A Profile of Poverty in Tajikistan

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Editorial Note and Acknowledgements

Jane Falkingham is Lecturer in Population Studies in the Department of Social Policy at the London School of Economics and is an associate of CASE. An earlier version of this paper formed part of the forthcoming World Bank *Poverty Assessment for Tajikistan*. The evidence presented is based upon an analysis of the Tajikistan Living Standards Survey, conducted by a team of national experts during May 1999 and sponsored by UNDP and the World Bank. The author wishes to acknowledge the indispensable contribution of the country researchers, particularly Barot Tureav, Deputy Director of the State Statistical Agency of Tajikistan, and Firuz Saidov, Deputy Director of the Centre for Strategic Studies, Dushanbe. Heartfelt thanks are also due to colleagues on the international team, most notably Isabel Hemming, Sasha Kolev, Ceema Namazie, Taies Nezam and Michael Mills of the World Bank, and Sascha Graumann of UNDP. The views expressed in this paper are those of the author and do not necessarily represent those of the Government of Tajikistan, UNDP or the World Bank.

Abstract

This paper examines the profile of poverty in Tajikistan, the most remote and poorest of the independent states of the Former Soviet Union. Data is used from the first nationally representative household survey conducted in Tajikistan since independence and the cessation of the civil war. The picture that emerges is of a population facing severe economic, physical and psycho-social stress.

Over 95 percent of the population are living below the minimum consumption basket, four out of five are 'poor', a third are 'very poor' and nearly 20 percent 'extremely poor' (below $1 PPP a day). Three-quarters of households are very concerned about how they will provide for basic necessities in the next 12 months. A significant proportion of children are now missing school due to financial hardship. This will have a damaging long term impact both upon the welfare of the child itself, in terms of future earning capacity, but also for the nation as a whole in terms of the future human capital of Tajikistan.

Despite this gloomy picture, households are also proving to be remarkably resilient to the dramatic drop in living standards most have experienced. Poor households throughout Tajikistan are surviving through a variety of coping mechanisms including the sale of assets, increased home production of food, expanding informal sector activities, borrowing from relatives or friends and humanitarian aid. But many these survival strategies are not sustainable in the longer term and the government, in collaboration with the international community, needs to give urgent consideration to the development of a poverty alleviation strategy. The number of children in the household was one of the strongest correlates of poverty. Given this, and the widespread nature of poverty, one option would be to target what limited resources there are on children.

1. Introduction

Poverty within Tajikistan is not new. It was widely recognised as one of the poorest republics of the Soviet Union. In 1989, just prior to 'transition', 51 percent of the population had a per capita monthly income below 75 rubles compared with 33 percent of the population in Kyrgyzstan, 16 percent in Kazakhstan and 5 percent in Russia (Table 8.4, Atkinson and Micklewright (1992)). After independence the country descended into civil war in 1992-3, followed by a long period of civil unrest. At the same time the interruption of traditional trading partnerships with the break-up of the Soviet Union, and the withdrawal of subsidies from Moscow resulted in sharp economic decline. Today Tajikistan ranks amongst the poorest countries in the world with an estimated per capita GDP of only $215 (UNDP, 2000).

Despite its critical importance, no comprehensive and nationally representative picture of poverty in Tajikistan has been available, although there have been a number of useful and informative studies prepared by various international NGOs[1]. This paper presents preliminary findings from the first nationally representative survey of household living standards in Tajikistan, carried out in May 1999. First, however, it is useful to briefly survey the inheritance of the country at independence and the experience since then.

1.1 The inheritance

On the eve of Independence, Tajikistan, in common with its Central Asian neighbours, had relatively high human development indicators, reflecting the legacy of economic and social development achieved during the Soviet period.

1 See especially ECHO Food Security Survey (Freckleton, 1997); Save the Children US Household and Bazaars Survey, and recent nutritional surveys by German-Agro Action (in RRS and Leninabad) and Action Against Hunger (in Khatlon and Kulyab).

Table 1: Human Development Indicators in Central Asia and selected other countries, 1991

	Urban pop. (%) in 1992	Popl. growth (p.a.)	Life expectancy at birth (yrs)	Adult literacy rate (%)	Real GDP per capita (PPP$)	UNDP Human Development Index
Kazakhstan	58	1.8	69.0	97.5	4490	0.774
Turkmenistan	45	2.8	66.0	97.7	3540	0.697
Kyrgyzstan	38	2.3	68.0	97.0	3683	0.685
Uzbekistan	40	2.9	69.0	97.2	2790	0.664
Tajikistan	31	3.1	70.0	96.7	2180	0.629
Iran	58	3.3	66.6	56.0	4670	0.672
Pakistan	33	2.9	58.3	36.4	1970	0.393
Afghanistan	19	1.8	42.9	31.6	700	0.208
Medium HDI	-	-	68.0	80.4	3420	0.649
Low HDI	-	-	55.8	47.4	1170	0.355

Source: Table 1.1 Falkingham *et al.* (1997).

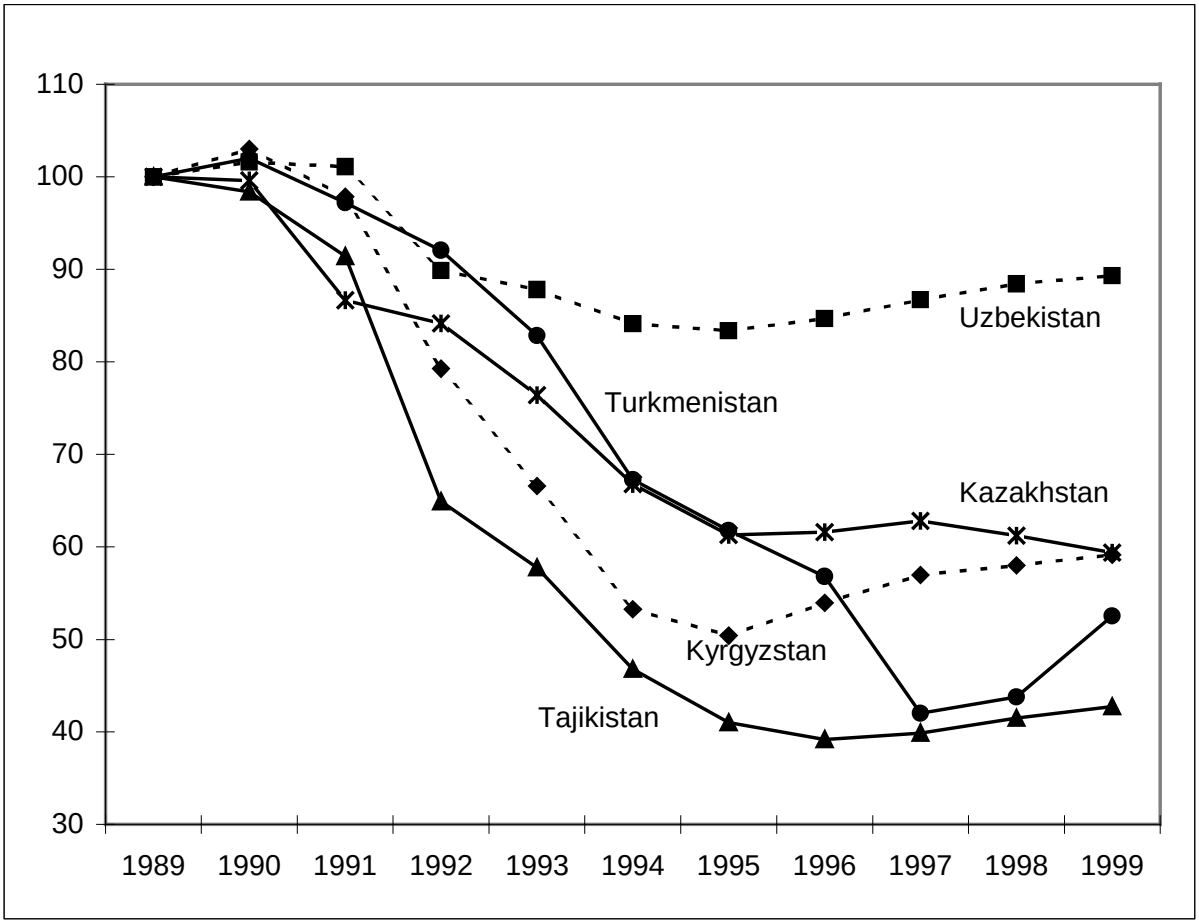
Despite a low level of real GDP, the Human Development Index (HDI) for Tajikistan was 0.629, which is comparable to the 0.649 averaged by countries classified by UNDP as 'medium' income countries. Life expectancy at birth averaged 70 years – significantly above that enjoyed in Pakistan and exceeding levels in the other Central Asian Republics (CARs), Iran and Turkey. Literacy was almost universal and well above other countries with comparable levels of per capita income.

1.2 Trends since 1991

Tajikistan inherited high levels of human capital. Education and health care were free and there were extensive social services and transfers. However, Tajikistan also inherited economic structures that were heavily dependent on Soviet supply and trade networks. Transport and other infrastructure was designed with the view to meeting the needs of the Union and not those of the local economy. For example, Tajikistan was home to one the largest aluminium smelters in the FSU, for which Russia was both the main source of inputs and the main market for outputs. High social spending was also supported by large budgetary transfers from Moscow. It is estimated that in the late 1980s such transfers were

worth as much as 40 percent of GDP. With the interruption of inter-republican trade and the cessation of transfers immediately following independence, GDP in Tajikistan declined precipitously and inflation soared.

Figure 1: Trends in real GDP in Central Asia (1989=100)



Source: Falkingham (1999a).

The decline in output in Tajikistan has been much sharper and more sustained than elsewhere in the region. By 1996 it is estimated that real GDP was worth less than 40 percent of its value in 1989. The signing of the peace agreement in 1997 signalled the end of the civil unrest and the beginnings of economic recovery. However, although there has been positive growth for the second year running, GDP *per capita* continues to decline as the growth in the population outstrips economic growth. The fall in GDP has been accompanied by a growing *incapacity* of governments to mobilise resources. Between 1991 and 1998 government expenditures as a share of GDP in Tajikistan fell by nearly two-thirds,

from 50 percent to under 16 percent. This has reduced the Government's ability to protect vulnerable people and to provide basic services such as health and education. It is estimated that public expenditures on education and health are less than a *quarter* of pre-independence levels in real terms. As a percentage of GDP, spending on health (1%) and education (2.1%) in 1998 is lower than in any of the other CARs.

Table 2: Selected macroeconomic indicators, Tajikistan 1991-1999

	Percent change in real GDP	Annual average % Change in CPI	Central govt exp. (% GDP)	Education exp (% GDP)	Health exp (% GDP)
1991	-7.1	112	49.6	-	-
1992	-29.0	1157	65.7	11.1	5.7
1993	-11.0	2195	60.7	8.8	5.4
1994	-18.9	350	61.4	8.7	6.4
1995	-12.5	609	29.4	3.3	2.1
1996	-4.4	418	17.9	2.1	1.3
1997	1.7	88	17.0	2.1	1.3
1998	5.3	43	15.8	2.3	1.1
1999	5.0 (est)	30 (est)	-	-	-

Source: EBRD (1999), World Bank (2000).

