



Poverty & Equity Global Practice Working Paper 135

SOUTH CAUCASUS IN MOTION

ECONOMIC AND SOCIAL MOBILITY IN ARMENIA,
AZERBAIJAN AND GEORGIA

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ABSTRACT

This paper presents a comprehensive analysis of economic and social mobility in countries in the South Caucasus by complementing available household survey data in each of the countries in the subregion with other sources, such as the Life in Transition Survey (2016). The first part of the paper—concentrated on intragenerational mobility—finds that despite progress made in reducing poverty over the past decade, there appears to be a significant amount of churning around the poverty line. Moreover, in Georgia and Armenia, roughly one in eight individuals lived in a state of chronic poverty in 2015, and in the case of Georgia, chronic poverty is not an exclusive phenomenon for rural areas. In addition, although social programs have provided a lifeline for the chronic poor, the ability to tap into labor market opportunities has been the ticket out of poverty. The second part of the paper expands the analysis to intergenerational or social mobility. The main findings are that (1) a higher proportion of the population in this subregion considers their pre-transition family life and the lives of their parents when they were of similar age as appropriate benchmarks to evaluate their current economic situations in comparison with the other transition countries, and (2) over half of the Georgian and Armenian population disagreed with the statement that asked their views on having a better in life than their parents, aligning with the “growing but unhappy” trend that has been reported for the region.

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– Poverty & Equity Global Practice Knowledge Management & Learning Team

South Caucasus in Motion: Economic and Social Mobility in Armenia, Azerbaijan and Georgia¹

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Motivation

Countries in the South Caucasus have witnessed notable improvements in living standards in the past decade. In Armenia, poverty almost halved from 53.5 percent to 29.8 percent between 2004 and 2015. Georgia made an equally impressive progress registering a poverty decline of roughly 14 percentage points roughly during the same period. Azerbaijan does not have comparable data for two points in time, so it is difficult to make a credible assessment of the trend there, but recent analysis from 2015 suggests that poverty stands around 9 percent of the population, which is relatively low. The broad trends appear similar even if we use the common, comparable, international poverty line.

Similar progress in reducing overall poverty notwithstanding, there are important differences in the experiences of Georgia and Armenia on how the countries have coped with the global economic crisis that affected both countries in 2009-10, the subsequent growth rebound and how this growth was shared among different segments of the population. For example, Armenia was growing strongly and seeing that growth translate into improvements in living standards of the poor in the decade preceding the global financial crisis. But it took a heavy blow during the crisis; a third of the gains made in reducing poverty between 1999 and 2008 was wiped out in the two years of the crisis. Since then growth has recovered modestly with a commensurately slower decline in poverty. In contrast, Georgia had slower growth and slower pace of poverty reduction pre-crisis, but appears to have rebounded stronger on both measures in the years after that.

A similar pattern emerges when we broaden the definition of the less-well off to include not just those below the poverty line (the national or the international) but those constituting the bottom 40 percent of each of the country's income or consumption distribution. In particular, comparing the performance of the bottom 40 percent relative the overall country average during the crisis years, it is clear that those in the bottom 40 were impacted harder than the overall population in both Georgia and Armenia. However, in the years post crisis, the bottom 40 in Georgia recovered much faster than the general population in Georgia while in Armenia, the bottom 40 appear to be experiencing a more sluggish climb. This is a notable contrast from the years before the crisis during which Armenia's bottom 40 percent were outperforming the average much better than the bottom 40 in Georgia.

These patterns are obviously related to the structural as well as cyclical factors that affect the incomes of the poor in both countries. Decomposition analyses show that social transfers such as pensions to the elderly and targeted assistance to the poor as well labor market opportunities – both at the extensive margin (access to more jobs) as well as the intensive margin (higher wages and earnings from these jobs) – have played important roles in both countries in varying degrees in different periods. The role of remittances sent by overseas workers is salient in Armenia and to some extent the recent slowdown in the Russian economy which may have affected these flows could be behind the weaker recovery among the bottom 40 percent in this country. Even though Georgia has a large expatriate population, overseas migration for work is not as common as in

Armenia and accordingly the role of remittances in poverty reduction is more muted.² However, for Georgia, the structure of growth within the economy has led to some expansion of economic opportunities and jobs for the poorer segments of the population in recent years and this has played an important role in reducing poverty in the country.

Yet, despite these recent gains, the South Caucasus region (with the possible exception of Azerbaijan) remains the poorest in the Europe and Central Asia (ECA) region. Using the US\$5 a day line, poverty rates would be 71.7 percent, 28.2 percent, 69.3 percent in Armenia, Azerbaijan and Georgia respectively.³ All three countries also face enduring challenges of high vulnerability to covariate external shocks (e.g., currency devaluation) as well as idiosyncratic shocks (e.g., health) on the one hand and high degree of spatial disparities in welfare, between urban and rural areas and especially between the respective capital cities and the rest of the country on the other. This gives rise to durable horizontal inequalities in the landscape for economic opportunities for the poor and can propagate poverty traps. For example, in Azerbaijan the poverty rate in the outlying region of Ganja-Gazakh (17 percent) is more than four times the poverty rate in the capital city of Baku (4 percent).⁴ Likewise, the devaluation of the Azeri *Manat* in 2015, which led consumer prices to increase by 10.4 percent between June 2015 and February 2016 is estimated to have pushed an additional million people into poverty during this period.⁵

Against this broad background, this report seeks to deepen the available stock of knowledge on poverty in these countries by introducing a dynamic perspective of living standards. Instead of focusing on the share of the population which lives below the national poverty line at one point in time, the attempt will be to describe transitions in and out of poverty between two periods. By decomposing the net change in poverty, this approach creates additional insights on whether poverty reduction is a one-way street or shows substantial churning - with multiple transitions in and out of poverty at the same time. In addition, the report will also zoom out and take an intergenerational perspective on the transmission of welfare between current and the earlier generations. The motivation for doing that will be to assess how the broader economic transition that the countries in the South Caucasus have gone through over the last two and half decades as well as recent economic trajectories have affected the life chances of the citizens in these countries. For example, to what extent does who one's parents were, and what they did and how much they were educated affect life chances of citizens today?

² This is despite the fact that personal remittances as a share of GDP in Georgia is 10.4 percent and not that much lower from Armenia's 14.2 percent.

³ The World Bank produces international poverty estimates to facilitate an international comparison of poverty across countries. At the same time, national statistics offices often develop their own national poverty measurement methodology which is used to monitor progress towards development goals and coordinate policies around poverty reduction. This note uses national poverty estimates to better align the analysis with the dialogue in the different countries.

⁴ Azerbaijan Poverty Note (2015).

⁵ Cancho et al. (2016).

These two lines of enquiry closely follow the basic concepts of mobility as in Ferreira et al's (2013) rendering of the taxonomy of Fields (2000). Of the three main types of mobility defined, the first one refers to mobility as movement, which can be directional—the net upward or downward movements in individual incomes—and non-directional—in terms of gross movements in incomes. It can refer to movements in relative terms, such as those in the share of overall income; as well as movements in terms of position or re-ranking. The second concept refers to mobility as independence from the origin. The view behind this notion is that an individual's initial position should not determine that person's future position, but instead be uncorrelated. A particular case of mobility as origin independence is the notion of equality of opportunity, where origin is considered a circumstance. Equality of opportunity implies that independence in terms of circumstance—such as an individual's gender, geography or ethnicity—are independent from inequality in outcomes later on in life—such as a person's income or educational achievements (Dworkin 1981; Cohen 1989; Arneson 1989; Roemer 1998; Fleurbaey 2008). The third conceptualization of mobility, as an equalizer of long-term incomes, considers the degree to which inequality in permanent incomes is lower than inequality at any particular point in time.

The focus of this paper will be on the first two notions of mobility which can broadly be mapped into ideas of “intra-generational” mobility or “intergenerational” mobility, depicting, as the labels suggest, mobility within a lifetime of any individual and mobility across generations. Each of these explorations has particular importance for policy. The idea of intergenerational mobility – also known as social mobility – is intricately linked to the inclusiveness of growth. A society in which parental characteristics and attainments preclude certain segments of the population from participating in the growth progress is not only fundamentally unfair but is also limited in its ability to generate and share prosperity.

Similarly, intra-generational mobility – which can also be understood as *economic* mobility – enables policy makers to make the distinction between a poverty reduction process that is a gradual lifting of living standards above the poverty line into the comforts of a middle class and a process that is more volatile with a large number of households escaping poverty but a similarly large number moving back into poverty. These two processes would be indistinguishable just looking at any typical poverty trend, which represents a net movement. The policy directions would also imply different emphasis on human capital accumulation and labor markets versus the role of social protection to mitigate risks associated with exposure to shocks.⁶

The analysis of economic mobility also provides a tool to identify households which are systematically left behind, or chronically poor.⁷ Are households falling behind because they live in a remote part of the country where lack of physical access to opportunities becomes an obstacle for inclusive growth? Or do individual characteristics such as lack of education or bad health

⁶ Cancho et al (2015).

⁷ Vakis et al (2016).

constrain income growth? The characteristics of these households can support the design for better policies to strengthen sustainable and inclusive economic growth.

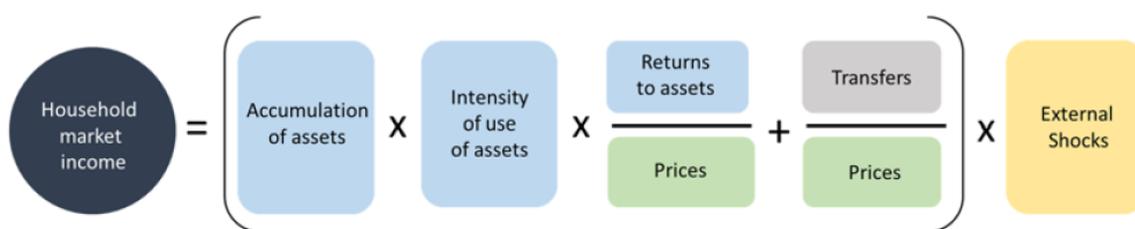
The rest of the paper is organized as follows. The following section presents a brief conceptual underpinning of the analysis of mobility to be presented here. This will be followed by two separate sections on economic and social mobility where a separate discussion of methodology will be presented along with the main results. In addition to estimating the mobility in each case, the paper will also attempt to benchmark the South Caucasus countries with other countries in the region wherever appropriate and also attempt to present a fuller characterization, including profiles of these mobility metrics to the extent that it is allowed by the data. The final section will offer some concluding remarks on the summary of the key results and the possible implications for policy.

Specific points about data will be made in the subsequent methodological sections but it is necessary to mention at the outset that our best efforts to present a South Caucasus level narrative faces considerable challenges due to the heterogeneity in the availability of appropriate data across the sub-region. Azerbaijan, in particular, does not have comparable data for two points in time making it difficult to construct a credible poverty trend, let alone a systematic assessment of economic mobility. Technically the survey carried out by the statistical agency to monitor household consumption could be used, but the data from these surveys are not accessible. Thus, for the economic mobility part of the analysis, the focus will be entirely on Georgia and Armenia. Specifically, the data from Georgia allows us to follow the same household over time and conduct a significantly richer analysis than what we are able to for Armenia where we have to rely on the “synthetic panel” methodology. For the social mobility part of the analysis, however, we rely on data from the Life in Transition Survey (LITS) which implemented the same questionnaire in all three countries. This will allow us to cover all three countries and also present the results in a manner in which it is comparable across the three of them.

Conceptual Underpinning

The overall conceptual framework for the analysis of economic mobility derives from the asset-based framework of the kind used by Bussolo and Lopez-Calva (2014). This approach embeds the household within the social and macroeconomic context of the country. On the one hand, the long-term production capacity of households will affect their ability to contribute to overall growth. On the other hand, the overall macroeconomic environment (e.g. demand for labor in various sectors, relative prices, i.e. the returns to assets and the intensity of use of assets over a life cycle) will in turn affect the households productive and income generation capacity. There may also be social influences on how the initial distribution of assets and the returns on these assets is determined (e.g., poor human capital endowments among minorities and lagging regions and any discriminatory practices).

Figure 1: Conceptual Framework



Source: Bussolo and Lopez-Calva (2014)

Any household's ability to generate income depends on the amount of assets they have, the intensity with which they can use these assets and the returns they can command on these assets. Separately, they also depend on any transfers they may receive from the government in the form of social assistance or from family members working away from the household in the form of remittances. Assets could include human capital, financial capital, social capital, natural capital such as land, soil, forests, water etc. Intensity of asset use captures the extent to which any given asset is devoted to the production process. Agricultural land may be multi-cropped or cropped only once a year; participation in the labor market may be full time or part time. Another source of variation in household income generation capacity is the return on assets. This could be due to differences in productivity, issues related to market segmentation or the quality of the underlying asset (say the quality of education in the case of human capital). In addition, existing social norms and institutions may also play a role; gender and race gaps in wages documented most convincingly for the US are an example of differential returns on human capital based on social groups.

Let's consider the notion of intra-generational mobility within this framework. Intra-generational mobility represents the ability of households over time, but within a generation, to make positional or rank movements within an income distribution.⁸ The household may move up in the distribution or may slip down in the distribution. Considering discrete "states", who is poor today may move out of poverty in the next period and who is not poor but "vulnerable" today may slip back into poverty. On the other hand, somebody in that vulnerable category may also make robust gains in income to solidly escape that state and enter the "middle class". For this kind of "intra-generational" analysis, we take the initial distribution of assets as given. Transitions from one state to the other will depend solely on directional income movements

⁸ The literature distinguishes between absolute and relative economic mobility. *Absolute* economic mobility refers to transitions between different groups of the welfare distribution which are defined in terms of thresholds such as the national poverty line. *Relative* economic mobility describes transitions between groups of the population which are defined in relative terms such as the bottom 40 or the top 60. Note that it is possible that households experience upward mobility in absolute terms, but downward mobility in relative terms if the rest of the reference group is growing faster. This note builds on the notion of absolute economic mobility.

generated by differences the intensity of use of assets, returns to these assets and transfers, and resilience to shocks.

Inter-generational mobility, on the other hand, is fundamentally about origin-independence and is measured by the extent to which the distribution of incomes of the children is independent of the distribution of incomes of parents. A society in which parents' rank position has no bearing on the children's position is a society with higher intergenerational mobility. Conceptually then, this is equivalent to establishing a link between the income generating capacity of the current generation to the endowment of assets for the next generation through inheritance and bequest, investment in education and health, access to networks etc.

Economic Mobility

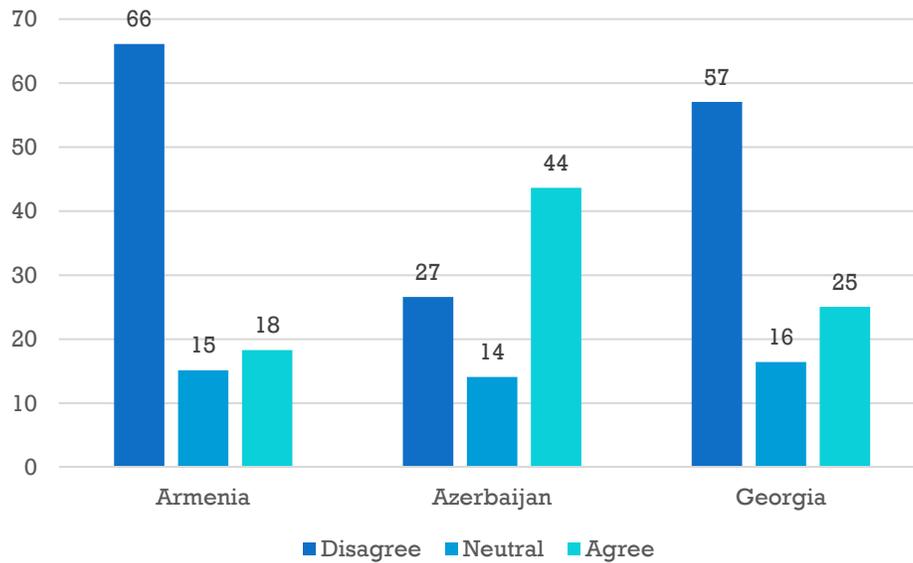
We begin the analysis by presenting some results on perceptions of mobility in the three countries in the sub-region. For this we utilize the data from latest round of the Life in Transitions Survey (LiTS). LiTS is a combined household and attitudinal survey collecting a rich array of information on the socio-economic status of the underlying population as well as information on perceptions about a variety of economic, social and political issues. The third round of LiTS was implemented between the end of 2015 and early 2016 in a total of 34 countries. This included 29 transition countries, the Czech Republic, Italy, Germany, Cyprus and Greece. All three countries, Armenia, Azerbaijan and Georgia are covered in the survey and a targeted 1,500 households were interviewed in each country.

For the purposes of the study of economic mobility, the LiTS surveys carry several questions that are relevant. First, each respondent is asked about their assessment of the statement "my household lives better than it did 4 years ago". This question directly gets at the issue of perceived directional movement in living standards relative to where the household considered itself to be at an earlier period and the responses are interesting. (Figure 2)

From the results, it appears that there is quite a bit of heterogeneity among the three countries. Roughly 14-16 percent of population in each of the countries have neutral views on the how they have fared in the last few years. But perceived downward mobility is particularly pronounced in Armenia where 66 percent of the population believes their household to have done worse than where they were 4 years ago. Georgia is not too far behind on this account: 57 percent of Georgians too perceive themselves to be doing poorer than they were doing four years ago. On the upside, one in four Georgians and roughly one in five Armenians believed their households were actually better off than four years ago. While the weaker post-crisis recovery of the economy in Armenia relative to Georgia could potentially explain some of this difference, it is not entirely consonant with the overall pace of poverty reduction seen in both countries in this period. Results appear slightly more positive in Azerbaijan with more than 2 in 5 households having a favorable assessment of their household's circumstances today relative to four years ago. But the Azerbaijan

results need to be interpreted with caution not least because 16 percent of surveyed population provided “Don’t know” as their response to this question.

