

LIVING STANDARDS AND POVERTY IN MOLDOVA

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2004

1. Introduction

Poverty in Moldova is widespread and endemic, with poverty rates averaging 60 percent from 1997 to 2002.¹ As a starting point for a profile of poverty rates and a description of recent trends, it is useful to put the macroeconomic situation in context². Following significant declines in GDP in the early nineties, GDP per capita began to recover through 1997, only to suffer due to vulnerability of the Moldovan economy to the Russian crisis. GDP fell by more than 6 percent in 1998; by 1999, GDP per capita was similar to levels in 1994. Overall, GDP declined by over 65 percent between 1990-2000. The movement in the poverty rate in recent years has paralleled these significant macroeconomic developments. From 1997 to 1999, Moldova experienced continued increases in poverty, from a rate of 47 percent to a peak of 71 percent (Figure 1). By 2000, the poverty rate started to decrease, with a significant reduction of 12 percentage points from 2000 to 2001. Nonetheless, the poverty rate at 62 percent in 2001 was still higher than it was before the 1998 Russian crisis. With poverty continuing to decline with the economic recovery, poverty rates in 2002 returned to 1997 levels. Overall, growth appears to have played a crucial role in poverty reduction.³

The degree to which Moldova was vulnerable to the economic crisis in Russia is explainable, in part, as the economy has been more trade-dependent than other transition countries, such as Ukraine and Romania. In Moldova, the ratio of exports and imports to GDP is extremely high with exports totaling over one half of GDP and imports accounting for more than 70 percent of GDP throughout the 1990s. In 1997, the trade intensity ratio (exports plus imports divided by GDP) was 1.29, one of the highest among FSU countries, compared to an FSU average of 0.99. Furthermore, trade has been concentrated on one key partner, Russia, and on other FSU countries.

In the context of the rapid economic changes in Moldova, the objective of this report is to examine multiple indicators of well-being to provide greater insight into the profile and dynamics of poverty in Moldova. A profile of poverty is crucial to the design of effective anti-poverty measures that will enable the country to reduce poverty more effectively while promoting economic growth. The next sections of this report describe: (i) an overview of expenditure-based poverty and inequality measures, (ii) international comparisons (iii) non-income based measures of poverty, (iv) poverty profile and changes in risk, (v) patterns of poverty during crisis and recovery, and (vi) recommendations for improving the monitoring of poverty and living standards.

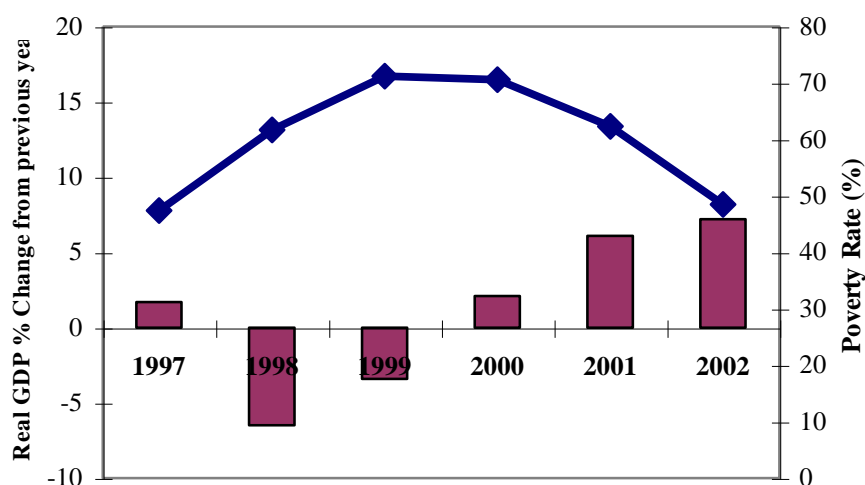
This note was prepared as background material for the World Bank Report No. 28024-MD: Recession, Recovery and Poverty in Moldova (2004).

¹ The data used for the statistics on poverty are computed from the Household Budget Survey collected by the Department of Statistics and Sociology (DSS) quarterly starting in the second quarter of 1997. The provision of the data and documentation by the DSS is gratefully acknowledged. The term "poverty" refers to expenditure-based measures of poverty. See Signoret (2003) for a complete description. Following other statistics, including official poverty statistics, the results presented refer only to the Right Bank zone of Moldova; Transnistria is excluded.

² See Porto (2003) for a more detailed examination of the linkages between macroeconomic development and poverty rates.

³ Growth is not always associated with poverty reduction. See, for example, Georgia Poverty Update (World Bank, 2002) where economic growth occurred while poverty increased.

Figure 1: Moldova GDP Changes and Poverty Rates (1997-2002)



2. Trends in socio-economic indicators of well-being

Poverty and inequality

Poverty is a multi-dimensional concept. We begin this overview by using the most common indicator of poverty: expenditure poverty.⁴ Table 1 presents the core indicators of *absolute* poverty where the expenditure measure is compared against an absolute poverty line.⁵ The poverty rate is extremely high for every year for which we have data. Nearly half of the population were living in poverty in 1997 and, again, in 2002 (about 1.75 million of the 3.6 million people as of the 1997 census).

While the poverty headcount concept, in and of itself, is a powerful tool, it provides a partial picture of poverty in the population. Other related measures include the poverty gap (the gap between the expenditure of the poor and the poverty line) and poverty severity (measuring how far the poor are from the poverty line). Using these additional measures, from 1997-1999, we find that the poor got poorer. That is, the poverty gap, a measure of the depth of poverty, grew (the regional breakdown is presented in Appendix 1). Assuming perfect targeting of the poor, the poverty gap reflects the total amount needed to bring expenditure of households in poverty up to the poverty line. For example, in 1997, one would need to spend 17 percent of the poverty line (which is 196 lei/month/person in 2001 prices) for each poor person on average to have no poverty. Overall, in 2002, the total poverty gap was about 7 percent of annual GDP, a substantial amount. The severity of poverty grew as well. Between 2000 and 2001, however, the rate, depth, and severity of poverty started to recede. Poverty levels by 2002 had returned to their 1997 levels; likewise, poverty gap and severity were close to 1997 levels.

⁴ Consumption-related expenditure consists of the following components: food, tobacco, drugs, clothing, footwear, health care, education, transportation, communication, and entertainment. The aggregate used for this analysis excludes utilities (where pricing and subsidy policy changed during the period such that consumption value is difficult to ascertain), housing (which is difficult to value given the very thin rental market), and consumer durables which are lumpy expenditures. Appendix 1 shows the consumption patterns by expenditure quintile for 2002.

⁵ The absolute poverty line is 196 lei per person per month in 2001 Q4 prices for consumption expenditures outlines in footnote 1. It is computed following the cost-of-basic-needs approach. It is the sum of the food poverty line (the cost to buy 2100 calories given the consumption patterns of the 3rd-5th deciles) and the nonfood expenditures of those with total expenditures near the food poverty line. For comparison, the PPMU (2003) poverty rate is 40 percent applying an OECD equivalence scale and using a poverty line of 271 lei in 2002 prices (for food of 2,282 kcal/day and nonfood basic needs, including utilities, housing and consumer durable expenditures). Signoret (2003) computes the cost of 2,282 kcal/day and non-food basic-needs at 253 lei, which is approximately 266 lei adjusting for 2001-2002 inflation.

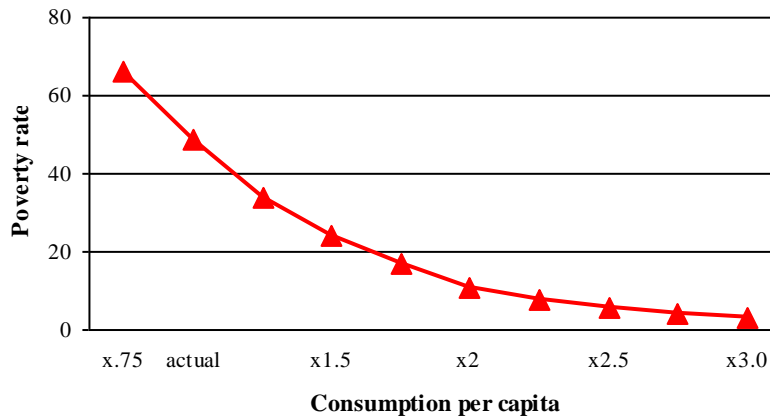
Table 1: Moldova: Absolute Poverty and Inequality Statistics

	1997	1998	1999	2000	2001	2002
<i>Poverty Measures</i>						
Headcount	47.4	61.6	71.2	70.6	62.4	48.5
Gap	16.5	25.1	29.7	28.9	24.0	16.5
Severity	7.9	13.2	15.7	15.0	12.0	7.6
<i>Extreme Poverty Measure</i>						
Headcount	37.5	51.7	61.3	60.9	52.0	37.8
<i>Inequality Measures</i>						
Gini coefficient	0.35	0.37	0.35	0.34	0.36	0.34
90/10 decile ratio	9.9	11.1	9.6	9.3	10.0	9.0

Focusing on a more extreme measure of poverty, we can use the food poverty line as a lower poverty threshold. The extreme poverty headcount has followed a similar pattern to that of poverty. Extreme poverty rates are about 10 percentage points lower than the poverty level. Generally, more than 80 percent of the poor are living in extreme poverty. By 2002, the extreme poverty rate was 38 percent, the same as the level in 1997.

The responsiveness of poverty to expenditure growth depends on the extent to which poor households fall below the poverty threshold. Figure 2 plots changes in per capita expenditure and corresponding poverty rates for a given increase in expenditure using data from 2002. This figure highlights the responsiveness of poverty rates to income growth, assuming growth changes that are constant across the distribution. In a similar assessment of the macroeconomic growth and poverty, Porto (2003) also shows a high elasticity of poverty to economic growth. At the same time, we can observe from Figure 2 that with considerable increases in expenditure among poor households, we would still observe very high poverty rates. For example, with an increase of 50% for expenditures of the poor, more than one fifth of the population would still live in poverty.

Figure 2: Poverty Incidence Curve



BOX 1: MEASURING POVERTY.

Based on a poverty line for the fourth quarter of 2001 at 196 lei per person per month, in 2002 about 48 percent of the Moldovan population were considered poor.

BUT WHAT IS POVERTY?

Poverty is a multidimensional concept encompassing numerous aspects of well-being. In practice, no one indicator can capture all dimensions. Nevertheless, measures of poverty are routinely constructed to identify the poor, helping policy-makers and researchers in understanding who is poor. The poverty measure in this report is based on standards adopted in many World Bank reports, evaluating a monetary measure of consumption-related expenditures compared to a cost-of-basic-needs (poverty line) below which a person is deemed to be poor.

BUT WHY NOT USE INCOME?

