative poverty ranking between households who own their dwelling and the ones who rent them. To correct the negative bias against homeowners, ROSSTAT has two options:

- To improve data collection practices to allow for the estimation of imputed rent. The implement this option, HBS questionnaire should collect a minimal set of dwelling characteristics to predict rent and use rent plus imputed rent. We used a step-wise regression algorithm to identify a parsimonious set of characteristics which have the highest predictive power in the NOBUS dataset. Such set will include the following variables: the living area of the dwelling; the building material of the house; and availability of a set of amenities such as elevator, sewage, water supply, bath, electric stove,

telephone as well as the source for heating and water supply. We suggest that RosStat adds these questions to the HBS questionnaire. Other variables (such as oblast, type of locality, type of dwelling and ownership of the dwelling) are already collected in the HBS.

- To exclude the information on rent paid from the consumption aggregate and poverty line. This alternative will only require a small change in the official methodology.

Rural-urban price differences. Taking rural-urban food price differences into account does not change substantially the level of poverty and inequality nationwide. However, for some regions – especially the regions with a higher share of rural population – the adjustments can be substantial. Thus, taking such differences into account is important to obtain accurate regional poverty statistics.

Other methodological innovations. The paper illustrates a number of methodological innovations worth considering by ROSSTAT, such as the imputation of missing values and correction of outliers.

What durables and what amount of them does your household have?

IF THE HOUSEHOLD HAS SEVERAL ITEMS OF DURABLES OF A SIMILAR TYPE (FOR EXAMPLE TV-SETS), **IN QUESTIONS 9.2-9.5** INCLUDE INFORMATION ABOUT THE RECENT ONE.

IN CASE OF DIFICULTY TO ANSWER (D/A) OR NO ANSWER CIRCLE **–7**

		9.1 **Amount, items**	**9.2** **Year of purchase**	**9.3** **Cost, when purchased,** (FOR GOODS PURCHASED IN 1998 AND LATER) IN RUBLES	**9.4** **Did you purchase it or receive as a gift?** Specify **1**–purchased **2 –** received as a gift	**9.5** What could you sell it for now? IN RUBLES
1.	TV-set	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
2.	Video recorder, video player	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
3.	Video camera	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
4.	Refrigerator	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
5.	Freezer	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
6.	Washing machine	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
7.	Microwave oven	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
8.	Dish washer	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
9.	Electric vacuum cleaner	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7
10.	Sewing machine	_____	_____ D/A….-7	_____	1 2	_____ D/A….-7

		9.1 **Amount, items**	**9.2** **Year of purchase**	**9.3** **Cost, when purchased,** (FOR GOODS PURCHASED IN 1998 AND LATER) IN RUBLES	**9.4** **Did you purchase it or receive as a gift?** Specify **1**–purchased **2 –** received as a gift	**9.5** What could you sell it for now? IN RUBLES
11.	Knitting machine	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
12.	Air-conditioner	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
13.	Personal computer	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
14.	Mobile telephone	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
15.	Bicycle	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
16.	Passenger car	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
17.	Motorcycle, motorized bicycle	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
18.	Truck, bus	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7
19.	Motor boat	_____	_____ D/A…. -7	_____	1 2	_____ D/A…. -7

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STATISTICAL APPENDIX

Table A1. Average per capita consumption and unit value, by area of residence

Food item code	Average quantity per capita			Average unit value			Sample size	% HHs reporting
	Urban	Rural	Total	Urban	Rural	Total		
Flour	1.61	3.97	2.20	8.9	7.9	8.6	18,389	41
Cereals	1.12	1.35	1.17	16.2	15.1	15.9	29,629	67
White bread	2.34	3.62	2.66	11.4	9.6	11.0	36,914	83
Rye- or other bread	1.86	3.04	2.09	9.5	8.2	9.2	24,532	55
Other bakery products and pastry	0.79	0.87	0.81	31.9	27.2	30.8	26,488	59
Pasta	0.84	1.10	0.91	15.9	14.1	15.5	33,759	76
Other farinaceous goods	0.54	0.59	0.55	46.0	37.6	44.5	8,953	20
Other cereal goods	0.70	0.96	0.76	19.6	16.2	18.8	4,883	11
Beef, veal	0.98	1.43	1.05	75.1	64.1	73.3	16,264	37
Pork	0.90	1.37	1.01	77.0	62.2	73.4	14,267	32
Lamb and goat's meet	0.88	1.50	1.12	72.0	62.0	68.1	1,000	2
Poultry meat including by-products	0.92	1.08	0.95	50.4	47.8	49.9	24,461	55
Meat of other domestic animals	0.81	1.02	0.87	56.3	48.9	53.9	948	2
Meat of wild animals	0.71	0.84	0.75	58.8	47.8	54.9	105	0
By-products	0.65	0.68	0.65	47.4	43.1	46.9	6,303	14
Sausages	0.64	0.59	0.63	86.3	75.6	84.0	33,362	75
Smoked meat and meat delicacies	0.37	0.38	0.37	119.6	93.5	116.3	4,814	11
Meat preserves	0.39	0.45	0.40	75.1	72.0	74.4	6,289	14
Convenience and ready meat food	0.61	0.53	0.60	64.0	57.6	63.2	12,405	28
Fish and seafood: live and frozen	0.85	1.06	0.89	46.4	36.9	44.4	22,106	50
Fish and seafood: salted, smoked, dried	0.34	0.43	0.36	96.9	62.4	88.4	5,580	13
Sturgeon and salmon caviar	0.10	0.15	0.10	1,180	1,002	1,173	339	1
Salted herring	0.34	0.43	0.36	48.6	45.5	47.8	12,533	28
Fish preserves	0.24	0.28	0.25	65.2	62.4	64.5	12,221	27
Convenience and ready fish food	0.25	0.23	0.25	80.9	67.9	79.7	1,855	4
Fresh milk, liters	2.69	4.75	3.19	11.1	8.1	10.4	35,057	79
Preserved milk	0.43	0.52	0.45	43.0	41.6	42.7	5,006	11
Yogurt, cream, sour cream	0.48	0.54	0.49	43.9	43.9	43.9	23,775	53
Other dairy products	0.96	0.83	0.94	19.2	21.0	19.4	13,440	30
Cheese	0.30	0.35	0.30	98.2	86.7	96.5	19,343	43
Cottage cheese, curds	0.43	0.64	0.47	49.1	38.3	46.9	19,608	44
Butter	0.26	0.33	0.27	74.3	70.2	73.5	28,811	65
Margarine and other fats	0.27	0.32	0.28	35.3	34.0	34.9	12,276	28
Vegetable oil	0.60	0.69	0.62	33.8	33.3	33.7	32,491	73
Citrus fruit	0.48	0.50	0.48	36.3	36.3	36.3	11,749	26
Apples	0.67	0.64	0.67	34.0	35.2	34.2	18,054	41
Stone fruit	0.53	0.54	0.53	47.9	39.1	46.4	631	1
Other fruit	0.56	0.47	0.55	33.7	34.2	33.8	9,483	21
Water-melons, melons	0.53	0.47	0.52	35.7	39.9	36.5	242	1
Grapes	0.43	0.44	0.43	88.6	91.7	88.9	760	2
Other berries	0.61	0.71	0.62	54.8	46.1	53.5	681	2
Dried fruit including grapes	0.44	0.49	0.45	53.3	45.6	51.9	2,630	6
Nuts, stones, and edible seeds	0.27	0.29	0.27	80.7	56.5	77.5	2,933	7
Frozen and canned fruit	0.66	0.82	0.70	63.3	68.9	64.6	1,219	3
Cabbage	0.88	1.09	0.93	19.1	17.7	18.7	23,614	53
Other green vegetables	0.21	0.31	0.23	77.8	62.0	74.8	7,437	17
Cucumbers and tomatoes	0.84	0.82	0.84	44.0	43.8	44.0	23,445	53
Gourds and other vegetables	0.53	0.85	0.60	43.9	38.2	42.7	1,233	3
Onions and garlic	0.62	0.65	0.63	20.6	18.3	20.0	28,050	63
Beet-roots, carrots, and other edibles roots	0.73	0.72	0.73	18.8	17.3	18.5	23,730	53
Mushrooms	0.42	0.66	0.46	71.5	66.8	70.8	1,971	4
Potatoes	3.57	5.20	4.00	10.6	9.0	10.2	33,137	74
Legumes	0.64	0.81	0.69	15.9	12.3	15.0	3,362	8
Vegetable preserves	0.84	1.06	0.90	41.2	38.0	40.3	11,682	26
Convenience and ready vegetable food	0.50	0.68	0.54	65.3	59.2	63.9	4,295	10
Sugar	1.21	1.67	1.33	19.3	19.7	19.4	32,768	74
Jam, fruit butter	0.52	0.55	0.53	42.6	40.8	42.0	8,417	19
Fruit preserves	1.29	1.33	1.30	58.8	72.6	62.6	2,420	5
Natural honey	0.30	0.36	0.31	113.0	97.4	110.0	2,386	5
Chocolate, chocolate candies	0.26	0.33	0.28	103.9	81.9	98.7	16,219	36
Other sweets	0.36	0.44	0.38	52.8	46.3	51.0	16,382	37
Ice cream	0.19	0.21	0.20	64.2	56.6	62.6	12,068	27
Eggs	11.84	12.71	12.04	1.8	1.7	1.8	35,736	80
Tea, coffee, cocoa (kg)	0.11	0.12	0.11	240.0	175.0	223.8	30,715	69
Mineral water, soft drinks, juices, lite	1.64	1.55	1.62	14.5	10.7	13.7	19,264	43
Alcoholic beverages, liters	0.85	0.87	0.85	69.9	65.2	68.9	11,045	25
Total number of households							44,529	100

Source: Own estimations, NOBUS 2003

Table A2. Average per capita consumption and unit value, by quintiles of real per capita consumption

