

PERCEPTIONS OF INCOME MOBILITY IN ARMENIA*

David Joulfaiian[†]

Abstract – This paper addresses the perception of income mobility in Armenia over the pre and post independence years. The findings suggest that those who ranked themselves at the lowest tail of the income distribution prior to independence in 1991 perceive to have overwhelmingly moved up in the rankings, with the reverse observed for those who ranked themselves in the upper tail of the distribution. There is some evidence that the least educated perceive to have gained the most. There is further evidence that suggests that individuals rank themselves incorrectly. Based on ranking measured using reported income and self-reported ranking, the overwhelming majority of those who are actually in the top quintile incorrectly rank themselves in the second and third quintiles.

Keywords: Income mobility, Perceptions of well being, Armenia
JEL: I3, J6, P2

1. INTRODUCTION

Armenians voice their pain of economic transition with great regularity, and, whether it is nostalgia for the past or just perceptions of their economic status pre and post 1991, often point to degradation in their well being. But were Armenians really better off prior to the break-up of the Soviet Union, and were their fortunes reversed after the breakup in 1991?

There are different approaches to gauging wellbeing and life satisfaction. This paper focuses on income mobility, or rather perceptions of it, as one measure. Of course there is more to well being than just income, but individuals do compare their income to others and how they rank themselves along the income distribution may influence their wellbeing.¹ A post by the Armenian Economist blog in 2008, henceforth the Blog, was the first to

*The views expressed are those of the author and do not necessarily represent those of the institutions he is affiliated with.

[†]US Department of the Treasury and Georgetown University, former Fulbright lecturer at Yerevan State University

¹See Easterlin (2009) as well as Deaton and Stone (2013).

address the perceptions of income mobility in Armenia.² A host of papers have followed since, albeit focusing on all or some of the transition economies. Cancho et al (2015) is a recent example where the authors provide an extensive review of the literature and study whether individuals move up or down the income distribution ladder for all transition economies using the very same data as the Blog.

To explore income mobility in Armenia, and as with the Blog, this paper employs the EBRD/World Bank 2006 wave of the Life in Transition Survey (LITS). This allows for the study of perceptions of well-being in 2006 and that enjoyed in 1989. The survey asks participants to rank themselves on where they fall in the income distribution over the two periods, from the poorest 10 percent of the population to the richest 10 percent. As with the Blog, the reported rankings point to rank reversal with those in the lowest tail of the distribution moving up considerably whereas those in the upper tail moving downward by 2006. When the young and the old are excluded, the results are moderated but continue to point to rank reversal. Multivariate analysis show that the distance in ranking over the two periods, a measure of income mobility, declines with educational attainment, and suggest that those who are least educated seem to believe to have moved up the rankings the most.

Individuals seem to rank themselves incorrectly which should come as no surprise. The critical questions here are the size and direction of the measurement error. Evidence from the LITS 2016 wave, which provides information on household monthly income as well as the subjective self-ranking of individuals, suggest that individuals overwhelmingly understate their relative standing in the society. Indeed, of those estimated to be in the top quintile, about 90 percent rank themselves as being in the second and third quintiles. The largest gap is observed for the most educated and for men.

The paper is organized as follows. Section 2 describes the available data. Perceptions of income mobility are explored in Section 3. These are illustrated in a number of mobility

²See <https://armenianeconomist.blogspot.com/2008/02/income-mobility-in-armenia.html>.

tabulations, followed by multivariate analysis to examine factors that may explain the gap in rankings and measurement errors. Section 4 concludes.

2. GAUGING MOBILITY

Like a number of transition economies, Armenia experienced severe economic dislocation since its independence following the break up of the Soviet Union in 1991. In addition considerable migration from rural to urban areas has been witnessed. These intertemporal and spatial dislocations are very likely to have shaped employment opportunities and earnings potential. Some workers and others may have adapted to the new regime, others may have been unable to adjust, and some may have thrived.

