Wife vs. Husband: How Can Differences in Identity Identify Poor Quality Data?

Adan Silverio Murillo *

November 24, 2017

Abstract

Asset information and household characteristics are frequently used to conduct empirical research and to guide public policy, such as generating measures of poverty or targeting programs to the poor. Practitioners assume that these variables are free of systematic measurement error. To test this assumption, I use an experiment with poor households participating in Mexico's PROGRESA program when the same questions regarding assets and home characteristics were asked to the wife and to the husband, I find: (1) important discrepancies in the information reported between the spouses; for example, when asked about the possession of a washing machine, the information reported did not match in 24% of the households; (2) differences in their self-identification of social class; for example, when asking about their social class (poor, middle class, or rich), the self-identification reported did not coincide for 43% of the spouses; and (3) evidence that self-identification of social class matters when answering a survey. The results show that individuals who participate in PROGRESA (a condition of being poor) and self-identify as being middle class or above over-report information regardless of gender. These results are robust to a bounding argument for omitted variable bias implemented by Oster (2016). Overall, these findings suggest that who answer the survey matters, and the information regarding assets and household services is not free of systematic measurement error.

JEL Classification: C83, D13, O12, I32. *Keywords:* Poverty, Survey data, Identity.

*American University, Department of Public Administration & Policy. E-mail: asmurillo@american.edu

1 Introduction

Household surveys are among the main instruments for conducting empirical research and making public policy decisions; yet, how accurate is the information collected through such surveys? When answering a survey, individuals may have incentives to misreport information. For example, Meyer and Mittag (2015), using data from USA, find evidence that some individuals underreport income in order to get more assistance from the government. While income is a variable that can be misreported by the individuals, information regarding assets and household services seem to be less susceptible of misreporting. At least this appears to be the consensus among practitioners who use information regarding assets and housing services to targeting programs to the poor, generate multidimensional measures of poverty, or testing baseline differences in randomized controlled trials, among other uses.

But, is the data collected from surveys regarding assets and home services accurate? To answer this question, I use a unique experiment with poor households participating in the social program PROGRESA in Mexico. Questions regarding the possession of eighteen goods and eight household services were asked to both the wife and the husband, separately, in a random sample of 900 households. I find important discrepancies in the information reported between the spouses, e.g. when asked about the possession of a washing machine, the information reported did not coincide in 24% of the households.

Why are spouses not reporting the same information? Individuals may consider the potential benefits (such as access to a social program) of cheating (underreporting information)

and the cost of cheating (probability of being discovered and the potential penalties). Mazar and Ariely (2006) propose that in addition to the external reward mechanisms (cost-benefit analysis), there are internal reward mechanisms that affect the decisions of individuals regarding cheating. In particular, empirical evidence has found that psychological factors, such as identity, matter when telling the truth. Akerlof and Kranton (2000) propose that individual's self-concept (or self-identity) can predict how he or she will adjust his or her behavior to closely mirror the desired belief about himself or herself. Thus, I hypothesize that individuals that participate in PROGRESA (a condition of being poor) and self-identify as being middle class or above will over-report information to behave according to the identity reported.

Ordinary Least Squares show that when one of the spouses reports being of a higher social class (with respect to that reported by the partner), then he/she ends up reporting more goods and household services (than those reported by the partner). Specifically, one standard deviation increase in the social class self-identity reported by the husband (wife) with respect to the social class reported by the wife (husband) increases by .15 standard deviations an index regarding the differences in assets and home characteristics reported between the spouses. To address the problem of omitted variable bias, a novel bounding technique is implemented: Oster (2016). The results suggest that the estimate is robust to omitted variable bias.

