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Identifying Socio-Economic Characteristics Affecting Poverty in Rural Areas of Armenia

This study attempts to determine household socio-economic factors affecting household economic conditions in rural areas of Armenia. To that end, an ordered logistic regression model was estimated using data from the Caucasus Barometer survey conducted by the regional office of the Caucasus Research Resource Centers in Armenia in 2013. The results of the estimation showed that household head health status, monthly household income, education level, and age composition of household were statistically significant determinants of household economic conditions.

Keywords: economic condition, ordered logistic regression, household socio-economic characteristics, the Caucasus Barometer survey

Introduction

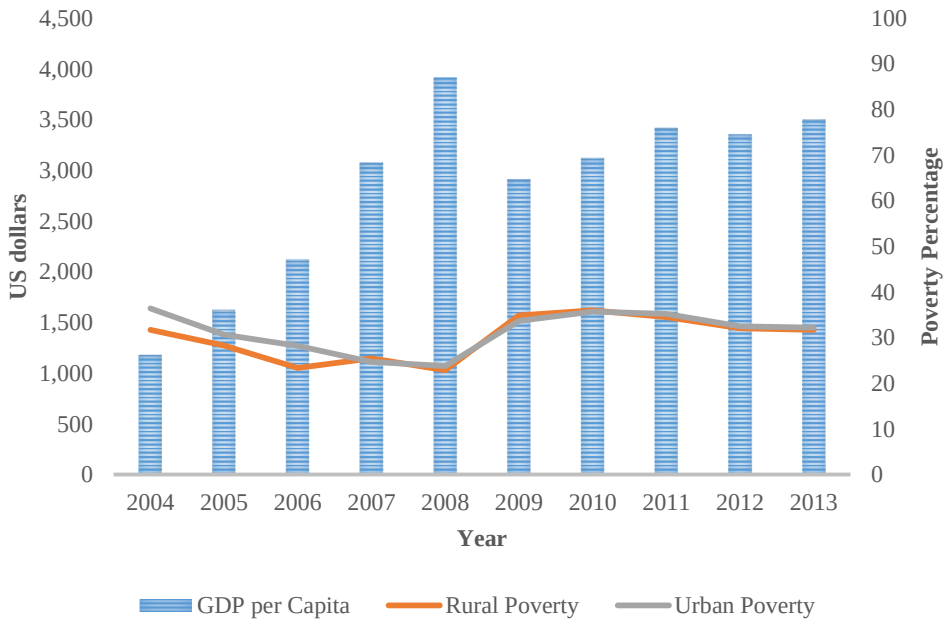
Poverty is a significant driver affecting the welfare of nations. Nations with high levels of poverty are more vulnerable to economic downturns and political turmoil. According to the World Bank's definition of poverty, it is the *"inability to retain a minimal standard of living, measured in terms of basic consumption needs or some income required for satisfying them*" (World Bank, 2014).

A vast array of studies have examined the socio-economic and environmental impact of poverty. Despite increasing urbanization, poverty continues to remain a rural phenomenon. Approximately 75% of the earth's extremely poor population lives in rural areas (Anríquez, 2007). They mainly depend on agriculture, forestry, fisheries and related activities for survival. Poverty can lead to such issues as high infant mortality (Franz, 2006; Strully, 2010), increase in crime (Webster, 2014), poor health (World Health Organization, 2003), and hunger and environment degradation (World Vision, 2006). As such, it is of utmost importance to understand factors impacting poverty.

Until the end of the 1980's and the beginning of 1990's, Armenia was predominantly an industrial country with a high level of employment. However, after the Spitak earthquake in 1988, the break-up of Soviet Union, the Nagorno Karabakh movement, and the economic blockade put in place by neighboring countries, the country faced significant economic and political challenges (Griffin, 2002). The state-owned industries began to shut down leading to a rise in the level of unemployment. As a result, the country had to rebuild its economy and ensure its own sustainable development. Figure 1 presents the historical trend of per capita Gross Domestic Product (GDP) and urban and rural poverty rates. With an increase in per capita GDP, both rates of poverty were decreasing until 2008. Then, as a result of the global financial crisis, Armenia experienced a drop in per capita GDP from about $4,000 to $3,000 in 2009 (World Bank, 2014) with both poverty rates increasing in the

same year. Beginning from 2010, GDP per capita increased gradually, while urban and rural poverty rates started to decline only recently.

