

# Feeling Poor, Feeling Rich, or Feeling Middle-Class

## An Empirical Investigation

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## Abstract

Based on their objective economic situation and comparing with their peers, individuals form perceptions of their economic position in a society. Data from the three waves of the Life in Transition surveys of European countries show that these perceptions systematically deviate from the rankings obtained using consumption levels. People position themselves in the middle ranks in larger numbers than those who are in the middle ranks according to their consumption levels. Correspondingly, many people who objectively are classified in the top, richest, or bottom, poorest, ranks subjectively feel that they are in the middle class. This puzzling “bunching in the middle” is the focus of this paper. Explanations are tested and discarded that consider subjective perceptions as misperceptions or the

result of other mistakes due to data limitations (such as tail bias). The paper concludes that rather than reflecting a subjective assessment of the distribution of welfare, subjective rankings reveal subjective economic well-being. The paper shows that monetary consumption is a strong predictor of subjective economic well-being, but that the latter is influenced by many other factors, including economic security, proxied by employment status or other measures of human capital, such as health and education. These findings have policy relevance, since redistribution measures aiming at simply protecting consumption levels may not be sufficient to restore the economic well-being provided by having full-time secure types of employment.

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# Feeling Poor, Feeling Rich, or Feeling Middle-Class: An Empirical Investigation

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# 1 Introduction

This paper focuses on the interpretation of the subjective assessment of relative welfare using the Life in Transition Surveys (LiTS). These surveys have been carried out in three waves (2006, 2010, 2016) in about 30 countries in Central and Eastern Europe, Central Asia, as well as Western Europe. Looking at the data from these surveys, a puzzle emerges. In responding to the question of where they place their household on a 10-step ladder (also known as “Cantril’s ladder”) where each step should represent an equal share of people from the poorest to the richest, most surveyed individuals answer that they belong to the middle deciles of the distribution. This ‘bunching in the middle’ implies that there are many rich people who believe they are less (relatively) rich than they actually are when their position is determined by their monetary consumption or assets. Similarly, individuals who are poor according to their objectively measured consumption or assets levels, upgrade their relative positions and place themselves in the steps above those at the bottom. How can this “bunching in the middle” puzzle be resolved? Why is it that individuals do not distribute uniformly along the ten steps – i.e. 10 percent for each step – according to their actual (objectively measured) incomes? Shall one dismiss these subjective assessments as simply mistakes or misperceptions, or do they contain useful information? Can this information be used to guide policy design and assessment, especially when inequality and other distributional issues are emerging as key concerns behind the recent polarization of voting and the emergence of populism? These questions motivate this paper.

The discrepancy between objective and subjective indicators of economic standing has been noted before (Ravallion and Lokshin, 2002). In fact, such discrepancy is one of the most contentious issues dividing those who support adopting indicators of social and economic progress that go beyond the narrow measure of economic production (GDP per capita), and those who dismiss these as “rather silly analyses” (Hamermesh, 2004).

The Easterlin paradox originating from his 1974 article – which was asking why well-being does not seem to go up in line with economic growth – is often cited as a catalyst for the attention of the discipline to subjective well-being and for policy makers to devise broad indicators of social and economic progress. By the mid 2010s, the number of papers concerned with happiness economics – some published in top journals – had increased from less than a few to more than 60 per year (MacKerron, 2012). Across contributors to this literature the consensus is that while monetary income is a strong predictor of subjective well-being, the latter is influenced by many other factors including economic security, access to economic opportunities, health status, education, marriage status, relative income vis-à-vis a reference group, among others. These academic discussions influenced the debate in policy circles, more prominently but not exclusively, in the development policy area. Some clear examples include the Human Development Index introduced by

the Human Development Report of 1990 of the United Nations Development Program (Hopkins, 1991), and the following UN focus on the Millennium Development Goals and later the Sustainable Development-Goals (MDGs and SDGs). More recent examples are the Stiglitz-Sen-Fitoussi (2009) commission report on the measurement of economic performance and social progress; the OECD’s “better life index”, or its attention to “inclusive growth”; the World Bank’s publications on rethinking the social contract (Bussolo et al., 2018; Devarajan and Mottaghi, 2015); and the ILO’s agenda for promoting “decent jobs”, and the three volumes of the International Panel on Social Progress . All these initiatives go in the direction of assessing aggregate social progress beyond the standard indicator of GDP growth.

Aside from their growing appeal with policy makers, these approaches based on subjective assessments have also been criticized. Two related strands of criticism are most frequent. The first points out that unobserved factors, such as personality traits, may be important determinants of subjective well-being (Ferrer-i-Carbonell, 2005; Lucas and Diener, 2008). Some go even further and claim that subjective assessments are unreliable because they are influenced by trivial factors such as weather, other short-term events, or the sequencing of the questions in the survey (Kahneman and Krueger, 2006). Deaton (2012) argues that “the SWB [subjective well-being] measures do a better job of monitoring short-run levels of anxiety than the medium-term evolution of the economy” (p. 1). The second frequent criticism underlines the difficulty in establishing causality, especially in cross-sections. Happiness, or subjective well-being, is such an extensive concept that it is difficult to identify whether a variable is causing it or whether it is the other way around (MacKerron, 2012, and references cited therein). Natural experiments which provide exogenous shocks (such as lottery wins in Gardner and Oswald, 2007 or political shifts in Frijters et al., 2004) as well as the availability of panel data may address some of these issues.

This paper does not attempt to settle this debate by providing arguments for one or the other position. We adopt the same view as Ravallion and Lokshin (2002), i.e. that one can learn quite a bit from comparing objective versus subjective data on welfare, and that they should be considered complements, rather than substitutes. In addition, rather than adding to the macro-level research which discusses whether GDP or national happiness should be used as the aggregate index of social progress, our paper contributes to the micro-level research which focusses on distributional issues, such as self-assessed poverty and inequality, or determinants of individuals’ well-being.

Our results extend previous findings of Cojocaru and Diagne (2015) and Ravallion and Lokshin (2002). In more detail, instead of starting, as in these papers, by assuming that the answers to the Cantril’s ladder questions represent a subjective economic welfare variable and then analyzing its reliability, consistency and determinants, our paper’s final objective it to show that this is indeed a valid interpretation. Our paper arrives at

this conclusion in two steps. Firstly, we consider the responses to the Cantril's ladder as if they were a distributional variable. In other words, with this interpretation we need to figure out the puzzle mentioned at the outset of why the responses to the Cantril's ladder deviate from a uniform distribution. We consider two main possible explanations: (i) data issues, and (ii) misinterpretations of the question or individual misperceptions. As none of these explanations is satisfactory, we show that the subjective assessment of one's position in the distribution cannot be interpreted as a subjective assessment of the implicit inequality of the distribution, but rather as a subjective assessment of economic standing, in other words as a subjective economic well-being variable. In this second step, we then show that this interpretation is valid and that such a subjective economic well-being variable behaves as other such variables, and that it even conforms to the relative income approach to explain well-being.

This attention to subjective perceptions of inequality or, as in the case of this paper, the subjective placements on a Cantril's ladder is particularly relevant for redistribution policies. A large empirical literature has shown, for example, that objective measures of inequality have a much weaker link with demand for redistribution than subjective perceptions of inequality, even after controlling for endogeneity (Cruces et al., 2013). In the second part of the paper we indeed show that economic well-being is influenced by economic security, proxied by employment status or other measures of human capital, such as health and education. This indirectly demonstrates that redistribution measures aiming at simply restoring monetary income flows may not be sufficient to restore the economic well-being provided by having a full-time secure type of employment.

This paper is organized as follows. Section 2 presents the data and the main puzzle behind this investigation - the "bunching in the middle". Section 3 discusses two alternative frameworks for interpreting this puzzle: on the one hand, a *distributional* interpretation of the relative ranking; on the other hand, a *well-being* interpretation of the relative ranking. Section 4 discusses the main takeaways of the analysis and concludes.

## 2 Measuring welfare subjectively

### 2.1 Data

There have been different approaches to using subjective data in welfare measurement. A first type of approach used income-based metrics through the Income Evaluation Question (IEQ) or the Minimum Income Question (MIQ). The IEQ asks what income is considered good or bad, while the MIQ asks what income is needed to make ends meet. In both approaches, the welfare indicator is taken to be objectively measured income or expenditure. Education, health, and unemployment do not enter the welfare function. A more-open approach uses instead self-rated welfare such as Cantril's ladder. This paper studies how

individuals subjectively rank themselves compared to others in their country on an economic ladder. Subjective economic ranking is defined as the response to the following question: “Please imagine a 10-step ladder where on the bottom, the first step, stand the poorest 10% people in our country, and on the highest step, the tenth, stand the richest 10% people in our country. On which step of the 10 is your household today?”. It differs from questions on well-being, life satisfaction or objective income rankings. The position on the economic ladder thus reflects a *relative* measure of welfare, because it does not ask respondents about their absolute level of welfare but, rather, how does their welfare compare to that of the richest and the poorest in society.