Figure 2: Percentage of population who agree, disagree or are ambivalent about how their household is faring relative to 4 years ago



Source: LiTS (2016)

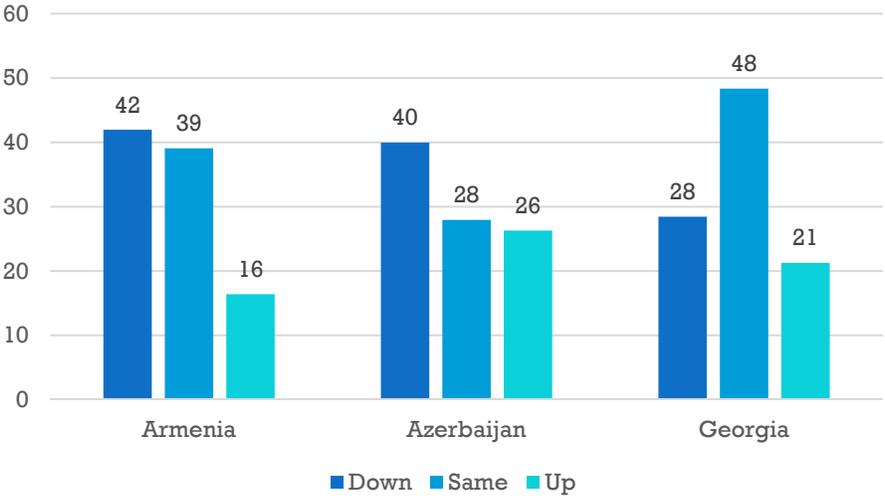
Note: The bars for each country may not add up to 100 percent because responses that were “Don’t know” and “Not applicable” are not plotted here. Strong agreement and agreement are grouped into a single agreement category and likewise strong disagreement and disagreement are grouped into a single disagreement category.

LiTS also provides another way of looking at economic mobility. The survey asks each respondent to situate themselves in a 10-step Cantrill ladder representing various levels of wealth. A person placing himself at ten in this ladder would be positioning himself in the top decile of the wealth distribution within the country and a person placing himself at one would be placing himself at the bottom decile. In addition to asking about the current position, the survey also asks about where the households would place themselves in the same ladder four years ago. Tracking the changes in the position in the ladder chosen by the household at these two points in time, one can make inferences about perceived directional income/wealth movements. A household is deemed to have moved up if the position in the ladder today is higher than what it was four years ago and moved down if it is the opposite.

The results presented in Figure 3 broadly corroborate the developing narrative with some differences. Across all three countries, there is a larger proportion of households that report themselves to be at the same step in the ladder in comparison to those who had neutral assessment of how their household had fared relative to four years ago in Figure 2. For

Azerbaijan, response rates are higher for these questions (about 95 percent) and about 2 in 5 report themselves at a lower rung of the ladder relative to where they considered themselves to be four years ago with only about 1 in 4 reporting upward movement. For both Armenia and Georgia, the perceived downward move is a bit less pronounced in comparison to the earlier result, but still quite high, especially for Armenia.

Figure 3: Proportion of population characterized by perceived movements in the 10-step ladder of wealth



Source: LiTS (2016)

Note: The bars for each country may not add up to 100 percent because responses that were “Don’t know” and “Not applicable” are not included.

Together, these results on perceived movements provide a number of interesting observations to help anchor a more in-depth exploration of economic mobility in the three countries in the sub-region. First, there is a sizeable variation in the perceived movements across the three countries. Second, to some extent the broad patterns are consistent with the level and pattern of economic growth realized in the two countries. Georgia has witnessed a faster recovery and better shared growth than Armenia and that is somewhat reflected in a higher proportion of Georgians reporting upward movements and a higher proportion of Armenians reporting downward movements. Even in Azerbaijan, where we are not able to explore actual mobility, the perceived movements appear somewhat consistent with the recent oil price related economic shocks the country has witnessed. However, the question of the extent to which these perceived movements are anchored in actual realized movements in welfare and living standards is not immediately

clear. Also not clear are the characteristics and attributes of households and individuals who realize these movements. We will attempt to shed some light on that in the subsequent sections.

Methodology

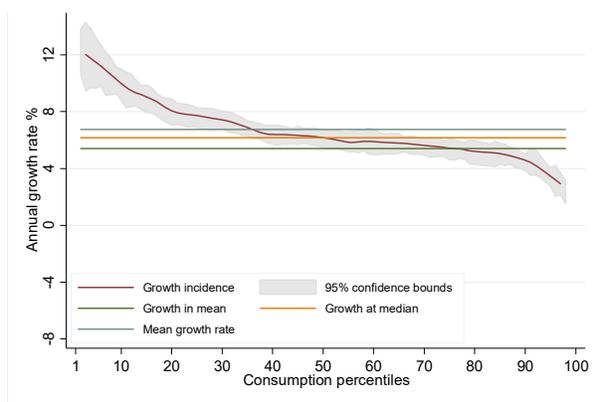
The ideal data set to study economy mobility would be one in which the same household is observed at multiple points in time allowing us to directly observe the directional movements in well-being. These so-called panel data sets are hard to come by in many settings as they are more difficult and costly to implement. In Armenia, for example, such panel of data does not exist. In its absence, we use the “synthetic panel methodology” and apply it to the data from multiple rounds of the national Income and Living Conditions Survey (ILCS). The basic idea behind the synthetic panel methodology is to impute the welfare status of households in a period based on a structural model that predicts welfare status of household observed in the previous period. Annex 1 presents further details on the exact methodology and its use here. The synthetic panel methodology has been applied in a variety of settings and its robustness, stability and performance has been validated against actual panel data with results showing pretty close replication of actual transitions observed in the panel data.

Fortunately, for Georgia, we have actual panel data. The four rounds of Welfare Monitoring Survey (WMS) that have been implemented by the UNICEF since 2009 track the same households over time.⁹ The four rounds were conducted in 2009, 2011, 2013 and 2015 and collected information on health, education, access to services in the country, together with a consumption module very similar to the Integrated Household Survey (IHS) used to measure and monitor poverty in Georgia.¹⁰ Despite some differences between the survey instruments, the consumption growth captured by the WMS over the survey period is broadly similar to the IHS. Particularly, both surveys show positive growth across the entire welfare distribution with slightly higher growth at the lower ends. (See Figure 4 and Figure .)

⁹ The original sample of 4,808 households in 2009 had 2,816 surviving households in 2015. To this an additional booster sample of 1,717 was included in 2015. All the results on mobility is based on the surviving panel sample. Selective attrition could affect results if specific groups of the population disappear from the sample, but is mitigated by the re-calculation of sampling weights, which results in very similar distributions for the panel and initial samples for key variables (see Annex, Figures A1 and A2).

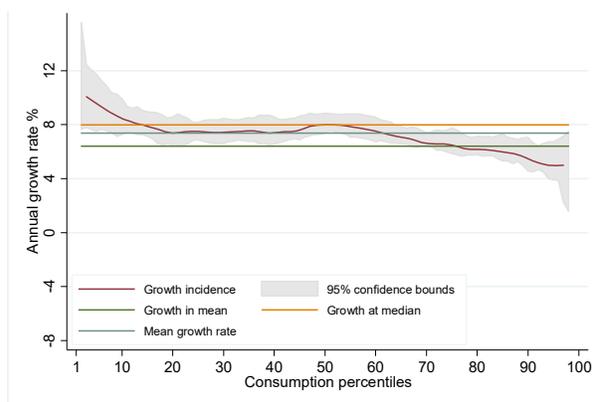
¹⁰ One key difference between the two surveys is the fact that the WMS uses a weekly recall to collect information on food expenditures while the IHS uses a 7-day diary. There are important advantages and disadvantages to both methods and recall methods are known to underestimate food consumption. We see this in Georgia as well: poverty estimated from WMS is higher (e.g. 50.8 percent in 2009) compared to the IHS survey (34 percent in 2009) for the same year. Still, for our purposes here, it will suffice to simply note this important source of difference between the two surveys.

Figure 4: Annual consumption growth in Georgia based on IHS (2010-2015)



Source: Author's calculations based on IHS

Figure 5: Annual consumption growth in Georgia based on WMS (2009-2015)



Source: Authors' calculations based on WMS

Armenia

Main Result

The analysis of patterns of economic mobility for Armenia focuses on two episodes of poverty reduction. In the first episode between 2004 and 2008 poverty declined substantially, with the share of the population living below the national poverty line decreasing by 25.9 percentage points. The second episode covers the years from 2010 to 2015 during which the decline in poverty was a more modest 6.0 percentage points. Even though both periods witnessed poverty reduction, the macroeconomic conditions in the country and the associated drivers of poverty reduction were largely different.

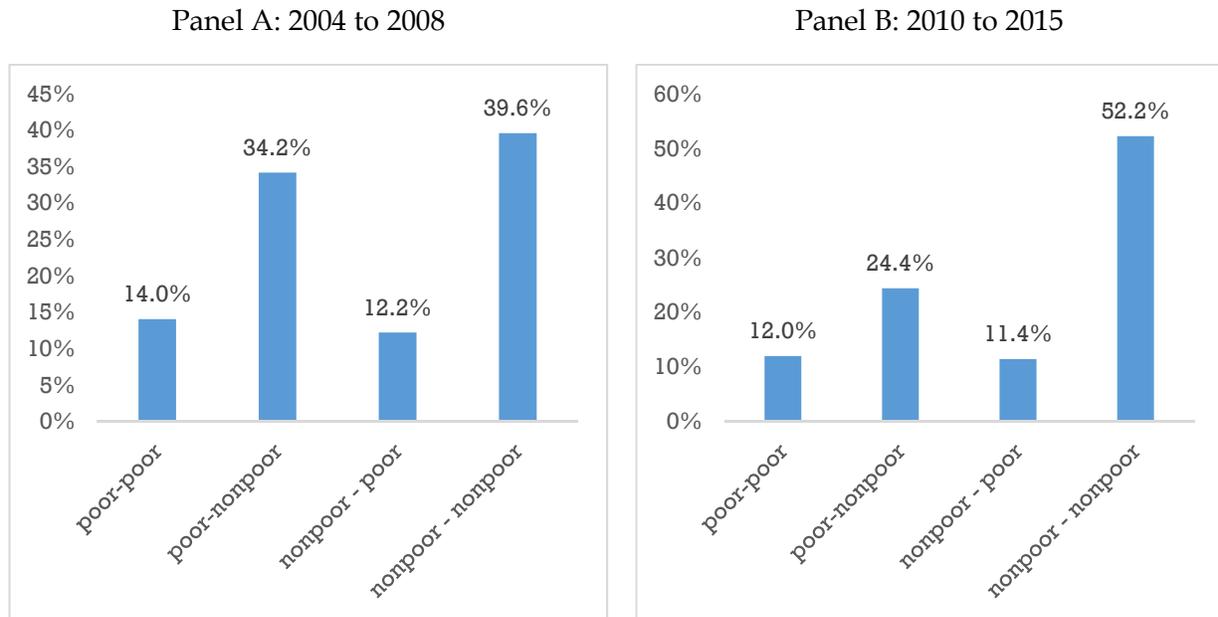
Poverty reduction between 2004 and 2008 benefited from stable economic growth. But as Figure 6 illustrates, while a sizeable share of the population exited the state of poverty (34.2 percent), there was a non-trivial proportion of population moving back into poverty (12.2 percent).¹¹ Over the same period, 14.0 percent of the population lived in poverty in both periods. Conversely, only about 39.6 percent of households in the sample lived free of poverty in both periods.^{12,13}

¹¹ The synthetic panel methodology heavily relies on the use of time-invariant characteristics to impute household welfare in the second time period. Following best practice in the literature, the sample of households is typically restricted to households with household heads between 25 and 55 years. Annex 2 provides descriptive statistics which support the validity of these findings on patterns of economic mobility not only for the sample used for the analysis but for all households in Armenia.

¹² The synthetic panel methodology determines patterns of economic mobility based on the welfare status in two periods of time. Findings are not informative about transitions which occur between the beginning and the end of the time window.

¹³ The documentation of results focuses on point estimates and does not report standard errors which are available from the author upon request.

Figure 6: Patterns of economic mobility in Armenia (upper national poverty line)



Source: Authors' calculations based on ILCS 2004, 2008, 2010 and 2015.

In contrast, during the period between 2010 and 2015, economic growth suffered from the negative impact of the global economic crisis and stayed below potential due to difficult external conditions in the Russian Federation. Still, even in the period of overall low dynamism and characterized by low net poverty reduction, there was significant churning around the poverty line with 24.4 percent of the population escaping poverty and about 11.4 percent falling below the poverty line. Like in the earlier period, a relatively small fraction of the population was monetary poor in both periods (12.0 percent). At the same time, slightly more than half of the sample (52.2 percent) managed to remain above the poverty line in both periods.

Patterns of economic mobility during the pre-crisis and the post-crisis period highlight the opportunities but also the vulnerabilities of households to poverty. For both time intervals the share of households left behind has been relatively small, and a significant share of the sample was able to escape poverty over a four (five) year time window.¹⁴ However, poverty reduction does not seem to be a one-way street and over the same time period the share of the population falling below the poverty line is high. In particular, one concrete implication of the results in Figure 6 is that about half of those who were poor in 2015, were actually non-poor in 2010.

¹⁴ The literature uses the term chronic poor in different contexts. Here, the term “chronic poor households” refers to the group of the population which lived in poverty in the initial and the final period under consideration (see Vakis et al. (2016)).

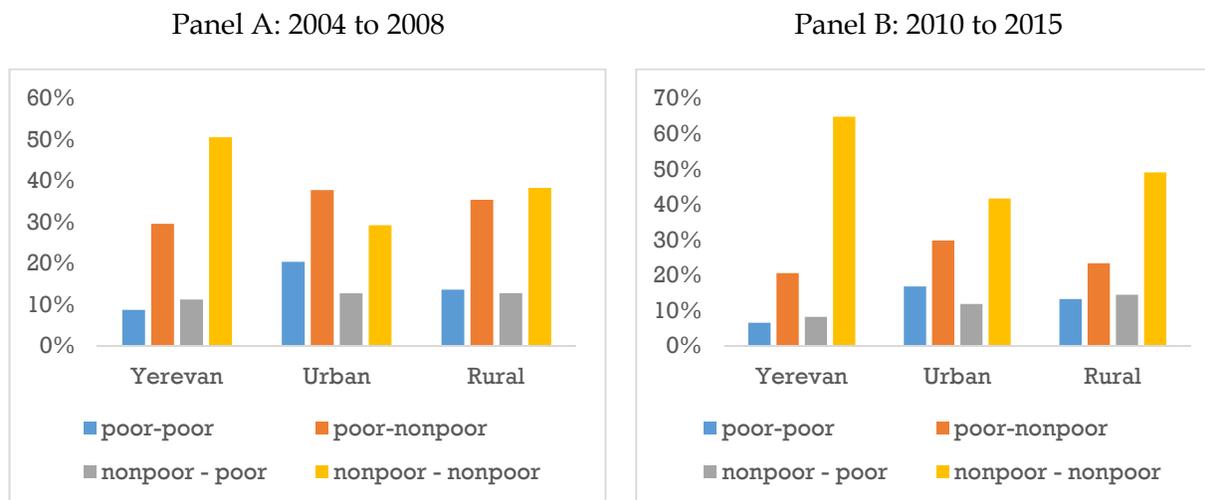
Transitions in and out of poverty are a function of individual and household characteristics and often reflect policies which support and protect households from falling below a certain welfare level when exposed to a variety of shocks. The following section looks into heterogeneity across households and describes patterns of economic mobility for different subgroups of the population.

Structure of economic mobility

Transitions in and out of poverty show stark disparities for different groups of the population. Circumstances such as the place of residence, and the endowment including education determine the access to opportunities and thereby shape the probability of escaping poverty or remaining trapped in it. The following analysis looks into differences in patterns of economic mobility based on the characteristics of the household head.

Patterns of economic mobility show a divide between the capital city Yerevan, urban and rural areas in the country. The share of chronically poor households is highest in other urban areas outside the capital city Yerevan (Figure 7). Patterns of economic mobility for the three locations suggest that the distribution of households in chronic poverty is broadly similar to the distribution of poor households in the country.¹⁵ As poverty has reduced for all three locations in the country between 2010 and 2015, net changes in poverty mask significant churning. Findings highlight the unstable path of poverty reduction as some households move above the poverty line whereas others fall behind.

Figure 7: Patterns of economic mobility for different locations in Armenia

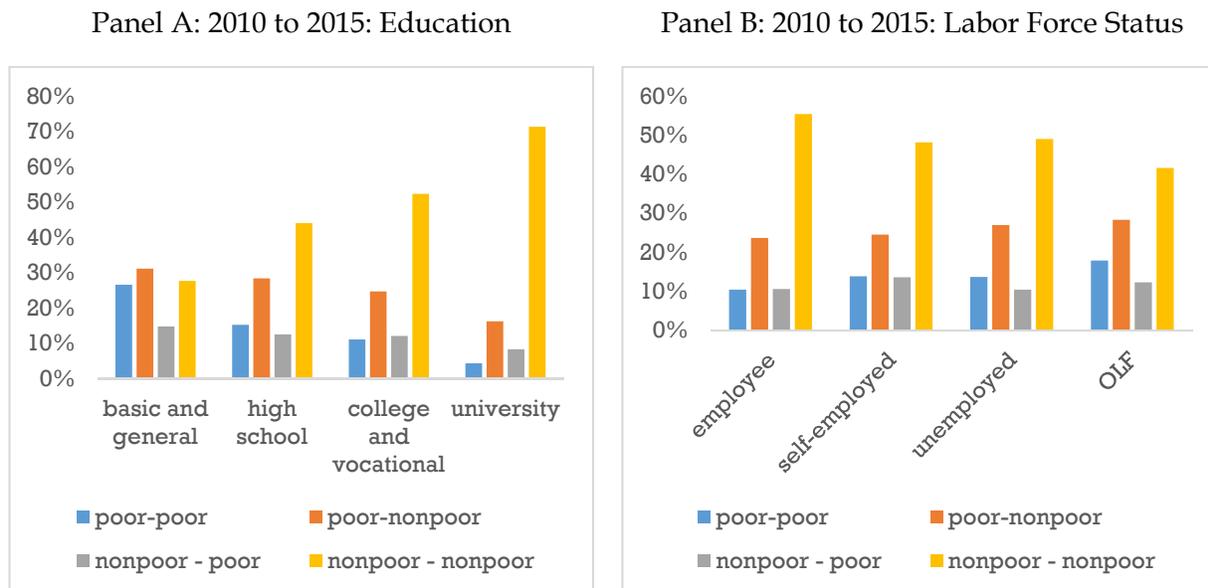


Source: Authors' calculations based on ILCS 2004, 2008, 2010 and 2015.