For the Moldova poverty profile, household welfare is based on total household consumption and expenditures (including implicit expenditures on home-produced food items). While welfare is measured by income in other settings (for example, income-based welfare is standard in the United States and developed economies) in developing and transitional economies, measuring income is problematic. First, many people do not have regular income, making current income difficult to assess at any point in time. Second, income from farm activities may be hard to enumerate if households do not keep formal accounts of revenues and expenditures. Third, households are likely to intentionally under-report earnings from informal activities. In Moldova, agriculture's share of GDP has remained steady at about 30 percent and there is a large informal sector. Income from self-employment, agricultural activity accounts for a sizeable share of household income, on average (See Appendix 1). Thus given the considerable measurement issues, for this report, income is deemed to not be a suitable standard with which to assess poverty in Moldova. The official poverty statistics, as computed by the Department of Statistics and Sociology, does use monthly household income as the basis for poverty measurement (DSS, 2001).

While poverty rates had return to 1997 levels, the considerable changes in the economy may have changed other facets of the distribution of income. There are several ways to assess inequality. The most widely used single measure of inequality is the Gini coefficient. The Gini coefficient is based on the Lorenz curve, a cumulative frequency curve that compares the distribution of a specific variable (e.g. income) with the uniform distribution that represents equality. The Gini coefficient takes on values between 1 (complete unequal society) and 0 (perfectly equal). A second widely-used inequality measure is the decile ratio (90/10 ratio), which presents the ratio of the average expenditure of the richest 10 percent of the population divided by the average expenditure of the poorest 10 percent. This measure perhaps better captures the relative position of the poorest in the population, rather than the Gini coefficient, which can be difficult to interpret with respect to inferences about the poor and poverty. In this sense, the 90/10 ratio may be a more appealing indicator monitoring inequality and progress at poverty alleviation in Moldova. These summary statistics are also presented in Table 1.

The Gini coefficient shows little change aside from an increase in inequality between 1997 and 1998 and a decrease in inequality after 1998. Inequality measured by the 90/10 ratio shows a similar trend, but with a decline from 2001 and 2002. By region, we see more variation across areas (Appendix 1). In large cities, there was a slight increase in inequality from 1997-2001 and a decrease from 2001 to 2002. Inequality declined in rural areas from 1997 to 2000.

Turning to regional poverty trends, the population in small towns consistently have higher poverty rates than those in large cities or rural areas (Figure 3). Following small towns, the population in rural areas had the higher poverty rates than large cities. This was the pattern in every year from 1997 to 2002. While rankings were maintained and the changes in poverty from 1997 to 2002 generally were in the same direction across locations, the magnitude of these changes varied considerably (Figure 4).

Poverty rates increased most in rural areas with the onset of the economic crisis (1997 to 1998), but large cities had larger increases in poverty from 1998 to 1999. More recently, household in large cities have experienced larger proportional declines in poverty headcount during the economic growth from 2001 to 2002.

Figure 3: Regional Poverty Rates (1997-2002)

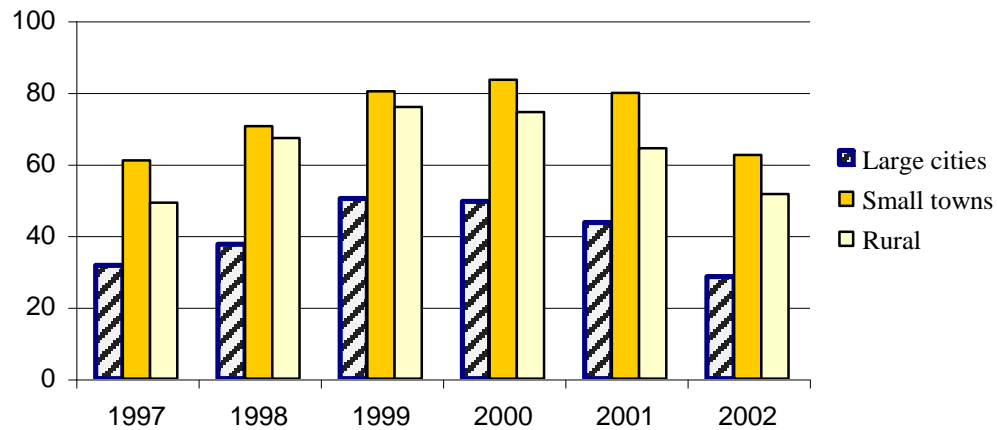
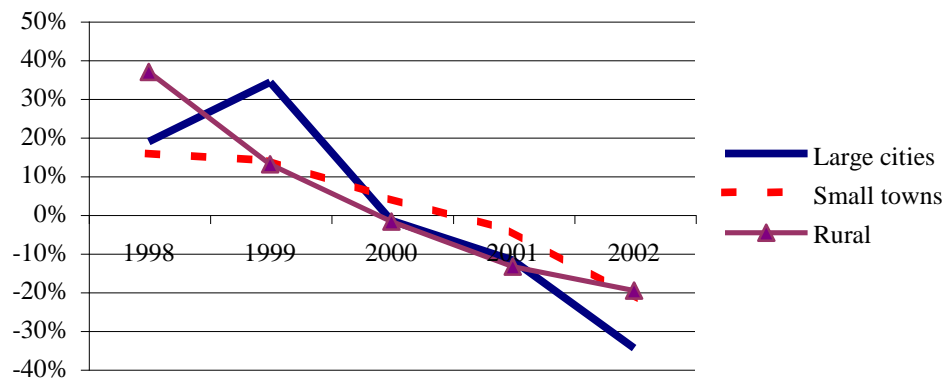


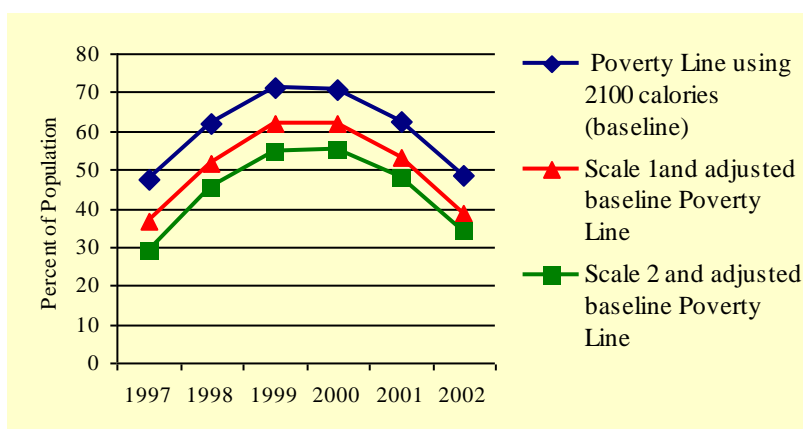
Figure 4: Percent Change in Poverty Rate From Previous Year



BOX 2: ADJUSTING FOR HOUSEHOLD SIZE AND COMPOSITION.

The baseline for this report is a *per capita* expenditure measure. A per capita adjustment simply divides the total household expenditure by the number of household members. More complicated equivalence scales consider that there may be *economies of scale* in expenditure. For example, a 2-person household does not imply double expenditures on housing, utilities or other non-food items for which expenditure can be shared (these are public goods whose cost does not vary whether one person or a number of people use the good). Larger households might also buy food or nonfood items in bulk which can mean lower prices or discounts. Moreover, the age structure of household members, where a child is assumed to not be equivalent to an adult in terms of needs, could be considered by using *adult equivalent* adjustments for composition. The choice of equivalence scale reflects judgments about differences in needs. Adjusting for household size and composition can be done in numerous ways, and there is not a clear dominant choice and, therefore, no widely accepted scale. Rather, it is important to ascertain that the general profile is robust to choice of scale, be it per capita or other scales (See Signoret, 2003, for more details). There are two ways to evaluate different scales: reset the poverty line using different adjustments to household composition and then compare poverty rates and trends (see Box Figure below). Alternatively, holding a fixed poverty rate, one can evaluate the ranking of different households for a given poverty rate.

The box figure compares per capita results with a scale setting children equal to .5 adult members in terms of expenditure (Scale 1) and then also allowing for economies of household size of 0.75 (Scale 2). The latter is almost equivalent to the OECD scale. See Appendix 3 for a comparison setting a fixed poverty rate and evaluating the profile of the poor for 4 different characteristics.



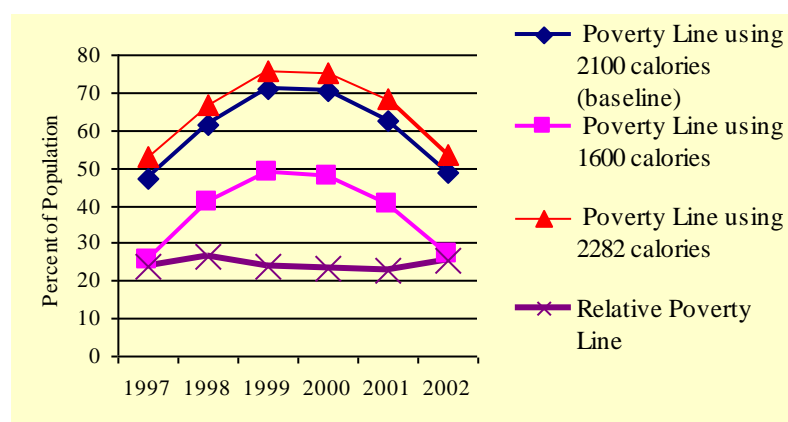
BOX 3: CHOICE OF POVERTY LINE.

ABSOLUTE VS. RELATIVE POVERTY MEASURES.

By assessing the poverty line using a cost-of-basic needs approach, we will have a poverty line that indicates an *absolute* measure of poverty. An alternative approach measures *relative* poverty within a country, using a poverty line based on the distribution of a welfare measure, such as 60 percent of median income (the standard in Western Europe). In low-income economies, however, a relative measure is not a useful indicator of the fraction of the population unable to meet minimum living standards. Moreover, relative poverty measures do not provide a clear indication of trends in poverty over time, as they also reflect distributional changes. Relative poverty rates are not useful for monitoring poverty over time. The box figure plots poverty rates using alternative poverty lines, including a relative line of 60 of median per capita expenditure in the year.

ABSOLUTE POVERTY: SETTING A MINIMUM STANDARD.

The baseline poverty threshold in this report estimates the cost of a minimum basket for 2,100 calories. Choosing a more generous minimum food basket (in terms of more expensive calories) will result in a higher poverty line and higher poverty rate; likewise a higher calorie standard will increase the poverty threshold since more calories cost more. The Poverty and Policy Monitoring Unit (2003) uses a higher calorie threshold (2,282) for costing the food basket. Alternatively, the official poverty statistics for the Republic of Moldova are based on a subsistence minimum which is not based on the cost-of-basic-needs (i.e. expenditure to reach some minimum calories plus non-food).



International Comparisons of Poverty

Moldova has been, and likely continues to be, poorer than most ECA country in transition both in terms of GDP per capita and poverty rates.⁶ International comparisons of poverty rates are difficult to make based on absolute poverty lines, since different countries set different subsistence minimum standards. Rather, comparisons tend to be made using a fixed poverty line, for example the well-known “\$1 per day” poverty estimates. The conversion of dollars per day to local currency units is done using purchasing power parity (PPP), defined as the number of units of a country’s currency required to purchase the same amount of goods and services in that country as compared with another. These PPPs are periodically re-calculated to account for re-weighting and availability of new data course. The most recent PPP conversion factors are for year 1996. This conversion factor is updated using inflation rates for the intervening years.