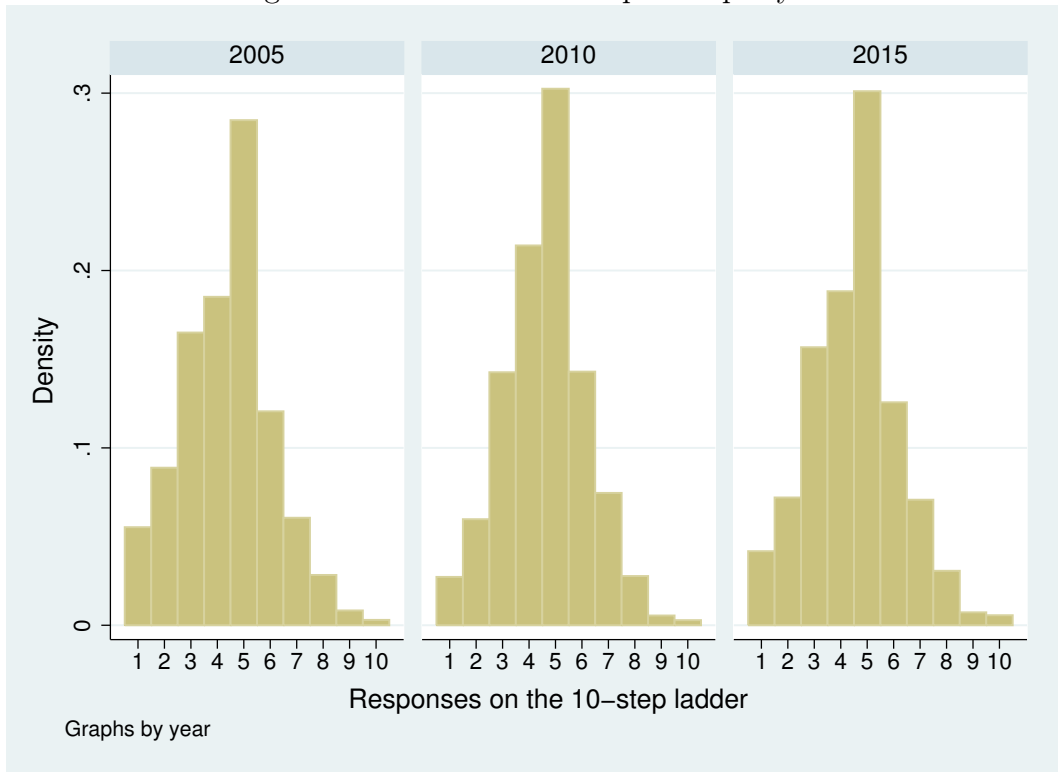
We use the three waves of the Life in Transition Surveys for European countries covering the years 2005, 2010 and 2015. All surveys ask the question used to define our subjective economic standing. LiTS I was conducted in 2006 and surveyed almost 29,000 individuals across 29 countries. LiTS II was conducted in 2010 and surveyed almost 39,000 individuals across 29 countries. LiTS I was conducted in 2015 and surveyed almost 51,000 individuals across 34 countries. Our total sample for the study ranges from about 45,000 to 60,000 individuals – depending on the availability of relevant variables.

In order to contrast the respondent’s subjective ranking with objective information, we rely on the expenditure data collected by LiTS to estimate respondent’s consumption level. Each respondent is then placed in the objective decile of his/her country-year’s consumption distribution that emerges from the LiTS data. We also estimate an asset index based on principal component analysis of asset data also collected by LiTS. The assets that feed into this index are durable goods (like cars, washing machines, motor-bikes and others) but also include some services (like heating or internet connection, for instance). In the same way as consumption, respondents are placed in the objective decile of his/her country-year’s asset index distribution.

## **2.2 A bunching in the middle**

Most individuals tend to feel they are located in the middle of the economic ladder, with responses concentrated in the fourth and fifth decile of the 10-step economic ladder. In 2006, 2010, and 2016, about 30% of the respondents felt they were in the fifth decile, and almost half felt they were either in the fourth or fifth subjective decile. When aggregating all countries, a majority of the population in LiTS countries tend to feel in the middle steps of Cantril’s ladder. Few people feel that they are among the poorest, and symmetrically few people feel they are among the richest. Looking at the distribution of responses per year, a similar bunching in the middle of the 10-step ladder appears for all three years.

Figure 1: Distribution of responses per year



Comparing the joint distribution of the survey’s responses to the Cantril ladder and the deciles calculated from actual consumption levels, as in table 1, show clearly the discrepancies between subjective and objective rankings. If there were a complete equivalence between the consumption-based and the subjective rankings, then the number of respondents in the non-diagonal cells of table 2.2 would be zero. Table 1 shows the percentage of the population in the whole survey that, for each decile of consumption in their specific country, has given a certain response to the 10-step ladder, and vice versa.

The matching of household consumption and subjective ranking rankings is clearly weak. We observe that the percentage of respondents on the diagonal is relatively low. The bold numbers show the percentage of respondents for each decile of consumption that choose a response on the 10-step ladder that is equal to their decile of consumption. 24% of respondents place themselves in the middle of the economic ladder by answering 5 to the question and 57% of the respondents choose either 4, 5 or 6 as a response on the 10-step economic ladder. This proportion varies little with the decile of consumption as the percentage of respondents across all consumption levels is between 21% and 27%. This means that the individual decile of consumption can, at best, only partially explain the perceived decile of economic standing. There is a clear bunching in the middle for all categories of consumption levels. Differences appear when we look at the distribution of consumption deciles for each response (first row). Only 17% of those choosing step 1 in the ladder, i.e. those reporting that they feel at the bottom of the scale are actually in the first, poorest, decile of consumption. This means that 83% of people who are actually



Table 1: Matrix of responses on the economic ladder versus decile of consumption (2015)

|                  | Decile of Consumption |           |           |           |                  |           |           |           |           |           | <b>Total</b> |
|------------------|-----------------------|-----------|-----------|-----------|------------------|-----------|-----------|-----------|-----------|-----------|--------------|
|                  | 1                     | 2         | 3         | 4         | 5                | 6         | 7         | 8         | 9         | 10        |              |
| <b>Responses</b> |                       |           |           |           |                  |           |           |           |           |           |              |
| 1                | 17                    | 10        | 11        | 11        | 13               | 11        | 11        | 7         | 5         | 5         | 100          |
|                  | <b>5</b>              | <b>3</b>  | <b>3</b>  | <b>3</b>  | <b>4</b>         | <b>3</b>  | <b>3</b>  | <b>2</b>  | <b>2</b>  | <b>2</b>  | <b>3</b>     |
| 2                | 8                     | 17        | 18        | 12        | 9                | 9         | 7         | 9         | 7         | 3         | 100          |
|                  | 7                     | <b>14</b> | 15        | 10        | 7                | 7         | 6         | 8         | 6         | 3         | <b>8</b>     |
| 3                | 12                    | 12        | 9         | 10        | 10               | 12        | 10        | 10        | 8         | 8         | 100          |
|                  | 17                    | 16        | <b>12</b> | 14        | 14               | 16        | 14        | 14        | 11        | 11        | <b>14</b>    |
| 4                | 10                    | 10        | 10        | 10        | 11               | 10        | 11        | 8         | 10        | 8         | 100          |
|                  | 18                    | 17        | 18        | <b>18</b> | 19               | 18        | 20        | 15        | 17        | 15        | <b>17</b>    |
| 5                | 11                    | 10        | 11        | 11        | 10               | 9         | 8         | 11        | 9         | 10        | 100          |
|                  | <u>26</u>             | <u>24</u> | <u>25</u> | <u>27</u> | <b><u>25</u></b> | <u>22</u> | <u>21</u> | <u>26</u> | <u>22</u> | <u>24</u> | <u>24</u>    |
| 6                | 8                     | 9         | 9         | 7         | 9                | 11        | 10        | 10        | 13        | 12        | 100          |
|                  | 14                    | 14        | 14        | 11        | 15               | <b>17</b> | 17        | 17        | 21        | 20        | <b>16</b>    |
| 7                | 7                     | 8         | 8         | 9         | 9                | 10        | 10        | 12        | 12        | 15        | 100          |
|                  | 7                     | 8         | 8         | 9         | 9                | 10        | <b>11</b> | 12        | 12        | 15        | <b>10</b>    |
| 8                | 10                    | 6         | 6         | 8         | 11               | 7         | 12        | 11        | 14        | 15        | 100          |
|                  | 5                     | 3         | 3         | 4         | 6                | 4         | 6         | <b>5</b>  | 7         | 7         | <b>5</b>     |
| 9                | 11                    | 7         | 7         | 13        | 12               | 11        | 13        | 6         | 5         | 15        | 100          |
|                  | 1                     | 1         | 1         | 2         | 2                | 1         | 2         | 1         | <b>1</b>  | 2         | <b>1</b>     |
| 10               | 3                     | 4         | 9         | 12        | 4                | 9         | 13        | 12        | 14        | 19        | 100          |
|                  | 0                     | 0         | 1         | 1         | 0                | 1         | 1         | 1         | 1         | <b>1</b>  | <b>1</b>     |
| <b>Total</b>     | 10                    | 10        | 10        | 10        | 10               | 10        | 10        | 10        | 10        | 10        | 100          |
|                  | 100                   | 100       | 100       | 100       | 100              | 100       | 100       | 100       | 100       | 100       | 100          |

*Source:* LiTS III with the decile of consumption measured at the country level.

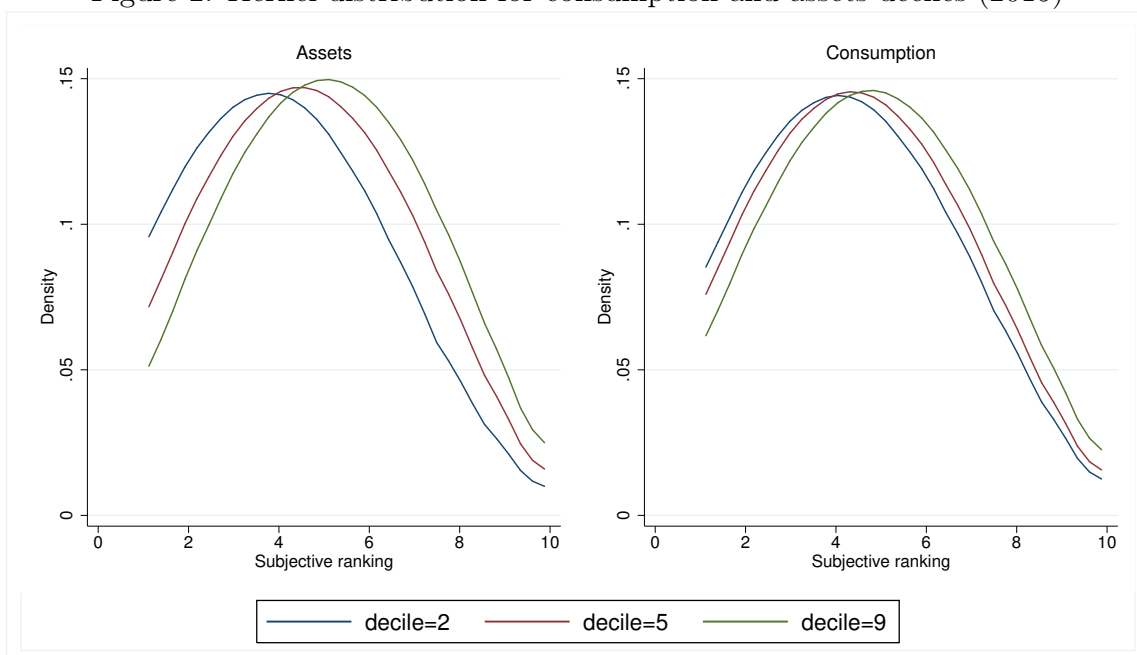
*Note:* The table covers the year 2016. The same tables for the years 2006 and 2010 show similar patterns. The top number in each row shows how people who have placed themselves on that row-specific step of the ladder are distributed across the ten (objective) deciles calculated from consumption levels. For example, 17% of those that chose step 1 are also objectively in the first decile of consumption of their country, and the remaining 83% belong to other deciles. Considering the columns, the bottom number of each column corresponds to how people belonging to a column-specific consumption decile distribute themselves according to the responses they give to the ladder question. For example, only 5% of those in the first decile of consumption have given 1 as a response, and 95% feel richer than they actually are.

better off, feel poor; among these 10 percent, belonging to the top richest 9th and 10th decile, report feeling poor. Conversely, only 5% of those who are objectively poor report feeling poor. So, 95% who are objectively poor do not subjectively feel poor.

