Happiness and Hardship:
Lessons from Panel Data on Mobility and Subjective Well Being in Peru and Russia

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Introduction

This paper summarizes a much longer body of published research on income mobility, subjective well being, and the linkages between the two. It is an attempt to draw out the broader lessons – as well as the challenges – that the experience provides for longitudinal research on poverty. The research is based on two themes. The first is that an informed discussion of the implications of inequality must focus on the dynamics of inequality as well as on the distribution of income at a particular point in time. The analysis of income mobility, for example, helps capture the distribution of opportunities within societies and across generations.

The second theme is that the distributions of both income and opportunity have significant effects on individual’s perceptions of their well being, and that those perceptions in turn affect the economic and political choices that individuals make. Both of these themes are particularly relevant to the current developing country context, in which many governments are introducing market reforms and/or political liberalization while also contending with high levels of poverty and inequality. Not surprisingly, our exploration of these themes required new and new kinds of data.

Inequality

Most of the discussion of income inequality focuses on static measures of inequality, such as the Gini coefficient or the 90/10 ratio. Yet these measures are snapshots of societies at a particular point of time. They do not tell us much about who is moving in and out of poverty; about people’s earnings over their life cycles; or about the intergenerational transmission of opportunities, for example. If one took the Gini of a hypothetical society of lawyers and bricklayers, for example, early in the earnings cycle, the policy conclusion could well be that bricklayers should redistribute their income to lawyers. In contrast, if one looks at the earnings curves of the two groups over the lifetime, then lawyers clearly earn more income, and any redistribution that was deemed necessary would go in the other direction. (See Figure 1)

Focusing on income mobility allows us to better gauge how people fare over a longer period of time, and to get a better sense of how equally opportunities are shared in particular societies. Yet measuring mobility requires panel data, which are scarce, particularly for developing economies. For this study, we were able to rely on panel data for Peru and Russia. For Peru, we collaborated in the gathering of the data with the Instituto Cuanto in Lima, which has conducted a nationally representative household survey – the ENNIV - since 1991, and for Russia, we

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relied on the Russian Longitudinal Monitoring Survey (RLMS), which has been conducted annually since 1995.\textsuperscript{2}

**Subjective Well Being**

Public perceptions of well being, meanwhile, are linked to individuals’ attitudes about inequality and their perceived opportunities for advancement, as well as those for their children. Over a century ago DeTocqueville posited that Americans’ higher tolerance for inequality compared to those of Europeans was explained by higher levels of social mobility in the United States. More recently, Benabou and Ok used panel data from the U.S. Panel Study of Income Dynamics (PSID) to show that even though most Americans are well below mean income, they do not vote for redistribution because the majority are convinced that they will be above it in the future (even though that is not a realistic assumption for most of them).\textsuperscript{3} Hirschmann, in his well known tunnel hypothesis, suggests that inequality in the development process is analogous to a traffic jam in a tunnel. Initial uneven movement (inequality) as one lane starts moving at first provides hope, as it signals where the rest of the lanes might be going in the future. Yet if only one lane keeps moving and the others remain jammed, then eventually the drivers in the stalled lanes get frustrated and resort to radical behavior such as jumping the median strip.\textsuperscript{4}

Our research was an exploratory attempt to compare individual’s perceptions of their past progress and their attitudes about future opportunity with objective mobility trends. We posited that people’s tolerance for inequality would be affected by their perceptions of future opportunities, as in deTocqueville and in Benabou and Ok, as well as by the information that they had about the progress and income gains of others in their societies, as in Hirschmann. In order to address these questions, we went back to our panel data for Peru and implemented a new questionnaire on perceptions to a 500 person sub-set of the panel (questionnaire attached at end of tables and figures). We also found some comparable, if less extensive, perceptions questions in the RLMS.