¹⁵ The household survey for Armenia (ILCS) is by design representative on the level of 10 marzes and Yerevan. Small area estimates of poverty produced for the poverty map in Armenia highlight the pronounced spatial dimension of poverty in the country and link some of these disparities to differences in endowment and physical access to opportunities across regions.

The analysis on the patterns of economic mobility has already shown that during both periods when economic growth was positive and labor markets generated jobs and higher earnings, a significant number of households managed to escape poverty. This hinges towards the role of education and labor markets as drivers for poverty reduction – not only in facilitating transitions out of poverty but also in building resilience towards idiosyncratic and aggregate shocks. Among households with higher educational attainment, chronic poverty is less frequent and the share of households staying out of poverty is also higher (Figure). In addition, higher education seems to protect against churning as the fraction of households falling back into poverty decreases monotonically in the level of education. This pattern does not differ for the two periods and suggests that independent of the nature of growth, education plays an important role in facilitating a sustainable path out of poverty.

Figure 8: The link between economic mobility and educational attainment and labor force status of the household head

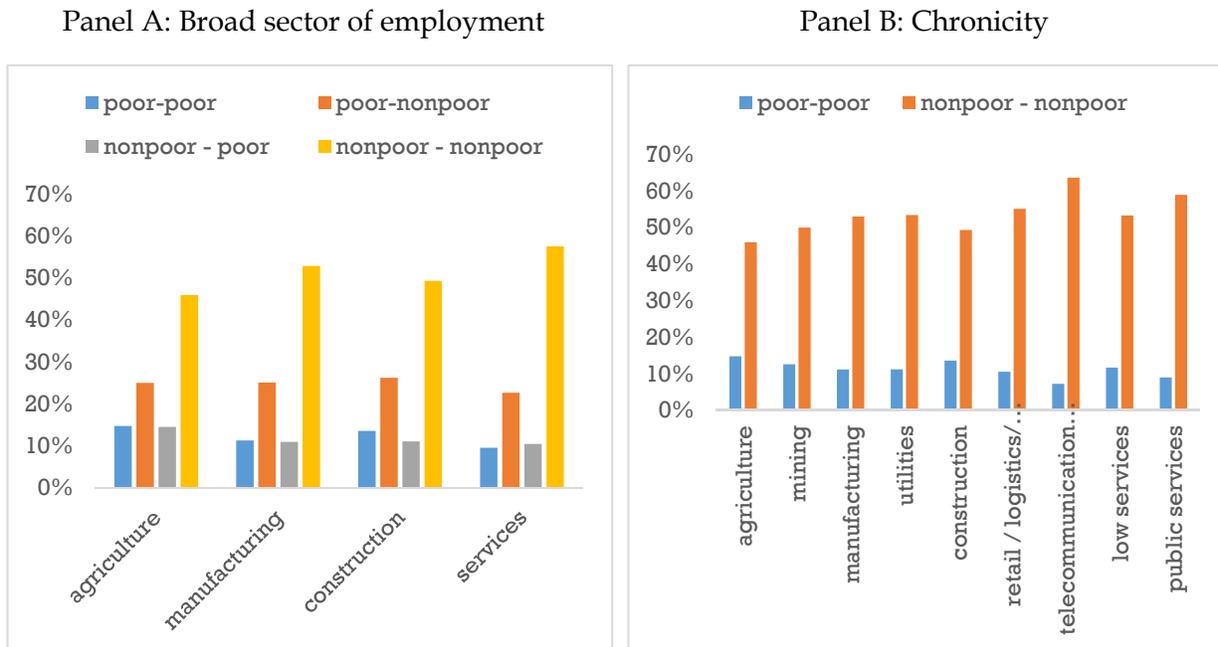


Source: Author's calculations based on ILCS 2004, 2008, 2010 and 2015.

Employment status is also linked to transitions in and out of poverty (Figure 8). The share of households that are chronically poor is lower among households in which the head is employed than for households where the household head is out of the labor force (10.4 versus 17.9 percent). Moreover, the probability of belonging to the group of households which lived above the national poverty line in both periods was highest among households where the household head is employed. The sector of employment (Figure 9) also plays an important role in determining dynamic patterns of poverty. Between 2010 and 2015, the share of chronic poor was highest among households working in the agricultural sector (14.7 percent), and significantly lower for

households engaged in the service sector (9.5 percent). The collapse of the construction sector during the post-crisis period explains the relatively high share of households being chronic poor for this particular sector (13.5 percent).

Figure 9: Patterns of economic mobility and sector of employment, 2010 – 2015



Source: Author's calculations based on ILCS 2010 and 2015.

As poverty dynamics between 2010 and 2015 were largely driven by higher employment rates and increasing wages, Figure 9 provides a more disaggregated analysis into differences between multiple sectors of the economy. The share of chronic poor is highest for sectors with low productivity (including agriculture and construction). On the other side of the welfare ladder, the share of households being non-poor in both periods seems highest for the high productivity service sector including telecommunication, financing and insurance.

Georgia

Poverty Transitions and the Vulnerability to Poverty Approach

The analysis of patterns of economic mobility for Georgia focuses on the period between 2009 and 2015 which roughly coincides with a period of rapid poverty decline. As for Armenia, one key finding that emerges quite immediately is that the net reduction in poverty witnessed during this period masks considerable churning in and out of poverty. Close to a half of the households identified as poor in 2011, 2013 and 2015 were not poor in the previous period, which shows

considerable movements in and out poverty (Figure). Among the non-poor, there is a greater stability from one period to the next, but still close to a fifth of the non-poor in one period fall into poverty in the next. These results indicate that poor households have the ability to make temporary escapes from poverty, but find it difficult to maintain their new status.

Figure 10a: Distribution of the poor and non-poor by poverty status in the earlier period, 2009-15

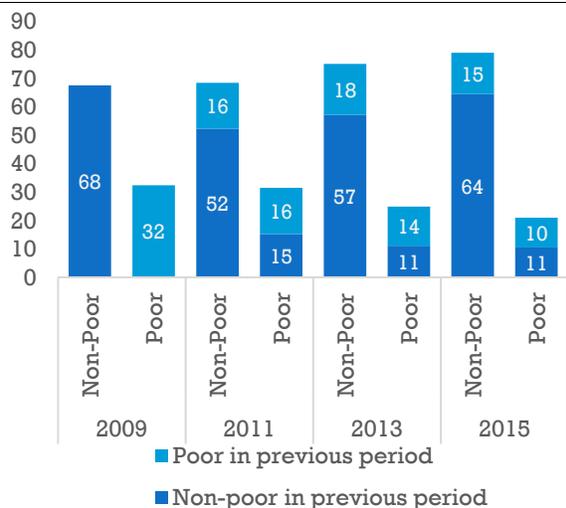
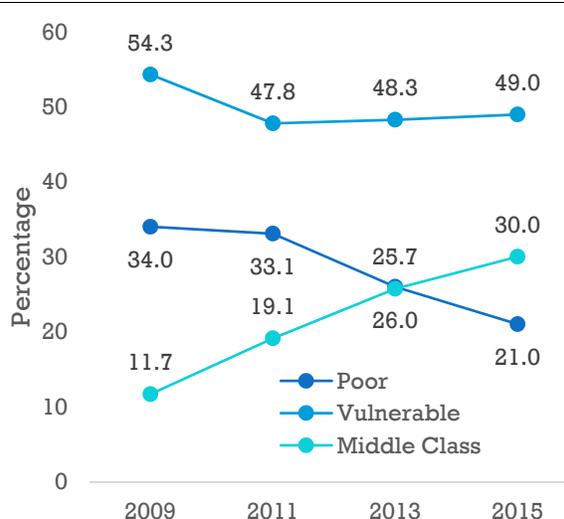


Figure 1b: The poor, the vulnerable and the middle class



Source: Authors' calculations based on 2009, 2011, 2013 and 2015 WMS and following Lopez-Calva and Ortiz-Juarez (2014) methodology.

This concept of poverty transitions, in particular the notion of the risk of falling into poverty, can be taken a little bit further to come up with a more precise definition of the vulnerable and the middle-class populations. Vulnerability is typically defined using heuristic constructs such as "population clustered just above the poverty line" or population just above the poverty line but below some arbitrary multiple of the poverty line. Likewise, the definition of the middle class is often based on arbitrary absolute or relative thresholds such as between \$2 to \$4 dollars a day (Duflo and Banerjee 2009) or \$2 to \$20 dollars a day (ADB 2010) or \$2 to \$13 dollars a day (Ravallion 2010) or those between 75 percent to 125 percent of any society's median income (Birdsall et al 2000) or some hybrid of the two (Birdsall 2007). But having panel data such as the data we have for Georgia allows us to do better.

Following Lopez-Calva and Ortiz-Juarez (2014), we define households whose probability of falling back into poverty is sufficiently low as belonging to the middle class. Specifically, we use the value of 10 percent as the cutoff. This translates into lower threshold of 257 GEL/month per

adult equivalent (2015 GEL).¹⁶ The definition of the vulnerable population follows as an immediate corollary: if low probability of falling back into poverty is what situates a household in the middle, those with higher risk of falling into poverty belong to the vulnerable group. We apply this approach with a slight modification and identifying the threshold for households in 2011 that do not fall back into poverty either in 2013 or 2015. This implies a stricter definition of vulnerability. Results from the logit model estimation used for identifying the probabilities are available in Annex 5.

Consistent with the evidence of churning around the poverty line, the results presented in Figure 1 above show that vulnerable households represent the largest category in the country; on average, close to 50 percent of the population is in the vulnerable category. On the other hand, the middle class has increased from 12 percent in 2009 to 30 percent in 2015, almost mirroring the overall decrease in poverty. This result contrasts with previous estimations based on an international middle-class line of \$10/day (2005 PPP), in which middle class is smaller and increases only marginally from 4 percent in 2010 to 7 percent in 2015. The results presented in this study, however, have the advantage of relying on a vulnerability framework for defining the middle class.

Moving out or left behind?

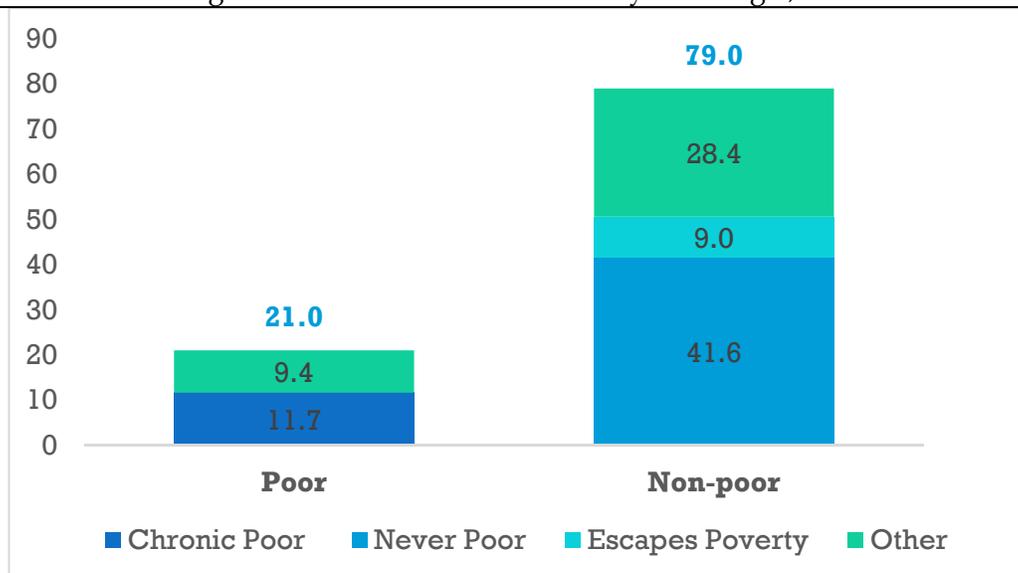
The results so far suggest a high degree of transitory poverty and a nascent but growing middle class. In the next stage of the analysis, we zoom in further to analyze the chronic poor, or those who may have been completely left behind in the growth process during this period. Considering the overall decline in poverty observed in the country, we define chronic poor as those households who were poor in 2015 and also poor in at least two of the three previous rounds (2009, 2011 and 2013). The intuition behind this so-called “spells approach” is that we want to incorporate the duration of being in poverty into the definition and rule out transitory and exits in the short run.

In Figure 2, we show the composition of the poor and non-poor group for 2015. Almost 60 percent of those who were poor in 2015 were chronically poor. This implies that roughly one-in-eight Georgians were in chronic poverty in 2015. To understand the challenges faced by this group, we create a comparison group of households that were poor in 2009 by who had escaped poverty by 2015. In order to minimize the possibility that we may be including households that may have been classified as poor in 2009 due to measurement errors, we further restrict this group to include those who escape poverty after being poor in 2009 and also in 2011. In Figure 2, we see that this group represented 9 percent of the population. Roughly 40 percent of the population were never poor in all four periods while a remaining close to 30 percent were in other residual transition groups. These groups include mostly households that are out of poverty in 2015, but

¹⁶ We do not use an upper threshold for the middle class as there is no clear guidance in the literature for how to estimate it and because using a value proportional to the \$50/day line used in Lopez-Calva and Ortiz-Juarez (2014) (1,286 GEL/month, 2015 GEL) that preserves the same scale between the \$10/day line and the line used here results in very low estimates of “elites” (less than 1 percent).

that were poor in one period between 2009 and 2013 (close to 80 percent of this group), or that were poor in two non-continuous periods.

Figure 2: Various Shades of Poverty in Georgia, 2015



Source: Own elaboration based on 2009, 2011, 2013 and 2015 WMS.

Note: Number on top of the bar represents the poor and non-poor headcount, respectively

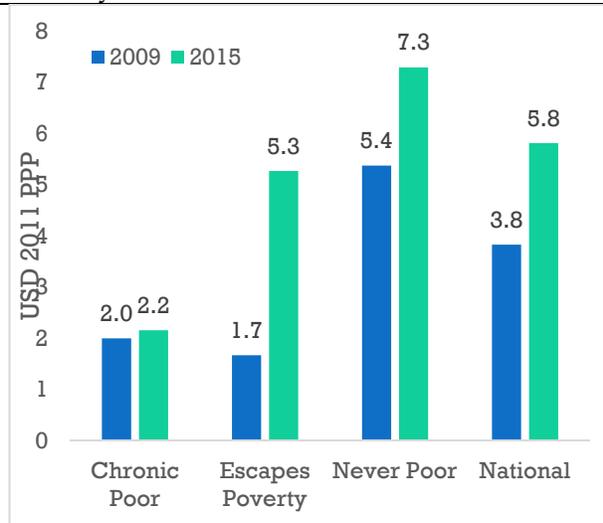
In the remainder of this section, we will focus on a comparison of the profiles of those in chronic poverty and those who managed to escape poverty in Georgia. This will help shed light on the key drivers of poverty reduction in the country.

The first point to note is that in contrast to other groups, the chronic poor appear to have benefitted only very marginally from the economic growth between 2009 and 2015. Per capita consumption (per day) grew by over 50 percent for the country as a whole but among the chronic poor this was just below 10 percent (Figure 3). Households that escaped poverty appear to have started from a base lower than those below the chronic poor but witnessed a dramatic cumulative increase in living standards (over 200 percent) during this period. Those never in poverty over these four rounds have in general maintained a higher living standard and have also witnessed a healthy growth (33 percent) in consumption. These results indicate that the chronic poor have not been able to take advantage of opportunities to increase their welfare as other groups have had, suggesting the need to understand the reason behind this difference.

The second point that emerges is that chronic poverty is both an urban and a rural phenomenon. More than 40 percent of the chronic poor are located in urban areas (over half of them in Tbilisi) while the rest are in rural areas (Figure 4). The distribution of other groups in urban and rural areas tends to be slightly more skewed towards urban areas, especially for households who have never been poor. While the chronic poor condition is not purely explained by spatial differences in access to public services or employment opportunities, these results suggest that there are

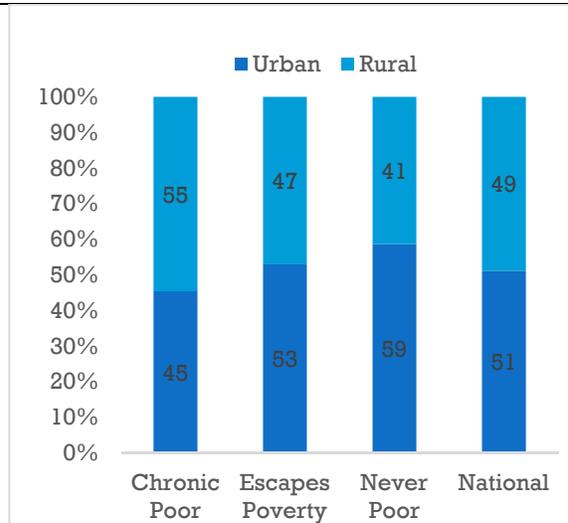
issues transversal to urban and rural areas that keep some households trapped in poverty. The rural-urban distribution of the chronic poor and the poor is roughly similar.

Figure 3: Per capita consumption per day 2009-2015, by welfare status



Source: Own elaboration based on 2009 and 2015 WMS.

Figure 4: Welfare status by urban/rural residence, 2015



Source: Own elaboration based on 2015 WMS.