Figure 1. GDP per Capita and Urban and Rural Poverty Rates



Source: World Bank http://www.worldbank.org/, National Statistical Service of the Republic of Armenia (NSSRA) http://www.armstat.am

According to the National Statistical Service of the Republic of Armenia (NSSRA), the absolute poverty line is used as basis for measuring poverty in Armenia, which assumes three components:

- Measurement of the main welfare indicator of households;
- Poverty lines below which individuals are classified as "poor"; and
- Measuring poverty indices.

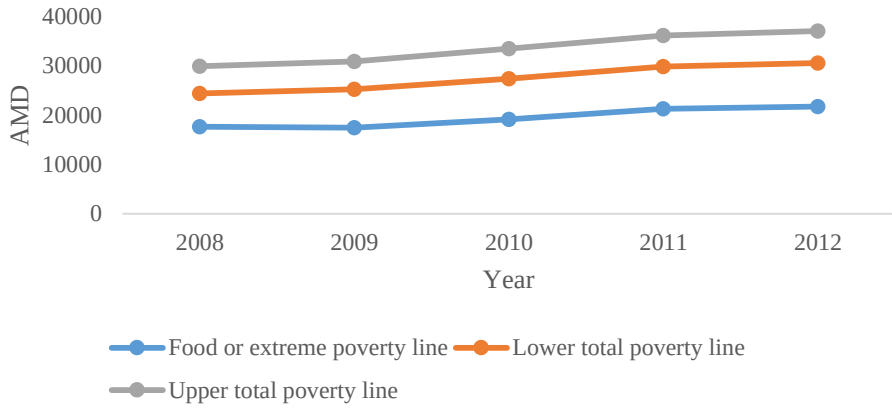
Welfare measurement is calculated using a consumption aggregate (NSSRA, 2013). This is deflated by using two dimensional price indicators. The consumption aggregate also takes into account differences in food prices across quarters for rural and urban areas by estimating price adjustments for food consumption. Finally, a total consumption aggregate is expressed in annual average national price levels.

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 of the minimum level of living standards formed (actually expressed) in society* (NSSRA, 2013). The poverty line consists of two components:

- Food poverty line (estimated monetary value of minimum food basket) and
- Estimated cost of non-food goods and services.

The minimum food basket is formed based on per capita caloric requirements (NSSRA, 2013). The average caloric requirement for Armenia was estimated to be at 2,232 calories per capita per day. Then, the total cost of these calories is calculated by allocating them across the "most important" food items. An allowance for non-food expenditures is derived by taking the individuals whose food consumption is around the food poverty line as a reference group and calculating the share of non-food expenditures for this reference group. Then, it is added to food poverty line. Figure 2 presents the historical patterns of the food poverty line, the lower total poverty line and the upper total poverty line. They have been increasing slightly throughout the period of 2008 to 2012.

Figure 2. Food Poverty Line, Lower Poverty Line and Upper Poverty Line



Source: NSSRA http://www.armstat.am

The main poverty indicators used are poverty incidence, gap, and severity indicators.

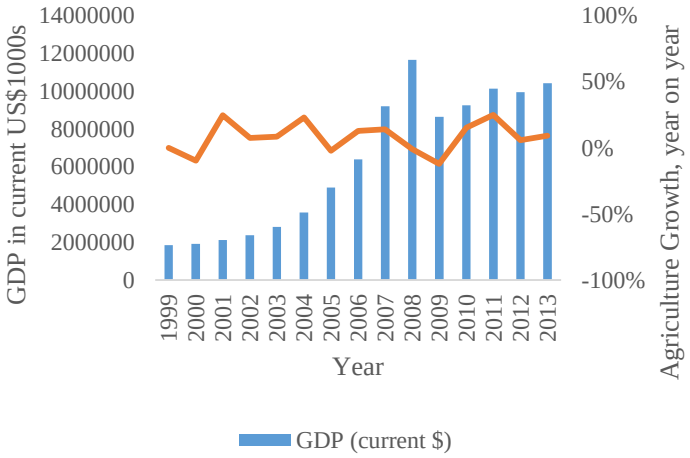
Poverty incidence represents the fraction of individuals with consumption per adult equivalent below the poverty line. The poverty gap shows how far people's consumption is below the poverty line. Finally, yet importantly, the severity indicator represents the inequality of consumption among poor.

According to the International Food for Agricultural Development (IFAD), despite the positive economic indicators of recent years, poverty is still widespread and severe in Armenia. Poverty in Armenia is almost evenly distributed across urban and rural areas. The country's poorest people live along the nation's borders, in mountainous areas of Aragatsotn, Gegharqunik, Lori, Shirak, Syunik, Tavush, and Vayots Dzor, an area that covers about 80% of the country and is home to about 40% of country's population (IFAD, 2011).