The same type of “bunching in the middle” is observed if, instead of consumption, an asset index is used as a measure of objective welfare. Figure 2 shows the kernel distributions of the responses for a given decile of assets or consumption levels. For both assets and consumption levels, the distribution reproduces the above described “bunching in the middle”. Comparing responses from individuals that are objectively poor (decile=2), “middle-class” (decile=5), or objectively rich (decile=9), the distributions vary. The distribution of responses move right for higher decile of consumption or assets. However, there is more variability when individuals are ranked according to their assets than according to their consumption.

In sum, there is clearly a positive relationship between objective welfare -measured by consumption or assets- and subjective ranking – but this relationship is far from perfect. This paper intends to investigate this further.

Figure 2: Kernel distribution for consumption and assets deciles (2015)



### 3 Two analytical frameworks for understanding individuals’ subjective ranking

The evidence presented in the previous section suggests a weak but positive relationship between self-rated welfare ranking (individuals’ perception about their position in the welfare distribution) and standard objective measures of consumption or assets. The difference is, however, sizeable. The focus of our study is to understand the drivers of such

difference, and there are two broad ways in which individuals' answers can be read. On the one hand, we can assume that, when asked about their position in Cantril's ladder, individuals' answers have to be understood as such - where do they place themselves with respect to other members of society. Being in the fifth step of the ladder would imply having roughly half of the population "above" in terms of welfare and half of the population "below". In essence, the answer to the question is *distributional*. On the other hand, that answer can be understood as their position with respect to some ideal benchmark - for instance, being "absolutely rich" or "absolutely poor". Being in the fifth step of the ladder would mean that individuals find themselves to be as far in terms of welfare from the richest and from the poorest of their country. In this sense, the position in Cantril's ladder refers more to individuals' perception of their *well-being*, even though the question is not phrased in those terms.

The reasons behind the difference between perceived and objective welfare ranking will be very distinct depending on whether it is assumed that individuals' self-reported positions in Cantril's ladder are *distributional* or that they refer to their *well-being*. These represent two different analytical frameworks and in the next subsections we will address them separately.

### **3.1 *Distributional* explanations of the difference between objective and subjective ranking**

If we assume that individuals' answers refer to their perceived position in the welfare distribution, then any explanation will ultimately have to address why responses are "normally" distributed, rather than uniformly distributed.

There are several possible explanations: on the one hand there are data issues: (i) the survey data miss rich and poor people, thus more people are actually in the middle because the sample does not include the full population. On the other hand, there are misperceptions or misinterpretations of the questions: (ii) people simply do not know, and in absence of any additional information they bunch in the middle; (iii) people answer the question referring to their permanent income, rather than their current situation, and the dispersion of permanent income is lower than that of the current income. Lastly, it could be possible that individuals' responses are based on their objective position not within the overall population within a smaller reference group - this reference group being specific for individuals who share some kind of characteristic, like their education level, their gender or their geographical location. This is (iv) the reference group explanation.

**Missing data.** First, the survey might miss persons that would rank themselves in the lowest and highest steps of the ladder. Household surveys like LiTS suffer from a known

“tail bias”, by which the poorest and richest are not adequately surveyed – either they are not present in the survey at all, or they choose to either not respond or misreport about their income or consumption levels. Bollinger et al. (2019) find, indeed, a U-shaped relationship between earnings nonresponse rate in the main US household survey (CPS) and actual earnings as recorded in administrative sources. However, the non-response rates they find cannot mirror a “bunching in the middle” like the one found for subjective ranking in LiTS. For instance, in LiTS round III, corresponding to year 2016, only 0.57% of the respondents position themselves in decile 10. Under the assumption that the response rate of individuals in decile 5 -which represent 30% of the sample- is 100%, this would imply that the nonresponse rate in decile 10 is close to 98%. For decile 9, the implied nonresponse rate would be 97%. For decile 1, the poorest decile, the implied nonresponse rate would be 86%. The maximum nonresponse rate Bollinger et al. find in the top-most and bottom-most percentiles in the United States is 30% - and only for percentiles 95 and above (well into decile 10) and percentile 10 and below (decile 1). Thus, the nonresponse rates compatible with a bunching in the middle as the one observed in the subjective ranking variable are well beyond those factually observed in the extreme percentiles of the income distribution in the United States. Also, if the LiTS survey would be missing almost entirely the top two deciles and the bottom decile of the income distribution (plus sizeable portions of other deciles) of each country then survey’s claim of representativeness at the country level would be seriously in doubt. Gimpelson and Treisman (2018) analyze this point in an indirect way by contrasting LiTS round II respondents’ assets information -car and second house ownership- with their subjective ranking: in the poorest countries included in LiTS round II -Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova and Ukraine- only a third of the households own a car according to official statistics, and given the average price of a car these households are among the richest. Still, they find that 60% of those who own a car in those countries position themselves in decile 5 or below. A similar pattern arises when looking at those who report owning a second house. In this sense, what emerges is that the survey does capture individuals clearly belonging to the top deciles of the distribution, but these individuals’ subjective ranking is simply different from their objective one.

**Ignorance.** A simpler reason for the “bunching in the middle” may be plain ignorance. Research in psychology has shown that individuals, when faced with *a priori* identical choices, may systematically choose the “middle option” (Christenfeld, 1995); this has been found also in consumer product choice (Valenzuela and Raghurir, 2009) and in answer patterns to multiple-choice tests (Attali and Bar-Hillel, 2003). In this sense, if individuals are completely ignorant about the shape of the income distribution, all the choices in front of them (the ten steps of the ladder) may look the same and, therefore, may end up choosing the middle steps just as a result of a cognitive bias. As we will see later on in this

paper, the objective ranking of individuals does have a small but statistically significant correlation with the subjective ranking - the probability of the objectively rich to place themselves in the upper steps of the ladder is higher than those objectively poor, and the opposite applies for the probability of choosing the lower steps of the ladder. Therefore, while ignorance can lead to a bunching in the middle, the fact that objective information does have an effect on subjective assessments implies that individuals do engage in some heuristic beyond simply choosing the “middle option”.

**Misperceptions: permanent versus transitory income** When asked about their position in the income distribution, individuals may respond based on their permanent income rather than their current, transitory income. The permanent income hypothesis (Friedman, 1957) assumes that, at any point in time, the income of an agent is the sum of a permanent component and a transitory component. The exact interpretation of these two components varies in the literature, but in general the permanent component is assumed to be explained by factors that don’t change in the long run –like education or gender– and the transitory component includes those that may vary in the short run –like employment status. While permanent income cannot be directly observed, an asset index may be a relevant proxy of it. Figure 2 has shown that, while the “bunching in the middle” is slightly less prominent when individuals are ranked according to their asset index rather than their objective consumption –something that indicates that individuals may actually be thinking in terms of permanent income–, the concentration in the middle steps of the ladder is still widely prevalent. How can a “bunching in the middle” arise in these circumstances?

In its most comprehensive form the transitory component of income is assumed to have an expected value of zero and therefore the mean of current income and the mean of permanent income are assumed to be the same, the only difference between both variables being their variance. Under certain conditions, then, individuals may position themselves in the middle deciles with a higher probability if they respond based on their permanent income rather than on their current income, which includes the transitory component. The first condition for this to happen is that the variance of permanent income must be smaller than the variance of current income. This implies that the mass of individuals within a given interval around the mean is bigger for permanent income than for current income. The second condition is that individuals must interpret the steps of Cantril’s ladder in terms of current income, i.e. that they interpret each step as including 10% of the population in terms of current income. Under these conditions a “bunching in the middle” may arise, as the number of individuals whose permanent income falls within, say, the boundaries of deciles 4 to 6 of current income, is higher than the number of individuals whose current income falls within that same interval (which includes 30% of the population by definition). Note that the two conditions must be satisfied for

this phenomenon to occur: if individuals use the concept of permanent income both to interpret the steps of Cantril’s ladder and to answer the question about their position in it, then the distribution of answers should be uniform as the difference in variance is irrelevant.

While the first condition has found some empirical support (Hall and Mishkin, 1982), the second condition requires that individuals use two different definitions of income, one to interpret the question and another to answer it. It is beyond the scope of this paper to test for this kind of behavioral patterns but, to the best of our knowledge, this specific type of “cognitive dissonance” has not been reported in literature. We therefore conclude that, even if individuals were responding based on their permanent income rather than on their current income, the “bunching in the middle” should not be a feature of the data.

**Misperceptions: reference group versus overall population** Individuals may estimate their position in the income distribution by extrapolating to the whole population their position in the income distribution of a reference group. Cruces et al. (2013) show that, under certain distributional assumptions, this behavior could give rise to a “bunching in the middle”. In particular, in the presence of first-order stochastic dominance of high income reference groups’ income distributions over that of the whole population (and a symmetric dominance of low income reference groups’ income distributions), individuals in high income reference groups will underestimate their true position and individuals in low income reference groups will overestimate their true position. Reference groups can be of different kinds, but the literature has established that geographical reference groups are the most relevant when comparing welfare (Clark et al., 2008, 2009; Clark and Senik, 2010).