Third, educational attainment is higher among escapers than among the chronic poor. What is more, the fact that differences have widened over time suggests that acquisition of higher educational levels have gone hand in hand with escape from poverty (Table 1). The widening is explained by an increase in young adults finishing tertiary education during the period. While 20 percent of the group aged between 18 and 30 years had tertiary education in 2009, this share had increased to close to 40 percent by 2015. Differences in quality of education and the differentiation between vocational and higher education naturally lead to differences in employment opportunities among tertiary education graduates. Yet, putting these differences aside, the higher attainment levels showed by the escapers points to a gap that needs to be closed to provide greater income generation opportunities to the chronic poor.

Table 1: Educational Attainment by Welfare Status, Georgia 2009-2015

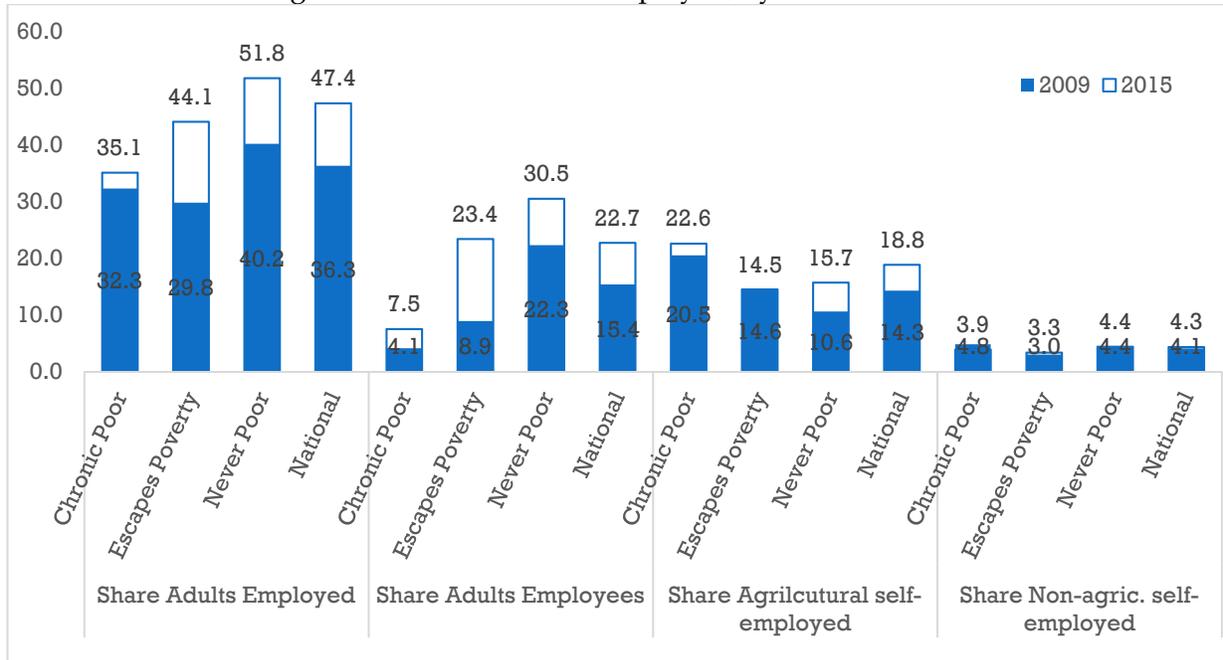
	Chronic Poor	Escapes Poverty	Never Poor	National
Education				
Share adults with tertiary education				
2009	10.9	20.8	43.5	30.4
2015	10.6	24.1	42.8	30.2

Source: Own elaboration based on the 2009 and 2015 WMS.

Fourth, the chronic poor are less likely to be employed than the rest of the population. In 2015, only about a third of adults in chronically poor households were working, as opposed to close to

45 percent for the escapers, and 47 percent for the national average. The difference is more striking if we consider that the escapers started even below the chronic poor in 2009 (30 percent against 32 percent). In addition, the chronic poor are also concentrated in the low-productivity agricultural sector. In contrast, almost one out of every four adults among the escapers worked as an employee in 2015, against only 7 percent for the chronic poor. In fact wage employment increased quite dramatically among the escapers suggesting that they may have been able to take better advantage of the higher availability of jobs between 2009 and 2015.

Figure 5: Share of Adults Employed, by welfare status



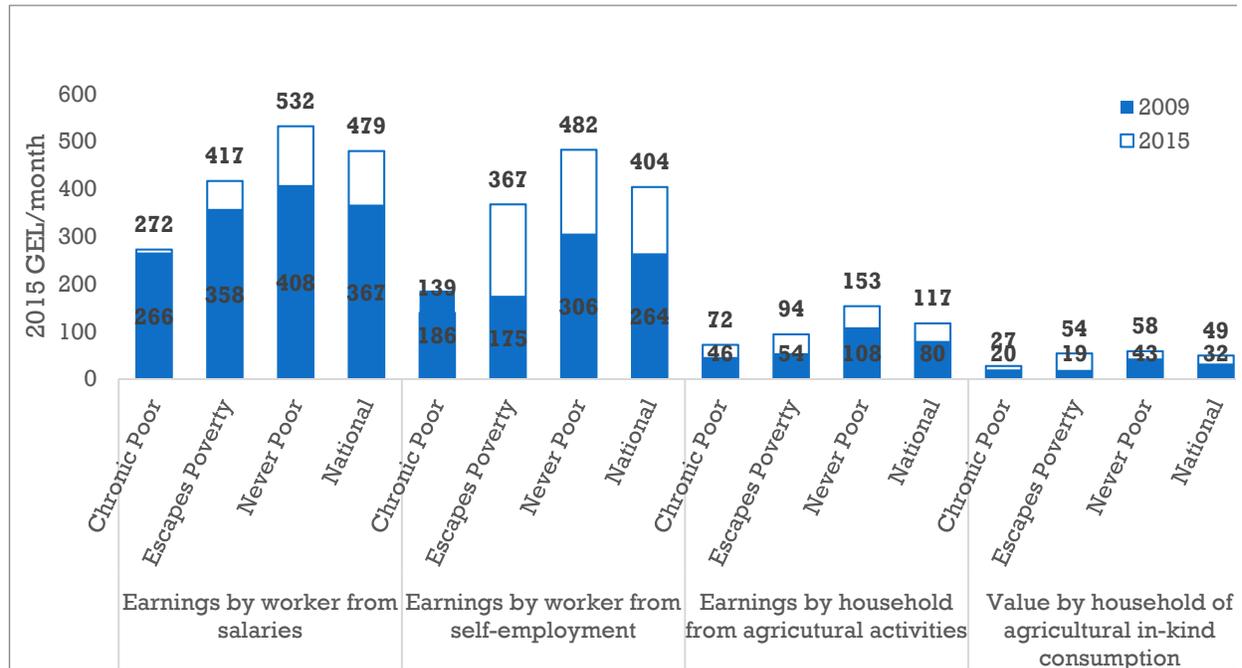
Source: Own elaboration based on the 2009 and 2015 WMS.

Looking into this a little bit deeper, it appears that males with advanced education benefited the most from the increase in employment opportunities between 2009 and 2015. Those who transitioned from no employment to waged employment are more likely to be males with higher education than those individuals who stayed out of employment. A regression analysis indicates that these are the main characteristics that distinguish the two groups at the national level (Annex 3). Age also plays a meaningful role, signaling that new employment opportunities did not appear only for young higher education recent graduates, but across all age groups. Being located in Tbilisi seems to play a role though this can be explained by the higher unemployment rates observed in urban areas – as opposed to rural areas where unemployment tends to be low, and large shares of the working age population are self-employed in their own land.

While the rest of the population has enjoyed higher returns to their human capital, the chronic poor have seen the returns to their labor decrease over this period. Salaries for those employed or earnings for the self-employed stagnated for the chronically poor (Figure 6). Earnings even

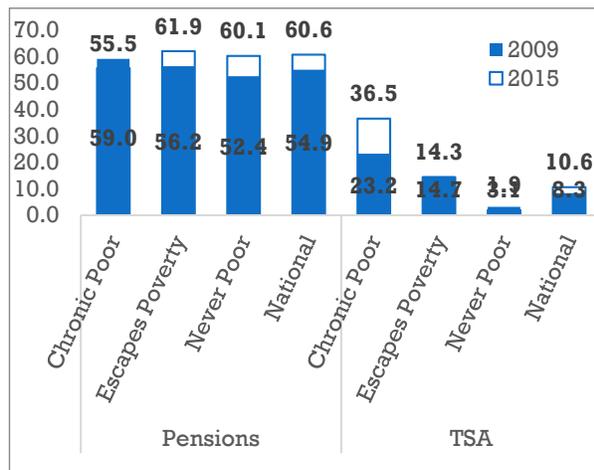
decreased considerably for the self-employed, falling in real terms by around 20 percent. In contrast, individuals who escaped poverty were lifted by about a 15 percent growth in average salaries. This together with the earlier evidence on employment reported above indicates that subpar performance in labor markets hurt the chronically poor during this period.

Figure 6: Average Returns to Assets by Worker/Household (2015 GEL/month) Georgia 2009 and 2015



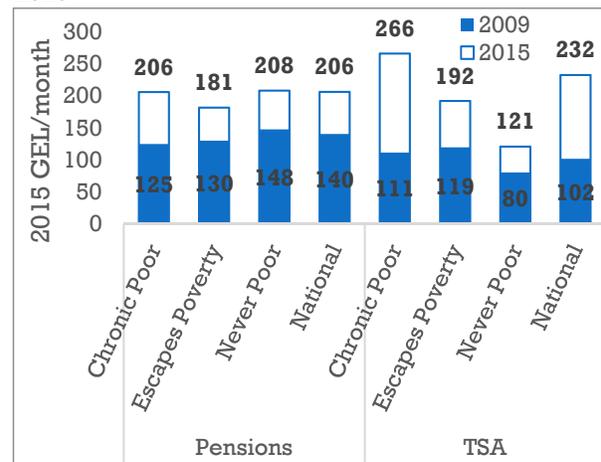
Source: Own elaboration based on the 2009 and 2015 WMS. Average earnings reported only for household with positive income for each category.

Figure 7: Coverage of Selected Transfers by Welfare Status, Georgia 2009-2015



Source: Own elaboration based on 2009 and 2015 WMS.

Figure 8: Average Transfer by Beneficiary Household (2015 GEL/month), Georgia 2009-2015



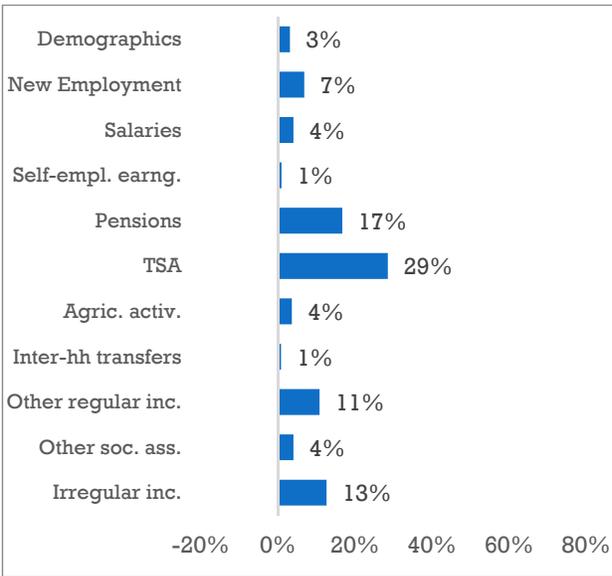
Source: Own elaboration based on 2009 and 2015 WMS.

Income from transfers increased across the board between 2009 and 2015, benefiting particularly the chronic poor due to an increase in Targeted Social Assistance (TSA) coverage in this group. The Government of Georgia expanded its social programs after the global financial crisis and again later in 2013 and this translated into actual increases in household income. The increase in non-contributory pensions, which cover roughly 60 percent of households across different welfare status, benefitted households across the entire welfare distribution. The increase in TSA transfers benefited the chronic poor more, who started with a higher coverage than other groups. However, this increase in income was not enough to help these households escape poverty, on account of the size of the transfer, though it played an important role to complement their income.

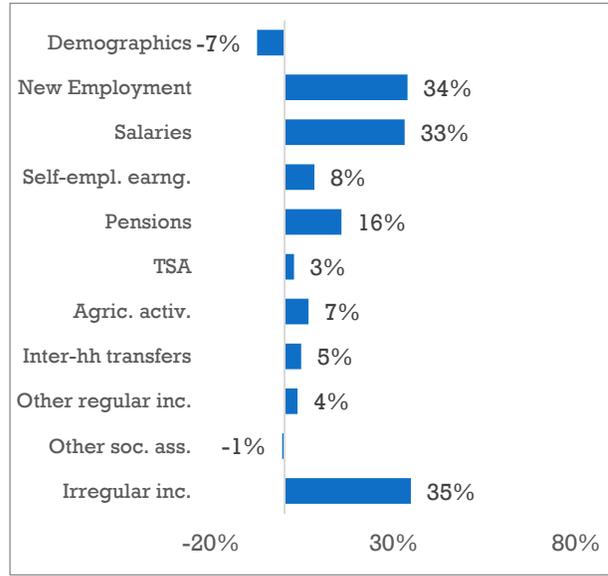
Social assistance was a key lifeline for the poor but better opportunities in the labor market was the most important ticket out of poverty for those who escaped. Using the methodology developed by Azevedo et al (2012), it is possible to assign to different components the source of income growth in an intuitive manner, and in a comparable manner with other results available for the country (e.g. 2015 Georgia Poverty Assessment). Household income increased between 2009 and 2015 for both the chronic poor and the escapers, but growth was led by social assistance for the chronic poor, and by labor earnings for the escapers. Although consumption increased only marginally for the chronic poor, income almost doubled between 2009 and 2015. The main drivers of this increase were the increase in social transfers (TSA and pensions), with labor markets playing a relatively smaller role. Household size (demographics) even playing a negative part (Figure 9). In contrast, the escapers were not only able to realize faster growth in income (135 percent) – which translated into a more than proportional consumption growth (200 percent) – but also a better-quality growth (Figure 10). Newer employment opportunities as well as higher salaries in existing jobs all contributed to income growth for those who were able to escape poverty, as well as income from temporary jobs.

Figure 9: Contributions to Income Growth, Chronic Poor, Georgia 2009-2015

Figure 10: Contributions to Income Growth, Households that Escaped Poverty, Georgia 2009-2015



Source: Own elaboration based on 2009 and 2015 WMS and components micro-decomposition method described in Azevedo et al. (2012). Bars add up to total household income growth 2009-2015.

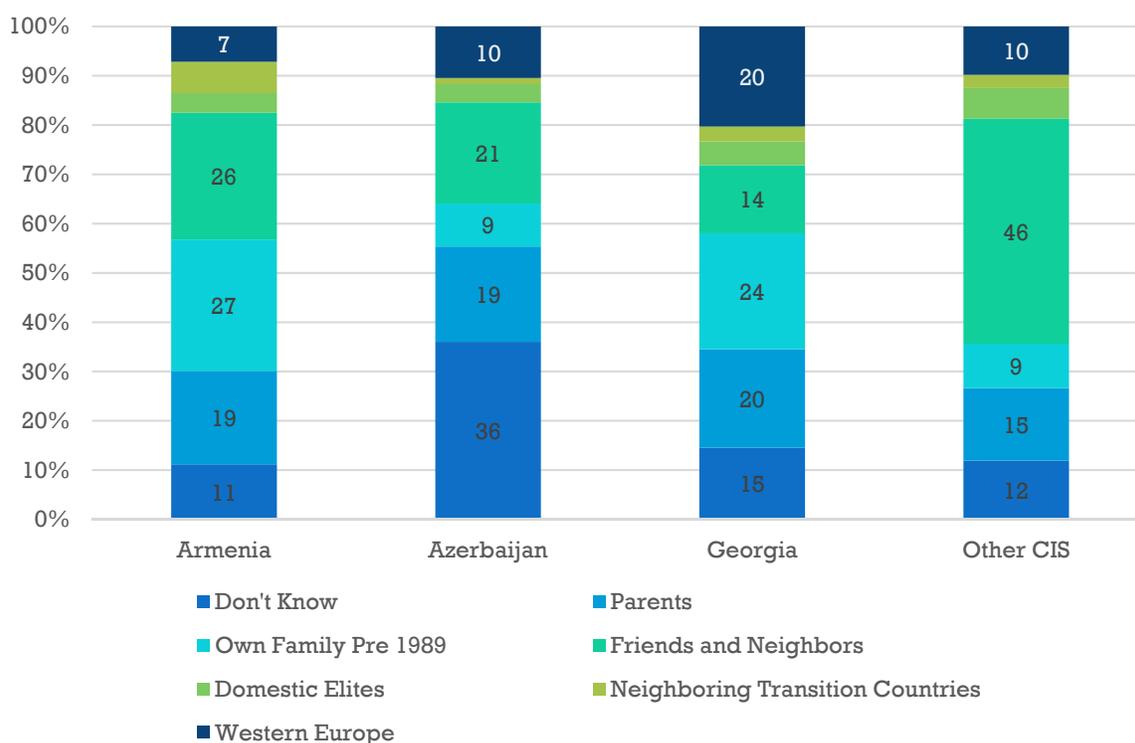


Source: Own elaboration based on 2009 and 2015 WMS and components micro-decomposition method described in Azevedo et al. (2012). Bars add up to total household income growth 2009-2015.

Social Mobility

An observation that is increasingly being made for the entire Europe and Central Asia region is that despite improvements in objective measures of welfare, a substantial share of the population in several countries appears to harbor dimmer views of how they currently fare, relative to their situation pre-transition. This perceived decline in living standards appears to coincide also with the widespread perception that inequality is on the rise. There is no clear trend in the data to back this view and if anything inequality appears to be on a decline in most countries in the region (EBRD, 2016).¹⁷ This apparent disconnect between what is captured by ‘traditional’ indicators vis-à-vis those that measure individuals’ perceptions regarding welfare and mobility has been posited as a puzzle for the region and there are several efforts currently underway to examine the possible explanations.