1.3 The human costs of transition in Tajikistan

The high human cost of economic transition, exacerbated by civil conflict and natural disasters, is reflected in the trends in Table 1.4. The Human Development Index (HDI) has slumped from 0.629 in 1991 to 0.540 in 1998, with the result that Tajikistan is now ranked 108th out of 174 countries. The decline in the Gender-related Development Index (GDI) between 1995 and 1998 also indicates that the *relative* position of women in Tajikistan has deteriorated. The following sections explore the profile of poverty within Tajikistan today.

Table 3: Recent Trends in Human Development

	1995	1996	1997	1998
HDI	0.555	0.537	0.528	0.540
Life expectancy	0.721	0.707	0.688	0.723
Adult literacy ratio		0.651	0.651	0.651
Enrolment ratio		0.226	0.208	0.226
Knowledge index	0.911	0.877	0.859	0.877
Real GDP	0.013	0.036	0.025	0.025
GDI	0.571			0.534

Source: UNDP (2000).

2. Measuring poverty in Tajikistan

Poverty is a multidimensional phenomena and accordingly there are a wide variety of approaches to its measurement. Conventionally poverty has been defined in terms of income or expenditure based on the assumption that a person's material standard of living largely determines their well-being. The poor are then identified as those with a material standard of living below a certain level – the so called poverty line.

Poverty lines

Where the poverty line is set determines how many people are poor and how many are non-poor and as such the derivation of this level is almost always a matter for debate and controversy. There are two main approaches to constructing a poverty line. An *absolute* definition of poverty assumes it is possible to define a minimum standard of living based on a person's physiological needs for water, clothing and shelter – i.e. their basic needs. In contrast, the *relative* approach defines poverty in relation to a generally accepted standard of living in a specific society at a specific time and goes beyond basic physiological needs. It was such a relative approach to poverty that was implicitly in the 'socially acceptable minimum' used to defined under-resourced households in the former Soviet Union. A commonly used relative poverty line is households living below half average income.

The absolute and relative approaches to defining poverty each have advantages and disadvantages. One advantage with the absolute

approach is that there are reasonably objective norms, while with the relative approach the decisions concerning what is an 'acceptable' minimum become much more subjective, depending on how the norms of the particular society are established. The absolute approach also has the advantage that because it is explicitly linked to a specific welfare level, it allows for comparisons over time or between different groups. The absolute approach is not however without problems and there remains the contentious issue of how the 'basket of basic needs' is defined. In the following section a variety of both absolute and relative poverty lines are explored.

Welfare indicator – difficulties in measuring incomes and expenditures

The choice of welfare indicator is also not straightforward. The particular circumstances of transition in Central Asia have given rise to a host of methodological issues in the measurement household welfare. Partial de-monetisation of the economy, the growing informalisation of the labour market, increasing reliance on non-market forms of production and inter-household transfers all mean that the calculation of household incomes and expenditures involves a complex mix of in-cash, in-kind, official, unofficial and informal payments (Falkingham, 1999b).

Perhaps the greatest challenge facing the measurement of living standards is the creeping de-monetisation of the economies of the FSU. As a consequence of chronic cash shortages it has become common practice for transactions between enterprises, and between enterprises and their employees, to be settled through bilateral barter and barter chains. Analysts interested in the measurement of household welfare have always faced the thorny problem of how to measure the income (or expenditure) derived from a household's consumption of food and other commodities produced 'at home' (which we discuss below). De-monetisation has added the new dimension of how to collect information on, and subsequently value, wages and other labour related benefits that are now paid in-kind.

There are two possible approaches to valuing wages in-kind. The *objective* approach is to collect information on the actual goods and services received in kind; i.e. the type of good received and the physical quantity received. A value can then be imputed using a known price vector. The advantage of this approach is that the quantities are measurable, and each household receiving goods in-kind of the same type is treated in the same way. However, this approach has several drawbacks. First, unless the range of goods received by employees in lieu of wages is known in advance it is not possible for the survey

instrument to include pre-coded questions. Secondly, and more importantly, the price used to impute a value to these goods may be subject to huge regional and local variations. For example, although the national price of rubber gloves may be say 10 roubles, if every one working at a particular enterprise in a particular town is being paid in rubber gloves the resale value at the local market may only be 2 roubles, whilst their price at the nearest regional market may be 5 roubles. Thus detailed information on local, regional and national prices may be required, entailing significant data collection costs.

A more direct, albeit *subjective*, approach is to ask the respondents themselves to put a value on the goods and services received in-kind. This has the advantage of needing only one simple question and avoids the problems of imputing a value to wages in-kind. A potential disadvantage is that different respondents may have a different view on how much the same in-kind goods are worth – although if we are interested in household well-being this may better reflect the *actual* resources received by the household as well connected households may be able to convert the goods at a more favourable 'exchange rate'. This second approach is the one used in the 1999 Tajik Living Standards Survey. Respondents were asked:

> *'How much did you actually earn or receive in- kind doing this work in the last month?',*
>
> *'Do you receive any other benefits in kind in this post?' and if so*
>
> *'How much were these benefits worth in cash in the last month'.*

In addition to the payment of wages and social transfers in kind, there is also the growing question of how to treat the non-payment of wages and pensions altogether. Despite not actually being paid, individuals when asked about their salary in the last month may still report their official wage rather than the actual wage received. This will result in the over-estimation of actual wage income received by a household in a given month. The back payment of wage arrears during the survey period can also introduce distortions into the measurement of household income. If a worker has just been paid for 6 months work asking a question such as 'how much did you receive from your employer in the last month' may result in hugely overestimated monthly wages. This problem can be overcome by the inclusion of a series of questions specifically aimed at identifying the amount of official salary, when was this last paid, how many months of arrears are owed etc.

Finally there is the question of valuing home production of foodstuffs. Agricultural production from collective and private plots has always been significant in Central Asia. As wages and social assistance benefits have become ever more unreliable, so the ability to produce food have become ever more important for households' welfare. Similar problems arise in the valuation of home production as with the valuation of wages received in-kind discussed previously – that is, whether to collect information on quantities and prices and thus impute a cash value or whether to collect information directly from the respondent on the value of foodstuffs consumed. The former involves decisions over which prices to use (market, farm-gate, local, regional, state or private) and necessitates respondents accurately reporting amounts in grams and kilograms.

In Tajikistan in 1999, respondents were asked directly about the value of products grown by the household and consumed in the last 7 days, removing the need for imputation and automatically allowing for regional price variations within household expenditures. The survey also contained information on the costs of inputs, such as seeds and fertilisers. Thus it was possible to estimate both the gross and net value of home production.

Below we examine the sensitivity of the results to the choice of both the welfare indicator and poverty line. Before doing so, however it is important to mention a few disclaimers.

Caveats

The paper presents preliminary results from the TLSS, providing a picture of poverty in Tajikistan in May 1999. The survey can only present a *'snap-shot'* of poverty and give an indication of its level and main factors associated with being poor at that point in time. Households may move in and out of poverty, depending on the time of year and the harvest, whether state benefits have been received or whether individuals have been paid or not. The results do not tell us anything about the *dynamics* of poverty.

Secondly, the TLSS is a survey of households and, by definition, households fail to include the most destitute in society – the homeless.

3. Poverty in Tajikistan in 1999

The level and depth of poverty

Table 4 shows the results from the TLSS using *both* household income and expenditures, with various adjustments to allow for variation in needs and economies of scale enjoyed by households of different size[2]. At one extreme all individuals are assumed to have the same level of need, no economies of scale are allowed for and total household expenditure (or income) is divided simply by the number of people in the household to give a per capita measure (theta=1.0). At the other extreme it is assumed that economies of scale increase exponentially with household size, and total expenditure (or income) is divided by the square root of the number of people in the household (theta=0.5). This assumption holds quite well in countries, such as Western Europe, where household sizes are generally small and where the share of non-food goods in total expenditures is relatively high. However, in Tajikistan where the average household size is 7 and households of over 10 are common, assuming a size elasticity of 0.5 (i.e. that a household of 16 costs only four times that of a household of one) is not realistic. Furthermore non-food costs where appreciable economies of scale can be incurred, such as housing costs and utilities, constitute a relatively small share of total expenditures in Tajikistan. A middle assumption therefore is to divide total household expenditure (income) by household size raised to the power of 0.75 (theta=0.75). Note that further discussion of the sensitivity of the results to changes in equivalence scales is discussed in appendix 1.

Table 4 also presents results using a range of different poverty lines. The first is a *relative* poverty line, taken to be 50% of median income/expenditure. The other five are *absolute* poverty lines. As discussed above, the usual way to measure absolute poverty is in relation to the value of a basket of basic goods. At the time of writing the government had yet to officially adopt a revised minimum consumption basket for 1999. However according to data from the SSA the value of the basket is now 32,083 TR per person per month (23,934 TR on food, 3,947 on non-food items and 2,695 on services) (personal communication with SSA). Thus the second poverty line shows poverty counts in relation to this figure.

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2 See appendix 1 for a more detailed discussion of equivalence scales.

Table 4: Poverty measures in Tajikistan (individuals)

	Expenditure			Income		
	Per capita No econ of scale. (theta=1.00)	**Medium econ of scale (theta=0.75)**	**Strong econ of scale (theta=0.50)**	**Per capita No econ of scale. (theta=1.00)**	**Medium econ of scale (theta=0.75)**	**Strong econ of scale (theta=0.50)**
(a) Relative Poverty – below 50% of median						
% poor	12.1%	10.9%	9.6%	23.9%	23.7%	21.8%
P1	3.0	2.6	2.4	11.1	10.5	9.7
P2	1.2	1.1	1.0	7.1	6.7	6.3
(b) Minimum consumption basket 1999 (32,083 TR)						
% poor	96.0%	95.7%	95.2%	96.0%	95.9%	95.8%
P1	57.4	56.4	55.2	70.1	69.5	68.7
P2	37.9	36.8	35.7	55.1	54.3	53.5
(c) $2.15 PPP a day (poverty line = 15,111 TR a month)						
% poor	68.0%	65.4%	63.6%	81.8%	81.4%	79.0%
P1	24.4	22.9	21.9	46.5	45.5	44.5
P2	11.8	10.9	10.4	31.2	30.9	30.2
(d) $1.075 PPP a day (poverty line = 7,557 TR)						
% poor	17.5%	16.3%	16.2%	51.4%	49.4%	48.2%
P1	4.8	4.4	4.2	23.9	23.0	22.4
P2	2.0	1.78	1.73	15.2	14.6	14.2
(e) State Statistical Agency 'Very Poor' (poverty line=10,000 TR)						
% poor	35.5%	32.8%	31.4%	64.6%	63.5%	62.8%
P1	10.2	9.2	8.9	32.3	31.4	30.6
P2	4.3	3.9	3.8	20.9	20.1	19.6
(f) State Statistical Agency 'Poor' (poverty line=20,000 TR)						
% poor	82.8%	82.6%	81.2%	89.1%	88.6%	87.9%
P1	37.1	35.8	34.4	56.2	55.3	54.3
P2	20.2	19.0	18.2	40.4	39.5	38.6

Note that the head-count (% poor) measures the incidence of poverty; the poverty gap (P1) is a measure of the depth of poverty and the Foster-Greer-Thorbecke index (P2) provides a measure of the severity of poverty. Expenditure (income) has been adjusted to take into account household size and economics of scale, where $E_e = E / n^{\theta}$. Where θ is less than 1, the money metric measure has been further adjusted by a scale factor (the ratio of median household size raised to the power of θ, divided by median household size (see Deaton and Zaidi, 1999).

Source: TLSS, sample size 14,142 individuals.

