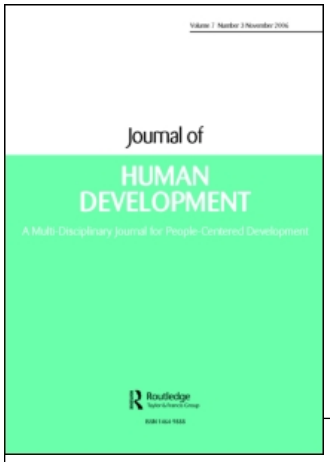

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Counting Heads or Counting Televisions: Can Asset-based Measures of Welfare Assist Policy-makers in Russia?

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Abstract There has been a vigorous debate about poverty measurement in Russia, where both the poverty line and poverty data have been subject to criticism. We outline some of the issues raised and discuss the use of an alternative welfare measure based on household assets. Asset indices have mostly been constructed for low-income countries, supported by two arguments: first, the asset index appears to have a number of empirical advantages in terms of data collection; and second, it may be better at capturing long-term welfare than either income or expenditure data. We show that the asset index approach is useful in Russia, and may present policy-makers with a superior means of determining household welfare. However, our discussion raises a number of methodological issues that must be confronted by those constructing asset indices.

Key words: Asset index, Poverty, Russia

Introduction

This article is concerned with the measurement of poverty in Russia, which has been a subject of considerable debate, with particular focus on the trends following liberalization. The collapse of Russia's productive sector in the early phase of the transition to a market economy is well known (for a longer discussion see Lokshin and Popkin, 1999; Shorrocks and Kolenikov, 2001). Graham (2004) finds that while poverty was on the rise well before the end of the Soviet Union, there was a dramatic rise after 1990. The 1998 financial crisis seems to have further worsened poverty. (Lokshin and Ravallion, 2000). The pattern with other indices of welfare, such as life expectancy, is more complex. Ivaschenko shows that life expectancy at birth initially fell after transition, but recovered somewhat until the events in 1998, after which it fell again (2004, p. 2).

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Assessing the impact of liberalization on welfare has been complicated because, as Klugman and Braithwaite (1998) among others note, there was little confidence in the official poverty estimates and their ability to measure accurately either the level of, or trends in, poverty. For example, in contrast to expectations, measured poverty fell during the initial transition, despite the fact that this was a period of great economic and social upheaval (Yemtsov, 1999).

In the present paper we discuss the problems with monetary measures of poverty in Russia and suggest that an alternative is to construct an index based on households' ownership of assets. Asset indices have been used in low-income countries for several years, but we believe this is the first time that one has been constructed with Russian data. We assess the extent to which an asset index is useful in identifying households with low levels of welfare, and consider whether such an index solves the problems that have been identified with monetary measures. In the following section we discuss poverty measurement in Russia, and then introduce our asset index. We generate some comparative results and finally present our conclusions. This paper will be of interest to those working on Russia, as well as researchers interested in the methodology of welfare measurement.

Problems of measuring poverty in Russia

The poverty headcount measure is the most common way of assessing poverty. It is constructed by measuring the number of persons in an economy whose income or consumption means they are unable to reach a minimum acceptable level of welfare defined by the 'poverty line' (Ravallion, 1996). The construction of the Russian 'poverty line' is described by the World Bank (2005). First, a subsistence food basket that meets nutritional requirements was defined, with an adjustment for differences in climatic conditions across regions. Nutritional minima were defined separately for individuals by age and gender, and then a fixed percentage was added to the cost of the minimum food basket to allow for non-food items (for a detailed description, see Popkin *et al.*, 1996). In 2000, this was revised so that an additional minimum basket of non-food items was explicitly defined. The basket of non-food items differs regionally and the cost of this basket is calculated using locally gathered prices. Thus, the current poverty line is calculated as the income necessary for a household to purchase this 'minimum' basket of food and non-food items.

Data for the Russian poverty headcount are collected using the Household Budget Survey (HBS), which samples 49 000 households on a quarterly basis. However, as the HBS collects data on expenditure rather than income, it is not used directly to estimate poverty but, rather, is put into an 'imitation' model. This model calibrates HBS data with national accounts estimates of income and hence estimates the percentage of the population with insufficient income to purchase the subsistence basket.