Figure 11: Benchmarks when evaluating present economic circumstance

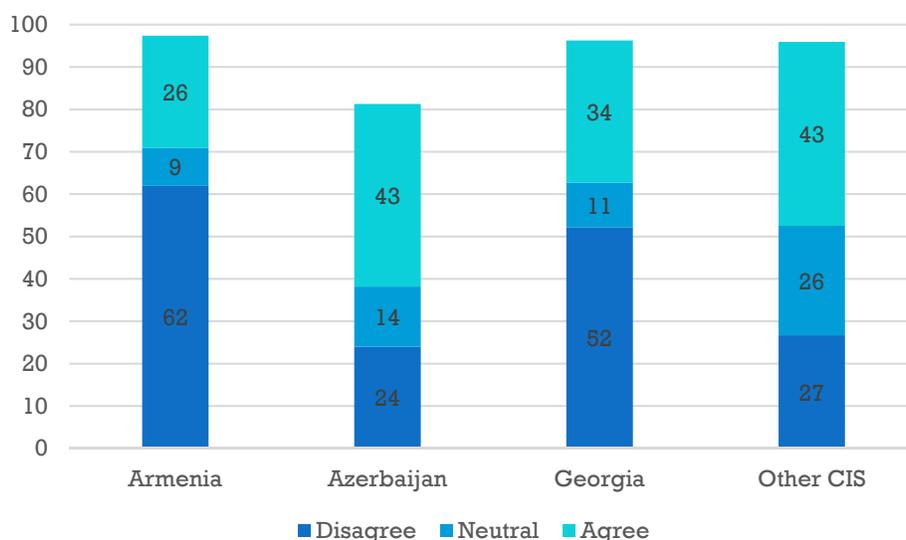


Source: LiTS (2016)

Note: The bars for each country may not add up to 100 percent because responses that were “Don’t know” and “Not applicable” are not plotted here. The plotted figures are responses to the question: “When thinking about your current economic situation, what is your benchmark?”

¹⁷ The share of individuals surveyed in 2015-2016 (LiTS III) who believe that inequality increased over the previous four years is greater than those who believe it fell, though the data suggest that the number of countries where it has declined is similar to that where it increased (EBRD, 2016).

Figure 12: Percentage of population agreeing, disagreeing with “I have done better in life than my parents”



Source: LiTS (2016)

Note: The bars for each country may not add up to 100 percent because responses that were “Don’t know” and “Not applicable” are not plotted here. Strong agreement and agreement are grouped into a single agreement category

In the case of South Caucasus, living standards have broadly improved in both Georgia and Armenia, as discussed in the earlier sections. So how do perceptions of mobility look? The question of who people generally consider appropriate benchmarks to evaluate their current economic circumstances is very illustrative. The LiTS survey asked this question to all respondents in the 2016 round of the survey and the responses for the three South Caucasus countries, together with the average response across all other transition countries is presented in Figure 11. Around 27 percent of the population in Armenia, and 24 percent in Georgia reported to have their own family pre-transition in mind as comparators when they evaluate their life circumstances today. This is significantly higher than the average of 9 percent of the population across all transition countries. The number for Azerbaijan too is at 9 percent, but Azerbaijan stands out for its unusually high non-response rates (responses of “Don’t know”) so it is difficult to definitively interpret its results. Likewise, roughly one in five individuals in each of the countries in the South Caucasus looks at their parents, and the life they had when they were of similar age as the appropriate comparison. This is also slightly higher than the average for other transition countries. Western Europe and how the people there live is used as a benchmark by a roughly a fifth of the population in Georgia and smaller shares in Armenia and Azerbaijan.

So irrespective of what the short run fluctuations in welfare and living standards may have been, one thing this suggests is that a non-trivial proportion of people in the South Caucasus still

evaluate their economic success and failure with a keen eye to the past. And what do they find? A majority of them in both Georgia and Armenia find that they have done distinctly worse than their parents. In both Armenia (62 percent) and Georgia (52 percent) the disagreement rate with the statement “I have done better in life than my parents” is significantly higher than the disagreement rate for the other CIS countries (27 percent). For Azerbaijan, though the agreement and disagreement rates are broadly consistent with other CIS countries, a 19 percent non-response makes full interpretation difficult (Figure 12).

So, on the whole, it appears that countries in the South Caucasus are more likely than other transition countries to be backward looking in their assessment of their current life position and relative to their parents, there is a distinctly negative assessment of how they have fared. How do these perceptions bear out in the data? We investigate by carrying out an in-depth analysis of intergenerational mobility in the following sections.

Methodology

The ideal data set to analyze intergenerational mobility would consist of a vector of income (or earnings) for the children paired with the corresponding vector of income for parents (the literature has typically used father’s income). This would allow for the estimation of the association between these two vectors. A stronger association between the two would imply lower mobility and conversely, a weaker association would imply higher mobility. In practice, this is implemented by calculating the “intergenerational elasticity” of income by regressing the log of income of the child against the log of income of the parent. An estimated elasticity that is closer to 0 denotes higher mobility. Of all countries for which this has been estimated, the value ranges from 0.67 for Peru to 0.15 for Denmark. For the United States, the intergenerational elasticity of income stands at 0.47 (Corak 2013).

There are several challenges to calculating intergenerational income/earnings elasticities. First, there are only a very few countries in the world in which one can construct matched parent-child pairs of income/earnings. Even when this can be done, it cannot be done for a long enough period to capture unbiased estimates of persistence. In the United States, for example, tax records only link children beginning in the in 1990s (Chetty et al 2014). In most countries, including the Caucasus which is the region of interest for this paper, such data sets do not exist. Second, even when matched data on parental income or earnings are available, they is often available only for a particular point in time. This forces one to make inferences about the relationship based on a snapshot of income while what we would ideally want is permanent income. It has been noted in the literature that calculating elasticities based on a single year measure of income can cause serious biases; even five-year averages have been noted to produce attenuated estimates of intergenerational persistence over longer periods (Mazumder 2005). Third, in many developing and transition countries where the formal labor markets are not well developed and there is still

a heavy reliance on self-employment, often informal in nature, data on income and earnings are likely to carry significant measurement errors.

For these reasons, in this paper we utilize educational attainment as the relevant metric to analyze intergenerational mobility. There are several advantages to doing this. First, educational attainment is a strong proxy for the overall economic status. (See Black and Devereaux 2011 for a review of evidence particularly in this context.) There are positive and non-trivial returns to education in almost all labor markets. Even in the post-transition countries in our sample, where there is some degree of notional universality of education at least up to the secondary level, there is significant heterogeneity in attainments and there are positive returns to higher levels of educational attainments. Second, education is often also the most important conduit for the transmission or reproduction of societal privilege or advantage and as such, it is a useful way of looking at social mobility. Bowles and Gitnis (2002 JEP), for example, report that the “combined inheritance processes operating through superior cognitive performance and educational attainments of those with well-off parents ... explain up to three-fifths of total intergenerational transmission of economic status”. Finally, educational attainments are measured much less noisily than other direct measures of income in the setting we are studying.

Occupation is another candidate labor market characteristic that could be used. In the sociological literature, one’s occupation is linked very closely to status, prestige and class and intergenerational mobility from the lens of occupation would entail movement to occupations with different social prestige or class mobility. However, from a pure welfare perspective, it is often difficult to order occupations based on their economic returns. The most prestigious occupation may not be the best from a remunerative standpoint. Conversely, a relatively less prestigious occupation may pay well. For example, a stable job in the public service may be prestigious but not pay as well as an individual self-employed in an agri-enterprise. Due to this inherent rank-indeterminacy of occupations, we focus on education.

The LITS asks respondents about their education as well as the educational attainment of both their mother and their father. We construct parental educational attainment as the maximum of these two educational attainment levels. Attainments are recorded in eight discrete categories in the 2016 round of the LiTS. We consolidate these into four broad categories to make the distinction between each a bit more explicit and meaningful and also to facilitate comparability with earlier rounds of LiTS which will allow us to carry out a more in-depth analysis of the mobility measure. We also restrict the sample to those above the age of 24 to minimize potential life cycle biases arising from the inclusion of students still in the process of attaining their maximum desired levels.

Table 2: Educational attainments among parents and children in Armenia, Azerbaijan and Georgia

		Children				
		Primary or less	Secondary	Post-Secondary/ND	Bachelor/postgraduate	Total
Parents	ARMENIA					
	Primary or less	57	61	40	9	167
	Secondary	9	335	137	65	547
	Post-Secondary/ND	4	92	161	115	372
	Bachelor/postgraduate	4	45	49	184	282
	<i>Total</i>	74	532	388	374	1368
		Children				
		Primary or less	Secondary	Post-Secondary/ND	Bachelor/postgraduate	Total
Parents	AZERBAIJAN					
	Primary or less	0	2	0	0	2
	Secondary	0	647	78	49	774
	Post-Secondary/ND	0	77	145	21	243
	Bachelor/postgraduate	0	20	10	42	72
	<i>Total</i>	0	746	233	112	1091
		Children				
		Primary or less	Secondary	Post-Secondary/ND	Bachelor/postgraduate	Total
Parents	GEORGIA					
	Primary or less	27	64	23	3	117
	Secondary	6	422	162	107	698
	Post-Secondary/ND	4	85	126	81	296
	Bachelor/postgraduate	0	33	47	206	286
	<i>Total</i>	37	604	358	397	1396

Source: LITS, 2016

Note: ND stands for non-diploma courses. Sample restricted to individuals aged 24+

Table 2 presents a cross-tabulation of the educational attainment for each parent-child pair for the three countries. As stated earlier, there is quite a lot of variation in the level of attainment for both generations in all three countries. The largest proportion in each country, in both generations appears to have some form of secondary education. The younger generation has a significantly smaller proportion with primary and secondary education and larger proportion with some form of tertiary education suggesting that overall education levels have increased in all three countries.

The typical methodology for calculating intergenerational education elasticity relies on years of schooling each of these educational attainment levels implies. Using a continuous measure such as years of schooling allows one to use the regression framework to examine directly the intergenerational elasticity of education. There are several papers that have applied this methodology to estimate the mobility parameter and its trend. (Hertz et al, 2007, Azam and Bhatt

2015 etc.). When years of education are not available, a typical estimation strategy has also been to infer that from the number of years required to attain a particular level. (Black and Devereux 2013)

But since the LITS surveys do not collect information on years of schooling and converting attainment levels into years of schooling would require us to make very strong assumptions, we take an alternative approach that entails working directly with the joint distribution. Specifically, we convert the cross-tabulation of educational attainments across generations into a transition matrix (such that every entry represents a conditional probability of being in that particular state), and examine the extent to which the transition matrices for each of the countries we analyze deviates from an alternative, hypothetical matrix that would characterize “perfect mobility”. Given any marginal distribution, i.e., say, the distribution of parental education, the transition matrix that characterizes perfect mobility would be one in which for any state of parental educational attainment, the child has equal probability of being in each of the (four in this case) possible states. In other words, irrespective of whether the parent has tertiary education or no education at all, a world of perfect mobility – which is also a world of “origin independence” – is one in which the child can land up in any of the possible states and is certainly not bound in any way to the parental level of attainment.

This idea is encapsulated in a statistic known as the Altham statistic which essentially summarizes the degree of association between the rows and columns of any given matrix, relative to the degree of association between the rows and columns of the matrix of perfect mobility. (See Box 1.) This statistic, originally proposed by Altham (1970) has been used to calculate and report on occupational mobility differences between the US and the UK by Long and Ferrie (2007), occupational mobility in India by Azam (2015), World Bank (2015).

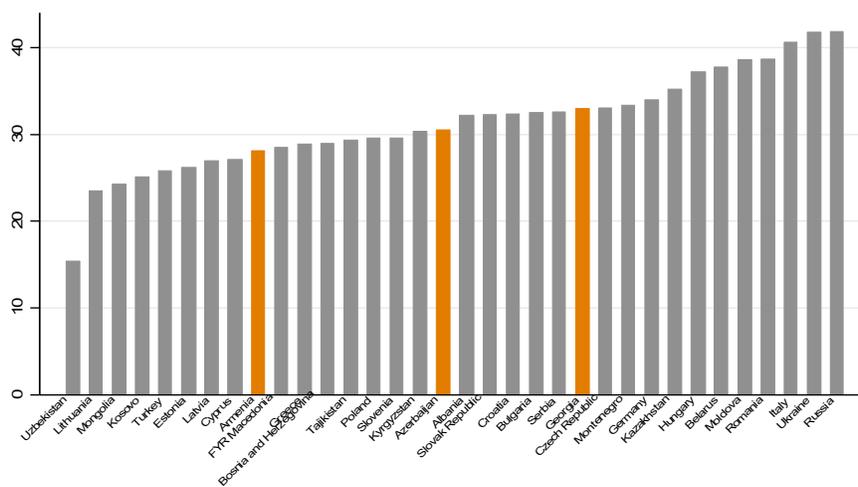
Box 1: Altham statistic as “distance” from a perfectly mobile society

When the transition matrix is a simple, 2x2 matrix such that there are only two educational attainment levels, let’s say high and low, the concept of mobility utilized here essentially reduces to the cross-product ratio of the matrix. This cross-product ratio is the ratio of the odds that children of parents in the low level of education will remain in the low level as opposed to the higher level and the odds that children of parents in high level of education will remain at the high level and not the low level. When the knowledge of the father’s educational attainment level yields no information on the attainment level of the child, this cross-product ratio will be exactly 1. In higher-order matrices, the number of cross-products increases as well. The Altham statistic is simply a way of summarizing all possible cross-product ratios and it can be understood. Annex 4 has details on the calculation of the Altham statistic.

Results

We start by presenting results to benchmark the three countries against the other countries in the Europe and Central Asia region. Figure 13 plots the Altham statistic based on the educational transition matrices for all countries in the sample in the LiTS survey of 2016. As discussed above, this statistic measures “distance” from a perfectly mobile society, implying that countries such as Russia, Ukraine and Italy with high values of the statistic are furthest away from perfect mobility whereas those such as Uzbekistan and Lithuania are at the other end of the spectrum with the weakest association between parental and child education. The high degree of intergenerational persistence for Italy in particular, is confirmed also in other studies (Hertz et al 2007). In this spectrum, the countries in the South Caucasus line up roughly in the middle with Armenia depicting the highest mobility and Georgia the lowest. It has to be noted that the actual difference in the value of the statistic is not that large, at least across the three countries.

Figure 13: Benchmarking Intergenerational Mobility in the South Caucasus with the rest of Europe & Central Asia Region



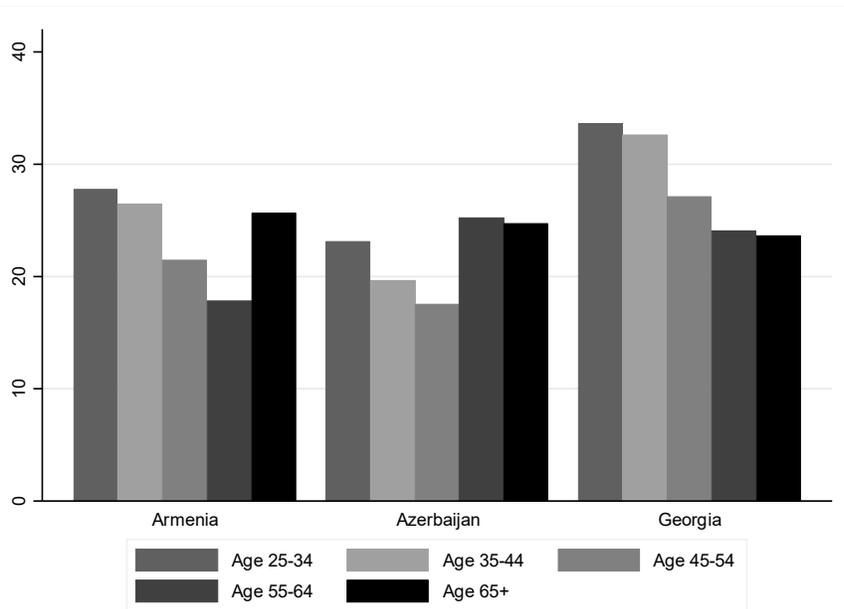
Source: Tiwari et al (2017)

In addition to a snapshot for a given year, often it is of interest to find out how intergenerational mobility has changed over time. In particular, is it the case that for the younger generations the association between their attainment levels and those of their parents is weaker than what you might find for the older generations? As society develops economically, it is often expected that the role and the influence of one’s original circumstance plays an increasingly weaker role in what one can achieve. In fact, in many ways that origin-independence is itself a measure of how a society as progressed from being a traditional, stratified society in which status is locked in at birth towards one that is more meritocratic.

Figure 14 presents the mobility measures for five decadal age cohorts in Armenia, Azerbaijan and Georgia. Note that around the year of the transition, these cohorts would have been roughly 0-9

years, 10-19, 20-29, 30-39 and 40+ respectively. This implies that the two youngest cohorts would be the ones to be most affected by any changes in the society in general and the educational system in particular in the post-transition period. What we see from the figures is indeed a very interesting pattern of a clear increase in “distance” from the perfect mobility matrix for the two youngest cohorts in all three countries. In Georgia, this is part of a steady monotonic decline across all cohorts, while for both Armenia and Azerbaijan, the decline for the youngest two cohorts follows an improvement in the 55-64 group (for Armenia) and the 45-54 group (for Azerbaijan).

Figure 14: “Distance” from perfect mobility, by age cohorts



Source: Tiwari et al (2017)

Interpreting this finding requires a slightly deeper look at what kind of mobility this measure is capturing. As discussed earlier, in most other analyses of intergenerational educational mobility, the methodology that is often used is the regression of years of education of the child against that of the parent.

$$y_{child} = \alpha + \beta y_{parent} + \varepsilon$$

The coefficient of interest is β , which is the measure of the intergenerational persistence of educational attainment. An alternative measure is simply the correlation between the two (say, ρ). Incidentally, the relationship between the two can be written as follows:

$$\beta = \rho \frac{\sigma_{child}}{\sigma_{parent}}$$

where σ_{child} is the standard deviation of the years of school of the children and σ_{parent} is the standard deviation of the years of schooling of the parent. This means that the regression coefficient is a function of the correlation coefficient between the two vectors and the ratio of the standard deviations. In words, unlike β , the correlation measure conditions for or purges the effect of the changes in the dispersion of the years of education which tends to increase with the mean years of schooling in the initial periods of expansion of education and decline later. Most studies of intergenerational educational persistence have noted that the β s have declined for most countries but the ρ s have largely remained unchanged.