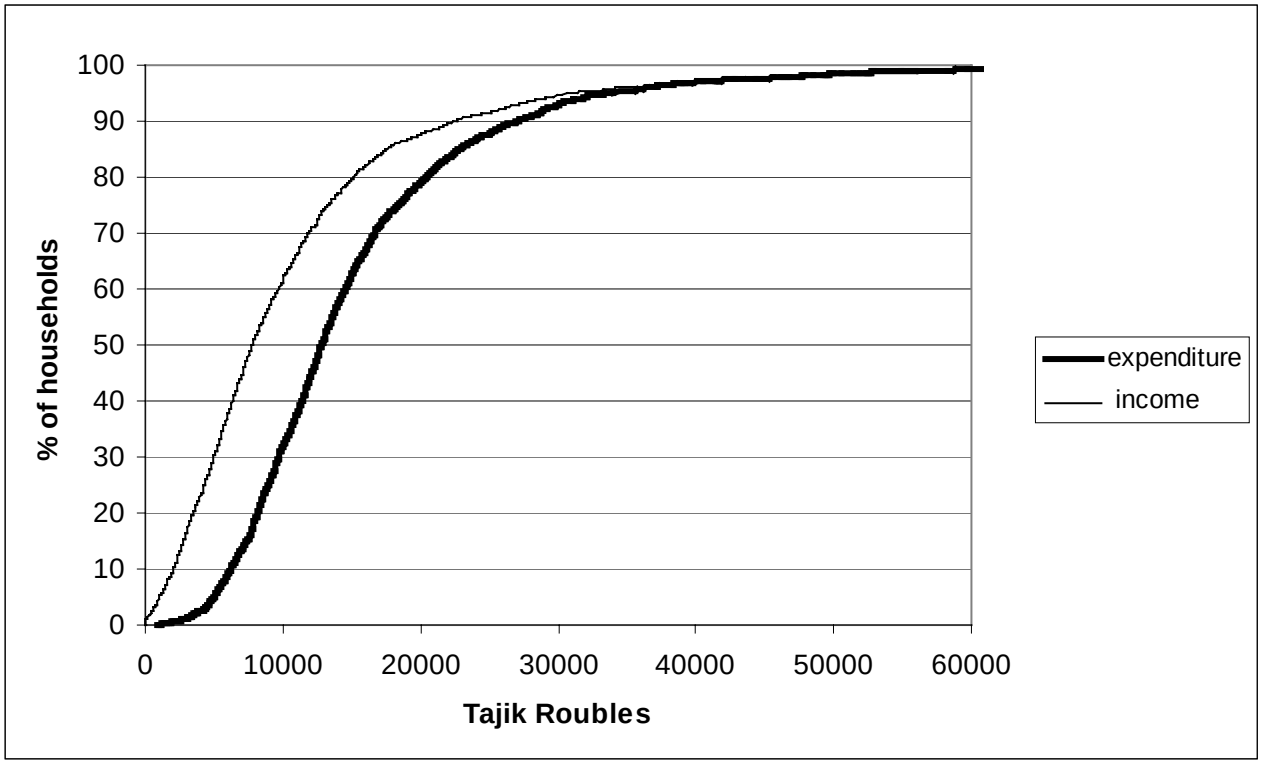
An alternative way to measure absolute poverty is to compare income/expenditure against a standard poverty line. The World Bank commonly uses the standard of $2.15 PPP a day. Persons living in a household with an income or expenditure below this level are said to be poor. In May 1999 $1 could be exchanged for 1200 TR on the foreign currency exchange market. However this exchange rate does not take into account differences in the cost of living between the USA and Tajikistan. There is currently no official consensus on the appropriate exchange rate to use to calculate PPP for Tajikistan. The World Bank has, however, recently produced an estimate of $1 = 234 TR. In addition to this central standard of $2.15 PPP a day, the World Bank also commonly uses two other variants, namely half this level (used in low income countries) and twice this level (used in middle income countries). Thus the third poverty line is $2.15 PPP a day and the fourth poverty line is $1.075 PPP a day. Finally, the State Statistical Agency's preferred cut off points for defining the 'very poor' and the 'poor' are 10,000 TR and 20,000 TR a month. These thresholds are taken as our fifth and sixth poverty lines.

Two things immediately stand out from Table 4.

- Firstly, the level of poverty varies enormously depending on the poverty line used; from 17.5% using the lower estimate of $1.075 PPP to 96% using the higher estimate of the minimum consumption basket in relation to per capita household expenditure.
- Secondly, poverty is much higher when measured by income than by expenditure, regardless of the poverty line used.

Figure 2, which shows the cumulative distribution of both per capita household income and expenditures, helps to explain the sensitivity of the results to the various poverty lines. The distributions of both incomes and expenditures within Tajikistan are very heavily skewed, with households highly concentrated in a narrow range of values in the bottom four-fifths, with the result that headcount measures of poverty are very sensitive to even small changes in the value of an absolute poverty line. Reported household income is lower than expenditure, except at the very top of the distribution beyond the 98th percentile, and therefore poverty defined according to income will always be higher than when defined according to expenditure.

Figure 2: Cumulative Distribution of Household per capita Income and Expenditure, 1999



The cost of eliminating poverty

The actual amount of revenue required to eliminate 'poverty' is very sensitive to the choice of poverty line. *P*1, in Table 1 above, indicates the average poverty 'shortfall' in the population, where the non poor have a zero shortfall.[3] If P1 = 56.4 (the case with Minimum Consumption Basket of TR32,083 and theta = 0.75), then the average poverty shortfall is TR32,083 * 0.564 = TR18,095 per person, per month.

According to the results of the latest Census, published this month, the total population of Tajikistan is 6.1 million. Thus the Poverty Gap = 6,100,000 * TR18,095 = TR 110,400 million per month, or a staggering TR 1,325 billion a year. To put this in perspective, according to EBRD *Transition Report 1999*, GDP for 1999 is forecast at TR1,350 billion. If we

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3 $$P1 = \frac{1}{n}\sum \max(0, 1 - C/P)$$

where C = per capita household consumption, P = Poverty line and n = total number of individuals.

use this figure, then the cost of bringing everyone in to Tajikistan up to the level of the minimum consumption basket would be roughly equal to GDP.

Of course this is not realistic. However, even adopting the more modest aim of bringing everyone up to the poverty line of TR 20,000 a month (or less than two-thirds of the value of the minimum consumption line) would require TR 527 billion a year, equivalent to 39 percent of GDP. The cost of eliminating 'severe' poverty i.e. using a poverty line of just TR 10,000 a month (or less than a third of the value of the minimum consumption line) would still require TR 75 billion a year – equivalent to 5.5 percent of GDP; whilst an 'extreme' poverty line of just $1.075 a day would need TR 27 billion a year – equivalent to 2 percent of GDP. Total spending by the government on the social sector in 1999 amounted to just 5.3 percent of GDP; with education accounting for 2.1 percent, health 1 percent, and social protection 0.1 percent. Therefore even to eliminate 'extreme' poverty would still entail a significant increase (i.e. 20-fold) in current levels of government expenditure.

Inequality

Table 5 presents some summary statistics for the distribution of income and expenditure for the various assumptions concerning household size elasticity. The distribution of incomes is, not surprisingly, much more unequal than that of expenditures, with those individuals living in households in the top decile of the distribution enjoying an income more than ten times that of those living in the bottom decile. Meanwhile, individuals living in households in the top 10% of the expenditure distribution spent four times as much as those living in the bottom 10%.

The Gini coefficients for the distribution of both income and expenditure compare relatively well with the other Central Asian republics for which data is available. Inequality seems to be lower in Tajikistan than elsewhere in the region. However, inequality has increased over time. Atkinson and Micklewright (1992), using the 1989 FBS, estimated that the Gini Coefficient for the distribution of per capita income was 0.308 in Tajikistan. Ten years later it has risen to 0.47. As Table 7 shows, the main driving force behind income inequality is the unequal distribution of income from 'other' sources. We will return to this point later below.

Table 5: Summary statistics for the distribution of income and expenditure (individuals)

	Per capita (theta=1.00)	Equivalent adult (theta=0.75)	Equivalent adult (theta=0.50)
A. Summary inequality for expenditure			
Decile ratio: (90 / 10)	4.07	3.97	4.04
of which: (50 / 10)	2.04	2.07	2.03
(90 / 50)	2.00	1.92	1.99
Gini coefficient	0.32	0.31	0.31
Theil entropy measure	0.18	0.17	0.17
Mean log deviation measure	0.17	0.16	0.16
B. Summary inequality for income			
Decile ratio: (90 / 10)	10.60	10.37	10.42
of which: (50 / 10)	3.67	3.72	3.66
(90 / 50)	2.89	2.79	2.85
Gini coefficient	0.47	0.47	0.47
Theil entropy measure	0.41	0.40	0.41
Mean log deviation measure	0.41	0.40	0.41

Table 6: Summary statistics for the distribution of income and expenditure – the 1990s

	Gini coefficient from LSMS data selected years	
	Per capita income	Per capita expenditure
Azerbaijan		0.347 (1995)
Kazakhstan		0.350 (1996)
Kyrgyzstan	0.678 (1993)	0.548 (1993)
	0.511 (1996)	0.461 (1996)
Tajikistan	0.47 (1999)	0.31 (1999)

Table 7: Decomposition of income inequality by income components

Source of income	All households: structure of incomes (%)	Concentration coefficients	Contribution to total inequality (%)
Total wage income	23.9%	0.420	21.5%
State transfers	1.5%	0.067	0.2%
Other income	74.5%	0.491	78.3%
Total household income	100%	0.468	

Identifying the poorest

Table 4 presents a bewildering array of poverty rates for Tajikistan that potentially vary from 16% (using welfare indicator of expenditure, theta 0.5; poverty line lower $1.075 a day PPP) to 96.0% (using welfare indicator of income, theta 1.00; poverty line 1999 minimum consumption basket). Thus it appears that any figure will do!

The choice of poverty line is essentially a political one. It makes little practical sense to adopt a poverty line that defines the vast majority of the population as poor, even though this may in fact be the case both by world standards of absolute poverty and within Tajikistan relative to accustomed living standards. In order to effectively target policy interventions on the *most* vulnerable in society it is necessary to focus on those at the bottom of the distribution. This leads us to the second vital choice, that of the welfare indicator by which people are ranked.

As discussed above, there are problems in measuring both income and expenditure in Tajikistan. Income data is subject to under-reporting at the best of times. This under-reporting is exacerbated by the growth of the informal sector, arrears in the formal sector and the de-monetisation of the economy. In Tajikistan expenditure is likely to give a better picture a households 'permanent income' and their control over resources. Thus to indicate the level of poverty, expenditure is the better measure.[4] However, for targeting it may be necessary to use income plus other variables which are correlated with poverty.

Finally there is the question of how to adjust for variation in household size and composition. There is no nationally accepted

4 There are, however, problems with expenditure as a welfare indicator if households are getting into unsustainable debt or unsustainably selling off assets. As is discussed in Table 8a, this may in fact be a problem in Tajikistan, and should be borne in mind when interpreting the following results.

equivalence scale for Tajikistan, indeed the notion of equivalence scales is relatively new to the country. The most widely accepted approach to controlling for household size is to use per capita measures. The use of per capita measures has been criticised as it tends to over-estimate levels of poverty amongst large households and underestimate poverty amongst smaller households. However, this appears to be less of a problem in Tajikistan where both very large and very small households are uncommon, and where share of non-food goods in total expenditure is quite low. There is some re-ranking of households, but 89% of those in the bottom quintile when theta=1.00 are also in the bottom quintile when theta=0.75; and 93% of those in the bottom 40% when theta=1.00 are also in the bottom 40% when theta=0.75. Table 8 shows the Pearson Correlation Coefficients between quintile rankings of equivalent expenditure with theta 1.00, 0.75 and 0.50. All coefficients are significant at the 0.01 level.