⁶ Unfortunately, very recent comparative statistics on poverty rates are not available for many countries.

Table 2: Poverty and Inequality in selected ECA countries

Name of Country (year of survey)	Percent <\$2.15/day	Percent < \$4.30/day	Gini coefficient
Slovenia (1997/98)	0.0	0.7	0.28
Czech Republic (1996)	0.0	0.8	0.25 *
Slovakia (1997)	2.6	8.6	0.26 *
Belarus (1999)	1.0	10.4	0.30 *
Hungary (1997)	1.3	15.4	0.28
Bulgaria (2001)	7.9	31.9	0.29
Poland (1998)	1.2	18.4	0.34
Estonia (1998)	2.1	19.3	0.38 *
Kazakhstan (2001)	4.9	37.1	0.29
Romania (1998)	6.8	44.5	0.30 *
Russia (1998)	18.8	50.3	0.47
Georgia (2000)	24.0	63.0	0.39
Moldova (1997)	43.4	82.9	0.35
Moldova (2002)	44.6	83.2	0.34

Notes: Poverty lines are computed using 1996 PPP conversion with adjustment for inflation. World Bank (2002) is the source (unless otherwise mentioned). Bulgaria: World Bank (2002a); Kazakhstan: World Bank (2003); Georgia: World Bank (2002b) * UNDP (2003) is the source for Gini index.. Not all ECA countries are included as computational difficulties make some estimates potentially less reliable.

Before the Russian crisis, in 1997, Moldova had the largest share of the population living below \$4 per day -- about 4 out of 5 people (Table 2). In addition, the distribution of expenditure expenditures, as measured by the Gini coefficient reveals less equality in Moldova than in other countries in the region; aside from Russia, inequality is among the highest in Moldova. Table 3 presents the poverty rates using the range of three common international poverty lines. For the lowest of \$1 per day, nearly ten percent of the population is poor. The standard more typically applied in this region, however, is \$2 and \$4 per day where we observe very larger poverty rates: 45 and 83 percent of the population respectively.

Table 3: Poverty Rates Using International Lines*

	1997	1998	1999	2000	2001	2002
\$1.075/day						
poverty rate	10.5	19.2	23.9	22.2	16.8	9.3
(poverty line in lei/month)	(42.5)	(45.8)	(63.8)	(83.8)	(92.0)	(96.8)
\$2.15/day						
poverty rate	43.4	57.7	67.6	67.1	58.4	44.6
(poverty line in lei/month)	(85.0)	(91.6)	(127.6)	(167.5)	(183.9)	(193.7)
\$4.30/day						
poverty rate	82.9	89.5	93.3	93.6	90.3	83.2
(poverty line in lei/month)	(170.1)	(183.2)	(225.2)	(335.0)	(367.9)	(387.4)

* The 1996 PPP conversion factor is 1.16. The value of the poverty lines in local currency is calculated by applying the conversion factor with adjustment for inflation between the survey year and the year in which the PPPs were calculated. Inflation rates used are: 1.18 (1997), 1.204 (1998), 1.677 (1999), 2.202 (2000), 2.418 (2001), and 2.546 (2002).

Multidimensional Poverty Indicators

While this analysis mostly assesses poverty based on household expenditure, poverty is a multidimensional concept encompassing various aspects of well-being. Different aspects of poverty – expenditure and non-expenditure – interact and reinforce each other in ways that often exacerbate the deprivation that poor people face. Poor health outcomes and low educational achievement not only decrease well-being, but also limit income-earning and expenditure potential. Identifying different dimensions of poverty is important in the context of understanding the profile of vulnerable groups. Households that are not income/expenditure poor may nonetheless be poor in other dimensions. Moreover, some households may suffer from multiple deprivations, thus constituting “the core” of the poor. On the other hand, some indicators of living standards may improve and not be reflected in a concurrent income based measure (such as access to electricity).

Table 4 displays several such indicators related to characteristics of residence and several health-related indicators for three different years. While some differences in housing characteristics can be accounted for based on income-levels, a substantial amount of the gap is due to location effects and not explained in full by income differentials. That is, gaps remain even if household income was controlled for in the analysis. Since location is a strong correlate for these characteristics, for housing, statistics are presented by location; similar information for health statistics was unavailable. Generally, access to some services has improved since 1997 but large differences remain across location, with the rural population generally having very poor levels of physical infrastructure.

Ownership of dwelling is over 90 percent overall, with increases for the population in large cities and small towns since 1997. Home ownership has been nearly universal in rural areas since 1997. Electricity is nearly universal in all locations, although the extent to which households experience electricity interruptions is not measured.⁷ Housing ownership and electricity, however, are the exception since other indicators show very high levels of deprivation for the rural population. Piped water is universal in large cities, but nearly two-fifths of the population in small towns and only five percent of the rural population have piped water. A similar pattern is observed for access to a sewage system. While central heating has become more prevalent, now reaching around one-third of the population, most of this expansion in coverage was found only for those in small towns and large cities. Telephone coverage remains the exception rather than the norm for the rural population where less than one-third of the population has access. On the brighter side, health-related indicators are generally better and some have even improved despite the economic crisis. Maternal mortality rates have declined to 27 per 100,000 live births.

⁷ To underscore the need to assess the reliability of electricity supply, the Kyrgyz poverty assessment noted that practically all households had electricity but only 40 percent had electricity interruptions less frequently than once a week (World Bank, 2002c).

Table 4: Non-Expenditure Basic Indicators (1997, 1999, 2002)

	Large cities			Small towns			Rural		
	1997	1999	2002	1997	1999	2002	1997	1999	2002
Housing Indicators									
Dwelling is owned by household (else state owned, rented, or cooperative housing)	47.2	51.6	64.2	75.7	85.7	87.4	97.0	98.4	99.3
Electricity	100.0	99.7	99.2	100.0	99.1	99.5	99.9	98.4	99.2
Piped water or water pump (else water from well, spring or river)	98.0	99.7	99.8	67.6	64.1	59.8	10.0	6.2	4.9
Sewage system	96.5	97.8	98.1	50.7	45.9	46.2	4.3	1.8	3.0
Hot water	86.7	89.6	90.7	n/a	40.1	43.4	0.6	0.0	0.0
Gas from central system (else gas containers) among dwelling using gas	92.2	95.3	95.6	33.7	46.6	60.5	7.7	7.7	11.0
Central heating (else individual heating source for dwelling)	91.2	93.2	99.1	45.5	48.4	55.2	4.1	3.3	5.5
Telephone	63.7	82.4	88.7	50.5	53.0	60.1	17.1	21.7	29.4
All									
Health-related Indicators				1997	1999	2002			
Infant mortality rate (per 1,00 live births)				19.0	21.2	18.3			
Under 5 mortality rate (per 1,00 live births)				25.2	27.4	23.3			
Maternal mortality rate (per 100,00 live births)				44.1	12.3	27.1			
Percent of pregnant women with some pregnancy consultation				97.0	98.0	97.0			

Focusing more narrowly on children, we find that even with the recent economic crisis, Moldova has managed to maintain a high level of net enrollment for the compulsory years of schooling (See Bonilla-Chacin and Nayar, 2004, for more detail). Enrollment rates at the primary level are almost 100 percent, with no gender, income, or location differential. Likewise, secondary enrollment rates are 92 percent. A more disconcerting trend in child well-being is related to living arrangements. The last few years have seen an increase in the fraction of children who do not live with their mother (Figure 5). This underscores the need to evaluate migration patterns, although the HBS data from 1997 to 2002 is not well-suited for this task because the sample listing was developed in 1997 with no updating in the interim.

Subjective assessments reveal that over half of households report satisfactory or good living conditions in 2002, close to levels in 1997 (Figure 6).⁸ Consistent with expectations, poorer households are less likely to report being satisfied with living conditions. Nevertheless, a considerable share of the non-poor report being unsatisfied. The economic volatility, in particular cash flow problems resulting from, for example, pension and wage arrears, can also lead to stress on households. Half of all poor report having some difficulties paying for municipal services, while about one-third of non-poor households report such difficulties (Figure 7). Along with housing and health indicators, these results underscore that the our monetary indicator of poverty is only part of the story.

Figure 5: Percent of Children 0-17 Years Who Do Not Reside with their Mother

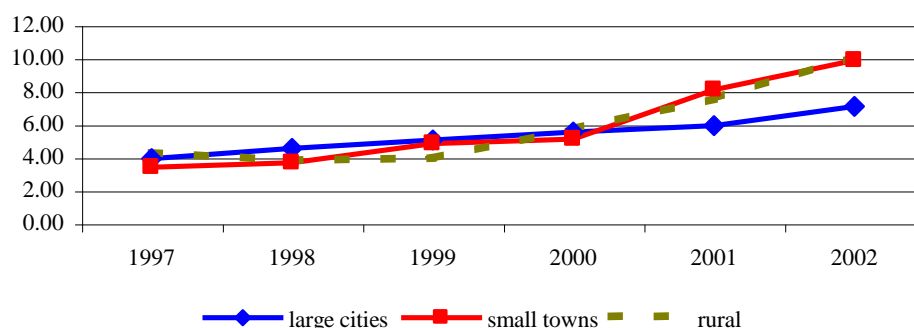
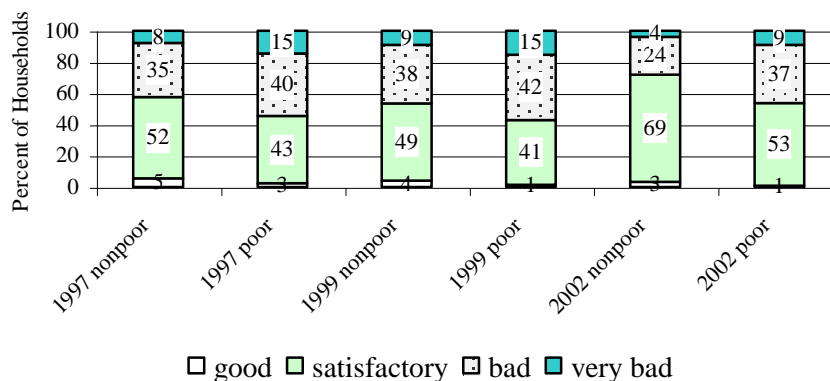
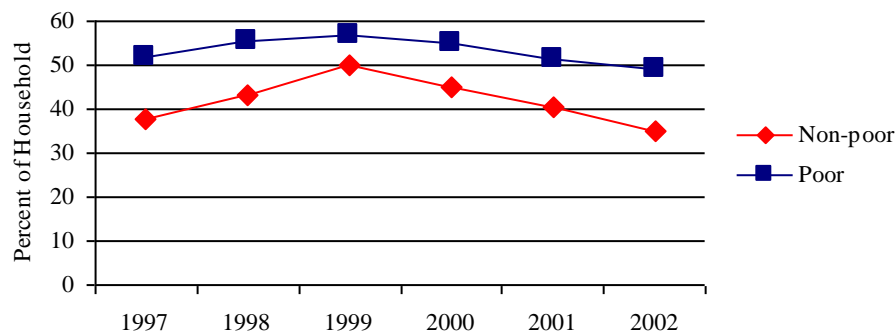


Figure 6: Self-Assessed Living Conditions of Household



⁸ The question asked was "How do you evaluate living conditions of your household?".

