Progress in Poverty Reduction in Mongolia: Did Poverty Decline between 2002/3 and 2007/8?

Recently, policy makers and the donor community in Mongolia have shared concerns about growth without poverty reduction between 2002/3 and 2007/8 since official numbers suggested only marginal changes in poverty over this period. These concerns motivated further exploration of the data by the World Bank team. The team studied various key macro and micro indicators for possible explanations, as well as revisited measures of poverty using household surveys conducted in 2002/3 and 2007/8. 1 Official poverty numbers for these two years were estimated using inconsistent poverty lines and, therefore, do not allow assessment of poverty trends. This note discusses recent macro trends, methods for measuring poverty over time and presents the results of World Bank analysis that uses comparable measures of poverty in Mongolia.

While there are alternative approaches to measuring poverty in Mongolia, assessing progress in poverty reduction requires an approach that maintains comparability and a common poverty benchmark over time. Based on this methodological ground, new World Bank analysis finds that consumption-based poverty in Mongolia declined substantially between 2002/3 and 2007/8. This reduction is observed at the national level and in both urban and rural areas, robust to the choice of the common poverty benchmark. Trends in several key non-consumption indicators during the same period are also consistent with declining poverty.

Concern about Growth without Poverty Reduction

Analysis on poverty trends in Mongolia was motivated by the widespread concern about the possibility of growth without poverty reduction between 2002/3 and 2007/8. Mongolia experienced high and stable annual growth in GDP per capita, between 4 percent and 9 percent, from 2002/3 to 2007/8 (Figure 1). However, this growth did not translate into poverty reduction according to official numbers, which report that national poverty headcount barely changed from 36.1% to 35.2%. Rural poverty was even reported to increase from 43.4% to 46.6% during this period (NSO 2009).

1 HIES/LSMS 2002/3 and HSES 2007/8. The latter survey was conducted July 2007-June 2008, before the global financial crisis hit the hardest. See the report NSO (2009) for a detailed description of the underlying data.
Growth without poverty reduction is possible, but it is not common in international experience. Cross-country empirical evidence shows a negative relationship between poverty rate and growth. The elasticity of poverty rate with respect to consumption is estimated to be in the rough range of (-3, -1), depending on different poverty benchmarks. That is, a 10% increase in mean consumption in a country is usually associated with 10% to 30% drop in the poverty headcount (Ravallion and Chen 1996).

In addition, could rural poverty have increased despite improvements in the herding sector? Mongolia’s aggregate livestock count and value grew considerably from 2002/3 to 2007/8. In particular, the number of sheep and goats roughly doubled over this five-year period\(^2\) (Figure 2), in parallel with increases in real prices of live sheep and goats (Figure 3). Several other commodity prices such as meat and wool prices also increased in real terms.\(^3\)

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\(^2\) Aggregate cattle and horse count both increased, but by less than the increase in that of sheep and goats. This phenomenon may be due to initial sizeable increases in cashmere prices, compared to meat prices, in the early 2000s.

\(^3\) It is difficult to obtain good data on historical cashmere prices. Some initial data from the NSO suggests that real prices of Mongolian cashmere actually declined between 2002 and 2008. Whether this decline is purely a real price effect, a quality effect, or some mix is uncertain.
This phenomenon of growth without reported poverty reduction merits a deeper look at the data for possible explanations. Changes in inflation or inequality are possible explanations. Growth in GDP per capita might not improve living standards for the poor due to increasing costs of living, or national economic growth may be captured mainly by the rich without being transferred to the poor. However, these two factors are not likely to offset completely the impact of growth at the macro level on poverty reduction for the following reasons. First, Mongolia’s inflation from 2002/3 to 2007/8 is approximately 73 percent, according to National Statistical Office’s (NSO) CPI series. But taking inflation into account, household survey data shows that real consumption increased at the national level, as well as in rural and urban areas (Figure 4a). Second, while the Gini coefficient increased from 0.33 to 0.36, the bottom quintile of the wealth distribution still experienced an increase in real consumption of 55 percent over the period\(^4\) (Figure 4b). Since changes in inflation and inequality are not likely explanations, it is important to look at the way poverty is measured.