However, a number of problems arise with the approach described here — some of which are general in nature, while other problems are related to the specifics of the Russian context. A first group of problems is related to the poverty line itself. It should be noted that there is some debate about the appropriateness of establishing a 'minimum' food basket. This is because assumptions regarding minimum nutritional requirements by activity level, gender and age are themselves based on estimates of desirable energy requirements for individuals, which will in practice vary by metabolic rates, weights and heights (see Svedberg, 1999; Gabbert and Weikard, 2001). Gabbert and Weikard (2001) suggest that a greater margin of comfort should then be built into minimum calorie cutoff points to allow some excess weight as a buffer for lean periods. However, this may be less relevant for Russia as it has been noted that Russian nutritional standards provide slightly larger amounts of many nutrients than recommended by the World Health Organization (Popkin *et al*., 1996, p. 4). Once minimum nutritional needs have been set, the food basket needs to be valued in prices to calculate a monetary poverty line. Poverty measures are generally very sensitive to food prices, but there have been concerns about the comprehensiveness of the price data used to value the basket of goods in Russia. Gibson *et al*. (2004) suggest that official data are unrepresentative of prices in rural areas and that this may lead to a higher monetary value for the poverty line and so *overestimate* poverty numbers. However, Klugman and Braithwaite (1998) are concerned that an insufficient proportion is added onto the food basket cost to allow for non-food expenditure, thereby *underestimating* poverty. This last problem may have been addressed by the introduction of a normative 'non-food' basket in 2000 — but again this raises the issue of whether this non-food allowance really reflects the needs of different households in different circumstances. For example, whilst the food basket is defined for 16 geographical regions, the non-food component only has three zones. Furthermore, the official poverty line also does not allow for economies of scale in consumption of non-food goods. For example, the income required to heat a house for four persons would not be four times that required to heat a house for one person.

Secondly, there are a set of concerns related to the data used to calculate the poverty headcount. The use of a model to ensure HBS data corresponds to the national accounts data has been criticized because it results in a large adjustment made to household income (Klugman and Braithwaite, 1998). Trends in expenditure, as measured in the HBS, and income, as measured in the national accounts, have diverged over time, while the lack of credibility in the adjustment is compounded by the fact that the HBS data are not publicly available.

Researchers into living standards in Russia have the advantage of being able to refer to an 'alternative' set of data originating from the Russian Longitudinal Monitoring Survey (RLMS).[1] The RLMS collects data on both income and expenditure as well as on a comprehensive list of

other topics. This makes it a valuable resource for understanding the dynamics of poverty and well-being in Russia.

A number of concerns remain, although these are common to most household surveys, particularly those attempting to be as comprehensive as the RLMS.[2] It is quite difficult to obtain accurate data on consumption and income at the household level. Individuals forget purchases or do not know what other members of the household spend or earn. There are strong incentives not to give out complete information on income due to concerns about this information coming to the attention of the tax authorities. The RLMS survey takes place in the last three months of the calendar year. It is unclear whether earnings and expenditure are suffering from transitory shocks (e.g. as a result of selling home produced food) at that time of the year. Luttmer (2001) seeks to deal with the mis-reporting of consumption in the RLMS by trying to account for measurement error and transitory shocks in the data using instrumental variables. Both Aivazian and Kolenikov (2001) and Graham (2004) also suggest that there is under-reporting and mis-reporting in the RLMS. In particular, Aivazian and Kolenikov are able to demonstrate that the very rich tend not to participate in the RLMS (2001, pp. 33, 37). To assess the accuracy of income-based poverty data from the RLMS, Graham compares it with qualitative questions on welfare contained in the survey, and suggests that the lack of correspondence is partly a result of flaws in the quantitative data (2004, pp. 5, 10). She argues that, particularly for the post-1998 devaluation period, ''the standard measurement error problems in correctly assessing poverty rates were compounded by the shocks to purchasing power that resulted from sharp devaluation'' (Graham, 2004, p. 11).

Thus, the concerns raised with Russian poverty measurements center on the construction of the poverty line, mis-reporting in survey data for both income and expenditure, concerns about sample bias and, finally, concerns about the manner by which transitory shocks affect the interpretation of the data. In this article, we use asset data from the RLMS to see whether an asset index avoids some of the problems of the monetary data discussed above. We argue in the next two sections that while there are caveats, an asset index may be a useful tool to identify the poor.