Figure 3 presents the GDP in current USD and agricultural growth during the period of 1999 through 2013. The GDP, which has been growing during the last ten years, faced a downturn in 2009 (Economist Intelligence Unit, 2011).

The main reason was unfavorable weather conditions in growing season, resulting in a sharp decline in agricultural production. Afterwards, both the GDP and agricultural growth has been simultaneously growing until 2012 when both experienced a decline.

Figure 3: GDP and Agricultural Growth



Source: NSSRA http://www.armstat.am, World Bank http://www.worldbank.org/

Rural households are more likely to be poor because the infrastructure and machinery they inherited from the Soviet Union is not suitable in terms of scale, and for the most part, it is already obsolete (IFAD, 2011). Rural households lack access to land, irrigation, agricultural machinery and financing.

Another important factor is the inequality of income distribution. The GINI index is the most widely accepted method of measuring income equality. It represents the deviation of actual household income from the uniform distribution. Figure 4 represents the historical values of the GINI index for Armenia. It decreased from 0.535 to 0.359 during 2001- 2005 period. Beginning from 2006, GINI index increased up to 0.389 in 2008. In 2009, after

global economic crisis, it dropped to the lowest level over the studied period. However, it has been increasing since then reaching 0.372 in 2013.

Figure 4. GINI Index in Armenia

Source: NSSRA http://www.armstat.am

Background of the Problem

Despite the economic growth that has taken place during the last decade, poverty is still widespread in Armenia. With its negative impact on the socio-economic life of Armenian society, the fight against poverty is on the priority list of the Armenian government. Poverty manifests itself vividly in rural areas, mountainous regions, and especially regions close to national borders. The determination of the socio-economic characteristics of households influencing their economic condition would permit the design of government programs targeting the alleviation of the poverty issue. Hence, this study focuses on the determination of the socio-economic characteristics of households.

Purpose of the Study

The purpose of this study is to examine and better understand the effects of various socio-economic factors on household economic condition in rural areas of Armenia. To accomplish this, the present study has identified the statistically significant characteristics affecting economic condition of rural households.

Significance of the Study

Based on the findings of this study, interested parties can identify the factors affecting rural households' economic condition, and based on those factors, they can develop policies addressing issues related to rural poverty.

Research Question

The research question of the present study is:

What are the socio-economic characteristics influencing economic conditions of rural households in Armenia?

Organization of the Paper

The paper proceeds by presenting a literature review in the next section. In the following section, the empirical specifications are discussed and the data description is presented in the following section. Then, the estimation results are presented and interpreted. The last section includes a summary of the results and a set of policy recommendations directed at improving the economic conditions in the rural areas of Armenia.

Literature Review

There are many studies concerning poverty in rural Armenia. These studies have mainly employed descriptive approaches to address the issue of poverty (Griffin, 2002; Bezemer, 2003; UNDP, 2004; IFAD, 2011). Griffin (2002) used data provided by NSSRA and the Poverty Monitoring and Analysis office within the Macroeconomics Department of the Republic of Armenia to analyse and draw conclusions about poverty and inequality in Armenia. She emphasized the importance of increasing investment in physical, human and natural capital, as well as increasing savings rates. These factors were viewed as complementary, since the effectiveness of one depended on the availability of the others. She then differentiated between urban and rural poverty by pointing out the importance of employment. The situation in rural areas was compared to that of urban areas, because of the equitable distribution of land. However, the labor productivity was low and continued to fall because the average size of land parcels was very small. Another important factor emphasized by the author was income inequality. The gap between expenditure distributions tends to be less unequal, since people with high levels of income do not spend their income and save some part of it, while people with lower levels of income tend to spend more than they earn by relying on borrowings, drawing from savings and selling some assets.

In their study Bezemer and Lerman (2003) supported the conclusions of Griffin by highlighting the presence of incidence of poverty and large income inequality. They reached this conclusion by analyzing data from their own large-scale survey of rural households in Armenia. The main aim of the study was to examine the ownership of capital and access to activities in relation to the incidence of poverty. They concluded that lower quantities and qualities of physical, human, financial, and social capital were the characteristics of the rural poor in Armenia.

Minasyan (2005) discussed the possible factors holding back the agricultural growth and hindering its potential for reducing rural poverty using the data

available from household surveys, national statistics, and expert estimations. It was found that growth in productivity was not substantial enough to cope with price shocks. The effects of economic growth on rural households through income from hired job and self-employment were very insignificant. Another important factor was the terms of trade; a comparison of the terms of trade faced by rural farmers in different regions shows that these terms are significant factors to be considered, since they are important in explaining the large variation of agricultural growth across regions.