To explore how the earnings of individuals may have evolved and gauge income mobility require information on income before and after the regime change. In an ideal world, income mobility would be measured by comparing income trajectories over time, identifying groups of individuals with incomes rising, declining, or remaining unchanged relative to other groups in the economy. More to the point, the rankings would be established relative to reported or observed income. But in this paper, and conditioned by data availability, these rankings and the implied mobility reflect the perceptions of individuals and not their actual income which is not observed.

In order to explore individual perceptions of their income mobility and their state of well being before and after independence, the paper employs the EBRD 2006 Life in Transition Survey 1 (LITS).³ Because LITS asks respondents to rank how well off they were in 2006 compared to their state in 1989, it allows for the study of perceptions of income mobility over the two regimes. More specifically, the survey asks participants to rank themselves on where they fall in the income distribution in 1989 and that in 2006, ranging from the poorest 10 percent of the population to the richest 10 percent. The survey also contains a number of demographic variables that shed light on the respondent's educational attainment, age, gender, among others.

³Available at <http://www.ebrd.com/what-we-do/economic-research-and-data/data/lits.html> .

TABLE 1. Descriptive summary statistics

Variable	All ^a		Exclude young ^b		Exclude old ^c	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Age	46.517	17.671	55.097	13.413	47.514	7.378
Male	0.372	0.484	0.373	0.484	0.366	0.482
Education						
No degree/education	0.029	0.168	0.038	0.191	0.009	0.0930
Compulsory school education	0.098	0.298	0.121	0.327	0.083	0.276
Secondary education	0.409	0.492	0.376	0.485	0.370	0.483
Professional, vocational school	0.247	0.432	0.250	0.433	0.290	0.454
College degree	0.217	0.413	0.215	0.411	0.248	0.433
Income decile 2006	4.350	1.588	4.230	1.615	4.318	1.657
Income decile pre 1991	5.699	2.425	5.688	2.452	5.632	2.491
Difference in deciles	-1.350	2.784	-1.458	2.867	-1.314	2.852
Adsolute difference in deciles	2.537	1.769	2.633	1.844	2.569	1.803
Observations	935		660		459	

^aExcludes 65 individuals who could not respond to the survey questions on the income rankings.

^bFurther excludes individuals under age 18 in 1989.

^c Further excludes individuals over age 65 in 2006.

The 2006 wave of the LITS survey covers 29 countries, including Armenia. The Armenian subsample consists of 1,000 households. A key member of the household is typically interviewed to provide information on household members and their attributes. The survey also provides information on the respondents demographics and educational attainment. As noted earlier, survey respondents rank their households in 2006, the year of the sample, as well as recollect their ranking in 1989. Because 65 participants do not rank themselves on the income ladder in either 1989 and 2006, the sample size is reduced to 935 households.⁴

Table 1 provides descriptive sample summary statistics. Beginning with subjective rankings, individuals rank themselves with a mean of 4.35 deciles in 2006, with a range of 1 to 10, down from 5.7 in 1989. The mean difference in rankings is -1.3, or a reduction of about one decile. The absolute mean gap, reflecting on some perceiving to have moved upward and others moving downwards, is 2.5 (sd=1.8).

⁴These are coded 66 (does not know) and 99 (not applicable).

Moving to the demographic profile of respondents, the mean age is 46.5 years with a standard deviation of 17.7 years. About 37 percent of the respondents are male, three percent have little in education, 10 percent completed compulsory schooling and did not complete secondary education, 41 percent completed high school or secondary education, 25 percent completed secondary vocational training, and 22 percent graduated from college.

The minimum age of the respondents in the sample is 18 years in 2006. This is equivalent to one year old in 1989, too young to have any recollection of the economic conditions prevailing in 1989. For completeness, all observations with respondents who would have been under the age of 18 in 1989 are excluded from the sample, a group that very likely was not in the labor force in 1989. Descriptive statistics for this subsample of 660 observations are reported in the middle panel of Table 1. There is little in differences in the reported values when compared to the figures in the first column. An exception is age where the mean is now not unexpectedly higher with a value of 55 years (sd=13.4).

