

Report No. 63111-AM

# Armenia

## Poverty Update Using Revised poverty Lines

June 1, 2011

Human Development Sector Unit  
South Caucasus Country Department  
Europe and Central Asia Region



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## CURRENCY EQUIVALENTS

(Exchange Rate Effective as of March, 2011)

Currency Unit = AMD (Armenian Dram)

AMD 1.00 = 0.0027 US\$

US\$1.00 = 365 AMD

## FISCAL YEAR

January 1 to December 31

## ABBREVIATIONS AND ACRONYMS

AMD	Armenian Dram
CB	Consumer Basket
CPI	Consumer Price Index
ECA	Europe and Central Asia
FBP	Family Benefit Program
FPL	Food Poverty Line
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GOA	Government of Armenia
ILCS	Integrated Living Conditions Survey
IMF	International Monetary Fund
MLSI	Ministry of Labor and Social Issues
NSS	National Statistics Service

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## Executive Summary

### Introduction

1. *This study has two objectives, the first of which is to revise the national poverty lines of Armenia.* The Government of Armenia expressed its desire for revised poverty lines that more accurately reflect the current consumption and expenditure patterns of the population. The work was jointly undertaken by the client counterparts and the World Bank. Since 2005, poverty measurement in Armenia has relied on poverty lines based on the consumption basket from the 2004 Integrated Living Conditions Survey (ILCS)—with adjustments for price changes in the subsequent years. There is a general consensus that the consumption basket has changed appreciably since then. As expected, the revised poverty lines are larger than the ones based on the 2004 consumption basket. This was mainly due to changes in the share of the non-food component of household consumption expenditures. The poverty line based on the 2009 consumption basket is about 19% higher than the one based on the old consumption basket; the corresponding increase in the cost of calorie is only 2%. These new and higher poverty lines are expected to be in effect until the next such revision in 4-5 years.

2. *The second objective of this study is to assess the changes in poverty incidence in the aftermath of the global recession.* After a decade-long boom—and for the first time since the late 1990s—Armenia suffered a severe economic contraction in 2009, as a result of the global recession. Survey data in the aftermath of the crisis showed that many Armenians suffered the impact. By the third quarter of 2009, about 40% of Armenian households reported a loss of labor income, remittances, or income from farm activities (World Bank, 2010). This note updates the poverty numbers using the full dataset from the 2009 ILCS. It estimates how much poverty incidence increased during the crisis, and draws implications for mitigation measures.

### Main Findings

3. *All poverty indices increased during the crisis and continued to worsen during the macroeconomic recovery.* From 2008-2009, the average monthly real consumption nationally decreased by about 6%. Rural areas and the poorest groups experienced a higher rate of decline. Consumption expenditures among households in the poorest quintile decreased by 10%, as compared to a 3% decline among those in the richest quintile. According to a comparable welfare measure and based on a revised poverty line of ADM 30,920 per adult equivalent per month, poverty incidence increased from 27.6% to 34.1% from 2008 to 2009, a 6.5% increase. Poverty became deeper and more severe in 2009, with a poverty gap of 7.8% (vs. 5.1% in 2008) and a poverty severity of 2.4% (vs. 1.4% in 2008). While inequality in Armenia is relatively low, it did worsen somewhat during the crisis.

4. *The magnitude of the increase in poverty incidence would have been bigger in the absence of the government's crisis mitigation measures.* Armenia protected its priority social spending programs, such as pensions and the Family Benefit Program (FBP)—the latter is the country's last resort targeted social assistance program. The protection of public spending on these programs—and improved targeting of FBP—has helped Armenia to avoid worse poverty

outcomes. Before the crisis, the programs were already effective poverty reduction instruments—and they played an even greater role in the aftermath of the crisis. This is evident from the calculation of what the levels of poverty would have been in the simulated absence of these transfers before and during the crisis. In 2008—before the impact of the crisis was felt—the poverty incidence would have been 43% without both pensions and FBP, as compared to the actual 27.6%. In 2009, the poverty incidence would have been 51.7% without both pensions and FBP, as compared to the actual 34.1%.

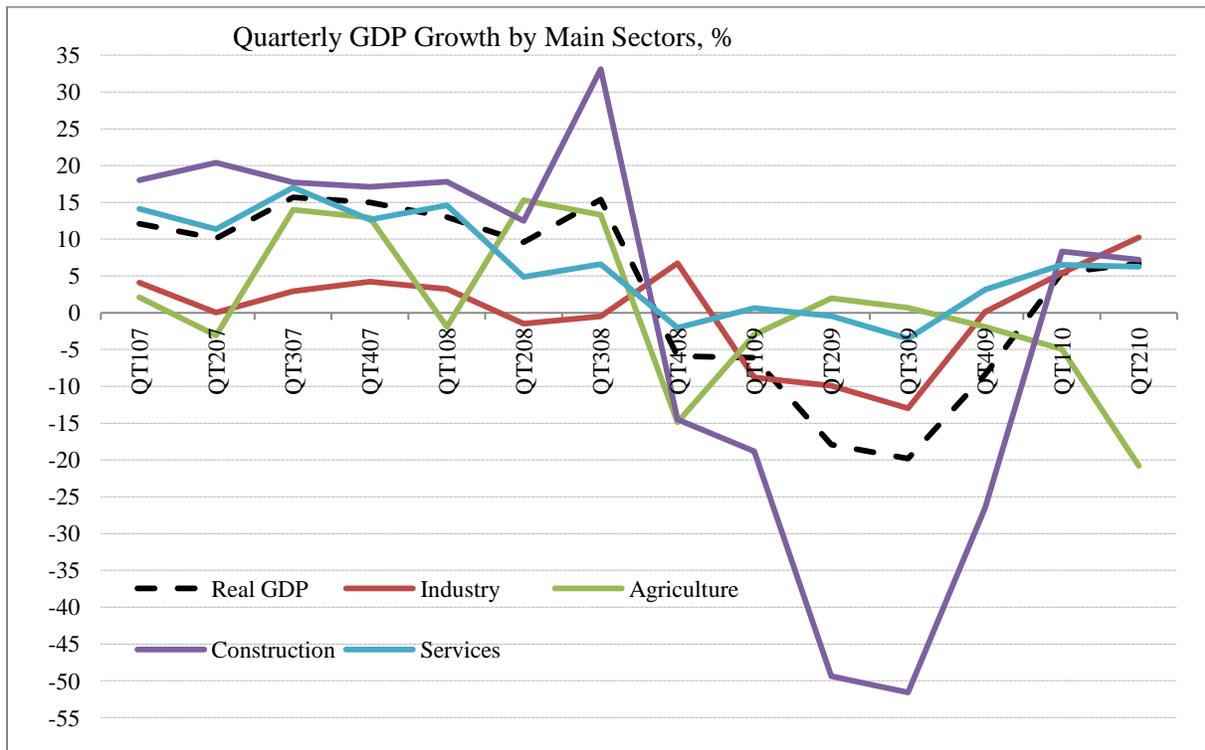
5. *The lingering effects of the global recession on households—despite the apparent macroeconomic recovery—call for continued mitigation measures.* It is advisable to maintain and further strengthen the social protection measures for the most vulnerable households that were put in place during the onset of the crisis.

# I. Introduction

## Macroeconomic Developments

1. *After a decade-long boom—and for the first time since the late 1990s—Armenia suffered severe economic contraction in 2009, as a result of the global recession.* Armenia was one of the hardest hit countries in the ECA region (World Bank, 2010b). The country’s real GDP contracted by 14.6%, nearly three-fold the average for the ECA region. This reflected Armenia’s excessive reliance on remittances and foreign capital inflows (see Figure 1). The construction sector was the major source of growth before the crisis. The sector rapidly shrank due to the sharp decline in remittances and foreign direct investment (FDI). Thus, Armenia’s vulnerabilities to the global crisis were exacerbated not only by external factors beyond its control, but also by its heavy reliance on a narrow base for growth.

**Figure 1: Economic Growth before, during and after the Global Recession**



Source: Ministry of Finance, Republic of Armenia.

2. *After nearly two years of economic contraction, recovery is underway in Armenia.* Real GDP declined by around 14.6% in 2009. It grew by 2.2% in the first quarter of 2010, and by 8.8% between January and May (see Figure 1). However, with a contraction in agricultural production—a result of unfavorable weather conditions—the pace of economic recovery appears to have lost some speed during the second half of 2010. The economy is expected to attain a 4-5% growth in the medium-term, a significant departure from the double-digit growth rates that

occurred during the years preceding the crisis. Post-recession economic growth appears to be more broad-based than pre-crisis growth—all major sectors of the economy are expected to contribute. Several sectors—including industry and services—contributed to the growth in 2010, and it is expected that they will continue to be more vibrant than they were in the 2000s.

3. ***The recession resulted in job and income losses for families, and squeezed the tax base for the Government of Armenia (GOA).*** Survey data in the aftermath of the crisis showed that individuals and families faced job losses, reduction in work hours, and declining earnings and remittances from both external and internal sources. About 40% of Armenian households reported suffering the direct impact of the crisis through loss of labor income, remittances, or income from farm activities. The crisis disrupted the poverty reduction momentum of Armenia—poverty increased for the first time since the late 1990s (World Bank, 2009, 2010; NSS, 2010).

4. ***The note updates poverty numbers based on the full dataset of 2009 Integrated Living Conditions Survey (ILCS).*** It analyzes poverty developments before, during and after the crisis. It assesses who suffered the most and how much from the economic downturn, and how the poverty incidence was impacted by the economic recovery. It investigates whether the crisis had a disproportionately higher impact on the poor, and how the burden of the downturn on the poor compares to the benefits to the poor during times of economic growth. The note also briefly looks at household coping strategies during and after the crisis.