Table 2 presents a test of this mechanism using LiTS data. LiTS surveys, being only representative at the country level, don’t provide sufficient sample size for an accurate estimation of respondents’ position in the income distribution of their locality, which is the reference group used in Cruces et al.’s analysis. Given the information available in LiTS we propose two alternative reference groups: (1) individuals with the same educational level (defined as either university education or less than university education) living in the same region within a country; (2) individuals with the same age (for which there are three age groups - below 35 years, between 35 and 55, and over 55 years of age) and same educational level within a country. Whenever the respondent’s region is not available, the country as a whole is used. A simple linear regression of the perceived decile as dependent variable, and the objective decile and the rank within the reference group as independent variables is estimated by OLS. The results of table 2 show that, conditional on the inclusion of the objective consumption decile and a series of individual level controls, the respondent’s rank within either type of reference group is not correlated positively with the perceived position in the income distribution - if anything, in

some cases the correlation is surprisingly negative. This result contrasts with that found by Cruces et al., who find that the rank in the reference group is strongly and positively correlated with the perceived position in the overall population’s income distribution and, moreover, the objective position has no explanatory power. The main difference between their and our results may lie in the fact that, as mentioned before, their reference group is geographically narrower than ours.

Table 2: Testing for the reference groups hypothesis (consumption)

|                                      | (1)   | (2)                  | (3)                   | (4)                  | (5)                 | (6)                   |
|--------------------------------------|---|----------------------|-----------------------|----------------------|---------------------|-----------------------|
|                                      | Dependent variable: perceived decile in the income distribution |                      |                       |                      |                     |                       |
| Objective decile<br>(consumption)    | 0.116**<br>(0.00806)  |                      |                       | 0.154**<br>(0.0184)  | 0.135**<br>(0.0144) | 0.185**<br>(0.0173)   |
| Decile in Region/Educ.<br>ref. group |   | 0.108**<br>(0.00674) |                       | -0.0274*<br>(0.0146) |                     | -0.00854<br>(0.0173)  |
| Decile in Age/Educ.<br>ref. group    |   |                      | 0.0995**<br>(0.00923) |                      | -0.0223<br>(0.0158) | -0.0595**<br>(0.0184) |
| <i>Indiv.Controls</i>                | Yes   | Yes                  | Yes                   | Yes                  | Yes                 | Yes                   |
| <i>CountryFE</i>                     | Yes   | Yes                  | Yes                   | Yes                  | Yes                 | Yes                   |
| <i>YearFE</i>                        | Yes   | Yes                  | Yes                   | Yes                  | Yes                 | Yes                   |
| <i>N</i>                             | 60726   | 60990                | 60987                 | 60729                | 60726               | 60729                 |
| <i>R</i> <sup>2</sup>                | 0.130   | 0.107                | 0.120                 | 0.118                | 0.131               | 0.120                 |

Standard errors clustered at the country-year level in parentheses. Individual controls include age, gender, religion and household composition of the respondent

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Powdthavee (2009) has argued that individuals’ subjective ranking may be influenced by their relative position within their reference group in terms of assets - which are more visible than income. In table 3 we repeat the analysis of table 32 but using instead information on individuals’ and their reference group’s asset index. Here the results show that both the respondent’s position in the population’s asset index distribution and its position within either reference group are correlated with the subjective ranking. In this sense, these results are in line with those of Powdthavee (2009). However, the partial correlation coefficients are low - not exceeding 0.2. This suggests that, still, variables other than the individual’s position in the whole population or the reference group explain a substantial amount of the subjective ranking. We conclude, thus, by arguing that while the reference group hypothesis -particularly when it refers to assets rather than consumption- may explain some of the “bunching in the middle”, it is far from an exhaustive explanation.

Table 3: Testing for the reference groups hypothesis (assets)

|                                      | (1)   | (2)                  | (3)                  | (4)                  | (5)                  | (6)                  |
|--------------------------------------|---|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                      | Dependent variable: perceived decile in the income distribution |                      |                      |                      |                      |                      |
| Objective decile<br>(asset index)    | 0.188**<br>(0.0101)   |                      |                      | 0.125**<br>(0.0164)  | 0.116**<br>(0.0186)  | 0.105**<br>(0.0174)  |
| Decile in Age/Educ.<br>ref. group    |   | 0.160**<br>(0.00665) |                      | 0.0665**<br>(0.0127) |                      | 0.0462**<br>(0.0170) |
| Decile in Region/Educ.<br>ref. group |   |                      | 0.170**<br>(0.00702) |                      | 0.0752**<br>(0.0138) | 0.0397**<br>(0.0175) |
| <i>Indiv.Controls</i>                | Yes   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>CountryFE</i>                     | Yes   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>YearFE</i>                        | Yes   | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>N</i>                             | 60987   | 57964                | 57964                | 57964                | 57964                | 57964                |
| <i>R</i> <sup>2</sup>                | 0.177   | 0.175                | 0.178                | 0.183                | 0.183                | 0.184                |

Standard errors clustered at the country-year level in parentheses. Individual controls include age, gender, religion and household composition of the respondent

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

### 3.2 Subjective ranking as a measure of *well-being*

An alternative explanation to the bunching in the middle is offered by changing the interpretation of the Cantril's ladder question. In this alternative case, the underlying variable measured by the responses is not anymore of a distributional nature, but it is of a subjective well-being nature. Individuals, rather than answering in distributional terms, i.e. attempting to figure out to which part of the distribution of consumption they belong, they interpret the question in terms of a standard well-being question. Such a question usually provides a range from a minimum to a maximum intensity that respondent can choose from. In fact, in the LiTS surveys, the question asking individuals their position on Cantril's ladder is phrased in a way that is ambiguous about whether each step should include 10% of the population. The reference to a 10-percent-sized group is explicitly made only with respect to the top step which is said to include the 10% of the richest, and the bottom step with 10% of the poorest people. It seems quite plausible that the subjective ranking lacks a direct distributional meaning and should be read more as an economic measure of well-being. In fact, this interpretation of the Cantril's ladder has been common in a stream of the literature starting by Ravallion and Lokshin (2002), who refer to it as the Economic Welfare Question (EWQ). Bunching in the middle is less surprising for a well-being measure since this is also observed in other non-economic happiness variables .

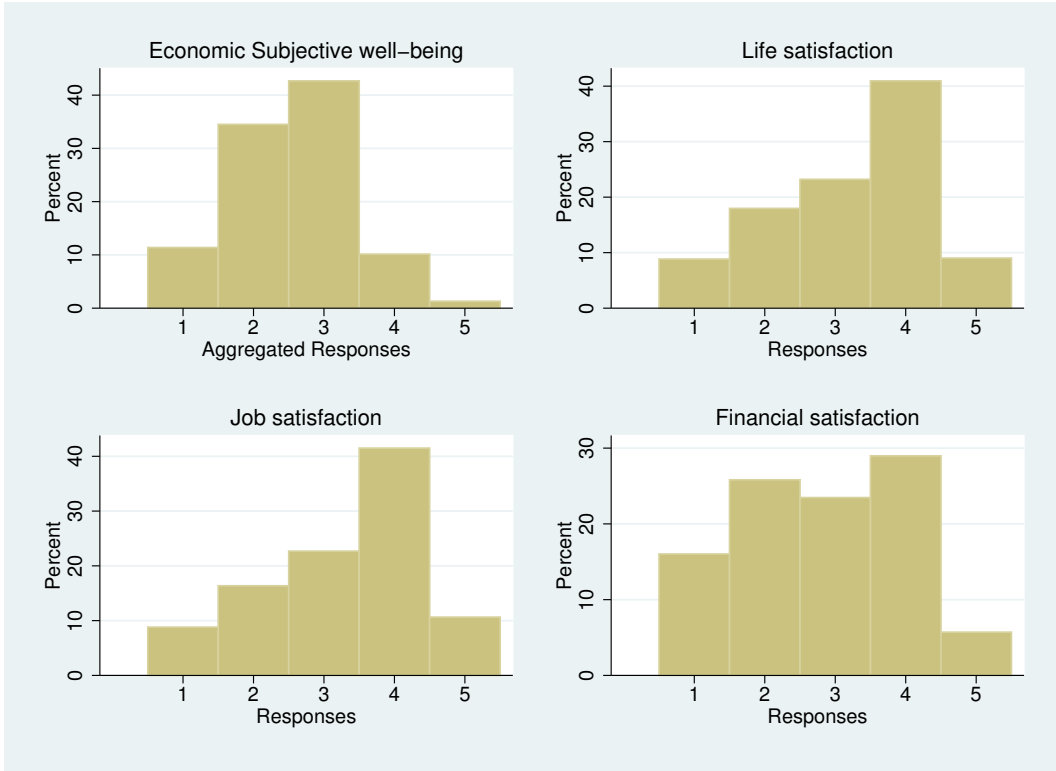
This section will start by showing that, indeed, there is a similarity between the distribution of individuals' subjective ranking and that of other well-being measures such



as job or life satisfaction. It will then show that in evaluating their position in the ladder, people use or are strongly influenced by variables other than their objective income ranking; for instance, they are influenced by their experience and their health status. These results are in line with what Ravallion and Lokshin (2002) find for the Russian Federation using the Russia Longitudinal Monitoring Survey and with the analysis of Cojocaru and Diagne (2015) for the second round of the Life in Transition Survey, which is part of our sample. Lastly, this section concludes by showing that the subjective ranking, just as other happiness variables, is influenced by individual's relative income with respect to their reference group.

**Comparing subjective ranking to other well-being measures** The Life in Transition Survey includes three measures of well-being other than the subjective ranking in Cantril's ladder. These are: (i) financial wellbeing ("Are you satisfied with your financial life?"), (ii) job satisfaction ("Are you satisfied with your job?"), and (iii) overall life satisfaction ("Are you satisfied with your life?"). Answers to these questions are measured in a five step scale. Figure 3 shows the distribution of answers for our measure of interest (aggregated to five steps for comparison) and the three other well-being measures. A bunching towards the upper middle can be observed in the measures of job and life satisfaction, while in the case of financial satisfaction the distribution is more spread out. The distribution of the subjective ranking does not appear to be an outlier when compared to these other measures: while the mean of the distribution is not exactly the same, in all cases there is a certain degree of concentration among specific values, which are typically not far from the middle of the scale.