On the other end, the maximum age is 92 years old. Reflecting on health considerations and as well retirement decisions, individuals over the age of 65 are further excluded which reduces the sample to 459 observations. The descriptive statistics for this group are reported in the last column of Table 1. These are similar to those reported in the first column except that now we have relatively more college graduates.

3. EMPIRICAL RESULTS

3.1. Perceived mobility.

The self reported deciles for 1989 and 2006 in the survey can be used to measure perceptions of income mobility. For presentation purposes, the reported deciles are converted into quintiles (20 percent) for each of 1989 and 2006. The perceived mobility over the two periods, or the cross tabulations, are captured in Table 2 which reports the number of households by how they were ranked in 1989 and their respective ranking in 2006.

TABLE 2. Income mobility: Subjective ranking

1989	2006 Quintiles					Number of
Quintiles	1	2	3	4	5	Individuals
1	71,444	141,752	45,091	3,524	5,551	267,362
2	28,018	88,779	186,107	17,236	0	320,140
3	53,249	172,192	222,908	52,133	6,309	506,791
4	82,677	305,250	295,724	37,278	0	720,929
5	42,517	68,775	84,062	24,289	9,831	229,474
All	277,905	776,748	833,892	134,460	21,691	2,044,696

Notes: Computed from weighted observations from the 2006 LITS I Survey.

TABLE 3. Income mobility (percent distribution): Subjective ranking

19891	2006 Quintiles					
Quintiles	1	2	3	4	5	All
1	26.72	53.02	16.87	1.32	2.08	100
2	8.75	27.73	58.13	5.38	0	100
3	10.51	33.98	43.98	10.29	1.24	100
4	11.47	42.34	41.02	5.17	0	100
5	18.53	29.97	36.63	10.58	4.28	100
All	13.59	37.99	40.78	6.58	1.06	100

Notes: Computed from weighted observations from 2006 LITS I Survey.

The weighted number of individuals in the sample is slightly over 2 million. Of these, 776,748 and 833,892 believe they were in the second and third quintiles, respectively, in 2006. At the other extreme, only 21,691 believe they were in the top quintile. Obviously, both sets of figures deviate considerably from the expected 400,000 in each quintile. A similar, albeit more dispersed pattern is observed for 1989. Table 3 replaces the number of these individuals in Table 2 with percent distributions such that the sum of each row is equal to 100 percent.

A striking finding is that the majority of the poorest 20 percent in 1989, the first quintile, consider themselves to be much relatively better off in 2006. Of these 267362 individuals, some 73 percent have moved up, with 53 percent moving to the next quintile, and 2.1 percent moved all the way up to the top quintile, the richest 20 percent; only 27 percent remained in the first quintile. And for those who considered themselves to be the richest 20 percent in 1989, 229,474 individuals, 96 percent perceive to have become poorer by

TABLE 4. Income mobility: Subjective ranking excluding young and old

1989	2006 Quintiles					Number of
Quintiles	1	2	3	4	5	Households
1	54,245	64,230	29,572	2,511	2,511	153,069
2	21,750	30,408	103,347	12,136	0	167,641
3	30,459	93,460	115,413	34,349	3,412	277,093
4	54,402	190,597	147,175	20,414	0	412,588
5	20,221	41,674	50,922	14,726	5,182	132,725
All	181,077	420,369	446,429	84,136	11,105	1,143,116

Notes: Computed from weighted observations from 2006 LITS I Survey. Excludes individuals under age 18 in 1989 and over age 65 in 2006.