Use of asset indices and the construction of an index for Russia

An asset index is a weighted sum of indicators of the households' ownership of certain assets, and as such it attempts to assess household wealth and hence estimate household welfare.[3] As Falkingham and Namazie (2001) demonstrate, asset indices gained prominence with the production of the World Health Organization Demographic and Health Surveys, which contain a suite of information on asset ownership but no information on income or expenditure. Thus, asset indices were constructed due to the absence of data on income or expenditure.

Even where information is available on income or expenditure, asset indicators are seen as having certain methodological advantages. This is because income and expenditure are seen as being subject to measurement errors (Srinivasan, 2000, pp. 8–11; c.f. Falkingham and Namazie, 2001), with difficulties including problems of recall, unwillingness to disclose activity and the difficulties faced by researchers of valuing in-kind or irregular income. Data on assets are seen as easier to obtain than those on expenditure or income, with fewer questions needed and the potential advantage of relying on only one household respondent (Rutstein and Johnson, 2004; Stifel and Christiaensen, 2006). In addition to the methodological issues, it has been argued that the asset index is a theoretically superior way to measure welfare. This is because data on expenditure and income are usually assessed over a short time period, such as the preceding week or month; some authors have argued that the resulting data snapshots could only be considered good indicators of long-term welfare under the unrealistic assumptions of perfect information and perfectly working credit markets (Filmer and Pritchett, 1998, pp. 12–13). Even longitudinal monetary data, such as those available in the RLMS, will be subject to the 'noise' created by transitory shocks, as it will be difficult to decipher persistent trends and transitory movements (Luttmer, 2001). In contrast, asset indices are seen as a better measure, as asset purchases are accumulated over time and thereby reflect longer-term welfare levels (Filmer and Pritchett, 1998, pp. 12–13; Sahn and Stifel, 2001; Rutstein and Johnson, 2004; Clarke, 2006).

The asset index allows households to be ranked in terms of their asset ownership, but does not provide a poverty line. The comparability of asset index rankings with those from expenditure or income data is often poor. An exception is Filmer and Pritchett's (1998) comparison of the asset and expenditure ranking within three countries. In contrast, Falkingham and Namazie report on two multi-country comparisons that found little correspondence between expenditure and asset rankings (2001, pp. 18–19). Falkingham and Namazie also quote a study in Armenia that found a low correlation between some key assets and consumption. They focus on the manner in which the relationship between assets and welfare is mediated by the existence of re-sale markets, and they argue that ''since markets are not fully developed in Armenia, … it is not surprising that the correlation between assets and current expenditure is low … [thus] greater detail on both the asset and the timing of acquiring the asset may be required in transition countries than in other low income countries'' (Falkingham and Namazie, 2001, pp. 22–23). This comment has particular resonance for our construction of an asset index for Russia, and motivates the careful choice of assets as described below. However, it must be pointed out that there are competing interpretations for the general lack of correspondence between monetary and asset measures, with Sahn and Stifel (2001) arguing that the asset index does not correlate closely because it identifies issues of long-term welfare in a manner superior to monetary measures.

To try to distinguish the extent to which an asset index is a good measure of underlying welfare, a number of authors have assessed the index's relationship with other welfare measures. To do this, it is necessary to find some instrumental variable that can be plausibly argued to be correlated with the unobservable 'welfare' but that is not causally linked to the asset index.[4] Rutstein and Johnson (2004) show for Guatemala that an asset index is better than expenditure data at predicting a range of health outcomes, while Filmer and Pritchett (1998) use data from Indonesia, Nepal, and Pakistan to show that a wealth index is a better predictor of educational differentials than an expenditure index. Falkingham and Namazie report a study that found an asset index to be better at predicting fertility, child schooling and mortality than consumption-based measures for six developing countries (2001, p. 19). Clarke (2006) reports on an asset index that was constructed for Ethiopia and that was found to more accurately predict food insecurity than per-capita consumption.

Thus, asset indices have been shown to perform well relative to traditional expenditure data, and this motivated our construction of an asset index for Russia using data from the RLMS. The data used in this paper pool rounds 7–11 of the RLMS, covering the period 1996–2004.