\(^4\) Further to the quintile analysis, Figure 9 in the Annex shows that the distribution of real consumption in 2007/8 stochastically dominates, i.e. is a strict improvement over, the distribution in 2002/3.
Figure 4a. Real consumption has almost doubled over this period

Source: World Bank staff calculations from HIES/LSMS 2002/3 and HSES 2007/8 household surveys

Measures of Poverty in Mongolia

Different approaches to measuring poverty over time have their strengths and weaknesses, but to answer the question of poverty reduction in Mongolia, it is important to use an approach that maintains comparability. Poverty comparisons require comparability of the underlying welfare indicator as well as comparability of the poverty line. We first summarize below how poverty headcount is calculated in a given year and updated over time, and then discuss the case of Mongolia.

The poverty headcount is defined as the fraction of the population living below a given poverty line. It is generally calculated based on household survey data. While poverty entails multiple dimensions of destitution, a commonly used welfare indicator is per capita consumption. Consumption is arguably a more stable and accurate measure of living standard than income, which tends to be volatile in the short run and is measured with less precision in developing country contexts. With respect to the poverty line, however, its estimation can be more arbitrary. National poverty lines are usually set by national statistical offices using a calorie-based formula, to reflect the cost of minimum basic needs based on a basic basket of goods and services consumed. From one period to another, the poverty line can be adjusted for inflation or recalculated, depending on several factors as discussed below.

One approach is to adjust the poverty line for changes in the cost of living but to still maintain the same benchmark in real terms, thus the same reference level of welfare. Specifically, the poverty line can be inflated from one period to another using consumer price index data, which

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5 See Deaton (1997) and Deaton and Zaidi (2002)
6 See Ravallion (1998)
generates a constant line in real terms. The left panel of Figure 5 demonstrates this concept of using one real poverty line. For example, as the cumulative distribution function of real consumption moves strictly to the right, poverty headcount falls. Since the need for maintaining comparability is important for tracking poverty reduction over time, this method is the common international practice.

Another approach is to recalculate the poverty line, which may be useful after a long period or when the survey design alters significantly. Some significant structural changes in the economy over the long term may justify changing the country’s poverty benchmark. However, this approach is used at the cost of maintaining comparability over time. The loss of comparability is shown in the right panel of Figure 5. As illustrated in the figure, since the poverty line benchmark is moved to the right in the later period, the poverty rate may not change even though everyone consumes more in real terms.

**Figure 5: Alternative approaches to updating poverty line over time differ in poverty benchmarks**

For the purpose of monitoring social progress, poverty analysts would like to hold fixed the standard of living represented by the poverty line (typically by keeping the same basic basket, assuming no change in preferences), that is, follow the first approach. The question of whether or not to recalculate the poverty line thus depends on whether, over time, the society has changed so much that an entirely different basket of goods and services is needed in order to remain at the same standard of living. Over long periods of time when major relative price shifts and significant income changes occur, one can make an argument that the old basket is no longer relevant to the society and make the case for a new one. Based on this line of reasoning, poverty comparisons across relatively short intervals should be based on a constant poverty line adjusted only for price variation. Only very periodically should the poverty line be recalculated based on a new basket.
How has poverty been measured over time in Mongolia? Regarding the welfare indicator, the measure of per capita consumption was constructed as consistently as possible in 2002/3 and 2007/8. There are small differences in the consumption basket that reflect small refinements in the survey, which are unlikely to affect comparability in poverty measures. On poverty lines, the NSO adopted the latter of the approaches discussed above, in an effort to strengthen its construction of the poverty line in 2007/8. The NSO updated the consumption basket used in calculating the new poverty line. In doing so, it finds that poverty headcount is 35.2 percent in 2007/8 (NSO 2009).

While efforts to strengthen estimation of the poverty line deserve praise, calculating a completely new poverty line without adjusting the previous one makes it impossible to assess progress in poverty reduction over the 2002/3-2007/8 period. In other words, it is difficult to compare the national poverty rate of 35.2 percent (or rural rate of 46.6 percent) in 2007/8 to NSO’s earlier rate of 36.1 percent (or rural rate of 43.4 percent) in 2002/3. To determine poverty trends in Mongolia during this five-year period, the World Bank team conducted further analysis using the first approach, i.e. applying consistent poverty lines over time.