	Average per capita consumption						Average unit values					
	Quintile of real per capita consumption						Quintile of real per capita consumption					
Food item code	1	2	3	4	5	Total	1	2	3	4	5	Total
Flour	2.82	2.21	2.05	2.02	2.16	2.20	8.0	8.5	8.5	8.8	9.0	8.6
Cereals	0.88	1.00	1.13	1.26	1.44	1.17	14.6	15.7	15.8	16.0	16.9	15.9
White bread	2.72	2.64	2.58	2.67	2.67	2.66	10.0	10.8	11.0	11.3	11.5	11.0
Rye- or other bread	2.17	2.00	2.07	2.05	2.16	2.09	8.7	9.1	9.1	9.3	9.5	9.2
Other bakery products and pastry	0.58	0.69	0.76	0.83	1.01	0.81	26.8	28.6	29.6	31.1	34.9	30.8
Pasta	0.77	0.82	0.89	0.94	1.04	0.91	14.5	14.9	15.2	15.5	16.7	15.5
Other farinaceous goods	0.37	0.44	0.50	0.55	0.70	0.55	38.9	41.5	43.4	44.3	48.6	44.5
Other cereal goods	0.69	0.69	0.73	0.73	0.86	0.76	15.9	18.0	18.8	18.8	20.4	18.8
Beef, veal	0.71	0.81	0.92	1.03	1.35	1.05	68.5	71.4	71.6	73.4	76.5	73.3
Pork	0.71	0.86	0.92	1.00	1.26	1.01	64.8	70.9	71.2	74.0	78.4	73.4
Lamb and goat's meet	0.69	0.97	1.18	1.18	1.31	1.12	66.0	67.2	65.7	66.7	72.8	68.1
Poultry meat including by-products	0.64	0.77	0.86	0.97	1.21	0.95	47.2	48.5	49.2	50.6	51.8	49.9
Meat of other domestic animals	0.62	0.62	0.87	0.93	1.18	0.87	52.7	54.3	54.7	51.5	56.2	53.9
Meat of wild animals	0.78	0.55	0.89	0.76	0.81	0.75	43.5	57.5	54.2	50.8	65.4	54.9
By-products	0.64	0.66	0.60	0.60	0.74	0.65	39.7	45.9	47.6	48.1	48.5	46.9
Sausages	0.35	0.48	0.56	0.66	0.87	0.63	74.0	78.7	81.1	84.9	92.8	84.0
Smoked meat and meat delicacies	0.24	0.27	0.30	0.34	0.45	0.37	81.9	98.1	105.9	117.5	128.1	116.3
Meat preserves	0.33	0.39	0.40	0.37	0.48	0.40	72.1	72.6	73.2	75.9	76.5	74.4
Convenience and ready meat food	0.40	0.48	0.55	0.61	0.77	0.60	58.2	61.6	61.0	63.3	67.2	63.2
Fish and seafood: live and frozen	0.71	0.76	0.82	0.87	1.10	0.89	34.6	40.5	43.0	45.8	50.1	44.4
Fish and seafood: salted, smoked, dried	0.29	0.30	0.33	0.33	0.43	0.36	51.3	73.1	74.3	88.6	110.2	88.4
Sturgeon and salmon caviar	0.13	0.10	0.10	0.10	0.10	0.10	270.6	1088.4	1274.4	1054.7	1215.8	1172.9
Salted herring	0.28	0.31	0.34	0.37	0.45	0.36	46.7	47.5	46.8	48.1	48.9	47.8
Fish preserves	0.19	0.21	0.22	0.24	0.33	0.25	58.4	63.6	62.8	65.8	67.8	64.5
Convenience and ready fish food	0.18	0.17	0.20	0.24	0.29	0.25	64.3	78.3	73.0	77.1	85.9	79.7
Fresh milk, liters	2.79	2.93	3.13	3.29	3.57	3.19	9.2	10.2	10.3	10.6	11.2	10.4
Preserved milk	0.42	0.42	0.44	0.41	0.50	0.45	42.2	41.4	41.9	43.4	43.5	42.7
Yogurt, cream, sour cream	0.33	0.37	0.43	0.48	0.67	0.49	44.3	43.5	43.4	44.4	44.0	43.9
Other dairy products	0.51	0.69	0.82	0.95	1.25	0.94	20.9	20.2	19.4	19.2	18.9	19.4
Cheese	0.21	0.22	0.26	0.30	0.39	0.30	87.0	91.2	92.4	97.0	102.4	96.5
Cottage cheese, curds	0.38	0.39	0.44	0.47	0.57	0.47	41.6	45.3	45.9	47.9	49.2	46.9
Butter	0.20	0.22	0.25	0.28	0.34	0.27	71.3	72.7	72.1	73.5	75.9	73.5
Margarine and other fats	0.24	0.26	0.28	0.29	0.34	0.28	33.8	34.8	34.5	34.9	36.5	34.9
Vegetable oil	0.47	0.54	0.60	0.65	0.75	0.62	33.2	33.0	33.2	33.3	35.0	33.7
Citrus fruit	0.29	0.32	0.38	0.46	0.64	0.48	35.9	35.7	35.4	36.4	37.0	36.3
Apples	0.38	0.48	0.59	0.66	0.89	0.67	33.9	33.4	33.4	34.1	35.2	34.2
Stone fruit	0.33	0.50	0.49	0.52	0.60	0.53	36.9	46.5	42.7	46.3	49.2	46.4
Other fruit	0.29	0.36	0.43	0.51	0.74	0.55	34.4	33.0	32.9	33.2	34.9	33.8
Water-melons, melons	0.22	0.34	0.38	0.51	0.81	0.52	33.5	37.5	32.8	35.4	41.3	36.5
Grapes	0.23	0.29	0.30	0.36	0.52	0.43	79.1	83.3	81.6	87.8	92.5	88.9
Other berries	0.39	0.78	0.46	0.61	0.67	0.62	45.8	43.3	48.7	53.8	59.4	53.5
Dried fruit including grapes	0.25	0.31	0.37	0.41	0.55	0.45	41.8	49.8	47.9	51.2	55.5	51.9
Nuts, stones, and edible seeds	0.17	0.20	0.20	0.25	0.35	0.27	47.3	69.7	67.6	77.2	87.3	77.5
Frozen and canned fruit	0.35	0.59	0.67	0.65	0.83	0.70	58.1	58.3	56.5	75.3	65.5	64.6
Cabbage	0.68	0.77	0.89	0.97	1.13	0.93	17.6	18.3	18.6	18.8	19.5	18.7
Other green vegetables	0.19	0.22	0.21	0.22	0.26	0.23	60.7	69.6	72.0	76.2	80.9	74.8
Cucumbers and tomatoes	0.45	0.58	0.71	0.82	1.17	0.84	42.6	43.3	43.6	43.6	45.2	44.0
Gourds and other vegetables	0.40	0.50	0.66	0.58	0.66	0.60	32.8	39.3	41.4	40.1	48.8	42.7
Onions and garlic	0.43	0.52	0.60	0.65	0.79	0.63	18.7	19.1	20.1	20.2	20.8	20.0
Beet-roots, carrots, and other edibles roots	0.50	0.59	0.68	0.74	0.94	0.73	17.1	17.8	18.4	18.7	19.3	18.5
Mushrooms	0.43	0.38	0.40	0.49	0.50	0.46	61.5	70.9	73.4	64.9	74.9	70.8
Potatoes	3.47	3.78	3.92	4.05	4.48	4.00	9.2	10.0	10.2	10.4	10.7	10.2
Legumes	0.57	0.60	0.67	0.74	0.76	0.69	11.6	14.5	14.7	15.3	16.5	15.0
Vegetable preserves	0.63	0.74	0.86	0.90	1.09	0.90	38.9	39.0	39.7	39.0	42.8	40.3
Convenience and ready vegetable food	0.46	0.52	0.51	0.51	0.63	0.54	51.4	60.1	62.2	68.9	67.8	63.9
Sugar	1.01	1.18	1.32	1.42	1.58	1.33	19.6	19.4	19.3	19.2	19.5	19.4
Jam, fruit butter	0.41	0.46	0.51	0.54	0.63	0.53	38.1	40.0	41.5	41.9	45.0	42.0
Fruit preserves	0.61	0.97	1.07	1.25	1.66	1.30	65.0	61.9	65.8	60.3	62.3	62.6
Natural honey	0.22	0.23	0.29	0.29	0.36	0.31	100.5	101.3	104.2	109.6	115.7	110.0
Chocolate, chocolate candies	0.18	0.21	0.24	0.27	0.35	0.28	84.5	91.4	93.5	101.7	106.7	98.7
Other sweets	0.27	0.34	0.36	0.41	0.47	0.38	47.1	48.2	50.1	50.1	56.6	51.0
Ice cream	0.15	0.15	0.17	0.19	0.26	0.20	53.5	60.1	60.1	63.5	67.8	62.6
Eggs	8.32	10.06	11.51	12.66	15.29	12.04	1.7	1.7	1.7	1.8	1.8	1.8
Tea, coffee, cocoa (kg)	0.08	0.09	0.10	0.12	0.15	0.11	158.9	199.8	209.3	231.3	277.9	223.8
Mineral water, soft drinks, juices, lite	0.89	1.05	1.33	1.61	2.28	1.62	10.9	12.6	13.1	13.4	15.6	13.7
Alcoholic beverages, liters	0.72	0.69	0.74	0.81	1.06	0.85	57.0	59.4	62.0	69.7	79.7	68.9

Source: Own estimations, NOBUS 2003

Table A3 Price (unit value) outliers - Implausibly large values

defined as prices in excess of 5 times the median unit value for item i in region j

Food item code	Average outlier value	Median unit value	Number of outliers
Flour	44	8	1
White bread	184	10	5
Rye- or other bread	111	10	7
Other bakery products and pastry	181	26	90
Pasta	124	17	36
Other farinaceous goods	236	39	3
Other cereal goods	124	16	85
Poultry meat including by-products	252	46	1
Smoked meat and meat delicacies	670	100	1
Meat preserves	1,096	71	3
Convenience and ready meat food	500	59	5
Fish and seafood: live and frozen	178	28	28
sh and seafood: salted, smoked, dried	456	64	21
urgeon and salmon caviar (by weight an	1,500	203	1
Fish preserves	383	63	3
Convenience and ready fish food	567	77	3
Fresh milk, liters	71	10	5
Preserved milk	271	45	2
Yogurt, cream, sour cream	319	44	7
Other dairy products	114	15	123
Cheese	967	95	2
Cottage cheese, curds	319	34	4
Vegetable oil	246	31	6
Citrus fruit	399	39	2
Apples	150	27	1
Other fruit	233	32	2
Other berries	200	31	1
Dried fruit including grapes	210	30	1
Nuts, stones, and edible seeds	300	42	27
Frozen and canned fruit	307	42	3
Cabbage	1,100	22	1
Other green vegetables	486	56	20
Gourds and other vegetables	250	35	2
Onions and garlic	127	17	189
et-roots, carrots, and other edibles r	114	17	30
Mushrooms	160	25	3
Potatoes	71	11	2
Legumes	57	9	18
Vegetable preserves	243	38	5
Convenience and ready vegetable food	329	46	49
Sugar	203	30	2
Jam, fruit butter	308	56	3
Fruit preserves	227	44	2
Chocolate, chocolate candies	465	62	8
Other sweets	475	46	64
Ice cream	302	55	13
Eggs	17	2	7
Tea, coffee, cocoa (kg)	1,058	159	422
neral water, soft drinks, juices, lite	55	7	212
Alcoholic beverages, liters	321	44	101
Total (A)			1,632
Total number of food transactions (B)			833,791
% large outliers (A/B)			0.20%

Source: Own estimations, NOBUS 2003

Table A4. Price (unit value) outliers - Implausibly small values

defined as prices below 1/5th the median unit value for item i in region j

Food item code	Average outlier value	Median unit value	Number of outliers
Flour	1.1	7.8	8
Cereals	1.8	15.1	36
White bread	1.4	11.3	70
Rye- or other bread	1.3	10.9	33
Other bakery products and pastry	4.0	29.6	299
Pasta	1.6	13.9	31
Other farinaceous goods	5.3	43.9	100
Other cereal goods	3.0	19.5	15
Beef, veal	8.5	69.8	30
Pork	8.2	69.4	26
Lamb and goat's meet	7.0	65.0	1
Poultry meat including by-products	5.1	46.8	33
Meat of other domestic animals	8.0	50.0	1
By-products	6.1	46.9	46
Sausages	8.3	82.0	52
Smoked meat and meat delicacies	13.4	102.6	18
Meat preserves	8.8	71.8	27
Convenience and ready meat food	5.2	53.2	65
Fish and seafood: live and frozen	6.0	42.0	66
Fish and seafood: salted, smoked, dried	11.4	81.1	30
Sturgeon and salmon caviar (by weight an	100.7	1,040.5	24
Salted herring	6.5	56.0	14
Fish preserves	9.2	60.8	133
Convenience and ready fish food	10.3	75.8	21
Fresh milk, liters	1.5	12.7	24
Preserved milk	6.4	46.7	23
Yogurt, cream, sour cream	6.7	48.8	125
Other dairy products	2.5	20.1	19
Cheese	10.6	95.7	45
Cottage cheese, curds	5.3	44.3	24
Butter	9.9	68.6	79
Margarine and other fats	5.6	36.0	26
Vegetable oil	3.3	34.1	26
Citrus fruit	4.8	33.8	30
Apples	3.9	32.4	15
Other fruit	4.1	32.9	7
Grapes	9.1	86.7	1
Other berries	10.0	75.8	4
Dried fruit including grapes	7.6	56.9	6
Nuts, stones, and edible seeds	10.6	64.7	8
Frozen and canned fruit	7.2	46.3	3
Cabbage	2.4	21.1	27
Other green vegetables	11.5	85.0	77
Cucumbers and tomatoes	4.7	42.8	32
Gourds and other vegetables	6.5	45.9	10
Onions and garlic	2.5	18.7	19
Beet-roots, carrots, and other edibles r	2.3	17.1	9
Mushrooms	11.9	81.4	19
Potatoes	1.3	11.0	23
Legumes	1.6	12.5	2
Vegetable preserves	5.9	42.4	20
Convenience and ready vegetable food	8.2	63.6	32
Sugar	2.1	19.8	40
Jam, fruit butter	3.2	31.7	5
Fruit preserves	8.3	66.5	4
Natural honey	15.0	135.1	1
Chocolate, chocolate candies	11.7	87.2	62
Other sweets	6.2	49.5	44
Ice cream	5.4	56.3	319
Tea, coffee, cocoa (kg)	19.3	159.7	391
Mineral water, soft drinks, juices, lite	1.8	13.1	20
Alcoholic beverages, liters	12.6	79.9	70
Total (A)			2,870
Total number of food transactions (B)			833,791
% small outliers (A/B)			0.34%

Source: Own estimations, NOBUS 2003

Table A5. Quantity outliers - Implausibly large values

defined as per capita consumption is 5 times larger than regional median for item i in region j