TABLE 5. Income mobility (percent distribution): Subjective ranking excluding young and old

1989	2006 Quintiles					
Quintiles	1	2	3	4	5	All
1	35.44	41.96	19.32	1.64	1.64	100
2	12.97	18.14	61.65	7.24	0	100
3	10.99	33.73	41.65	12.4	1.23	100
4	13.19	46.2	35.67	4.95	0	100
5	15.24	31.4	38.37	11.1	3.9	100
All	15.84	36.77	39.05	7.36	0.97	100

Notes: Computed from weighted observations from 2006 LITS I Survey. Excludes individuals under age 18 in 1989 and over age 65 in 2006.

2006, with 19 percent moving all the way down to the bottom quintile, the poorest 20 percent.

When the young, those under age 18 in 1989, and the old, those over age 65 in 2006, are excluded, the earlier observed trend is moderated. As shown in Tables 4 and 5, now 65 percent of those in the lower tail in 1989, down from 73 percent, believe they have moved up. For those in the top tail, 96 continue to believe they have moved down. Notwithstanding the age restrictions, the findings on rank reversal continue to hold. And once again, close to 77 percent rank themselves in the second and third quintiles, virtually unchanged from Tables 2 and 3.

3.2. What explains the perceived change in mobility.

While LITS is rich with variables that capture values and perceptions shaped by the

regime changes, most would be difficult to employ so as to avoid using perceptions to explain perceptions of income mobility; it is not informative to explain subjective outcomes by other subjective outcomes (Hamermesh, 2004). However, educational attainment is one potential measure that can be employed both because it is not a perceived or subjective measure and also because it may be construed as a predictor of true income, although evidence suggests that it may not be a very good predictor in Armenia (see Hakobyan and Joulfaian, 2016).

Column (1) of Table 6 regresses the perceived change in rankings on indicators for educational attainment. With the exception of those who did not complete high school or secondary education, the estimated coefficients suggest that those with less education moved up in the ranking when compared to those with college education. The relative ranking of those with little education moves up close to two deciles, whereas those who completed secondary and vocational education move up close to one decile. Column (2) adds age in quadratic form, and Column (3) adds gender. The estimated coefficients in column (1) are little affected by the additions, with that for the least educated group slightly larger.

Column (4) excludes the young, those who were under the age of 18 in 1989. The estimated coefficients on educational attainment are now slightly larger, but not statistically different from the earlier figures. But once we exclude the elderly from the sample, those over age 65 in 2006, the marginal effects of schooling change dramatically in Column (5). When compared to college graduates, we no longer observe a reduction in the rankings. An exception, once again, is the least educated group which continues to exhibit an upward trend, moving up three deciles, albeit with significance at the 10 percent only.

3.3. Errors in self-reported ranking.

It is abundantly clear that individuals incorrectly rank themselves as evident from Tables 2 and 3, where each quintile should represent 20 percent of individuals. Yet the observed figures for 2006 are about twice as large for the second and third quintiles, and way under reported for the fifth quintile with only three percent. The respective figures for 1989 are

TABLE 6. Estimates for difference in rankings (2006)

VARIABLES	(1)	(2)	(3)	(4)	(5)
Education ^a					
no degree/education	1.748*** (0.566)	2.252*** (0.580)	2.253*** (0.581)	2.461*** (0.632)	2.651* (1.450)
compulsory school education	0.277 (0.348)	0.541 (0.353)	0.545 (0.353)	0.509 (0.405)	0.296 (0.533)
secondary education	0.690*** (0.240)	0.680*** (0.240)	0.686*** (0.241)	0.718** (0.299)	0.423 (0.347)
professional, vocational school	0.758*** (0.266)	0.720*** (0.264)	0.718*** (0.264)	0.726** (0.325)	0.556 (0.365)
Age		0.0109 (0.0279)	0.0109 (0.0280)	-0.00371 (0.0765)	0.553** (0.241)
Age ²		-0.000322 (0.000284)	-0.000322 (0.000284)	-0.000224 (0.000656)	-0.00606** (0.00246)
Male			-0.108 (0.186)	0.107 (0.228)	0.176 (0.276)
Constant	-1.897*** (0.194)	-1.632** (0.671)	-1.597** (0.674)	-1.180 (2.163)	-13.99** (5.802)
Observations	935	935	935	660	459
\bar{R}^2	0.017	0.034	0.034	0.039	0.035

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

^aCollege degree omitted category.

