Gendered Well-Being: Cross-Sectional Evidence from Poor Urban Households in India

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Abstract

This paper examines the well-being of women relative to men in poor urban populations in India. Are women happier when their objective circumstances improve? Based on a primary survey of low-income households in the Indian capital Delhi, the paper finds that education and employment are positively related to declining well-being among women compared to men. The gender-varying impact of factors such as education and employment on well-being can be explained by societal norms that constrain women more than men. We show that the gender varying correlations are robust to omitted variables bias.

Keywords: Gender, Well-Being, Poverty, Social Norms, Urban

JEL Classification: B54, J16, I31

1 Introduction

This paper is an analysis of the subjective well-being of women relative to men in low-income urban households in India. The principal question is whether the relation between well-being and its correlates (e.g., education and employment) are gendered. To address this question, the paper uses primary data from a survey of over 1,000 respondents across slums in Delhi. The question is important for at least two reasons. First, women and men may have different preferences. Second, entrenched social attitudes may not permit women opportunities equal to men.

The paper straddles two strands of the happiness literature: studies that examine life satisfaction among the poor in developing economies, and the literature that explicitly focuses on women's well-being. The latter also includes research that examines how the well-being of women changes relative to men. This paper is concerned with the same question, but with reference to low-income households in developing economies.

The existing literature presents contradictory findings. Analyzing the data on life satisfaction during the period 1970–2005, Stevenson and Wolfers (2009) find that women's happiness declined both absolutely and relative to men in the United States. This is a paradox because the lives of women in the United States have improved over the past 35 years according to many objective measures. Stevenson and Wolfers (2009) show this paradox to exist for all income groups, including those at the bottom of the income distribution. Although there is no such aggregate evidence for developing countries, some existing studies (cited in the next section) suggestive a similar paradox because they have found greater economic opportunities are associated with lower life satisfaction for women. These studies have not, however, looked at how these opportunities have affected women's life satisfaction relative to men.

A contrary finding from a cross-country analysis comes from Graham and Chattopadhyay (2013). Using a worldwide sample from the Gallup World Poll, they find that self-reported well-being for women relative to men is higher in developed countries and for more educated cohorts. An open question is whether this relation reflects the impact of income and education alone or whether it also due to country-specific omitted factors especially relating to legal rights and social norms. Another contrary result comes from Asadullah et al. (2018) who find that women systematically report being happier than men in China. The observed happiness gender gap is puzzling given that women are generally disadvantaged in the labor market. This finding is widely referred to as the paradox of the contented female worker (Crosby 1982).

A preview of our findings is as follows. We surveyed low-income urban households residing in the slums of Delhi. As migrants from neighboring states dominate these slums, the variation in relevant social norms and rights are minor relative to a cross-country sample (such as in Graham and Chattopadhyay 2013). Our first finding is that the well-being of educated women (relative to educated men) is significantly less than the well-being of uneducated women (relative to uneducated men). A second finding in a similar vein is that the well-being of working women (relative to working men) is less than the well-being of women out of the labor force (relative to men out of the labor force).

This paper contributes to the slender literature on gender variation in the determinants of life satisfaction. The point of departure for our work is the focus on the low-income population in developing economies. Methodologically, the paper estimates ordered probit and ordered logit model where gender interacts with the right-hand side variables of the probit/logit equation. However, because our data is drawn from a cross-section, unobservable heterogeneity can

contaminate the results. We use the methods of Altonji et al. (2005) to examine the robustness of results to omitted variable bias.

2 Relation to Literature[1]

There is a growing literature on subjective well-being in developing countries that focuses on low-income households. The reported life satisfaction of the poor often turns out to be high (i.e., comparable to the subjective well-being of the richer inhabitants of developed countries) despite their poor living conditions. The poor are presumably adapted to the lives they experience, and they form their expectations with respect to a very narrowly defined reference group such as the village/locality where they live (Banerjee et al. 2004; Knight et al. 2009). Income turns out to be an important determinant of life satisfaction of the individuals at the bottom of the income distribution. But there are other correlates like education, employment, public facilities and socio-demographic characteristics. The correlates of subjective well-being also vary between their impact on poor and rich (Asadullah and Chaudhury 2012; Asadullah et al. 2018; Knight et al. 2009). The role of relative income or relative consumption on the subjective well-being in a poor society has been examined by Fafchamps and Shilpi (2008), Ravallion and Lokshin (2010), Kingdon and Knight (2007), and Guillen-Royo (2011). Subjective well-being and its determinants for low-income households in developing countries has been examined by many

[1] We followed a systematic literature review process to identify the relevant literature. The papers cited here were extracted from Google Scholar. The first search process used the phrases "subjective well-being", "low income" and "developing countries". This list was further winnowed by successively using the phrases "economics" and "women". By this process, we obtained papers relating to women's subjective well-being in developing economies. But this process excluded research papers on women's subjective well-being in the developed world. It also excluded papers that contain the keyword "women's happiness" instead of "women's subjective well-being" as these terms are interchangeably used in the literature. Therefore, in order to get an expanded list of papers on women's happiness/subjective well-being, we followed another search process using the keywords "subjective well-being", "women", "female happiness", and "economics". We identify the relevant literature from this multiple search process and cite the relevant papers for our research question. The research question is identified from the research gap found in the literature.

other studies (examples include Camfield et al. 2009; Cramm et al. 2010; Guillen-Royo et al. 2013;Knight and Gunatilaka 2012;Reyes-García et al. 2016; Rojas 2009).

Evaluating the progress of the lives of women is an important research agenda in development economics, and the subjective well-being literature has been extended in that direction. Women's subjective well-being has been examined for both developed and developing countries. Blanchflower and Oswald (2004) provide evidence that, in the United States and Britain, men report lower happiness scores than women using data from the General Social Survey 1972–1998 and the Eurobarometer British Survey from 1975 to1986. In a seminal paper, Stevenson and Wolfers (2009) find that women's happiness declined both absolutely and relative to men in the United States between 1970 and 2005. This happened despite the improvement of women's lives in the United States according to many objective measures. Those measures include increasing female labor force participation, a rising real wage rate for women relative to men, and increasing freedom in family life. Stevenson and Wolfers (2009) refer to this as the paradox of women's declining relative well-being. They conjecture several explanations for their finding. The decline in female happiness may be because of a doubling of the total workload – that is, an increase in women's participation in the paid labor force without any shift away from household production. It may also be due to the fact that, with the increase in gender equality over time, the reference group for women expands – that is, it also includes men, so women may find their relative position lower than when their reference group includes only women. Women's rising aspiration can also play a key role. There can be many other factors that may lead to the finding of declining female happiness. As shown by Stevenson and Wolfers (2009), the paradox of declining female happiness turns out to be true for all income groups, and hence it also applies to the poorest of the income distribution.

The paradoxical finding of declining female happiness has been contradicted by some cross-country studies. Considering a wide selection of countries spanning the period 1981–2008, Lima (2011) finds a happiness gender gap, favouring women throughout the world. Using a worldwide sample from the Gallup World Poll, Graham and Chattopadhyay (2013) find that as one moves from lower income to higher income countries or from less educated to more educated cohorts, life satisfaction of women increases more than that of men. We can also interpret this finding as the increase in the life satisfaction of the women relative to men when objective measures (e.g., income and education) improve. The cross-country evidence by Graham and Chattopadhyay (2013) is contradicted by Zweig (2015). Using the Gallup World Poll data and running country-specific regressions for 73 countries, she finds that the magnitude of the female–male happiness gap is not associated with economic development or women's rights and that there are no systematic patterns by geography or primary religion. Other notable cross-country studies regarding gendered well-being include Arrosa and Gandelman (2016) and Mencarini and Sironi (2010).