The National Statistical Service of the Republic of Armenia (2014) developed a model for examining factors that are closely related to poverty. The data were obtained from the household's integrated living conditions survey conducted by NSSRA. A natural logarithmic consumption of per adult equivalent was used as a dependent variable, and characteristics of a household, such as age composition, size, presence of migrant members, employment status of household members, and household domicile; as well as characteristics of household head such as age, gender, education, employment status, and disability were used as explanatory variables. The results indicated statistically significant dependence of consumption of per adult equivalent on the household size, household head gender, age composition, education, migration, labor market participation, and household domicile.

It is a common practice to start poverty modeling by identifying a single monetary indicator for household welfare. Either total expenditure on consumption or total income over some period are the most widely used indicators (Ravallion, 1996). The next step is to define a poverty line that tries to objectively estimate the cost of the level of welfare needed for a household to avoid poverty. In the final step, an aggregate poverty measure is determined which incorporates information from the single monetary indicator and poverty line. Various socio-economic factors can be used as explanatory variables depending on the purpose of research.

In his study, Chaudhry (2009) used both a multivariate income regression, as well as logit model as an alternative to analyze the impact of socioeconomic and demographic variables on poverty by using the data obtained from survey. In the multivariate income regression model the natural logarithm of per capita income expenditures divided by the poverty line was used as a dependent variable, while household size, educational codes (household education level), participation rate (employment), female-male ratio (FMRM), worker female-male ratio, dependency ratio (dependents/adults), child dependency ratio, old dependency ratio, age of the household head (in years), age of the household head squared, persons per room in a household, population of livestock per household, the value of physical assets per household in thousand rupees, and landholding per household (area in acres) were the independent variables. The results showed that the household gains from farm and non-farm incomes were not substantial because of the insufficiency of income and employment multipliers of agricultural growth. The household size, dependency ratio and residential district increased the odds of a household being poor. In addition, education, livestock ownership, remittances and farming increased the chances of alleviating poverty.

Empirical Specification

To identify the socio-economic variables influencing household economic conditions in rural areas of Armenia, an ordered logistic regression model was estimated, where the dependent variable, economic condition, is modeled as a function of a set of socio-economic characteristics (variables). The empirical specification of the ordered logistic regression model estimated in this study is as follows:

$$\begin{aligned}\Pr(\text{response category for the jth outcome} = \text{i}) \\ = F(\beta_1 + \beta_2 POOR\_HLTH_i + \beta_3 FAIR\_HLTH_i \\ + \beta_4 HH\_INC\_LESS\_USD\_250_i \\ + \beta_5 MAX\_INCOMP\_SEC\_EDUC_i + \beta_6 COMPL\_SEC\_EDUC_i \\ + \beta_7 SEC\_TECH\_EDUC_i + \beta_8 HH\_MALE\_RATIO_i \\ + \beta_9 HH\_FEMALE\_RATIO_i + \beta_{10} HH\_CHILD\_RATIO_i \\ + \beta_{11} HH\_ADULT\_RATIO_i + \beta_{12} HH\_OLD\_RATIO_i \\ + \beta_{13} HH\_EMPL\_RATIO_i + \beta_{14} HH\_UNEMPL\_RATIO_i \\ + \beta_{15} HH\_SINGLE\_RATIO_i + \beta_{16} HH\_MARRIED\_RATIO_i \\ + \beta_{17} HH\_DIV\_SEP\_WID\_RATIO_i + u_i)\end{aligned}$$

where,

$\Pr(ECONSTN\_4)_i$ is the probability of economic condition of the i-th respondent taking on 1 for not having enough money for food, 2 for having enough money for food, but not for clothes, 3 for having enough money for food and clothes but not enough for expensive durables like a refrigerator and washing machine and 4 for having enough money for expensive durables. It needs to be mentioned that in this study the four ordinal categories of the dependent variable reflect an underlying measure of the respondent's propensity to become less and less poor.

The independent variables are:

$POOR\_HLTH_i$ is dummy variable for health condition taking on 1 for poor health condition and 0 otherwise for the i-th respondent,

$FAIR\_HLTH_i$ is dummy variable for health condition taking on 1 for fair health condition and 0 otherwise for the i-th respondent,

$HH\_INC\_LESS\_USD\_250_i$ is dummy variable for monthly household income taking on 1 if the respondent has monthly household income of 0-250 USD and 0 otherwise for the i-th respondent,

$MAX\_INCOMP\_SEC\_EDUC_i$ is dummy variable for education level taking on 1 if the respondent has no primary education, or primary education or incomplete secondary education, and 0 otherwise for the i-th respondent,