## **Data**

5. ***The study uses data from the Armenia ILCS from 2004, 2008 and 2009.*** The data from the three years are comparable because they use virtually the same survey instrument and are identically designed and implemented. The Armenia ILCS is a representative sample of about 2,000 households surveyed each quarter, for a total of about 8,000 households per year. It contains detailed information on household composition, education, health, the labor market, migration, agriculture, income, public and private transfers, expenditures, savings and debt, and subjective perceptions of individuals and households. In addition, the report uses data from crisis response and coping strategies modules, which were added to the main ILCS questionnaires. These modules included questions on the perceived impact of the crisis on household income and income sources, including wages, remittances, borrowing, etc. They also included questions on behavioral changes in consumption patterns and household coping strategies, and sources of support during the crisis. The data from these crisis-related modules, together with the main ILCS data of 2009, enrich the analysis of the poverty and social impact of the crisis.

## II. Updated Poverty Lines

### Background and Rationale

6. *The Government of Armenia expressed its desire for new and revised poverty lines that more accurately reflect the current consumption and expenditure patterns of the population.* Since 2005, poverty measurement in Armenia has relied on poverty lines constructed on the basis of the 2004 consumer basket derived from the Armenia Integrated Living Conditions Survey (ILCS). For each subsequent year, the poverty lines were adjusted to account for changes in prices—thus, keeping them fixed in real terms over the course of time. There is a general consensus that the consumption basket has changed appreciably since then. This is particularly true with regard to households' and individuals' command and consumption of non-food items. As the economy and household income grow, the share of household spending on food is expected to decline, and the share of spending on non-food is expected to grow. These income effects influence the cost of basic needs, and therefore, the poverty lines.

7. *It is crucial that poverty lines be in accord with current social and economic conditions, in order to accurately identify the poor and pursue effective pro-poor social policies.* There is an agreement between the Government of Armenia and the World Bank to revise the poverty lines every five years. The poverty lines in the report have been revised per that agreement according to the consumption basket derived from the 2009 ILCS (see Annex 1 for detailed justification and estimation methodology for the new poverty lines). The work was jointly undertaken by the client counterparts and the World Bank. The revised poverty lines are expected to better reflect the current consumption and expenditure patterns of the population.

### Methodology

8. *Both the old and the revised poverty lines are based on a similar methodology*—and they are both based on the notion that poverty lines should echo an absolute minimum of consumption needed to meet basic needs. There are a number of ways to draw poverty lines. The World Bank poverty measurement and analysis relies on *absolute* poverty lines derived from an estimation of the cost of basic food needs to which a provision is added for basic nonfood needs. In the case of Armenia, both the old and the revised poverty lines are characterized by the following key features:

- They are based on a broader measure of the consumption aggregate, which—in addition to food and non-food components—also includes the user values of durable goods and the cost of non-catastrophic health care;
- The consumption aggregate is adjusted for differences between adult and child consumption, and economies of scale;
- The minimum food basket is determined according to the actual consumption patterns revealed in the household survey; and
- The cost of basic needs (CBN) approach is used in the estimation of the poverty lines, in accordance with the World Bank methodology for measuring absolute upper, lower and food poverty lines.

9. ***Construction of Consumption Aggregate.*** The study employs a standard World Bank algorithm for construction of the consumption aggregate. Household consumption expenditures are comprised of food and non-food components. Food consumption includes food consumed at home and outside of home—from purchase, self-production, gifts, and other transfers. Non-food consumption expenditures include: alcoholic beverages and tobacco, clothing and footwear, household goods, transportation, utilities, recreation and education. Expenditures on health and the rental value of durable goods are also included in the non-food component, in order to create a broader measure of welfare. The non-food component also includes in-kind non-food consumption, such as non-food goods and services received free of charge (i.e., in-kind non-food humanitarian aid, gifts, non-food goods and services provided by the members of the household). The monetary values of in-kind non-food consumption are based on the households' own assessments.

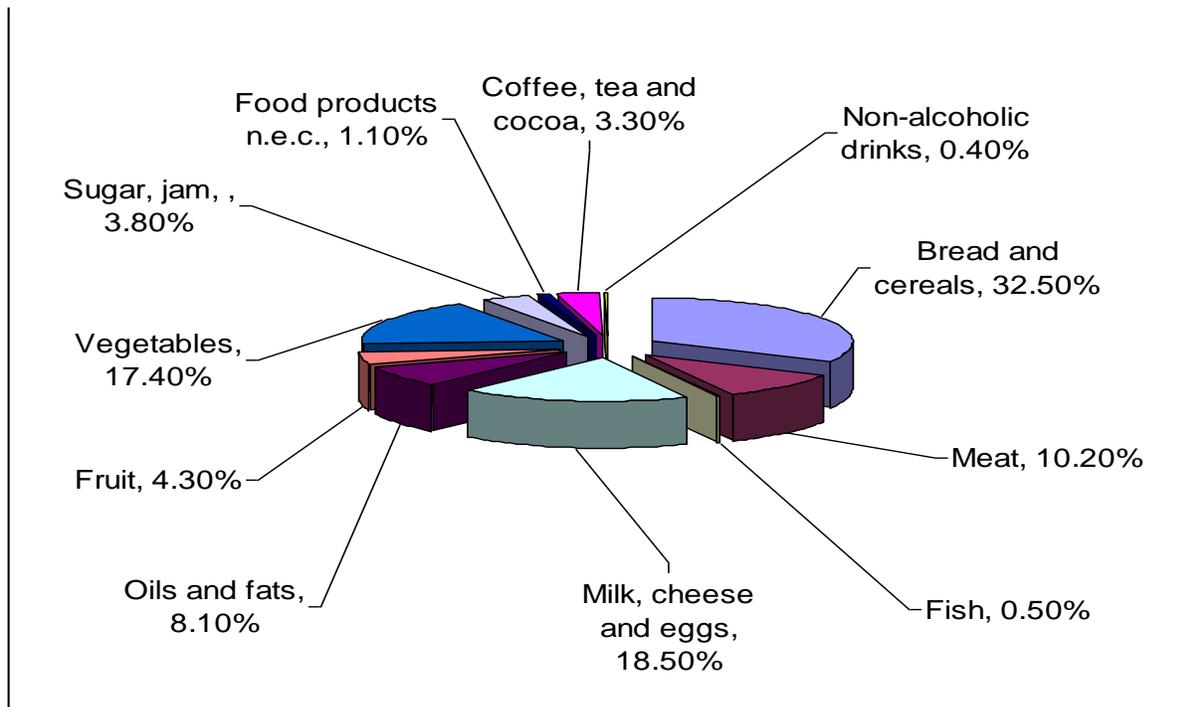
10. ***Adjustments for Regional Prices and Economies of Scale.*** The resulting welfare aggregate is subject to adjustments for regional and seasonal differences in prices, for economies of scale, and for differences in the amount of consumption by children and adults. The nominal consumption aggregate is adjusted using two-dimensional price indices to price differences over the course of time and across space. The total consumption aggregate is then expressed in average annual national price levels. Consumption per adult-equivalent is used to account for differences in child and adult consumption.

11. ***Poverty Lines.*** A poverty line consists of two components: (i) the costs of caloric requirements (estimated monetary value of minimum food basket); and (ii) the costs of basic non-food goods and services. The first component, also known as the *food poverty line* (FPL), is based on the cost of basic needs (CBN) framework. As detailed in Annex 1, the estimation of FPL is comprised of the following steps:

- ***Establishing the minimum dietary requirement.*** The average caloric requirement for Armenia is calculated using information on caloric requirements of different demographic groups according to the 1985 WHO standards and information on demographic distribution of the population. The average caloric requirement for Armenia is estimated at 2,232 calories per day per capita—the same as it was in 2004.
- ***Decision on the reference population.*** The choice of reference population for the minimum food basket was guided by the need to adequately represent the population of households near the poverty line—thus, reflecting a food consumption basket that is neither “too poor” nor “too rich”.
- ***Decision on the composition of the minimum food basket.*** The number of food items in the minimum food basket was dependent on several factors, including: (i) the budget share of the various food items; (ii) the essentiality of the food items for the population's nutrition and health; (iii) the availability of prices for the food items; and (iv) the level of consumption of the food items. The 2009 ILCS collected information on about 208 food items and non-alcoholic beverages. A sensitivity analysis revealed that if “non-important” food items—which altogether constitute less than 1% of the total food expenditures—are removed, the list of products can easily be reduced almost in half.

- *Estimation of the cost of the minimum food basket.* FPL is calculated as the cost of the minimum food basket for the reference population needed to meet a total caloric requirement of 2232 Kcal per capita per day. Based on the consumption shares of the selected reference population, 2232 calories per day is distributed across the different food items. This 2232 calorie per capita per day diet is then priced using the national price-per-calorie for each food item in the consumption basket.