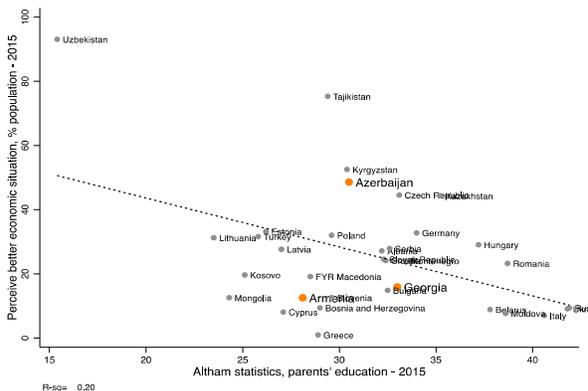
How does the persistence measure based on the Altham statistic that we use map into this discussion? Since we work with transition matrices between parent-child educational attainment levels and since the mobility measure obtained is completely independent of the marginal distribution of education of the parent, the statistic we report is analogous to the correlation coefficient measure of relative mobility. This is not “tainted” at all by the possible changes in the educational attainment levels across the two generations, including due to any changes in education policies and systems during the period.¹⁸ In other words, the rise in Altham statistic for the younger cohorts across all three countries in the sub-region implies a rise in the conditional persistence.

Next, we examine the relationship between this measure of intergenerational persistence and several markers of perceptions and attitudes across the entire Europe and Central Asia region and attempt to see if the countries in the South Caucasus stand out in a particular way. First, in terms of broad bivariate correlations across the ECA region, higher intergenerational mobility appears to be positively correlated with favorable assessment of current economic situation, life satisfaction, favorable assessment of overall well-being relative to parents, and favorable outlook for the future for children. To the extent that higher mobility – or lower persistence of parental privilege – signals a fairer society in which the observed inequalities in market outcomes are due to exerted effort or luck (as opposed to birth circumstances), it would be associated with a lower preference for redistribution (Alesina and Angeletos 2005). On the other hand, perceived mobility may be different from actual experienced mobility. Alesina et al (2017) show that Americans are more optimistic about intergenerational mobility in comparison to Europeans and too optimistic also relative to actual mobility. But even conditional on actual mobility, if perceived mobility is low, then the preferences for redistribution may be high.

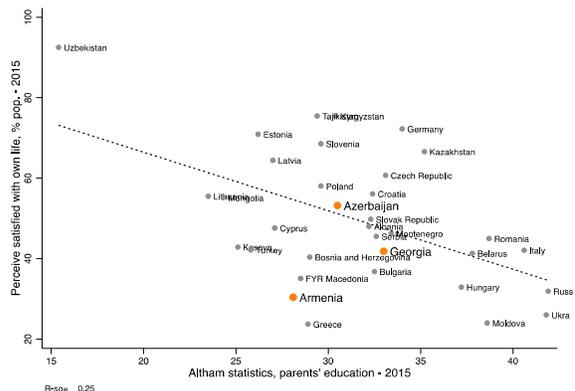
¹⁸ This is similar to a distinction made in sociology between “exchange mobility” and “structural mobility”. Exchange mobility is closest to the origin-independence idea that motivates our work here and posits that individuals in society exchange social positions or are shuffled through the social hierarchy based on talent or merit. Structural mobility on the other hand posits that mobility happens because of the structural changes in society that leads to the expansion of better opportunities. This could be in the form of more jobs in occupations with higher prestige and remuneration or expansion of the availability and access to schools, social changes that make it easier for certain sub-groups of the population to attain higher education levels and so on. The Altham measure has characteristics that make it more similar to exchange mobility.

Figure 15: Mobility and Perceptions, some bivariate plots

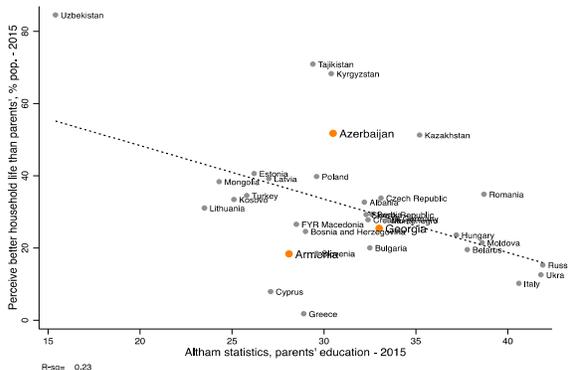
(a) Higher mobility, better perception of economic situation



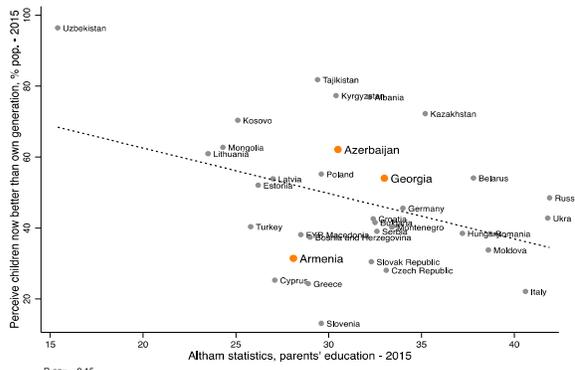
(b) Higher mobility, higher life satisfaction



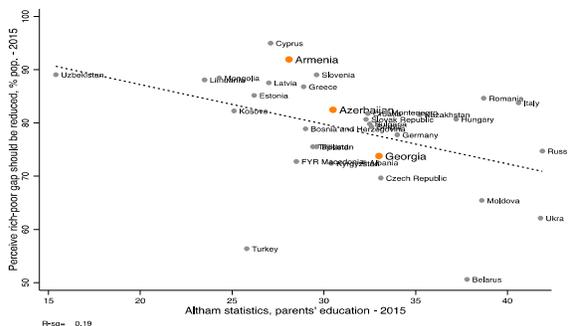
(c) Higher mobility, perceive better household life than parents



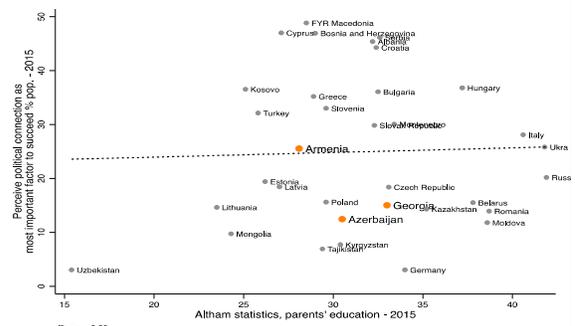
(d) Higher mobility, think children today better than earlier generation



(e) Higher mobility, higher demand for redistribution



(f) Higher mobility, lower perception of unfairness?

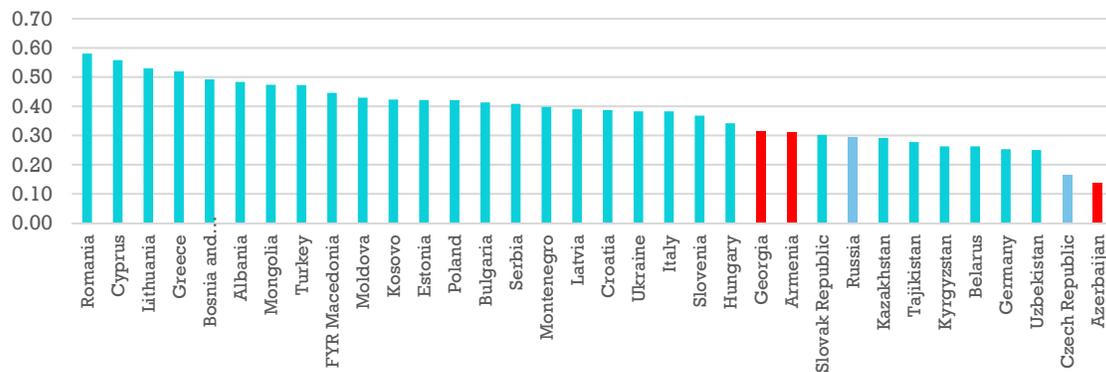


Source: Authors' calculations based on data from the LiTS (2016)

While the focus of our analysis so far has been on overall mobility, one could also bring in a “directional” element to analyze upward and downward mobility. For example, what are the prospects for individuals to be better educated than their parents? How prevalent is downward mobility? We operationalize this measure and compare upward and downward mobility in Armenia, Azerbaijan and Georgia with the rest of the ECA countries in the LiTS sample in Figure 16 and Figure 17.

Figure 16: Countries in the South Caucasus have experienced lower prospects for upward mobility...

(proportion of people who have done strictly better than their parents)

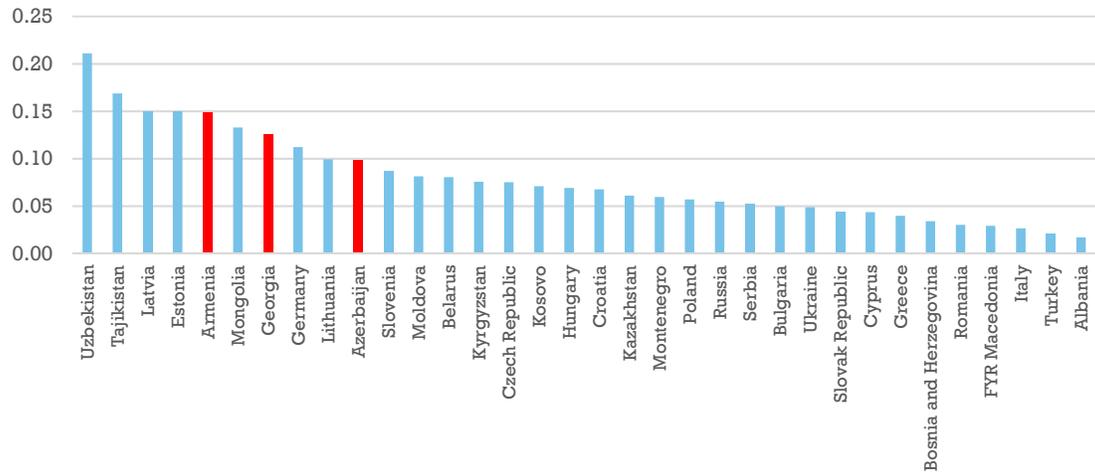


Source: Tiwari et al (2017)

The results suggest that prospects for upward mobility have been slightly lower in the South Caucasus relative to the average for the entire region. Upward mobility prospects are especially low in Azerbaijan. The prospects for downward mobility, on the other hand, are among the highest in the sub-region with Armenia leading the group. What these results suggest is that there is considerable churning (upward as well as downward mobility) even in educational attainment across generations. Unlike measures such as income or earnings that are unbounded at the top, educational attainment is bounded so the results here have to be interpreted with the caution that countries with high average level of attainments can plausibly have lower “room at the top” whereas countries starting out from a low base have greater scope for upward mobility.

Figure 17: ...and higher downward mobility

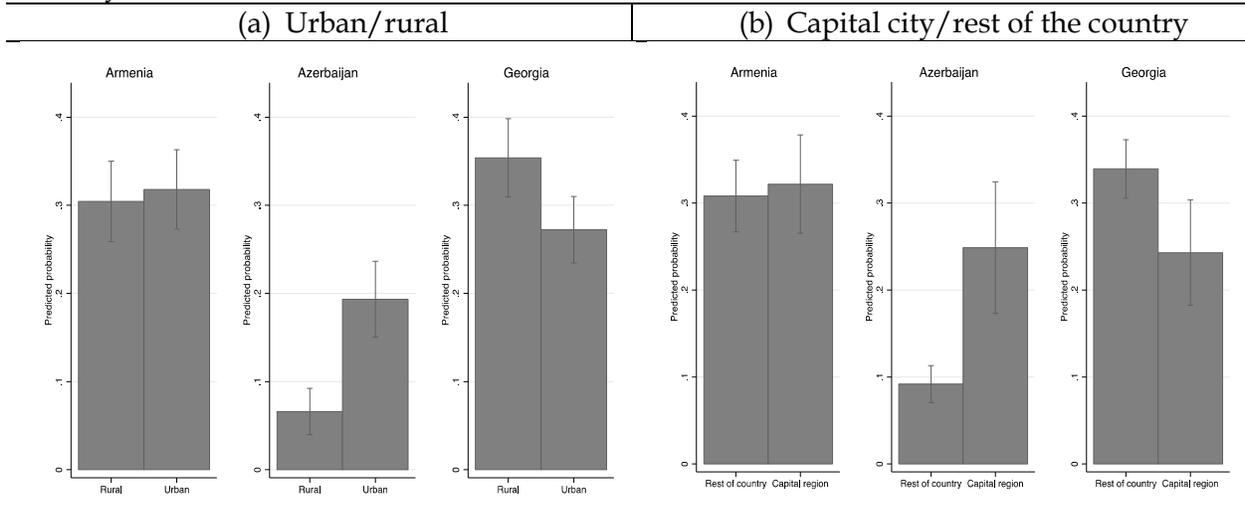
(proportion of people who have done strictly worse than their parents)



Source: Tiwari et al (2017)

Similarly, downward mobility when mobility is defined over educational attainment also requires some additional qualification. Unlike income or earnings, lower educational attainment than the parental level of attainment may not always represent a slide in overall welfare or well-being. For example, for a child whose parents already hold the highest tertiary degree, the only two choices available are to either match that level or to attain a lower level. Even though the entire motivation for us to analyze intergenerational mobility using education is its correlation with economic/or labor market returns, this relationship may weaken for specific cases at the higher end of the education distribution. To take a concrete example, on average a PhD may deliver higher earnings than a BA in any labor market, but there may very well be specific cases where this does not hold. The fact that we use coarser definitions of education does mitigate this quite substantially, but we note this as something that needs to be taken into consideration while interpreting the results.

Figure 18: Prospects of upward mobility, by urban/rural areas and capital city vs. rest of the country

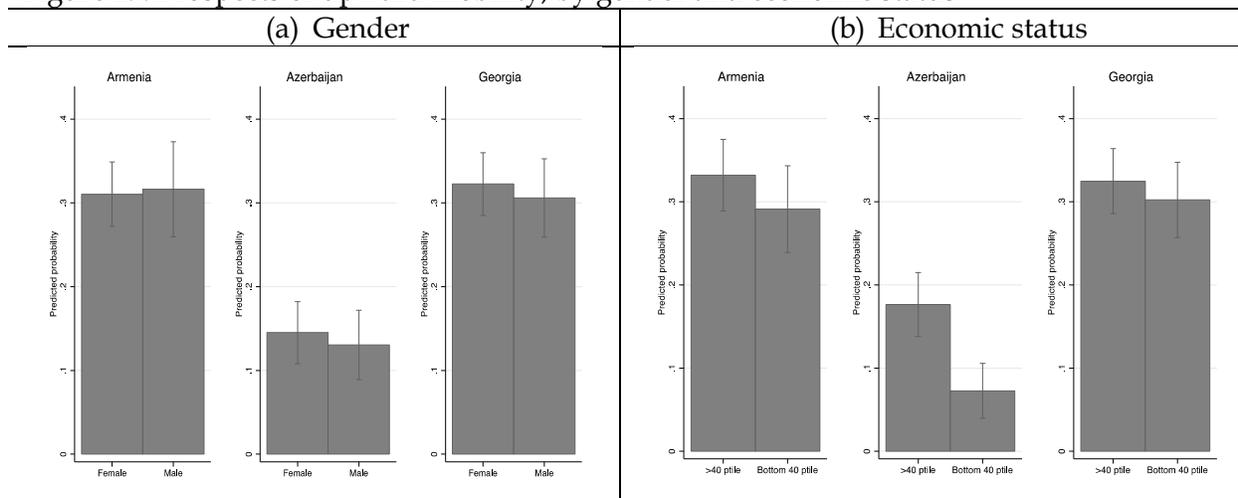


Source: Tiwari et al (2017)

Note: The bars represent estimated means and the “whiskers” are the 95 percent confidence intervals.

Next, we turn to how the prospects for upward mobility vary by characteristics across the three countries. In all three countries, available poverty analyses suggest substantial spatial disparities in welfare outcomes and particularly large gaps in poverty rates between urban and rural areas within the country. For upward mobility, however, the pattern across space is not as clear cut. For Armenia, the point estimates suggest a slightly higher mobility for urban areas and the capital city, particularly with respect to the rest of the country. However, given the substantial overlaps between the 95 percent confidence intervals for the two estimates, it is difficult to argue that the difference is statistically distinguishable from zero. In contrast, for Azerbaijan, urban areas and the capital region clearly have witnessed higher mobility than rural and other regions of the country. Georgia, on the other hand, appears to have had exactly the opposite pattern: rural areas and regions other than the capital city have witnessed higher upward mobility, suggesting some degree of catch-up in educational attainments in regions that are likely to have had lower attainments to start with.

Figure 19: Prospects of upward mobility, by gender and economic status



Source: Tiwari et al (2017)

Upward mobility patterns across gender groups reveal no clear difference between males and females in their upward mobility prospects. In all three countries, the point estimates for upward mobility are higher for individuals in the top 60 percent of the income distribution in comparison to the bottom 40 percent, but the difference is only statistically significant in Azerbaijan.

Conclusion

In this paper we carry out a comprehensive analysis of economic and social mobility in countries in the South Caucasus. Country heterogeneity in terms of the nature of the data available for analysis has dictated the methodologies used but on the whole, the effort has been to complement available household survey data in each of the countries in the sub-region with other sources of data to shed light on this important topic and deepen the available analysis on poverty and inequality. In particular, we have taken advantage of the most recent round of the Life in Transition Survey (2016) to fill key data gaps in Azerbaijan, which is included in this analysis. The availability of panel data in the case of Georgia has enabled us to delve deeper than we are able to do for the other two countries to not only identify patterns specific to Georgia, but also to elucidate the kind of analysis that could be done in the other countries if similar data were available. Finally, we also carry out some original work on social mobility and benchmark the progress in South Caucasus against the performance of other transition countries in the region.