Finally, we made some benchmark comparisons to ensure that our perceptions data were at least comparable to those for other developing countries, and also that the developing country data did not differ in any fundamental or structural way from that for the developed economies. We analyzed perceptions and broader subjective well being questions from the regionwide Latinobarometro data set (which is a cross section and not a panel).\textsuperscript{5} We then compared our

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\textsuperscript{2} Cuanto has actually conducted the ENNIV in years as early as 1985, but the survey was not nationally representative due to guerilla activity in rural parts of the country. RLMS data, meanwhile, can be downloaded from the following website: www.cpc.unc.edu/projects/rlms


\textsuperscript{5} The Latinobarometro survey consists of approximately 1000 interviews in 17 countries in Latin America, providing nearly 18,000 observations annually. The samples are conducted annually by a prestigious research firm in each country, and are nationally representative except for Brazil and Paraguay. The survey is produced by the NGO Latinobarometro, a non-profit organization based in Santiago de Chile and directed by Marta Lagos (www.latinobarometro.org). The first survey was carried out in 1995 and covered 8 countries. Funding began with an grant from the European Community and is now from multiple sources. Access to the data is by purchase, with a 4 year lag in public release.
\end{footnotesize}
findings to the analyses of subjective well being that have been done for the United States and Europe.⁶ [See Table 1 for summary statistics from the data sets]

**Research Results**

Our results on mobility patterns were surprising. While we expected that the developing economies would have less mobility than a country like the United States, which is known for its high levels of mobility, our comparison of mobility rates in Peru and the United States over a ten year period yielded significantly more income mobility in Peru than in the United States. For the U.S., we relied on adjusted family income data provided by Michel et al for 1979-89.⁷ For Peru we use the subset of our panel that we re-interviewed for our perceptions survey (500 observations). [See Table 2] This comparison actually underestimates the amount of mobility in Peru, as the Peru data is in expenditure, which fluctuates less than income. The U.S. data is in adjusted family income. The Russia data – which is income - suggests that there is even more income mobility in Russia than in Peru over a shorter time period. Among other things, this reflects the dramatic degree of structural change – as well as a major devaluation – in Russia during the period.

A closer look at the data yields two notable trends. The first is that there are more rags to riches stories in Peru than the U.S. – e.g. more people move from the first to the fifth quintiles in Peru than in the U.S. Second, there is a great deal of downward mobility from the fourth quintile – roughly middle class by Peruvian standards – to the poorest quintile. This suggests that there is both an unexpected amount of opportunity for upward advancement and exit from poverty, but also a high degree of vulnerability to falling into poverty for those in the middle.

We attribute the former trends to new opportunities (and stability) for the poor provided by the stabilization of hyper-inflation and the achievement of macroeconomic stability and growth. We attribute the latter to changing rewards to different education levels: while prior to the initiation of market reforms and trade and capital market liberalization, a secondary education was sufficient to achieve a stable, “middle class” existence, often with a job in the public sector, it is now no longer enough, and rewards are going to those with higher levels of skills and education.⁸ In addition, most people in Peru – as in much of the region – lack any form of social welfare or unemployment insurance. Thus they are very vulnerable to falling into poverty if they experience a break in their income flows.

We also took a closer look at the determinants of upward mobility in Peru. The only significant factors determining upward mobility from 1991-2000 are years of education, urban

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location (significant at the 10% level), income level (those with LOWER income were more likely to have upward mobility), and participation in neighborhood organizations for NON-economic reasons. In contrast, participating for economic necessity reasons was negatively correlated with upward mobility. [Table 3]

We disaggregated our participation/proxy for social capital question/variable into reasons for participating, dividing those who participate for economic necessity reasons from those who participate to make new acquaintances. The idea here is that much of what is loosely termed "social capital" in LDCs is actually the poor participating in safety net/joint survival schemes (such as soup kitchens, etc). While these are important safety net mechanisms, they can also be poverty traps rather than the "weak ties" kind of organizations that Mark Granovetter finds are good for upward mobility and that Robert Putnam followers believe are linked to growth.

We also asked this sub-sample (500) of respondents in the panel a number of questions about their perceptions of their past progress and for their future prospects (questionnaire at the end of the tables and figures section). We repeated this perceptions survey two years in a row. The most significant and surprising finding was that almost half of the respondents with the most upward mobility reported that their economic situation was negative or very negative compared to ten years prior. [See Figure 2] We conducted a similar analysis for Russia, and found an even higher percentage of frustrated respondents – or frustrated achievers as we call them. [Figure 3]

A closer look at these frustrated achievers (FA’s) shows that they are at or about average income (and therefore not the poorest in the sample), that they are more urban and slightly older on average than non-frustrated respondents with upward mobility. There are no significant gender or education differences, meanwhile. In Peru, the FA’s have less volatility in their income trajectory, as measured by the coefficient of variation, while in Russia it is higher. Finally, the FAs scored lower on a whole host of perceptions questions, such as their perceived prospects of upward mobility, and their position on a notional economic ladder. In keeping with the direction of these findings, the FA’s also had a higher fear of being unemployed in the future. In addition, the Russian FA’s were more likely to want to restrict the incomes of the rich, and were less satisfied with the market process and with democracy (we did not have the same questions for Peru).