**Figure 2: Composition of Food Poverty Line, 2009 (%)**

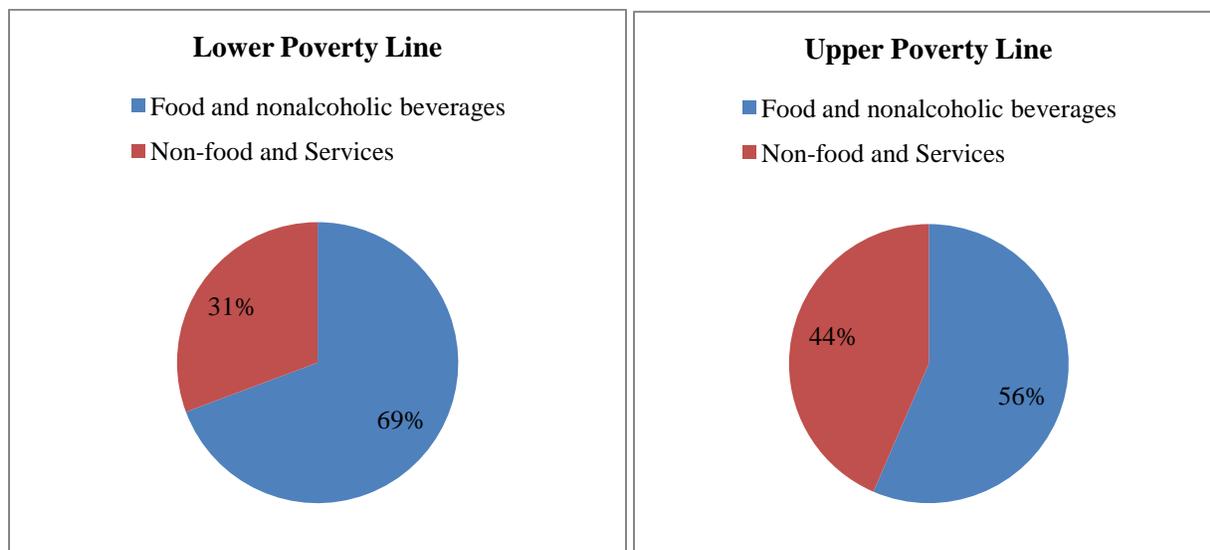


Source: ILCS 2009

12. *The estimation of the second component of the poverty line involves accounting for basic non-food consumption needs.* Having established the food poverty line, the question is how much allowance should be considered for basic non-food needs. While several competing methods are available, the study uses two simple methods for determining the allowance for non-food consumption: (i) the food expenditure method (FEM); and (ii) the consumption basket method (CBM) [World Bank, 2002]. The first step with the FEM is to select those households or individuals whose food consumption (total consumption) is around the value of the food poverty line. The second step is to calculate the *share* of total consumption that goes to non-food consumption for the reference groups. The corresponding non-food share estimated for the reference groups is added to the value of the food poverty line in order to calculate the complete poverty line.

13. **Lower and Upper Poverty Lines.** According to the CBM, the food share of households whose total consumption is close to the food poverty line is estimated to be around 70%. This leads to a *lower poverty line* of AMD 25,217 per adult equivalent per month. According to the FEM, the food share of households whose food consumption value is around the food poverty line is estimated to be 56.5%. This leads to an *upper poverty line* of AMD 30,920 per adult equivalent.

**Figure 3: Composition of Lower and upper Poverty Lines in Armenia, 2009**



Source: 2009 ILCS

14. **Comparison of the old and the revised poverty lines.** The poverty lines based on the 2009 consumption basket are larger than the ones based on the 2004 consumption basket (see Table 1). This is mainly due to changes in the share of the non-food component of household consumption expenditures. The poverty line based on the new consumption basket is about 19% higher than the one based on the old consumption basket—the corresponding increase in the cost of calorie is only 2%. These new and higher poverty lines are expected to be in effect until the next such revision in 4-5 years—and poverty measurements in this note are based on the new poverty lines. For comparison and for robustness check of poverty trends during the crisis, poverty numbers based on both the old and the new poverty lines are presented wherever necessary. As the next section makes clear, the poverty rates in Armenia based on the revised poverty lines are higher, but the trends in poverty over the past several years remain essentially the same regardless of which poverty line is used.

**Table 1: Old and Revised Poverty Lines for Armenia, 2009**

(AMD per Adult Equivalent, per Month, 2009 prices)

	<i>Old Basket (2004)</i>	<i>New Basket (2009)</i>	<i>Change (%)</i>
Food Poverty Line	17,141	17,483	2

Lower Poverty Line	23,265	25,217	8
Upper Poverty Line	25,877	30,920	19

Source: *ILCS 2004 and 2009*

15. **Comparison of the poverty incidence numbers based on the old and the revised poverty lines.** The poverty headcount using the revised poverty lines is larger than the headcount using the old poverty lines (see Table 2). This is to be expected, because the revised poverty lines are about 19% larger. However, there is no significant difference between the poverty rates based on the old as opposed to the revised cost of calorie (i.e., food poverty line).

**Table 2: Comparison of Poverty Headcount based on the Old and Revised Poverty Lines**

	<i>Food Poverty Line</i>	<i>Lower Poverty Line</i>	<i>Upper Poverty Lire</i>
Old	3.3	17.3	28.6
Revised	3.6	20.1	34.1
Difference	+0.3	+2.8	+5.4

Source: *ILCS 2009*

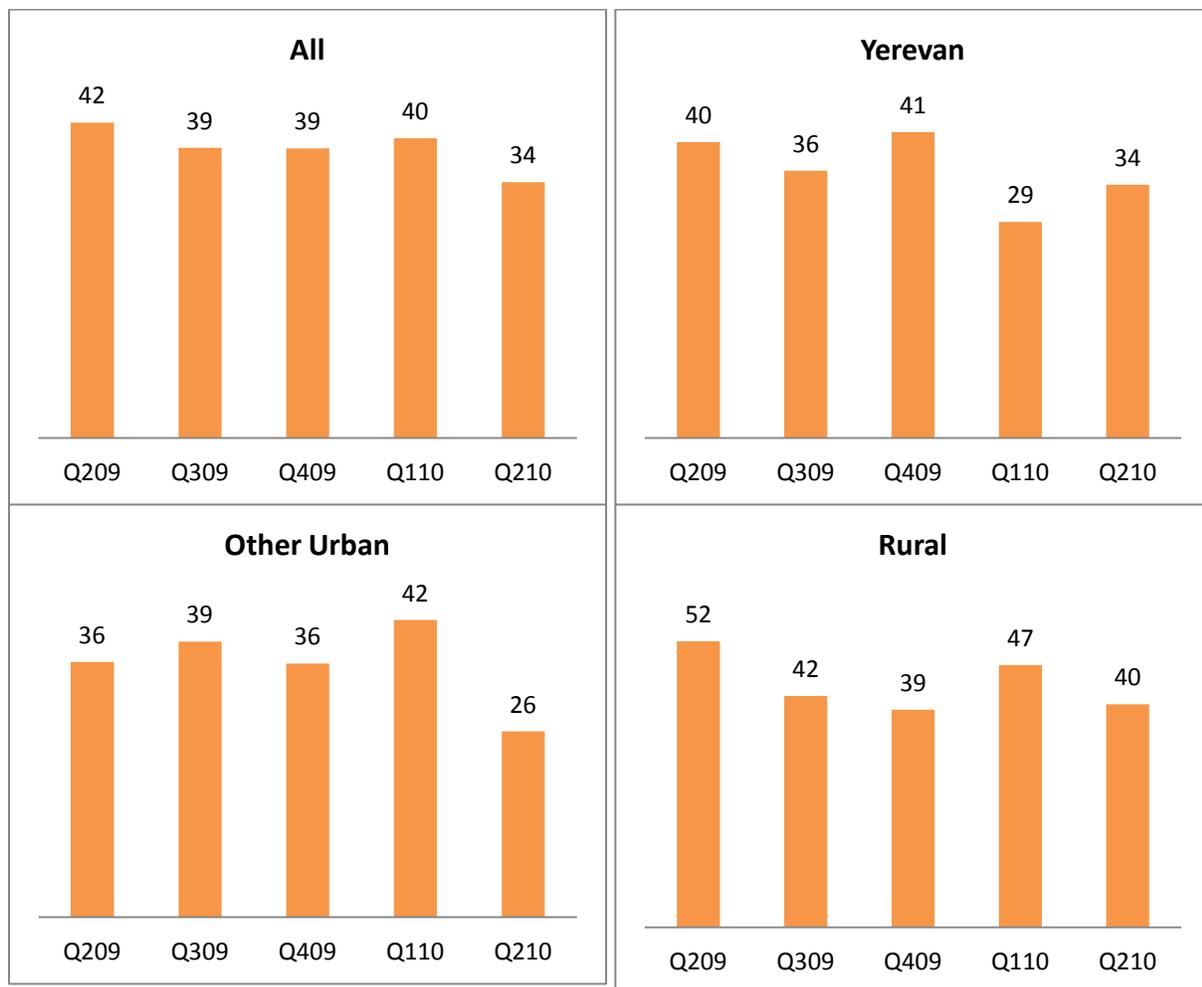
### III. Poverty Trends

#### The Global Recession and Household Coping Strategies

16. *At the height of the recession, about 42% of Armenian households reported suffering the negative consequences of the global economic crisis.* Figure 4 presents the percentage of households that reported having been affected by the crisis. As shown in the earlier reports, the main transmission channels have been: (i) the labor market (job loss, reduced wage); (ii) the decline in remittance flows; and (iii) the decline in farm sale income (World Bank, 2010).