$COMPL\_SEC\_EDUC_i$ is dummy variable for education taking on 1 if the respondent has completed secondary education, and 0 otherwise for the i-th respondent,

$SEC\_TECH\_EDUC_i$ is dummy variable for education taking on 1 if the respondent has completed secondary technical education, and 0 otherwise for the i-th respondent,

$HH\_MALE\_RATIO_i$ is the proportion of male members in household of the i-th respondent, $HH\_FEMALE\_RATIO_i$ is the proportion of female members in household of the i-th respondent,

$HH\_CHILD\_RATIO_i$ is the proportion of members under 18 in household of the i-th respondent,

$HH\_ADULT\_RATIO_i$ is the proportion of members aged from 19 to 62 in household of the i-th respondent,

$HH\_OLD\_RATIO_i$ is the proportion of members aged older than 63 in household of the i-respondent,

$HH\_EMPL\_RATIO_i$ is the proportion of employed members in household of the i-th respondent,

$HH\_UNEMPLOY\_RATIO_i$ is the proportion of unemployed members in household of the i-th respondent,

$HH\_SINGLE\_RATIO_i$ is the proportion of single members in household of the i-th respondent,

$HH\_MARRIED\_RATIO_i$ is the proportion of married members in household of the i-th respondent,

$HH\_DIV\_SEP\_WID\_RATIO_i$ is the proportion of divorced, separated or widowed members in household of the i-th respondent,

u_{ij} is the random error term, and βs are the parameters to be estimated.

The model was estimated using the STATA 10 software package declaring survey design for dataset with **svyset** syntax. First, by observing the statistical significance of the parameter estimates associated with independent socio-economic variables, key characteristics were determined. Then, by using the magnitudes of these parameter estimates, the percent change in odds ratios of being poor was calculated. Odd ratios were computed through the exponentiation of the ordered logit coefficients (i.e., $e^{\alpha i}$) and the percent change in the odds ratios was calculated as $(e^{\alpha i}-1)*100$.

Health

According to the World Health Organization (WHO) and the World Bank, having good health is not only important in protecting a family from poverty, but it also plays a significant role in reducing poverty. Poor people in good health are capable of working and studying, while those in poor health are not. Thus, the parameter estimates of *POOR_HLTH* and *FAIR_HLTH* were expected to be negative.

Average Monthly Household Income

Having an average monthly household income of less than 250 USD was expected to have a negative impact on the economic condition of a household. It is impossible to underestimate the role of income while characterizing poverty, to the extent that one of the common approaches to measuring poverty is based on income itself (World Bank, 2015; Chaudhry, 2009; Blank, 1993; United Nations, 2012; Organisation for Economic Co-operation and Development, 2013).

Education

Oftentimes education is considered to be the most important factor in poverty reduction. The more educated a person is, the more likely he or she is to avoid poverty, given the wider opportunities for employment education provides (Lacour, 2011; Munich Personal RePEc Archive, 2011). Therefore, education was expected to have a positive impact.

Dependency Ratios

Child and elderly dependency ratios were expected to have a negative impact. A higher number of children and elderly members in a given household would indicate a smaller number of workers (Chaudhry, 2009).

Employment

Employment ratios would typically have a positive impact, since the larger the share of employed members in a given household, the more likely it is for a household to be in a better economic condition (Holmes, 2013).

Sex Composition

The cultural norms in rural areas of Armenia limit women from working outside their household. This is common in many developing countries (World Bank, 2006). Taking into account this fact, one will most likely expect a negative impact for the parameter estimate of female ratio. However, seasonal migration of male members of households is common in rural areas of Armenia, thus, leaving women as heads of the household carrying all the burden of the household (IFAD, 2011).

Marital Status Ratios

The parameter estimates associated with the marital status ratios could have both positive and negative impacts. According to The United States Social Security Administration (2010), unmarried people are more likely to be poor, compared to the married ones. In contrast, Fremstad (2012) suggests that most parents with below-poverty incomes who are raising minor children are married.

Data Description

For analysis, household survey data gathered by the Caucasus Research Resource Center's (CRRC) regional office in Armenia, within the framework of the 2013 Caucasus Barometer (CB) survey were used. These data are available at the CRRC-Armenia's website and they contain all the necessary information to successfully complete the research. The sample used in this study contains information on Armenian respondents who were at least 18 years old at the time when the survey was conducted. A total of 634 observations for Armenia were used in the analysis. To analyze factors affecting rural household economic conditions in Armenia the following sets of household socio-economic characteristics (variables) were analyzed: household economic condition, respondent's health condition, monthly household income, respondent's education level, employment status, household members' age, sex, and marital status.