In Peru the likelihood of having upward mobility and being frustrated (a frustrated achiever) is negatively related to initial income levels. [Table 4] In other words, the frustrated achievers started from lower income levels, on average, even though they are not the very poorest in the sample. This is not surprising, as thus even large percentage increases in their incomes will seem insufficient to reach the levels of wealthier groups.

What explains these frustrations? Relative income differences could certainly be a plausible explanation, and the FA’s were more likely to score lower on the notional economic ladder in both surveys, as well as to compare their situation negatively to others in their community and their country in Peru. Both Peru and Russia have high degrees of inequality. A lack of adequate social insurance and insecurity could be another: the FA’s had a higher fear of unemployment.


For a complete picture of the statistically significant differences between frustrated and non-frustrated upwardly mobile respondents, see Graham and Pettinato (2002).
than non-frustrated achievers. Thus even though the FA’s are doing well today, they perceive that there is no guarantee of stability. This is not surprising, given that both surveys were conducted in very volatile economic contexts, and the objective mobility data reveal a remarkable degree of vulnerability. Related to this, most of the FAs were at mean levels of education, while it is those with higher levels of education – at least in Latin America - that are gaining high marginal returns compared to the rest of society, while those with secondary education are seeing decreasing marginal returns compared to those with primary education.\textsuperscript{11}

Finally, some of these frustrations could be behaviorally driven. It is plausible that some percent of every sample will always be negative or unhappy, regardless of objective conditions. In order to explore this, or at least to see if our sample populations were significantly different from other population samples, we turned to the nascent economics and psychology literature on subjective well being. A notable finding from this literature is that as countries grow wealthier over time, average happiness levels do not increase. We combined our the Latin America data with that from a broader international comparison from the World Happiness Data Base compiled by Ruut Veenhoven at Erasmus University, and found that a similar lack of relationship held for Latin America. [See Figure 4] (It is also notable that both Peru and Russia are quite low in terms of overall happiness levels).

We compared the determinants of happiness in Latin America and in Russia with those of the United States, and find a remarkable degree of similarity: there were similar age, income, education, marriage, and employment effects (except for Russia, where married people are not happier than others). [See Tables 5 and 6] In all contexts, unemployed people are less happy than others). Indeed, the only significant difference between the U.S. and our two samples were that women were happier than men in the U.S., while in Latin America and Russia men were happier (due to possible gender disparities?). Self employed people, meanwhile, are happier in the U.S. than others, while in Latin America, they were less happy. This makes intuitive sense. While in the U.S. the self employed are so by choice, in Latin America they are often in the informal sector by default.

What are the implications of all of these findings? It is certainly not possible to summarize these in a paper of this length, and fuller discussion appears in the above cited references. However, it is very important to note that using longitudinal and perceptions data gives a very different and arguably more accurate picture than looking at income or distribution data. While it is fairly standard to equate well being or utility with income, our research suggests that there are very important non-income determinants of well being, and that these variables are more important for those that are just above the poverty level rather than for the very poor.

Our data also suggest that these negative perceptions are linked to negative attitudes about a host of other issues, such as the fairness of the income distribution, future prospects for upward mobility, and satisfaction with markets and democracy. Finally, some more recent research based on the Russia panel shows that these perceptions matter to future income: happier people earn more income, on average, than less happy people.\textsuperscript{12}

\textsuperscript{11} See Behrman, Birdsall, and Szekely (2001).
\textsuperscript{12} See Graham, Eggers, and Sukhtankar (2003).
In sum, working with different kinds of data – and in particular longitudinal and perceptions data – provides a much fuller picture than do cross section data of the extent of movement in and out of poverty within particular societies and therefore of the extent of opportunity and vulnerability. It also suggests that inequality has implications for economic and political behavior. That picture, in turn, has quite different policy implications, and suggests that factors other than income gains are extremely important to peoples’ well being in developing economies. While not discounting the critical role of growth in poverty reduction, it highlights the need for an increased focus on policies that enhance opportunity and for those that reduce vulnerability, as well as for more attention to equity issues. Despite these important advantages, working with such data is also rift with methodological and analytical challenges.