There are two key decisions in the construction of an asset index: how to translate the data on assets into an index; and what type of asset data to use. First, researchers must decide how to apply weights to the asset data in order to construct an index of the form $A_i=a_1x_{i1}+\ldots+a_kx_{ik}$, where x_{ij} is household i's ownership of asset j and a_j is the weight on asset j. The two commonly used methods are those of *principal components* and of *factor analysis*.[5] Both of these methods are purely statistical and are mainly a way of reducing the amount of data required without reducing the information content. While Filmer and Pritchett (1998) use principal components, Rutstein and Johnson (2004) document the use of factor analysis for the construction of the official asset index used in the World Health Organization's Demographic and Health Survey. Sahn and Stifel (2000) also use factor analysis and argue that it is a methodologically superior approach as it calculates the covariance of assets in terms of a significantly smaller number of hypothetical common factors and it allows for asset-specific influences to explain the variances (i.e. all of the common factors are not forced to explain the entire covariance matrix). However, it should be noted that there is often little difference between the two approaches, with Sahn and Stifel (2000, p. 5) reporting a Spearman rank coefficient of 0.98 and Clarke (2006, p. 15) reporting one of 0.994 for correlation between the indices that result from the two approaches. We have consequently chosen to use factor analysis. In this approach, long-run household welfare is the underlying common factor, with data on asset ownership providing the observable variables.

The statistical transformation thus applies weights to the information on assets and so provides an apparently objective approach to the manner in which certain assets will contribute to the final index. However, this

process is not automatic and the construction of a meaningful index requires that a considerable amount of thought be given to the underlying asset data in order to ensure that any relationship is not spurious. The decision taken about which assets to include is not trivial, with Houweling *et al*.'s (2003) study of ten countries showing that changing the composition of an asset index substantially affected the ranking of households.

While there is some variation between approaches, Falkingham and Namazie show that most indices use information on dwelling characteristics, ownership of consumer durables and access to water or energy sources. However, they are critical of approaches they feel take components of the index from a generic list, as qualitative studies suggest the need to tailor measures to reflect country-specific or region-specific circumstances (Falkingham and Namazie, 2001, p. 18).

Three key issues in the choice of asset data may be identified. Firstly, many asset indices include data on access to energy and water, which may be provided at the level of the community rather than of the household. Rutstein and Johnson argue that publicly provided services offer an indication of a household's economic status, as wealthier households will be able to lobby for the local provision of such services (2004, p. 6). However, other authors are concerned that such assets may not be an indicator of a household's individual economic status, but instead are a reflection of wider political or social factors (Falkingham and Namazie, 2001, p. 17; Houweling *et al*., 2003). Clarke (2006) questions whether asset indices should include information on water access, as his study of Thailand finds that the type of water access strongly reflects the *location* of the household rather than household wealth. Similarly, Falkingham and Namazie cite evidence that the CASHPOR (Credit and Savings for the Hardcore Poor) index used by microfinance institutions, which is heavily weighted towards dwelling characteristics, has been difficult to use in situations where some poor groups have benefited from public housing, as in some Scheduled Caste villages in southern India (2001, p. 21). For Russia, with its history of extensive state provision, the need to distinguish between those dwelling or household characteristics that derive from the public provision of services or from community-level features is important.

Because of these concerns we chose not to include variables reporting on either household education or health in our asset index, as *current* education and health status may not be simplistically linked to individual household welfare given the *historical* pattern of state intervention in both areas. In addition, our asset index does not include data on house ownership. In each round of the RLMS survey, over 90% of households reported owning their own house, and this reflects the fact that houses were usually allocated by the state under the Soviet system and have since been 'privatized'. Thus, the previous public provision of housing means that *current* housing ownership was not a clear indicator of individual household welfare. Interestingly, this is reflected in the work of several authors who argue that there is a clear disjuncture between house

ownership and household welfare in Russia (Buckley *et al*., 2003; Ivaschenko, 2004). We did include living space per person in our asset index to see whether the ability to acquire a larger property could be used as an indicator of household status. As will be shown in the next section, this worked in an unexpected way, perhaps illustrating urban–rural differences rather than household status. Variables illuminating the quality of housing, such as the type of windows or the frequency of major refurbishment, might be more indicative of current household economic status, but these are not currently included in the RLMS data set. We also decided not to include data on access to publicly provided services such as water and sewerage. Most households had access to these services and any differentials appeared to reflect differences in urban–rural service levels rather than individual household status.