The data have been weighted in accordance with strata and primary sampling units, where the former accounted for the subdivisions of Armenia's geographical areas, while the latter represented the number of polling stations.

Percentages of respondents by socio-economics characteristics for rural areas of Armenia are shown in Table 1.

Table №1. Percentage of Respondents by Socio-Economic Variables in Rural Areas of Armenia

	Mean (%) n=634
Economic condition	
Money is not enough for food	32.81
Money is enough for food only, but not for clothes	33.28
Money is enough for food and clothes, but not enough for expensive durables like a refrigerator or washing machine	28.71
We can afford to buy expensive durables	5.21
Health condition	
Poor health	26.09
Fair health	48.18
Good health	25.73
Monthly household income	
More than 251USD	37.20
Less than 250 USD	62.80
Education level	
Incomplete secondary education	16.51
Complete secondary education	39.93
Secondary technical education	27.95
Higher Education	15.61
Household members' gender distribution	
Male ratio	43.72
Female ratio	56.12
Household members' age distribution	
Children (0-18 years old) ratio	22.26
Adults(19-63 years old) ratio	62.76
Old (64 years and older) ratio	14.93
Household members' employment distribution	
Employed ratio	28.94
Unemployed ratio	51.99
Household members' marital status distribution	
Single ratio	14.05
Married ratio	53.84
Divorced, separated or widowed size ratio	11.17

Rural households in Armenia without enough money for food accounted for 32.81% of total respondents. The share of households with enough money for food, but not for clothes was slightly more (33.28%). Roughly 28.71% of households were able to afford both food and clothes. Only 5.21% of respondent households could afford expensive durables. Roughly 26% of respondents living in rural households in Armenia reported that they were in poor health. The highest proportion of respondents in rural areas of Armenia (48.18%) evaluated their health condition as "fair", and 25.73% reported to be in good health. Roughly two-thirds of the respondents reported to have an average monthly household income of less than 250 USD (62.80%), while the rest (37.20%) reported an average monthly household income above 251 USD. Having completed secondary education was the most frequent reported education level in rural areas of Armenia (39.93%), followed by secondary technical education (27.95%), and maximum incomplete secondary education (16.51%). The least frequency was observed for "Higher education" category, 15.61%. Household sex composition, on average, was 43.72% male and 56.12% female. Age composition is another important factor that has been taken into account. On average, 22.26% of household members were children, 62.76% were adults, and the remaining 14.93% were the elderly. On average, 14.05% of household members were single, 53.84% were married, and 11.17% were either divorced or separated or widowed.

According to the CB sample data, a typical Armenian rural household would mainly consist of an adult married female who has complete secondary education, is in fair health, is unemployed, has an average monthly household income of less than 250 USD, and reports to have enough money to afford only food.

Estimation Results

Cross-tabulations

To ascertain the relationship between the economic condition and socio-economic characteristics of a household, a cross tabulation analysis was carried out. The results of the analysis are presented in Table 2. The cross tabulation of the economic conditions with socio economic variables makes it possible to draw the profiles of households in rural areas of Armenia that have reported not having enough money for food, having enough money for food but not for clothes, having enough money for food, clothes but not for expensive durables like a refrigerator or a washing machine, and having enough money to afford expensive durables.

Households not Having Enough Money for Food

The majority of respondents from these households reported to have fair health (46.41%), followed by poor health (43.09%) with only 10.50% of respondents reporting good health. The vast majority (82.78%) of households reported to have an average monthly household income of less than 250 USD, and only 17.22% reported having an average monthly household income of more than 251 USD. A quarter of respondents (25.18%) from this group had not completed secondary education, 42.83% had completed secondary education, 26.06% had secondary technical education, and only 5.94% reported higher education. An average household from this group consisted of 40.08% males, and 59.65% females. In terms of age distribution, these households consisted of, on average, 22.58% children, 57.66% adults, and 19.76% elderly people. The unemployed accounted for 62.76% of the size of household, while employed members were only 17.75%. Roughly, half of household members (50.50%) were married, 12.24% were single, and 15.82% were either divorced or separated or widowed.