**Figure 4: Impact of the Global Recession**

*(% households reporting decline in various sources of income)*

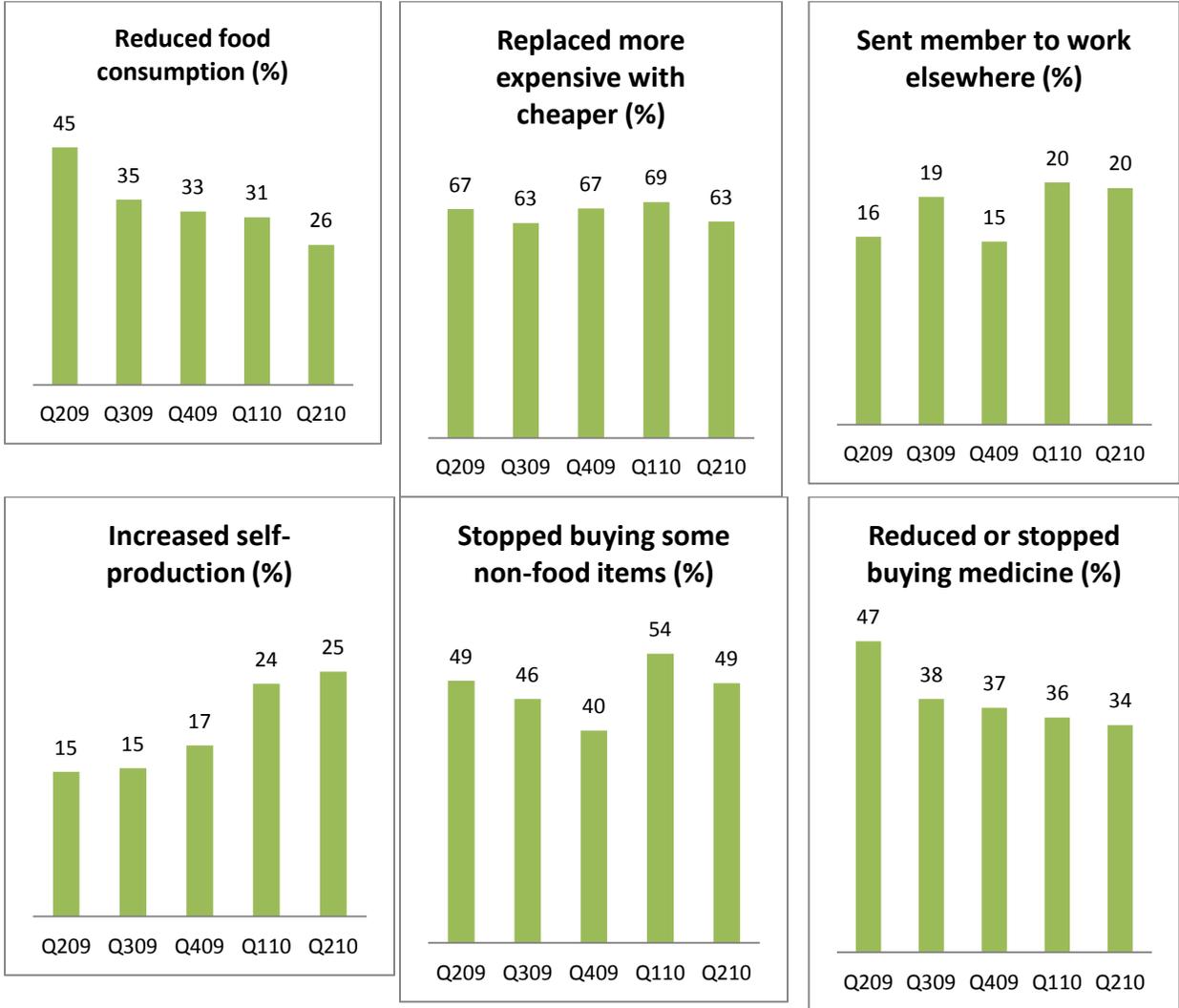


Source: ILCS 2009 and 2010.

17. *Households employed several coping strategies, including those potentially harmful in the long-run.* Figure 5 is based on the data from the ILCS for 2009 and first half of 2010. It

presents the share of affected households that employed different coping strategies during the crisis. The main coping mechanisms included: (i) reduction in food consumption; (ii) substitution of less-expensive goods for more expensive goods; (iii) reduction in spending on medicines; and (iv) reliance on self-production of food. In the second quarter of 2009, about 45% of affected households reported cutting back on food consumption—which can have serious implications for nutritional adequacy for adults and children. The share of households that cut back on food consumption decreased to 26% in 2010. Similar improvements were also seen in affected households’ access to drugs and medicines. Some coping strategies—such as increasing self-production of food and sending household members to work elsewhere—are increasingly being used.

**Figure 5: Coping Strategies during and after the Crisis**



Source: World Bank staff estimates based on ILCS 2009 and 2010.

## Changes in Consumption Expenditures during the Recession

From 2008-2009, the average monthly real consumption nationally decreased by about 6%. The decline was experienced by all income groups. Household consumption declined from ADM45,273 per adult equivalent to ADM42,715 (in 2009 prices), a 6% decrease in the space of one year (see Table 3). Rural areas and the poorest groups experienced a higher rate of decline: consumption expenditures among households in the poorest quintile decreased by 10%; the decline among households in the richest quintile was 3%.

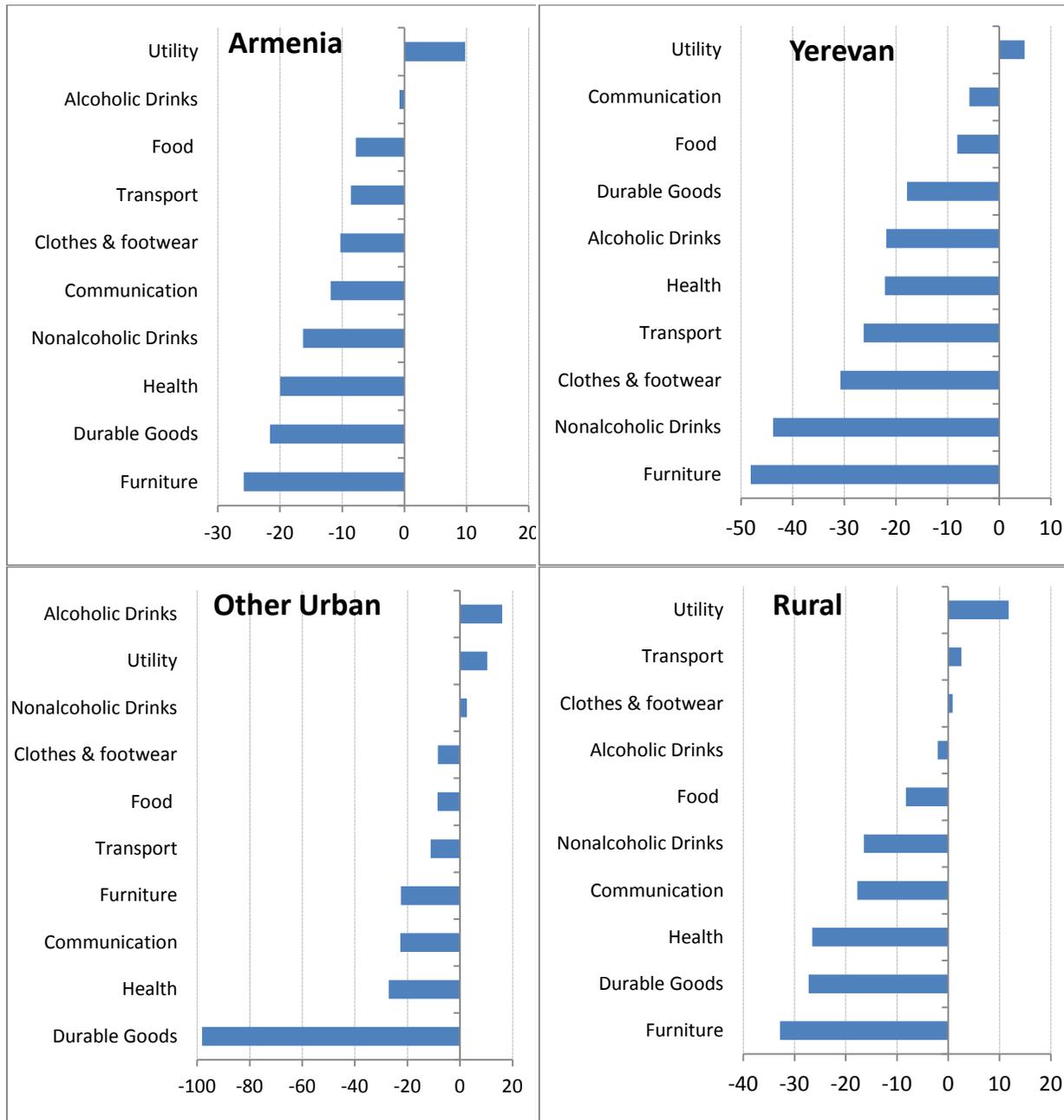
**Table 3: Consumption Expenditures per Adult Equivalent before and during the Crisis**  
(AMD, 2009 prices)

<i>Area</i>	<i>2008</i>	<i>2009</i>	<i>Change (%)</i>
Urban	45,273	42,715	-6
Yerevan	49,169	46,794	-5
Other Urban	41,216	38,337	-7
Rural	43,854	40,983	-7
<i>Quintile</i>			
Quintile 1 (lowest)	23,638	21,186	-10
Quintile 2	31,797	29,021	-9
Quintile 3	39,583	36,937	-7
Quintile 4	49,394	46,419	-6
Quintile 5 (highest)	77,804	75,332	-3
Total	44,765	42,107	-6

Sources: ILCS 2008 and 2009.

**18. Household consumption expenditures decreased across all main spending categories, except for utilities.** Household expenditures on healthcare, transportation, and purchase of durable goods declined by 20%, 21%, and 23%, respectively (see Figure 6). The decline in spending on healthcare and purchase of durable goods was larger in rural areas. The latter also experienced a spike in alcohol consumption. The combination of rising unemployment and deterioration of living standards may have led to additional stress and risky behavior, such as increased alcohol consumption.