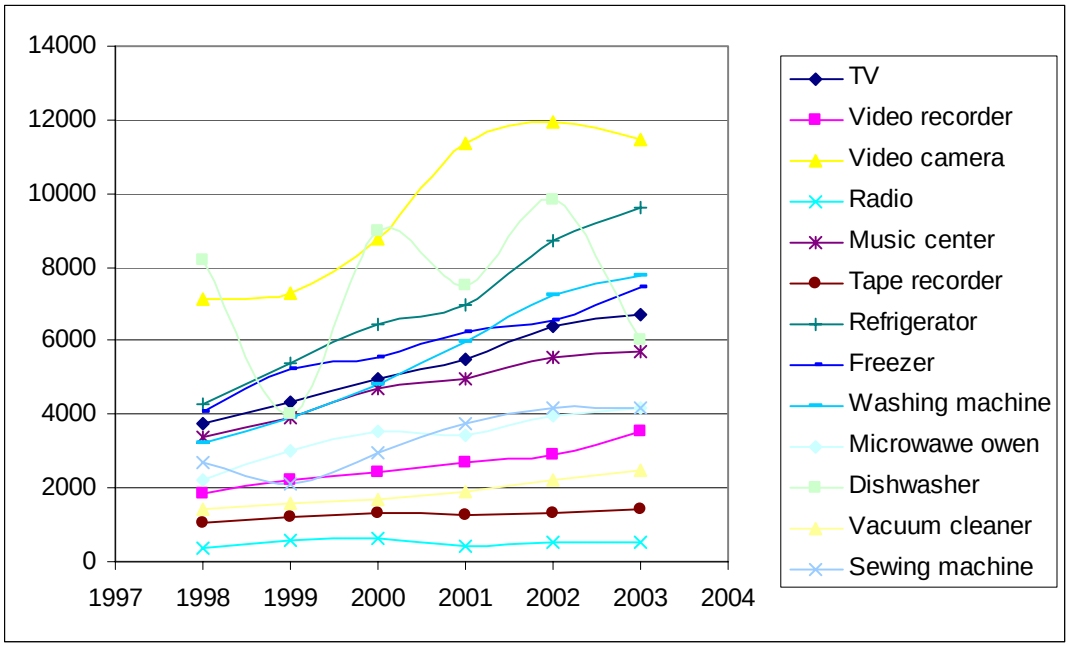
Food item code	Average per capita consumption of outlier values	Maximum per capita consumption	Median per capita consumption	# of outliers
Flour	19.3	8.0	1.6	1,390
Cereals	9.2	4.7	0.9	493
White bread	16.1	10.8	2.2	327
Rye- or other bread	10.5	6.9	1.4	469
Other bakery products and pastry	5.4	3.0	0.6	681
Pasta	6.0	3.5	0.7	460
Other farinaceous goods	3.9	2.1	0.4	206
Other cereal goods	5.7	2.7	0.5	158
Beef, veal	6.5	4.2	0.8	251
Pork	6.0	3.8	0.8	294
Lamb and goat's meet	6.6	4.0	0.8	33
Poultry meat including by-products	6.7	3.8	0.8	365
Meat of other domestic animals	5.6	3.6	0.7	22
Meat of wild animals	5.5	4.3	0.9	3
By-products	3.7	2.2	0.5	185
Sausages	3.9	2.4	0.5	370
Smoked meat and meat delicacies	2.1	1.4	0.3	135
Meat preserves	3.4	1.4	0.3	278
Convenience and ready meat food	3.7	2.2	0.4	264
Fish and seafood: live and frozen	6.1	3.6	0.7	415
sh and seafood: salted, smoked, dried	2.7	1.4	0.3	152
urgeon and salmon caviar (by weight an	1.1	0.4	0.1	15
Salted herring	2.4	1.5	0.3	139
Fish preserves	1.8	0.9	0.2	419
Convenience and ready fish food	1.8	0.7	0.1	83
Fresh milk, liters	17.9	11.5	2.3	863
Preserved milk	3.2	1.6	0.3	322
Yogurt, cream, sour cream	3.0	1.7	0.3	673
Other dairy products	5.1	3.0	0.6	635
Cheese	2.4	1.2	0.2	268
Cottage cheese, curds	2.8	1.6	0.3	498
Butter	2.2	1.1	0.2	381
Margarine and other fats	1.8	1.1	0.2	296
Vegetable oil	4.6	2.6	0.5	272
Citrus fruit	2.6	1.7	0.3	270
Apples	4.6	2.5	0.5	237
Stone fruit	3.6	2.0	0.4	13
Other fruit	2.9	1.9	0.4	190
Water-melons, melons	3.1	2.5	0.5	3
Grapes	2.3	1.6	0.3	9
Other berries	3.3	2.1	0.4	26
Dried fruit including grapes	2.6	1.6	0.3	57
Nuts, stones, and edible seeds	1.7	1.0	0.2	88
Frozen and canned fruit	3.5	1.9	0.4	59
Cabbage	5.9	3.5	0.7	314
Other green vegetables	1.5	0.7	0.2	454
Cucumbers and tomatoes	4.4	3.0	0.6	555
Gourds and other vegetables	2.9	1.8	0.4	60
Onions and garlic	4.3	2.4	0.5	455
et-roots, carrots, and other edibles r	4.2	2.6	0.5	567
Mushrooms	4.5	1.6	0.3	154
Potatoes	26.0	16.0	3.2	450
Legumes	4.4	2.3	0.5	199
Vegetable preserves	4.3	2.6	0.5	673
Convenience and ready vegetable food	3.1	1.6	0.3	303
Sugar	13.8	5.0	1.0	1,131
Jam, fruit butter	3.3	2.0	0.4	221
Fruit preserves	6.5	4.1	0.8	45
Natural honey	1.9	1.0	0.2	127
Chocolate, chocolate candies	1.7	1.0	0.2	370
Other sweets	2.1	1.4	0.3	390
Ice cream	1.7	0.7	0.2	567
Eggs	74.3	49.6	9.9	176
Tea, coffee, cocoa (kg)	0.9	0.5	0.1	698
neral water, soft drinks, juices, lite	9.7	5.9	1.2	681
Alcoholic beverages, liters	5.6	2.9	0.6	638
Total number of outlier transactions (A)				21,995
Total number of food transactions (B)				833,791
% large outliers (A/B)				2.64%

Source: Own estimations, NOBUS 2003

Table A6. Classification of the non-food commodities in commodity groups

Item	Commodity group	Reference period
Tobacco products	Food and non-alcoholic beverages	30
Clothes for children under 3 years old	Clothing and footwear	365
Coats, raincoats, outdoor jackets	Clothing and footwear	365
Dry cleaning, repair, and hire of clothi	Clothing and footwear	91
Fabrics for making clothes	Clothing and footwear	365
Head dress and accessories	Clothing and footwear	365
High boots, boots, shoes	Clothing and footwear	365
Panty-hose, stockings, socks	Clothing and footwear	30
Repair, making, and hire of footwear	Clothing and footwear	91
Shirts, blouses	Clothing and footwear	365
Skirts, trousers	Clothing and footwear	365
Sports, rubber, and other footwear	Clothing and footwear	365
Suits, jackets, dresses, vests	Clothing and footwear	365
Sweaters, knit jackets, pullovers	Clothing and footwear	365
Underwear and night clothes	Clothing and footwear	365
Cold water	Housing, water, electricity, gas and other	30
Electricity	Housing, water, electricity, gas and other	30
Fuel	Housing, water, electricity, gas and other	365
Gas	Housing, water, electricity, gas and other	30
Heating	Housing, water, electricity, gas and other	30
Hot water	Housing, water, electricity, gas and other	30
Telephone	Housing, water, electricity, gas and other	30
Bed-clothes, blankets, curtains, and oth	Furnishings, household equipment and rou	365
Carpets and rugs, lamps, art and other h	Furnishings, household equipment and rou	365
Construction, finish, and other material	Furnishings, household equipment and rou	365
Dwelling repair	Furnishings, household equipment and rou	91
Furniture	Furnishings, household equipment and rou	365
Haberdashery	Furnishings, household equipment and rou	30
House and kitchenware	Furnishings, household equipment and rou	365
Household appliances, big and small, ele	Furnishings, household equipment and rou	365
Other household goods and utensils	Furnishings, household equipment and rou	30
Repair of household appliances	Furnishings, household equipment and rou	91
Soap, detergents, and other household ch	Furnishings, household equipment and rou	30
Dentist's services	Health	91
Glasses, medical equipment	Health	365
Commuter public transport	Transport	91
Fuel for vehicles	Transport	30
Long distance trains	Transport	91
Other	Transport	30
Other transportation services	Transport	91
Service and repair of vehicles	Transport	91
Spare parts, service and repair equipmen	Transport	365
Town public transport	Transport	91
Communication services (except home tele	Communication	91
Radio equipment, equipment for telephone	Communication	365
Audio and video cassettes, other media f	Recreation and culture	365
Cinema, theatre, concerts	Recreation and culture	91
Goods for sports activities, tourism, an	Recreation and culture	365
Musical instruments	Recreation and culture	365
Other cultural and recreation services	Recreation and culture	91
Periodicals, books	Recreation and culture	30
Photographers' services	Recreation and culture	91
Photography and optic equipment	Recreation and culture	365
Services of pre-schools for children	Recreation and culture	91
Stationery	Recreation and culture	30
Toys	Recreation and culture	30
How much did you pay	Education	365
Textbooks	Education	365
Transport	Education	365
Tuition	Education	365
Vouchers to rest homes, boarding houses,	Restaurants and hotels	91
Body and hair care products	Miscellaneous goods and services	30
Clocks, watches, jewelry, and other pers	Miscellaneous goods and services	365
Funeral and religious services	Miscellaneous goods and services	91
Other repair services	Miscellaneous goods and services	91
Other services	Miscellaneous goods and services	91
Perfumes and cosmetics	Miscellaneous goods and services	30
Services provided by hairdressers, beaut	Miscellaneous goods and services	91
Spa and fitness services, maternity depa	Miscellaneous goods and services	91
Goods for gardening, pets and goods for	other	365
Tools and equipment for house and garden	other	365
Veterinary and other services for pets	other	91

Figure 1A. Average relationship between the resale price of a durable goods and its age



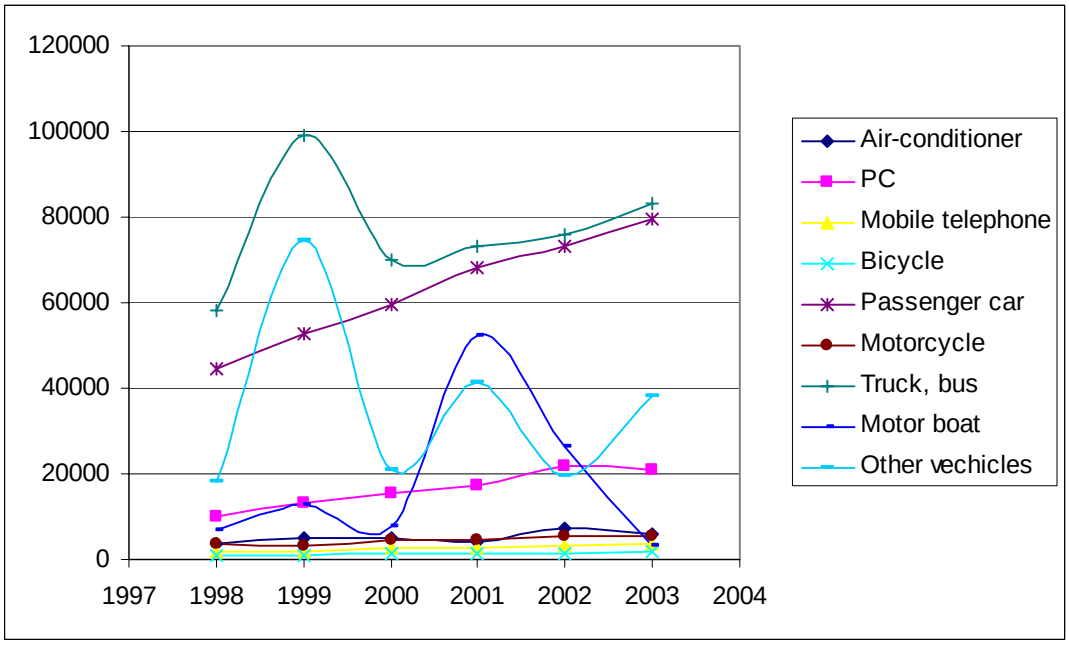


Table A7. Average (unweighted) purchase price for food items, by area of residence