Figure 3: The distribution of life satisfaction (LiTS III)



Source: LiTS III. The first graph shows the distribution for the subjective ranking. The others focus on other subjective questions. The distribution of responses to the questions "Are you satisfied with your life" (upper right), "Are you satisfied with your job?" (lower left), and "Are you satisfied with your financial situation?" (lower right) with responses (1) Strongly disagree, (2) Disagree, (3) Neither agree or disagree, (4) Agree, and (5) Strongly agree.

### The individual determinants of the subjective ranking: the importance of non-income factors

A more compelling evidence of the well-being nature of the subjective ranking variable is the fact that factors other than current income affect its variability. Ravallion and Lokshin (2002) have shown that individuals' economic welfare as self-assessed by their subjective ranking is influenced by non-economic factors such as their health, their education and their perspectives about future welfare. Similarly, Cojocaru and Diagne (2015) show that, apart from the factors mentioned before, subjective ranking is also correlated with beliefs about society – namely, whether connections are vital to get ahead in life and whether the cause of need in society is either (lack of) luck, laziness or injustice.

In this section we extend the analysis carried out in the literature by quantifying the effect that factors other than current income have on individuals' self-rated welfare in a common scale. We propose to estimate the following specification for individual  $i$  in country  $c$

$$PerceivedDecile_{i,c} = a + \beta_C Objective\ Economic\ Decile_{i,c} + \gamma X_i + \sum_c \delta_c + \sum_t \delta_t + u$$

with the Objective Economic Decile being the decile of consumption or the decile of asset ownership. The sample consists of the repeated cross-section of the three rounds of the Life in Transition Survey. Limits to this method have been discussed by Ravallion (2012). Given the ordinal nature of the dependent variable, we follow Schroder (2017) by comparing both ordered logit and OLS results of the estimates. The variables that included in the regression are:

- Individual characteristics: gender, age, education, rural versus urban, family characteristics (number of members, marriage, share of females, share of old persons), the work profile (having worked in the last 12 months or not).
- Individual beliefs and perceptions: type of religion, the main reason why there are people in need, the most important factor to succeed in life, views on the market economy, perceptions about past intergenerational mobility and perceptions that the next generation will do better.
- Objective ranking: per-capita consumption per country or assets.
- Country and time dummies:  $\delta_c$  for country  $c$  and  $\delta_t$  for time  $t$ .

The results of table 4 show that, as expected, there is a correlation between the objective economic decile and the subjective ranking in the economic ladder - but most of the non-income factors included in the regression also have a significant correlation with the subjective ranking. In this sense, individuals' perception about their economic welfare is associated to a combination of individual and social circumstances beyond their objective economic situation. The next paragraphs provide a more detailed description of these results.

Table 4: Perceived decile and non-income factors

|                                | (1)                                      | (2)                  | (3)                   | (4)                  |
|--------------------------------|--|----------------------|-----------------------|----------------------|
|                                | O. Logit                                 | O. Logit             | OLS                   | OLS                  |
|                                | Dep. variable: perceived economic decile |                      |                       |                      |
| Objective decile (consumption) | 0.124**<br>(0.00911)                     |                      | 0.0956**<br>(0.00728) |                      |
| Objective decile (assets)      |  | 0.192**<br>(0.0131)  |                       | 0.146**<br>(0.00921) |
| Ln(age)                        | -0.154**<br>(0.0420)                     | -0.137**<br>(0.0422) | -0.115**<br>(0.0327)  | -0.102**<br>(0.0329) |
| Female                         | 0.0418                                   | 0.0459               | 0.0284                | 0.0326               |

|                             |          |          |           |           |
|-----------------------------|----------|----------|-----------|-----------|
|                             | (0.0284) | (0.0280) | (0.0235)  | (0.0229)  |
| Has university degree       | 0.491**  | 0.404**  | 0.403**   | 0.322**   |
|                             | (0.0457) | (0.0425) | (0.0343)  | (0.0314)  |
| In full-time work           | 0.174**  | 0.133**  | 0.139**   | 0.105**   |
|                             | (0.0341) | (0.0353) | (0.0284)  | (0.0281)  |
| In good health              | 0.348**  | 0.300**  | 0.269**   | 0.227**   |
|                             | (0.0195) | (0.0189) | (0.0158)  | (0.0157)  |
| Not married                 | -0.243** | -0.245** | -0.193**  | -0.189**  |
|                             | (0.0352) | (0.0338) | (0.0270)  | (0.0258)  |
| Ln(Household size)          | 0.428**  | 0.0208   | 0.325**   | 0.0157    |
|                             | (0.0535) | (0.0410) | (0.0409)  | (0.0308)  |
| Share of children in HH     | -0.192** | -0.221** | -0.149**  | -0.164**  |
|                             | (0.0613) | (0.0736) | (0.0508)  | (0.0585)  |
| Share of female in HH       | -0.0227  | -0.00974 | -0.0127   | 0.00541   |
|                             | (0.0487) | (0.0488) | (0.0390)  | (0.0384)  |
| Share of elderly in HH      | 0.125**  | 0.0525   | 0.102**   | 0.0465    |
|                             | (0.0513) | (0.0507) | (0.0386)  | (0.0367)  |
| Believes in free market     | 0.138**  | 0.126**  | 0.106**   | 0.0922**  |
|                             | (0.0343) | (0.0344) | (0.0272)  | (0.0268)  |
| Reason for success:         |          |          |           |           |
| Effort and hard work (ref.) |          |          |           |           |
| Intelligence                | 0.123**  | 0.101**  | 0.0969**  | 0.0733**  |
|                             | (0.0343) | (0.0334) | (0.0276)  | (0.0254)  |
| Political connections       | -0.115** | -0.105** | -0.0784** | -0.0733** |
|                             | (0.0473) | (0.0463) | (0.0385)  | (0.0367)  |
| Breaking the law            | -0.302** | -0.294** | -0.224**  | -0.217**  |
|                             | (0.0488) | (0.0505) | (0.0391)  | (0.0389)  |
| Other                       | -0.390** | -0.370** | -0.296**  | -0.277**  |
|                             | (0.108)  | (0.102)  | (0.0800)  | (0.0748)  |
| Cause of need in society:   |          |          |           |           |
| No luck (ref.)              |          |          |           |           |
| Laziness                    | 0.166**  | 0.133**  | 0.145**   | 0.118**   |
|                             | (0.0543) | (0.0533) | (0.0431)  | (0.0404)  |

|                                |          |          |          |          |
|--------------------------------|----------|----------|----------|----------|
| Injustice                      | -0.253** | -0.247** | -0.192** | -0.181** |
|                                | (0.0515) | (0.0528) | (0.0417) | (0.0413) |
| It's inevitable                | 0.0173   | -0.00971 | 0.0300   | 0.00971  |
|                                | (0.0547) | (0.0549) | (0.0436) | (0.0419) |
| Other                          | -0.141** | -0.156** | -0.0882  | -0.101*  |
|                                | (0.0700) | (0.0714) | (0.0547) | (0.0545) |
| Expectations of mobility:      |          |          |          |          |
| children will fare worse (ref) |          |          |          |          |
| Children will fare the same    | -0.514** | -0.466** | -0.413** | -0.371** |
|                                | (0.0410) | (0.0425) | (0.0347) | (0.0354) |
| Children will fare better      | 0.889**  | 0.900**  | 0.754**  | 0.749**  |
|                                | (0.0416) | (0.0397) | (0.0379) | (0.0370) |
| <i>N</i>                       | 45134    | 45313    | 45134    | 45313    |
| <i>R</i> <sup>2</sup>          |          |          | 0.236    | 0.262    |
| pseudo <i>R</i> <sup>2</sup>   | 0.072    | 0.082    |          |          |

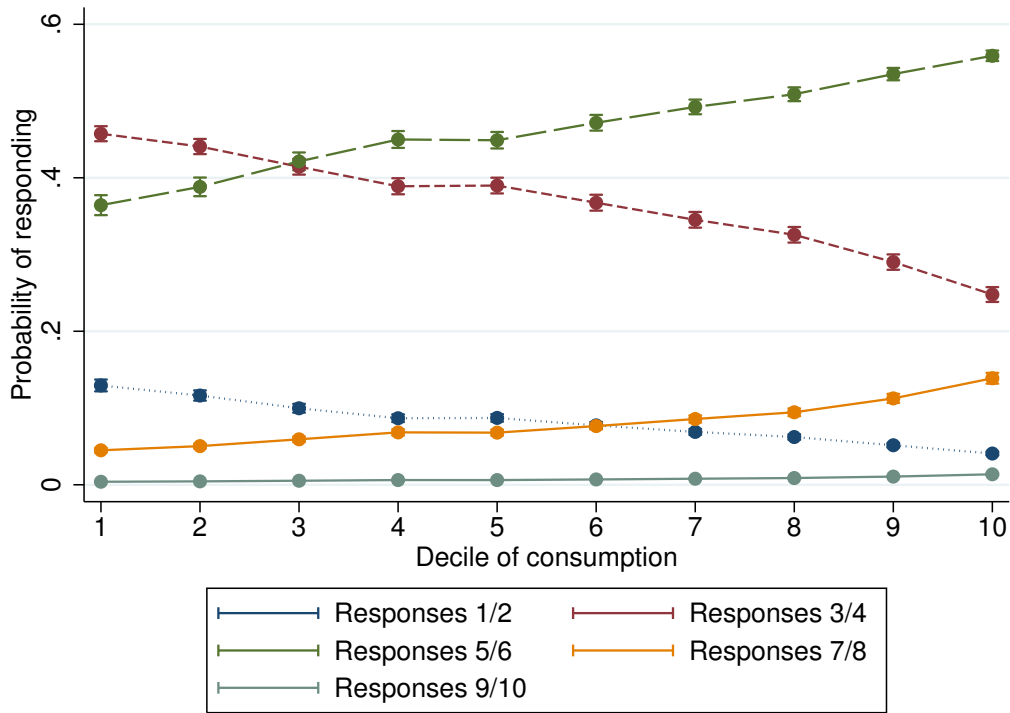
Standard errors clustered at the country-year level in parentheses

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

**Decile of consumption and subjective ranking** Self-rated economic welfare is not detached from respondents' objective economic situation. Based on the results of the ordered logit specification shown in column 1 of table 4, figure 4 plots the probability of individuals positioning themselves on different steps of the economic ladder based on their objective decile in consumption. The higher their objective positioning in the consumption distribution, the higher their subjective positioning - but at a very mild rate. The probability of self-rating in steps 3 and 4 in the economic ladder decrease from more than 40% for those whose consumption is in the lowest decile of the distribution to around 25% for those in the highest decile of the objective consumption distribution. Similarly, the probability of self-rating in steps 5 and 6 rises from slightly below 40% for those in the first decile to close to 60% for those in the highest decile. Moving from the bottom to the top of the consumption distribution does make individuals position themselves in higher steps of the economic ladder, but those in the highest decile still position themselves overwhelmingly in the middle steps.