**Figure 6: Changes in Expenditure Components, 2008-2009**



Source: ILCS 2008 and 2009

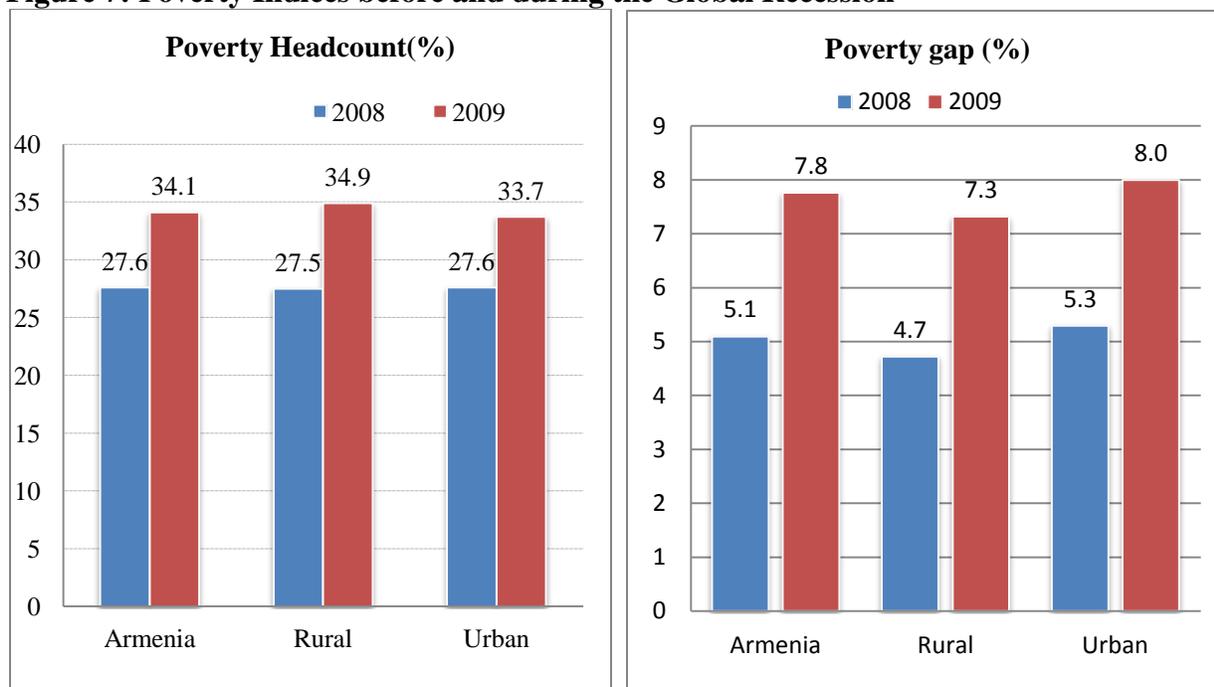
### Poverty during the Recession

19. *From 2008-2009, all poverty indices increased.* According to a comparable welfare measure and based on a revised poverty line of ADM 30,920 per adult equivalent per month, poverty incidence increased from 27.6% to 34.1% from 2008-2009, a 6.5% increase in one year. Urban poverty incidence of 33.7% in 2009 was slightly better than the corresponding rural rate of 34.9%. Although the difference was not statistically significant, rural poverty worsened more

than urban poverty during the crisis. During the global recession, poverty incidence in rural areas increased faster than in urban areas (7.4% and 6.1%, respectively).

20. **Poverty became deeper and more severe in 2009, as compared to 2008.** The poverty gap in 2009 was 7.8%, as compared to 5.1% in 2008 (see Figure 7, right panel). Poverty severity was 2.4% in 2009, as compared to only 1.4% in 2008. The worsening of poverty outcomes is largely attributable to: (i) the global economic crisis—which resulted in a 14.2% contraction in real GDP in 2009; and (ii) an increase in inequality.

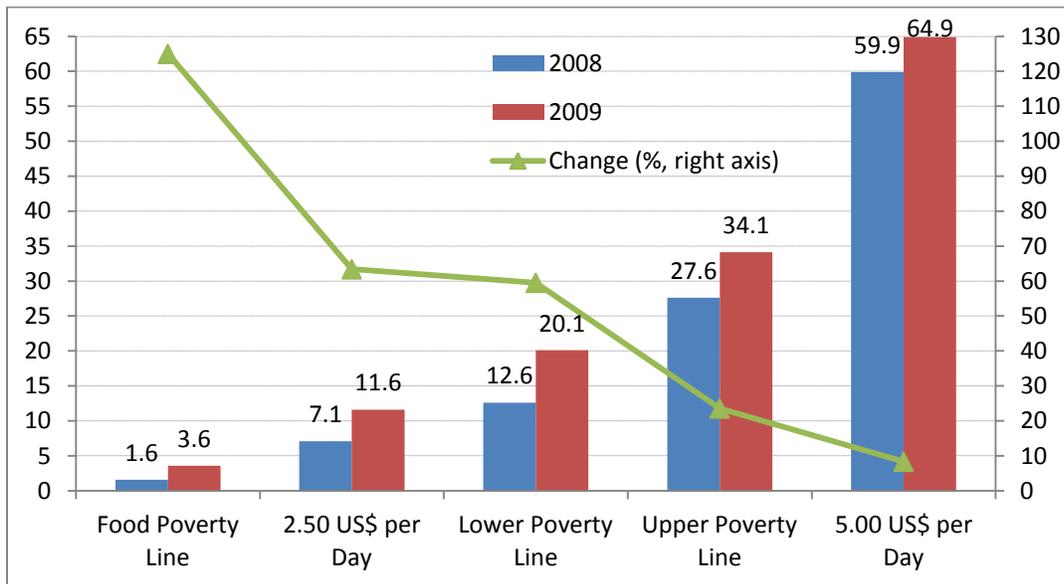
**Figure 7: Poverty Indices before and during the Global Recession**



Source: ILCS 2008 and 2009

21. **The increase in poverty incidence during the crisis is relatively higher when using lower poverty lines—indicating that the impact was more severe on poorer households.** Figure 8 presents the changes in poverty headcount ratio using: (i) the food line (i.e., AMD 17,483 per adult equivalent per month); (ii) the lower poverty line (i.e., AMD 25,217 per adult equivalent per month); (iii) the upper poverty line (AMD 30,920 per adult equivalent per month); and (iv) two international poverty lines (2.50 and 5.00 US \$ per capita per day). The relative poverty impact of the crisis decreases with the size of the poverty line. Food poverty (the rate of malnutrition) more than doubled, whereas there was a less than 10% increase in poverty based on a US\$ 5.00 per day poverty line. Beginning from the lower poverty line, even the absolute magnitude increase in poverty declines with higher poverty lines. For example, using the lower, upper and US\$ 5.00 per day poverty lines, poverty increased by 7.5%, 6.5%, and 5.0%, respectively.

**Figure 8: Changes in Poverty Headcount using Different Poverty Lines**



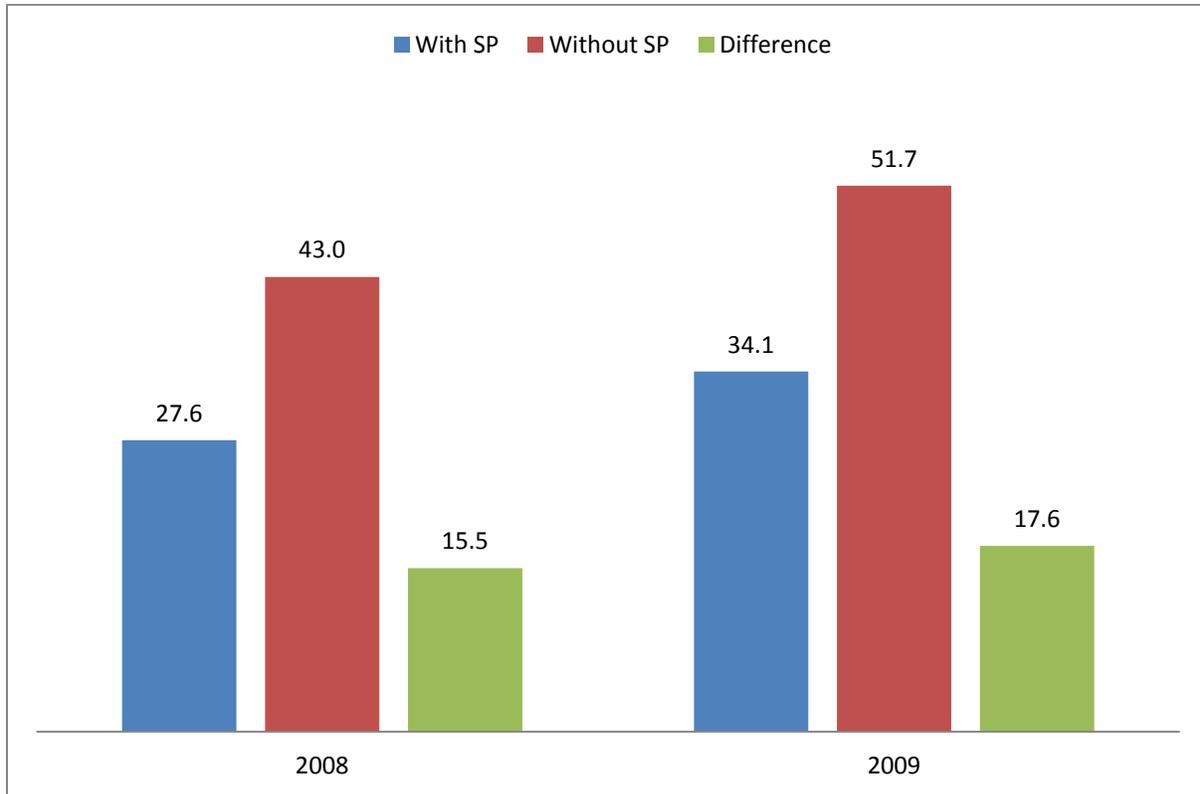
Source: ILCS 2008 and 2009

22. **The role of Government Mitigation Measures.** What would have been the level of poverty without the government mitigation measures? What was the role played by the social protection spending programs that the Government of Armenia implemented during the crisis as its main crisis mitigation measures? A simple way to measure the poverty impacts of social protection programs is to compare the living conditions under the programs with the living conditions in the absence of the programs. For simplicity, it is assumed here that recipient households spend 100% of all transfers and that labor supply and other behaviors are unchanged in response to the transfers. Pre-transfer consumption expenditures are therefore obtained by subtracting transfers from actual observed expenditures.

23. **The magnitude of increase would have been bigger in the absence of the government's social protection measures.** Figure 9 presents the poverty impacts of Armenia's main social protection programs before and during the crisis. In 2008—before the crisis—all social protection programs combined reduced poverty by 15.5% in the overall population. Without social protection transfers, poverty incidence in Armenia could have been 43% in 2008, compared to the actual 27.6%. In 2009—in the aftermath of the crisis—all social protection programs combined reduced poverty by 17.6% in the overall population. Without social protection transfers, poverty incidence in Armenia could have been 51.7% in 2009, compared to the actual 34.1%. This suggests that social protection programs played a more important role in poverty reduction during the crisis than before the crisis. As shown by earlier analysis by the World Bank, the increased importance of public transfers can be explained by two factors (World Bank, 2010). First, the decline in other sources of income due to the crisis would have enhanced the marginal impact on poverty of the public transfers. Second, the average size of pensions and Family Benefits increased in 2009. The government's decision to protect the priority social spending programs—while other government programs suffered budget cuts—

ensured that these programs did not decline during the crisis and provided the needed cushion to the beneficiaries.