Figure 7: Often Has Difficulties Paying for Municipal Services



3. Profile of Poverty

Who are the Poor? Poverty Rates and Poverty Risks

The Moldova-specific poverty profile can be drawn for a number of social and economic measures, such as place of residence, primary activity of the household head (work, retirement, etc.), education, and presence of children in the household. Signoret (2003) presents a more exhaustive set of statistics; here we focus on a subset of the profile presented in Signoret (2003). We start with an examination of poverty rates across groups (Tables 5 and 6), followed by statistics on relative poverty risks (Tables 7 and 8), and then focus on identifying the population of poor -- the intersection of poverty rate and population shares.

Table 5 reports the poverty and extreme poverty rates by location and demographic characteristics. As noted earlier, poverty rates in large cities have been lower than rates in small towns and among the rural population. This is relatively common throughout the FSU. The unique circumstance in Moldova, however, is that even in large cities over one quarter of the population is poor and one fifth are living in extreme poverty. As in many other transition economies, large households are more likely to be in poverty than small households. Similarly, households with many children and elders are more likely to be poor (results presented in Signoret, 2003). Poverty rates are monotonically increasing in the number of children in the household. Households headed by older people over 50 are less likely to be poor than those head by adults 30-49 years, a reflection of several co-factors such as returns to experience in employment and pension income, as well as household size. Poverty rates are lowest for people in households in which the household head has some higher (post secondary) education (excluding vocational training). Still, one quarter of these households are poor. Households headed by males had slightly higher poverty rates than those headed by females. While this may seem counterintuitive, given lower relative female earnings throughout the world, it may reflect the interaction of other characteristics with the designation of household head. By age of individuals, consistent with patterns for households with more children, we see higher poverty rates among children (59%) than among adults 16-59 (46%) and older adults (42%).

Table 5: Poverty and Extreme Poverty Rates by Location, Education, and Composition in Moldova

	Poverty			Extreme Poverty		
	1997	1999	2002	1997	1999	2002
<i>By location</i>						
Large cities	31.6	50.4	28.5	23.3	40.8	18.3
Small towns	61.0	80.3	62.5	49.9	72.0	52.4
Rural	49.1	75.8	51.6	39.1	65.4	40.5
<i>By age of household head</i>						
<30 years	46.4	72.4	43.9	35.6	63.3	35.7
30-39 years	48.8	76.6	54.8	39.7	68.1	44.2
40-49 years	48.9	70.5	50.7	38.0	61.0	41.0
50-59 years	46.6	65.7	43.5	37.6	56.1	33.1
60-69 years	42.9	66.4	44.1	33.2	53.9	32.0
>=70 years	48.6	72.1	47.6	38.1	58.5	32.9
<i>By education of household head</i>						
Higher education	29.0	49.2	24.1	21.5	38.1	15.3
Technical	49.6	69.8	44.2			
College/Secondary				39.8	61.3	32.9
Secondary completed	50.8	75.6	53.9	40.1	66.6	43.7
Secondary incomplete	51.8	78.3	54.4	40.2	68.0	43.6
Less than secondary	46.6	74.7	52.7	38.8	60.0	38.9
<i>By sex of household head</i>						
Male	47.5	72.6	49.6	37.3	62.5	38.8
Female	46.8	67.3	46.2	38.1	58.0	35.4
<i>By number of children in household</i>						
No children	35.6	60.5	36.8	26.2	49.2	26.8
1 child	47.9	73.0	53.0	38.0	64.5	41.9
2 children	55.5	81.3	60.9	45.7	72.5	48.1
3 children	61.3	87.9	75.9	51.2	75.8	65.4
4+ children	71.7	89.7	87.5	59.9	84.6	83.3
<i>By age of individual</i>						
Children 0-15	54.0	78.6	59.2	43.9	69.4	48.1
Adults 16-59	45.7	69.1	46.4	36.1	59.7	36.5
Adults 60+	41.7	67.4	42.4	31.3	54.5	29.7

Table 6: Poverty rates among economic groups in Moldova

	Poverty			Extreme Poverty		
	1997	1999	2002	1997	1999	2002
By household head's main source of income						
Farmer	49.1	74.0	53.9	36.8	62.5	45.0
Hired in agriculture	53.5	79.9	66.2	42.6	70.9	54.0
Hired in non-agriculture	43.1	65.6	40.9	34.3	56.8	30.9
Self-employed	34.8	51.8	33.1	29.3	44.3	24.8
Pensioner	46.5	71.2	46.8	36.6	58.4	33.9
Other	38.9	68.5	25.4	31.4	63.1	21.1
Unemployed and looked for work last 7 days	64.4	73.6	57.0	58.2	70.0	49.7
By household head's employment status last 7 days						
Employed	47.0	71.1	49.6	37.3	61.8	39.5
Inactive	48.1	71.2	45.5	37.9	59.3	33.0
Unemployed and looked for work last 7 days	62.1	74.9	57.3	53.0	73.6	49.8
<i>By household head's sector of work</i>						
Agriculture, fishery	51.6	78.2	59.1	40.2	68.6	48.7
Industry	43.3	59.6	38.0	33.4	52.2	29.7
Elec, gas, water	48.7	67.1	51.7	38.0	58.7	35.5
Construction	45.6	72.7	44.6	41.0	65.0	35.9
Trade, retail	46.3	65.3	43.6	38.5	54.4	33.3
Transport, communications	45.9	70.0	37.8	35.0	57.8	25.6
Other	24.3	53.7	32.5	19.3	44.9	24.3
State	36.4	67.1	27.8	27.1	55.0	21.8
Education	35.6	62.5	33.8	27.8	53.1	23.7
Other public services	44.1	62.7	52.2	37.4	57.3	41.2
Not working	48.2	71.4	45.8	38.1	59.9	33.4

People in households in which the household head is engaged in agricultural activities (mainly hired agricultural workers) are at higher risk of poverty. Two-thirds of households headed by hired agricultural workers are poor. Households with self-employed household heads are less likely to be poor than others. However, there are relatively few such households in the population in general. Households head by someone who is unemployed and seeking work have higher poverty rates, although there are few such households. In most cases, non-working household heads are not seeking work (and thus, not considered "unemployed" by an ILO definition). Those households where the household head is not working (mainly pensioners) have poverty rates of 46% compared to overall poverty of 48%.

**Table 7: Relative poverty risks by location, education and composition:
More or less likely to be poor?**

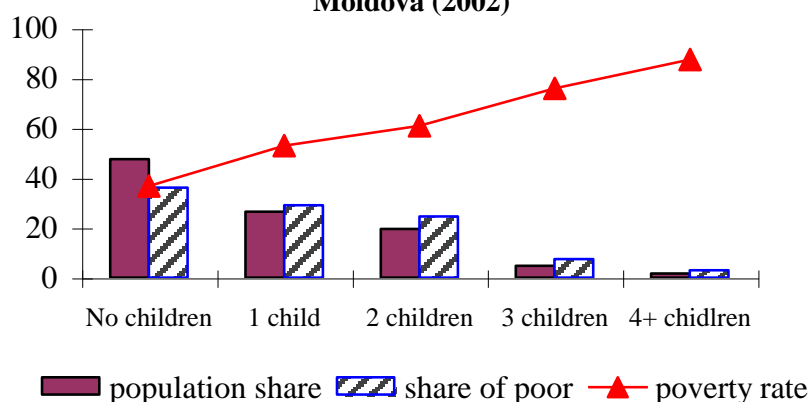
	Relative Poverty Risk			Percent of Poor	Percent of population
	1997	1999	2002	2002	2002
<i>By location</i>					
Large cities	-39%	-34%	-47%	12.3	20.9
Small towns	36%	16%	36%	20.2	15.7
Rural	11%	20%	20%	67.6	63.5
<i>By age of household head</i>					
<30 years	-2%	2%	-10%	6.5	7.2
30-39 years	4%	11%	17%	23.8	21.1
40-49 years	5%	-1%	6%	30.6	29.3
50-59 years	-2%	-9%	-12%	15.9	17.7
60-69 years	-11%	-8%	-10%	13.2	14.5
>=70 years	3%	1%	-2%	10.1	10.3
<i>By education of household head</i>					
Higher education	-42%	-34%	-53%	5.9	11.8
Technical				17.3	19.0
College/Secondary	6%	-3%	-11%		
Secondary completed	11%	10%	20%	43.7	39.3
Secondary incomplete	11%	12%	15%	21.9	19.5
Less than secondary	-2%	5%	10%	11.3	10.4
<i>By sex of household head</i>					
Male	1%	8%	7%	70.1	68.7
Female	-1%	-7%	-7%	29.9	31.4
<i>By number of children in household</i>					
No children	-34%	-23%	-38%	36.1	47.5
1 child	2%	4%	13%	29.0	26.5
2 children	24%	19%	34%	24.5	19.5
3 children	33%	25%	61%	7.5	4.8
4+ children	54%	27%	83%	3.0	1.7
<i>By age of individual</i>					
Children 0-15	20%	14%	30%	27.6	22.3
Adults 16-59	-8%	-7%	-9%	54.6	56.8
Adults 60+	-14%	-6%	-15%	18.0	20.5

An alternative way to evaluate poverty is to examine the risk of being poor for one group, relative to others in society. Tables 7 and 8 report poverty risks for each group relative to the rest of society. A positive entry means that the population belonging to this group is *more* likely to be poor than the rest of the population; a negative entry stands for the reverse. Hence, these are not poverty levels, but *relative* poverty levels compared to all other groups. The fourth column reports the percent of the group among

the poor in 2002; the last column shows the share of the total population belonging to the group in 2002. The latter two columns are important for policy makers as the poverty risk might be extremely high for a group in the population but they might represent only a small fraction of the total poor population. In this case, targeting that group will not have much impact on lowering the overall (national) poverty rate. For example, while poverty rates are highest among households with many children and those with unemployed household heads seeking work, fewer than five percent of households have more than three children and less than one percent of household heads do not have and are seeking employment. Figure 8 illustrates this point for the number of children in the household.

In considering the change in poverty risk across years, it is important to consider whether the population share has shifted at the same time to understand overall trends and make intra-group comparisons. For example, if the risk of poverty increases for farmers but farmers are a decreasing share of the total population, then farmers will not necessarily be a greater share of the total poor. In fact, population shares for most categories remained remarkably stable from 1997-2002 (see Appendix 4), in part a reflection of the static sample listing from 1997 used for all survey years. However, an exception to this is for the share of households with no children which has been increasing and the increasing share of households whose head is a farmer rather than hired labor in agriculture.