Table 8: Pearson Correlation Coefficients for quintile rankings of expenditure

	Per capita No econ of scale. (theta=1.00)	**Medium econ of scale (theta=0.75)**	**Strong econ of scale (theta=0.50)**
Per capita No econ of scale. (theta=1.00)	1.00	0.941	0.857
Medium econ of scale (theta=0.75)	0.941	1.00	0.942
Strong econ of scale (theta=0.50)	0.857	0.942	1.00

Given the difficulties in

(a) the measurement of income,

(b) the definition of a poverty line and

(c) estimating the appropriate household size elasticity for consumption in Tajikistan,

the main analysis of the profile of poverty now focuses simply on individuals who live in households in the *bottom 20%* of the distribution of *per capita expenditure*.

This approach has the advantage of avoiding a degree of complexity that may threaten a broad endorsement of the poverty line and is simple and transparent.

The sensitivity of the poverty profile to alternative equivalence scales is further discussed in Appendix 1.

4. Who are the Poor in Tajikistan

Poverty can be looked at in two ways: firstly the *risk* of being poor faced by individuals with different characteristics and secondly the *composition* by characteristics of those that are poor. Tables 9 and 10 present summary information for a range of variables from these two perspectives. For completeness, Table 9 presents the percentage within each quintile of the distribution of per capita expenditure; the incidence of poverty being defined as the percent of any particular group in the bottom quintile. Table 10 presents the composition of both the richest and poorest quintile, as well as that of the population as a whole. Note that chi-squared was significant at ($p<0.001$) for all the bi-variate associations shown.

Urban-rural differences in poverty

It is useful to look to at relative risk of poverty i.e. the ratio of the poverty rate for a particular sub-group to the average poverty rate. If a particular sub-group has a relative poverty rate of greater than one, this implies that the group has a higher incidence of poverty than the average and that the characteristic defining that group may be a correlate of poverty which can be used in policy design.

22.4% of all individuals live in households located in the bottom quintile of the distribution of per capita household expenditure. However from Table 9, only 18.6% of individuals living in urban areas can be said to be poor compared with 23.4% of those living in rural areas. Thus the relative risk of poverty for those in urban areas is 0.83 compared to a relative risk of poverty for those in rural areas of 1.04. Put another way, urban dweller are 20 percent less likely to be poor than on average, whilst rural dweller are 4 percent more likely to be poor. This is in part due to the fact that rural households tend to be larger than urban ones, with a mean household size of 7.6 people in rural areas compared with 5.7 in urban areas. However a slight differential between those in urban and rural areas remains even when household economies of scale are taken into account (see Appendix 1).

Regional dimensions

Tajikistan is divided into four regions (oblasts), Gorno-Badakhstan Autonomous Oblast (GBAO) in the east, Khatlon Oblast in the south, Leninabad Oblast in the north and the Regions of Republican Subordination (RRS) in the centre. The capital, Dushanbe, is also a separate administrative unit. (For those unfamiliar with the geography of Tajikistan see the map included). Poverty is much lower in the capital, Dushanbe, than elsewhere in Tajikistan whilst GBAO is the worst off region, followed by Khatlon, Leninabad and RRS Table 9 shows that individuals living in the remote and mountainous region of GBAO are three-quarters more likely to poor than on average, with a relative poverty rates of 1.75. This contrasts sharply with Dushanbe, with a relative risk of poverty of 0.32. Appendix 1 shows that although the *level* of poverty is affected by the assumptions concerning equivalence scales, the *ranking* between regions is not significantly affected, despite the fact that there are regional variations in household size and composition[5]. This points to possibility of geographical targeting. However, as Table 10 shows, although poverty in GBAO is relatively high, the oblast only accounts for 6.9% of all poor people. Geographical targeting at the oblast level would result in many poor people being missed out.

Children

Children experience a higher risk of living in poverty than adults, with a relative risk of between 1.03 and 1.11. Interestingly older children, aged 6-15, are more likely to be poor (25%) than younger children aged 5 and under (23%). This may be because older children are more likely to have younger siblings. The risk of poverty increases sharply according to the number of children under 15 living in the household. Only 7 percent of individuals living in households with no children are poor, compared with 31 percent of those living in households with 5 or more children (Table 9). People living in households with children comprise the vast majority of the poor (Table 10). Over four-fifths live in households with at least 3 children and nearly a half live in households with at least 5 children. Therefore targeting large households with children may represent one option for reaching the bulk of the poorest.

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5 Mean household size varies between 5.2 in Dushanbe to 8.3 in RRS, with households averaging 7.0 people in GBAO, 6.1 in Leninabad and 7.7 in Khatlon.


Khujand
Ura-Tiube
Kyrgyzstan
Leninabad
Aini
Pyanjekent
Garm
RRS
China
Dushanbe
Faizabad
Uzbekistan
Tursunzade
Yavan
Dangara
Gorno-Badakhshan
Khatlon
Kulyab
Kurgan-
Tiube
Khorog
Kolkhozabad
Moscovsky
Dusti
Shaartuz
Afghanistan
Pakistan

Table 9: Distribution across quintiles of per capita household expenditure, by household and individual characteristics, all individuals, Tajikistan (%)

	Quintile of per capita household expenditure				
	Poorest 20%	**2**	**3**	**4**	**Richest 20%**
All individuals	22.4	21.7	20.5	19.1	16.3
Location					
Urban	18.9	19.9	19.4	19.8	22.0
Rural	23.4	22.2	20.9	18.9	14.6
Region					
Dushanbe (capital)	7.1	17.5	12.9	25.9	36.6
GBAO	39.1	26.9	18.5	10.2	5.4
RRS	17.0	16.0	20.7	22.9	23.35
Leninabad	22.4	23.7	21.7	18.1	14.2
Khatlon	26.8	24.2	21.2	17.1	10.7
Age in Years					
0-5	23.1	23.1	20.8	18.6	14.4
6-15	24.8	21.6	20.0	19.1	14.5
16-64	20.8	21.5	20.9	19.3	17.6
65+	22.7	18.9	20.3	19.4	18.7
Number of Children Under 15					
Zero	6.8	15.1	16.2	15.7	46.2
One – Two	16.5	18.6	20.5	23.3	21.1
Three – Four	20.2	22.2	21.6	20.4	15.6
Five or more	30.7	23.9	19.9	15.1	10.5
Number of elderly (55+ women; 60+ men)					
Zero	21.2	21.1	20.2	19.4	18.1
One	25.5	23.6	20.8	17.8	12.3
Two	21.9	21.4	21.8	20.1	14.9
Three or more	78.3	-	-	-	21.7
Gender of Household Head					
Male	21.2	21.9	20.8	19.6	16.5
Female	28.6	20.3	19.5	16.4	15.0

Ethnicity of Household Head					
Tajik	23.0	21.8	19.8	19.7	15.7
Russian	9.5	9.5	12.4	21.9	46.7
Uzbek	20.4	22.9	22.4	17.2	17.2
Tatar	28.3	2.2	19.6	19.6	30.4
Kyrgyz	28.4	4.3	31.0	31.0	5.2
Other	38.7	-	25.8	8.1	27.4
Education					
Age le 15	24.2	22.2	20.3	18.9	14.5
Unknown	23.1	24.9	23.5	18.8	9.7
None	27.6	15.8	23.7	17.1	15.8
Primary (LE 7 years)	22.3	21.8	21.4	18.5	16.0
General Secondary (8-12 years)	22.6	21.5	20.4	19.1	16.3
Vocational/Specialised Secondary	17.1	21.1	22.3	20.3	19.2
Some Higher	10.4	19.3	17.3	20.5	32.5
Household Head Labour Market Status					
Employed	21.6	21.7	19.8	19.1	17.8
Unemployed	18.6	23.6	27.4	19.6	10.8
Not in work force	33.4	19.8	15.1	16.1	15.6
Retired	22.2	21.7	23.5	19.1	13.5
Unknown	20.7	19.8	11.2	31.8	16.5
Number of adults unemployed					
Zero	21.4	21.6	20.4	19.5	17.1
One – Two	27.5	19.9	23.4	15.8	13.3
Three or more	22.5	27.5	16.1	21.7	12.2

Note: *all* chi-square significant at ($p<0.001$)

Table 10: Composition of the poorest and richest quintiles of individuals ranked by per capita household expenditure, Tajikistan (%)

	Quintile of per capita household expenditure		
	Poorest 20%	**Richest 20%**	**All Tajikistan**
All individuals	100	100	100
Location			
Urban	18.5	29.7	21.9
Rural	81.5	70.3	78.1
Region			
Dushanbe (capital)	2.1	14.5	6.4
GBAO	6.9	1.3	3.9
RRS	19.2	36.4	25.3
Leninabad	26.1	22.8	26.1
Khatlon	45.7	25.0	38.1
Age in Years			
0-5	17.6	15.1	17.0
6-15	30.9	25.0	27.9
16-64	47.4	55.2	51.0
65+	4.1	4.7	4.0
Number of Children Under 15			
Zero	1.1	10.4	3.7
One – Two	16.4	28.9	22.3
Three – Four	36.9	39.3	40.8
Five or more	45.6	21.4	33.3
Number of elderly in household (55+ women; 60+ men)			
Zero	57.9	67.7	61.0
One	25.3	16.9	22.2
Two	16.3	15.2	16.6
Three or more	0.6	0.2	0.2
Gender of Household Head			
Male	80	85.6	84.4
Female	20	14.4	15.6

Ethnicity of Household Head			
Tajik	74.5	69.7	72.5
Russian	0.3	2.1	0.7
Uzbek	23.0	26.5	25.2
Tatar	0.4	0.6	0.3
Kyrgyz	1.0	0.3	0.8
Other	0.8	0.7	0.4
Education *			
Age le 15	48.5	40.1	44.9
Unknown	2.0	1.2	2.0
None	2.0	1.6	1.6
Primary (LE 7 years)	2.6	5.6	5.6
General Secondary (8-12 years)	33.0	32.8	32.7
Vocational / Specialised Secondary	7.0	10.9	9.2
Some Higher	1.8	7.9	4.0
Household Head Labour Market Status			
Employed	61.1	69.5	63.4
Unemployed	5.3	4.2	6.3
Not in work force	10.9	7.0	7.3
Retired	21.1	17.6	21.2
Unknown	1.6	1.7	1.7
Number of adults unemployed			
Zero	75.6	83.2	79.1
One – Two	18.6	12.4	15.2
Three or more	5.8	4.3	5.8

Note: *all* chi-square significant at ($p<0.001$)