In the context of developing countries, there are studies that discuss the variation across gender of the relative importance of factors correlated with self-reported well-being measures (Asadullah et al. 2018;Hu 2013; Knight et al. 2009;Jung 2014;Qian and Qian 2015). But these authors examine the gendered well-being for all income groups. In this paper, the focus is on low-income households.

On the other hand, some studies explicitly investigate subjective well-being and its determinants for women who belong to the low-income group. Van den Broeck and Maertens (2017) find that employment has contradictory effects on women's life satisfaction in rural Senegal. While a higher income increases the happiness of women, employment reduces their

satisfaction through increased workload and low job satisfaction. As argued by these authors, conservative gender norms are a crucial factor that explains their finding. De Hoop et al. (2014) find a significant negative impact of self-help group membership on subjective well-being in the villages of the Indian state of Odisha, where there are relatively conservative gender norms. Enhanced autonomy is not a sufficient condition for increases in women's subjective well-being. The utility loss entailed by the failure to conform to the dominant gender norm can be so large that it results in a decline in subjective well-being, particularly if gender norms are conservative. But neither of these studies discuss the variation between men and women in measuring the impact of economic or social measures on life satisfaction.

This paper adds to the slender literature on how the life satisfaction of women moves relative to that of men. The context is a developing country (India) and low-income urban households (in Delhi). The data is a cross-section and our question is whether objective economic circumstances (measured by employment and education) affect women and men differently.

Before concluding this section, it should be mentioned that, as in the existing literature, we have used the terms "subjective well-being", "well-being", "self-reported well-being", "life satisfaction", "satisfaction" and "happiness" interchangeably. We distinguish between experienced (emotions) and remembered well-being (life satisfaction). Our analysis in this paper is based entirely on remembered evaluation as captured by life satisfaction evaluation.

3 The Survey and the Questionnaire

For our survey, we chose 29 slums after stratifying Delhi into four zones: South Delhi, East Delhi, West Delhi and North Delhi. For each slum, 35 households were interviewed.[2]

From each household, we attempted to interview a female and a male (aged 20 years or above). However, there was often either a female or a male available for interview but not both. We surveyed 989 households across 29 slums during the entire month of March and the first week of April 2016. The total number of respondents surveyed was 1,278, of whom 771 (60% of the total sample) were female respondents and 507 (40% of the total sample) were male respondents. The map in Figure 1 shows the coverage of the area for our survey. Details about the survey, the sampling technique and the list of all the slums surveyed are in the Appendix.

The survey asked the following question to assess life satisfaction: "In general terms would you say that you are satisfied with life?" There were four choices of answer to this question: "not at all satisfied" (score 1), "not very satisfied" (score 2), "pretty satisfied" (score 3) and "very satisfied" (score 4). The wording of the question and the choices were exactly the same as those of the Eurobarometer and Latinobarometer surveys.[3]Similar questions were also asked about health and financial satisfaction.

There were five sections in the questionnaire. The first section asked questions about socio-economic and socio-demographic characteristics of the respondents. The second section

[2]From each of the slums randomly chosen in our survey, the households were chosen by systematic sampling. According to this approach, we started from the northernmost point for each of the slums and then selected every *k*th household by moving clockwise around the compass.

[3]Eurobarometer is a series of public opinion surveys conducted regularly on behalf of the European Commission since 1973. Latinobarometer is an annual public opinion survey conducted in 18 Latin American countries. We also piloted a life satisfaction question based on the Cantril ladder. Respondents were shown a ladder ranging from step 1 to step 10, where step 1 is supposed to represent the worst possible life and step 10 represents the best possible life. Each respondent was asked to locate his/her position on the ladder by choosing any one of the ten steps. Such Cantril ladder measures are used in the World Value Survey as well as in the Gallup World Poll. In our pilot, we found that households did not understand the Cantril ladder well and that it required repeated intervention by the survey investigator to elicit a meaningful response. As such investigator intervention might contaminate the response, we did not pursue the Cantril ladder measures any further.

consisted of questions on income and occupation of the respondent and his/her family members. There were also questions on family expenditure, job satisfaction and the financial satisfaction of the respondent. The third section contained only the life satisfaction question. The fourth section investigated various public facilities available in a slum. The fifth and the final section was on health. It had two sub-parts: the first was on the psychological traits of the respondent; and the second was on physical health. Apart from the question on health satisfaction, there were also questions about illnesses and sudden ill health that the respondent and his/her family members had faced within the previous year.

4 Findings from the Survey Data

4.1 Well-Being Measures

In response to the life satisfaction question, only 11.35% of the respondents reported that they were “not at all satisfied” and 42.49% of the respondents reported that they were “not at all satisfied” or “not very satisfied”. The modal response was “pretty satisfied” (reported by 40.47% respondents), and 16.94% of the respondents reported that they were “very satisfied”. Therefore, the reported life satisfaction score was on the high side and it shows a clear resemblance to the findings of Banerjee et al. (2004) in rural Udaipur. As remarked by those authors, such life satisfaction levels are in line with those reported in rich countries. Nonetheless, the variability in life satisfaction scores was also high. The average life satisfaction score was 2.63 with a standard deviation of 0.89. Therefore, the coefficient of variation was 34%. The average life satisfaction score in the sample turned out to be almost the same for men (2.61) and women (2.64). The fraction of people reporting different categories of life satisfaction was also quite similar across gender (see Figure 2).

The health satisfaction score was quite similar to the life satisfaction score. Just like life satisfaction, the responses on self-reported health turned out to be on the high side. As in the case of life satisfaction, health satisfaction scores also exhibited considerable variability (the coefficient of variation was 31%). On average, women self-reported as more dissatisfied (average score of 2.75) about their health than men did (average score of 2.93).

In relation to the self-reported financial satisfaction level, more people reported a low value of financial satisfaction compared to their life and health satisfaction. We found 46.71% respondents who were either "not all satisfied" or "not very satisfied" with their financial status. The proportion of people who answered "very satisfied" (i.e., the highest score) was only 6.26%. This figure was much lower than the percentage of people who reported the highest level of life and health satisfaction (16.9% and 23.9% respectively). The self-reported financial satisfaction status also exhibited sufficient variability (the coefficient of variation was almost 32%). The figures were almost same for men and women.

The findings suggest that poor people may be adapted to the life and health they experience, but that the same adaptation mechanism does not work for self-reported financial satisfaction. This is true for both men and women.

Regardless of the pattern of reporting (over-reporting or under-reporting), well-being measures were found to have sufficient variability. This paper seeks to explain this variation and to identify the factors that account for the difference in variation between men and women. These issues are explored in the next two sections.

4.2Bivariate Correlations

In this section, we report on the bivariate correlations of life satisfaction with other variables. The life satisfaction score is positively correlated with the other two self-reported measures of health satisfaction and financial satisfaction. The Spearman rank correlation coefficient between life satisfaction and financial satisfaction is 0.45 and is statistically significant. The fact that financial satisfaction and life satisfaction are positively correlated supports the finding of Banerjee et al. (2004). The rank correlation coefficient between self-reported life and health satisfaction score is 0.35 and is also statistically significant.

We find a positive correlation between monthly family income and life satisfaction. This finding supports all the earlier literature that discusses the positive cross-sectional relationship between income and life satisfaction (e.g., Argyle 2003; Diener 1984; Easterlin 2001).

Educational level seems to be an important determinant of life satisfaction. We defined a person as "educated" if he/she has, at least, secondary education. The average life satisfaction score for the educated cohort was 2.76, which was almost 7% higher than the average life satisfaction score of the uneducated cohort (2.58). Age was negatively correlated with the self-reported life satisfaction measure. The average life satisfaction of the married respondents (average life satisfaction score of 2.68) was slightly higher than the average life satisfaction of the unmarried, widowed or separated (average life satisfaction score of 2.6).