Figure 8: Children in Households and Poverty in Moldova (2002)



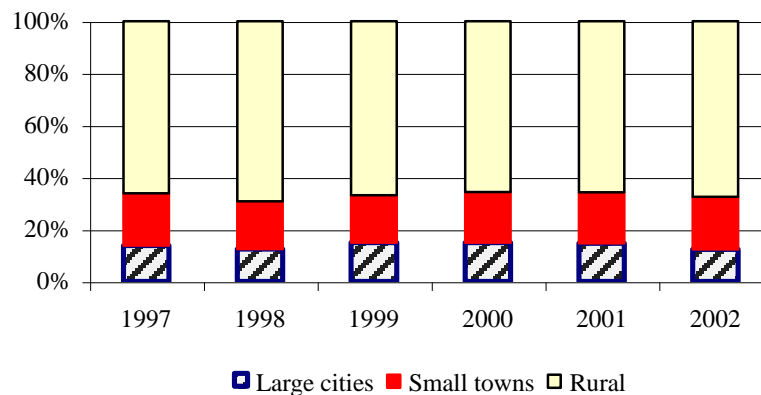
As reflected in the previous section, poverty risk between households in large cities and other areas has widened in recent years. By 2002, the poverty rate among those in large cities was fifty percent of the poverty rates among others. Education remains an important determinant of expenditure. By 2002, higher education of the household head is associated with even lower poverty risk relative to those with lower education. Households with large numbers of children, a very small fraction of the population, have much higher poverty risk by 2002. By age, poverty risks have also changed. Children are much more likely (30%) to be poor relative to those over 15 years. Across economic groups, we see that poverty risk associated with economic sector has also been changing. Households in which the household head is engaged in agriculture have a much higher risk of being poor relative to others in 2002 compared to the risks associated with this activity in 1997 and 1999. By 2002, household heads employed as hired agricultural workers had almost 50% higher poverty rates than other households compared to 18% lower poverty rate in 1997.

**Table 8: Relative poverty risks among economic groups:
More or less likely to be poor?**

	Relative Poverty Risk			Percent of poor	Percent of population
	1997	1999	2002	2000	2002
<i>By household head's activity main source of income</i>					
Farmer	4%	4%	14%	22.5	20.3
Hired in agriculture	-18%	17%	46%	19.8	14.5
Hired in non-agriculture	-14%	-12%	-22%	29.7	35.2
Self-employed	-28%	-28%	-32%	1.5	2.1
Pensioner	-38%	0%	-5%	25.1	25.9
Other	-23%	-4%	-48%	0.7	1.3
Unemployed and looked for work last 7 days	-33%	3%	18%	0.8	0.7
<i>By household head's employment status last 7 days</i>					
Employed	-3%	0%	8%	73.2	71.6
Inactive	-21%	0%	-8%	26.0	27.7
Unemployed, looking for work	-20%	5%	18%	0.8	0.7
<i>By household head's sector of work</i>					
Agriculture, fishery	14%	16%	38%	42.4	34.8
Industry	-9%	-17%	-23%	5.4	6.8
Elec, gas, water	3%	-6%	7%	2.0	1.9
Construction	-4%	2%	-8%	3.6	3.9
Trade, retail	-2%	-9%	-11%	6.6	7.3
Transport, communications	-3%	-2%	-23%	2.8	3.6
Other	-49%	-25%	-33%	1.2	1.8
State	-24%	-6%	-43%	1.8	3.1
Education	-26%	-13%	-31%	2.9	4.1
Other public services	-7%	-13%	8%	4.6	4.2
Not working	3%	0%	-8%	26.8	28.4

Figure 9 shows the share of the poor across the three main location strata during this 5-year period. The majority of poor in Moldova live in rural areas. By 2002, households whose heads are farmers or employed in agriculture make up a relatively larger share of the population in poverty compared to others. By 2002, in Moldova rural households, households with married, secondary educated and male heads, households with no or few children and elders, and households engaged in the agricultural sector accounted for greatest number of poor households.

Figure 9: Poor in Moldova by Location 1997-2002



Multivariate analysis provides a more complete picture of who the poor are. Signoret (2003) reports these statistics. Controlling for other household characteristics, female-headed households have lower expenditures (higher poverty likelihood). This is in comparison to raw tabulations that show higher poverty rates among male-headed households. Market access (proxied by agricultural sales or wage earners in household) has a positive effect on welfare (per capita expenditure) in rural areas (Lopez and Melo, 2002). This finding could motivate the development of public policy measures to reduce rural poverty.

Additional analysis by Signoret (2003) reveals that external funding played a significant role in the deterioration of household welfare for rural households during 1998-2000. Social benefits and informal assistance (remittances from other households) are significantly associated with higher household expenditures (and thus lower poverty), controlling for other characteristics of the household. However, the association between incidence of social benefits and expenditure levels (and poverty) has declined over the five-year period. This suggests that an in-depth analysis of policies, funding, and implementation of social benefit programs is in order, as discussed in Castel, 2003.

Vulnerability in Economic Crisis and Gains from Economic Recovery

Evidence from the analysis of the cross-sectional data revealed large fluctuations in the poverty rates and living standards following the Russian economic crisis and with recent recovery. Even though poverty rates were the same in 1997 and 2002, the average may mask substantial volatility in poverty status of households. Were the same poor households in 1997 still poor in 2002? We know that the Russian crisis resulted in a significant deterioration in the living standard for the population, but one that did not necessarily impact all households equally. Economic growth does not result in even growth rates across households. These are questions the extent to which poverty is permanent or transient, as well as the characteristics associated with escaping poverty or falling below the poverty line. Different policy measures are needed to address these different situations. For example, for transient poverty, temporary assistance is likely to be satisfactory. For permanent poverty, structural changes are needed. While the poverty statistics presented above describe poverty in each year, cross-sectional data cannot inform about poverty transitions. In other words, without examining similar households, the likelihood that a poor household will remain poor or that a non-poor household will become poor over time cannot be determined. Panel data, which follow households over time, are needed to evaluate poverty transitions. For some questions, such as percentage changes in expenditure by quintile, cross-sectional data will be sufficient.

Signoret and Murrugarra (2002) explore some of the dimensions of vulnerability of households to the crisis using the subset of panel households in the Moldova HBS data. Panel data from the HBS indicate that only 28 percent of households remained in their pre-crisis expenditure quintile in the period just after the crisis. There was a high degree of transition in rankings – with some households relatively better off and others in a worse situation. Total expenditures declined for about 63 percent of all households from before to just after the crisis (Table 9). A larger proportion of individuals in wealthier households suffered expenditure declines compared to those in poorer households. Nearly one-third of the poorest quintile had reductions in expenditures compared to 84 percent in the richest quintile. Looking at the share of expenditure decline, on average households that were initially non-poor faced the largest proportional declines in welfare, consistent with an increase in the poverty rate. Proportional to pre-crisis levels, households in small towns were hit hardest by the economic crisis. This is also reflected in multivariate analysis. Other households with large post-crisis welfare losses include those with many children, single persons, household heads with no education, and those employed in non-agricultural activities.

Table 9: Mean Proportional Change in Expenditure from Pre-crisis to Post-crisis

	Prop. change	% in households with decline in expenditure
All	-0.008	62.7
By quintile pre-crisis		
Poorest 20%	0.487	30.4
20-40%	0.051	58.2
40-60%	-0.128	68.7
60-80%	-0.144	72.2
Richest 20%	-0.304	83.9
<i>By location</i>		
Large cities	-0.046	
Small towns	-0.053	
Rural	0.016	

Source: Signoret and Murrugarra (2002), using two-year panel HBS households 1997Q4-1998Q2 and 1998Q4-1999Q2.

The work in Signoret and Murrugarra (2003) can be extended here to include the more recent rounds of data. Using data from 1997 to 2002, we find that despite the huge losses associated with the crisis, a decomposition of poverty in chronic and transient components shows that poverty in Moldova is largely chronic, accounting for as much of 90 percent of the average poverty level.⁹ That is, despite transitions among households in terms of rank, a very large fraction of the poor in any year are likely to remain poor in the next. Restricting the sample to the set of panel households interviewed in 4 consecutive years, we find that about one-quarter of households were poor in every period (Table 10). Only 14 percent of households were not poor in any of the four survey rounds. Exposure to extreme poverty is slightly lower but still quite high. About one in five households were not in extreme poverty in

⁹ Chronic poverty is calculated assessing the poverty rate when each panel household is assigned their average consumption per capita over the 4 interviews. The ratio of the chronic poverty rate to the average poverty rate is used to compute to extent to which poverty is chronic – over 90 percent in this case. See Signoret (2003) for details.

any of the four years. Thus, the vast majority of the population was exposed to poverty over the period 1997-2002, while at the same time, there was a sizeable core group of households that stayed poor throughout. Taking the baseline characteristics, we find that the probability of being poor all four survey rounds is higher for households with many children and those whose household head has less than college education.

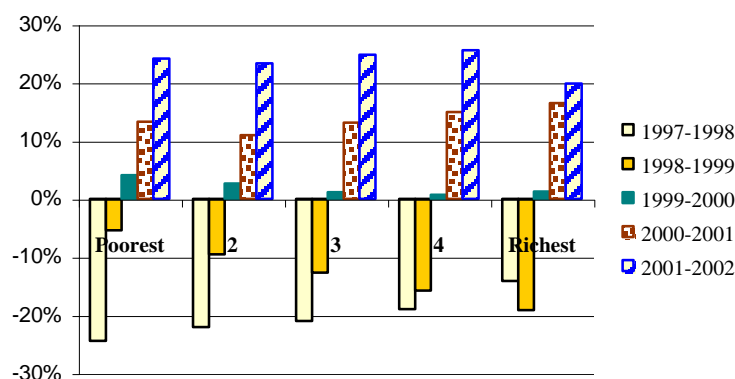
Table 10: The Persistence of Poverty (Percent)

Number times poor	Poverty	Extreme Poverty
Never	13.6	22.1
1	15.1	19.9
2	20.7	20.8
3	24.1	20.7
4	26.5	16.5

Source: Sub-sample of panel households in HBS with 4 interviews in consecutive years (1997-2000; 1998-2001; 1999-2002)

Change in real per capita expenditure can also reveal the distribution of gains and losses in prosperity across the years. To evaluate how the gains from aggregate economic declines and growth were distributed across households Figure 10 shows average annual growth rates by household expenditure quintiles. From 1997 to 1998, the decline in the average per capita expenditure of the poorest quintile was greatest. Among the highest quintile, the decline in the average per capita expenditure was smallest. For example, comparing the average expenditure of the poorest 20 percent of the population in 1997 to the average of the poorest quintile in 1998 shows a decline of 24 percent. Note that this is not same comparison as in Table 9 which evaluated proportional changes in expenditure controlling for quintile in the base year. In Figure 10, we are allowing for households to move quintiles. Among those in the wealthiest quintile in each year, average expenditures declined by 14 percent from 1997 to 1998. From 1998 to 1999, the patterns if reversed, with larger declines observed among the richest quintile.