Column (4) excludes the young, and column (5) further excludes the old; see notes to Table 1.

TABLE 7. 2016 Actual and Self-ranked distribution

Actual Quintiles	Self-Ranked Quintiles					Number of individuals
	1	2	3	4	5	
1	132,517	137,661	120,593	6,555	11,902	409,228
2	115,827	141,028	168,039	33,525	6,458	464,877
3	67,682	148,490	147,452	39,719	5,802	409,145
4	34,310	130,180	159,410	26,414	5,812	356,126
5	11,240	112,282	241,572	36,963	2,145	404,202
All	361,576	669,641	837,066	143,176	32,119	2,043,578

Notes: Computed from weighted observations from the 2016 LITS I Survey.

also prone to errors in misreporting as well.⁵ Similar observations can be made for the age restricted Tables 4 and 5 as well.

⁵This observation was made by the Blog in 2008

TABLE 8. 2016 Actual and Self-ranked distribution (percent)

Actual	Self-Ranked Quintiles					
Quintiles	1	2	3	4	5	All
1	32.38	33.64	29.47	1.6	2.91	100
2	24.92	30.34	36.15	7.21	1.39	100
3	16.54	36.29	36.04	9.71	1.42	100
4	9.63	36.55	44.76	7.42	1.63	100
5	2.78	27.78	59.77	9.14	0.53	100
All	17.69	32.77	40.96	7.01	1.57	100

Notes: Computed from weighted observations from 2016 LITS I Survey.

Notwithstanding this clarity, there is little in the 2006 LITS survey to explain the scope of this measurement error. Which Armenians overstate, understate, or correctly identify their ranking in the income distribution? And what attributes explain over and understatements? To address these questions, the 2016 wave of the LITS survey can be employed as it contains a question that asks for the household monthly income. Using such reported income makes it possible to compare the reported subjective ranking and that estimated using the reported income for 2016. While granted this does not directly address the measurement errors for 1989/2006, it may go a long way in exploring the propensity of Armenians to incorrectly classify their rankings.

Tables 7 and 8 provides cross tabulations of the subjective ranking reported by individuals and that constructed using reported income.⁶ Once again the deciles obtained from subjective ranking on ten-step ladder are converted to quintiles in these two tables. And once again we have clear indications of measurement errors. The column total for the third quintile is 837,066 instead of the expected 400,000. In contrast, the total for the top quintile is only 32,199, both pointing to serious errors in classifications.

Deciles were constructed using reported income, which were then converted to quintiles. The totals for the constructed quintiles using reported income are reported in the rows of these tables. Each of these quintiles should add up to about 400,000, or 20 percent

⁶172 observations with negative income are dropped. In addition, 18 observations were further dropped when the respondents did not rank themselves.

of 2,043,578.⁷ A comparison of the row totals and column totals highlights the magnitudes of errors in rankings. In the case of the third quintile column, for instance, the total is 837,066 compared to the row total of 409,145, or twice as many individuals. Similarly, the total for the top quintile column is only 32,119, in contrast to over 400,000 for the row total, or only 8 percent as many.

In the case of a perfect match in rankings, we would observe values in the main diagonal with zeroes elsewhere. Obviously, that is not the case here as all the cells in Table 7 and 8 are populated with positive values. Now we can visibly see which group is overstating or understating its rank. While measurement errors are ubiquitous, it does look like those typically in the top quintiles have a greater propensity to understate their well-being. Indeed, and in the case of the top quintile, only 2,145, or less than one percent, rank themselves as such.