There have been some efforts to identify problems in survey data. Judge and Schechter (2009) proposed that Benford's law can be used as a tool to detect problems in surveys. The

idea behind Benford's law is that, in large data sets, numbers with a first digit of 1 are observed more often than those starting with 2, and so on. In particular, Benford's law proposes that: P(First digit is d)= $log_{10}(1+\frac{1}{d})$. Judge and Schechter (2009) analyzed data from nine commonly used datasets, including the Matlab Health and Socioeconomics Survey (MHSS) from Bangladesh, the PROGRESA data from Mexico, the Living Standards Measurement Survey (LSMS) from Peru, the Agricultural Resource Management Survey (ARMS) from the United States, among others. Their principal result is that the data from developing countries are of poor quality based on Benford's law, and the data from the United States are of better quality. In addition, they reported no differences between female and male respondents. Unfortunately Benford's law cannot be applied to binary or categorical data; but which are fundamental to conduct empirical research.

The results of this paper contribute to a growing, but scarce literature, showing problems in the quality of data collected trough surveys. In particular, this paper presents evidence that who answer the survey matters. More importantly, I present evidence that the problems observed in the collection of data can be associated with the psychological characteristics of the respondents, specifically, with social class self-identity. Practitioners need to focus not only in the consumption of survey data, but also into generate mechanisms to induce truth-telling when collecting data trough surveys.

The rest of the paper is organized as follows: Section 2 reviews the related literature; Section 3 introduces the data, and Section 4 describes the empirical strategy; Section 5 presents the results; and Section 6 concludes.

2 Literature Review

Philipson and Malani (1999) point out that economists pay much more attention to the consumption of data than to the production of data. Judge and Schechter (2009) mention that this point is consistent with the increasing literature on how to handle problems of measurement errors, but little literature on how to prevent it. Philipson and Malani (1999) propose that the data collection process can be analyzed as a labor market where the investigator is the principal and the individuals who provide information are the agents. The problem is that the agents have preferences (does the respondent want to tell the truth?) and problems of information (does the respondent know the truth?). And, this situation is the principal source of erroneous reporting. While Philipson and Malani (1999) recognized problems in survey data, they do not provide a clear answer about why individuals not report the truth.

The literature has documented problems in the quality of data collected through surveys. Martinelli and Parker (2009), using data from PROGRESA, find evidence of misreporting and overreporting when analyzing dummy and categorical variables. When the program was expanded from rural to urban areas (2002), the applicants first attended a registration meeting, and provided information in order to participate in the program. From those who were eligible based on a household poverty index, the program sent a representative to their house in order to verify the information provided at the registration meeting. Martinelli and

Parker (2009) compared these sources of information, and they find underreporting in gas boilers, cars, trucks, and washing machines; and they present evidence of over reporting in toilets, tap water, and concrete floor. My paper presents four important differences with respect to Martinelli and Parker (2009): (1) the information was collected in the household; (2) the information was asked to both the wife and the husband; (3) the information was collected in the name of a private University; and (4) I use psychological characteristics of the individuals to understand the mismatching in the information reported. Despite the survey was conducted in the household, I still find important discrepancies in the information reported between the spouses. This result is in line with the evidence presented by Onwujekwe, Hanson, and Fox-Rushby (2006), who using data from Nigeria, found disturbingly low correlations between the responses obtained by different numerators visiting the same home in a single day when asking about basic indicators of socio-economic status. In addition, they find different answers when the same numerator interviews the household twice. Yet, despite the documentation of evidence regarding problems in survey data, little attention has been paid to the psychological characteristics of the individuals who answer surveys.

According to Becker (1974), a person chose to committee a deviant behavior (like cheating on a survey) weighing the expected material benefits against the punishment costs. Yet, sociological and psychological literature argues that in addition to rational cost-benefit calculations, the decision depends on moral and identity considerations (Anderson 2000). Akerlof and Kranton (2000) propose that the identity of the individuals affect their utility. In particular, they develop a model where identity is tied to norms prescribing how ones should behave. Identity influences behavior because individuals experience disutility if their

behavior deviates from what their identities prescribe. Applying this result to the context of answering a survey, I propose that individuals develop a self-identity based on social class (poor, medium class, rich, etc.), and this identity will guide their behavior. Thus, I hypothesize that individuals that participate in a social program (hypothetically poor) and self-identify as middle class or above will tend to over-report the possession of assets and household services in order to behave according to their social class self-identity.