### Findings of Analysis Based on Consistent Poverty Lines

The results of new World Bank analysis indicate that consumption-based poverty in Mongolia declined substantially between 2002/3 and 2007/8, consistent with both the macro indicators already discussed and a number of key non-consumption indicators at the micro level.

World Bank analysis based on a consistent poverty line over time finds a considerable fall in poverty, irrespective of where the poverty benchmark is set. Taking the NSO’s 2007/8 poverty line of 62,494 MNT per capita per month as benchmark and adjusting for inflation leads to a consistent poverty line of 36179 MNT in 2002/3. As a result, we find that consumption-based poverty headcount fell from 61.1 percent in 2002/3 to 35.2 percent in 2007/8. Rural poverty dropped from 69.7 to 46.6 percent, and urban poverty dropped from 54.1 to 26.9 percent, as shown in Figure 6. Not only the poverty headcount but also poverty depth and severity decreased during this period (Annex Table 1).

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7 The two surveys were designed to be comparable, particularly the expenditure modules. See NSO (2009) for a detailed description of how the consumption aggregate was constructed and its comparability between the two surveys.

8 Further details about the construction of the new poverty line are in the report NSO (2009).

9 Equivalent to 93 dollars at 2005 PPP

10 The poverty line is adjusted for differential cost of living over time using the NSO’s CPI series, as mutually agreed between the NSO and the Bank of Mongolia.

11 This decrease in the poverty headcount is statistically significant as the headcount rate in 2002/3 and that in 2007/8 are estimated with standard errors of 1 and 0.5, respectively.

12 The numbers presented here are slightly different from those reported in the Mongolia Monthly Economic Update in November 2009, due to incorporation of the NSO’s revised CPI series.
Poverty has declined substantially in Mongolia


The Bank team also analyzed what happened to poverty, starting with NSO’s 2002/3 poverty line of 24743 MNT per capita per month as the benchmark. In 2002/3, this measure generated a poverty rate of 36.1 percent. Using this same poverty line consistently, the analysis indicates that poverty fell from 36.1 percent in 2002/3 to 14.8 percent by 2007/8. Both urban and rural areas experienced a reduction in poverty. Thus, the patterns of poverty reduction are robust to the choice of the real poverty line.

The data supports the finding of declining poverty under most plausible scenarios of inflation from 2002/3 to 2007/8. World Bank analysis uses the official CPI index to adjust for cost of living over time. While there might be debates about whether the CPI fully captures changes in cost of living for the poor, it was the best option available since there is no better, more detailed, and accurate price data for this purpose. Even if we could accurately measure changes in cost of living for the poor during this period, inflation would have had to be around 156% (approximately twice what the official CPI indicates) for poverty as measured by the NSO’s 2002/3 poverty line to have remained largely unchanged.

It may also be informative to look at food shares in consumption since, according to Engel’s law, one typically expects a reduction in the share of food consumed by households as well-being improves. In the Mongolia data, the ratio of food consumption to total consumption among all households fell from 47.5 percent in 2002/3 to 44.3 percent in 2007/8. While we do not see a fall in food shares for households in the bottom two quintiles, food shares among rural households dropped from 55.4 percent to 50.9 percent. In the Mongolian data, the observed change in average food expenditure associated with the change in total expenditure is consistent with international estimates of the income elasticity of demand for food.

13 When food prices increase more relatively to non-food prices, as observed in 2008, it is possible not to see a reduction in the food share even as real welfare improves.
Examination of key non-consumption measures of well-being between 2002/3 and 2007/8 provides further evidence consistent with falling poverty. On the most essential input to Mongolia’s rural economy, both macro and micro data show that the livestock headcount increased significantly and especially among the poorest households (Figures 2 and 7). Increases in livestock size may be one of the driving factors for poverty reduction among the rural poor in Mongolia.

The country also experienced progress along various social and economic indicators such as increased access to savings, higher educational attainment, lower illness incidence, and increased access to solar energy and telecommunications. The fraction of households in rural areas with a savings account grew four-fold during the 2002-2008 period (Figure 8a). This phenomenon may reflect the rapid expansion of the social welfare system in which benefit payment are deposited to savings accounts; nevertheless, the data suggests an improvement in connectedness to commercial banks and financial instruments. Rural families’ access to solar energy also increased by more than five times (Figure 8b). This factor helped serve the energy needs of rural herders, thus likely to improve their livelihoods and well-being. A similar magnitude of increase in phone ownership (Figure 8c) also implies better information flows, in general, and possibly better access of herders to market price information, in particular.
Livestock headcount increased significantly and especially among the poorest households.