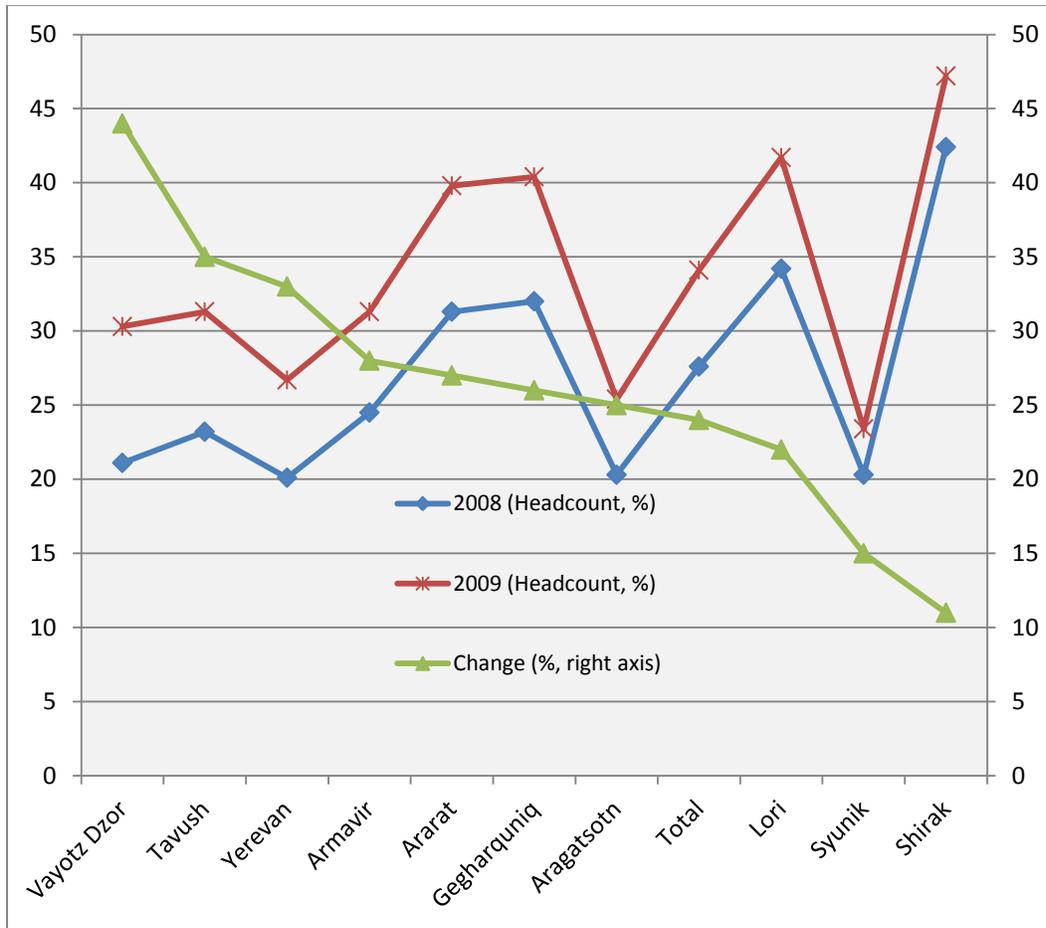
**Figure 9: Overall Poverty Reduction Impact of Social Transfers (headcount poverty, %)**



Source: ILCS 2008 and 2009

24. *All regions of Armenia experienced an increase in poverty incidence during the crisis—although to varying degrees.* Figure 10 presents the poverty headcount in 2008 and 2009—and its relative change from 2008 to 2009—by all regions and Yerevan. According to the 2009 ILCS, Tavush, Vayots Dzor and Yerevan suffered the highest relative increase in poverty incidence during the crisis. Kotayk and Shirak saw a smaller relative increase—albeit from high rates of poverty to begin with—and they still remain the two poorest marzs in Armenia. Shirak—a high altitude region which was devastated by the earthquake of 1988—is the poorest region of Armenia. Almost 47.2% of its population lives below the poverty line.

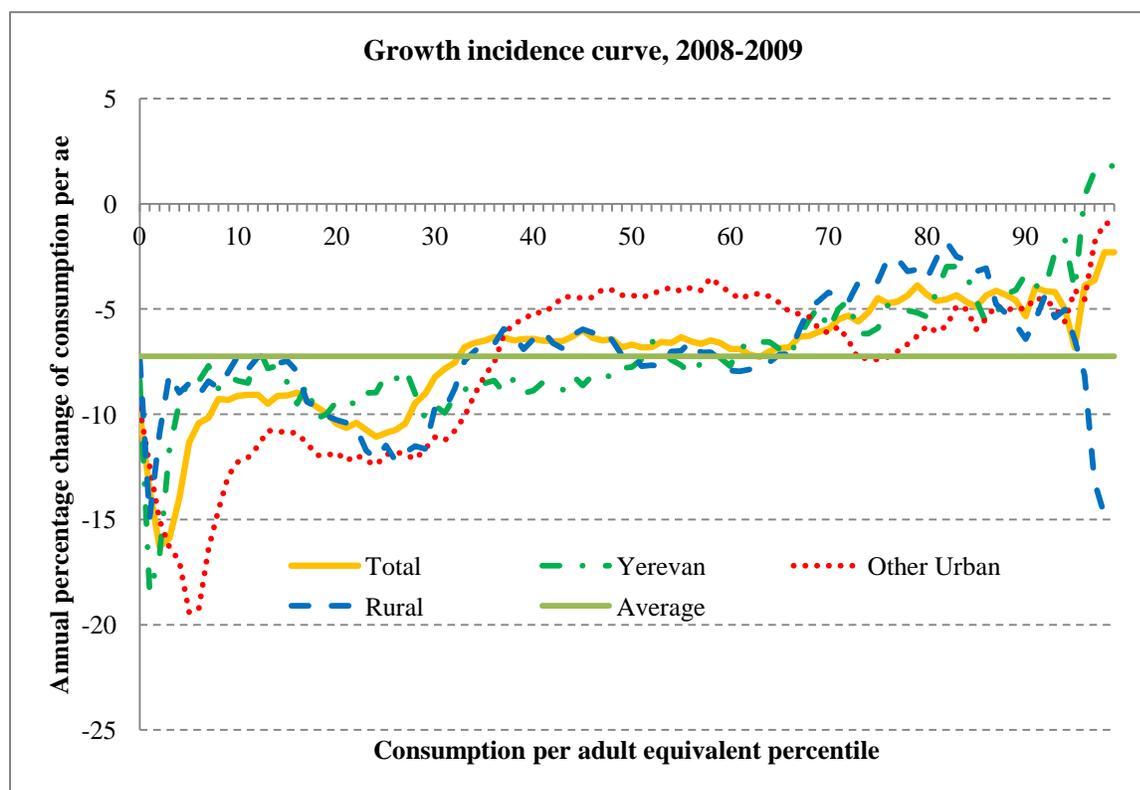
**Figure 10: Poverty Headcount by Region, 2008-2009**



Source: ILCS 2008 and 2009

25. ***The decline has affected all income groups, but to varying degrees.*** The general decline in consumption is reflected in the shape of the growth incidence curves (see Figure 11). The poor income groups appear to have lost more, particularly in urban areas outside the capital city. As illustrated by the growth curves presented below, at the national level the richest 8<sup>th</sup> and 9<sup>th</sup> deciles suffered the least, whereas the poorest 1<sup>st</sup> decile suffered the most.

**Figure 11: The Recession Affected all Income Groups, but the Impact was Most Severe on the Poor**



Sources: ILCS 2008 and 2009

### Inequality during the Crisis

26. **While inequality in Armenia is relatively low, it did worsen somewhat during the crisis.** Error! Reference source not found. presents different measures of inequality before and during the crisis. Each of the inequality indices presented imposes different weights at different parts of the consumption distribution. The Gini coefficient is the most widely used summary statistic of inequality; it gives more weight to inequality around the median of the distribution. The generalized entropy (GE) measure is a parameterized index, with lower values of the parameter assigning higher weight to inequality in poorer parts of the distribution, and higher values of the parameter assigning greater weight to inequality in richer parts of the distribution.<sup>1</sup> All measures of inequality consistently show higher inequality in 2009, as compared to 2008. The per adult equivalent consumption inequality measured in Gini coefficient increased from 0.242 to 0.257—a more than 6% increase. Other measures of inequality, such as the coefficient of variation or Theil mean logarithmic deviation show even higher increases in inequality in household consumption distribution in the aftermath of the global recession.

<sup>1</sup> When the parameter is set to zero (GE(0)) the index is also known as the mean log deviation index, or Theil L. When the parameter is set to one (GE(1)) the index is also known as the Theil L index.

**Table 4: Consumption Inequality, 2008-2009**

	<i>2008</i>	<i>2009</i>	<i>Change (%)</i>
Coefficient of variation	0.592	0.654	10.5
Gini coefficient	0.242	0.257	6.2
Theil mean logarithmic deviation E(0)	0.096	0.108	12.5
Theil L entropy E(1)	0.110	0.124	12.7

Source: ILCS 2008 and 2009

## Growth and Poverty Linkages

27. *The increase in poverty incidence in Armenia was driven by an increase in inequality as well as a decline in growth.* As shown earlier, overall poverty increased by 6.5% from 2008 to 2009. Following Ravallion and Datt (1992), this increase can be decomposed into change in consumption (growth), change in welfare distribution (consumption inequality), and interaction between the two. Table 5 presents the decomposition of changes in poverty into growth and redistribution components. The decrease in average consumption accounted for a 2.2% increase in poverty incidence; the increase in inequality was responsible for the remaining 4.3%. Changes in the distribution of consumption played larger role in the increase in poverty incidence than decline in consumption aggregate—except for urban areas outside Yerevan. Therefore, the deterioration in the distribution of consumption during the crisis played a larger role in the worsening of poverty incidence in Armenia.