3 Data

To analyze the effects of social class self-identification on the differences in the possession of goods and home characteristics reported by the wife and the husband, I use a database from couples participating in Mexico's PROGRESA conditional cash transfer program. The survey collected information from 903 couples on non-cognitive skills and socioeconomic information. To analyze the quality of the data, I follow Judge and Schechter (2009), and I use a χ^2 test to check the extent to which the data conform with Benford's law. The results are presented in Table 1 and the variables that I analyze are income, light bulbs and number of rooms. Separately by the gender of the respondent, for the three variables analyzed, I reject the null hypothesis that the data follow Benford's law. This opens the possibility that the data contain abnormalities.

Until some extent, we can argue that the data on income is of poor quality and present a considerable problem of recall and calculation. Yet, variables such as assets and household

services have the advantage of being dummy variables, and the problem of recall and calculation could be minimum. Unfortunately, I can not test the hypothesis that these variables are free of error using Benford's law, because it can not be applied to dummy variables. Thus, I exploit the nature of the experiment, using the information of the spouses regarding the information of assets and household services within the same household. Table 2, column 1, shows the information reported by husbands and column 2 those reported by wives. There are no important discrepancies when comparing column 1 and 2. For example, 63.5% of the husbands reported the possession of a refrigerator in their houses, while this percentage is 65.1% for wives. Column 3 presents the percentage of mismatch regarding the 26 items, i.e. the percentage of cases when the information provided by husbands did not coincide with the information provided by wives. This suggests problems with the quality of the data collected. For example, in the case of having a refrigerator, for 21.3% of the couples the information provided by the husband did not match the information provided by the wife. In particular, for 9.8% of the cases, the husband responded that the household had a refrigerator and the wife replied that the household was not in a possession of a refrigerator (see column 4); and for 11.5% the husband responded that the household was not in a possession of a refrigerator while the wife responded that the household had a refrigerator (see column 5). The percentage when there is a mismatch goes for 2.2% in the case of having a canoe up to 32.9% for the case of having a music device (see column 3). Yet, the percentage of mismatching is lower than 10% in the cases when the items are present in a high proportion (like having a TV or electricity) or when the assets are almost absent in the majority of the households (like having a local business).

Figure 1 presents the differences in assets and household services reported by the husbands and the wives. It is observed that only in 20% of the households the information reported about the total number of assets coincide. The difference goes from -11 (the husband reported 11 less assets than those reported by the wife) to 15 (the husband reported 15 more assets with respect to those reported by the wife). It is observed that in 10% of the cases the husband reported 4 or less assets than those reported by the wife. And, the husband reported 4 or more assets than those reported by the wife in 7% of the cases. The information regarding social class self-identification is reported in Table 3 for the wife and the husband. The question regarding social class asks the individuals to classify themselves in one of the following categories: 1. extremely poor , 2. poor, 3. medium class (low) , 4. medium class (medium), 5. medium class (high), and 6. rich. Given that these families participate in PROGRESA, it would be expected that the majority classify themselves as extremely poor or poor. Yet, only 44.82% of the wives and 51.69% of the husbands reported being poor or extremely poor. More interestingly, only in 28.49% of the couples, the information reported by the wife and the husband coincides when classifying the household as poor or extremely poor.

Table 4 presents information regarding other variables that I will use as controls. In the case of age, the husbands are relative older than wives, 48.64 and 44.89 years old respectively. For years of school, it is not observed important differences with an average of four years. I also control for impulsiveness, self-esteem, anxiety, depression, and religiosity. The self-esteem questions are based on Rosenberg (1965); the self-control questions are based on the Self-Regulation Questionnaire of Brown et al. (1999); the depression questions are based