The key findings that emerge from this analysis are as follows. *First*, despite the progress that has been made in reducing poverty in both Armenia and Georgia over the last decade, there appears to be a significant amount of churning around the poverty line. In Georgia, for example, more than half of the households identified as poor in 2011, 2013 and 2015 were not poor in the previous

period. Similarly, for every two individuals that escaped poverty between 2010 and 2015 in Armenia, one slipped back into poverty. This high incidence of transitory poverty in both countries suggests a high degree of vulnerability in the population in these countries. Exploiting the panel data in Georgia and the risk of falling into poverty between two consecutive periods to come up with a precise definition for vulnerability, we find that as high as one in two Georgians was vulnerable to falling into poverty in 2015.

Amid all the transitions, the *second* finding is that in both Georgia and Armenia roughly one in eight individuals was in chronic poverty in 2015. This implies that a sizeable fraction of the population has been unable to participate in the growth processes in the respective countries. The methodologies used to arrive at this finding for the two countries are quite different from one another but again, the panel data in Georgia allow us the unique opportunity to not only implement a precise definition of chronicity but also to compare and contrast the profiles of those left behind with those that managed to escape poverty.

So, *third* we have a series of inter-related findings from Georgia: (a) chronic poverty is as prevalent in urban areas as it is in rural areas; (b) the chronic poor have seen their living standards grow at a much slower rate (10 percent cumulative) between 2009 and 2015 in comparison to the growth witnessed by the overall population (50 percent) and those that moved out of poverty (200 percent); and (c) while social assistance programs such as the TSA have provided a much-needed lifeline for the chronic poor, the ability to tap into labor market opportunities (wage jobs) and derive higher returns from available opportunities by investing in human capital has been the key ticket out of poverty for those who have actually been able to move out. The latter in particular is an especially important finding as it upends the prevailing narrative on the drivers of the observed poverty reduction in Georgia that ascribes a significant role to the social assistance programs (TSA as well as pensions).

In the second part of the paper, we expand the analysis of economic mobility witnessed within a given generation to intergenerational or social mobility. Data limitations force us to focus on intergenerational *educational* mobility but since educational attainment is an important labor market variable anywhere, including in the South Caucasus, we argue that this captures an important part of the mechanism through which socio-economic status is transmitted across generations.

Our exploration reveals several interesting and previously unreported findings for the South Caucasus. *First*, a significantly higher proportion of the population in this sub-region considers their family life pre-transition and the lives of their parents when they were of similar age as appropriate benchmarks to evaluate their current economic situations in comparison to the other transition countries. There are obviously variations, with Georgia's stronger EU orientation showing up in a fifth of the Georgians considering the lives of Western Europeans as the appropriate reference and almost two in five Azerbaijanis abstaining from responding. But despite that, this general wistfulness of the life of the past does come through quite strongly.

Second, over half of the Georgian and Armenian population disagreed with the statement that asked them their views on them having a better in life than their parents. The disagreement rates were almost twice the average disagreement rates in other transition countries. *Third*, comparing the three countries with others in the region, the actual country-level differences in intergenerational educational mobility measures do not stand out in any particular way but looking at within-country patterns, there is a distinctly identifiable trend of an increase in intergenerational persistence for the youngest cohorts in all three countries. Since this measure of mobility is intricately linked to idea of origin-independence, equality of opportunity and fairness of processes of getting ahead, this trend broadly aligns well with the “growing but unhappy” trend that has been reported for the region.

Fourth, for the actual level of mobility that has been realized in Armenia, it stands out in the sub-region for its poorer overall life satisfaction, and unfavorable assessment of current economic circumstance as well as outlook for the future. Part of the explanation could be the fact that a higher proportion of Armenians regard the system to get ahead in life to be fundamentally rigged. This is reflected in the strong (over 90 percent) preference for redistribution in the country. In stark contrast to Armenia, Azerbaijan stands out in generally having a rosier assessment and outlook of economic prospects than would be predicted from the mobility that has been realized in the country. Finally, urban areas, the capital city (relative to the rest of the country) and the population in the top 60 percent appear to have had better prospects for upward mobility in Azerbaijan. Georgia, in contrast, had higher mobility in rural areas and in the outlying regions (relative to the capital). There were no significant differences in mobility by gender groups in any of the countries.

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Annexes

Annex 1

Synthetic panel methodology

Economic mobility has gained relevance in academic and wider policy discussion over the last years. Despite significant reductions of economic poverty during the early 2000s in most countries in Europe and Central Asia, few studies currently exist on this process. Did poverty rates decrease as poverty reduction was a one-way street with households predominantly escaping poverty? Or is there significant churning with large numbers of households falling back into poverty offsetting transitions out of poverty? From a policy perspective it makes a large difference if a country which reduced poverty by 5 percent experiences either of these scenarios since each requires very different policy responses. Here, estimates of economic mobility allow for a better design of policies that can support economic development in a sustainable and inclusive way.

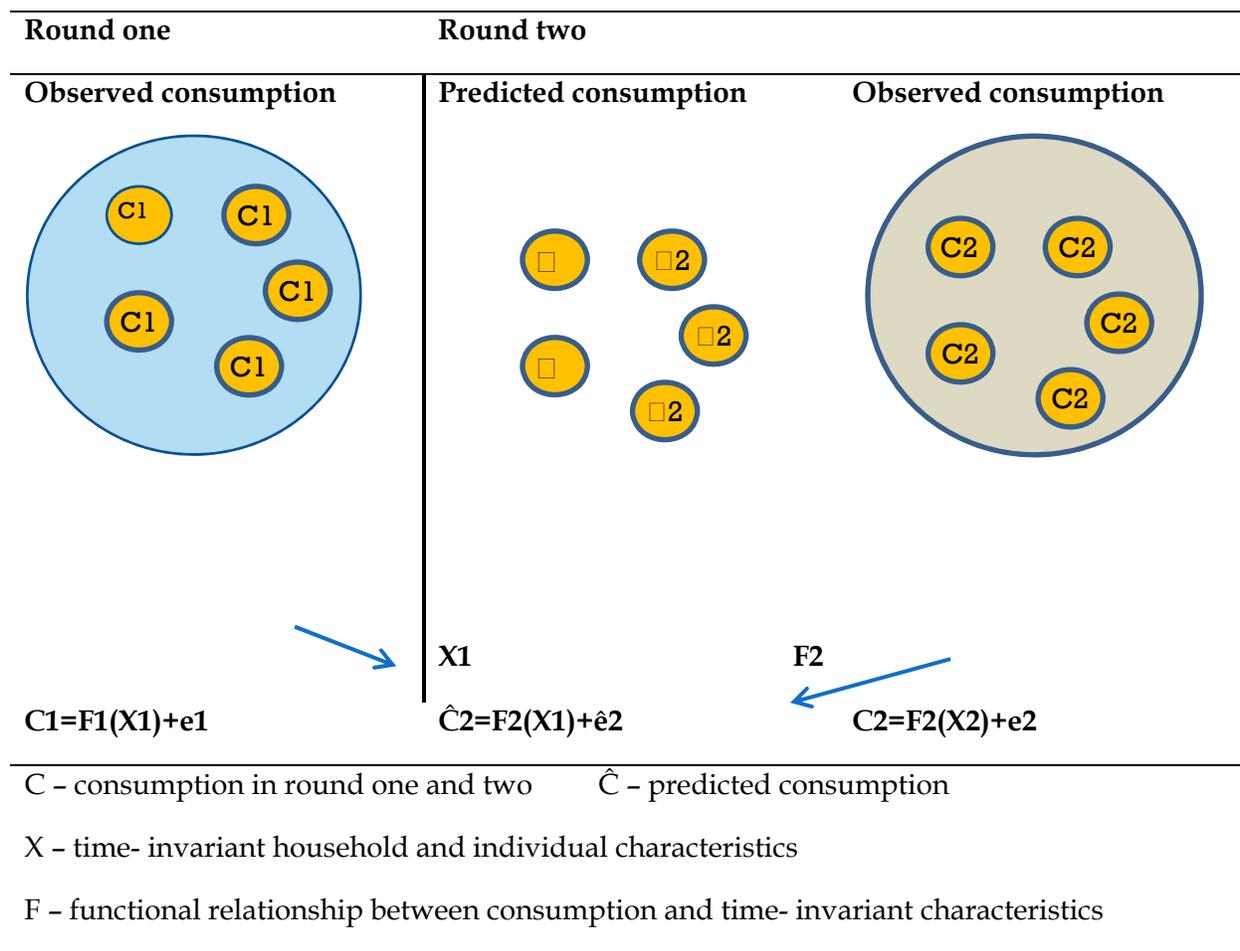
Data requirements to analyze patterns of economic mobility are not trivial and require the use of innovative methodologies. A proper study requires household-level information for one and the same household for at least two periods, not only for income or consumption, but also for other variables that can affect changes in income or consumption. Unfortunately, the availability of panel surveys that contain this type of information is quite limited, and even when existent, many times they suffer from high attrition rates and relatively short survey periods.

The synthetic panel methodology overcomes these shortcomings and builds on an imputation methodology to construct synthetic panel data with predicted consumption using two different rounds of cross sections (Figure A1). This way a new data set is created which provides information on consumption for one and the same household in two different time periods. The approach relies on time-invariant individual and household characteristics. Consumption in each period is modeled as the sum of two components: a first one associated with time-invariant characteristics, and a second one capturing non-observable factors. To create the predicted consumption in the second round (\hat{C}_2) for households whose consumption was only observed in the first round (C_1), we generate a new component based on how their time-invariant characteristics are associated with consumption, but in the second round ($F_2(X_1)$). Adding up this new component to the non-observable factors (\hat{e}_2) we obtain the predicted consumption in round two. With these two consumption measures (C_1 and \hat{C}_2) we construct transition matrices to analyze patterns of economic mobility between two rounds.

Depending on the assumptions made about the non-observable characteristics, the method generates a high and a low mobility scenario. For the low mobility scenario, non-observable characteristics do not change in time (such that the correlation of \hat{e}_2 and e_1 is 1), whereas for the high mobility scenario they change between rounds (i.e., the correlation of \hat{e}_2 and e_1 is 0). More

intuitively, low mobility implies that if a shock or unobservable characteristics affect consumption in the first period, it continues to do so in the second one, and in the same direction. For instance, if the existence of social networks (friends and relatives) allows households to find better jobs and generate higher incomes and consumption levels and this positive impact remains constant over time such that social networks also increase consumption levels in the second period, the country experiences a low mobility scenario. High mobility implies that there is no relationship between shocks in time. Dang et al. (2014) show that these two boundaries sandwich the true estimate of economic mobility.

Figure A1.1 Synthetic panel approach in a nutshell



The quality of the imputation improves as time-invariant characteristics capture more variation in consumption. In particular, the distance between the lower and the upper bounds decreases if the functional component increases relative to the non- observable factors. Yet the empirical model is only supposed to include information which does not change over time. More specifically, the empirical model uses the logarithm of consumption as dependent variable and

then explores a set of independent variables which mostly relate to the household head. For instance, information on gender, birth cohort and educational attainment but also the region of residence and the location (urban and rural) are assumed to be time-invariant. Furthermore, the model only includes households with household heads who were between 25 and 55 years of age in the first period; this way behavioral changes due to life events such as retirement do not complicate the construction of a consumption measure for the second period. Notwithstanding these limitations, synthetic panels allow the use of existing data in a novel way to better understand patterns of economic mobility and its determinants.

In response to methodological challenges, Dang and Lanjouw (2013) introduce a new approach to determine patterns of economic mobility based on point estimates and confidence intervals.

Compared to the lower and upper bound estimates, point estimates have the potential to generate a more precise measure of mobility which accounts explicitly for sampling and modeling errors. For the lower bound approach, the degree of bias depends on how far the true correlation between the error terms in both periods is from 0. If the true correlation term is close to 0, we have better estimates, and vice versa. Here, the point estimates approach incorporates the true cohort level correlation ρ between error terms from both periods (look at the pseudo panel literature). The approach developed by Dang and Lanjouw (2013) requires a bivariate normal distribution between error terms in both periods. If this assumption holds, the probability of escaping poverty is given by

$$P(y_{i1} < z_1 \text{ and } y_{i2} > z_2) = \Phi_2\left(\frac{z_1 - \beta_1'x_{i2}}{\sigma_{\varepsilon_1}}, -\frac{z_2 - \beta_2'x_{i2}}{\sigma_{\varepsilon_2}}, -\rho\right)$$

Assumptions

Patterns of economic mobility based on the synthetic panel methodology discussed decompose the net change in poverty into transitions in and out of poverty (see presentation of results above) and show plausible estimates for the size of each of the four groups. For instance, the correlation between the observed level of income in the first period (either 2004 or 2010) and the predicted household specific probability of belonging to the group “poor-poor/non-poor” is negative, and the corresponding correlation for the group “non-poor - poor/non-poor” is positive. However, the methodology builds on strong assumptions which are discussed in more detail below:

Assumption 1: The sample (with household heads between 25 and 55 years of age) is sufficiently close to the true population in the country. *Summary statistics in Table A4 suggest that for a set of time-invariant characteristics, differences between the sample and the population (as defined by the household survey) are small.*

Assumption 2: Characteristics – as proxied by time-invariant variables – of the sample for the first period and the second period, do not change between the two time periods. *Summary statistics in Table A4 suggest that differences between characteristics for the two different samples in the two periods are small.*

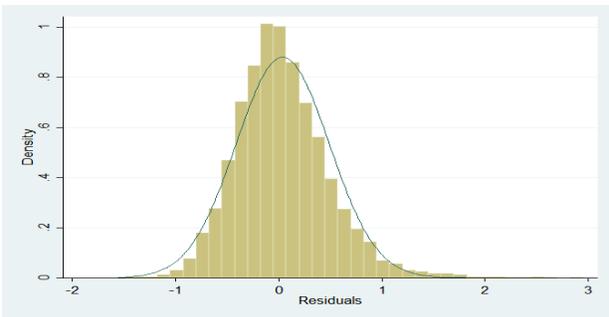
Assumption 3: The correlation in error terms for the first and second time periods is non-negative. *The literature on economic mobility builds around the validity of assumption 3.*

Assumption 4: Only if the joint distribution of error terms between both periods is bivariate-normally distributed, the correlation in error terms can be approximated by the cohort level correlation. *Figures A1.2 and A1.4 show that the distribution of predicted residuals for all four models is close to normal. Cannot test for bivariate normality, but normality in every year is a necessary condition.*

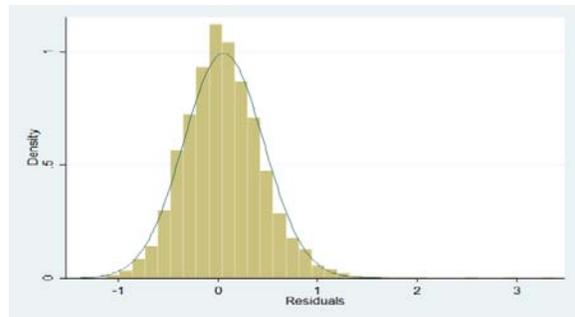
Assumption 5: The strength of the empirical results from the synthetic panel approach depends on whether the consumption model can explain differences in consumption based on a set of time-invariant characteristics. *Regression results in Table A5 show R squares around 0.15 which is unsatisfactory. The empirical model includes a wide set of time-variant characteristics as independent variables, but even the excessive use of interaction terms does not allow for a good fit of the model.*

Figure A1.2: Predicted residual from the consumption model for 2004 and 2008

Predicted residual 2004



Predicted residual 2008

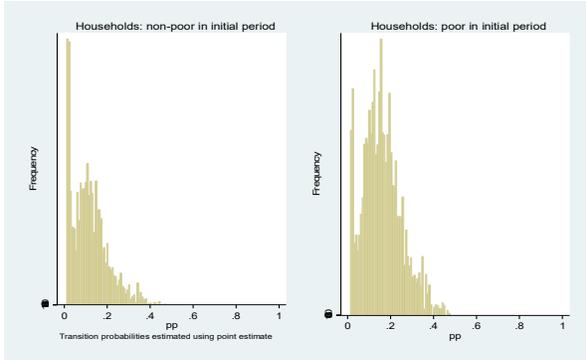


Note: Blue line shows normal distribution.

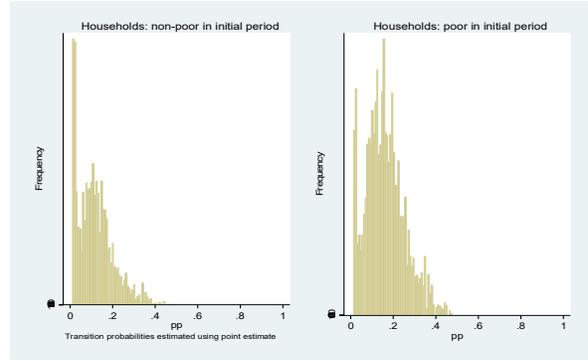
Figure A1.3: Predicted probabilities to belong to any of the four groups between 2004 and 2008

Panel A: poor - poor

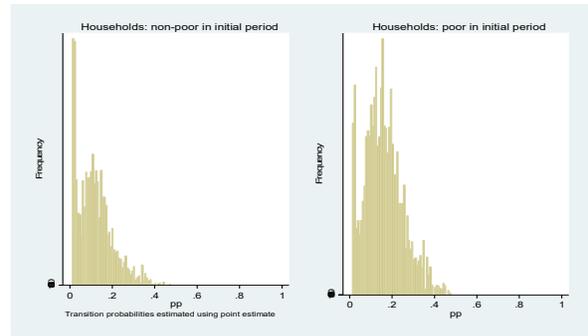
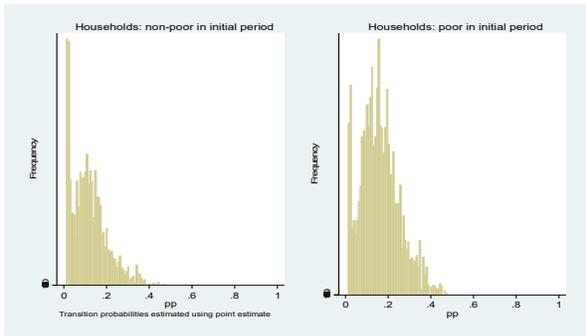
Panel B: poor - non-poor



Panel C: non-poor - poor



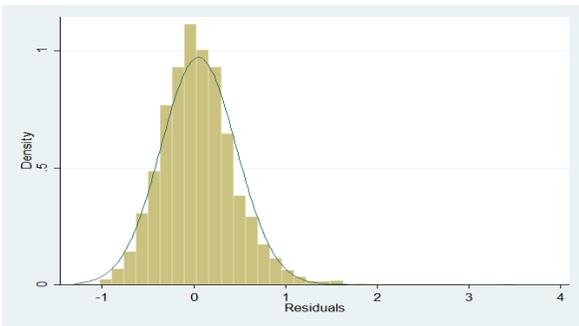
Panel D: non-poor - non-poor



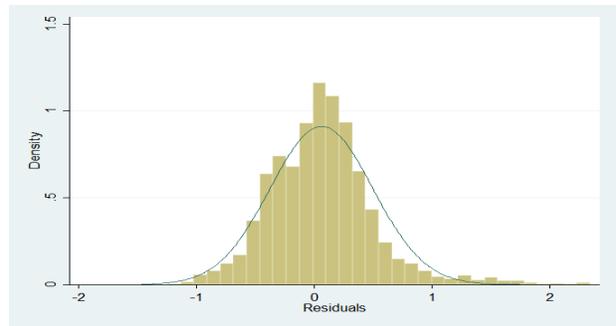
Note: For each figure the horizontal shows predicted probabilities of belonging to any of the four groups. The vertical axis shows the frequency distribution.