	Urban	Rural	Urban/ Rural ratio
	Rubles/Unit	*Rubles/Unit*	%
Flour	8.7	7.7	13%
Cereals	16	14.9	7%
White bread	11.5	10.2	13%
Rye- or other bread	9.6	8.1	19%
Other bakery products and pastry	32.1	28.4	13%
Pasta	16.2	14.7	10%
Other farinaceous goods	45	38.9	16%
Other cereal goods	20.1	16.9	19%
Beef, veal	74.3	66	13%
Pork	76.3	66.8	14%
Lamb and goat's meet	71	63.7	11%
Poultry meat including by-products	49.8	47.7	4%
Meat of other domestic animals	55.6	51.5	8%
Meat of wild animals	62.9	46.3	36%
By-products	47.6	43.4	10%
Sausages	85	76.5	11%
Smoked meat and meat delicacies	113.5	97.7	16%
Meat preserves	74.8	72.5	3%
Convenience and ready meat food	63.8	57.4	11%
Fish and seafood: live and frozen	42.6	36.2	18%
Fish and seafood: salted, smoked, dried	85.4	61.3	39%
Sturgeon and salmon caviar (by weight an	1054	1023.4	3%
Salted herring	47.9	45.6	5%
Fish preserves	63.9	62	3%
Convenience and ready fish food	78.3	68	15%
Fresh milk, liters	11.4	8.6	33%
Preserved milk	43.3	44.7	-3%
Yogurt, cream, sour cream	44.9	46	-2%
Other dairy products	19.2	23.7	-19%
Cheese	97.3	87.3	11%
Cottage cheese, curds	51	42.3	21%
Butter	73.7	70.5	5%
Margarine and other fats	36.5	35.2	4%
Vegetable oil	34.1	34.1	0%
Citrus fruit	38.1	37	3%
Apples	35	35.7	-2%
Stone fruit	53.3	43.9	21%
Other fruit	35.1	35.3	-1%
Water-melons, melons	42.4	43.2	-2%
Grapes	104.1	104.2	0%
Other berries	58.8	49.5	19%
Dried fruit including grapes	52.2	45.7	14%
Nuts, stones, and edible seeds	71.8	56	28%
Frozen and canned fruit	61.8	62.8	-2%
Cabbage	19.4	17.2	13%
Other green vegetables	82.5	62.5	32%
Cucumbers and tomatoes	44.5	44.2	1%
Gourds and other vegetables	49.3	42.2	17%
Onions and garlic	22.8	21.6	6%
Beet-roots, carrots, and other edibles r	19.7	18.8	5%
Mushrooms	68.9	57.6	20%
Potatoes	11.1	11.6	-4%
Legumes	15.6	14.1	11%
Vegetable preserves	45.5	40.6	12%
Convenience and ready vegetable food	70.1	61.5	14%
Sugar	19.7	20.1	-2%
Jam, fruit butter	48.9	42.8	14%
Fruit preserves	61.7	61	1%
Natural honey	115.7	102.9	12%
Chocolate, chocolate candies	99.8	83	20%
Other sweets	54	46.1	17%
Ice cream	63.9	57.3	12%
Eggs	1.9	1.9	0%
Tea, coffee, cocoa (kg)	222.9	172	30%
Mineral water, soft drinks, juices, lite	14.3	11.3	27%
Alcoholic beverages, liters	68.3	67.2	2%

Table A8. Food Price Indices, NOBUS 2003

Region	Regional	Rural	Urban
Altaiskiy krai	0.90	0.88	0.93
Krasnodarskiy krai	0.94	0.90	1.00
Krasnoyarskiy krai	1.06	0.97	1.10
Primorskiy krai	1.07	1.01	1.08
Stavropolskiy krai	0.89	0.86	0.88
Habarovskiy krai	1.09	1.08	1.09
Amurskaya oblast	1.04	1.01	1.04
Arkhangelskaya oblast	1.02	0.97	1.04
Astrakhanskaya oblast	0.92	0.91	0.94
Belgorodskaya oblast	0.92	0.92	0.92
Bryanskaya oblast	0.89	0.86	0.91
Vladimirskaya oblast	1.04	0.93	1.08
Volgogradskaya oblast	0.88	0.85	0.90
Vologodskaya oblast	1.05	1.01	1.07
Voronejskaya oblast	0.89	0.86	0.91
Nijegorodskaya oblast	0.98	0.96	0.99
Ivanovskaya oblast	0.93	0.92	0.93
Irkutskaya oblast	1.09	1.01	1.09
Republic Ingushetiya	1.00	1.05	0.93
Kaliningradskaya oblast	0.99	0.97	1.01
Tverskaya oblast	1.02	1.01	1.04
Kalujskaya oblast	1.06	1.04	1.08
Kamchatskaya oblast	1.44	1.45	1.44
Kemerovskaya oblast	0.96	0.92	0.97
Kirovskaya oblast	0.92	0.92	0.93
Kostromskaya oblast	0.95	0.93	0.96
Samarskaya oblast	1.01	0.96	1.03
Kurganskaya oblast	0.87	0.84	0.93
Kurskaya oblast	0.88	0.87	0.89
St-Petersburg	1.17	0.97	1.17
Leningradskaya oblast	1.16	1.18	1.14
Lipetskaya oblast	0.94	0.92	0.96
Magadanskaya oblast	1.49	1.49	1.48
Moscow	1.34	0.97	1.34
Moskovskaya oblast	1.21	1.22	1.21
Murmanskaya oblast	1.18	1.15	1.18
Novgorodskaya oblast	0.99	0.98	1.01
Novosibirskaya oblast	0.93	0.88	0.97
Omskaya oblast	0.85	0.81	0.88
Orenburgskaya oblast	0.91	0.87	0.93
Orlovskaya oblast	0.94	0.93	0.93
Penzenskaya oblast	0.84	0.83	0.86
Permskaya oblast	0.96	0.90	0.98
Pskovskaya oblast	0.94	0.89	0.98
Rostovskaya oblast	0.91	0.89	0.92
Ryazanskaya oblast	0.93	0.91	0.93
Saratovskaya oblast	0.85	0.89	0.86
Sakhalinskaya oblast	1.31	1.35	1.30
Sverdlovskaya oblast	1.04	0.99	1.04
Smolenskaya oblast	0.95	0.93	0.97
Tambovskaya oblast	0.89	0.88	0.91
Tomskaya oblast	1.07	1.06	1.12
Tulskaya oblast	0.98	1.02	0.98
Tiumenskaya oblast	1.24	1.08	1.29
Uliyanovskaya oblast	0.89	0.85	0.93
Chelyabinskaya oblast	0.98	0.95	1.00
Chitinskaya oblast	1.08	1.07	1.08
Chukotskiy AO	2.66	2.58	2.72
Yaroslavskaya oblast	1.03	1.01	1.03
Republic Adygeya	0.88	0.86	0.89
Republic Bashkortostan	1.02	1.00	1.04
Republic Buryatiya	1.04	1.00	1.04
Republic Dagestan	0.88	0.88	0.90
Kabardino-balkarskaya Republic	0.90	0.86	0.92
Republic Altai	1.05	1.05	1.06
Republic Kalmykiya	0.82	0.81	0.84
Republic Kareliya	1.12	1.02	1.15
Republic Komi	1.10	1.01	1.13
Republic Mariy El	0.88	0.83	0.92
Republic Mordovia	1.10	1.10	1.08
Republic Severnaya Osetiya	0.94	0.91	0.96
Karachaevo-cherkesskaya Republic	0.88	0.87	0.91
Republic Tatarstan	1.03	1.01	1.03
Republic Tyva	1.04	1.06	1.00
Udmurtskaya Republic	0.92	0.89	0.94
Republic Hakasiya	0.92	0.91	0.95
Chuvashskaya Republic	0.92	0.93	0.92
Republic Saha (Yakutiya)	1.46	1.47	1.46
Evreiskaya AO	1.00	0.96	1.04

Table A9: Housing Costs and Housing Prices, by Region and Area of Residence

	Constant Prices		Current Prices		Housing Price Index		Total
	Urban	Rural	Urban	Rural	Urban	Rural	
Altaiskiy krai	1984	873	1963	352	99%	40%	71%
Krasnodarskiy krai	1321	891	1574	512	119%	57%	91%
Krasnoyarskiy krai	1424	627	1812	323	127%	51%	108%
Primorskiy krai	1250	585	1779	349	142%	60%	124%
Stavropolskiy krai	1723	4401	1519	1890	88%	43%	68%
Habarovskiy krai	1339	680	1975	414	147%	61%	132%
Amurskaya oblast	1171	773	1174	368	100%	48%	82%
Arkhangelskaya oblast	1399	721	1493	327	107%	45%	91%
Astrakhanskaya oblast	1903	1115	1583	449	83%	40%	69%
Belgorodskaya oblast	2484	1862	1450	438	58%	24%	47%
Bryanskaya oblast	2361	1377	1315	390	56%	28%	47%
Vladimirskaya oblast	1802	1117	1459	420	81%	38%	73%
Volgogradskaya oblast	2416	1240	1868	420	77%	34%	66%
Vologodskaya oblast	1616	653	1578	267	98%	41%	80%
Voronejskaya oblast	2388	1139	1872	388	78%	34%	62%
Nijegorodskaya oblast	2419	1364	1850	463	76%	34%	67%
Ivanovskaya oblast	2271	1496	1334	434	59%	29%	54%
Irkutskaya oblast	1486	603	1763	297	119%	49%	105%
Republic Ingushetiya	611	630	929	553	152%	88%	110%
Kaliningradskaya oblast	961	617	1405	427	146%	69%	129%
Tverskaya oblast	1841	1104	1333	368	72%	33%	62%
Kalujskaya oblast	1390	946	1208	444	87%	47%	77%
Kamchatskaya oblast	1045	831	1558	646	149%	78%	135%
Kemerovskaya oblast	1850	842	1621	330	88%	39%	81%
Kirovskaya oblast	1956	1112	1297	340	66%	31%	56%
Kostromskaya oblast	2072	972	1434	306	69%	31%	56%
Samarskaya oblast	1830	946	2250	499	123%	53%	108%
Kurganskaya oblast	2184	959	1436	288	66%	30%	50%
Kurskaya oblast	2865	1524	1339	304	47%	20%	36%
St-Petersburg	1483		2699		182%		182%
Leningradskaya oblast	869	947	1195	619	137%	65%	113%
Lipetskaya oblast	2610	1469	2047	531	78%	36%	64%
Magadanskaya oblast	1082	1056	1345	596	124%	56%	119%
Moscow	1034		2970		287%		287%
Moskovskaya oblast	969	975	1375	677	142%	69%	127%
Murmanskaya oblast	1711	1421	1677	723	98%	51%	94%
Novgorodskaya oblast	1369	986	1142	393	83%	40%	71%
Novosibirskaya oblast	1820	681	2092	333	115%	49%	98%
Omskaya oblast	2348	949	1972	355	84%	37%	69%
Orenburgskaya oblast	2347	1344	1806	450	77%	34%	58%
Orlovskaya oblast	2236	1326	1526	410	68%	31%	55%
Penzenskaya oblast	2728	2076	1301	516	48%	25%	40%
Permskaya oblast	2211	1073	1601	356	72%	33%	63%
Pskovskaya oblast	1621	1012	1125	353	69%	35%	58%
Rostovskaya oblast	1554	831	1593	382	103%	46%	84%
Ryazanskaya oblast	1477	1228	1104	461	75%	38%	63%
Saratovskaya oblast	1981	1138	1907	451	96%	40%	81%
Sakhalinskaya oblast	736	509	1134	412	154%	81%	144%
Sverdlovskaya oblast	1454	802	1686	406	116%	51%	108%
Smolenskaya oblast	1857	1303	1447	492	78%	38%	66%
Tambovskaya oblast	2123	1194	1396	382	66%	32%	52%
Tomskaya oblast	1216	692	1750	398	144%	58%	115%
Tulskaya oblast	2231	1706	1432	529	64%	31%	58%
Tiumenskaya oblast	723	428	1630	403	226%	94%	194%
Uliyanovskaya oblast	3366	1619	1806	336	54%	21%	45%
Chelyabinskaya oblast	1748	1003	1875	471	107%	47%	96%
Chitinskaya oblast	1564	709	1250	267	80%	38%	64%
Chukotskiy AO	404	472	1092	678	271%	144%	230%
Yaroslavskaya oblast	1716	979	1893	451	110%	46%	98%
Republic Adygeya	1384	1046	1284	466	93%	45%	72%
Republic Bashkortostan	1821	982	1893	422	104%	43%	83%
Republic Buryatiya	1935	920	1556	346	80%	38%	63%
Republic Dagestan	1980	1258	1453	530	73%	42%	55%
Kabardino-balkarskaya Republic	2283	1742	1662	651	73%	37%	58%
Republic Altai	1006	671	1134	367	113%	55%	69%
Republic Kalmykiya	1689	1106	1178	443	70%	40%	52%
Republic Kareliya	1206	616	1663	350	138%	57%	117%
Republic Komi	1136	674	1318	336	116%	50%	99%
Republic Mariy El	1896	1244	1239	401	65%	32%	53%
Republic Mordovia	2946	1859	1596	448	54%	24%	43%
Republic Severnaya Osetiya	2241	1679	2053	816	92%	49%	78%
Karachaevo-cherkesskaya Republic	1615	1435	1593	667	99%	46%	76%
Republic Tatarstan	2053	1110	2095	450	102%	41%	86%
Republic Tyva	1798	940	887	241	49%	26%	37%
Udmurtskaya Republic	1976	937	1827	365	92%	39%	76%
Republic Hakasiya	1890	1048	1329	302	70%	29%	58%
Chuvashskaya Republic	2348	1560	1430	475	61%	30%	49%
Republic Saha (Yakutiya)	773	430	1336	341	173%	79%	138%
Evreiskaya AO	923	516	951	261	103%	50%	86%
Average					120%	44%	100%