Consequently, our asset index focuses on the possession of consumer durables. The RLMS has consistently asked a set of questions on the number of white goods (refrigerator, freezer, washing machine, etc.), transport (car, motorcycle), valuable machinery (such as a tractor) and the ownership of property other than the main dwelling (such as a *dacha*). For these variables, a second issue is raised — that of capturing information on the characteristics of the assets, particularly their age and quality. Falkingham and Namazie note that the indices constructed from DHS data do not reflect the quality of assets owned by the household. For example, many surveys may simply report the ownership of a television, and not distinguish between color and black and white. They argue that in some circumstances, such as in transition countries, where most households own durables such as televisions and refrigerators, it would be useful to distinguish the quality and nature of these durables (Falkingham and Namazie, 2001, p. 16). However, adjusting for quality requires that appropriate categorization is available while adjusting for depreciation is difficult due to the need to make assumptions about an appropriate depreciation profile, and is also likely to introduce the practical difficulties of accurate data collection (Rutstein and Johnson, 2004). Zeller *et al*. (2001) handle this difficulty for their poverty index by asking respondents about the present re-sale value of the asset, thereby capturing both quality and age issues. However, this measure of asset value does depend on the existence of an active and undistorted re-sale market, and an asset may have a value to the household different to its resale value.[6] Given the problems with age data and the lack of information on value in the RLMS, we included simple data on asset ownership, without an adjustment for age. However, we were fortunate in being able to utilize existing categories in the RLMS that helped us differentiate between type of television (black and white versus color) and type of vehicle (car, motorcycle, truck), and this gives us some limited information on asset quality.

A third issue related to choice of asset data is that of asset quantification. Our asset index (see Table 1 below) has only one

component that is adjusted for household size — namely, living space *per capita* — while other assets are not adjusted to a *per-capita* basis. Many assets are theoretically indivisible in their usage (e.g. a refrigerator or a car), and so Filmer and Pritchett (1998) argue that many assets benefit all household members and do not need to be adjusted for household size. To support our decision not to adjust other assets, we point to work by Sahn and Stifel (2000), who found that adjusting for household size in their index made no difference to their results.[7]

Thus, as our example for Russia shows, the construction of an index requires not only a decision to be made about statistical methodology but also crucially about the choice of asset data to be utilized. The issues raised suggest that the collection of asset index data, particularly in complex form, is likely to suffer from some portion of the measurement difficulties discussed above for monetary data. Much better asset indices could be derived given a better designed set of questions on asset ownership.

Results

Following the methodology described above, we constructed an asset index by performing factor analysis on some of the dwelling and asset data collected for the RLMS household sample. All individual indicators of asset ownership were rescaled to have a zero mean and unit standard deviation. Table 1 presents the assets that formed the final index as well as the weights given by factor analysis.

These weightings generally agree with *a priori* notions. Thus, while a color television has a strong positive weight, a black and white television has a negative weight, reflecting the fact that the latter is an inferior asset for Russian households. Interestingly, living space per person (total living space in main dwelling divided by household size) has a negative weight.

Table 1. Asset weightings

Asset	Weight
Refrigerator	0.14792
Freezer	0.06618
Washing machine	0.16696
Black and white television	−0.15232
Color television	0.43941
Car	0.14128
Motor cycle	0.01587
Truck	0.0287
Tractor	0.02813
Dacha	0.10155
Other apartment	0.03595
Phone	0.14176
Living space per person	−0.04231
Amount of land owned by household	0.00122

Source: Authors' calculations from RLMS data.

Table 2. RLMS categorization of households by poverty measure

Poverty group	Description
One	Household income<0.5 poverty line
Two	0.5<household income<1.0 poverty line
Three	1.0<household income<1.5 poverty line
Four	1.5<household income<2.0 poverty line
Five	2.0 poverty line<household income

Source: RLMS assessment of household income in relation to poverty line, as described in Lokshin and Ravallion (2000, p. 273).

This is intuitively surprising. However, it might arise from differences between urban and rural households, with urban households being on average better off but living in more cramped apartments.