The availability and quality of some of the facilities vary within a slum. The sewage system is an example of a public facility. Self-reported life satisfaction was low for those respondents (56% of the total) who complained that their home was not well connected to the sewage system. The average life satisfaction of those who complained and those who did not complain were 2.52 and 2.78 respectively. This finding indicates the influence of public facilities

on the reported life satisfaction score, and it is immensely important for policy purposes in relation to the poor households in a developing country. This finding is at variance with Banerjee et al. (2004) who find the availability and quality of the public facilities to be uncorrelated to happiness in their data.

The survey questionnaire asked each respondent about the possession of a refrigerator and of a two-wheeler (scooter or motorbike). Our survey data found reasonable variation in the possession of these two assets. Possession of these assets was positively correlated with subjective well-being. The average life satisfaction score of those who possessed a refrigerator was 2.72 as opposed to an average life satisfaction score of 2.55 for those who did not possess one. The average life satisfaction score for those who possessed a two-wheeler (2.86) was also much higher than that of those who did not possess one (2.58). Among the other correlates; loneliness and stress turned out to be negatively correlated to self-reported well-being.

4.3 Do Men and Women Respond Differently?

This section considers the important question of whether the correlates of life satisfaction (reported in the earlier section) differ between men and women.

The positive association between financial satisfaction and life satisfaction was almost same for men and women. The Spearman rank correlation coefficient between life satisfaction and financial satisfaction was also almost identical (0.43 for men and 0.46 for women). The correlation between life satisfaction and health satisfaction turned out to be slightly higher for men than for women (Spearman rank correlation coefficient was 0.41 for men and 0.32 for women).

Health satisfaction and financial satisfaction were subjective measures. Next, we examined the differential satisfaction response between men and women with respect to

objective measures. We considered education first. It turned out that as we moved from the uneducated to the educated cohort, self-reported well-being for women increased less than it did for men –that is, the ratio of women's average life satisfaction to men's average life satisfaction was lower for the educated cohort compared to the uneducated cohort. This is displayed in Table 1, and it indicates that, although education improves female well-being in absolute terms, the relative well-being declines (relative to men). Explaining the change in the life evaluation relative to men is a key contribution of this paper.

Table 2 shows another interesting finding. The average life satisfaction score was higher for employed men than for unemployed men, but the opposite is true for women –that is, the average life satisfaction score was less for those women who were employed than it was for unemployed women. These findings were true for the entire sample and for each zone, and they were also true regardless of whether a man or woman belonged to the educated or uneducated cohort. Among the uneducated men, the average life satisfaction score of the employed was 2.53, which was much higher than the average life satisfaction score of unemployed men (1.94). The reverse was true for uneducated women: the self-reported average life satisfaction was higher for the unemployed (2.7) than for the employed (2.42). The pattern was the same for the educated cohort: the average life satisfaction was much higher for employed men (2.89) than for unemployed men (2.64). On the other hand, the reported happiness score was much lower for employed women (2.38) than for unemployed women (2.74).

Apart from the role of aspiration mentioned earlier, that the reported life satisfaction was lower for employed women can also be explained by the double workload of working both in the home and in the workplace. The average number of total hours worked in a day (7.7 hours) indeed turned out to be higher for working women then for unemployed women/housewives (4.7

hours) in our data (Zhou and Peng 2018 show that leisure activities improve the subjective well-being of women in China, which indicates that high workload is likely to reduce women's well-being).

Marriage brought more happiness for women but not for men in our data. This finding is consistent with Graham and Chattopadhyay (2013). A probable reason behind the positive happiness–marriage relationship for women is the social norm that confers social respect and security on married women. Other correlates discussed (including sewage facility) in the previous section were similar in their impacts on men and women.

4.4 Hypotheses to be Examined

As a next step, we examined whether the interesting bivariate correlations and gender-varying correlations survived in a regression framework after controlling for other factors. The statistical significance of the determinants of self-reported well-being (which show interesting bivariate correlations) were tested after controlling for other factors. We also tested whether the correlation between education and life satisfaction as well as that between employment and life satisfaction were significantly lower for women than for men after controlling for other factors. In the next section, we propose an empirical methodology and use the data collected from our primary survey to run regressions in order to test the above hypotheses.

5 Empirical Model and Variables

We investigated the correlations in a regression framework controlling for all variables. The outcome variable of interest was the self-reported four-scale life satisfaction score by the respondents.

Life satisfaction was a categorical variable with monotonic ordering. Hence, we use ordered logit and ordered probit model. The ordinary least square regression is also used as an alternative specification.

The equation for our regression model with a categorical dependent variable was:

$$L_i^* = \beta_1 + \boldsymbol{\beta_2 X_i} + \epsilon_i \quad (1)$$

where $L_i^*$is the latent index of reported life satisfaction by the *'i'* th individual, $\boldsymbol{X_i}$ stands for the vector of independent variables, and $\boldsymbol{\beta_2}$is the associated vector of regression coefficients. In order to assess the gender-varying effect of any independent variable on the probability of reporting a higher level of life satisfaction, we also estimate another regression equation where the vector of independent variables (i.e., $\boldsymbol{X}$) was interacted with a "female" dummy. $\epsilon_i$is the error term.

$$L_i^* = \beta_1 + \boldsymbol{\beta_2 X_i} + \boldsymbol{\beta_3 X_i} * female + \epsilon_i \quad (2)$$

The latent index measured a respondent's own scale of life evaluation. However, this was not observed, and we only observed the discrete points in the respondent's scale according to the following:

$$L_i = 1 \; if \; L_i^* \leq \mu_1$$

$$L_i = 2 \; if \; \mu_1 < L_i^* \leq \mu_2$$

$$L_i = 3 \; if \; \mu_2 < L_i^* \leq \mu_3$$

$$L_i = 4 \; if \; \mu_3 < L_i^* \leq \mu_4$$

where the parameters μ_i were externally imposed endpoints of the observed categories. The coefficient of the independent variable estimated whether the probability of reporting a higher level of satisfaction increases or decreases for all other categories as compared to the base category (when the independent variable is categorical). For continuous independent variable,

the coefficient of the independent variable estimates whether the probability of reporting a higher level of satisfaction increases or decreases as the independent variable increases marginally.

In the Appendix, we describe the independent variables of interest and other control variables, along with the summary statistics (mean and standard deviation). The independent variables were of two types: continuous variables and binary variables. The mean of a binary variable provided the proportion of people reporting a particular category (say yes/no).

6 Regression Results

Table 3 shows the results of the estimation of regression equation (1). The three columns in Table 3 correspond to three different regression specifications. In the first column, we run the regression using the ordered logistic specification. The second column shows the results of estimation from an ordered probit model. In the third column, we use the OLS specification. In each of the specifications, we control for slum fixed effects. We report the coefficients of only the subset of those independent variables that are found to be correlated with the reported life satisfaction score in binary comparisons (as shown in section 4.2). The coefficients of many other control variables are not reported (the details about those controls has been explained in the appendix).

The results across these three specifications turn out to be quite similar. Among the reported coefficients, health satisfaction, logarithm of family income, marriage, malfunctioning of sewage system, loneliness and stress turns out to be significant correlates of life satisfaction at 1% level under all these three specifications. Possession of refrigerator and education is significant at 10% level (for education, the significant coefficient is observed only under ordered logistic and ordered probit specification). All the results remain same with or without clustering the robust standard errors at the slum level.

In the regressions of Table 3, we did not include financial satisfaction as an independent variable. The reason is the high collinearity between monthly family income and financial satisfaction. In order to see the impact of financial satisfaction on life satisfaction, we replace monthly family income by financial satisfaction and run the same regressions. Although the regression results have not been reported here, we found positive and significant (at 1% level) correlation between financial satisfaction on life satisfaction after controlling all other factors.

Gender Effects

The result is shown in Table 4 which comes from estimating regression equation (2). In regression equation (2), apart from controlling all other factors, we also control the interaction term between each of the independent variables and female dummy. We only report the coefficients of the interaction terms. Just like Table 3, the first, second and third column shows the results of an ordered logistic specification, ordered probit specification and OLS specification respectively. The slum fixed effects are controlled for all three specifications.