**Table 5: Decline in Growth Drove the Increase in Poverty Headcount (%)**

	<i>2008</i>	<i>2009</i>	<i>Change</i>	<i>Growth</i>	<i>Redistribution</i>	<i>Interaction</i>
Armenia	27.6	34.1	6.5	2.1	4.5	-0.1
Urban	27.6	33.7	6.1	2.0	4.2	-0.1
Yerevan	20.1	26.7	6.6	0.9	5.8	-0.1
Other Urban	35.8	41.5	5.7	3.5	2.4	-0.2
Rural	27.5	34.9	7.4	2.2	5.2	0.1

Sources: ILCS 2008 and 2009

## IV. Conclusions

28. ***This study had two main objectives, the first of which was to revise the national poverty lines of Armenia based on a more current household consumption basket.*** Since 2005, poverty measurement in Armenia has relied on poverty lines based on the 2004 Integrated Living Conditions Survey (ILCS) consumption basket—with adjustments for price changes in the subsequent years. There is a general consensus that the consumption basket has changed appreciably since 2004. The revised poverty lines are better reflective of the current consumption and expenditure patterns of the population.

29. ***The second main objective of this study was to assess the changes in poverty incidence in the aftermath of the global recession and during the subsequent recovery.*** Armenia was one of the countries hit hardest by the global recession. Armenia had been experiencing a robust poverty reduction momentum—this momentum was severely disrupted by the recession. After a decade-long boom—and for the first time since the late 1990s—Armenia suffered a severe economic contraction in 2009, with real GDP growth shrinking by 14.6%. The Government of Armenia took a number of steps to maintain macroeconomic stability, and to provide a cushion for the poor and vulnerable. Most significantly, the authorities protected spending on priority social programs to mitigate the impact of the crisis on the poor and vulnerable. This note updated the poverty numbers and estimated how much poverty incidence would have increased without the mitigation measures.

30. ***The analysis showed that all poverty indices appreciably increased during the crisis.*** According to a comparable welfare measure and based on a revised poverty line of ADM 30,920 per adult equivalent per month, poverty incidence increased from 27.6% to 34.1% from 2008 to 2009, a 6.5% increase. Poverty became deeper and more severe in 2009, with a poverty gap of 7.8% (vs. 5.1% in 2008) and a poverty severity of 2.4% (vs. 1.4% in 2008). While inequality in Armenia is relatively low, it did worsen somewhat during the crisis. The global recession, together with an increase in inequality, was largely responsible for the worsening of poverty outcomes. In the absence of government crisis mitigation measures, the magnitude of the increase in poverty incidence would have been higher. This is evident from the calculations of what the levels of poverty would have been in the simulated absence of these transfers before and during the crisis. The overall poverty reduction impact of the transfers increased from 15.4% in 2008 to 17.6% in the aftermath of the crisis. The lingering effect of the global recession on households—despite the robust macroeconomic recovery—calls for continued mitigation measures for the most vulnerable households. It is important to maintain and further strengthen the social protection measures that were put in place during the onset of the crisis.

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## **Annex 1: Revised Poverty Lines**

### **Background and Rationale**

Since 2004, poverty measurement in Armenia relied on poverty lines based on the 2004 Integrated Living Conditions Survey (ILCS). For each subsequent year, the poverty lines were adjusted for changes in prices, keeping them fixed in real terms over the course of time. There is a general consensus that the consumption basket has changed appreciably since 2004. This is particularly true of households' and individuals' command and consumption of non-food items. As the economy grows, the share of household spending on food is expected to decline, and the spending on non-food is expected to grow. These income effects influence the cost of basic needs, i.e., poverty lines.

It is crucial that poverty lines be in accord with current social and economic conditions, in order to accurately identify the poor and pursuing effective pro-poor social policies. There is an agreement between the Government of Armenia and the World Bank to revise the poverty lines every five years. The poverty lines in the report have been revised per that agreement according to the consumption basket derived from the 2009 ILCS data. The revised poverty lines are expected to better reflect the current consumption and expenditure patterns of the population. Poverty measurement and analysis in this note are based on these new poverty lines. The revised poverty lines are expected to remain in effect for several years.

It is important to note that the estimation methodology used for the new poverty lines is the same as methodology used in 2004. The main difference between the old and new poverty lines is that the old lines are based on 2004 data and the new ones on 2009 data. Both the old and the new poverty lines are characterized by the following key features:

- They are based on a broader measure of the consumption aggregate, which—in addition to food and non-food components—also includes the user values of durable goods and the cost of non-catastrophic health care;
- The consumption aggregate is adjusted for differences between adult and child consumption, and economies of scale;
- The minimum food basket is determined according to the actual consumption patterns revealed in the ILCS; and
- The cost of basic needs (CBN) approach is used in the estimation of the poverty lines, in accordance with the World Bank methodology for measuring absolute upper, lower and food poverty lines.

This Annex details the methodology used to measure poverty. Its three key ingredients are: (i) welfare aggregate; (ii) poverty lines; and (iii) poverty indices.

## Welfare Aggregate

The study employs a standard World Bank algorithm for construction of the consumption aggregate. Household consumption expenditures are comprised of food and non-food components. Food consumption includes food consumed at home and outside of home—from purchase, self-production, gifts, and other transfers. Non-food consumption expenditures include: alcoholic beverages and tobacco, clothing and footwear, household goods, transportation, utilities, recreation and education. Expenditures on health and rental value of durable goods are also included in the non-food component, in order to create a broader measure of welfare. The non-food component also includes in-kind non-food consumption, such as non-food goods and services received free of charge (i.e., in-kind non-food humanitarian aid, gifts, non-food goods and services provided by the members of the household). The monetary values of in-kind non-food consumption are based on the households' own assessments.

The resulting consumption aggregate is subject to adjustments for regional and seasonal differences in prices, for economies of scale, and for differences in the amount of consumption by children and adults. The nominal consumption aggregate is adjusted using two-dimensional price indices to price differences between quarters and between urban and rural areas. The total consumption aggregate is then expressed in average annual national price levels.

Consumption per adult-equivalent is used to account for differences in child and adult consumption. Adult equivalent members ( $EA_i$ ) are calculated using the estimates of equivalence scales and economies of scale for household  $i$  as follows:

$$EA_i = (A_i + a C_i)^\theta$$

where  $A_i$  is the number of adults in the household,  $C_i$  is the number of children,  $\theta$  is the scale parameter ( $\theta=0.87$ ) and  $a$  is the cost of a child relative to an adult ( $a=0.65$ ). Children are considered to be individuals of age 14 and below.

## Poverty Lines

The following section describes the methodology and main steps involved in the calculation of the national poverty lines based on the ILCS 2009 data. The poverty line is defined as the monetary value of the minimum consumer basket, which represents the amount of goods and services that meet the needs to achieve a minimum standard of living in a society. The basket is based on actual consumption patterns of the population as revealed in the household survey—its value varies according to changes in consumer prices. The minimum consumer basket (MCB) consists of two components: (i) a minimum food basket (MFB) that corresponds to the allowance for basic foods; and (ii) an allowance for basic non-food goods and services. Therefore, a poverty line consists of two components: (i) the costs of caloric requirements (estimated monetary value of minimum food basket); and (ii) the costs of basic non-food goods and services.

### *Estimation of the Food Poverty Line*

The study estimates the food poverty line (FPL) by using the WB’s methodology based on the cost of basic needs (CBN) approach. The methodology of estimation of the food poverty line as a cost of the minimum food basket consists of several steps. Below is a short conceptual description of these steps.

**Minimum dietary energy requirement.** Many countries—including Armenia—rely on the WHO and the FAO to establish and disseminate this information, which they adopt as part of their national dietary allowances. Accordingly, the average caloric requirement for Armenia was estimated at 2,232 calories per day per capita. The same caloric requirement was used in this analysis for the calculation of the updated food line

**Reference population.** The choice of reference population for the minimum food basket was guided by the need to adequately represent the population of households near the poverty line—thus, reflecting a food consumption that is neither “too poor”, nor “too rich”. The food basket of this group is meant to capture the food consumption patterns for a relevant, relatively low-income population. The choice of the reference population is a normative judgment in the construction of a poverty line. Ideally, the reference group will be chosen so as to be consistent with the resulting poverty estimates based on the behavioral parameters of the reference group. In theory, then, one must first approximate who are the poor to set the reference group, and then calculate the poverty line. In some cases, it is necessary to iterate until there is convergence, by revising the reference group accordingly. This led the team to use the second, third and fourth consumption deciles per adult equivalent as a reference population for setting up the MFB. Additionally, the team implemented the sensitivity analysis to check the robustness of the Minimum Food Basket’s composition to the choice of the reference population. Table A.1 presents the analysis of consumption structure of different parts of the population distribution.