Subtracting the subjective rank or decile from that constructed from reported income provides a measure of the error in ranking. Table 9 reports regression results where, in the spirit of Table 6, this measurement error is regressed on a number of individual attributes. Beginning with education in column (1), the estimated coefficients suggest that college graduates and those with graduate degrees understate their well being by about 1.5 deciles relative to those with little or no education.

Column (2) adds age in quadratic form. The estimated coefficients on education change little. The coefficients on age suggest that understatements rise with age and peak at about one decile at age 45, before they decline. Column (3) adds gender. This addition has little effect on the earlier reported estimates. The coefficient on gender, or being male, is 0.66 (se=0.16), suggests that men may understate the well being by two thirds of a decile, other things equal.

⁷Because some observations have identical values for income, it is difficult to correctly classify individuals along deciles with equal number of observations. Deciles were generated using stata command *xtile decile = income [wt = weight], nq(10)*.

TABLE 9. Estimates for errors in rankings – 2016

VARIABLES	(1)	(2)	(3)
Education ^a			
Lower secondary education	-0.182 (0.371)	-0.341 (0.374)	-0.368 (0.372)
(Upper) secondary education	0.0286 (0.330)	-0.165 (0.336)	-0.185 (0.334)
Post-secondary non-tertiary education	0.299 (0.331)	0.105 (0.338)	0.115 (0.336)
Tertiary education (not a university)	1.216** (0.545)	1.101** (0.549)	0.981* (0.547)
Bachelor's degree or more	1.413*** (0.388)	1.230*** (0.393)	1.222*** (0.390)
Master's degree or PhD	1.476*** (0.372)	1.308*** (0.376)	1.354*** (0.374)
Age		0.0499* (0.0255)	0.0512** (0.0254)
Age ²		-0.000579** (0.000252)	-0.000585** (0.000250)
Male			0.663*** (0.161)
Constant	0.163 (0.299)	-0.537 (0.635)	-0.133 (0.639)
Observations	1,341	1,341	1,341
\bar{R}^2	0.043	0.049	0.061
Standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			
^a Primary or no education omitted category.			

4. CONCLUSION

This paper attempted to gauge perception of income mobility in Armenia over the pre and post- independence years. Consistent with a previous finding, most of those who considered themselves to be in the top tail of the income distribution in 1989 rank themselves as poor by 2006, while those in the lowest tail believe their lot has improved. The least educated perceive that they have improved the most.

Perhaps not surprisingly, individuals seem to rank themselves incorrectly as very few rank themselves in the top quintile, and twice as many as they should rank themselves in the third quintile. Measurement errors, or understatement of rank, seem to be the greatest

for the very educated as well as men. But notwithstanding measurement errors, if they shape and motivate policies, then these perceptions of well-being can be important and should not be overlooked.

REFERENCES

- [1] Cancho, César; Dávalos, Maria E.; Sánchez-Páramo, Carolina. 2015. Why So Gloomy? : Perceptions of Economic Mobility in Europe and Central Asia. Policy Research Working Paper;No. 7519. World Bank, Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23619>
License: CC BY 3.0 IGO.
- [2] Deaton , Angus and Arthur A. Stone (2013). Two happiness puzzles. *American Economic Review*. 2013 May; 103(3): 591–597. doi: 10.1257/aer.103.3.591
- [3] Easterlin, Richard A. (2009) Lost in Transition: Life Satisfaction on the Road to Capitalism. *Journal of Economic Behavior & Organization* (71): 130-145.
- [4] Hakobyan, Shushanik, and David Joulfaian, 2016. The Return to Education in Armenia, *Armenian Journal of Economics*
- [5] Hamermesh, Daniel (2004) *Subjective Outcomes in Economics*. NBER Working Paper Series, WP 10361. Cambridge, MA
- [6] The Armenian Economist, 2008. Income Mobility in Armenia, 1989-2006, <https://armenianeconomist.blogspot.com/2008/02/income-mobility-in-armenia.html>