Figure 10: Growth Of Consumption (average annual growth in per capita real terms)



An alternative depiction is the growth incidence curves which can be used to describe the extent to which growth is pro-poor (Ravallion and Chen, 2002) which shows the growth rates for each percentile (rather than the average within quintile or decile as in the Figure 10). Two periods are evaluated in Figures 11 and 12: 1997-1999 and 1999-2002, with growth rates annualized for comparability. For both time periods, at a national level, per capita expenditure of the lower percentiles of the expenditure distribution generally grew at rates comparable to that of the richest percentiles. That is, the decline in expenditure from 1997-1999 was equally experienced across percentiles. Likewise, the growth in

expenditure was about 10 percent across percentiles. These national pictures do mask some subtle regional differences; Appendix 6 presents the growth incidence curves by region. In large cities, the economic decline from 1997-1999 hit hardest those households at the median. In rural areas, the wealthiest percentiles had larger declines in expenditure. Since the recovery, growth in rural areas was equal across percentiles consistent with a slight decline in inequality in the rural population.. households at the median percentile experienced the largest declines.

Figure 11: Growth Incidence Curve 1997-1999

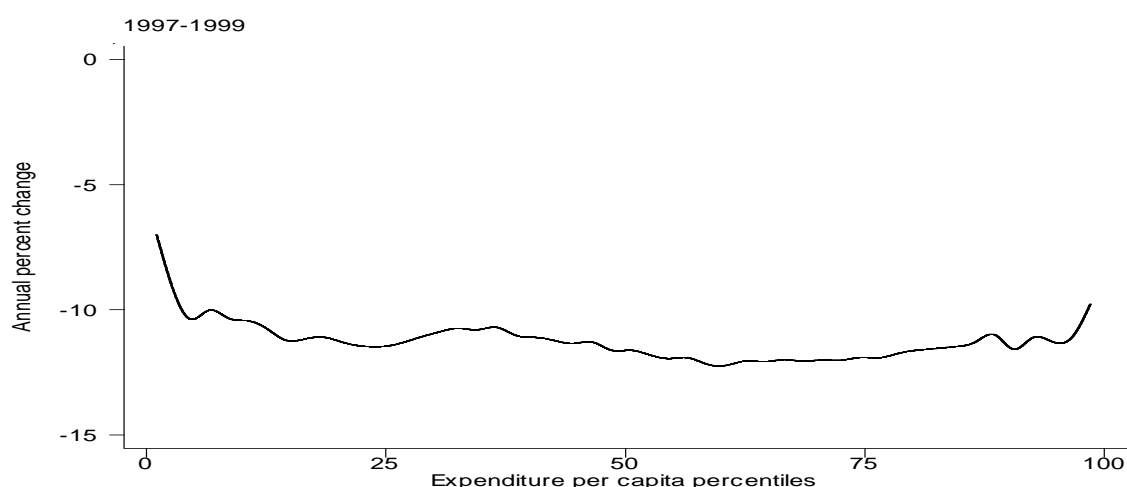
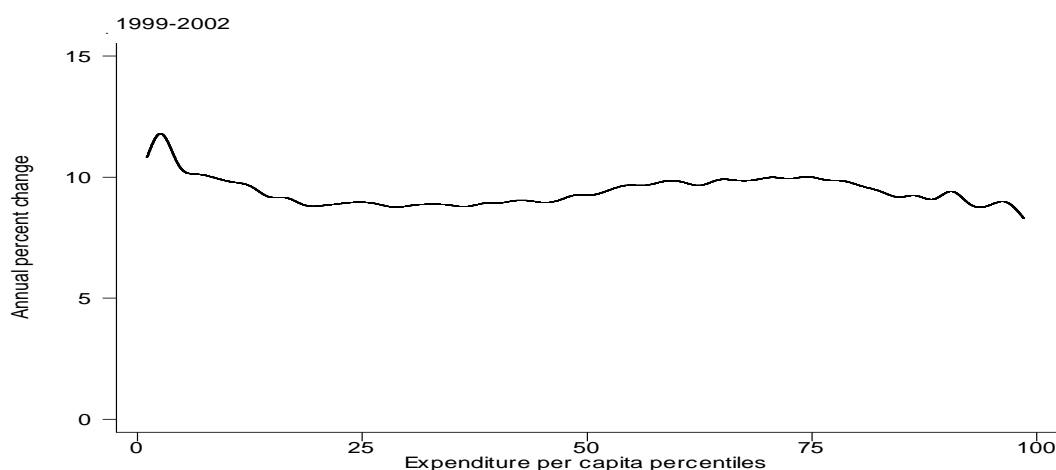


Figure 12: Growth Incidence Curve 1999-2002



Poverty Decomposition: Growth and Inequality

Economic growth is typically assumed to alleviate poverty, but to the extent the growth is associated with rising inequality, poverty reduction will be smaller than otherwise. The decline in poverty, therefore, depends on whether economic growth reaches the poorest in the population. It is of interest to consider to what extent poverty would have changed if there had been no changes in the

welfare distribution. The change in poverty between two years can be decomposed into three components. The growth component is the difference between the two poverty indices keeping the distribution constant. The redistribution component is the change in poverty if the mean of the two distributions is fixed. The residual component shows the change in poverty due to the interaction between growth and inequality. Table 11 presents this growth-inequality decomposition on a national level and across the three locations for two periods: 1997-1999 and 1999-2002. (Appendix 5 shows the growth-inequality decomposition on a national level and across the three locations for two periods: 1997-1999 and 1999-2002 for extreme poverty).

The 24 percentage point increase in poverty in Moldova from 1997-1999 could be decomposed into a 23 percentage point increase due to the decrease in the mean per capita expenditure and a 1.4 percentage point increase due to the change in the distribution. In other words, if the mean per capita expenditure in Moldova had not changed between 1997 and 1999, the poverty incidence would have increased by 1.4 percentage points just because of the change in the distribution. On the other hand, if inequality stayed constant during this period, the decline in per capita expenditure would increase poverty by 23 percentage points. Thus, changes in poverty from 1997 to 1999 were mainly the result of changes in per capita expenditure, and much less was due to change in inequality. Large cities are the exception; in large cities, about one-quarter of the 19 percentage point increase in poverty was attributed to redistribution effects (increasing inequality).

Table 11: Growth and redistribution decomposition of poverty changes by region
(percent change in incidence of poverty)

Panel A 1997-1999	Growth	Redistribution	Residual	Actual Change
All Moldova	23.0	1.4	-0.6	23.9
<i>By location</i>				
Large cities	14.4	4.9	-0.5	18.7
Small towns	22.9	1.4	-5.0	19.3
Rural	27.7	0.3	-1.3	26.7
Panel B 1999-2002	Growth	Redistribution	Residual	Actual Change
All Moldova	-21.1	-0.0	-1.6	-22.7
<i>By location</i>				
Large cities	-18.3	-1.9	-1.7	-21.8
Small towns	-19.5	0.8	1.0	-17.8
Rural	-23.0	1.2	-2.5	-24.2

From 1999 to 2002, growth again plays the major role in poverty reduction, accounting for almost all of the 23 percentage point decline in the poverty rate. This is true within each of the three strata. In large cities, where inequality deteriorated with the decline in per capita expenditure from 1997 to 1999, we find little change in distribution; the increase in per capita expenditure explains almost all of the decline in the poverty reduction.

4. Monitoring Poverty and Living Standards

Developing appropriate policies for reducing poverty requires that policy makers continuously identify the poor, understand how their composition may change over time, and evaluate how the poor may respond to changing public policies. The surveys collected by the Department of Statistics and Sociology (DSS), as well as the administrative data compiled by line ministries, are the critical quantitative inputs in the poverty monitoring system, providing a wealth of information. While there are many important questions that can be analyzed with the existing data sources, in-depth analysis of existing data has been limited. The usefulness and relevance of the information are reduced due to lack of timely exploitation of the data. Moreover, some areas need improvement in order to raise the relevance and quality of the data in the national statistical system. Against this background, recommendations for improvements in the existing system focus on three key areas: analytical methods, data sources, and data dissemination.

Analytical methods

The methodology undertaken by the DSS for establishing the monetary poverty indicators needs to be revised to use methods based on international best-practices for measuring absolute poverty. These methods are reflected in the Poverty and Policy Monitoring Unit (2003) analysis and are being considered for official adoption. They include, among other areas, developing a poverty line on the basis of actual consumption and expenditure patterns of a relevant reference population and a careful evaluation of the merits of measuring poverty on the basis of income rather than consumption and expenditure (given the difficulties in measuring both). Substantial progress has been made by the PPMU in collaboration with the DSS in tackling the complicated technical issues over poverty measurement and official methods.

In addition to the basic set of cross-sectional poverty estimates, the Household Budget Survey (HBS) could be used for more detailed analysis of the subset of panel households. Panel data afford an opportunity to evaluate poverty and welfare dynamics typically not possible with pure cross-sectional data. Unfortunately, the HBS panel remains largely unexploited. To date, only known panel analysis has been in the context of the background reports prepared for the World Bank starting in 2002 (see, for example, Signoret and Murrugarra, 2003). Given the availability of such unusually rich data, it is recommended that the PPMU and the DSS prioritize the analysis of the panel for understanding and monitoring the transient and chronic aspects of poverty.

The large regional differences in living standards suggest the potential value of assessing poverty at local levels. Household surveys typically cannot be used for such analysis due to the small sample size and sample design effects.¹⁰ With census data it is possible to apply survey-to-census data techniques to estimate poverty for small areas. Technical assistance for such poverty mapping is available from World Bank for such activities.¹¹ The availability of detailed and accurate administrative data make it possible to construct poverty maps for rural regions (where such records have been maintained). The PPMU has ambitiously undertaken collection of these administrative records, although the technical aspects have not been evaluated. Specifically, the methods for calculation of standard errors need to be carefully reviewed in order to assess the statistical significance of the poverty differentials across areas. Unfortunately, for lack of such records in urban areas, a complete national poverty map will be conditional on a national census which faces repeated delays in implementation.

¹⁰ Specifically, the sample design effects stem from the two or three stages of sampling in which primary sampling units are first identified and then a number of households within a unit are sampled thus resulting in a *clustered* sample in the region.

¹¹ See <http://econ.worldbank.org/programs/poverty/topic/14460/>

Data sources

The data used for measuring poverty come mainly from the HBS. Implemented in 1997 with the main focus of collecting detailed budget information (both consumption and income), a broader role for the HBS could be developed. Currently, the HBS is not intended to constitute a comprehensive integrated portrait of living standards in Moldova. Indeed the survey instrument itself has remained largely unchanged from its initiation in 1997. More comprehensive data will allow policy makers to move forward with a better understanding of poverty determinants. On the other hand, over-loading the HBS questionnaire with many new modules could compromise the entire survey in terms of data quality. To this end, the DSS introduced revised health and education modules that rotate in on quarterly basis. This approach could be extended to other topics including labor characteristics and wages (including migrant labor patterns) and social protection programs. An integrated community survey which would collect information on social, economic, and physical infrastructure in the community could also increase the potential to analyze poverty.