It is possible to compare the ranking of households using the asset index with that using the poverty measure. As shown in Table 2, the RLMS assigns each household to a poverty group according to their income relative to the household specific poverty line, which reflects its age-specific and gender-specific calorie requirements (Lokshin and Ravallion, 2000, p. 273).

To compare, we divided our asset index into quintiles to examine whether households were categorized in a consistent manner by the two approaches. Results are pooled across all our sample rounds, and the cross-tabulation is presented in Table 3.

Despite the fact that they have been categorized on difference bases, we would expect a clear association between the top and bottom rankings of both measures. Indeed, we can reject the null hypothesis of no association between the measures at a high level of significance, and an ordered logit regression shows that the association is of the correct sign (i.e. higher quintiles of the asset index are associated with membership of a higher income group). However, despite the overall correspondence at the top and bottom quintiles, the assignments of households do differ markedly, with many low-asset households being assigned as belonging to relatively high-income groups. For example, of those in the lowest quintile of the asset index, almost one-quarter are assigned to the richest poverty group (group five); while of those in the second lowest asset quintile, 36% are assigned to the highest poverty group.

Remembering that the asset index and the poverty measure are both attempts to assess an unobservable value — underlying household welfare — the divergence in household assignment is significant in the debate about how welfare is best measured. However, it is difficult to judge which is the most accurate approach as we must assess which best approximates welfare. In the previous section we saw that many authors have sought to compare the predictive power of asset indices *vis-à-vis* monetary poverty indices using measures of education or health as instrumental variables. However, as mentioned above, the choice of this type of variable for Russia is problematic given its history of extensive state provision of services. For

Table 3. Asset index ranking compared with poverty group

All Russia poverty group (RLMS)	Quintiles of asset index (column percentages)					Total (column percentages)
	One	Two	Three	Four	Five	
One	1117 (21%)	585 (11%)	652 (12%)	487 (9%)	295 (6%)	3136 (11.9%)
Two	1091 (21%)	936 (18%)	964 (18%)	956 (18%)	672 (13%)	4619 (17.5%)
Three	1015 (19%)	988 (19%)	914 (17%)	970 (18%)	868 (17%)	4755 (18.1%)
Four	770 (14%)	847 (16%)	766 (15%)	782 (15%)	816 (16%)	3981 (15.1%)
Five	1274 (24%)	1911 (36%)	1971 (37%)	2072 (39%)	2616 (50%)	9844 (37.4%)
Total	5267 (100%)	5267 (100%)	5267 (100%)	5267 (100%)	5267 (100%)	26 335 (100%)

Source: Authors' calculations from RLMS data.

example, the use of education attainment data as suggested by Filmer and Pritchett (1998) was possible as such data are available in the RLMS. However, as argued earlier, in the Soviet Union, there was a significant amount of state intervention in the education system, and so data on educational outcomes are not clearly indications of household welfare.

Instead of using education-related or health-related measures to test our asset index and poverty measure, we were able to utilize data on activity by the household that might be considered highly superior or 'luxury'. We construct three variables: a variable that takes the value one if anyone in the family ate away from home in the past seven days; a variable that takes the value one if the family spent money on theatre or cinema tickets in the past 30 days; and a variable that takes the value one if the household bought a car within the past three months.

We would expect that households engaging in such activity would not appear among the worst-off households in a ranking exercise. However, it should be noted that these variables have some correlation with the expenditure data used to compile the poverty groups as it implies that the households were not cash-constrained in the immediately preceding period, and this is likely to give results that suggest the poverty groupings have greater explanatory power. Interestingly, even in this case, the asset index performed better than the poverty groupings (see Tables 4, 5 and 6).

The asset index is able to make a greater differentiation than the poverty group measure. Table 4 shows that those in the highest quintile of the asset index are 4.2 times more likely to have eaten out in the past week than those in the bottom quintile, while those in the highest poverty group are only 26% more likely than those in the lowest group to have done so. In terms of car purchase, shown in Table 6, those in the highest asset quintile are almost 19 times more likely to have bought a car than those in the bottom group, while those in poverty group five are only twice as likely to have done so as those in poverty group 1. Finally, Table 5 shows that those in the highest asset quintile are five times more likely to have spent

Table 4. Probability of eating out compared with the lowest rank group

	Probability (%)	95% confidence interval (%)
Probability of eating out compared with		
Poverty group one		
Poverty group two	131	120–143
Poverty group three	117	107–128
Poverty group four	115	106–127
Poverty group five	127	117–137
Probability of eating out compared with		
Asset index first quintile		
Asset index second quintile	192	177–209
Asset index third quintile	262	241–284
Asset index fourth quintile	335	308–363
Asset index fifth quintile	420	387–456

Source: Authors' calculations from RLMS data.