**Methodology Lessons and Questions**

The most obvious drawback of panel data, which is well known to those of us who use it, is its scarcity. This scarcity is of two kinds. The first is the mere paucity of the data itself, in large part due to the expense of generating it. Panels are few and far between, and there are only a small number of developing countries where we can rely on nationally representative samples to capture trends over time and therefore fully gauge the effects of particular policies on poverty and inequality. And it is virtually impossible to re-create such data for periods and places where it does not exist; e.g. it is very difficult to use proxies where observations are missing, and/or to recreate or capture past trends. Therefore establishing a panel requires that the data begin at t-0 and only captures information moving forward.

The second kind of scarcity stems from the nature of panel data itself. Respondents both age and move away, leading to attrition which reduces the sample size and can also result in bias. Attrition tends to be greatest at the two tails of the distribution, meanwhile, as the wealthiest respondents tend to move to better neighborhoods, and the poorest ones may move in with others or return to their places of origin (for example urban migrants that return to the countryside). In our studies, we had a 38% attrition rate over a 5 year period in Russia, and a 25% attrition rate for the 3 year period covered by our perceptions survey in Peru (for the 1991-2000 living standards measurement survey, we had less attrition). In addition, as respondents in the panel age, they also may become less representative of the population as a whole. Thus unless panels are inter-generational, as in the U.S. PSID, it is difficult to cover a long period of time without encountering attrition and bias issues (this is less of a problem for rotating panel, where subsets of the sample drop out and are replaced periodically, but this approach has its own drawbacks).

Another problem with any kind of longitudinal data is accounting for error in reporting income, a problem that is gravely aggravated by policy shocks such as devaluations and/or high levels of inflation. One approach – as in our Peru panel - is to rely on expenditure data. People who are self employed or employed in the informal sector have a difficult time estimating any sort of monthly or annual salary, in part because their income fluctuates a great deal. Thus expenditure data is more accurate than income data for samples with large numbers of self employed and/or formal sector workers and agricultural workers. It is also more difficult to under or mis-report expenditures.
Yet relying on expenditures misses part of the story, particularly at the higher tails of the income distribution, and also does not capture volatility in income flows as well, as people tend to smooth their consumption where possible by dis-saving. On the other hand, relying on income reports in volatile developing or transition economy contexts is also rift with problems. We had a relatively large number of respondents in our Russia panel (54 out of 5000) who reported zero income, yet many of them displayed other traits that suggested that they were earning substantial income – most likely in the informal economy or black market. And the sharp devaluation of the ruble, among other things, contributed to a fairly wide margin in the range of incomes that people reported to be necessary to stay out of poverty, for example.

A related problem is differences in the way that rural and urban respondents answer survey questions. We found that rural (and poorer) respondents were much more likely to assess their situations at the mean response level (for example “same” when comparing past and present economic situations), than were urban respondents, who were more likely to opt for extreme responses (very good or very negative). Reaching rural respondents and getting an adequate representation, meanwhile, is more difficult and costly than reaching urban ones. This is problem that we encountered, and both our Peru and Latinobarometro samples have an urban bias.

Accepting these limitations, having observations on the same people in two points or more in time creates a tremendous amount of analytical flexibility. Because of this, we were able, for example, to look at the effects of happiness on income in future periods (by calculating residual, or unexplained happiness in the first period (t-0), and including it on the right hand side in a regression with income in t-1 as the dependent variable). There are a variety of other questions where having more than one observation allows us to establish a direction of causality and not just a correlation.

Adding perceptions data to longitudinal data has benefits, but creates its own set of additional methodological problems. Happiness or life satisfaction questions are usually based on a four point scale; “how happy or satisfied are you with your life”, with two answers above and two below neutral. The correlation coefficient between happiness and life satisfaction questions is .95. The first problem with such surveys is that the data are most useful in the aggregate, rather than at the individual level. In other words, how a particular individual answers a question on happiness, for example, can be biased by day to day events, such as the break up of a relationship or a high grade on a test score or the like. Thus the same person could answer such questions quite differently from day to day or year to year. The simple correlation from a regression of happiness in year two on happiness in year one was .2734 for our Russia sample, suggesting a significant amount of fluctuation in happiness levels.