It is critical that the national statistical system look beyond the HBS for poverty monitoring. For example, the Labor Force Survey (LFS) conducted by the LFS could be used in the system of poverty monitoring. Given the importance of labor income for the poor and the strong link between poverty and lack of employment opportunities, the labor market characteristics are critical for a good understanding of poverty. The LFS is an ambitious survey effort, conducted on a quarterly basis with a large sample. If a subset of labor questions are added to the HBS and are consistent with the LFS, they can be used for cross-survey validation. It is also possible to link the LFS and the HBS more directly, which would make it possible to connect detailed labor market information with poverty rankings. There have been discussions at DSS for some integration in the HBS and LFS, but the implementation of such integration has been delayed. In addition, administrative records and survey data collected outside DSS (such as by line Ministries) could enhance the overall empirical base for poverty monitoring.

One key improvement needed in the poverty monitoring system is the sample frame for existing household surveys which poses difficulties in the precise estimation of household well-being beyond those related to questionnaire design or analytical methods of poverty measurement. For lack of recent census data (with the previous census from 1989), the current survey samples are on the outdated sampling frames from the 1996 Presidential electoral lists. This frame almost certainly does not capture the current patterns of the Moldavian households. By using outdated weights in the calculation of national statistics from survey data, the national levels and profile of poverty may be biased. In using an outdated sample frame to survey households, likewise, the poverty profile will be skewed. In addition to providing a much-needed new sampling frame for the existing surveys, including the HBS, the new Census will have a pivotal role in social policy design such as redefining the burden on pensions. Unfortunately, the implementation of a new Demographic Census has been repeatedly delayed.

Data dissemination

The value of the data collected by the DSS and other line ministries ultimately depends on the analysis and dissemination of the information contained in these data. Data access is a key tool for improving the current system of poverty monitoring. By adopting policies to promote data use and open feedback from data users, the overall quality of poverty monitoring will be greatly enhanced. To that end, the DSS and others produce periodic reports with numerous summary information from different surveys and administrative data sources. Statistics are also disseminated by the DSS on their internet address (www.statistica.md). However, data access to the unit-record data is limited. For the HBS, while the data files were made available on the internet as of 2002, there is little documentation nor the questionnaires available to assist users in understanding the data and how to use them. Moreover, there are no

established systems in DSS for encouraging and gathering feedback from data users, including users from government, the non-government research community and donors.

Institutional arrangements can further impede for poverty analysis and dissemination. There is no clear government agency delegated to the exercise of determining the official methodology for and establishment of a poverty line. Multiple other agencies continue to develop their own consumption aggregates and poverty estimates independent of the work of the Poverty and Policy Monitoring Unit (e.g. DSS and the Annual Social Report of the Ministry of Labor and Social Protection). In sum, there is a lack of consensus across these exercises as well as significant discrepancies in their poverty estimates. Currently, the DSS calculates a “Subsistence Minimum” and uses a relative measure of this amount to define the poverty threshold. This threshold is compared with per capita income (not consumption expenditure) to compute poverty statistics. On the other hand, the PPMU follows an approach more closely aligned with the methods of the World Bank for poverty measurement. The continued existence of two (or three or more) sets of “official” statistics on poverty can be confusing for those interesting in monitoring the living standards of the population. It is recommended that one set of official poverty statistics be produced in a coordinated manner between agencies.

5. Conclusions

In this paper, a descriptive analysis of levels and changes in poverty and inequality in Moldova is presenting, covering both the period of economic crisis and the recent recovery. Poverty is a significant phenomenon, with almost half of the population living in absolute poverty and more than one-third in extreme poverty. By 2002, in Moldova rural households, households with married, secondary educated and male heads, households with no or few children and elders, and households engaged in the agricultural sector accounted for greatest number of poor households.

We find that poverty rates in Moldova as a whole increased sharply from 1997 to 1999 with the massive macroeconomic downturn and the resultant decline in the expenditures of households. With the exception of large cities where there was some increase in inequality, redistribution effects were generally mild. The increase in poverty was not associated with a notable increase in inequality. Likewise, since 1999, the economic recovery has resulted in a large decrease in poverty with little redistribution effects. Economic recovery has benefited all percentiles, with no evidence of growth that is pro-poor in the sense that the poorest experiences larger proportional increases in expenditure.

While the characteristics of the poor are generally similar over time, there are some important changes in poverty risks across groups. The population in large cities is less likely to be poor compared to others. While this was true in 1997, the gap is larger by 2002. Models of the determinants of expenditure show that the gap between small towns and large cities is larger by 2002, where as the gap between rural areas and large cities in 2002 is the same as in 1997. Likewise, higher education is associated with even lower poverty risk in 2002 than in 1997. Agriculture, particularly households where the head is an agricultural worker, is associated with higher poverty risk by 2002 compared to 1997.

Despite the recent economic recovery and gains for households at all expenditure levels, only by 2002 did poverty rates return to their 1997 levels. Although there are persistent differences in growth rates between large cities, small towns and rural areas, the patterns of expenditure growth rates by percentile do not look strikingly different between large cities, small towns and rural areas.

Looking ahead, the recent rapid economic growth in Moldova since 2000 holds tremendous promise for further poverty reduction. As evidenced by the significant portion of households just below the poverty line, further economic growth should lead to continued poverty reduction. Nevertheless, the expenditure necessary to reduce poverty below 20 percent is quite sizeable (an increase in expenditures

per capita of more than 50 percent among the poor). Therefore, even with substantial economic growth large numbers of the population are likely to remain living in poverty. Furthermore, any downturn in the macroeconomic situation is almost guaranteed to result in significant numbers of households becoming poor.

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Annex 1: Consumption and Income Shares (2002)

Table A1.1: Consumption Shares

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	Total
Food	90.4	86.0	83.7	78.7	65.1	80.8
Tobacco and drugs	2.3	2.3	1.7	1.4	1.2	1.8
Clothing and footwear	2.3	4.1	5.2	8.2	15.3	7.0
Health care	1.8	2.8	3.2	4.3	7.2	3.8
Education	0.0	0.1	0.2	0.1	0.8	0.2
Transportation and communication	2.5	3.9	4.7	6.0	8.4	5.1
Entertainment	0.6	0.9	1.3	1.2	2.1	1.2

Note: Quintiles are based on consumption expenditure levels per capita. Results are population weighted.

Table A1.2: Consumption Shares, including utilities, housing and consumer durables

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	Total
Food	77.8	74.3	72.6	68.7	56.6	70.0
Tobacco and drugs	1.9	2.0	1.5	1.2	1.1	1.5
Clothing and footwear	1.9	3.6	4.4	7.3	13.4	6.1
Health care	1.5	2.3	2.7	3.7	6.2	3.3
Education	0.0	0.1	0.1	0.1	0.7	0.2
Transportation and communication	2.0	3.1	3.9	5.0	7.1	4.2
Entertainment	0.5	0.7	1.1	1.0	1.8	1.0
Utilities	10.3	9.9	9.1	8.5	7.8	9.1
Housing	1.5	1.8	1.9	1.8	2.2	1.8
Consumer durables	2.5	2.3	2.7	2.7	3.0	2.7

Note: Quintiles are based on consumption expenditure levels per capita. Results are population weighted.

Table A1.3: Income Shares

	Poorest	Quintile 2	Quintile 3	Quintile 4	Richest	Total
Agriculture self-employment	49.8	46.9	45.4	45.1	34.5	44.3
Wages	25.4	26.4	27.4	29.0	38.4	29.3
Non- Agriculture self-employment	0.3	1.0	0.9	1.0	1.9	1.0
Pension	14.0	15.1	15.8	12.5	7.4	13.0
Government transfer	2.1	1.7	1.5	1.4	1.5	1.7
Private Transfer	6.9	7.9	7.8	9.4	14.4	9.3
Other income	1.4	1.0	1.1	1.6	1.9	1.4

Note: Quintiles are based on consumption expenditure levels per capita. Results are population weighted.

Annex 2: Poverty And Inequality By Region

Table A2.1: Poverty and Inequality by Region

	1997	1998	1999	2000	2001	2002
<i>Poverty Gap</i>						
Large cities	9.9	12.5	17.3	17.6	14.5	7.8
Small towns	22.5	28.4	37.1	40.3	37.1	24.0
Rural	17.2	28.2	31.9	29.8	24.0	17.5
<i>Poverty Severity</i>						
Large cities	4.4	5.6	7.9	8.2	6.5	3.2
Small towns	10.8	14.6	21.0	23.5	20.8	12.0
Rural	8.4	15.3	17.0	15.1	11.7	7.9
<i>Gini Coefficient</i>						
Large cities	0.34	0.35	0.36	0.37	0.37	0.34
Small towns	0.34	0.36	0.33	0.34	0.33	0.34
Rural	0.34	0.35	0.32	0.30	0.33	0.32

Annex 3: Evaluating Alternative Equivalent Scales

Equivalence Scales

The measure of well-being used, total household consumption and expenditures, is collected at the household level, yet household consumption and expenditures need to be adjusted for household size and composition in order to be a useful measure of individual material well-being. We presume that a one-person household spending 200 lei per month is materially better off than a five-person household spending the same amount. Adjusting for household composition can be done in numerous ways, and there is not a clear dominant choice and, therefore, no widely accepted scale.

A simple solution is to divide by the number of household members. Dividing total household expenditure by *household size* (total number of members) gives a *per capita* measure of expenditure, where household size is simply:

$$N = A + K$$

where A is the number of adults and K is the number of children

More complicated solutions consider that there may be *economies of scale* in expenditure. For example, a 2-person household does not imply double expenditures on housing, utilities or other non-food items for which expenditure can be shared (these are public goods whose cost does not vary whether one person or a number of people use the good). Larger households might also be able to buy food or nonfood items in bulk which can mean lower prices or discounts. Moreover, the age structure of household members, where a child is assumed to not be equivalent to an adult in terms of needs, could be considered. Consider the “adjusted” household size to be:

$$PAE_N = (A + \alpha K)^\theta$$

In this equation, θ capture the economies of scale in expenditure. The parameter α identifies the weight to convert each child into an equivalent adult.

The adjustment for household size and composition is done by dividing total household expenditure by PAE_N (*per adult equivalent household size*) which gives an adjusted measure of expenditure. For example, a household with an adult equivalent size of 3.5 needs to spend 3.5 times as much as a single adult in order to be equally well off as the single adult.