Elderly people

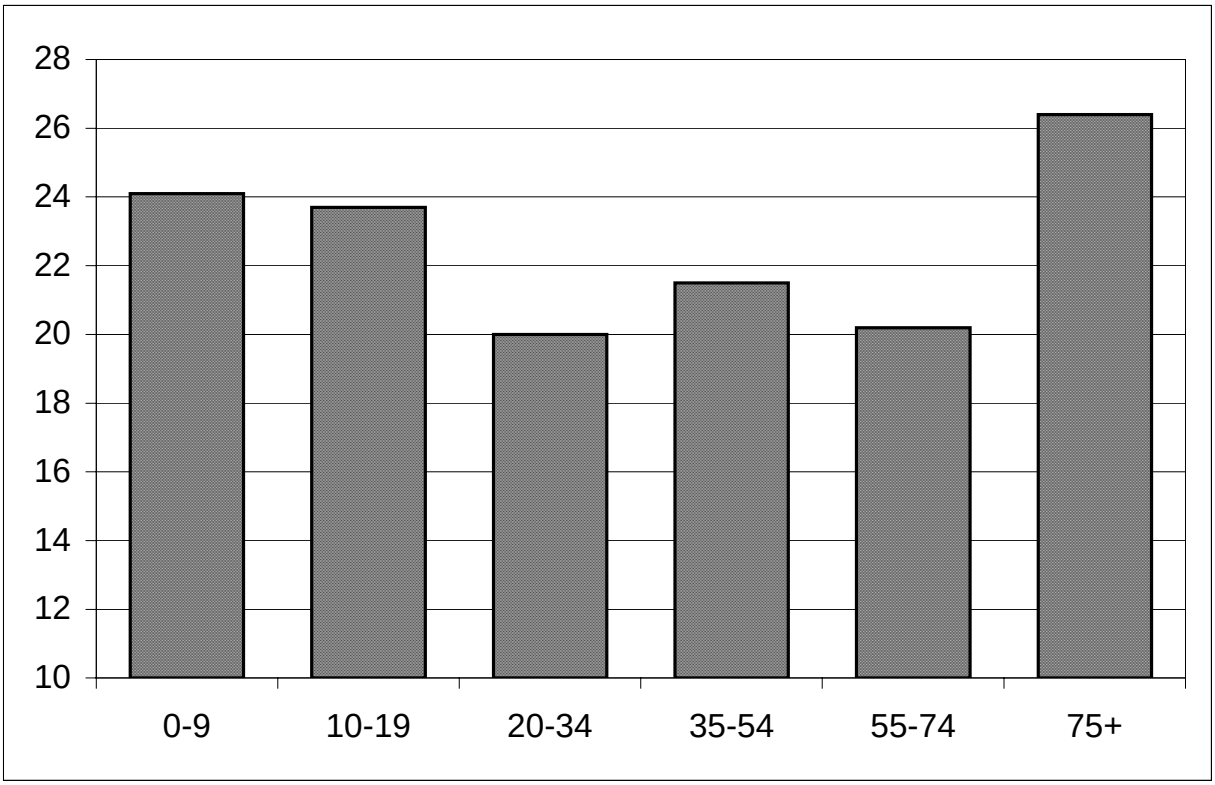
Older people are also more likely to be poor than other adults, with 23 percent of people aged over 65 living in the bottom quintile of per capita household expenditure compared with 21 percent of persons aged 16-64. However older people make up only a small proportion of the total poor (4.1%). The risk of poverty is greater for people living in a household containing one older person as compared with a household containing none or two. Note that most older people live with younger household members. Single elderly person households are very rare, comprising less than one percent of all households.

Households with three or more people aged 65 and over are also very unusual in Tajikistan (constituting 2% of all households). However, people living in such households are significantly more likely to be poor than other types of household with a relative risk of poverty of 3.5. Interesting, if these households were not poor, then they are located at the other end of the spectrum i.e. in the top quintile. This may reflect that fact that the receipt of three pensions, when paid, is sufficient to push a household a long way up a relatively flat distribution!

In Russia, poverty was found to be inversely related to age. One argument put forward for this was that receipt of pensions and other transfers acted as a protective factor. Those groups with access to cash income, even if that access is intermittent, may be privileged over other groups. This is supported by qualitative evidence. One respondent in the Buryat region in the east of the Russian Federation said that '*It is [now] better to have two live grandparents than to have two cows*' (Humphrey, 1998: 465).

However in Tajikistan the relationship between age and poverty is far from straightforward. Figure 3 shows that poverty rates amongst the very old (aged 75+) are higher than even those for children. Elderly people living alone, although numerically very small, may be amongst the poorest of the poor.

Figure 3: Percentage who are 'poor' by age group



Gender

In general terms there is no significant difference in the poverty rates for men and women in Tajikistan and as such these are not presented in Tables 9 and 10. However it must be borne in mind that poverty here is defined by the expenditure of the household and as such assumes that all household resources are shared equally among their members. However, feminist literature would argue that in reality this is rarely the case (Bruce and Dwyer, 1988; Evans, 1989; Moore, 1992). There is some evidence that the circumstances of transition may have tended to *increase* gender-based disparities within the household rather than reduce them. Therefore statistics based on household measures may *underestimate* the true extent to which women are affected by poverty.

Other studies have found that women are disproportionately bearing the cost of a shrinking labour market (UNICEF, 1999). Women's labour force participation rates in the Soviet period were much higher than in other industrialised countries. Since independence however, a greater proportion of female employees have been laid off and more are 'on leave without pay' than their male counter-parts. Furthermore, there is evidence that women's wages have fallen more than men's. In the Soviet period a high proportion of public sector workers were women

(especially in education and health). These are the sectors now where wages have not been paid and where real pay rates have suffered the greatest fall in value (Falkingham, 2000). The greater decline in the relative value of women's wages may mean that the proportion of household resources 'enjoyed' by women and children is declining.

Female-headed households are likely to face particular problems. The civil war created approximately 25,000 female-headed households, predominately in Khatlon and Garm. Some women lost their husbands during the war. Others lost their husbands to emigration. A few of the latter group abandoned their families and created new families. In all of these cases, the woman became the head of the household. According to the Save the Children 1998 Socio-Economic Survey of Households, Farms and Bazaars, female-headed households have less access to land, irrigation and livestock. They are also less food secure, but receive more humanitarian assistance. Even with this assistance, their monthly income is less than male-headed households. Table 9 conforms that individuals living in female headed households experience a greater risk of poverty (28.6%) than those in male headed households (21.2%). However such households account for only a fifth of all poor people.

Education

As is the case in most regions of the world, the risk of being poor appears to be inversely related to education. Individuals aged 16 and over with no schooling experienced a relative risk of poverty of 1.23 (table 9). Individuals with primary education or general secondary education were no more likely to be poor than on average. However individuals with vocational/specialised secondary education were less likely to be poor than on average, with a relative risk of 0.76, and those with some higher education were *much* less likely to be poor with a relative risk of 0.46.

Thus persons with no education are over two and a half times as likely to be living in a household with a per capita expenditure in the bottom quintile than those with higher education. Overall, however, individuals with no education make up a very small proportion of the poor – a reflection of the fact that less than two percent of the population have no formal schooling (Table 10). The vast majority of the adult population has at least general secondary education; and so do the majority of the adult poor.

Higher education, does however appear to be a protective factor. Four percent of the total population has some higher education. However, eight percent of those in the top quintile have higher

education, compared with just under two percent of those in the bottom quintile. It may be that those individuals with higher education have been ore able to adapt to the changing labour market. However, education is also related to family size and region of residence – factors which are also associated with the risk of poverty. It is necessary therefore to go beyond simple bi-variate analysis to establish whether there remains an association between education and poverty (see Table 17 below).

Absence from School and Poverty

Table 11: Percentage Absent from School by Quintile

	Poorest 20%	2	3	4	Richest 20%	All Taj
Missed school for 2 weeks or more in last academic year						
(N=3,471 children aged between 7 and 15)						
Yes	44	36	39	34	31	37
No	56	64	61	66	69	63
Main reason for absence						
No clothes / shoes	44	30	35	21	24	32
Illness	8	13	14	20	25	15

Note: *all* chi-square significant at ($p<0.001$)

A significantly greater proportion of children in the bottom quintile of the distribution have missed school for 2 weeks or more in the last academic year (44%) as compared with those in the top quintile (31%).

When the reasons for absence are examined, the two most common reasons (excluding bad weather) are no clothes / shoes and ill health. There is a striking difference between children in rich and poor households, with 44 percent of those in the bottom quintile reporting that they missed school due to lack of clothing compared to 'just' 24 percent of those in the top. In contrast, a quarter of those children living in rich households missed school through ill health compared to just 8 percent of poor children.

Of those who report missing school for 2 weeks or more in last year, 26 percent are poor (defined as living in a household in bottom quintile). This compares with a poverty rate 19.5 percent amongst children who have not missed school.

Employment and unemployment

There is no clear relationship between labour market status and poverty in Tajikistan. Table 10 shows that a lower proportion of those in the bottom quintile live in a household where the head is employed (61.1%) than on average (63.4%); but also a lower proportion live in a household where the head is unemployed (5.3%) than on average (6.3%). The group with the highest risk of poverty are those where the head is out of the labour market, but not retired. Individuals in these households experience a relative risk of poverty of 1.49, and constitute 11 percent of the poor.

It may be that labour market status is no longer a good indicator of access to resources. It is not whether a person has a job that is important, but whether a person has a job and receives a salary or wage that is the critical factor. As Table 9 below shows income from the labour market accounts for only a third of the total income of households in the bottom quintile of consumption, and rises to make up just under a half for those in the top quintile.

The Structure of Income

Labour income remains the most important source of income for all households. However combined income from the sale of foodstuffs and households assets, on average, accounts for a similar share. Remittances are also very important, whilst the role of the state in providing a safely net is very small. Even amongst those households in the bottom fifth of the distribution of expenditure, social transfers only account for eight percent of income[6].

6 Note that this proportion would be even lower if the imputed value of consumption of food produced by the household was included in total income.

Table 12: Structure of total household income (excluding the imputed value of home production) (%) by quintile group of households ranked by per capita household expenditure

	Poorest 20%	2	3	4	Richest 20%
Labour income (inc. employer subsidies)	32	34	34	38	42
Sale of food and crops	16	18	17	14	10
Sale of private belongings and livestock	14	13	18	16	15
Sale of commercial goods	1	3	2	2	3
Rent	<1	-	-	<1	<1
Withdrawal of savings/repayment of debts	2	2	2	3	3
Remittances (gifts or loans)	14	12	9	10	12
Aid	8	7	7	6	4
Social Transfers (inc. pensions and child benefits)	6	6	5	5	5
Other	7	5	5	6	6
Total	100%	100%	100%	100%	100%

Expenditure Patterns

As we would expect, the share of total household expenditure on food is higher for those households at the bottom of the distribution than at the top, with the poorest household spending 79 percent of all expenditure on food. The imputed value of home production contributes a significantly greater proportion of total food expenditures for the poorest groups, as does the value of food gifts including humanitarian aid, whilst the share of expenditure on the cash purchase of food varies little across the distribution. Expenditures on 'other', which includes clothing, books, durables, holidays and weddings, also varies sharply between the rich and poorest households.

Table 13: Composition of total household expenditure (%) by quintile group (households ranked by per capita household expenditure)

	Poorest 20%	2	3	4	Richest 20%
Food purchases	48	50	51	49	45
Imputed value of home consumption	21	21	19	17	13
Food gifts (inc. humanitarian assistance)	10	6	4	3	2
Total food	*79%*	*77%*	*74%*	*69%*	*60%*
Rent	-	-	-	-	-
Utilities	4	3	3	4	4
Education	2	2	2	2	3
Health	3	3	4	5	7
Other	12	16	18	20	25
Total	100%	100%	100%	100%	100%
Average monthly household expenditure (TR)	47,450	74,400	93,300	114,530	176,370

Poverty and health

The relationship between poverty and health in Tajikistan is not straightforward. Table 14 appears to show that poverty and health are positively correlated. Individuals in the higher quintiles are *less* healthy in the sense that they report *higher* levels of chronic and acute illnesses than the poor. Fourteen percent of those in the top quintile report suffering from a chronic illness or disability that has lasted for more than six months and 11.5 percent report having had an acute illness or injury in the two weeks prior to the survey, compared with just 8.3 percent and 6.7 percent respectively of individuals in the bottom quintile.