Table A10a. Poverty Profile, Alternative Consumption Aggregates

Number of Poor in Q2 2003

Poverty Status	Total	z0		z1		z2		z3		z4		z5		z6	
		poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor
All Population	145909	111825	34084	95315	50594	112139	33770	114709	31200	110420	35489	111898	34011	111891	34018
Household size															
1	12765	11384	1380	10404	2361	11422	1342	10336	2429	10156	2609	11413	1351	11458	1307
2	33984	28839	5145	25126	8859	28881	5103	28228	5756	27266	6719	28881	5103	28657	5328
3	40555	32650	7905	28117	12438	32688	7867	33457	7098	32611	7943	32708	7847	32810	7745
4	38278	27623	10656	22695	15583	27709	10569	29474	8804	28233	10046	27579	10699	27704	10575
5	15342	9019	6323	7101	8241	9124	6219	10415	4928	9595	5748	9014	6328	9025	6317
6+	4984	2310	2674	1873	3112	2314	2670	2799	2185	2560	2424	2303	2682	2238	2746
Number of children															
0	80062	67255	12807	58624	21438	67422	12640	66824	13238	64675	15387	67349	12713	67224	12838
1	42926	31603	11322	26254	16672	31722	11204	33189	9736	32171	10755	31597	11328	31705	11220
2	18725	11396	7328	9215	9509	11423	7301	12713	6012	11801	6924	11380	7345	11424	7301
3+	4197	1571	2626	1222	2975	1572	2625	1984	2213	1773	2424	1572	2625	1538	2659
Quintiles of Durables															
Q1	28990	17868	11122	13849	15141	18223	10767	17169	11821	16652	12337	17936	11054	17715	11275
Q2	29130	20779	8351	16177	12953	21051	8078	21488	7641	20192	8937	20770	8359	20611	8518
Q3	29182	21829	7353	18175	11007	22008	7174	22883	6299	22157	7025	21855	7326	22026	7156
Q4	29234	24257	4977	21813	7420	24174	5060	25400	3834	24443	4791	24263	4971	24347	4887
Q5	29374	27093	2281	25301	4073	26683	2691	27769	1605	26976	2398	27074	2300	27192	2182
Ownership of dwelling															
Tenant	56687	43584	13103	36956	19731	43857	12830	44300	12386	48189	8498	43565	13121	43506	13181
Owner	89223	68242	20981	58359	30863	68282	20940	70409	18813	62232	26991	68333	20890	68385	20837
Area of residence															
Urban	106756	89093	17663	77254	29502	89369	17387	89596	17160	88137	18619	88770	17986	88822	17934
Rural	39153	22732	16421	18061	21092	22770	16383	25114	14039	22283	16870	23129	16024	23070	16084
Federal Region															
Central	37266	30231	7036	25390	11876	30357	6910	30483	6783	30035	7231	30242	7024	30263	7003
North-West	14607	12372	2234	10739	3868	12390	2216	12737	1870	12676	1931	12383	2224	12287	2320
Siberia	20874	15533	5341	13742	7133	15520	5354	16212	4662	15525	5349	15555	5320	15547	5327
South	21203	14781	6422	11927	9276	14928	6275	15649	5555	14045	7158	14759	6444	15007	6197
Far-East	7180	5073	2107	4362	2818	5096	2084	5538	1642	5277	1903	5066	2114	4976	2204
Urals	12662	9322	3340	8230	4432	9307	3355	9654	3008	9200	3462	9328	3334	9301	3361
Volga	32117	24513	7604	20926	11191	24542	7575	24437	7680	23663	8454	24566	7551	24510	7607
Gender of HH Head															
Male	57304	42421	14883	35854	21449	42571	14733	44477	12827	42279	15025	42571	14733	42598	14706
Female	88605	69404	19201	59461	29145	69568	19037	70232	18373	68142	20464	69327	19278	69294	19312
All Individuals	145343	111426	33917	94984	50359	111736	33606	114278	31065	110011	35332	111499	33844	111488	33855
Age groups															
0-5	6789	4466	2324	3721	3068	4489	2300	4854	1935	4630	2160	4472	2317	4471	2318
7-15	18377	12198	6179	9997	8380	12208	6169	13047	5330	12424	5953	12184	6193	12235	6142
17-24	19774	15167	4607	13010	6764	15192	4581	15760	4014	15356	4418	15138	4636	15234	4539
26-39	27589	20390	7199	17407	10182	20405	7185	21306	6283	20630	6960	20415	7174	20500	7089
41-59	41624	33089	8535	28468	13156	33185	8439	33627	7997	32791	8833	33091	8533	33225	8398
60 and over	31190	26117	5073	22381	8809	26257	4932	25685	5505	24181	7008	26199	4990	25823	5367
Gender															
Male	63853	48146	15706	40953	22900	48256	15597	49888	13964	47989	15864	48188	15665	48227	15625
Female	81490	63280	18210	54032	27458	63481	18010	64390	17100	62022	19468	63311	18179	63261	18229

Note: See Table 18 for the definition of the alternative consumption indicators (z0 to z6)

Table A10b. Poverty Profile, Alternative Consumption Aggregates

Fraction of Poor and Non-Poor Population Groups in Q2 2003

Poverty Status	Total	z0		z1		z2		z3		z4		z5		z6	
		poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor	poor	Poor
All Population	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Household size															
1	8.7	10.2	4.0	10.9	4.7	10.2	4.0	9.0	7.8	9.2	7.4	10.2	4.0	10.2	3.8
2	23.3	25.8	15.1	26.4	17.5	25.8	15.1	24.6	18.5	24.7	18.9	25.8	15.0	25.6	15.7
3	27.8	29.2	23.2	29.5	24.6	29.1	23.3	29.2	22.7	29.5	22.4	29.2	23.1	29.3	22.8
4	26.2	24.7	31.3	23.8	30.8	24.7	31.3	25.7	28.2	25.6	28.3	24.6	31.5	24.8	31.1
5	10.5	8.1	18.6	7.5	16.3	8.1	18.4	9.1	15.8	8.7	16.2	8.1	18.6	8.1	18.6
6+	3.4	2.1	7.8	2.0	6.2	2.1	7.9	2.4	7.0	2.3	6.8	2.1	7.9	2.0	8.1
Number of children															
0	54.9	60.1	37.6	61.5	42.4	60.1	37.4	58.3	42.4	58.6	43.4	60.2	37.4	60.1	37.7
1	29.4	28.3	33.2	27.5	33.0	28.3	33.2	28.9	31.2	29.1	30.3	28.2	33.3	28.3	33.0
2	12.8	10.2	21.5	9.7	18.8	10.2	21.6	11.1	19.3	10.7	19.5	10.2	21.6	10.2	21.5
3+	2.9	1.4	7.7	1.3	5.9	1.4	7.8	1.7	7.1	1.6	6.8	1.4	7.7	1.4	7.8
Quintiles of Durables															
Q1	19.9	16.0	32.6	14.5	29.9	16.3	31.9	15.0	37.9	15.1	34.8	16.0	32.5	15.8	33.1
Q2	20.0	18.6	24.5	17.0	25.6	18.8	23.9	18.7	24.5	18.3	25.2	18.6	24.6	18.4	25.0
Q3	20.0	19.5	21.6	19.1	21.8	19.6	21.2	19.9	20.2	20.1	19.8	19.5	21.5	19.7	21.0
Q4	20.0	21.7	14.6	22.9	14.7	21.6	15.0	22.1	12.3	22.1	13.5	21.7	14.6	21.8	14.4
Q5	20.1	24.2	6.7	26.5	8.1	23.8	8.0	24.2	5.1	24.4	6.8	24.2	6.8	24.3	6.4
Ownership of dwelling															
Tenant	38.9	39.0	38.4	38.8	39.0	39.1	38.0	38.6	39.7	43.6	23.9	38.9	38.6	38.9	38.7
Owner	61.1	61.0	61.6	61.2	61.0	60.9	62.0	61.4	60.3	56.4	76.1	61.1	61.4	61.1	61.3
Area of residence															
Urban	73.2	79.7	51.8	81.1	58.3	79.7	51.5	78.1	55.0	79.8	52.5	79.3	52.9	79.4	52.7
Rural	26.8	20.3	48.2	18.9	41.7	20.3	48.5	21.9	45.0	20.2	47.5	20.7	47.1	20.6	47.3
Federal Region															
Central	25.5	27.0	20.6	26.6	23.5	27.1	20.5	26.6	21.7	27.2	20.4	27.0	20.7	27.0	20.6
North-West	10.0	11.1	6.6	11.3	7.6	11.0	6.6	11.1	6.0	11.5	5.4	11.1	6.5	11.0	6.8
Siberia	14.3	13.9	15.7	14.4	14.1	13.8	15.9	14.1	14.9	14.1	15.1	13.9	15.6	13.9	15.7
South	14.5	13.2	18.8	12.5	18.3	13.3	18.6	13.6	17.8	12.7	20.2	13.2	18.9	13.4	18.2
Far-East	4.9	4.5	6.2	4.6	5.6	4.5	6.2	4.8	5.3	4.8	5.4	4.5	6.2	4.4	6.5
Urals	8.7	8.3	9.8	8.6	8.8	8.3	9.9	8.4	9.6	8.3	9.8	8.3	9.8	8.3	9.9
Volga	22.0	21.9	22.3	22.0	22.1	21.9	22.4	21.3	24.6	21.4	23.8	22.0	22.2	21.9	22.4
Gender of HH Head															
Male	39.3	37.9	43.7	37.6	42.4	38.0	43.6	38.8	41.1	38.3	42.3	38.0	43.3	38.1	43.2
Female	60.7	62.1	56.3	62.4	57.6	62.0	56.4	61.2	58.9	61.7	57.7	62.0	56.7	61.9	56.8
All Individuals	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Age groups															
0-5	4.7	4.0	6.9	3.9	6.1	4.0	6.8	4.2	6.2	4.2	6.1	4.0	6.8	4.0	6.8
7-15	12.6	10.9	18.2	10.5	16.6	10.9	18.4	11.4	17.2	11.3	16.8	10.9	18.3	11.0	18.1
17-24	13.6	13.6	13.6	13.7	13.4	13.6	13.6	13.8	12.9	14.0	12.5	13.6	13.7	13.7	13.4
26-39	19.0	18.3	21.2	18.3	20.2	18.3	21.4	18.6	20.2	18.8	19.7	18.3	21.2	18.4	20.9
41-59	28.6	29.7	25.2	30.0	26.1	29.7	25.1	29.4	25.7	29.8	25.0	29.7	25.2	29.8	24.8
60 and over	21.5	23.4	15.0	23.6	17.5	23.5	14.7	22.5	17.7	22.0	19.8	23.5	14.7	23.2	15.9
Gender															
Male	43.9	43.2	46.3	43.1	45.5	43.2	46.4	43.7	45.0	43.6	44.9	43.2	46.3	43.3	46.2
Female	56.1	56.8	53.7	56.9	54.5	56.8	53.6	56.3	55.0	56.4	55.1	56.8	53.7	56.7	53.8

Note: See Table 18 for the definition of the alternative consumption indicators (z0 to z6)