Table 5. Probability of purchasing theatre or cinema tickets compared with the lowest rank group

	Probability (%)	95% confidence interval (%)
Probability of purchase compared with		
Poverty group one		
Poverty group two	143	119–171
Poverty group three	144	121–171
Poverty group four	154	129–184
Poverty group five	178	152–208
Probability of purchase compared with		
Asset index first quintile		
Asset index second quintile	221	183–267
Asset index third quintile	298	249–358
Asset index fourth quintile	402	337–479
Asset index fifth quintile	543	457–646

Source: Authors' calculations from RLMS data.

money on entertainment than those in the lowest asset index quintile, while group five households are only 77% more likely than group one to have spent money in this way.

While we have no direct comparator for this information (i.e. there is no standard that suggests the number of times a poor person should buy a car per year), the information shown here is in the form of an odds ratio based on real data, which suggests that our measure is better able to discriminate the likelihood of engaging in luxury purchases. Looking at our indicators of 'luxury activity', households in asset quintiles two to four are more likely than those in asset quintile one to have spent money in this way, and the likelihood increases smoothly as the quintile increases. In contrast, Tables 4–6 show that the results for the poverty group are sometimes counter-intuitive. For example, households in poverty group four are less likely to have eaten out than those in the poorer group two, while those in poverty group four are no more likely to have purchased a

Table 6. Probability of purchasing a car compared to the lowest rank group

	Probability (%)	95% confidence interval (%)
Probability of purchase compared with		
Poverty group one		
Poverty group two	125	72–216
Poverty group three	153	90–260
Poverty group four	121	68–214
Poverty group five	221	138–355
Probability of purchase compared with		
Asset index first quintile		
Asset index second quintile	272	114–648
Asset index third quintile	258	107–617
Asset index fourth quintile	880	402–1925
Asset index fifth quintile	1856	866–3975

Source: Authors' calculations from RLMS data.

car than group two, even though the latter group is the extremely poor, with an income less than one-half of the poverty line.

Discussion and conclusions

Most asset indices have been used in situations where there is no expenditure or income data to compute standard monetary poverty measures. In the case of Russia, such data are available but a range of problems has been identified with their use. In this paper, we have suggested that asset indices may be better than poverty measures at predicting household welfare in Russia. As household welfare is itself unobservable, we sought to investigate the usefulness of the two approaches by investigating their relationship with three instrumental variables. The asset index seemed more closely correlated with our instrumental variables than the poverty groupings, achieving far clearer discrimination between households.

Thus, the asset index seems to be a good way of differentiating households with low welfare outcomes from others. However, the extent to which the asset index approach deals with the criticisms leveled at the Russian poverty data needs to be assessed. Clearly, the asset index approach avoids the direct construction of a poverty line and so does not directly raise the issues of the suitability of such a line — as discussed in section two, where we saw that there had been criticism about the setting of a Russian poverty line. However, while not directly using a poverty line, the utilization of an asset index does require implicit decisions to be taken about the categories of analysis of asset data. For example, in our analysis, we have used a quintile approach, often comparing the results for the first quintile with those for the fifth. This type of comparison may need a more considered rationale. A second significant difficulty that harks back to the problems of setting a Russian poverty line is the construction of a nationwide asset index. Our discussion clearly illustrates that certain variables, such as living space per person, appear to have a different importance in rural and urban areas. However, the RLMS unfortunately has an insufficient sample size to allow analysis at a regional level to determine how regional factors are likely to affect the construction of an index. Falkingham and Namazie (2001, pp. 17, 18) and Houweling *et al*. (2003) also argue that there are problems generalizing asset indicators across rural and urban areas, as assets will have very different relationships to welfare in different production and social contexts. Clarke (2006) makes the same point for his asset index of Thailand, arguing that the portfolios of assets owned are likely to be influenced by the types of livelihoods that household members are engaged in, as well as cultural perceptions. For example, he argues that household land holdings will be a better indicator of wealth in a rural rather than urban setting.