This trend has been found in other low income countries using self-reported health status (e.g. Kazakhstan, using the 1996 KLSS) and has been explained by the fact that poor health and injury may be luxuries that the well-off can more easily afford. Certainly health seeking behaviour is inversely related to poverty, with only 4 percent of the bottom quintile reporting having sought medical assistance in the last two weeks compared with 9 percent in the top. However the trend may also be related to the demographic composition of the different quintiles.

Children are over-represented amongst the poor and under-represented among the rich. Children also tend to be healthier than adults.

Table 14: Self reported morbidity by quintile of per capita household expenditure

	Poorest 20%	2	3	4	Richest 20%	All Taj
Chronic illness lasting more than six months						
Yes	8.3%	8.2%	8.7%	10.5%	14.0%	9.7%
No	91.7%	91.8%	91.3%	89.5%	86.0%	90.3%
Acute illness in the last two weeks						
Yes	6.7%	7.9%	7.2%	8.3%	11.5%	8.1%
No	93.3%	92.1%	92.8%	91.7%	88.5%	91.9%
Sought medical assistance in last two weeks						
Yes	3.9%	5.3%	5.2%	5.9%	8.8%	5.7%
No	96.1%	94.7%	94.8%	94.1%	91.2%	94.3%
Hospitalised in the last year						
Yes	3.5%	4.7%	5.0%	6.0%	7.3%	5.2%
No	96.5%	95.3%	95.0%	94%	92.7%	94.8%

Note: *all* chi-square significant at ($p<0.001$)

Consumer durables

In Tajikistan, as in other countries of the FSU, in the past there was little or no relationship between a household's ownership of consumer goods and its level of income. This is because under the Soviet regime consumer durables were allocated by the command economy rather than by the market economy. However since Independence the sale of household assets has emerged as a key household coping strategies (see below). Therefore we might expect to see a relationship between probability of being poor and ownership of consumer durables in general, and ownership of goods acquired during the 'post-soviet' period in particular. Table 15a shows that there is a significant relationship between household per capita expenditure and a range of durables. The strongest correlation was between ownership of a colour television, followed by stereo and then video recorder.

Table 15a: Percentage of households owning selected consumer durables within quintile groups of per capita household expenditure

	Poorest 20%	2	3	4	Richest 20%	All Taj
Gas or electric stove	35	43	50	52	64	48
Refrigerator	28	40	44	49	56	43
Vacuum cleaner	1	3	3	6	12	5
Washing machine	13	18	23	33	34	24
Air conditioner	4	3	7	9	12	7
Stereo / cassette player	11	21	28	38	44	28
Colour TV	5	12	18	24	35	19
Video	1	3	3	9	17	7
Bicycle	6	13	18	16	18	14
Car	4	8	14	15	21	12

Note: *all* chi-square significant at ($p<0.001$).

Table 15b: Percentage of households having bought selected consumer durables since 1992 within quintile groups of per capita household expenditure

	Poorest 20%	2	3	4	Richest 20%	All Taj
Gas or electric stove	11.8	14.0	13.8	16.8	25.0	16.3
Refrigerator	0.8	4.3	3.3	5.0	8.0	4.3
Vacuum cleaner	-	0.3	0.3	0.8	4.0	1.1
Washing machine	0.8	1.3	1.8	2.3	5.8	2.4
Air conditioner	0.3	0.3	1.8	3.0	5.0	2.1
Stereo / cassette player	4.5	10.5	15.0	20.3	27.5	15.6
Colour TV	2.3	4.0	7.8	11.8	18.3	8.8
Video	1.0	2.5	2.8	7.0	14.05	5.5
Car	0.8	1.0	2.8	4.5	8.8	3.6

Note: *all* chi-square significant at ($p<0.001$).

The pattern in Table 15a may reflect two discrete effects: first the divestiture of household assets by the poorest groups and secondly differential acquisition of consumer durables by the better-off in the recent past. Table 15b therefore presents information on the proportion of households who have acquired consumer durables since 1992.

Again there is a significant relationship between ownership of consumer durables and poverty, although what is *most* striking from Table 15b is the relatively low level of consumer spending throughout the Republic. Under five percent of households in Tajikistan have purchased a major household appliance (refrigerator, vacuum cleaner, washing machine) in the last 7 years, indicating the widespread nature of financial hardship. The most popular item purchased was a stereo / cassette player.

Ownership of other assets and housing attributes

The majority of households in Tajikistan have access to an individual garden plot (79%), and in fact access is inversely related to poverty with a higher proportion amongst the bottom quintile having a garden plot than amongst the top quintile (Table 16). When, however, we look at the average number of sotkas available to each individual in the household, those in the poorest quintile have an average of 5.5 sotkas[7] per head compared with 11.5 in the top quintile. Similarly ownership of at least one cow is greater amongst the rich than the poor.

7 1 Sotka is equivalent to one hundredth of a hectare.

Table 16: Household assets and housing characteristics by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Assets						
Access to individual garden plot **	83	84	80	78	70	79
Mean per capita land available to Household (sotkas) **	5.6	7.1	8.5	8.2	11.5	8.2
Own at least one cow *	46	56	53	53	53	52
Housing						
Gas main source of fuel for cooking **	5	7	10	10	15	9
Coal / peat / wood stove *	79	78	77	75	61	74
Electricity #	95	96	96	98	99	97
Central heating **	4	2	6	6	12	6
Outside toilet **	92	87	87	84	76	85
Shared toilet *	8	4	4	4	6	5
Piped water *	42	43	45	44	57	46

Note: ** chi-square significant at ($p<0.001$), * chi-square significant at ($p<0.01$), # chi-square significant at ($p<0.05$).

Housing quality and access to amenities is also inversely related to poverty.

Life in Tajikistan

- 7% of households report that their home was damaged during the war, of which a quarter experienced significant damage and a third almost completely destroyed
- Less than half of all households have access to piped water. Nearly a quarter are reliant on water from river / lake / ponds and a further eighth on spring water (probably actually the best source!)
- Of those who have piped water, a quarter reported that water was only available for five hours a day or less; and only 36% reported 24 hour availability.
- Only a half of households reported that their water quality was good / excellent and a half reported fair / poor
- 75% of households reported no source of *hot* water
- Only 14% of households have a flush toilet. 85% rely on an outside latrine
- The most common source of fuel used by households for cooking was wood (43%), followed by manure (17.5%) and cotton stem (12.3%). Similarly the most common usual source of heat was wood stove (45%) followed by manure / peat (23.6%). Burning solid fuels indoors has important implications for health as indoor air pollution is associated with numerous respiratory complaints.
- A third of households had only heated their home for 3 months or less in the last year; two-thirds heated it for 4 months or less.
- 14% of households have a phone inside the dwelling, 17% rely on neighbours. 54% stated that they had NO access to a phone.

Multivariate analysis of the correlates of household poverty

Many of the correlates of poverty discussed above are related to each other. In order to establish the strength of their relationship after controlling for other factors, a logistic regression was carried out with the independent variable being whether or not the household is poor as defined by being in the bottom quintile of per capita household expenditure. All of the household level variables analysed in Tables 9-16 were entered in a forward step regression where the criteria for entry was a reduction in the log likelihood ratio significant at $p<0.05$.

Table 17 presents the best-fit model in which all the variables are significant. Many variables where there was a strong bi-variate

correlation with poverty were insignificant in the multiple regression. Interestingly, type of settlement (urban-rural) was not significant; neither were the gender or ethnicity of the household head. Note that the model does not allow us to say anything about *causation*. It may be that ownership of a durable or assets, such as a car or cattle, facilitates a livelihood strategy that protects the household against being poor; or it may be that ownership of a durable (or lack thereof) reflects the purchasing power of the household. We are not able to distinguish between cause and effect, but examining the *correlates* of poverty.

To give a indication of the relative strength of associations it is helpful to present the order in which the variables in Table 17 were selected by the step-wise process: Stereo/tape player, number of children in the household, colour TV, number of cows, sewing machine, region, radio, bicycle, car, number of adults in the household, number of adults employed, sotkas of land per capita, fridge (acquired since 1992), education of household head, gas, coal/peat/wood stove. Thus the number of children in the household and ownership of consumer durables and assets proved to be the factors most significantly correlated with household poverty (or not being poor).

- The probability of a household being poor is positively related to the number of children in it.
- Ownership of consumer durables 'reduces' the household's probability of being poor by a half to two-thirds.
- Ownership of two or more cows significantly reduces the probability of poverty.
- There remains a strong regional dimension to poverty after controlling for other factors. Compared with living in the Capital, households in GBAO are seven times more likely to be poor and households in Leninabad and Khatlon are four-five times more likely to be poor.
- Poverty is inversely associated with the number of adults in the household who are employed.
- There is an association between education and poverty. Households were the head has at least some higher education are half as likely to be poor as other.

Coping mechanisms

Households with limited resources are increasingly employing a range of different strategies to survive on limited resources.

The most basic necessity within any household is food, and by far the most important coping strategy with regard to ensuring its supply is its self-production. 84% of all households reported having access to an individual garden plot and 72% of households reported consuming food grown by the household in the last 7 days.

- Access to land is therefore a critical factor in many households' survival.

Humanitarian assistance is also important. 23% of all households reported the receipt of food gifts in the last seven days and their imputed value accounted for a tenth of total expenditure for the poorest households.

Table 18a provides information about a range of other coping strategies households reported employing with regard to food consumption over the last 6 months. There is a clear relationship between poverty and the proportion of households reporting the use of a particular strategy. However, what is most striking is the *widespread* nature of behaviour change within Tajikistan. Even amongst the most well-off households, nearly 30 percent reported having reduced the number of meals a day and a similar proportion reported eating smaller portions. This rose to over 60 percent amongst the poorest households.

Table 17: Correlates of household poverty

Demographic variables	
Number of children in the household	1.32 **
Number of adults in the household	1.17 **
Region **	
Dushanbe	1.00
GBAO	7.00 **
RRS	1.87
Leninabad	3.38 **
Khatlon	4.79 **
Socio-economic variables	
Number of adults employed in the household	0.85 *
Head of household educational group *	
None	1.00
Primary (le 7 year)	0.91
General Secondary (8-12 years)	1.00
Vocational/Specialised	0.68
Some Higher	0.48 #
Other	1.19
Ownership of consumer durables	
Stereo/tape player	
No	1.00
Yes	0.39 **
Colour TV	
No	1.00
Yes	0.37 **
Radio	
No	1.00
Yes	0.52 **
Sewing machine	
No	1.00
Yes	0.60 **
Car	
No	1.00
Yes	0.42 *

Bicycle	
No	1.00
Yes	0.45 **
New Refrigerator (since 1992)	
No	1.00
Yes	0.23 #
Household assets	
Sotkas of land per capita	0.98 *
Number of cows	
Zero	1.00
One	0.88
Two	0.48 **
Three or more	0.35 **
Housing	
Gas supply	
No	1.00
Yes	0.46 *
Coal/peat/wood stove	
No	1.00
Yes	0.64 #
Model reduction in LLR	380 **

Note: ** significant at (p<0.001), * significant at (p<0.01), # significant at (p<0.05).