The interaction term between the dummy 'educated' and dummy 'female' turns out to be negative and significant at 5% level across all three specifications. Similarly, the interaction term between the dummy 'employed' and dummy 'female' turns out to be negative and significant(at 5% level for the ordered logistic and ordered probit regression and at 10% level for the OLS regression). The findings imply that education and employment are positively related to declining well-being among women compared to men even after controlling for all other factors and their interactions with female dummy. However, none of these gender varying correlations can be considered as causal.

Apart from education and employment, the interaction term between the dummy of married and female turns out to be positive and significant at 10% level for the ordered logistic

specification. The other independent variables which show statistically significant gender differential impact in the regression framework are age, squared age and loneliness.

The gender varying correlation between education and self-reported well-being as well as between employment and self-reported well-being turns out to be very important and intuitive finding in this paper. But these gender varying correlations can't be inferred as causal. But in the next section, we show that these gender varying correlations survive even if we take care of the omitted variables bias caused by the unobservables in the regression. The gender varying correlations for education and employment also turns out to be robust for OLS specification with standardized dependent variable i.e. life satisfaction (shown in the appendix).[4]

7 Gender-Varying Impacts: Omitted Variables Bias

Can we interpret the gender-varying effects as causal? Education and employment turn out to be the two most important variables that produce quite interesting gender-varying effects. In order to assess the unobservable factors in the regression equation that can affect the education or employment of women as well as their self-reported well-being, we consider the OLS specification:

$$L_{is} = \alpha_i + \delta T_{is} + \boldsymbol{\beta X_{is}} + \varepsilon_{is} \quad (3)$$

where L_{is} denotes the life satisfaction score for the individual *i* in slum *s*. *T* is the treatment dummy and $\boldsymbol{X}$ is a vector of control variables. In this study, *T* stands for an "educated woman" or an "employed woman". The $\boldsymbol{X}$ vector includes dummies for education, gender and employment

[4]The regression results are robust to the inclusion of district fixed effects where a district identifies the original place of residence of a respondent. During the survey, we collected data on usual place of residence. This robustness check is important as it takes care of the heterogeneity in social norms in the slum dwellers of our sample. Our results also remain robust if we exclude the categorical independent variable "health satisfaction" from our empirical model as it is potentially collinear with other independent variables.

as well as other control variables. Let *G* be a dummy for women and *E* be the dummy for education (or employment); δ is a double difference. Specifically:

$$\delta = \left[E\left(L_{is} \ / G_i = 1 \ \&E_i = 1\right) - E\left(L_{is} \ / G_i = 1 \ \&E_i = 0\right)\right]$$

$$- \left[E\left(L_{is} \ / G_i = 0 \ \&E_i = 1\right) - E\left(L_{is} \ / G_i = 0 \ \&E_i = 0\right)\right]$$

δ is, therefore, the causal effect of education (or employment) on the relative well-being of women if the treatment is uncorrelated with omitted variables. Even after controlling for slum fixed effects and several household and individual specific control variables, the coefficient δ could still suffer from omitted variables bias.

Altonji et al. (2005) suggest a method by which we can gauge how much the influence of unobservable factors biases the measured effect of being an educated woman or employed woman. Suppose that the selection on unobservable factors is same as the selection on observable controls. Then

$$\frac{Cov(T,\varepsilon)}{Var(\varepsilon)} = \frac{Cov(T,X\beta)}{Var(X\beta)} \tag{4}$$

Expression (4) says that the covariance between treatment and unobservable factors (deflated by the variance of the unobservable factors) equals the covariance between treatment and observable controls (deflated by the variance of observable controls).

Using equation (3), the bias in OLS due to omitted variables can be written as:

$$Bias = \frac{Cov(\tilde{T},\varepsilon)}{Var(\tilde{T})} \tag{5}$$

where $\tilde{T}$ is the residual from regressing *T* on vector *X*. If ε and *X* are orthogonal, then we can write down the bias as:

$$\text{Bias} = \frac{Cov(T,X\beta)}{Var(X\beta)} \frac{Var(\varepsilon)}{Var(\tilde{T})} \tag{6}$$

We get expression (6) in the following way: If ε and X are orthogonal, then the expression of bias in equation (5) boils down to $\frac{Cov(T,\varepsilon)}{Var(\tilde{T})}$. Now the orthogonality between ε and X and equation (4) together implies:

$$Bias = \frac{Cov(T,\varepsilon)}{Var(\tilde{T})} = \frac{Cov(T,\varepsilon)}{Cov(T,X\beta)}\frac{Var(X\beta)}{Var(\varepsilon)}\frac{Cov(T,X\beta)}{Var(X\beta)}\frac{Var(\varepsilon)}{Var(\tilde{T})} = \frac{Cov(T,X\beta)}{Var(X\beta)}\frac{Var(\varepsilon)}{Var(\tilde{T})}$$

This bias can be estimated from the data. The results are given in Table 5, in which there are six columns. The first three columns only show the estimated treatment effect of employed female. The next three columns only show the estimated treatment effect of educated female. In column (1), we only control for the dummies for gender and employment among the X variables. Similarly, in column (4), dummies for gender and education are the only X variables that are controlled. We do not control for any of the other X variables or slum fixed effects in column (1) and column (4). Therefore, in column (1), self-reported life satisfaction is regressed on the dummy of employed, female, and employed female. Similarly, in column (4), self-reported life satisfaction is regressed on the dummy of educated, female, and educated female. The coefficients in column (2) and column (5) are estimated after controlling for the slum fixed effects but none of the X variables (apart from the dummies for gender and employed in column (2) and the dummies for gender and educated in column (5)). In column (3) and column (6), we control for the slum fixed effects as well as all other control variables (X variables). The X variables include all other controls used and their interactions with the female dummy.

The variable of interest is the relative life satisfaction of employed female and educated female (Table5). Table5 shows that the coefficients of both employed female dummy and educated female dummy gets reduced in magnitude with the addition of slum fixed effects and individual and household controls. This implies that fixed effects and other control variables do control for the various biases due to selection and endogeneity. But there could still be some

unobservable factors that influence the education and employment of women as well as their life satisfaction. We estimated this bias using Altonji's method.

We find evidence of a positive correlation between the unobservable factors in the life satisfaction equation and the treatment of employed female and educated female –that is, the bias estimated by Altonji's method turns out to be positive. The coefficients of 'employed female' and 'educated female' turn out to be negative. The positive bias along with the negative treatment effect implies that the true treatment effect is underestimated. The bias is very small for employed female. Therefore, the estimated coefficient of employed female almost captures the true treatment effect. The positive bias is quite large for the coefficient of educated female. But the true coefficient is nothing but the bias subtracted from the estimated coefficient. Therefore, the true coefficient of educated female is negative and it actually becomes larger in magnitude compared to the estimated coefficient when we control for the bias.

Thus, the method proposed by Altonji et al. (2005) ensures negative and significant interaction term between the dummy of 'employed female' and life satisfaction or dummy of 'educated female' and life satisfaction even after taking into account the omitted variables bias. Moreover, if we do not control for the bias that arises from omitted variables then we underestimate the true coefficients (see Table5).

8 Discussion

The empirical findings in this paper contribute interesting theoretical insights as well as policy implications. The fact that women's relative self-reported well-being falls as they become more educated or employed raises important questions regarding the improvement in lives of poor women. Improvement in the objective indicators may not be enough. It also requires simultaneous reform in social norms and institutions to make women happier and feel more

empowered. In developing countries, Government chooses policies and measures to help women get more education and employment opportunities. But the important question is whether the women themselves enjoy or get benefitted from these policy measures. Measuring female happiness before and after the implementation of a policy is one way to get an answer.