**Employment, health, education and subjective ranking** Individual circumstances beyond objective levels of consumption influence the subjective ranking, such as employment, health and education. These are some of the individuals characteristics that have a clear effect on individuals' perceived position in the economic ladder. Figure 5 shows that

Figure 4: The impact of the decile of consumption on the economic standing

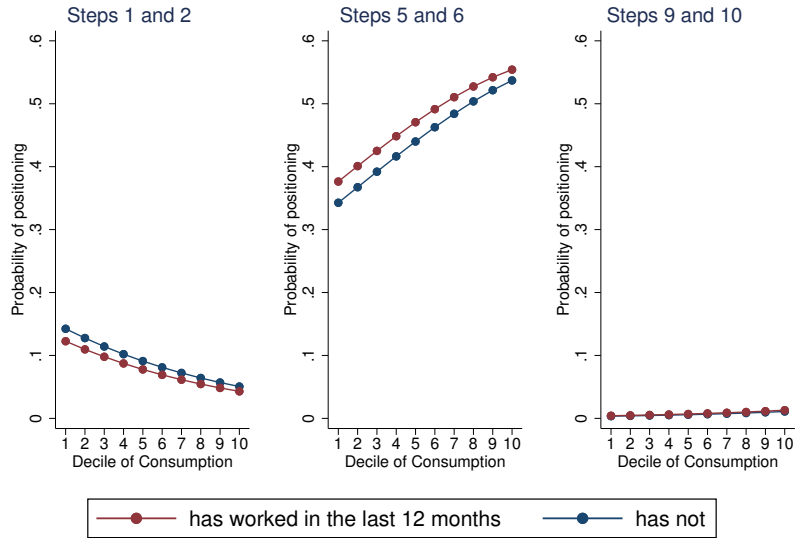


Note: LiTS data from 2005, 2010 and 2015. The y-axis represents the average adjusted predictions of economic standing for each decile of consumption. Responses on a 10-step scale are aggregated to a 5-step scale for presentational purposes

having been employed at least one month in the previous year increases the probability of respondents to position themselves in the middle steps of the economic ladder and decreases the probability of positioning in the bottom, while no effect is visible for the probability of positioning in the top. A sense of the magnitude of this effect can be given by the fact that the probability of choosing the steps 1 and 2 of the ladder for someone in decile 7 with no employment is the same as for someone in decile 4 with full employment - that is, the effect of not having an employment on the probability of “feeling poor” is equivalent to a change in three deciles of objective consumption.

The effect is stronger when looking at the (self-rated) health status as shown in figure 6. For the same objective level of consumption, individuals who declare to be bad health have up to 10 percentage points more probability of ranking themselves in the bottom of the ladder than those who declare to be in good health. The effect is of the opposite sign and larger magnitude for the probability of ranking themselves in the middle of the ladder: respondents declaring to be in good health are 20 percentage points more probable to position in the middle than those declaring to be in bad health. Lastly, figure 7 look at the effect of having a university degree on subjective ranking. As for the case of having worked and feeling in good health, having a university degree increases the probability of choosing the middle steps of the economic ladder and decreases the probability of choosing

Figure 5: Employment and subjective ranking  
Probability of positioning in given steps of the economic ladder



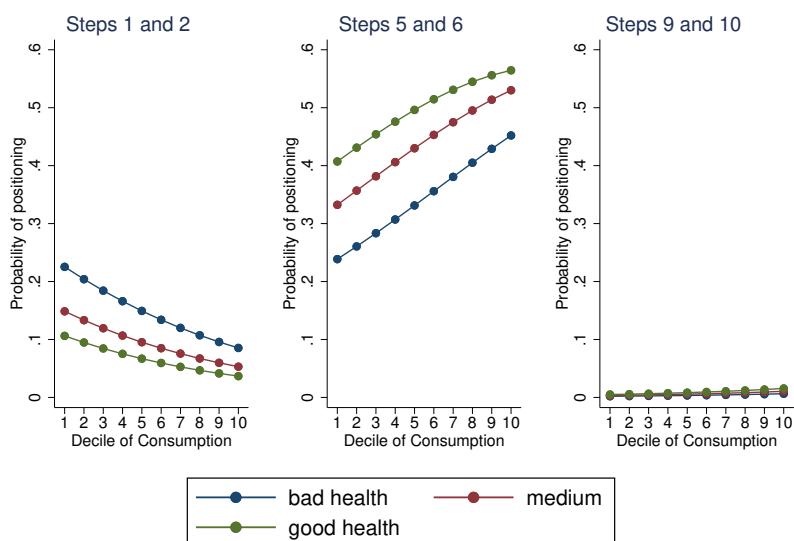
Note: this graph plots the probability of respondents positioning themselves in different steps of the economic ladder by objective decile of consumption and employment status. The left panel plots the probability of choosing steps 1 and 2; the center panel plots the probability of choosing steps 5 and 6 and the right panel plots the probability of choosing steps 9 and 10.

the bottom steps for every objective consumption decile. However, the effect is larger in magnitude at the bottom of the objective distribution than at the top. For objectively poor respondents having a university degree is associated with a higher subjective ranking, whereas for objectively rich respondents having or not such degree makes a small difference. In this sense, the boost to self-rated economic welfare given by educational attainment appears to be concentrated among the poorest.

**The effect of beliefs and perceptions on subjective welfare** Beliefs and expectations also may play a role in individuals' perception about their economic welfare. Figure 8 shows how individuals' subjective ranking varies according to what they believe are the main reasons for success in the country they live in. Those that believe that intelligence, effort and hard work are the reason for success tend to position themselves in higher steps of the economic ladder than those who believe that political connections or breaking the law are the only way to succeed. A similar result, not shown here, holds for beliefs about the cause of need in society: those who think that laziness and lack of willpower are the cause of need tend to position themselves more in the middle steps and less in the lowest steps than those who think that injustice or lack of luck is the cause of need. Expectations of mobility are another important factor that affects perceptions of economic standing. LiTS includes two questions on past and future mobility: one question asks respondents their degree of agreement with the statement that "I have done better than my parents" and another questions asks their degree of agreement with "Children who are

Figure 6: Health and subjective ranking

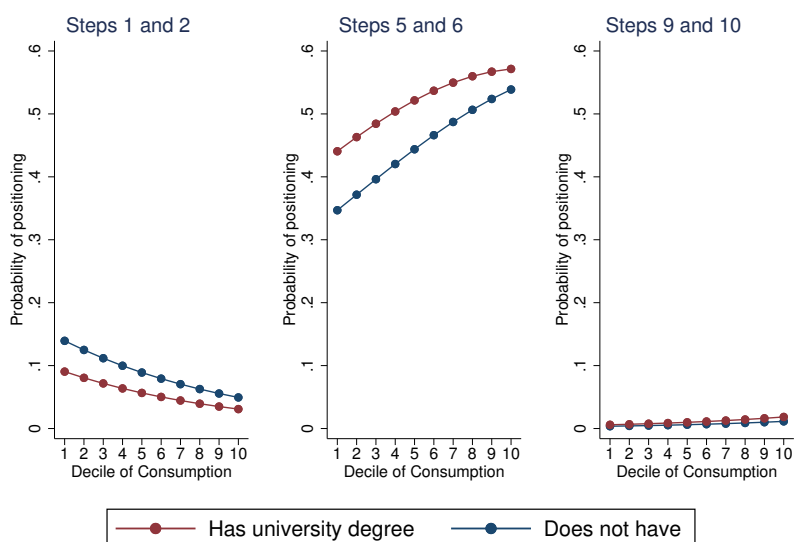
Probability of positioning in given steps of the economic ladder



Note: this graph plots the probability of respondents positioning themselves in different steps of the economic ladder by objective decile of consumption and self-rated health status. The left panel plots the probability of choosing steps 1 and 2; the center panel plots the probability of choosing steps 5 and 6 and the right panel plots the probability of choosing steps 9 and 10.

Figure 7: Education and subjective ranking

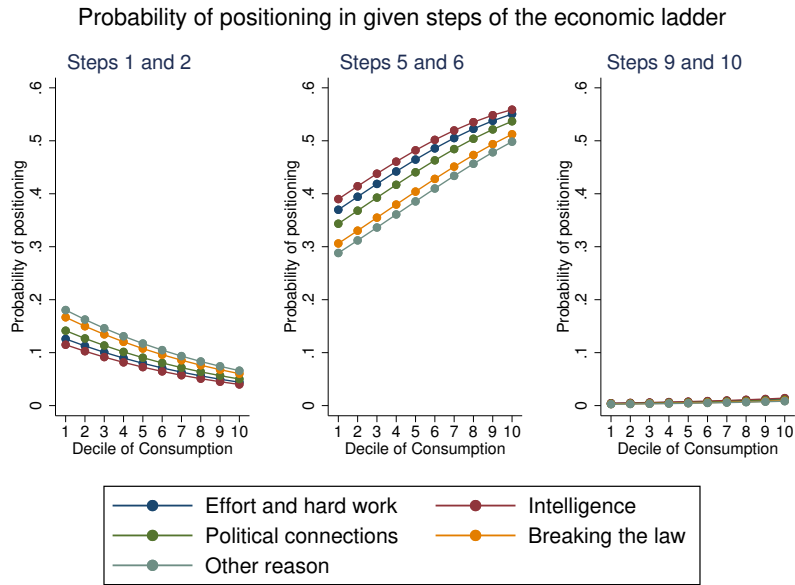
Probability of positioning in given steps of the economic ladder



Note: this graph plots the probability of respondents positioning themselves in different steps of the economic ladder by objective decile of consumption and holding of university degree. The left panel plots the probability of choosing steps 1 and 2; the center panel plots the probability of choosing steps 5 and 6 and the right panel plots the probability of choosing steps 9 and 10.