Therefore, for the two reasons specified above, it is clear that the construction of an asset index can share some of the difficulties of the

setting of a national poverty line. In addition, as they are both based on the RLMS, the asset index data are as subject as the poverty data to the criticisms of sample bias; namely, richer households may be under-represented. However, the asset index is likely to be less subject to the measurement problems that some authors have levied against the poverty data, in the sense that asset measurement should be easier than complex measurement of income or expenditure. On the other hand, it became clear in the discussion above that an attempt to allow for the age or quality of assets might yet introduce new measurement difficulties and will certainly require carefully designed survey questions.

In addition, as Clarke (2006) suggests, we have shown that the construction of an asset index involves subjectivity about which assets to include. A key issue for Russia has been the extent to which assets reflect household welfare, and this has required us to focus on the manner in which household status and government policy come together to determine access to assets and services. As a result, we either excluded some commonly used variables (e.g. access to utilities) or incorporated them in new ways (e.g. housing space). We believe that this is an important area for future debate, with more justification needed as to which assets are included and which are excluded in the construction of asset indices. In the case of Russia, further work in this area might usefully include qualitative exercises on role of various assets, as well as an investigation of the relationship between the asset index and subjective measures of welfare.

Our conclusion is that the asset index may be particularly useful where there is reason to assume substantial mis-reporting of income or expenditure data, resulting either from transitory shocks or from persistent difficulties in measuring certain activity. However, it is not useful for dealing with problems of sample bias, and the analysis of the resulting index ranking requires careful consideration. Despite these caveats, we believe that the performance of the asset index relative to the poverty measure confirms that the asset approach has a value outside situations where no income or expenditure data exist.

Notes

1 This is a much smaller survey than the HBS, but is freely downloadable — for more details of the RLMS, see Lokshin and Popkin (1999) and online [http://www.cpc.unc.edu/rlms/].

2 For a detailed discussion of the generic issues, see Falkingham and Namazie (2001).

3 The asset index is an attempt to measure household wealth and so is more narrowly focused than some other non-monetary approaches, such as the poverty index approach. Falkingham and Namazie (2001) have argued that the poverty index is an approximation for household capability. For example, the World Bank's Consultative Group to Assist the Poorest's poverty index includes indicators both on the means to achieve welfare (i.e. income, human, physical and social capital) as well as indicators related to achievements in consumption (e.g. access to food, health services, water, electricity) (Zeller *et al.*, 2001). While the poverty index approach is broader than that

of the asset index, it is not always easy to differentiate them as recent work by Houweling *et al*. (2003) utilises an asset index that includes a measure of food security. The usefulness of a poverty index approach in Russia is an area for further research, although it is clear that the difficulties related to measurement and methodology raised in this article with regard to the asset index would remain relevant.

4 An instrumental variable is an exogenous variable that is correlated with the suspected explanatory variable but is uncorrelated with other variables. The instrument must act on the outcome only through the predicting variable, not directly. See also Luttmer (2001, p. 13)

5 See Falkingham and Namazie (2001) for a review of these and earlier approaches. In the method of principal components the variance in the data set x_j is decomposed into a set of orthogonal variates $y_1 \ldots y_k$ such that y_1 has the largest variance, y_2 the largest variance subject to it not being correlated with y_1, and so on. In factor analysis, the idea is that the observable variables x_j are related to an underlying factor or factors such that $x_i = \sum_{r=1}^{M} \lambda_{ir} f_r + e_i$, where f_r is the rth factor, λ_{ir} is the factor loading of factor r on x_i, and e_i is the unique element of x_i uncorrelated with the unique element on the other variables (Lawley and Maxwell, 1971).

6 It was shown that professional accountants in UK firms were quite inaccurate in assessing the current cost of historical assets in Wadhwani and Wall (1986), so we would not expect informal household calculations to be much better.

7 This may be an area for further investigation, as the choice of whether to apply a '*per capita*' or an alternative equivalence scale has important methodological repercussions for standard income and expenditure data, and may well do so for asset indices (Falkingham and Namazie, 2001, pp. 13–14).

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