Table A10c. Poverty Profile, Alternative Consumption Aggregates

Incidence, Depth and Severity of Poverty in Q2 2003

Poverty Status	z0						z1						z2						z3					
	Pov. headcount		Poverty gap		Poverty severity		Pov. headcount		Poverty gap		Poverty severity		Pov. headcount		Poverty gap		Poverty severity		Pov. headcount		Poverty gap		Poverty severity	
	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.
All Population	0.234	0.005	0.062	0.002	0.024	0.001	0.347	0.006	0.100	0.002	0.042	0.001	0.231	0.005	0.061	0.002	0.024	0.001	0.214	0.005	0.059	0.002	0.025	0.001
Household size																								
1	0.108	0.007	0.023	0.002	0.008	0.001	0.185	0.008	0.042	0.002	0.015	0.001	0.105	0.006	0.022	0.002	0.008	0.001	0.190	0.008	0.051	0.003	0.022	0.001
2	0.151	0.006	0.034	0.002	0.012	0.001	0.261	0.008	0.065	0.002	0.024	0.001	0.150	0.006	0.033	0.002	0.012	0.001	0.169	0.007	0.044	0.002	0.017	0.001
3	0.195	0.007	0.047	0.002	0.018	0.001	0.307	0.008	0.081	0.003	0.033	0.001	0.194	0.007	0.047	0.002	0.018	0.001	0.175	0.006	0.047	0.002	0.019	0.001
4	0.278	0.009	0.074	0.003	0.029	0.002	0.407	0.010	0.120	0.004	0.051	0.002	0.276	0.009	0.074	0.003	0.030	0.002	0.230	0.008	0.064	0.003	0.027	0.002
5	0.412	0.014	0.120	0.006	0.050	0.003	0.537	0.015	0.180	0.007	0.082	0.004	0.405	0.014	0.117	0.005	0.049	0.003	0.321	0.013	0.090	0.005	0.038	0.003
6+	0.537	0.029	0.189	0.015	0.089	0.010	0.624	0.027	0.250	0.017	0.129	0.012	0.536	0.029	0.186	0.015	0.087	0.010	0.438	0.030	0.143	0.014	0.067	0.010
Number of children																								
0	0.160	0.005	0.037	0.001	0.013	0.001	0.268	0.006	0.068	0.002	0.026	0.001	0.158	0.005	0.036	0.001	0.013	0.001	0.165	0.005	0.043	0.002	0.018	0.001
1	0.264	0.008	0.068	0.003	0.026	0.001	0.388	0.008	0.111	0.003	0.046	0.002	0.261	0.008	0.067	0.003	0.026	0.001	0.227	0.007	0.061	0.002	0.025	0.001
2	0.391	0.012	0.115	0.004	0.048	0.002	0.508	0.013	0.170	0.005	0.078	0.003	0.390	0.012	0.114	0.004	0.048	0.002	0.321	0.011	0.093	0.004	0.040	0.002
3+	0.626	0.029	0.235	0.016	0.116	0.012	0.709	0.027	0.304	0.018	0.164	0.014	0.625	0.029	0.232	0.016	0.113	0.012	0.527	0.029	0.181	0.015	0.088	0.011
Quintiles of Durables																								
Q1	0.384	0.010	0.122	0.005	0.055	0.003	0.522	0.010	0.181	0.005	0.087	0.003	0.371	0.010	0.116	0.004	0.052	0.003	0.408	0.010	0.135	0.005	0.064	0.003
Q2	0.287	0.009	0.073	0.003	0.028	0.002	0.445	0.010	0.126	0.004	0.051	0.002	0.277	0.009	0.070	0.003	0.027	0.002	0.262	0.008	0.068	0.003	0.027	0.002
Q3	0.252	0.009	0.059	0.003	0.021	0.001	0.377	0.010	0.100	0.003	0.038	0.002	0.246	0.009	0.058	0.003	0.021	0.001	0.216	0.008	0.051	0.003	0.018	0.001
Q4	0.170	0.009	0.039	0.003	0.013	0.001	0.254	0.010	0.065	0.004	0.025	0.002	0.173	0.009	0.041	0.003	0.014	0.001	0.131	0.008	0.031	0.003	0.011	0.001
Q5	0.078	0.005	0.016	0.002	0.005	0.001	0.139	0.008	0.031	0.003	0.011	0.001	0.092	0.006	0.020	0.002	0.007	0.001	0.055	0.005	0.011	0.001	0.003	0.001
Ownership of dwelling																								
Tenant	0.231	0.007	0.059	0.002	0.024	0.001	0.348	0.008	0.097	0.003	0.041	0.002	0.226	0.007	0.058	0.002	0.023	0.001	0.219	0.007	0.060	0.002	0.026	0.001
Owner	0.235	0.006	0.063	0.002	0.025	0.001	0.346	0.007	0.102	0.003	0.044	0.002	0.235	0.006	0.063	0.002	0.025	0.001	0.211	0.006	0.058	0.002	0.024	0.001
Area of residence																								
Urban	0.166	0.005	0.037	0.001	0.013	0.001	0.276	0.006	0.069	0.002	0.026	0.001	0.163	0.005	0.037	0.001	0.013	0.001	0.161	0.005	0.040	0.002	0.015	0.001
Rural	0.419	0.011	0.127	0.005	0.054	0.003	0.539	0.011	0.186	0.006	0.087	0.004	0.418	0.011	0.126	0.005	0.054	0.003	0.359	0.011	0.111	0.005	0.050	0.003
Federal Region																								
Central	0.189	0.011	0.041	0.003	0.014	0.001	0.319	0.014	0.078	0.004	0.029	0.002	0.185	0.011	0.040	0.003	0.013	0.001	0.182	0.011	0.043	0.003	0.016	0.001
North-West	0.153	0.011	0.037	0.004	0.014	0.002	0.265	0.015	0.064	0.004	0.025	0.002	0.152	0.011	0.037	0.004	0.014	0.002	0.128	0.010	0.031	0.003	0.013	0.002
Siberia	0.256	0.015	0.078	0.006	0.034	0.004	0.342	0.016	0.113	0.008	0.053	0.005	0.257	0.015	0.077	0.006	0.034	0.004	0.223	0.013	0.067	0.006	0.031	0.004
South	0.303	0.014	0.079	0.005	0.030	0.002	0.438	0.015	0.132	0.006	0.056	0.003	0.296	0.014	0.077	0.005	0.029	0.002	0.262	0.013	0.071	0.004	0.028	0.002
Far-East	0.293	0.014	0.091	0.006	0.041	0.003	0.393	0.014	0.133	0.007	0.063	0.004	0.290	0.014	0.090	0.006	0.040	0.003	0.229	0.013	0.071	0.005	0.033	0.003
Urals	0.264	0.016	0.077	0.006	0.031	0.003	0.350	0.016	0.113	0.007	0.051	0.004	0.265	0.016	0.077	0.006	0.031	0.003	0.238	0.014	0.068	0.005	0.029	0.003
Volga	0.237	0.012	0.062	0.005	0.025	0.002	0.349	0.014	0.101	0.006	0.043	0.003	0.236	0.012	0.062	0.005	0.025	0.002	0.239	0.012	0.071	0.005	0.031	0.003
Gender of HH Head																								
Male	0.260	0.008	0.070	0.003	0.028	0.002	0.374	0.008	0.112	0.003	0.048	0.002	0.257	0.008	0.069	0.003	0.028	0.002	0.224	0.007	0.062	0.003	0.026	0.001
Female	0.217	0.006	0.056	0.002	0.022	0.001	0.329	0.007	0.093	0.002	0.039	0.001	0.215	0.006	0.056	0.002	0.022	0.001	0.207	0.005	0.057	0.002	0.024	0.001
All Individuals	0.233	0.005	0.061	0.002	0.024	0.001	0.347	0.006	0.100	0.002	0.042	0.001	0.231	0.005	0.061	0.002	0.024	0.001	0.214	0.005	0.059	0.002	0.025	0.001
Age groups																								
0-5	0.342	0.011	0.103	0.005	0.044	0.003	0.452	0.011	0.152	0.005	0.070	0.003	0.339	0.011	0.102	0.005	0.044	0.003	0.285	0.011	0.085	0.004	0.037	0.002
7-15	0.336	0.008	0.098	0.004	0.041	0.002	0.456	0.009	0.147	0.004	0.067	0.003	0.336	0.008	0.097	0.004	0.041	0.002	0.290	0.008	0.084	0.003	0.037	0.002
17-24	0.233	0.007	0.062	0.002	0.025	0.001	0.342	0.008	0.100	0.003	0.043	0.002	0.232	0.007	0.062	0.002	0.025	0.001	0.203	0.006	0.056	0.002	0.024	0.001
26-39	0.261	0.007	0.070	0.002	0.028	0.001	0.369	0.008	0.111	0.003	0.048	0.002	0.260	0.007	0.070	0.002	0.028	0.001	0.228	0.006	0.063	0.002	0.027	0.001
41-59	0.205	0.006	0.052	0.002	0.020	0.001	0.316	0.007	0.088	0.002	0.036	0.001	0.203	0.006	0.052	0.002	0.020	0.001	0.192	0.006	0.053	0.002	0.023	0.001
60 and over	0.163	0.006	0.035	0.002	0.012	0.001	0.282	0.008	0.069	0.002	0.025	0.001	0.158	0.006	0.034	0.002	0.011	0.001	0.177	0.006	0.043	0.002	0.016	0.001
Gender																								
Male	0.246	0.005	0.066	0.002	0.026	0.001	0.359	0.006	0.106	0.003	0.045	0.001	0.244	0.005	0.065	0.002	0.026	0.001	0.219	0.005	0.061	0.002	0.026	0.001
Female	0.224	0.005	0.058	0.002	0.023	0.001	0.337	0.006	0.096	0.002	0.040	0.001	0.221	0.005	0.057	0.002	0.022	0.001	0.210	0.005	0.057	0.002	0.023	0.001