Table №2. Household Economic Condition by Socio-Economic Variables

	Money is not enough for food	**Money is enough for food only, but not for clothes**	**Money is enough for food and clothes, but not enough for expensive durables like a refrigerator and washing machine**	**We can afford to buy expensive durables**
Health condition				
Poor health	43.09	25.30	11.19	8.73
Fair health	46.41	47.30	57.91	16.13
Good health	10.50	27.40	30.90	75.15
Monthly household income				
Less than 250 USD	82.78	69.51	39.90	24.58
More than 251 USD	17.22	30.49	60.10	75.42
Education level				
Incomplete secondary education	25.18	13.90	11.26	8.98
Complete secondary education	42.83	44.89	33.61	25.99
Secondary technical education	26.06	28.85	29.72	24.71
Higher Education	5.94	12.36	25.41	40.32
Household members' gender distribution				
Male ratio	40.08	43.59	46.58	50.65
Female ratio	59.65	56.30	53.26	49.35
Household members' age distribution				
Children (0-18 years old) ratio	22.58	22.36	22.95	16.54
Adults (19-63 years old) ratio	57.66	63.68	65.73	71.24
Old (64 years and older) ratio	19.72	13.95	11.16	12.23
Household members' employment distribution				
Employed ratio	17.75	29.62	35.28	56.12
Unemployed ratio	62.76	51.86	44.03	31.71
Household members' marital status distribution				
Single ratio	12.24	13.52	15.56	19.76
Married ratio	50.50	54.29	55.37	62.27
Divorced, separated or widowed ratio	15.82	10.86	7.67	4.16

Households Having Enough Money for Food but not for Clothes

About a quarter of the respondents (25.30%) from the households with enough money for food, but not for clothes, reported poor health, with roughly, twice as many reporting fair health (47.30%), and the remaining 27.40% evaluated their health condition as "good". About 69.51% of these households reported to have an average monthly household income of less than 250 USD, while the remaining 30.49% had an average monthly household income of more than 251 USD. The majority of respondents (44.89%) from this group had completed secondary education, 28.85% had secondary technical education, 12.36% had higher education, while 13.90% had not completed secondary education. In terms of sex distribution, an average household from this group consisted of 43.59% males and 56.30% females. Adults in these households accounted for 63.68%, while 23.36% were children, and 13.95% were elderly people. Roughly 29.62% of household members were employed, while 51.86% were unemployed. On average, a household with enough money for food but not enough for clothing consisted of 13.52% single, 54.29% married and 10.86% divorced or separated or widowed people.

Households Having Enough Money for Food and Clothes but not for Expensive Durables like a Refrigerator or Washing Machine

On average, 11.19% of respondents from these households reported poor health. The majority (57.91%) reported fair health and about one-third of respondents (30.90%) evaluated their health as "good". About 60.10% of households have enough money for food but not for expensive durables reported an average monthly household income of more than 251 USD. The remaining 39.90% had an average monthly household income of less than 250 USD. Roughly, 11.26% of respondents from these households had not completed secondary education, 33.61% had secondary education, 29.72% had secondary technical education, and about a quarter of respondents

(25.41%) reported to have higher education. A household belonging to this group on average consisted of 46.58% males and 53.26% females. Adults in these households accounted for, on average, 65.73%, children for 22.95%, and elderly people for 11.16%. About 35.28% of household members were employed, and 44.03% were unemployed. Approximately, 15.56% of household members were single, while 55.37% were married, and 7.67% were either divorced or separated or widowed.

Households that can Afford to Buy Expensive Durables

The respondents from these households had the following breakdown: 8.73% had poor health, 16.13% had fair health, and the majority (75.15%) had good health. The share of respondents with an average monthly household income of more than 251 USD was three times as large (75.42%) as the share of the ones with average monthly household income of less than 250 USD (24.58%). Approximately, 8.98% of respondents had not completed secondary education, 25.99% had completed secondary education, 24.71% had secondary technical education, and 40.32% had higher education. These households consisted of, on average, 50.65% males and 49.35% females, with adults accounting for 71.24%, children accounting for 16.54%, and elderly people accounting for 12.23%. Households from this group reported the highest level of employment (56.12%). Only 31.17% of the members of the households from this group were unemployed. The breakdown according to marital status was as follows: 19.76% were single, 62.27% were married and 4.16% were either divorced or separated or widowed.

Ordered Logistic Regression

The estimated coefficients, the associated p-values and percent change in odds ratios from the ordered logit model are presented in the Table 3. The

statistical significance of the coefficients was evaluated at a 5% significance level. The interpretation of the estimation results is done in terms of only statistically significant percent change in odds ratios.