Figure 7: Livestock headcount increased significantly and especially among the poorest households.

Note: Bod scale - 1 horse is assumed to be the same as 1 cattle (cow or yak), 0.67 camels, 6 sheep or 8 goats. Source: World Bank staff calculations from HIES/LSMS 2002/3 and HSES 2007/8 household surveys.

Mongolia experienced progress along various social and economic indicators.

Figure 8a: Mongolia experienced progress along various social and economic indicators.

Figure 8b: Mongolia experienced progress along various social and economic indicators.

Figure 8c: Mongolia experienced progress along various social and economic indicators.


Conclusion and Further Research

These results bring good news that economic growth from 2002 to 2008 as well as some of Mongolia’s efforts to reduce poverty have paid off. New World Bank analysis using a common poverty benchmark over time finds that consumption-based poverty in Mongolia declined significantly between 2002/3 and 2007/8. This finding is consistent with observed macro indicators and several key non-consumption indicators during the same period.
However, these results are not a reason for complacency. A third of Mongolians are still considered poor. Moreover, large differences in the poverty rate still exist across regions and household dwelling status. Certain pockets of the population, such as those in rural areas and recent migrants to the urban areas, are significantly poorer than average. Large negative shocks such as the global financial crisis and the recent harsh winter conditions (dzud) may have hurt the poor and vulnerable populations significantly.

The World Bank and the Asian Development Bank together are conducting a series of qualitative assessment of the impacts of the financial crisis on the poor. The first two rounds of research highlighted vulnerabilities in both rural and urban domains. Respondents in poorer households have described reductions in consumption of some basic goods and even forgoing of healthcare to reduce family expenditures. In rural areas, poorer households dependent on the sale of cashmere or on tourism-related livelihoods have reported difficulties in coping with the combined effects of falling incomes and rising prices of basic consumption goods. In urban areas, poorer migrant communities have described difficulties finding work and frequent breaches of contracts in which employers pay salaries below the agreed-upon wage. All the above factors emphasize the need for effective poverty reduction policies in general and social safety nets in particular.

To address such issues, and as inputs to the Bank’s policy dialogue in Mongolia, the World Bank team is currently conducting further, more detailed analysis on a number of poverty-related topics. A multi-dimensional analysis of Mongolia’s poverty profile, including on determinants of poverty, is under way. Other work includes such themes as internal migration and poverty, the role of social safety nets in poverty reduction, and the impacts of the financial crisis on poverty. The team is also supporting the Mongolian government in its efforts to make the social welfare system more efficient and better targeted to poor households.

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14 The World Bank team is currently carrying out simulation exercises to test quantitatively the hypotheses that arise from findings of the qualitative work.
REFERENCES


Annex

Figure 9. Distribution of real consumption in Mongolia in 2007/8 stochastically dominates (a strict improvement to) that in 2002/3

Note: Welfare indicator is per-capita consumption in 2007/8 MNT. The vertical line denotes the 2007 national poverty line
Source: World Bank staff calculations from HIES/LSMS 2002/3 and HSES 2007/8 household surveys

Table 1: Overall Poverty

<table>
<thead>
<tr>
<th></th>
<th>Poverty Headcount Rate (P0)</th>
<th>Poverty Gap (P1)</th>
<th>Squared Poverty Gap (P2)</th>
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<tbody>
<tr>
<td>Urban</td>
<td>54.1 26.9 -27.3</td>
<td>19.7 7.7 -12.1</td>
<td>9.7 3.1 -6.6</td>
</tr>
<tr>
<td>Rural</td>
<td>69.7 46.6 -23.2</td>
<td>27.1 13.4 -13.7</td>
<td>13.6 5.2 -8.3</td>
</tr>
<tr>
<td>Total</td>
<td>61.1 35.2 -25.9</td>
<td>23.0 10.1 -12.9</td>
<td>11.4 4.0 -7.4</td>
</tr>
</tbody>
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Note: Changes shown between years 2002/3 and 2007/8