Two common equivalence scales from the Organization for Economic Development and Cooperation (OECD), developed for western economies, are defined as:

$$\text{OECD scale 1: } PAE_N = 0.3 + (0.7 * A) + (0.5 * K)$$

and

$$\text{OECD scale 2: } PAE_N = 0.5 + (0.5 * A) + (0.3 * K)$$

In the OECD scale 1, the first adult is counted as 1 member, and the second adult is counted as .7 of 1 adult. Each child is .5 of an adult. Considering that food is a very higher share of the budget and that caloric needs of children are not much lower than adult needs (except for the very young), the scaling of children appears to very large. The second OECD scale is even steeper, by raising the extent to which there are economies of scale and lowering the child-adult equivalence factor to .3. Given the large share

of total expenditure devoted to food in Moldova, this scale seems even more inconsistent and results in poverty rates even lower than the first OECD scale

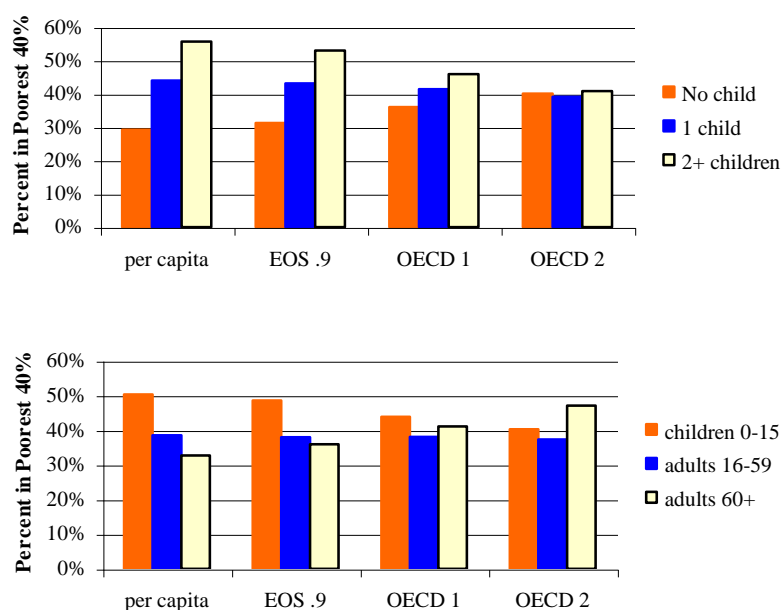
Sensitivity to Equivalence Scales

The choice of equivalence scale reflects judgments about differences in needs. For example, the per capita adjustment incorporates the extreme judgment that all household members have equal needs irrespective of age. In Moldova, food is a large share of household expenditure. Since food is generally not associated with economies of scale, using per capita adjustment which has no economies of scale seems plausible.¹²

Because of the difficulty in justifying the use of a particular equivalence scale, a preferred practice is to examine the sensitivity of poverty estimates to a range of plausible scales. One alternatives are to calculate a new poverty line and assess the profile for each scale. A second option is to set the poverty rate at a fixed level and assess the profile for each scale; this is the option used here and in Signoret (2003). Figure A1.1 shows the poverty rate of different groups when different scales are used. Figure A1.2 shows the share of the poorest 40 percent using these different scales. Four different scales are compared: per capita, economies of size of 0.9, OECD 1, and OECD 2.

The poverty profile is remarkably robust to different scales. In most cases, it is not until the more extreme scales (OECD) are applied that the profile shifts.

Figure A3.1: Poverty Rates Using Alternative Scales, Holding Poverty Fixed at 40% (2002)



¹² The exception to the notion that food does not have economies of scale would be bulk-purchase discounts. If certain foods are perishable and cost of storage is high, then large households may be better able to take advantage of bulk-purchase discounts.

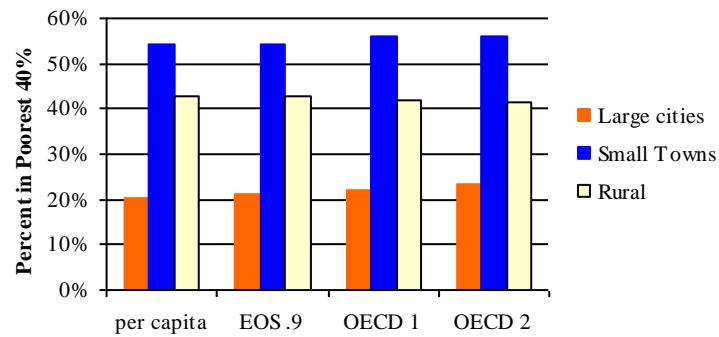
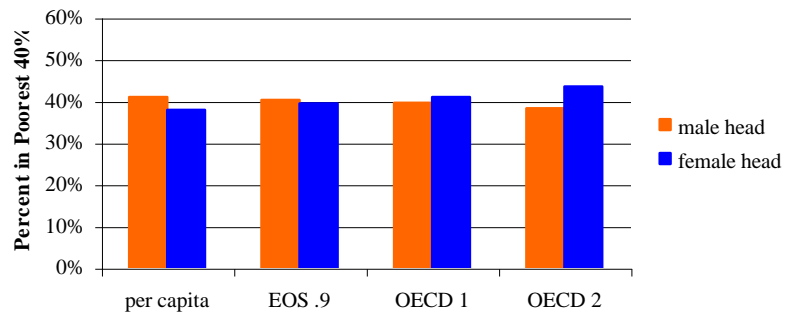
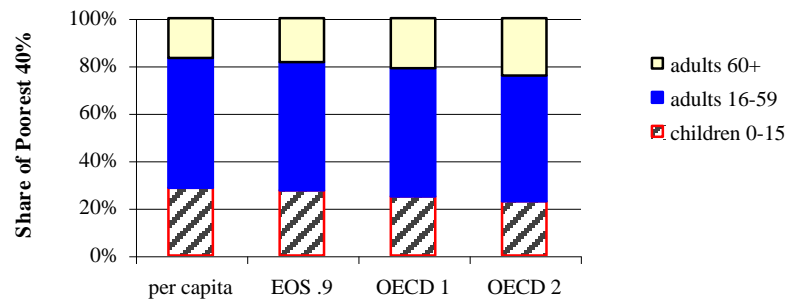
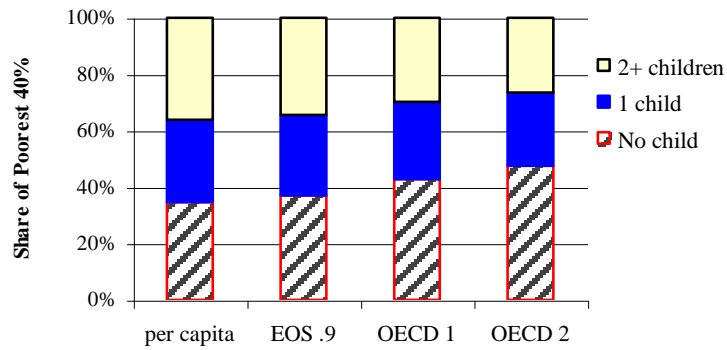
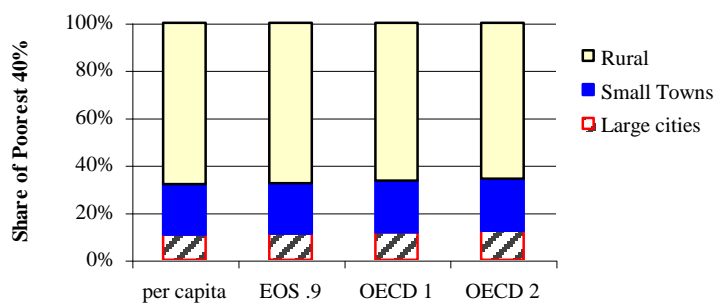
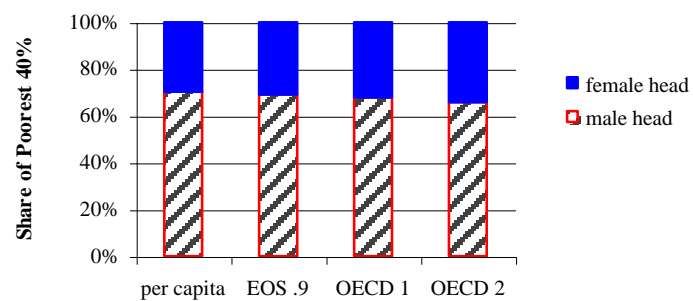


Figure A3.2: Share of Poor Using Alternative Scales, Holding Poverty Fixed at 40% (2002)





Annex 4: Population Shares

	1997	1999	2002
<i>By location</i>			
Large cities	20.6	21.0	20.9
Small towns	15.6	16.2	15.7
Rural	63.7	62.3	63.5
<i>By age of household head</i>			
<30 years	9.3	8.7	7.2
30-39 years	26.5	26.8	21.1
40-49 years	28.3	29.3	29.3
50-59 years	15.1	15.2	17.7
60-69 years	13.8	12.2	14.5
>=70 years	7.1	8.0	10.3
<i>By education of household head</i>			
Higher education	12.3	12.3	11.8
Technical College/Secondary	25.1	23.7	19.0
Secondary completed	31.7	35.5	39.3
Secondary incomplete	15.8	16.7	19.5
Less than secondary	15.0	11.8	10.4
<i>By sex of household head</i>			
Male	73.5	73.3	68.7
Female	26.5	26.7	31.4
<i>By number of children in household</i>			
No children	35.1	40.1	47.5
1 child	28.8	28.3	26.5
2 children	24.9	23.2	19.5
3 children	8.1	6.6	4.8
4+ children	3.2	1.8	1.7
<i>By age of individual</i>			
Children 0-15	27.1	25.2	22.7
Adults 16-59	58.1	58.2	56.8
Adults 60+	14.8	16.6	20.5
<i>By household head's activity</i>			
Farmer	7.2	10.3	20.3
Hired in agriculture	28.1	25.1	14.5
Hired in non-agriculture	34.9	37.0	35.2
Self-employed	2.0	2.2	2.1
Pensioner	25.5	22.8	25.9
Other	1.2	1.2	1.3
Unemployed and looked for work last 7 days	1.2	1.5	0.7
<i>By household head's employment status</i>			
Employed	71.7	71.6	71.6

	1997	1999	2002
Inactive	27.6	27.2	27.7
Unemployed, looking for work	0.7	1.2	0.7
<i>By household head's sector of work</i>			
Agriculture, fishery	34.9	33.6	34.8
Industry	6.5	6.9	6.8
Elec, gas, water	2.5	2.2	1.9
Construction	4.4	5.5	3.9
Trade, retail	6.4	6.4	7.3
Transport, communications	3.8	3.6	3.6
Other	1.4	1.5	1.8
State	2.6	2.8	3.1
Education	3.9	3.9	4.1
Other public services	4.7	5.1	4.2
Not working	29.0	28.5	28.4

Annex 5: Growth and Redistribution of Extreme Poverty Changes by Region (percent change in incidence of poverty)

Panel A 1997-1999	Growth	Redistribution	Residual	Actual Change
All Moldova	24.8	2.1	-3.2	23.8
<i>By location</i>				
Large cities	16.3	5.3	-4.2	17.4
Small towns	27.1	0.3	-5.3	22.0
Rural	28.8	-0.1	-2.4	26.3
Panel B 1999-2002	Growth	Redistribution	Residual	Actual Change
All Moldova	22.4	-10.8	-0.3	-33.4
<i>By location</i>				
Large cities	-18.9	-1.3	-2.3	-22.4
Small towns	-19.7	1.6	-1.4	-19.5
Rural	-24.6	2.2	-2.5	-24.9

Annex 6: Growth Incidence Curves by Region