Banerjee et al. (2004) examine the self-reported life satisfaction and its determinants for poor households in rural Udaipur in the Indian state of Rajasthan. But the important issue of women's well-being relative to men among the poor households is not addressed in their paper. The present paper is a step towards filling that gap. Conducting a primary survey of poor urban households in Delhi, we find a highly significant gender-varying correlation between life satisfaction and education and between life satisfaction and employment status. As mentioned earlier, our finding is supported by a host of other studies (De Hoop et al. 2014; Graham and Chattopadhyay 2013; Stevenson and Wolfers 2009; Van den Broeck and Maertens 2017).The finding of this paper encourages a deeper investigation of women's well-being and further research to locate women's life satisfaction within social norms.

9. Limitations

Although this paper produces some interesting results that are important for both theory and policy, there are certain caveats relating to the methodology. First, we cannot interpret the correlations found in this paper as causal because we have performed a cross-sectional analysis. Even after controlling for slum fixed effects and several household and individual control variables, the coefficients still suffer from omitted variables bias as there is unobserved heterogeneity across respondents. Altonji et al. (2005) proposed a methodology to compute the omitted variable bias in a cross-sectional regression. We use their methodology and show that our findings regarding the gender-varying correlations are robust even after taking care of the

omitted factors. But the best way to get rid of those unobserved factors is to collect data for the same respondents for more than a single time period (i.e., generating panel data at individual level) and to conduct a panel data regression analysis. A future objective is to collect such data.

Just like any other study on subjective welfare, interpersonal comparison of welfare is a concern for this paper as well. Different people may well have different ideas about what it means to be satisfied with life, leading them to interpret survey questions on subjective well-being differently. If the scale of the life satisfaction question is not understood the same way by all the respondents, it is unclear what meaning can be attached to such measures.

Although the problem of interpersonal comparability seems to be a threat to the accuracy of the subjective well-being measures, the evidence shows that the application of these well-being measures may not be that erroneous. In the early 1960s, social psychologist Hadley Cantril carried out an intensive survey in 14 countries worldwide, rich and poor, capitalist and communist, asking open-ended questions about what people want out of life – that is, what they would need for their lives to be completely happy. Despite enormous socio-economic and cultural disparities among countries, what people said was strikingly similar. In every country, material circumstances, especially level of living, was considered the most important factor for a happy life. This was followed by happy family life, good health and job satisfaction. Therefore, the comparability issue of the ordinal rankings on the life satisfaction question across respondents may not be as serious as it is thought. Ravallion et al. (2016) propose a methodology to correct the comparability issue in the ordinal rankings of the well-being measures. But little difference is found in the coefficients on the covariates of life satisfaction or in their statistical significance even after correcting for the heterogeneity in the ordinal rankings.

Conducting a survey (especially on subjective well-being) in a slum is itself a challenging issue. Maintaining privacy during the interviews is a serious concern as there is lack of enough space in most of the houses to conduct the interviews privately. Hence, the respondents are often accompanied by other family members and even neighbors during the interviews. This may cause biased responses and reporting errors. Although, we conducted the interviews by isolating the respondents from others as much as possible, a certain amount of response error cannot be ignored.

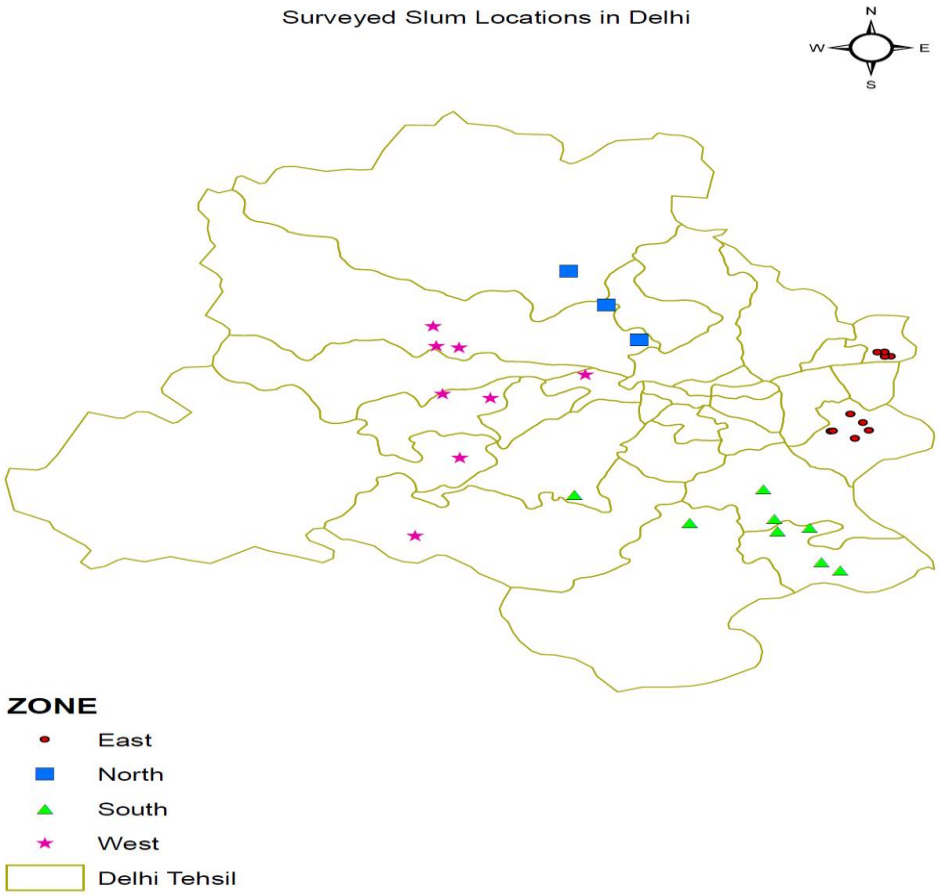
Finally, while our sample is representative of the poor slum population in Delhi, it does not represent the population of all poor urban households or slum dwellers living in India. This requires a survey on a larger scale, which can be an important future research agenda.

10 Concluding Remarks

In this present study, focusing on the poor urban households in Delhi, we have examined the change in the subjective welfare of women relative to men as women improve in terms of objective indicators. If society offers different opportunities to men and women and if the preferences vary across gender, we may expect variation across gender of the relative importance of the factors that are correlated with the self-reported well-being measures. This is what we have examined from our data. Among all the gender-varying correlates, education and employment were highly significant. Using the data from our survey and running ordered probit and ordered logit regressions, we find a negative and statistically significant correlation between the self-reported well-being of women relative to men and educational level. We obtain similar results for the correlation between the self-reported well-being of women relative to men and employment.