Figure 8: Beliefs about the reason for success and subjective ranking

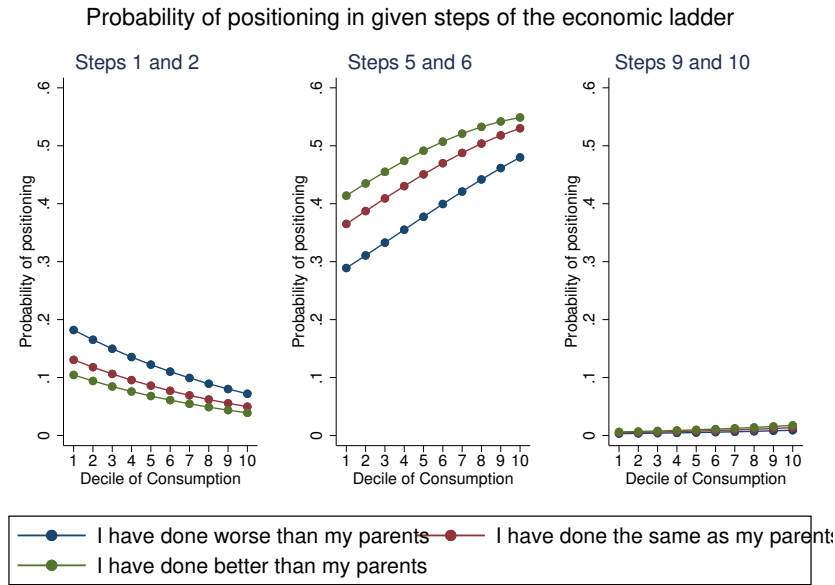


Note: this graph plots the probability of respondents positioning themselves in different steps of the economic ladder by objective decile of consumption and beliefs about the reason for success in the respondent's country. The left panel plots the probability of choosing steps 1 and 2; the center panel plots the probability of choosing steps 5 and 6 and the right panel plots the probability of choosing steps 9 and 10.

born now will have a better life than my generation". Perceptions of past mobility have a significant and large effect on the subjective ranking. A more positive perception of past inter-generational mobility increases the probabilities of individuals to choose the middle steps of the ladder and decreases the probabilities to choose a lower economic standing (steps 1 or 2 in the economic ladder) - see figure 9. For the case of expected mobility (results not shown here), the magnitude of the differences are statistically significant but of a much smaller magnitude, suggesting that personal experience is a more relevant driver of self-rated economic welfare than expectations of future mobility.

**Subjective ranking and the relative income theory** In this part we test whether individuals' subjective welfare ranking behaves in the same way as other happiness variables with respect to relative income. The relative income hypothesis argues that individuals' well-being is a function of their ranking within their reference group – that is, it is not only their absolute income that is relevant for well-being, but also their income relative to that of the reference group they assume they belong to. Recent papers have shown that income rank is a better predictor of life satisfaction and, most important, it has a stronger theoretical foundation (Boyce et al., 2010; Brown et al., 2008; Burkhauser et al., 2016; Ferrer-i-Carbonell, 2005). Instead of looking at the income only, they rely on the rank-income hypothesis, according to which utility or satisfaction increases with the ranked position of the income within a reference or comparison group. In this section we

Figure 9: Past intergenerational mobility and subjective ranking



Note: this graph plots the probability of respondents positioning themselves in different steps of the economic ladder by objective decile of consumption and perceptions on whether the respondent has done better than his/her parents. The left panel plots the probability of choosing steps 1 and 2; the center panel plots the probability of choosing steps 5 and 6 and the right panel plots the probability of choosing steps 9 and 10.

propose to look at whether subjective ranking shows the same pattern as other well-being measures in their relationship with relative income using LiTS data.

In section 3.1 we have already discussed the role of ranking within reference groups as a source of information for individuals' perception about their position in the income distribution. In the analysis that we carry out in the following lines we are using a different working assumption – that individuals' response about their position in the income ladder should be understood as a measure of well-being. It is, thus, a different analysis, for which the empirical specifications are different. In order to study the role of relative income on self-rated economic welfare, we can assume the following relation for each individual

$$Perceived\ Position = SUBJ(c, Rel, X)$$

with *Perceived Position* the response on the economic ladder, *c* stands for the per-capita consumption and *Rel* for the relative position of an individual in his or her reference group. The vector of variables *X* includes the same variables as in the previous section. In terms of reference groups, we choose to look at the same we referred to in section 3.1: the region-education group, where education is defined as having or not a university degree, and the age-education group, where age groups are three (below 35 years of age, between 35 and 55, and above 55). The rank of each individual is given by the rank of his consumption level among the consumption level of other members of the chosen reference group. We normalize ranks from 0 to 1, being 0 the lowest consumption level in

the reference group, 1 the highest and 0.5 the median.

We test three specifications with an ordered logit in table 5. The first specification is the simplest and only includes the consumption level of the individual. Given the results for relative consumption (objective consumption decile) we have seen before, we expect that also the absolute consumption level to be positively related to the subjective ranking. We introduce consumption in logarithmic form, following what has been done for income in Ferrer-i-Carbonell (2005)<sup>1</sup>. The second and third specifications adds the rank of each individual in the pre-defined reference group - region-education (columns 2 and 4) or age-education (columns 3 and 5).

We start by exploring the specification which includes ranking in the reference group in a linear way (columns 2 and 3). Results are similar for both pre-defined reference groups. The consumption level has a positive effect on individual self-rated economic welfare only when ranks in reference groups are not included in the regressions (column 1). When ranks are included, the coefficients for the consumption level becomes negative. For both reference groups (region/education and age/education), the coefficients for the rank of each individual in his or her reference group is positive. A higher position in a comparison group tends to increase the perceived position of individuals. .

Next, we differentiate between two groups: those who are ranked above the middle and those who are below. The assumption is that the distance to the middle (the median in this case) also matters, which is not captured by having only one variable of ranks. We adapt the rank-income hypothesis to the results in Ferrer-i-Carbonell (2005) who creates two groups and uses the distance to the average income in the reference group as a new variable. We test whether the distance to the middle has a positive effect for the rich group and a negative effect for the poor group. There is no difference across groups in terms of size given that the rank variable has been defined between 0 and 1, and the median rank defined as 0.5. Columns 4 and 5 show the results of introducing two variables for each reference group: the distance to the middle for the individuals below and the distance to the middle for the individuals above. The middle is here given by the rank 0.5.

Similarly to Ferrer-i-Carbonell (2005), our results shows that the subjective ranking improves as the distance to the middle increases for individuals above the middle of their reference group, but worsens as the distance to the middle increases for the individuals below. We can also notice an asymmetry of the distance effect. Being more distant from the median has a slightly larger effect on the self-rated economic welfare for the indi-

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<sup>1</sup>Note that this is a crucial difference with respect to the specification tested in table 3.1. In that table two measures of relative consumption were used as regressors - the individual's position in the overall population's consumption distribution and the position in the reference group's consumption distribution. That analysis was aimed at understanding which of the two relative measures was more informative of individuals' perception about their own position in the distribution. In table 5 we include an absolute measure of consumption and a relative one, and the interpretation we do off the dependent variable is not of a distributional variable but of a well-being variable.

viduals above compared to those below the median individual. The effect is almost the same for the reference group defined by region and education, whereas it differs for the reference group defined by the age and education.

Table 5: Subjective ranking and relative income

|  | (1)                                      | (2)                    | (3)                    | (4)                    | (5)                    |
|--|--|------------------------|------------------------|------------------------|------------------------|
|  | Dep. variable: perceived economic decile |                        |                        |                        |                        |
| Ln(Consumption per capita)                       | 0.0403**<br>(0.00650)                    | -0.0582**<br>(0.00714) | -0.0929**<br>(0.00787) | -0.0582**<br>(0.00714) | -0.0914**<br>(0.00789) |
| rank Reg-Edu                                     |  | 1.232**<br>(0.0369)    |                        |                        |                        |
| rank Age-Edu                                     |  |                        | 1.293**<br>(0.0429)    |                        |                        |
| "Rich" distance Reg-Edu<br>(distance from above) |  |                        |                        | 1.239**<br>(0.0672)    |                        |
| "Poor" distance Reg-Edu<br>(distance from below) |  |                        |                        | -1.223**<br>(0.0715)   |                        |
| "Rich" distance Age-Edu<br>(distance from above) |  |                        |                        |                        | 1.479**<br>(0.0688)    |
| "Poor" distance Age-Edu<br>(distance from below) |  |                        |                        |                        | -1.066**<br>(0.0785)   |
| In full-time work                                | 0.236**<br>(0.0204)                      | 0.181**<br>(0.0205)    | 0.175**<br>(0.0205)    | 0.181**<br>(0.0205)    | 0.174**<br>(0.0205)    |
| In good health                                   | 0.360**<br>(0.0113)                      | 0.355**<br>(0.0113)    | 0.354**<br>(0.0113)    | 0.355**<br>(0.0113)    | 0.355**<br>(0.0113)    |
| Ln(Age)  | -0.160**<br>(0.0282)                     | -0.152**<br>(0.0282)   | -0.137**<br>(0.0283)   | -0.152**<br>(0.0282)   | -0.138**<br>(0.0283)   |
| Female   | 0.0520**<br>(0.0185)                     | 0.0505**<br>(0.0185)   | 0.0464**<br>(0.0185)   | 0.0505**<br>(0.0185)   | 0.0470**<br>(0.0185)   |
| Has university degree                            | 0.604**<br>(0.0238)                      | 0.645**<br>(0.0238)    | 0.650**<br>(0.0238)    | 0.645**<br>(0.0238)    | 0.650**<br>(0.0238)    |
| Ln(Household size)                               | 0.117**<br>(0.0222)                      | 0.406**<br>(0.0238)    | 0.345**<br>(0.0235)    | 0.406**<br>(0.0239)    | 0.348**<br>(0.0235)    |

|                         |                      |                      |                      |                      |                      |
|-------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Share of children in HH | -0.325**<br>(0.0491) | -0.193**<br>(0.0492) | -0.217**<br>(0.0492) | -0.193**<br>(0.0492) | -0.210**<br>(0.0492) |
| Share of female in HH   | -0.0589<br>(0.0398)  | -0.0171<br>(0.0398)  | -0.0307<br>(0.0398)  | -0.0169<br>(0.0398)  | -0.0290<br>(0.0398)  |
| Share of elderly in HH  | 0.0510<br>(0.0351)   | 0.119**<br>(0.0352)  | 0.0960**<br>(0.0352) | 0.119**<br>(0.0352)  | 0.102**<br>(0.0352)  |
| Not married             | -0.294**<br>(0.0219) | -0.240**<br>(0.0219) | -0.247**<br>(0.0219) | -0.240**<br>(0.0219) | -0.250**<br>(0.0219) |
| Country and Year FE     | Yes                  | Yes                  | Yes                  | Yes                  | Yes                  |
| <i>N</i>                | 45313                | 45313                | 45313                | 45313                | 45313                |

Standard errors in parentheses \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

## 4 Conclusion

The main contributions of this paper are to show why the starting point of previous papers, i.e. that responses to the Cantril’s ladder question represent a subjective well-being variable, is a valid point, and to study, at the micro level, the determinants of this variable. These determinants include not only the (relative) levels of monetary income (or consumption or assets) but also a series of other factors linked to economic security and fairness. These findings have clear policy relevance. A more ‘literal’ interpretation of the responses of Cantril’s ladder as a distributional variable requires dealing with the puzzle of the “bunching in the middle” of such responses, namely with the fact that they deviate from a uniform distribution. In other words, if individuals knew exactly their position in Cantril’s ladder, their responses would distribute in equal shares of 10 percent along its 10 steps and not in larger shares on the middle steps.