Table A10d. Poverty Profile, Alternative Consumption Aggregates

Incidence, Depth and Severity of Poverty in Q2 2003

Poverty Status	z4						z5						z6					
	Pov. headcount		Poverty gap		Poverty severity		Pov. headcount		Poverty gap		Poverty severity		Pov. headcount		Poverty gap		Poverty severity	
	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.	Mean	Std.err.
All Population	0.243	0.005	0.068	0.002	0.029	0.001	0.233	0.005	0.061	0.002	0.024	0.001	0.233	0.005	0.061	0.002	0.024	0.001
Household size																		
1	0.204	0.008	0.056	0.003	0.023	0.002	0.106	0.007	0.022	0.002	0.008	0.001	0.102	0.006	0.021	0.002	0.007	0.001
2	0.198	0.007	0.051	0.002	0.020	0.001	0.150	0.006	0.033	0.002	0.012	0.001	0.157	0.006	0.034	0.002	0.012	0.001
3	0.196	0.007	0.052	0.002	0.021	0.001	0.194	0.007	0.047	0.002	0.018	0.001	0.191	0.007	0.046	0.002	0.017	0.001
4	0.262	0.008	0.074	0.003	0.031	0.002	0.280	0.009	0.073	0.003	0.029	0.002	0.276	0.009	0.073	0.003	0.029	0.002
5	0.375	0.014	0.113	0.005	0.049	0.003	0.413	0.014	0.118	0.005	0.049	0.003	0.412	0.014	0.119	0.005	0.049	0.003
6+	0.486	0.030	0.174	0.015	0.085	0.011	0.538	0.029	0.187	0.015	0.087	0.010	0.551	0.029	0.190	0.015	0.089	0.010
Number of children																		
0	0.192	0.006	0.051	0.002	0.021	0.001	0.159	0.005	0.036	0.001	0.013	0.001	0.160	0.005	0.036	0.001	0.013	0.001
1	0.251	0.007	0.069	0.003	0.028	0.001	0.264	0.008	0.067	0.003	0.026	0.001	0.261	0.007	0.067	0.003	0.026	0.001
2	0.370	0.012	0.110	0.005	0.048	0.003	0.392	0.012	0.113	0.004	0.047	0.002	0.390	0.012	0.114	0.004	0.047	0.002
3+	0.578	0.030	0.217	0.016	0.109	0.012	0.625	0.029	0.232	0.016	0.113	0.012	0.634	0.029	0.234	0.016	0.114	0.012
Quintiles of Durables																		
Q1	0.426	0.010	0.142	0.005	0.068	0.003	0.381	0.010	0.120	0.004	0.054	0.003	0.389	0.010	0.122	0.004	0.055	0.003
Q2	0.307	0.009	0.083	0.003	0.033	0.002	0.287	0.009	0.072	0.003	0.027	0.002	0.292	0.009	0.072	0.003	0.027	0.002
Q3	0.241	0.008	0.061	0.003	0.023	0.001	0.251	0.009	0.058	0.003	0.021	0.001	0.245	0.008	0.058	0.003	0.021	0.001
Q4	0.164	0.009	0.040	0.003	0.015	0.002	0.170	0.009	0.039	0.003	0.013	0.001	0.167	0.008	0.039	0.003	0.013	0.001
Q5	0.082	0.006	0.017	0.002	0.006	0.001	0.078	0.006	0.016	0.002	0.005	0.001	0.074	0.005	0.015	0.002	0.005	0.001
Ownership of dwelling																		
Tenant	0.150	0.006	0.038	0.002	0.015	0.001	0.232	0.007	0.059	0.002	0.024	0.001	0.233	0.007	0.060	0.002	0.024	0.001
Owner	0.303	0.007	0.087	0.003	0.037	0.001	0.234	0.006	0.062	0.002	0.024	0.001	0.234	0.006	0.062	0.002	0.024	0.001
Area of residence																		
Urban	0.174	0.005	0.042	0.002	0.016	0.001	0.169	0.005	0.038	0.001	0.014	0.001	0.168	0.005	0.038	0.001	0.014	0.001
Rural	0.431	0.012	0.139	0.005	0.064	0.003	0.409	0.011	0.123	0.005	0.052	0.003	0.411	0.011	0.123	0.005	0.053	0.003
Federal Region																		
Central	0.194	0.011	0.048	0.004	0.018	0.002	0.189	0.011	0.041	0.003	0.014	0.001	0.188	0.011	0.041	0.003	0.013	0.001
North-West	0.132	0.010	0.033	0.003	0.013	0.002	0.152	0.011	0.036	0.004	0.014	0.002	0.159	0.011	0.037	0.004	0.014	0.002
Siberia	0.256	0.015	0.079	0.006	0.036	0.004	0.255	0.015	0.076	0.006	0.033	0.004	0.255	0.015	0.076	0.006	0.033	0.004
South	0.338	0.014	0.096	0.005	0.040	0.003	0.304	0.014	0.078	0.005	0.030	0.002	0.292	0.014	0.076	0.005	0.029	0.002
Far-East	0.265	0.013	0.081	0.006	0.037	0.003	0.294	0.014	0.090	0.006	0.040	0.003	0.307	0.014	0.094	0.006	0.042	0.003
Urals	0.273	0.016	0.078	0.006	0.033	0.003	0.263	0.016	0.075	0.006	0.030	0.003	0.265	0.016	0.076	0.006	0.031	0.003
Volga	0.263	0.013	0.076	0.005	0.033	0.003	0.235	0.012	0.062	0.004	0.024	0.002	0.237	0.012	0.062	0.004	0.025	0.002
Gender of HH Head																		
Male	0.262	0.008	0.076	0.003	0.032	0.002	0.257	0.008	0.068	0.003	0.027	0.001	0.257	0.008	0.068	0.003	0.027	0.002
Female	0.231	0.006	0.064	0.002	0.027	0.001	0.218	0.006	0.056	0.002	0.022	0.001	0.218	0.006	0.056	0.002	0.022	0.001
All Individuals	0.243	0.005	0.068	0.002	0.029	0.001	0.233	0.005	0.061	0.002	0.024	0.001	0.233	0.005	0.061	0.002	0.024	0.001
Age groups																		
0-5	0.318	0.011	0.098	0.005	0.044	0.003	0.341	0.011	0.102	0.004	0.043	0.003	0.342	0.011	0.101	0.004	0.043	0.003
7-15	0.324	0.008	0.097	0.004	0.043	0.002	0.337	0.008	0.097	0.004	0.041	0.002	0.334	0.008	0.097	0.004	0.041	0.002
17-24	0.223	0.007	0.063	0.002	0.027	0.001	0.235	0.007	0.062	0.002	0.025	0.001	0.230	0.007	0.060	0.002	0.024	0.001
26-39	0.252	0.007	0.072	0.002	0.030	0.001	0.260	0.007	0.069	0.002	0.027	0.001	0.257	0.007	0.069	0.002	0.027	0.001
41-59	0.212	0.006	0.060	0.002	0.026	0.001	0.205	0.006	0.052	0.002	0.020	0.001	0.202	0.006	0.051	0.002	0.020	0.001
60 and over	0.225	0.007	0.056	0.002	0.021	0.001	0.160	0.006	0.034	0.002	0.011	0.001	0.172	0.006	0.037	0.002	0.012	0.001
Gender																		
Male	0.248	0.006	0.071	0.002	0.030	0.001	0.245	0.005	0.065	0.002	0.026	0.001	0.245	0.005	0.065	0.002	0.026	0.001
Female	0.239	0.005	0.066	0.002	0.028	0.001	0.223	0.005	0.057	0.002	0.022	0.001	0.224	0.005	0.057	0.002	0.022	0.001

Table A11. Sensitivity of poverty statistics to different treatments of the "consumption of durable goods"

	Mean	Estimate	Std.Err	95% CI bounds	
				Lower	Upper
Using endogenously-determined poverty line					
wr0					
	p0	0.234	0.005	0.224	0.243
	p1	0.061	0.002	0.058	0.065
	p2	0.024	0.001	0.023	0.026
wr1					
	p0	0.347	0.006	0.335	0.358
	p1	0.100	0.002	0.096	0.105
	p2	0.042	0.001	0.040	0.045
wr2					
	p0	0.231	0.005	0.222	0.241
	p1	0.061	0.002	0.057	0.064
	p2	0.024	0.001	0.022	0.026
Based on Pline0 and different consumption aggregates					
pc_cons0					
	p0	0.234	0.005	0.224	0.243
	p1	0.061	0.002	0.058	0.065
	p2	0.024	0.001	0.023	0.026
pc_cons1					
	p0	0.228	0.005	0.218	0.237
	p1	0.060	0.002	0.057	0.064
	p2	0.024	0.001	0.022	0.026
pc_cons2					
	p0	0.248	0.005	0.238	0.258
	p1	0.066	0.002	0.062	0.069
	p2	0.026	0.001	0.024	0.028

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr1 to scenario B and wr2 to scenario C.

Table A11. Sensitivity of inequality statistics to different treatments of the "consumption of durable goods"

	Gini		Theil		Varlogs	
	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
wr0	0.269	0.002	0.119	0.002	0.258	0.005
wr1	0.372	0.007	0.320	0.021	0.387	0.009
wr2	0.268	0.003	0.118	0.003	0.258	0.008

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr1 to scenario B and wr2 to scenario C.

Table A12. Sensitivity of the welfare aggregate to different treatments of the "consumption of durable goods"

		Deciles based on wr1 (with durables purchased during 2003)										Total
		1	**2**	**3**	**4**	5	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including the uservalue of stock of durable goods)	**1**	9.3	0.3	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.1	10.0
	2	0.7	8.2	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	10.0
	3	-	1.5	7.3	0.2	0.2	0.1	0.1	0.1	0.2	0.2	10.0
	4	-	-	2.2	6.5	0.2	0.2	0.2	0.2	0.2	0.2	10.0
	5	-	-	0.0	3.1	5.5	0.3	0.3	0.3	0.3	0.4	10.0
	6	-	-	-	0.0	3.9	4.6	0.4	0.3	0.3	0.5	10.0
	7	-	-	-	-	0.0	4.6	3.9	0.5	0.5	0.6	10.0
	8	-	-	-	0.0	-	0.0	5.0	3.4	0.6	0.9	10.0
	9	-	-	-	-	-	-	0.0	5.1	3.6	1.3	10.0
	10	-	-	-	-	-	-	-	0.0	4.2	5.8	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0

Sum, main diagonal **58.01**

		Deciles based on wr2 (without consumption of durables)										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including the uservalue of stock of durable goods)	**1**	9.8	0.2	-	-	-	-	-	-	-	-	10.0
	2	0.3	9.4	0.3	-	-	-	-	-	-	-	10.0
	3	-	0.3	9.1	0.6	-	-	-	-	-	-	10.0
	4	-	-	0.5	8.8	0.7	-	-	-	-	-	10.0
	5	-	-	0.0	0.7	8.7	0.7	-	-	-	-	10.0
	6	-	0.0	-	-	0.6	8.6	0.7	-	-	-	10.0
	7	-	-	-	-	0.0	0.7	8.8	0.5	-	-	10.0
	8	-	-	-	0.0	-	0.0	0.5	9.0	0.5	-	10.0
	9	-	-	-	-	-	-	-	0.5	9.2	0.3	10.0
	10	-	-	-	-	-	-	-	-	0.3	9.7	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0

Sum, main diagonal **90.99**

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr1 to scenario B and wr2 to scenario C.

Table A14: Similar Households who purchased an average TV set in 2003 and 2002

			Deciles based on a cs aggr:			Ranks based on cs aggr		
id	Year purchase	Price	uvalue	purchase	no durable	uvalue	purchase	no durable
9423260570	2003	6500	1	6	1	1026	2867	1002
3207670507	2003	6500	4	9	4	2266	5871	2206
7517420770	2003	6500	9	10	9	4805	11791	4686
7517630453	**2003**	**6500**	**3**	**8**	**3**	**1839**	**3621**	**1799**
2205620418	2003	6500	6	8	5	2486	4077	2335
5713510044	2003	6500	10	10	10	8784	15063	8421
1804740382	2003	6500	9	10	9	4256	7748	4187
1002550456	2003	6500	2	7	2	1749	3657	1701
5212640062	2003	6500	8	10	8	4851	12122	4740
2005210699	2003	6500	9	10	9	4593	8256	4519
8119690264	2003	6500	2	7	1	1435	3650	1320
5613300109	2003	6500	7	9	7	3421	5527	3325
1102950233	2003	6500	2	6	2	1331	2903	1288
3308010379	2003	6500	10	10	10	6676	9913	6530
1203320240	2002	6500	3	3	3	1766	1715	1715
3207660472	2002	6500	10	10	10	6980	6866	6866
4711250585	2002	6500	8	8	8	4454	4364	4364
1103140500	2002	6500	5	5	5	2444	2408	2408
9022570057	2002	6500	4	3	4	1896	1846	1846
4711210553	2002	6500	4	4	4	2756	2697	2697
4911760791	2002	6500	3	3	3	1861	1824	1824
5413160633	2002	6500	4	3	4	2029	1972	1972
7116960358	2002	6500	6	5	6	2793	2746	2746
8220700784	2002	6500	1	1	1	834	806	806
2807010289	2002	6500	9	8	9	4774	4652	4652
5212590740	2002	6500	4	4	4	2101	2036	2036
3609040677	2002	6500	3	3	3	1882	1835	1835
7818600472	2002	6500	7	6	7	2973	2921	2921
2807050819	2002	6500	4	4	4	2208	2164	2164
2205600391	2002	6500	4	4	4	2112	2052	2052
3709410836	2002	6500	1	1	1	1007	953	953
5212540487	2002	6500	5	5	5	2517	2453	2453
4711280636	2002	6500	8	7	8	3496	3460	3460
8120140677	2002	6500	6	6	6	2797	2747	2747
8220560576	2002	6500	1	1	1	1113	1095	1095
1203400314	2002	6500	3	3	3	2221	2028	2028
3207550190	2002	6500	5	4	5	2347	2303	2303
6515610630	2002	6500	7	6	7	3015	2924	2924
3408710164	2002	6500	5	4	5	2269	2196	2196
5413260289	2002	6500	9	9	9	4812	4678	4678
1203230607	**2002**	**6500**	**3**	**3**	**3**	**1821**	**1776**	**1776**
9423520072	2002	6500	8	8	8	3727	3685	3685
4711190521	2002	6500	10	10	10	8890	8606	8606
4911400854	2002	6500	7	6	7	2827	2801	2801
3608850773	2002	6500	7	6	7	2974	2946	2946
8721690121	2002	6500	5	5	5	2675	2632	2632
7517510393	2002	6500	3	3	3	1926	1869	1869

Table A15. Sensitivity of poverty statistics to different treatments of the "consumption of housing services"

	Mean	Estimate	Std.Err	95% CI bounds	
				Lower	Upper
Using endogenously-determined poverty line					
wr0					
	p0	0.234	0.005	0.224	0.243
	p1	0.061	0.002	0.058	0.065
	p2	0.024	0.001	0.023	0.026
wr4					
	p0	0.243	0.005	0.233	0.253
	p1	0.068	0.002	0.065	0.072
	p2	0.029	0.001	0.027	0.031
wr3					
	p0	0.214	0.005	0.204	0.223
	p1	0.059	0.002	0.055	0.062
	p2	0.025	0.001	0.023	0.026
Based on Pline0 and different consumption aggregates					
pc_cons0					
	p0	0.234	0.005	0.224	0.243
	p1	0.061	0.002	0.058	0.065
	p2	0.024	0.001	0.023	0.026
pc_cons4					
	p0	0.339	0.006	0.328	0.351
	p1	0.100	0.002	0.095	0.105
	p2	0.043	0.001	0.041	0.046
pc_cons3					
	p0	0.414	0.006	0.402	0.426
	p1	0.127	0.003	0.122	0.132
	p2	0.056	0.001	0.054	0.059

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr4 to scenario D and wr3 to scenario E.