**Table 6 Composition of Food Consumed for Various Reference Populations (%)**

Food groups	ALL populations	Deciles 1-2	Deciles 2-4	Deciles 4-6	Deciles 1-5	Deciles 6-10
Bread and cereals	28.7	33.3	33.6	31.8	33.3	25.5
Meat	16.1	9.2	11.4	13.6	11.4	19.3
Fish	1.1	0.5	0.7	1.0	0.7	1.4
Milk, cheese and eggs	14.3	19.0	16.6	14.2	16.5	12.8
Oils and fats	7.2	8.2	7.6	7.2	7.6	6.9
Fruit	8.1	3.7	5.2	7.3	5.3	10.0
Vegetables	15.3	17.9	16.5	15.9	16.7	14.3
Sugar, jam, honey, chocolate, confectionary	4.6	3.5	3.8	4.3	3.8	5.2
Food products n.e.c.	1.0	1.1	1.1	1.1	1.1	1.0
Coffee, tea and cocoa	3.0	3.3	3.1	3.1	3.2	2.8
Non-alcoholic drinks	0.7	0.3	0.4	0.5	0.4	0.9
Total	100	100	100	100	100	100

Sources: 2009 ILCS

**Cost of the minimum food basket.** FPL is calculated as the cost of the MFB for the reference population needed to meet a total caloric requirement of 2232 Kcal per capita per day. Based on the consumption shares of the selected reference population, 2232 calories per day is distributed across the different food items. This 2232 calorie diet is then priced using the national price-per-calorie ( $P^f/c^f$ ) for each food item. The monetary value of the minimum food basket—i.e., the food poverty line (FPL)—is computed as the total cost of this diet expressed as:

$$FPL = \sum_f \frac{P^f}{c^f} S^f (N).$$

### *The Composition of Food and Nonalcoholic Beverages*

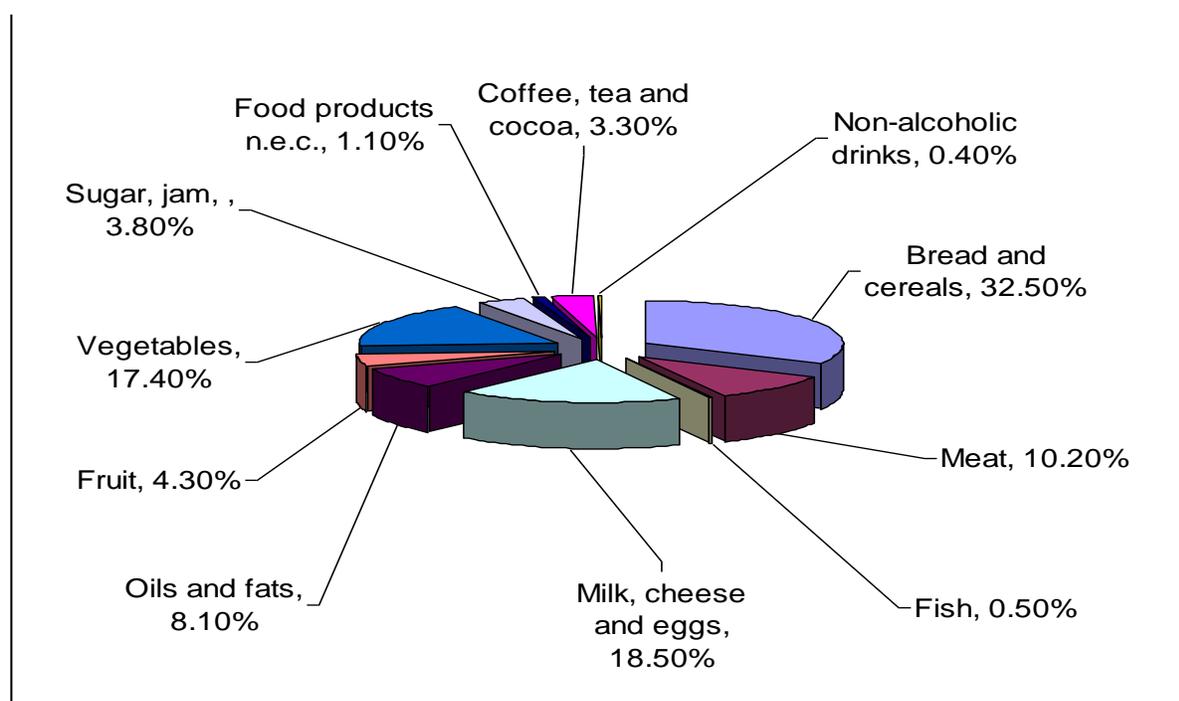
The number of food products in the minimum food basket is determined by a consideration of the following factors:

- The budget share of the various food items.
- The essentiality of the food items for the population’s nutrition and health. Some products may be included in the basket even if their consumption quantity or value is not very high.
- The availability of the prices of the food items—and how easy it is to monitor and update those prices.
- The level of consumption of the food items. Some food items may be included if they are commonly consumed even in small quantities.

The 2009 ILCS collected information on about 208 food items and non-alcoholic beverages. A sensitivity analysis was undertaken to check how the cost of minimum food basket would change if a subset of the 208 food items were used, keeping the caloric value of the Basket unchanged at the level of 2232 Kcal /day. The analysis revealed that if “non-important” food items—which all together constitute only 1% of the total food expenditures—are removed, the list of products can easily be reduced to almost in half. In 2009, the reference population (deciles 2-4) reported consuming up to 200 items. After ranking the products by consumption value in descending order—and keeping only the list of food items and beverages that constitute 99% of cumulative consumption expenditures of the reference population—then the number of food items can be reduced to 106.

Almost half of the food and non-alcoholic items may be dropped without significantly affecting household food expenditures. FPL is estimated at AMD 518 per day per capita when based on the entire list of 200 products. When 94 items are dropped, FPL becomes AMD 516 per day. This constitutes less than 1% of total spending—a difference that is negligible. Accordingly, the food poverty line was based on the 106 items. Dropping the 94 less important items helps avoid dealing with items with a very low frequency of purchase and a very small share of consumption, i.e., the types of items that tend to be associated with larger measurement errors.

**Figure 12 Composition of the Food Poverty Line, 2009 (%)**



Source: ILCS 2009

The estimated value of the FPL is AMD 17,483 per month per adult equivalent. It is estimated on a per capita basis to arrive at a 2232 Kcal per person per day diet, and then scaled-up to estimate the per adult equivalent amount. In summary, the FPL is the cost of the minimum food basket, which: (i) consists of 106 main food items and non-alcoholic beverages; (ii) has an energetic value of 2232 Kilocalories per capita per day; and (iii) is based on consumption patterns of the reference population (i.e., deciles 2-4). Figure A.2 below illustrates the composition of the food poverty line by COICOP 2 digit level groups.

### ***Estimation of Non-food Expenditures***

Accounting for basic non-food consumption entails adding an allowance for non-food goods and services to the Minimum Food Basket. Once the food poverty line has been established, the question arises as to how to estimate an allowance for basic non-food goods—i.e., how to obtain a total poverty line that includes an allowance for both food and non-food expenditures. While several competing methods are available, this report uses two simple methods for determining the allowance for non-food consumption: (i) the Food Expenditure Method (FEM); and the Consumption Basket Method (CBM) [World Bank 2002].

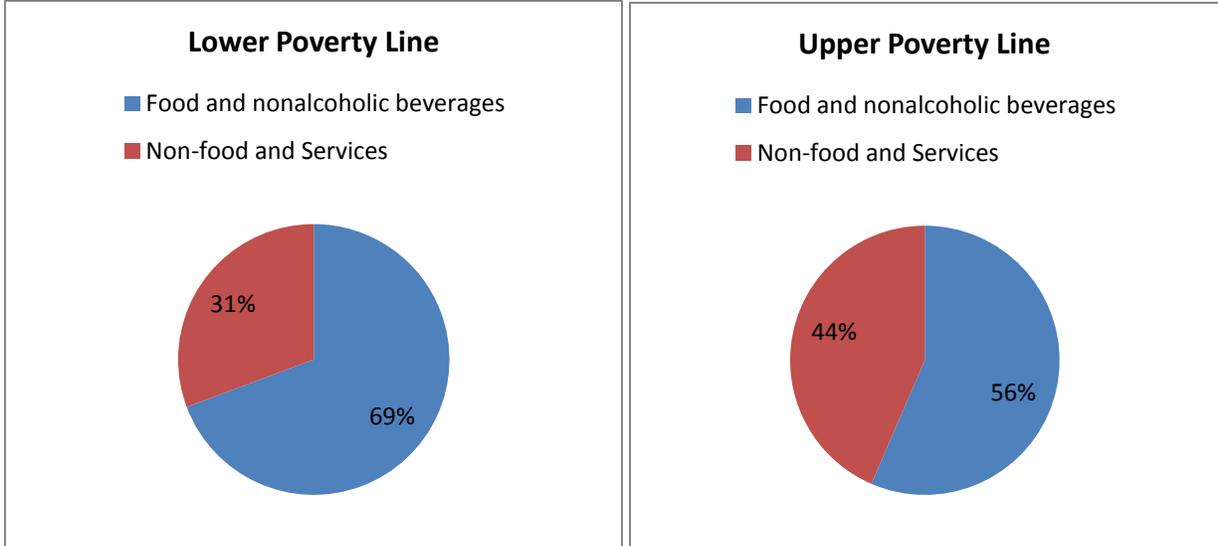
Both methods are easy for a non-technical audience to understand, because neither involves the use of regression techniques. The first step is to select those households or individuals whose food consumption (total consumption) is around the value of the food poverty line. The selected households or individuals constitute the two reference groups—one under the FEM, and the other under the CBM—for the derivation of the allowance of non-food and the general poverty

lines. The *share* of total consumption that goes to non-food consumption is then calculated for these two reference groups. The corresponding non-food shares for the reference groups are taken as the “allowance” for non-food consumption to be added to the value of the food poverty line to calculate the complete poverty line. More precisely, under the FEM, the food share is calculated as a “grand-mean” of the average food shares of households whose food consumption per adult equivalent is within the interval of  $\pm 2-10$  around FPL. Under the CBM, the food share is calculated as a ”grand-mean” of the average food shares of households whose total consumption per adult equivalent is within the interval of  $\pm 2-10$  around FPL.

**Lower and Upper Poverty Lines**

According to the CBM, the food share of households whose total consumption is close to the food poverty line is estimated to be around 70%. This leads to a *lower poverty line* of AMD 25,217 per adult equivalent per month. According to the FEM, the food share of households whose food consumption value is around the food poverty line is estimated to be 56.5%. This leads to a *lower poverty line* of AMD 30,920 per adult equivalent per month.

**Figure 13 Composition of the Lower and Upper Poverty Lines in Armenia, 2009**



Source: Calculations based on 2009 ILCS