Based on the p-value of the F statistic, which is equal to zero, it can be concluded that all of the parameter estimates were jointly statistically significant at the 5% significance level. The estimation results showed that the odds of being in a better economic condition (less poor) for the respondents reporting poor health were lower by 75.58%, compared to those who reported good health condition, everything else held constant. Similarly, for

Table №3. Ordered Logit Coefficients, Associated p-values and Percentage Change in Odds Ratios

	Coefficients	**% change in odds ratios**
Health condition *(base: Good health)*		
Poor health	-1.41* (0.000)	-75.58*
Fair health	-0.76* (0.005)	-53.23*
Monthly household income*(base: More than 251 USD)*		
Less than 250 USD	-1.13* (0.000)	-67.70*
Education level*(base: Higher Education)*		
Incomplete secondary education	-1.21* (0.001)	-70.18*
Complete secondary education	-0.93* (0.001)	-60.54*
Secondary technical education	-0.66* (0.042)	-48.31*
Household members' gender distribution		
Male ratio	2.51 (0.428)	1130.49
Female ratio	2.28 (0.473)	877.67
Household members' age distribution		
Children (0-18 years old) ratio	-9.72* (0.011)	-99.99*
Adults (19-63 years old) ratio	-10.83* (0.007)	-100.00*

Old (64 years and older) ratio	-10.98* (0.006)	-100.00*
Household members' employment distribution		
Employed ratio	0.53 (0.384)	69.89
Unemployed ratio	-0.68 (0.204)	-49.34
Household members' marital status distribution		
Single ratio	1.70 (0.278)	447.39
Married ratio	2.02 (0.259)	653.83
Divorced, separated or widowed ratio	1.13 (0.506)	209.57
Prob> F	12.40 (0.000)	

*p-values are reported in parenthesis.

**Asterisk indicates statistical significance at the 5% level.

those respondents who reported fair health condition, the odds of being in a better economic condition were lower by 53.23%, compared to those who reported good health condition, everything else held constant. Households that reported an average monthly household income of less than 250 USD were less likely by to be in a better economic condition by 67.70%, compared to households that reported an average monthly household income of more than 251 USD, everything else held constant. Another statistically significant determinant of household economic condition was education. The results of estimation showed that the respondent that did not complete secondary education had 70.18% less chance to be in a better economic condition, compared to those who had higher education, everything else held constant. Similarly, respondents who only completed secondary education or secondary technical education had their odds of being in better economic condition lowered by 60.54% and 48.31%, respectively, compared to those who had higher education, everything else held constant. Children ratio, adults' ratio and elderly ratio had the same impact on the odds of being in a better economic condition. Particularly, if the ratio of children to household size increased by one unit, the odds of being in a better economic condition decreased by 99.99%, everything else held constant. In case of number of

adults to household size ratio, a one unit increase in this ratio decreased the odds of being in a better economic condition by 100.00% everything else held constant. Like other categories of this variable if the percentage of elderly members in a household increased by one unit, the odds of being in a better economic condition decreased by 100.00%, other things held constant. The impact of characteristics related to gender, employment, and marital status distributions were statistically insignificant.

Summary and Policy Recommendations

The purpose of this research was to shed light on the characteristics that affect rural household economic conditions in Armenia. To that end, an ordered logit model was estimated using the CB dataset collected by the CRRC-Armenia in 2013. Also, using the method of cross tabulations, profiles of households in different economic conditions were drawn up.

The ordered logit estimation results showed that health conditions, average monthly household income, education levels, and age distributions were statistically significant determinants of rural households' economic conditions. Particularly, compared to having good health, having poor or fair health reduced the odds of being in a better economic condition. Having a low average monthly household income or a low level of education also reduced the odds of being in better economic condition. At all age levels, having additional members in household reduced the odds of being in a better economic condition.

A typical household with not enough money for food predominantly consisted of married female adults, who had completed secondary education, were unemployed and had average household monthly income of less than 250 USD. Respondents from this type of households on average reported fair health. A household with enough money for food, but not for clothes would typically consist of married female adults, who completed secondary

education, were unemployed and had average monthly household income of less than 250 USD. Respondents from this type of household usually reported to have fair health. A typical household with enough money for food and clothes, but not for durables, consisted of married female adults with complete secondary education, who were unemployed and had average monthly household income of more than 251 USD. A respondent from this type of household usually reported to have fair health. A typical household that was able to afford expensive durables consisted of married male adults with higher education, who had been employed and had an average monthly household income of more than 251 USD. A respondent from this type of household usually reported to have good health.

Based on the results of the present analysis, the following recommendations should be followed to assist households in improving their economic condition:

Establish healthcare institutions in rural areas of Armenia and provide affordable healthcare packages for households with bad economic conditions.

Increase average monthly monetary income through social welfare programs for households that are in relatively bad economic conditions,

Support investments in education and establish more educational facilities in rural areas of Armenia making it accessible for rural people.

Improve the living standards of the elderly by establishing rural nursing homes.

Assist families with many children by establishing affordable childcare facilities in rural areas of Armenia.

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