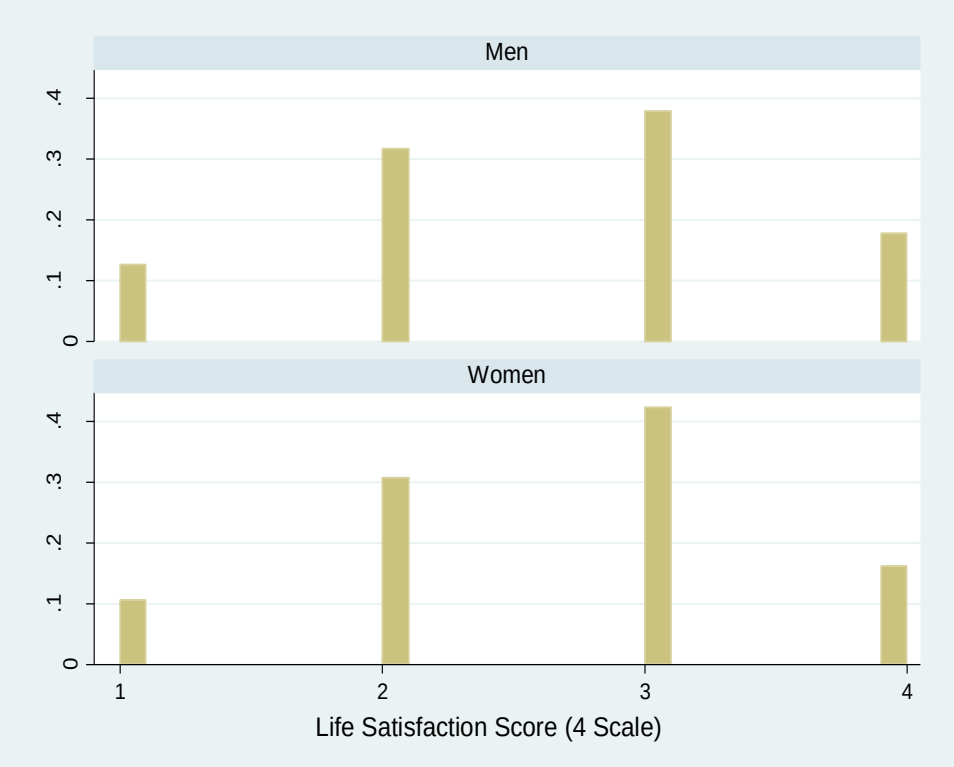
These findings are similar to those of Stevenson and Wolfers (2009). But unlike Stevenson and Wolfers (2009), our findings are based on cross-sectional data. The findings of this paper are also connected to other similar studies on developing countries (Salway et al. 2005; Van den Broeck and Maertens 2017; Vyas et al. 2015)that show improved economic status does not necessarily induce higher female well-being and a stronger role for women in the decision-making process. Women may not consider themselves happier with improved economic status or financial autonomy if conservative social and gender norms still prevail, and this may explain our finding.

Figure1. Surveyed Slum Locations in Delhi



Note: Drawn through the Geographical Information System software using the latitudes and longitudes of the slums.

Figure2. Fraction of People Reporting Different Levels of the Life Satisfaction Score (Men and Women)



Note: Drawn from our own survey data. The horizontal axis represents different levels of life satisfaction. The vertical axis shows the fraction of the respondents reporting those values.

Table1. Average Life Satisfaction Score (4-Point Scale) for Educated and Uneducated Cohorts: Comparison between Men and Women

Zone	Uneducated men	Uneducated women	Educated men	Educated women	Ratio between uneducated women and men	Ratio between educated women and men
East	2.41	2.66	2.84	2.78	1.1	0.98
West	2.49	2.56	2.96	2.48	1.03	0.84
South	2.7	2.7	2.84	2.82	1	0.99
North	2.08	2.53	2.38	2.47	1.22	1.04
Overall Sample	2.46	2.63	2.84	2.67	1.07	0.94

Note: Author's computation from the survey data. Educated group/cohort consists of those people who have at least secondary education.

Table2. Average Life Satisfaction Score for Employed and Unemployed: Comparison between Men and Women

Zone	Employed men	Unemployed men	Employed women	Unemployed women
East	2.62	2.32	2.36	2.79
West	2.76	2.11	2.26	2.63
South	2.81	2.53	2.67	2.74
North	2.14	2.25	2.45	2.52
Overall Sample	2.66	2.31	2.41	2.71

Note: Author's computation from the survey data. An employed person is one who earns for his/her family.

Table 3:-Determinants of Life Satisfaction

VARIABLES	Ordered Logit life satisfaction	Ordered Probit life satisfaction	OLS life satisfaction
2.health_satisfaction	0.861***	0.521***	0.344***
	(0.274)	(0.148)	(0.100)
3.health_satisfaction	1.074***	0.639***	0.432***
	(0.277)	(0.148)	(0.101)
4.health_satisfaction	2.101***	1.212***	0.804***
	(0.312)	(0.164)	(0.109)
ln family monthly income	0.391***	0.213***	0.144***
	(0.102)	(0.0603)	(0.0415)
not possessing two wheeler	-0.217	-0.120	-0.0807
	(0.166)	(0.0931)	(0.0636)
not possessing fridge	-0.241*	-0.133*	-0.0857*
	(0.126)	(0.0709)	(0.0488)
employed	-0.252	-0.138	-0.0921
	(0.188)	(0.106)	(0.0734)
female	-0.0207	-0.000591	-0.00133
	(0.275)	(0.153)	(0.105)
married	0.808***	0.457***	0.310***
	(0.280)	(0.159)	(0.108)
age	0.0184	0.00753	0.00404
	(0.0373)	(0.0208)	(0.0143)
squared age	-0.000257	-9.68e-05	-5.82e-05
	(0.000457)	(0.000251)	(0.000172)
educated	0.274*	0.143*	0.0907
	(0.155)	(0.0858)	(0.0587)
sewage not functioning	-0.542***	-0.285***	-0.195***
	(0.139)	(0.0786)	(0.0534)
not feeling lonely	0.588***	0.352***	0.240***
	(0.154)	(0.0874)	(0.0612)
sometimes feeling stressed	-0.450***	-0.252***	-0.162***
	(0.157)	(0.0865)	(0.0591)
always feeling stressed	-1.274***	-0.693***	-0.467***
	(0.241)	(0.128)	(0.0885)
Observations	1,214	1,214	1,214
R-squared			0.322
slum fixed effects	yes	yes	yes

Note: The dependent variable is the life satisfaction score. The unit of analysis is an individual. The regressions are run using the entire sample. The first column shows the results of an ordered logistic regression. The second column shows the results of an ordered probit regression and the third column exhibits the results of an OLS specification. The slum fixed effects have been controlled for all three specifications. Robust standard errors are in parenthesis, ***, ** and * indicate significance at 1%, 5% and 10% level respectively.

Table 4:- Gender Varying Correlates

VARIABLES	Ordered Logit life satisfaction	Ordered Probit life satisfaction	OLS life satisfaction
2.health satisfaction*female	-0.413	-0.268	-0.138
	(0.575)	(0.311)	(0.208)
3.health satisfaction*female	-0.671	-0.457	-0.275
	(0.574)	(0.309)	(0.209)
4.health satisfaction*female	-0.961	-0.603*	-0.360
	(0.620)	(0.336)	(0.224)
ln monthly family income*female	-0.234	-0.158	-0.0929
	(0.231)	(0.146)	(0.0981)
employed*female	-0.735**	-0.470**	-0.292*
	(0.373)	(0.239)	(0.163)
not possessing two wheeler*female	0.317	0.202	0.133
	(0.325)	(0.184)	(0.124)
not possessing refrigerator*female	-0.115	-0.117	-0.0831
	(0.257)	(0.146)	(0.0983)
married*female	0.902*	0.101	0.0455
	(0.530)	(0.427)	(0.289)
age*female	-0.0955	-0.0945**	-0.0551*
	(0.0753)	(0.0445)	(0.0295)
squared age*female	0.00127	0.00108**	0.000632*
	(0.000923)	(0.000535)	(0.000354)
educated*female	-0.652**	-0.367**	-0.232**
	(0.306)	(0.174)	(0.118)
sewage not functioning*female	-0.0321	0.0226	0.0102
	(0.249)	(0.148)	(0.0996)
not feeling lonely*female	-0.793**	-0.523***	-0.328***
	(0.310)	(0.177)	(0.121)
sometimes feeling stressed*female	-0.249	-0.162	-0.105
	(0.330)	(0.188)	(0.126)
always feeling stressed*female	-0.392	-0.124	-0.103
	(0.474)	(0.264)	(0.181)
Observations	1,214	1,214	1,214
R-squared			0.361
slum fixed effects	yes	yes	yes

Note: The dependent variable is the life satisfaction score. The unit of analysis is an individual. The regressions are run using the entire sample. The first column shows the results of an ordered logistic regression. The second column shows the results of an ordered probit regression and the third column exhibits the results of an OLS specification. The slum fixed effects have been controlled for all three specifications. Robust standard errors are in parenthesis, ***, ** and * indicate significance at 1%, 5% and 10% level respectively.