Some that adopt this literal interpretation (Gimpelson and Treisman, 2018) conclude that individuals simply make mistakes or misperceive the underlying distribution. While this may be true in some cases, there may be other potential explanations for the discrepancy between objective and subjective assessments of the distribution. We focus on two possible candidates. The data collected under-sample the tails of the distribution, missing the poorest and richest individuals or, equivalently, these people misreport their actual incomes (or consumption levels). The second possible explanation is that individuals genuinely use different reference points when answering the question. They either compare themselves with a reference group, a smaller peers’ group that is not the whole country, or consider their current income irrelevant for the comparison because it does not reflect their more stable permanent income. We show that the available data do not support these explanations and we thus reject them.

If the “bunching in the middle” puzzle cannot be resolved adjusting, as just mentioned, the underlying subjective distributional assessments, does a different interpretation of such assessments – not as a distributional variable but as an economic well-being variable – help and is such interpretation valid? Researchers on the determinants of the demand for redistribution (Bussolo et al., 2019; Gimpelson and Treisman, 2018) have repeatedly shown that subjective perceptions of inequality have stronger links with demand for redistribution than objectively measured inequality does. Some (Cruces et al., 2013), using variables similar to Cantril’s ladder responses, show that perceptions about the distribution – appropriately exogenized using an experiment – are driving demand for redistribution.

These findings shift the research focus from attempting to justify individuals’ misperceptions to understand how these perceptions are formed, their determinants, and how their meaning can ultimately be interpreted. The second part of the paper provides compelling evidence in support of the interpretation of the responses to Cantril’s ladder as a subjective economic well-being variable. These responses not only are distributed normally as other evaluative variables of subjective well-being, but they also have correlations with the same set of factors that are linked to overall subjective well-being. Finally, Cantril’s ladder responses also conform with the relative income hypothesis. They tend to increase or decrease in line with shifts of relative level of incomes rather than with shifts of the absolute level.

The correlations with economic security and fairness have clear policy implications. We find that the difference in the probability of feeling poor (i.e. choosing the bottom two steps of the ladder) for two persons who are in the same decile according to their objective consumption, but that differ in terms of their employment status – one being full time employed, the other not – can be as large as three “objective” deciles. This means that people value having a secure full-time employment as much as an increase in their consumption that would move them three deciles up. Similarly, a decrease in social mobility for certain groups, signaling a shift towards a less fair society, is accompanied by an increase in the likelihood of these groups to feel poorer than they objectively are. These examples immediately suggest that a policy in the form of monetary compensations for the loss of such security, or increased unfairness, may need to be much larger than one would initially assume and may not work. People may feel subjectively poor even if they are not monetarily poor and demand for redistribution may increase even if objective inequality has not changed.

## References

- Attali, Yigal and Maya Bar-Hillel**, “Guess Where: The Position of Correct Answers in Multiple-Choice Test Items as a Psychometric Variable,” *Journal of Educational Measurement*, 2003, *40* (2), 109–128.
- Bollinger, Christopher R., Barry T. Hirsch, Charles M. Hokayem, and James P. Ziliak**, “Trouble in the Tails? What We Know about Earnings Nonresponse 30 Years after Lillard, Smith, and Welch,” *Journal of Political Economy*, October 2019, *127* (5), 2143–2185.
- Boyce, Christopher J., Gordon D.A. Brown, and Simon C. Moore**, “Money and Happiness,” *Psychological Science*, apr 2010, *21* (4), 471–475.
- Brown, Gordon D A, Jonathan Gardner, Andrew J. Oswald, and Jing Qian**, “Does wage rank affect employees’ well-being?,” *Industrial Relations*, jul 2008, *47* (3), 355–389.
- Burkhauser, Richard V, Jan-Emmanuel De Neve, and Nattavudh Powdthavee**, “Top Incomes and Human Well-being around the World,” 2016.
- Bussolo, Maurizio, Ada Ferrer i Carbonell, Anna Giolbas, and Ivan Torre**, *I Perceive Therefore I Demand: The Formation of Inequality Perceptions and Demand for Redistribution*, World Bank Policy Research Working Paper 8926, 2019.
- , **Maria E. Davalos, Vito Peragine, and Ramya Sundaram**, *Toward a new social contract: Taking on distributional tensions in Europe and Central Asia.*, World Bank, 2018.
- Christenfeld, Nicholas**, “Choices from Identical Options,” *Psychological Science*, 1995, *6* (1), 50–55.
- Clark, Andrew E. and Claudia Senik**, “Who Compares to Whom? The Anatomy of Income Comparisons in Europe\*,” *The Economic Journal*, may 2010, *120* (544), 573–594.
- , **Nicolai Kristensen, and Niels Westergård-Nielsen**, “Economic Satisfaction and Income Rank in Small Neighbourhoods,” *Journal of the European Economic Association*, apr 2009, *7* (2-3), 519–527.
- Clark, Andrew E, Paul Frijters, and Michael A Shields**, “Relative Income, Happiness, and Utility: An Explanation for the Easterlin Paradox and Other Puzzles,” *Journal of Economic Literature*, feb 2008, *46* (1), 95–144.
- Cojocaru, Alexandru and Mame Fatou Diagne**, “How reliable and consistent are subjective measures of welfare in Europe and Central Asia? Evidence from the second Life in Transition Survey,” *Economics of Transition*, 2015, *23* (1), 75–103.
- Cruces, Guillermo, Ricardo Perez-Truglia, and Martin Tetaz**, “Biased perceptions of income distribution and preferences for redistribution: Evidence from a survey experiment,” *Journal of Public Economics*, 2013, *98*, 100–112.

- Deaton, Angus**, “The financial crisis and the well-being of Americans,” *Oxford Economic Papers*, 2012, 64, 1–26.
- Devarajan, Shanta and Lili Mottaghi**, *Middle East and North Africa Economic Monitor: Towards a New Social Contract*, Vol. October, World Bank, 2015.
- Easterlin, Richard**, “Does economic growth improve the human lot? Some empirical evidence,” in P. David and M.W. Reder, eds., *Nations and Households in Economic Growth: Essays in Honour of Moses Abramovitz*, New York: Academic Press, 1974, pp. 89–125.
- Ferrer-i-Carbonell, Ada**, “Income and well-being: an empirical analysis of the comparison income effect,” *Journal of Public Economics*, 2005, 89 (5-6), 997–1019.
- Friedman, Milton**, *A Theory of the Consumption Function*, Princeton University Press, 1957.
- Frijters, Paul, John P. Haisken-DeNew, and Michael A. Shields**, “Money does matter! Evidence from increasing real income and life satisfaction in East Germany following reunification,” *American Economic Review*, 2004, 94 (3), 730–740.
- Gardner, Jonathan and Andrew J. Oswald**, “Money and mental wellbeing: a longitudinal study of medium-sized lottery wins,” *Journal of Health Economics*, 2007, 26 (1), 49–60.
- Gimpelson, Vladimir and Daniel Treisman**, “Misperceiving Inequality,” *Economics & Politics*, March 2018, 30 (1), 27–54.
- Hall, Robert E. and Frederic S. Mishkin**, “The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households,” *Econometrica*, March 1982, 50 (2), 461–481.
- Hamermesh, Daniel S.**, “Subjective Outcomes in Economics,” *Southern Economic Journal*, 2004, 71 (1), 1–11.
- Hopkins, Michael**, “Human development revisited: A new UNDP report,” *World Development*, 1991, 19 (10), 1469–1473.
- Kahneman, Daniel and Alan B. Krueger**, “Developments in the measurement of subjective well-being,” *Journal of Economic Perspectives*, 2006, 20 (1), 3–24.
- Lucas, Richard E. and Ed Diener**, “Personality and subjective well-being,” in O. P. John, R. W. Robins, and L.A. Pervin, eds., *Handbook of personality: Theory and research*, The Guilford Press, 2008, pp. 795–814.
- MacKerron, George**, “Happiness Economics from 35,000 Feet,” *Journal of Economic Surveys*, 2012, 26 (4), 705–735.
- Powdthavee, Nattavudh**, “How important is rank to individual perception of economic standing? A within-community analysis,” *The Journal of Economic Inequality*, sep 2009, 7 (3), 225–248.
- Ravallion, Martin**, *Poor, or Just Feeling Poor? On Using Subjective Data to measure poverty* Policy Research Working Paper, The World Bank, feb 2012.



- **and Michael Lokshin**, “Self-rated economic welfare in Russia,” *European Economic Review*, 2002, 46 (8), 1453–1473.
- Schröder, Carsten and Shlomo Yitzhaki**, “Revisiting the evidence for cardinal treatment of ordinal variables,” *European Economic Review*, 2017, 92, 337–358.
- Stiglitz, Joseph, Amartya Sen, and Jean-Paul Fitoussi**, *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Government of the French Republic, 2009.
- Valenzuela, Ana and Priya Raghurir**, “Position-based beliefs: The center-stage effect,” *Journal of Consumer Psychology*, April 2009, 19 (2), 185–196.