Figure A1.4: Predicted residuals for the consumption model for 2010 and 2015

Predicted residual 2010



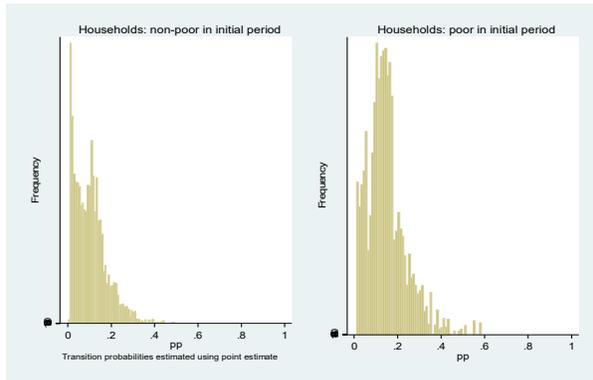
Predicted residual 2015



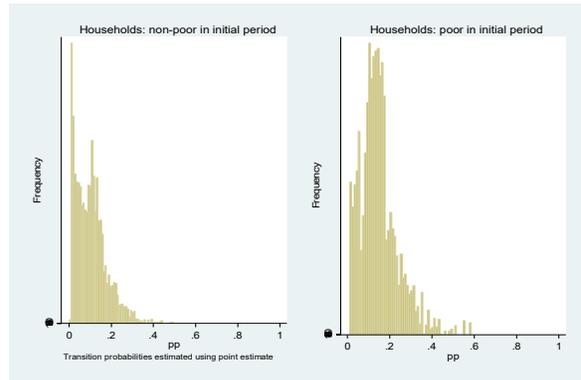
Note: Blue line shows normal distribution.

Figure A1.5: Predicted probabilities to belong to any of the four groups between 2010 and 2015

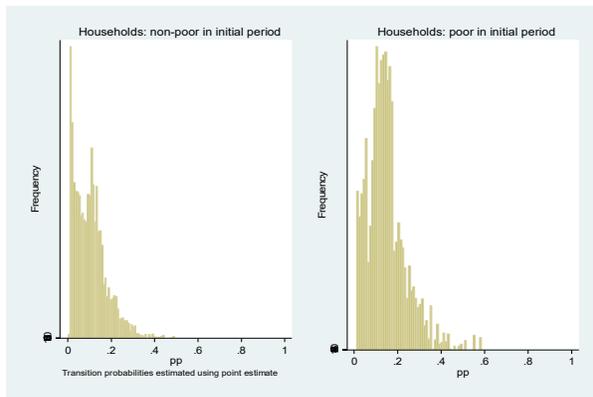
Panel A: poor - poor



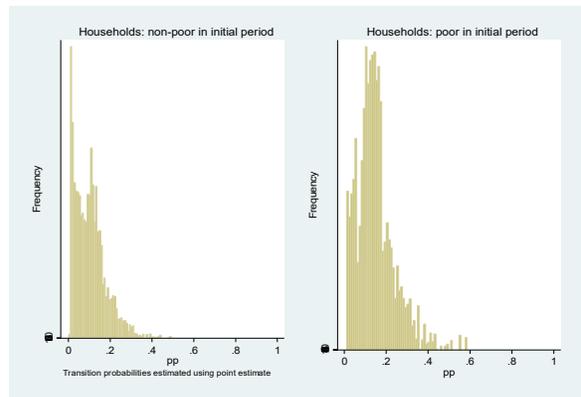
Panel B: poor - non-poor



Panel C: non-poor - poor



Panel D: non-poor - non-poor



Note: For each figure the horizontal shows predicted probabilities of belonging to any of the four groups. The vertical axis shows the frequency distribution.

Findings presented in Figures A1.3 (period between 2004 and 2008) and A1.5 (period between 2010 and 2015) reflect the limited explanatory power of the consumption model. In consequence, results cannot be used to sort households into one of the four transition groups. For instance, the shape of the density function of the estimated probability to belong to the group “poor-poor” shows a large overlap between households which have been observed to be either poor or non-poor in the initial period. For this reason, this paper does not make any attempt to profile groups (such as “non-poor - non-poor” versus “poor-poor”) as sorting into these groups would have been critical and results do not show a natural threshold to divide the sample.

Annex 2

Descriptive statistics

Descriptive statistics support the validity of the findings on patterns of economic mobility not only for the sample used for the analysis but for all households in Armenia.

Table A2.1. Poverty Dynamics in Armenia, 2010 and 2013

	Poor in 2013	Non-poor in 2013
Poor in 2010	9.6 – 3.2 – 0.2	24.8 – 16.9 – 5.0
Non-poor in 2010	16.9 – 11.6 – 3.6	48.7 – 68.3 – 91.1

Note: upper poverty line – lower poverty line – extreme poverty line. Source: ILCS data 2010 and 2013.

Table A2.2. Poverty Dynamics in Armenia, 2010 and 2014

	Poor in 2014	Non-poor in 2014
Poor in 2010	10.6 – 4.0 – 0.3	23.8 – 16.1 – 4.8
Non-poor in 2010	11.7 – 8.1 – 2.6	53.8 – 71.7 – 92.2

Note: upper poverty line – lower poverty line – extreme poverty line. Source: ILCS data 2010 and 2014.

Table A2.3. Poverty Dynamics in Armenia, 2010 and 2015

	Poor in 2015	Non-poor in 2015
Poor in 2010	6.9 – 1.9 – 0.1	27.5 – 18.2 – 5.2
Non-poor in 2010	16.0 – 10.2 – 2.7	49.6 – 69.6 – 92.0

Note: upper poverty line – lower poverty line – extreme poverty line. Source: ILCS data 2010 and 2015.

Table A4: Summary statistics for different years and different samples

year	total 2004	sample 2004	total 2008	sample 2008	total 2010	sample 2010	total 2015	sample 2015
poorC_up	0.535	0.5286	0.2856	0.2749	0.3579	0.3568	0.298	0.2885
location	2.0578	2.0257	2.0127	2.0153	2.0157	1.9841	2.0501	2.0668
Household head (male)	0.6782	0.7009	0.6755	0.6947	0.6736	0.6998	0.6805	0.7051
ed== 1.0000	0.0708	0.0077	0.0319	0.0038	0.0274	0.0035	0.0135	0.0029
ed== 2.0000	0.4415	0.4517	0.4836	0.4727	0.0871	0.0579	0.0728	0.0498
ed== 3.0000	0.2791	0.3115	0.2756	0.3027	0.3934	0.4104	0.4255	0.4532

ed== 4.0000	0.2086	0.2291	0.2089	0.2208	0.2502	0.2713	0.2305	0.2482
ed== 5.0000					0.2419	0.2569	0.2577	0.2459
children06	0.726	0.7352	0.6754	0.7261	0.6606	0.702	0.739	0.8052
children715	1.5302	1.6037	1.3211	1.4388	0.8873	0.9543	0.9848	1.0755
ageG_1	0.0492	0	0.0324	0	0.0821	0	0.0734	0
ageG_2	0.0968	0.1156	0.0755	0.0923	0.1261	0.1835	0.1062	0.1582
ageG_3	0.1348	0.1904	0.1111	0.1556	0.1403	0.2042	0.0956	0.1423
ageG_4	0.1679	0.2372	0.1519	0.2128	0.1129	0.1644	0.0992	0.1478
ageG_5	0.1343	0.1896	0.129	0.1808	0.1093	0.1591	0.106	0.1578
ageG_6	0.0953	0.1346	0.1229	0.1722	0.0943	0.1373	0.1162	0.1731
ageG_7	0.0703	0.0992	0.1015	0.1422	0.0886	0.129	0.1249	0.1859
ageG_8	0.0453	0.0334	0.0771	0.0441	0.0534	0.0226	0.0932	0.0349
ageG_9	0.0112	0	0.0503	0	0.0058	0	0.0469	0
birth_place== 1.0000	0.1988	0.23	0.217	0.2299	0.2395	0.2703	0.2426	0.2557
birth_place== 2.0000	0.7119	0.693	0.6915	0.689	0.6899	0.6764	0.6965	0.6928
birth_place== 3.0000	0.0893	0.077	0.0915	0.0811	0.0706	0.0533	0.0609	0.0515
marz==Aragatsotn	0.0541	0.0518	0.0412	0.0403	0.0403	0.0426	0.039	0.0452
marz==Ararat	0.0892	0.0891	0.0814	0.0789	0.0795	0.075	0.0881	0.0896
marz==Armavir	0.0857	0.0921	0.0849	0.0931	0.0844	0.0818	0.0924	0.093
marz==Gegharkunik	0.0695	0.0687	0.0682	0.0746	0.0678	0.0687	0.0684	0.0752
marz==Lori	0.096	0.0919	0.0947	0.0956	0.0947	0.0924	0.0951	0.0846
marz==Kotayk	0.0912	0.0975	0.0966	0.0933	0.0985	0.101	0.1014	0.11
marz==Shirak	0.0938	0.0827	0.09	0.0861	0.0912	0.0927	0.0773	0.0802
marz==Sjunik	0.0427	0.042	0.0436	0.0457	0.0404	0.0399	0.0451	0.0439
marz==Vayots Dzor	0.017	0.0162	0.0192	0.0177	0.0185	0.0168	0.0195	0.0194
marz==Tavush	0.0405	0.0344	0.0407	0.0398	0.043	0.0389	0.0468	0.0386
marz==Yerevan	0.3203	0.3336	0.3395	0.3349	0.3417	0.3502	0.3269	0.3203

Annex 3

Correlates of finding waged employment between 2009 and 2015, Georgia

Education and gender are the most important characteristics that divide the workers that obtained a job from those that stayed without a job.

Table A3.1: OLS Regression Results

		National Sample	Only Chronic Poor and Escapers
Dependent: 0=did not have any employment in 2009 and 2015; 1=transitioned from out of employment in 2009 to waged employment in 2015			
Education	Primary or less (Base)		
	Secondary	0.207*** (0.068)	0.224** (0.096)
	Vocational	0.330*** (0.071)	0.371*** (0.101)
	Higher	0.354*** (0.069)	0.329*** (0.110)
Age	18-30 (Base)		
	31-40	0.033 (0.050)	0.003 (0.096)
	41-50	0.048 (0.049)	0.105 (0.096)
	51-60	-0.100** (0.048)	0.032 (0.097)
	61+	0.041 (0.057)	-0.039 (0.115)
Gender	Female	-0.235*** (0.031)	-0.217*** (0.057)
Region	Rural (Base)		
	Other Urban	0.057 (0.039)	0.052 (0.070)
	Tbilisi	0.136*** (0.038)	0.286*** (0.069)
	Constant	0.160** (0.070)	0.036 (0.100)
N		896	244
R ²		0.1402	0.2747

* p<0.10, ** p<0.05, *** p<0.01

Source: Own elaboration based on the 2009 and 2015 WMS.

Annex 4

Altham Statistic

In measuring intergenerational mobility in terms of educational attainment, we follow a framework developed by Long and Ferrie (2013). The main instrument for this framework is the transition matrix: a square matrix in which the numbers of columns and rows are equal to educational attainment categories. The matrix elements show allocation of children's educational attainment in each parent educational attainment categories. The measure of intergenerational mobility exploits the difference in features of transition matrices across contexts, in this case countries.

For illustration, suppose we have transition matrix \mathbf{P} and \mathbf{Q} , where the columns are fathers' educational attainment and rows children's.

$$\mathbf{P} = \begin{bmatrix} 3 & 1 \\ 2 & 2 \end{bmatrix} \text{ and } \mathbf{Q} = \begin{bmatrix} 2 & 1 \\ 6 & 1 \end{bmatrix}$$

The first thing to do is to transform these matrices to have similar marginal frequencies, to eliminate some fundamental differences between \mathbf{P} and \mathbf{Q} such as the amount labor required for a certain job. Suppose, we multiply the first row of \mathbf{Q} by 2 and the first column by $\frac{1}{2}$ and leave \mathbf{P} as is.

$$\mathbf{P} = \begin{bmatrix} 3 & 1 \\ 2 & 2 \end{bmatrix} \text{ and } \mathbf{Q}' = \begin{bmatrix} 2 & 1 \\ 6 & 1 \end{bmatrix}$$

The cross product of \mathbf{P} , that is $p_{11}p_{22}/p_{12}p_{21}$, is 3 and similarly for \mathbf{Q}' 1/3. We, however, reinterpret the cross product by rearranging $p_{11}p_{22}/p_{12}p_{21}$ into $(p_{11}/p_{12})/(p_{21}/p_{22})$: the ratio of the odds that children with education 1 fathers ends up in education 1 (that is 3/2) to the odds that children with education 2 fathers ends up in education 1 (that is 1/2), which is equal to 3. Since cross product of \mathbf{P} is greater than of \mathbf{Q}' , \mathbf{P} exhibits lower mobility.

We calculate the summary of full-set of cross-products in more than 2X2 matrix using Altham (1970) statistics. Specifically, for two matrices, P and Q , with r rows and s columns:

$$d(P, Q) = \left[\sum_{i=1}^r \sum_{j=1}^s \sum_{l=1}^r \sum_{m=1}^s \left| \log \left(\frac{p_{ij}p_{lm}q_{im}q_{lj}}{p_{im}p_{lj}q_{ij}q_{lm}} \right) \right|^2 \right]^{1/2}, \quad (1)$$

To find which one between **P** and **Q** has higher mobility, we replace one table with matrix of ones, **J**, indicating perfect mobility, and calculate $d(P, J)$ and $d(Q, J)$. If $d(P, Q) > 0$ and $d(P, J) > d(P, Q)$, then mobility is greater in **Q**.

Annex 5

Logit model used for identifying probabilities of a household in 2011 not falling into poverty in 2013 or 2015

```
Iteration 0: log pseudolikelihood = -2509139.4
Iteration 1: log pseudolikelihood = -2091628.8
Iteration 2: log pseudolikelihood = -2079988.5
Iteration 3: log pseudolikelihood = -2079953.5
Iteration 4: log pseudolikelihood = -2079953.5
```

```
Logistic regression                                Number of obs   =      2,814
                                                    Wald chi2(25)   =      269.50
                                                    Prob > chi2     =      0.0000
Log pseudolikelihood = -2079953.5                Pseudo R2      =      0.1710
```

v06	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
avg_age	-.0145605	.0104717	-1.39	0.164	-.0350846	.0059636
sh_eductert	-1.513963	.3450688	-4.39	0.000	-2.190285	-.8376403
members	.1037309	.0441674	2.35	0.019	.0171644	.1902973
sh_c014	-.002775	.5372074	-0.01	0.996	-1.055682	1.050132
sh_eld	-.4159275	.4060907	-1.02	0.306	-1.211851	.3799956
ul	.1342555	.1601081	0.84	0.402	-.1795507	.4480617
rr2	-.3440713	.354454	-0.97	0.332	-1.038788	.3506459
rr3	.3707989	.2980312	1.24	0.213	-.2133316	.9549294
rr4	-.1675204	.2559874	-0.65	0.513	-.6692464	.3342057
rr5	-.3982194	.2729325	-1.46	0.145	-.9331572	.1367183
rr6	.4885379	.3188844	1.53	0.126	-.1364641	1.111354
rr7	-.2511904	.2948968	-0.85	0.394	-.8291775	.3267968
rr8	-.6008981	.3026112	-1.99	0.047	-1.194005	-.0077911
rr9	.0221042	.2839179	0.08	0.938	-.5343646	.578573
rr10	.4017429	.2806505	1.43	0.152	-.148322	.9518078
sh_lfs_emplee	-1.906951	.4387145	-4.35	0.000	-2.766815	-1.047086
sh_lfs_agself	-.2826495	.1908974	-1.48	0.139	-.6568015	.0915025
sh_lfs_self	-1.483688	.5243723	-2.83	0.005	-2.511438	-.4559367
sh_lfs_othempl	-.2171528	.6081251	-0.36	0.721	-1.409056	.9747505
sh_lfs_pension	-.4313783	.3766071	-1.15	0.252	-1.169515	.306758
sh_lfs_student	-2.655091	1.0013	-2.65	0.008	-4.617602	-.692579
sh_lfs_80plus	-1.480941	.8837167	-1.68	0.094	-3.212994	.2511118
hh_agric	-.2966091	.1388033	-2.14	0.033	-.5686585	-.0245596
hh_tsa	1.564863	.1697065	9.22	0.000	1.232244	1.897481
hh_pension	.1798348	.1705258	1.05	0.292	-.1543897	.5140593
_cons	.1968411	.5766409	0.34	0.733	-.9333542	1.327036



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