Table 5:-Bias Due to Unobservable Factors: OLS Regression

	(1)	(2)	(3)	(4)	(5)	(6)
Employed female	-0.679***	-0.667***	-0.248*			
	(0.150)	(0.139)	(0.136)			
Educated female				-0.337***	-0.285**	-0.256**
				(0.113)	(0.106)	(0.121)
Slum fixed effects	No	Yes	Yes	No	Yes	Yes
Other controls	No	No	Yes	No	No	Yes
Observations	1257	1257	1214	1257	1257	1214
R-Squared	0.019	0.043	0.287	0.015	0.035	0.288
Bias Employed female			0.023			
Bias Educated female						0.697

Note: The dependent variable is the life satisfaction score. The unit of analysis is an individual. The regressions were run using the entire sample. Robust standard errors are in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively. Educated female and employed female are treatment variables. The first three columns show only the estimated treatment effect of employed female. The next three columns only show the estimated effect of educated female. In column (1) and column (4), we do not control for any of the *X* variables (apart from the dummies for employed and female in column (1) and the dummies for educated and female in column(4)) or slum fixed effects. In column (1), self-reported life satisfaction is regressed on the dummy of employed, female, and employed female. Similarly, in column (4), self-reported life satisfaction is regressed on the dummy of educated, female, and educated female. The coefficients in column (2) and column(5) are estimated after controlling for the slum fixed effects, but none of the *X* variables have been controlled (except dummies for employed and female in column (2) and the dummies for educated and female in column(5)). In column (3) and column(6), we control for the slum fixed effects as well as all other control variables(*X* variables). The *X* variables include all other controls and their interactions with the female dummy.

Appendix

1. The Sampling and the Survey

In 2009–10, the Centre for Global Development Research (CGDR) in New Delhi collaborated with the Planning Commission, Government of India to conduct a slum survey in Delhi. The objective of that survey was to investigate the conditions of life and facilities in low-income neighborhoods of Delhi. A report was also published based on their findings in 2011. The CGDR listed 477 slums out of almost 4,000 slums (both registered and unregistered) located in Delhi. From this list of 477 slums, 65 slums were surveyed after stratifying Delhi into five zones: South, East, West, North and Central.

This paper's sampling strategy was based on these 65 slums. We followed the same stratification, but our survey sampled from four zones (South, East, West, and North) and dropped the Central zone, which has very few slums.

For each of the four zones, we randomly chose half of the slums surveyed by the CGDR. For example, the CGDR surveyed 20 slums in the East zone, and we randomly chose 10 of them. Following the same strategy for all the other zones, we ended up surveying 29 slums in total.

From each of the slums in our survey, the households were sampled through the *k*th household approach. According to this approach, we started from the northernmost point for each of the slums and then selected every *k*th household by moving clockwise around the slum. This was a systematic sampling with every *k*th element in the frame selected, where *k*, the sampling interval, was calculated as:

$$k=N/n$$

where n was the sample size and N was the population size (i.e., sample and population of households in a slum). For each slum, we set a target to interview 35 households (i.e., n=35). The

total number of households in each slum was known and, using that information, we calculated the sampling interval (i.e., *k*). The value of *k* in our study was 4, 5 or 6 depending on the population of households in each slum.

The interviews were conducted during the daytime by a team of four interviewers. The interviews were conducted in Hindi, which is the mother tongue of most of the slum residents in Delhi. Individuals with a non-Hindi mother tongue can also speak Hindi quite comfortably as Hindi is the local language in Delhi. Therefore, we constructed the questionnaire in English first and then translated it into Hindi. We did not face much resistance from the respondents in responding to interviews once we had made the purpose and objective of the interviews clear to them.

From each household, we attempted to interview a female and a male (20 years or above). However, there was frequently either a female or a male available for interview but not both. We surveyed 989 households across 29 slums during the entire month of March and the first week of April 2016. The total number of respondents surveyed was 1,278. The number of households where we interviewed both a man and a woman was 289. The numbers of female and male respondents were 771(60% of the total sample) and 507(40% of the total sample) respectively.

As mentioned in the previous paragraph, we attempted to maintain an equal proportion of male and female respondents in the sample by interviewing a man and woman from each household. If both a male and a female respondent were not available, either a male or a female member was interviewed according to availability. We created a random number for each household in the sample. The random numbers indicated whether to interview a male or a female member when both of them were not available. For such households (with either a man or a

woman available for interview), the gender of the respondent was often found to match with what was assigned by the random number; for example, the random number indicated female and the available respondent was female as well. When there was a mismatch, we accepted that and interviewed the respondent with the mismatched gender only. As the interviews were conducted during the daytime, we missed the male household members on some occasions (i.e., for some of the households, they were not available due to their work). The proportion of the female members in the sample was a little higher (60%) for this reason.

The interviews were conducted by isolating the respondents from others – that is, from their family members and neighbors – to get accurate responses as much as possible. The women were interviewed by a female investigator.

2. List of Slums Surveyed

Zone	Slum name	Location
East	Aradhak Nagar Camp	Behind Shahadra Border
East	Sonia Camp	Dilshad Garden
East	Rajiv Camp Mini Market	Trilokpuri
East	Shashtri Mohalla	Shashi Garden
East	Deepak Colony, Block E-103	Near Ahauchalaya
East	Mazdoor Nagar Camp	I P Extension
East	J.J. Bharti Camp	East Vinod Nagar
East	Ram Prasad Vishmil camp	Shashi Garden
East	Shahid Bhagat Singh camp	Kalyanpuri
East	Dr. Rajender Prasad Camp	G.T.B. Hospital Delhi
North	J.J. Camp BhagwanPur	Libaspur
North	Kabir Nagar and Kishore Nagar JJ Cluster	Rana Pratap Nagar
North	J.J. Colony Sari Peepasl Thala	Adarsh Nagar
South	Malviya Nagar Corner Camp	Malviya Nagar
South	Sarvodaya Camp	Kalka Ji
South	J.J. Indira Camp	Sriniwaspuri
South	Nehru camp	Govindpuri

South	New Sanjay Camp E-33	Okhla Ph-II
South	Bhanwar Singh Camp	Vasant Vihar
South	Sonia camp part ii	Prahladpur
South	V.P. Singh camp	Tugalkabad
West	Udyog Nagar Camp	Preera Garhi
West	Indira Camp Part 2	Vikashpuri
West	Tilak Nagar Industrial area	Subhash Nagar
West	J.J. Camp Block D-4	Sultan Puri
West	Bhim Nagar Jwalapur Camp	Preera Garhi
West	Prem Nagar Camp	Patel Nagar
West	Rajeev Gandhi Camp Saad Nagar Ph-2	Saad Nagar
West	Nehru Camp	Brijwasan Village

3. Definition of Variables and Their Summary Statistics

A. Respondent Specific Variables

Variable Name	Description of the Variable	Mean	Standard Deviation
Health Satisfaction	A categorical variable with four-scale/four choices. A bottom scale response gets the score of 1, and the top scale response gets the score of 4.	2.83	0.89
Financial Satisfaction	A categorical variable with four-scale/four choices. A bottom scale response gets the score of 1, and the top scale response gets the score of 4.	2.47	0.78
Age	Age of the respondent.	35.87	11.8
Married	Represents the marital status of the respondent. Married is a binary variable. It takes the value 1 if the person is married and the value 0 otherwise.	0.82	0.39

Educated	A binary variable that stands for the educational level of the respondent. It takes the value 1 for a person who has at least secondary education. Otherwise it is assigned the value 0.	0.28	0.45
Employed	A binary variable that takes the value 1 for an earner and 0 for a non-earner.	0.47	0.5
Household Head	A binary variable that takes the value 1 if the respondent is the household head and the value 0 otherwise.	0.31	0.46
Smoke	A binary variable that takes the value 1 if an individual smokes and the value 0 otherwise.	0.15	0.36
Drink Alcohol	A binary variable that takes the value 1 if an individual drinks alcohol and the value 0 otherwise.	0.11	0.31
Chew Tobacco	A binary variable that takes the value 1 if an individual chews tobacco and the value 0 otherwise.	0.14	0.35
Female	A binary variable that takes the value1 if the respondent is a female and the value0 otherwise.	0.6	0.49

Note: Author's computation from the survey data. Apart from age, health satisfaction and financial satisfaction, all other variables are binary variables. The mean of these binary variables represents the proportion of people reporting the value/category 1. For health satisfaction and financial satisfaction, there are more than two categories, but each category represents a score. Therefore, the reported mean and standard deviation for health satisfaction and financial satisfaction are the mean and standard deviation of the reported scores.