Yet when these questions are aggregated over large samples, they display a remarkable degree of consistency in patterns, such as in the effects of age, health, and marriage on happiness. And even at the individual level, psychologists find that there is a significant degree of validation in these surveys; in other words, people that answer happiness and other perceptions questions positively also display psychological traits such as smiling more.13

Accuracy in reporting is obviously another major issue in using perceptions data. Responses can be very biased by the phrasing or the placement of questions in the survey. In Russia, for example, the happiness question was embedded in the middle of the survey, after a series of questions about economic status, which could obviously bias answers downward. We had the same problem occurred in the Latinobarometro the first year a happiness question was included. In later years, we were able to get the question placed at the top of the survey.

Another problem in reporting is bias introduced by different or changing reference norms. If you ask people how much income would they need to make ends meet, and/or to be happy, they usually base their answers on their existing income and double it or the like. Alternatively, people base their answers on others in their community or others “like themselves”. When we asked people in our Peru survey to compare themselves with others in their community and then with others in their country, we found that most respondents compared themselves much more favorably with others in their community than those in their country, which is a much vaguer concept for most respondents. Yet if the reference point changes – perhaps a result of more information – then this can have significant effects on the answers.

We also found that there was a marked difference between how respondents answered questions that involved concrete points of reference and those that involved hope and aspirations. For example, many more respondents in Peru (and Latin America more generally) were negative when answering a question about how they lived compared to their parents than when answering questions about how their children would live compared to they. A very similar percent of respondents in Latin America than in the U.S. In Latin America (Latinobarometro, 2001), only 16% of respondents say that they live better than their parents did, while 64% of respondents in the US do (GSS, 1998). In contrast, 58% of Latin Americans say that their children will live better than they and 57% of U.S. respondents do.

One technique that we used to try and benchmark responses was to ask more tangible questions, such as about the state of roads and schools and other public services. Here we often found a gap between responses: the same people who responded that their economic situation today was worse than 10 years ago (even when it was not) often responded that public services had improved a great deal.

Perceptions often interact with objective conditions and bias responses to questions on issues such as health. People’s conception of health makes a large difference to how they answer questions about poor health. Poor people are much less likely to say that they have been ill, for example, than are rich ones. Even when one benchmarks questions, such as asking how many days in the last month one lost to ill health, the poor are much less likely to stay home from work.

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15 A survey conducted by Richard Webb and Cuanto and Lima in the 1980’s, for example, found that workers of all income levels consistently doubled their current income when asked how much income would be “enough”.
16 See Graham (2002).
even when they are sick. Trying to get more specific and accurate helps, but cannot completely get around the problem.

Finally, it is difficult to disentangle behavioral versus contextual determinants of answers to perceptions questions. While there is a great deal of consistency in the determinants of happiness, a great deal of individual happiness remains unexplained (the R-squared in most happiness regressions is on the order of .03). When we separate this unexplained or residual happiness, we find that it is highly correlated with a number of perceptions variables, such as positive prospects for future upward mobility. To some extent, then, individuals’ perceptions about their future mobility – or their children’s – are driven by their character – the positive cognitive bias (self esteem, optimism) that psychologists find in happier people. At the same time, contextual factors also matter. Happier people and those with more positive attitudes about their future mobility are, not surprisingly, also more likely to be wealthier and healthier, for example. And they are more likely to assess markets and democracy positively.

There is clearly a direction of causality problem in working with perceptions data, as it is plausible that people with positive attitudes assess any context that they live in more positively. Our research finds that in many instances the causality runs in both directions: happier people are healthier in later periods, and at the same time, health is linked to happiness in the initial period. In the same way, happier people are, on average, wealthier, and we also find that residual or unexplained happiness in period one is linked to higher earnings, on average, in period two.

Thus there remains a great deal to disentangle in making inferences – particularly causal ones – from happiness data. Yet as in the case of panel data, working with such data gives us a much richer and fuller picture of the reality in developing economies, and a reality that better captures how people conceive of and assess their own welfare, something which we cannot get at from static, cross section data on earnings, income, or other socio-economic or demographic variables. Given the efforts of many development economists – and policymakers – to develop measures of poverty that are more comprehensive than income-based measures, these kinds of data – with all of their flaws – may have a great deal to contribute.

17 For some of the difficulties encountered in measuring health status and establishing causality, see Angus Deaton (2003), “Health, Inequality, and Economic Development”, Journal of Economic Literature, Vol.XLI, No.1 (March),