Table A16. Sensitivity of inequality statistics to different treatments of the "consumption of housing services "

	Gini		Theil		Varlogs	
	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
wr0	0.269	0.002	0.119	0.002	0.258	0.006
wr4	0.285	0.003	0.134	0.003	0.299	0.009
wr3	0.291	0.003	0.141	0.003	0.309	0.006

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr4 to scenario D and wr3 to scenario E.

Table A17. Sensitivity of welfare aggregate to different treatments of the "consumption" of housing services

		Deciles based on wr4 (with rent paid by tenants)										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including the uservalue of stock of durable goods)	**1**	7.9	2.1	-	-	-	-	-	-	-	-	10.0
	2	1.5	4.9	3.6	0.0	-	-	-	-	-	-	10.0
	3	0.3	1.9	3.0	4.1	0.7	-	-	-	-	-	10.0
	4	0.1	0.6	1.9	2.5	4.1	0.8	-	-	-	-	10.0
	5	0.0	0.3	0.8	1.8	2.4	4.1	0.6	-	-	-	10.0
	6	0.0	0.1	0.4	0.9	1.6	2.1	4.6	0.3	-	-	10.0
	7	0.0	0.1	0.2	0.4	0.8	1.7	2.3	4.6	-	-	10.0
	8	0.0	0.0	0.1	0.2	0.4	0.9	1.7	3.3	3.5	-	10.0
	9	-	0.0	0.1	0.1	0.1	0.4	0.7	1.5	5.2	2.0	10.0
	10	-	-	0.0	0.0	0.0	0.1	0.1	0.3	1.3	8.0	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0
Sum, main diagonal				**41.62**								

		Deciles based on wr3 (without rent)										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including the uservalue of stock of durable goods)	**1**	7.9	2.1	0.0	-	-	-	-	-	-	-	10.0
	2	1.5	5.2	3.1	0.2	-	-	-	-	-	-	10.0
	3	0.4	1.6	3.9	3.5	0.6	-	-	-	-	-	10.0
	4	0.1	0.6	1.6	3.3	3.6	0.9	-	-	-	-	10.0
	5	0.0	0.2	0.8	1.7	3.0	3.5	0.8	-	-	-	10.0
	6	0.0	0.1	0.3	0.7	1.6	3.0	3.6	0.6	-	-	10.0
	7	0.0	0.1	0.2	0.3	0.7	1.6	3.2	3.8	0.2	-	10.0
	8	0.0	0.0	0.1	0.2	0.3	0.7	1.7	3.7	3.1	-	10.0
	9	-	0.0	0.0	0.1	0.1	0.3	0.6	1.5	5.5	1.8	10.0
	10	-	-	0.0	0.0	0.1	0.1	0.1	0.3	1.2	8.2	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0
Sum, main diagonal				**46.84**								

Note: wr stands for welfare ratio. Wr0 corresponds to scenario A in Table 18, wr4 to scenario D and wr3 to scenario E.

Table A18: A tale of two households: Homeowners and tenants living in a similar dwelling

Household ID	Owns the dwelling he/she is living in?	Value of the nominal rent: paid or imputed	Value of the nominal rent: paid	Deciles based on a consumption aggregate wich includes: rent paid or imputed	Deciles based on a consumption aggregate wich includes: no rent	Deciles based on a consumption aggregate wich includes: only paid rent	Per capita consumption aggregate which includes: rent paid or imputed	Per capita consumption aggregate which includes: no rent	Per capita consumption aggregate which includes: only paid rent
21177	6415190720	1012	0	6	6	6	3373	2717	2717
21408	6415190705	1024	0	6	6	5	3541	2876	2876
21498	7517530639	1030	0	6	7	7	2980	2660	2660
21782	2506450090	1052	0	6	5	5	3732	2846	2846
21917	8721890612	1059	0	6	5	4	3676	2764	2764
22041	501640791	1067	0	6	7	6	3154	2779	2779
22132	6415180350	1072	0	6	5	5	3341	2645	2645
22810	8721900336	1113	0	6	7	6	3160	2681	2681
23053	4711180758	1129	0	6	5	4	3938	2786	2786
23945	7718330048	1181	0	6	7	7	2886	2741	2741
21616	401210469	1039	1039	6	7	7	2988	2716	2988
21739	8721900373	1049	1049	6	6	7	3064	2613	3064
21945	5012120556	1062	1062	6	5	7	3705	2781	3705
22065	9824050442	1068	1068	6	6	7	3407	2789	3407
22270	4410510045	1080	1080	6	7	7	3243	2809	3243
22330	8721820677	1083	1083	6	7	7	3157	2690	3157
22947	9824270229	1123	1123	6	7	7	2946	2621	2946
23157	3007370698	1136	1136	6	7	7	3005	2624	3005
23321	801970488	1147	1147	6	7	7	2987	2728	2987
23803	802120791	1174	1174	6	7	7	3044	2646	3044

Table A19. Sensitivity of poverty statistics to adjustments for rural-urban food price differences

		WR0				WR5			
		Estimate	Std.Err	95% CI bounds		Estimate	Std.Err	95% CI bounds	
				Lower	Upper			Lower	Upper
Using endogenously-determined poverty line									
p0	National	0.234	0.005	0.224	0.243	0.233	0.005	0.223	0.243
p1	National	0.061	0.002	0.058	0.065	0.061	0.002	0.057	0.064
p2	National	0.024	0.001	0.023	0.026	0.024	0.001	0.022	0.026
p0									
	Urban	0.165	0.005	0.156	0.175	0.168	0.005	0.159	0.178
	Rural	0.419	0.011	0.397	0.441	0.409	0.011	0.387	0.431
p1									
	Urban	0.037	0.001	0.035	0.040	0.038	0.001	0.035	0.041
	Rural	0.127	0.005	0.118	0.136	0.123	0.005	0.113	0.132
p2									
	Urban	0.013	0.001	0.012	0.015	0.014	0.001	0.012	0.015
	Rural	0.054	0.003	0.049	0.060	0.052	0.003	0.047	0.057
Based on Pline0 and different consumption aggregates									
p0	National	0.234	0.005	0.224	0.243	0.233	0.005	0.223	0.243
p1	National	0.061	0.002	0.058	0.065	0.061	0.002	0.057	0.064
p2	National	0.024	0.001	0.023	0.026	0.024	0.001	0.022	0.026
p0									
	Urban	0.165	0.005	0.156	0.175	0.168	0.005	0.159	0.178
	Rural	0.419	0.011	0.397	0.441	0.409	0.011	0.387	0.431
p1									
	Urban	0.037	0.001	0.035	0.040	0.038	0.001	0.035	0.041
	Rural	0.127	0.005	0.118	0.136	0.123	0.005	0.113	0.132
p2									
	Urban	0.013	0.001	0.012	0.015	0.014	0.001	0.012	0.015
	Rural	0.054	0.003	0.049	0.060	0.052	0.003	0.047	0.057

Table A20. Sensitivity of inequality statistics to adjustments for rural-urban food price differences

	Gini		Theil		Varlogs	
	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
wr0	0.269	0.003	0.119	0.002	0.258	0.006
wr5	0.267	0.002	0.118	0.002	0.255	0.005

Table A21. Sensitivity of the welfare aggregate to adjustments for rural-urban food price differences

		Deciles based on wr5 (adjusting for rural-urban food price differences)										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including the uservalue of stock of durable goods)	**1**	9.8	0.2	-	-	-	-	-	-	-	-	10.0
	2	0.2	9.5	0.3	-	-	-	-	-	-	-	10.0
	3	-	0.3	9.4	0.3	-	-	-	-	-	-	10.0
	4	-	-	0.3	9.3	0.4	-	-	-	-	-	10.0
	5	-	-	-	0.4	9.3	0.3	-	-	-	-	10.0
	6	-	-	-	-	0.3	9.4	0.3	-	-	-	10.0
	7	-	-	-	-	-	0.3	9.5	0.2	-	-	10.0
	8	-	-	-	-	-	-	0.2	9.6	0.2	-	10.0
	9	-	-	-	-	-	-	-	0.2	9.7	0.1	10.0
	10	-	-	-	-	-	-	-	-	0.1	9.9	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0
Sum, main diagonal				**95.4**								

Table A22. Sensitivity of poverty statistics to inclusion/exclusion of welfare derived from subsidized consumption

		WR0				WR6			
		Estimate	Std.Err	95% CI bounds		Estimate	Std.Err	95% CI bounds	
				Lower	Upper			Lower	Upper
Using endogenously-determined poverty line									
p0	National	0.234	0.005	0.224	0.243	0.233	0.005	0.223	0.243
p1	National	0.061	0.002	0.058	0.065	0.061	0.002	0.058	0.064
p2	National	0.024	0.001	0.023	0.026	0.024	0.001	0.022	0.026
p0									
	Urban	0.165	0.005	0.156	0.175	0.168	0.005	0.158	0.178
	Rural	0.419	0.011	0.397	0.441	0.411	0.011	0.389	0.433
p1									
	Urban	0.037	0.001	0.035	0.040	0.038	0.001	0.035	0.041
	Rural	0.127	0.005	0.118	0.136	0.123	0.005	0.114	0.132
p2									
	Urban	0.013	0.001	0.012	0.015	0.013	0.001	0.012	0.015
	Rural	0.054	0.003	0.049	0.060	0.053	0.003	0.047	0.058
Based on Pline0 and different consumption aggregates									
p0	National	0.234	0.005	0.224	0.243	0.252	0.005	0.242	0.262
p1	National	0.061	0.002	0.058	0.065	0.066	0.002	0.063	0.070
p2	National	0.024	0.001	0.023	0.026	0.026	0.001	0.024	0.028
p0									
	Urban	0.165	0.005	0.156	0.175	0.186	0.005	0.175	0.196
	Rural	0.419	0.011	0.397	0.441	0.434	0.011	0.411	0.456
p1									
	Urban	0.037	0.001	0.035	0.040	0.042	0.002	0.039	0.045
	Rural	0.127	0.005	0.118	0.136	0.132	0.005	0.123	0.142
p2									
	Urban	0.013	0.001	0.012	0.015	0.015	0.001	0.014	0.016
	Rural	0.054	0.003	0.049	0.060	0.057	0.003	0.051	0.062

Table A23. Sensitivity of inequality statistics to inclusion/exclusion of welfare derived from subsidized consumption

	Gini		Theil		Varlogs	
	Mean	Std.Err.	Mean	Std.Err.	Mean	Std.Err.
wr0	0.269	0.003	0.119	0.003	0.258	0.006
wr5	0.271	0.003	0.121	0.003	0.259	0.005

Table A24. Sensitivity of the welfare aggregate to inclusion/exclusion of welfare derived from subsidized consumption

		Deciles based on wr6 (without welfare derived from subsidies)										Total
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Deciles based on wr0 (including subsidized consumption)	**1**	9.5	0.5	-	-	-	-	-	-	-	-	10.0
	2	0.5	8.5	1.0	-	-	-	-	-	-	-	10.0
	3	0.0	1.0	7.7	1.3	-	-	-	-	-	-	10.0
	4	0.0	0.0	1.1	7.3	1.5	-	-	-	-	-	10.0
	5	-	-	0.1	1.3	7.1	1.6	-	-	-	-	10.0
	6	-	-	0.0	0.1	1.3	7.1	1.5	-	-	-	10.0
	7	-	0.0	-	0.0	0.1	1.2	7.3	1.4	-	-	10.0
	8	-	-	-	-	0.0	0.1	1.1	7.7	1.1	-	10.0
	9	-	-	-	-	0.0	0.1	0.0	0.9	8.4	0.6	10.0
	10	-	-	-	-	-	-	0.0	0.0	0.6	9.4	10.0
Total		10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	100.0

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