B. Household Specific Variables

Variable Name	Description of the Variable	Mean	Standard Deviation
Monthly Family Income	Sum of the income earned by all the members in a household.	12,920	9,500
Household Size	Number of members in a household.	5.35	1.94
Male Children	Total number of male children in a household.	0.86	0.93
Female Children	Total number of female children in a household.	0.84	1.02
General	A binary variable that takes the value 1 if the respondent belongs to the general category; otherwise it takes the value 0.	0.24	0.42
Non-Hindu	A binary variable with the value 1 for the non-Hindu respondents and 0 otherwise.	0.15	0.36
Not Possessing Refrigerator	A binary variable that takes the value 1 if the household does not own a refrigerator and 0 otherwise.	0.54	0.5
Not Possessing Two-Wheeler (Scooter/Motorbike)	A binary variable that takes the value 1 if the household does not own a two-wheeler and 0 otherwise.	0.81	0.39
Not Possessing Ration Card	A binary variable that takes the value 1 if the household does not possess a ration card and 0 otherwise.	0.15	0.36

Note: Author's computation from the survey data. Not Possessing Refrigerator, Not Possessing Two-Wheeler and Not Possessing Ration Card are all binary variables. For these binary variables, the mean represents the proportion of people reporting the value/category 1.

C. Mental Health/Psychological Traits of the Respondents

Variable Name	Description of the Variable	Mean	Standard Deviation
Not Feeling Lonely	A binary variable that takes the value 1 if the respondent does not feel lonely and the value 0 otherwise.	0.71	0.45
Cannot Concentrate	A binary variable that takes the value 1 if the respondent cannot concentrate and the value 0 otherwise.	0.16	0.37
Unable to Take Decision	A binary variable that takes the value 1 if the respondent is unable to take any decision and the value 0 otherwise.	0.21	0.41
Does not Feel Confident in Work	A binary variable that takes the value 1 if an individual does not feel confident and the value 0 otherwise.	0.05	0.23
Cannot Overcome Difficulties	A binary variable that takes the value 1 for an individual who is unable to overcome difficulties and 0 otherwise.	0.67	0.47
Someone in the Family Died in the Past Two Years	A binary variable that takes the value 1 if any household member has died within the past two years and 0 otherwise.	0.19	0.39
Does not Feel Secure	Takes the value 1 if the respondent does not feel secure in the slum and 0 otherwise.	0.41	0.49

Stress	Takes the value 1 if the respondent feels stressed and 0 otherwise.	0.72	0.45
Hours Working	Number of hours a respondent works in a day.	6.8	3.5
Hours Sleeping	Number of hours a respondent sleeps in a day.	6.8	1.5

Note: Author's computation from the survey data. All variables except Hours Working and Hours Sleeping are binary variables. For these binary variables, the mean represents the proportion of people reporting the value/category 1. Hours Working and Hours Sleeping are continuous variables.

D. Public Facilities

Variable Name	Description of the Variable	Mean	Standard Deviation
Health Camp	Takes the value 1 if the respondent reports that at least one health camp has been held in his/her slum in the last six months, and the value 0 otherwise.	0.17	0.38
Child Immunization Camp	Takes the value 1if the respondent reports that at least one child immunization camp has been held in his/her slum in the last six months; otherwise it takes the value 0.	0.23	0.42
NGO Working	It takes the value 1 if the respondent reports awareness of any NGO facility in his/her slum; otherwise, a value of 0 is assigned.	0.2	0.4
Drinking Water Quality	Value is 1 when the respondent is satisfied with	0.78	0.41

	the quality of the drinking water; otherwise the value is 0.		
Clean Toilet	A binary variable with a value 1 if the respondent reports the public toilet to be clean and with a value 0 if he/she reports the public toilet to be unclean.	0.6	0.49
Anganwadi (Child Care Centre) Exists	Takes the value 1if such a center exists in the slum; otherwise it takes the value 0.	0.81	0.39
Anganwadi (Child Care Centre) Midday Meal	Takes the value 1 if the respondent says that Anganwadi provides a midday meal; otherwise, a value of 0 is assigned.	0.72	0.45
Public Toilet Woman	When a public toilet exists in the slum, this variable takes the value 1; otherwise, it is 0.	0.83	0.37
Government Dispensary	When a government dispensary exists in the slum, this variable takes the value 1 and it is 0 otherwise.	0.24	0.43
Drainage Not Functioning	It takes the value 1 if the respondent complains about the malfunctioning of drainage in front of his/her home; otherwise, it takes the value 0.	0.57	0.5
No Dustbin	It takes the value 1 if the respondent complains that there is no dustbin near his/her home; otherwise, it takes the value 0.	0.43	0.5
Sweeper Not Cleaning	Takes the value 1 if a slum dweller complains about the	0.66	0.47

	irregular visits by the government sweeper; otherwise, it is 0.		
Street Light Not Working	Takes the value 1 if the street light does not exist or does not function properly; otherwise, it takes the value 0.	0.57	0.49

Note: Author's computation from the survey data. All these variables are binary variables. The mean represents the proportion of people reporting the value/category 1.

4. A Robustness Check: OLS Regression with Standardized Dependent Variable

Another way to run an OLS regression is first to standardize the happiness variable (dependent variable) by subtracting the mean and dividing by the standard deviation. We made the OLS regression coefficients comparable with the ordered probit regression coefficients through the transformation (normalization) of the dependent variable. The results are shown in Table A1, in which there are two columns corresponding to two different specifications.

In the first column, we report the results of the OLS regression of normalized life satisfaction on the dummy of employed, dummy of educated, dummy of female, interaction between dummies of female and educated, and interaction between dummies of female and employed. No other control variables or interaction terms are used in the first column. The interaction terms are negative and highly significant (1% level). In the regression result reported in column 2, we controlled for all other factors and their interactions with the female dummy. The correlation between life satisfaction (normalized) and employment turned out to be significantly less for women at the 10% level. The gender-varying correlation between life satisfaction (normalized) and education was negative and significant at the 5% level.

Table A1. OLS Regression (Standardized Variables)

Variables			(1) life satisfaction (z score)	(2) life satisfaction (z score)
female*employed			-0.830***	-0.327*
			(0.153)	(0.182)
female*educated			-0.422***	-0.260**
			(0.126)	(0.132)
Observations	1,257	1,214		
R-squared	0.041	0.361		
exogenous controls	no	yes		
other controls	no	yes		
all interactions	no	yes		

Note: The dependent variable is the life satisfaction score. The unit of analysis is an individual. We ran OLS regressions for the entire sample. In the first column, life satisfaction is regressed on the dummy of employed, dummy of educated, dummy of female, interaction between dummies of female and educated, and between dummies of female and employed. No other control variables or interaction terms are used in the first column. In the second column, we control for all the control variables and their interaction with the female dummy. Slum fixed effects are also controlled. Robust standard errors are in parentheses; ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.

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