Table 18a: Proportion of households reporting having engaged in selected coping strategies in the *last* six months by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Reduce number of meals a day **	61	44	42	44	29	44
Eat smaller portions **	63	45	47	45	30	46
Find other work **	45	35	31	35	26	34
Sell household assets	29	25	28	29	27	28
Borrow	37	33	34	34	30	34
Beg **	7	3	1	1	<1	3
Send children to relatives **	9	6	3	2	3	5

Note: ** chi-square significant at ($p<0.001$).

An indication of the pervasive nature of financial insecurity for households across Tajikistan is the fact that over a quarter of all households had sold assets in the last month, and a third had had to borrow from relatives, friends, and neighbours. These proportions were roughly constant for households *across the entire distribution*.

In addition to the coping strategies already employed by households, respondents claimed that they would envisage using a variety of coping strategies over the *next* six months. A higher proportion of households thought that they would have to modify their diet still further and/or find other work A quarter thought that they would have to sell household assets and over a quarter would have to borrow to make ends meet. Two percent thought that they would have to resort to begging.

Table 18b: Proportion of households reporting that they are likely to engage in selected coping strategies in the *next* six months by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Reduce number of meals a day **	46	43	43	41	33	41
Eat smaller portions **	47	41	41	40	31	40
Find other work #	40	37	32	35	30	35
Sell household assets	25	19	25	23	21	23
Borrow #	33	29	31	27	23	28
Beg **	4	2	2	3	<1	2
Send children to relatives #	6	5	4	2	2	4

Note: ** chi-square significant at ($p<0.001$), * chi-square significant at ($p<0.01$), # chi-square significant at ($p<0.05$).

Migration is often seen as a strategy of the last resort. Two percent of households reported that they had had to migrate within Tajikistan in last 6 months, and 3 percent reported that at least one member had migrated to outside the republic. The same proportions reported that they envisaged migrating either internally or externally in the next 6 months.

5. Food Security

The above section focused on the profile of poverty as measured by expenditure and focused on those at the bottom of distribution. However the information presented on household coping strategies suggests that financial hardship is far from being limited to this group. In this section therefore we examine the situation of households with regard to the most basic necessity – food.

In June 1997 a nation-wide survey was conducted by the European Community Humanitarian Organisation (ECHO) to assess the profile and location of food insecure households in Tajikistan (Freckleton, 1997). Some of the questions from that survey were included in the TLSS to monitor changes over time in food consumption and security. Tables 18a and 18b above have already suggested that many households have changed their eating patterns over the last 6 months.

On average households in Tajikistan in 1999 ate 2.5 meals a day. This is only a slight reduction from the 2.6 reported by the ECHO Food Security Survey in 1997[8]. The average number of meals a day varied from 2.2 for the poorest households to 2.8 for the richest.

Most worrying from a nutritional point of view is the rise in the proportion of households claiming to eat just *one* meal a day from 10% in 1997 to 13% in 1999. Over a quarter of the poorest households ate an average of one meal or less a day, and over half ate two or less (Table 19). Alarmingly of all households eating less than two days a day, over 50 percent stated that they thought in the next 6 months that they would have to reduce the number of meals eaten still further.

Table 19: Average number of meals per day consumed by members of the household over the last week by quintile of per capita household expenditure (%)

Average of meals per day over the last week	Poorest 20%	2	3	4	Richest 20%	All Taj
1 or less	28	15	10	6	6	13
2	24	24	23	25	16	22
3 or more	48	61	66	68	75	64
Total	100	100	100	100	100	100

Note: chi-square significant at ($p<0.001$)

There has been a significant change in the diet of the average Tajik since independence with a shift towards cheaper foodstuffs. Traditionally the mainstay of the Tajik diet was soup – made with a variety of ingredients including vegetables and meat as well as noodles. In addition vegetables stuffed with rice and meat, *plov* (a rice and meat dish) or meat and potatoes were consumed several times a week, particularly in works canteens (Freckleton, 1997). Today, looking at Table 20, it appears that meat, eggs and confectionery have become luxury items that even the richest only eat a few times a week and that the poorest rarely have access to. Over half of all households had not

8 Freckleton notes that of those claiming to eat one meal a day in 1997, some ate an adequate dietary mix, indicating under-reporting of meals particularly where they are consumed outside the home. If under-reporting is lower in the TLSS then the change between 1997 and 1999 is under-estimated.

eaten any meat in the 7 days prior to the survey, 61 percent had not eaten eggs and 85 percent had not eaten confectionery.

Table 20: Average consumption of selected foods over the last week by quintile of per capita household expenditure

Average days consumed per week per food item	Poorest 20%	2	3	4	Richest 20%	All Taj
Rice	1.2	1.9	2.2	2.5	2.8	2.1
Pasta	1.0	1.7	2.0	2.3	2.3	1.9
Potatoes	3.4	4.6	5.2	5.4	5.7	4.9
Carrots	2.9	3.7	4.0	4.5	4.9	4.1
Tomatoes	2.1	2.7	3.1	3.1	2.8	2.8
Other vegetables	0.9	1.1	1.5	1.8	2.3	1.5
Meat (beef)	0.5	1.2	2.1	2.8	3.7	2.1
Eggs	0.6	1.1	1.4	1.8	2.5	1.4
Fresh milk	2.2	3.5	3.5	3.9	4.3	3.5
Sugar	1.7	3.3	4.3	5.1	5.8	4.0
Confectioneries	0.0	0.2	0.5	0.6	1.3	0.6

Bread, always an important part of the diet, has become more significant with households eating it virtually everyday. Non-bread staples, in particular potatoes, are also important.

Respondents were asked a range of questions concerning their current stock of various foodstuffs, and their perception concerning the household's position with regard to food over the next 6 months and basic necessities in the next 12 months.

The store cupboard in most Tajik households appears to have been almost bare in May 1999 with very low per capita stocks of dried fruits and beans and no stocks of preserved fruits. This is perhaps not surprising as the survey was conducted after winter and spring and before the main harvest period. There is a very strong correlation between food stocks and poverty, highlighting that the poorest households have little cushion by way of stored food.

Table 21: Average stock of selected foods (kg) by quintile of per capita household expenditure

Average per capita stock of food item (kg)	Poorest 20%	2	3	4	Richest 20%	All Taj
Flour	1.9	3.0	3.6	4.3	5.7	3.7
Rice	1.3	2.3	2.2	2.5	4.3	2.5
Vegetables	0.8	1.4	1.9	2.7	3.3	2.0
Beans	0.1	0.2	0.2	0.3	0.4	0.3
Dried fruits	0.2	0.5	0.6	0.7	1.5	0.7
Oils and fats	-	0.1	0.1	0.2	0.3	0.1

Although the survey was conducted before the harvest, households were not uniformly optimistic that their situation with regard to food would improve in the coming months. Just under a half of all households thought it would definitely get better, but this fell to only 30 percent for amongst the poorest households. This may reflect that even if food availability increased with the harvest, many households felt uncertain that their access to food would improve. In fact just under a fifth of all households thought that their food situation would get worse, and this rose to a quarter amongst the poorest.

Table 22: Households perceived situation with regard to food in the next 6 months by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Definitely get better	30	48	43	50	53	47
Stay the same	37	34	37	35	33	35
Definitely get worse	25	18	20	15	14	19
Total	100	100	100	100	100	100

Note: chi-square significant at ($p<0.001$)

Households also expressed disquiet regarding their ability to provide themselves with the most basic necessities over the next year. Concern was widespread across the republic, with 77 percent reporting that they were 'very concerned' and a further 18 percent were a 'little concerned'. Even amongst the better-off households, over 90 percent were a little or very concerned.

Table 23: Households concern over provision of basic necessities in the next 12 months by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Very concerned	87	81	78	75	62	77
A little concerned	11	15	17	20	27	18
Neither worried or not worried	1	2	3	4	7	3
Rather unconcerned	1	2	2	1	4	2
Not at all concerned	-	1	-	-	-	<1
Total	100	100	100	100	100	100

Note: chi-square significant at ($p<0.001$)

This concern is further reflected in Table 24. Only two percent of households thought that they would be much better off in 12 months time and a similar figure thought that they would be much worse off. However, more households are optimistic than pessimistic, even amongst the poorest.

Table 24: Households perception concerning whether in 12 months time they will be better off or worse off than today by quintile of per capita household expenditure (%)

	Poorest 20%	2	3	4	Richest 20%	All Taj
Much better	3	2	2	3	3	2
Somewhat better	33	41	46	47	53	44
Nothing will change	42	42	39	36	31	38
Somewhat worse	16	14	12	13	13	14
Much worse	6	1	1	2	1	2
Total	100	100	100	100	100	100

Note: chi-square significant at ($p<0.001$)

6. Subjective measures of household welfare in Tajikistan. How do they relate to objective measures?

There have been very few attempts to measure subjective economic welfare in the FSU. Ravallion and Lokshin (1999) examined subjective household welfare in Russia, using a nine-point Cantril type ladder, where respondents were asked to place themselves on the ladder bearing in mind that poorest were on the first step and the richest on the ninth step. A similar question was included in the TLSS:

> *Please think of a nine-step ladder. The extremely poor would be at the bottom of the ladder (step 1) and the rich would be at the top (step 9). At which step would you place yourself today?*

The majority of households in Tajikistan ranked themselves as being on the bottom half of the ladder, with 11 percent extremely poor (rung 1), 23 percent on rung 2 and 31 percent on rung 3. Given the findings in tables 22-24 it is not surprising that most households 'feel' poor. But tables 22-24 also suggest that subjective concerns about food and the provision of basic necessities are not perfectly correlated with objective measures of welfare using money metric measures.

Table 25: Joint distribution of objective and subjective measures of household welfare

Per capita household	**Subjective rank**							
Expenditure rank	**1**	**2**	**3**	**4**	**5**	**6**	**7+**	**Total**
1	**57**	*73*	63	20	8	1	2	224
2	*51*	**127**	*151*	81	42	1	3	456
3	69	*125*	**201**	*124*	81	10	1	611
4	28	79	*117*	**96**	*62*	11	3	396
5	17	45	69	*66*	**54**	*10*	3	265
6	2	7	7	8	*10*	*1*		35
7+			3	1	8	*1*		12
Total	224	456	611	396	265	35	12	1999

Note: Spearman Correlation 0.254; Cramer's V = 0.137; chi squared 194 (significant at $p<0.0001$)

In order to compare the objective and subjective distributions of household welfare, rather than use quintile groups as above, households were ranked by per capita expenditure and then assigned to categories in such a way that the number of respondents in each category is equal to the number of respondents in the corresponding subjective welfare group. The highest 7th, 8th and 9th rungs were condensed into one category due to the very small number of responses. Table 25 summaries the joint distribution of the subjective and objective indicators of welfare.

The matching of objective and subjective rankings *is* statistically significant. The matrix is dominant diagonally, and the majority of households ranked themselves within ± 1 category of their actual objective ranking. The lowest correlation was at the two ends of the ladder. Of the 224 who placed themselves on the lowest rung of the ladder, only 57 were amongst the poorest households as measured by per capita expenditure. Interestingly, those households who placed themselves on the top rungs were actually more likely to be ranked as poor by the objective measure – indicating either that under-reporting of expenditure is worst amongst better-off households (a phenomenon that is found elsewhere in the world) or that subjective well-being is related to other factors.

The fact that over two-thirds of households ranked themselves as being on the bottom three rungs of the Welfare Ladder is reflected in Table 26 which shows household's satisfaction with life in general[9]. 65 percent of respondents are either unsatisfied or very unsatisfied with their life at present.

Table 26: Satisfaction with life at present (%)

	Poorest 20%	**2**	**3**	**4**	**Richest 20%**	**All Taj**
Very satisfied	-	1	<1	<1	1	<1
Satisfied	19	30	38	38	45	34
Unsatisfied	63	58	54	54	49	55
Very unsatisfied	19	10	8	8	5	10
Total	100	100	100	100	100	100

Note: chi-square significant at ($p<0.001$)

9 The Spearman rank correlation between subjective poverty and life satisfaction was high at 0.45, and significant at $p<0.0001$).

These findings are disturbing as they indicate high levels of psychological stress and insecurity within the Tajik population. Taking a broad view of well-being, it is clear that not only are there high levels of economic (or material) poverty, but also growing social exclusion and alienation.

7. Summary discussion

The picture painted by the above analysis is a bleak one.

- Levels of material poverty in Tajikistan are high, with over 95 percent of the population living below the provisional official minimum consumption basket, four out of five 'poor', a third 'very poor' and nearly 20 percent 'extremely poor' (below $1 PPP).
- Levels of subjective poverty are also high. Two-thirds of households rank themselves as being amongst the poorest in society. Three-quarters are very concerned about how they will provide for basic necessities in the next 12 months.
- As well as financial and psychological stress, there are also signs that many households are suffering from food insecurity. Nearly half of the population has reduced the number of meals that they eat in a day and/or is eating smaller proportions. This may have a damaging long term impact on the nutritional and health status of the population.
- A quarter of households report having had to sell household assets in the last 6 months, and a third have had to go into (or increase) debt by borrowing. Amongst the very poorest, 7 percent have resorted to begging.
- There is also evidence that a significant proportion of children are missing from school due to financial hardship. The most common reason for absence, excluding the weather, is lack of shoes and clothing. This will have a damaging long term impact both upon the welfare of the child itself, in terms of future earning capacity, but also for the nation as a whole in terms of the future human capital of Tajikistan.
- It is unlikely that the government will be able to alleviate much more than a small fraction of poverty. To raise everyone to a level around the subsistence minimum would require the government to devote *all* of GDP to this task. Even if alleviation efforts were targeted exclusively on the very poor (below 10,000TR a month),

this would require social protection expenditure to rise to nearly 6 percent of GDP.

- Amongst the strongest correlates of poverty was the number of children in the household. Given this, and the widespread nature of poverty, it seems sensible to target what limited resources there are on children. Targeting through schools may have the added benefit of improving enrolment and attendance rates. Targeting through school meals may also improve nutrition.

Appendix 1

The sensitivity of the poverty profile to alternative assumptions of equivalence scales

In order to compare the living standards of different households it is necessary to adjust total expenditure for household demographic characteristics, and for different cost functions between households, by incorporating economies of scale and employing equivalence scales. Household members have different needs depending on their age, location and personal characteristics. Economies of scale generally arise due to per capita economies in sharing utility and housing costs, although in Tajikistan this was not very significant in the past as the State provided those services.

Typically equivalent household consumption is defined as follows:

$$E_e = E / n^{\theta}$$

E_e is the household equivalent expenditure (or income), E is total household expenditure (income), n is household size. θ is the elasticity of household needs with respect to household size: an elasticity of 1 is equivalent to dividing by the number of persons in the household (and assumes no economies of scale and that the needs of children in the household are the same as those of adults), while an elasticity of zero implies that aggregate household expenditure is the relevant indicator of individual welfare. It has been argued that the choice of equivalence scale can significantly alter the profile of poverty (Lanjouw and Ravallion, 1995). In particular, work by Lanjouw, Milanovic and Paternostro (1998) found that using a per capita welfare indicator can lead to a conclusion that larger households are poorer, whilst alternative equivalence scales will reverse this policy conclusion.

The derivation of equivalence scales involves several factors including how needs vary with age and activity level and the share of food in total household expenditure. Many equivalence scales take the food share of low income families as a reference (Ravallion 1998). Foley estimated θ at 0.9 for Russia in 1992 (Foley 1993). In 1997, however, Foley considered that household economies of scale in consumption could be ignored and that household per capita consumption was a good enough approximation, although he recognised that this situation would change as Russian housing and utility prices were liberalised.

Other poverty assessments in the region, most notably Kazakhstan, Azerbaijan and Armenia, have also taken household per capita

consumption as the main welfare indicator. The poverty assessment in Kyrgyzstan using data from the 1993 KLSS employed a poverty line which reflected different needs by age and sex, but which did not incorporate any additional factor for household economies of scale.

Below we present data on impact on the poverty profile of using a range of alternative equivalence scales within Tajikistan.

(A) HOUSEHOLD SIZE

Table A1.1: The risk of household poverty by household size (%)

Household size	**Expenditure**					
	θ = 0.5	**θ = 0.6**	**θ = 0.7**	**θ = 0.8**	**θ = 0.9**	**θ = 1.00**
1	52.0	36.0	24.0	12	0	0
2-4	23.3	20.7	17.5	14.9	11.5	10.1
5-9	21.0	21.3	22.0	22.3	22.1	21.4
10-14	12.4	14.9	16.5	18.3	22.7	25.8
15+	6.8	8.5	10.2	13.6	20.3	25.4
All	20	20	20	20	20	20

Table A1.1 shows the risk of poverty, defined as being in the bottom 20% of the distribution of expenditure, by household size using different equivalence scales with the value of theta varying between 0.5 and 1.00. The data confirm the findings of Lanjouw, Milanovic and Paternostro (1998) that using a per capita poverty standard results in a higher proportion of larger households, and a lower proportion of smaller household, being defined as poor. This conclusion is reversed when theta takes a value between 0.8 and 0.7. This points towards a value of theta of 0.7-0.8 for Tajikistan. This would be consistent with the share of food in total expenditure, which as we saw in Table 10 was 0.79 for the bottom quintile.

(Note that the risk of poverty for households with between 5 and 9 members does not appear to vary according to changes in the value of theta. The average household in Tajikistan in 1999 contained 7 members).

Although the *risk* of poverty for different household sizes varies considerably depending on the assumption concerning the strength of household economies of scale, the *composition* of the poor varies much less (Table A1.2).

Table A1.2: Composition of poor households by household size (%)

Household size	Expenditure					
	θ = **0.5**	θ = **0.6**	θ = **0.7**	θ = **0.8**	θ = **0.9**	θ = **1.00**
1	3.3	2.3	1.5	0.8	-	-
2-4	20.3	18.0	15.3	13.0	10.0	8.8
5-9	65.5	66.5	68.5	69.5	68.8	66.8
10-14	10.0	12.0	13.3	14.8	18.3	20.8
15+	1.0	1.3	1.5	2.0	3.0	3.8
All	100	100	100	100	100	100

Over two-thirds of poor households contain between five and nine members, regardless of which equivalence scale is used. Even at the most extreme assumption of economies of scale, only 3 percent of poor households are single person households. At the more realistic assumption of theta being equal to 0.8, single person households make up just under 1 percent of all poor households.

(B) AGE

One of the most important findings of the work of Lanjouw, Milanovic and Paternostro (1998) from a policy perspective was that the use of a per capita definition of household welfare effectively discriminated in favour of households with children at the expense of the elderly; the logic being that elderly persons are much more likely to live in smaller households than children.

Table A1.3 presents data to examine whether this is the case in Tajikistan. Note that *individuals* are defined as being poor if they live in households in the bottom quintile, ranked according to equivalent *household* expenditure. Note that given that household size is related to poverty, we would not automatically expect a fifth of all individuals to be located in the bottom quintile of the household distribution. As the table demonstrates, this proportion varies according to the assumption regarding the value theta.

Table A1.3: The risk of individuals living in poor households by age (%)

Age group	Expenditure					
	θ = **0.5**	θ = **0.6**	θ = **0.7**	θ = **0.8**	θ = **0.9**	θ = **1.00**
0-15	18.9	20.0	21.1	21.9	23.3	24.2
16-64	16.6	17.1	17.7	18.7	20.0	20.9
65+	20.9	22.1	22.2	22.9	22.4	21.9
All	17.8	18.6	19.4	20.3	21.6	22.4

Both elderly persons (aged 65 and over) and children (aged less than 16) are more likely to be poor than individuals on average, regardless of the assumption concerning the value of theta. However at values of theta 0.9 or greater, children are more likely to living in poor households than elderly persons whilst the reverse is true for values of theta of 0.8 or less. This adds weight to the argument of a value of theta of 0.8 as being appropriate for Tajikistan.

Table A1. shows how this would alter the age composition of the poor. Children under 16 comprise 45 percent of the total population of Tajikistan, whilst older people aged 65 and above make up just over four percent. Both groups are over-represented amongst the poor, but not by a significant factor. Alternative values of theta may affect some individuals, but not the overall picture of poverty by age.

Table A1.4: Composition of individuals living in poor households by age (%)

Age group	Expenditure					
	θ = **0.5**	θ = **0.6**	θ = **0.7**	θ = **0.8**	θ = **0.9**	θ = **1.00**
0-15	47.6	48.2	48.7	48.5	48.5	48.5
16-64	47.3	46.7	46.3	46.6	47.0	47.3
65+	5.1	5.1	5.0	4.9	4.5	4.2
All	100	100	100	100	100	100

(C) URBAN – RURAL DIFFERENCES

Table A1.5: The risk of household poverty by type of settlement (%)

	Expenditure					
	θ = 0.5	**θ = 0.6**	**θ = 0.7**	**θ = 0.8**	**θ = 0.9**	**θ = 1.00**
Urban	20.8	19.7	18.4	17.8	16.2	15.1
Rural	19.7	20.1	20.6	20.8	21.4	21.8
All	20	20	20	20	20	20

It is generally the case that poverty rates are higher in rural areas than urban areas. However, the greater the economies of scale within households that are assumed, the smaller the differential between urban and rural areas and with the extreme assumption of a value of theta equal to 0.5 the relationship is reversed. However, at levels of theta of 0.8, urban households are still more likely to be poor than rural ones.

(D) REGION

Table A1.6: The risk of household poverty by region (%)

Region	Expenditure					
	θ = 0.5	**θ = 0.6**	**θ = 0.7**	**θ = 0.8**	**θ = 0.9**	**θ = 1.00**
Dushanbe	12.5	10.8	10.2	7.4	5.7	5.1
GBAO	32.5	33.8	33.8	32.5	31.3	32.5
RRS	11.6	12.3	13.0	13.7	14.6	15.7
Leninabad	23.5	22.5	21.2	21.2	20.4	19.7
Khatlon	22.6	23.3	24.1	24.6	25.3	25.1
All	20	20	20	20	20	20

The poverty rate in Dushanbe is most affected by alternative assumptions concerning the strength of household economies of scale, varying from just 5 percent on a per capita measure to over 12.5 percent on the strongest assumption of theta taking a value of 0.5.

Although the level of poverty is affected by the assumptions concerning equivalence scales, the *ranking* between regions is not significantly affected, despite the fact that there are regional variations in household size and composition. Mean household size varies between

5.2 in Dushanbe to 8.3 in RRS, with households averaging 7.0 people in GBAO, 6.1 in Leninabad and 7.7 in Khatlon.

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