on Zung (1965); the anxiety questions are based on Beck et al. (1988); and the religiosity questions are based on the System of Belief Inventory of Grulke et al. (2003). These tests were adapted to the Mexican context by Palomar (2015). To avoid loosing data, I use the question with the higher factor loading when conducting principal component analysis (see Appendix Table A2). Yet, my results are robust when including the complete tests, but I lost a considerable number of observations (see Results section). In the case of impulsiveness (lack of self-control), I choose the question: "when you get angry, you are violent", and they have the following categories: 1. never, 2. rarely, 3. frequently, and 4. always. Table 4 shows no differences regarding impulsiveness between the wife and the husband, an average of 2.11 and 2.06 respectively. Regarding self-esteem, I choose the following question: "I feel that I am a person of worth, at least on an equal plane with others." The average score for the husbands is 3.48 and for the wives is 3.53 (see Table 4). Another potential variable that can be related to how people reveal the truth on surveys is religiosity. To measure religiosity, I use the question: "How frequently you wonder what did you do to God in order to punish you?" In the case of the wives the average is 2.05 and for the husbands is 2.10. Another variable that can affect how individuals answer a survey is anxiety. It is possible that when individuals suffer from anxiety they have problems to concentrate and the answers provided are not accurate. One of the manifestations of anxiety is having a trembling body. The survey asks the individuals if they have experienced this situation, and they have the following possibilities: 1. never, 2. little, 3. a lot, 4. with severity. It appears that wives suffer more trembling body than husbands, 1.63 vs. 1.51. Finally, in the case of depression, the question asks if the individuals feel nervous. The results show that the average of the wives is bigger than the average of husbands, 2.27 and 1.92 respectively (see Table 4).

4 Estimation Strategy

4.1 Identification Strategy

This paper analyzes the effects of social class self-identity on the differences in the possession of goods and home characteristics reported by the wife and the husband from couples participating in PROGRESA. Ideally, I would like to estimate the following equations for the husband (h) and the wife (w):

$$Y_j^h - Y_j^r = \beta T_{hj} + \gamma X_{hj} + e_{hj} \tag{1a}$$

$$Y_j^w - Y_j^r = \beta T_{wj} + \gamma X_{wj} + e_{wj} \tag{1b}$$

where Y_j^i is an index adding assets reported by individual i in house j, Y_j^r is and index adding the real number of assets within the household, T_{ij} represent the variable of interest (social class self-identity) of the individual i in house j, X is a vector of observed control variables, and e is an error term with mean zero. Unfortunately, I cannot observe Y_j^r, thus I use the following specification:

$$Y_j^h - Y_j^w = \beta(T_{hj} - T_{wj}) + \gamma(X_{hj} - X_{wj}) + e_{hj} - e_{wj} \tag{1c}$$

The parameter β is testing for the hypothesis of a linear relationship between the variable of interest (self-identity) and the number of goods and home characteristics reported versus the real number within the household. For example, if this coefficient is positive and statis-

tically significant, it implies that when individuals report a higher social class self-identity increases the difference between the goods and services reported by the individual and the real number of assets within the household.

A study of this type presents several econometric challenges. First, the measure of social class self-identity is a proxy variable, so there is a potential problem of measurement error. It is well-known that when regressors are measured with random error, the parameters estimated tend to be biased toward zero. Second, self-identity may be correlated with other psychological variables not present in the data. If such variables have a causal impact on the outcome of interest, then they are in the error term e and their correlation with T will generate bias in the estimated impacts of social class self-identity.

To address the problem of omitted variable bias, I use a recently developed bounding methodology: Oster (2016). A common approach to evaluate robustness to omitted variable bias is to include additional control variables on the right hand side of the regression (Altonji et al., 2005). If such additions do not affect the coefficient of interest, then this coefficient can be considered to be unlikely to be biased. This strategy implicitly assumes that selection on observables is informative about selection on unobservables. Oster formalizes this idea, and provides conditions for bounds and identification. Following the notation in Oster, the full model has the form:

$$\mathrm{Y} = \beta\,\mathrm{T} + X_1 + X_2 + \epsilon. \tag{2}$$

where T is the variable of interest, X_1 contains the J_o *observed* control variables multiplied by their coefficients, i.e. $X_1 = \sum_{j=1}^{J_o} x_j^o \gamma_j^o$, and X_2 contains all J_u *unobserved* variables multiplied by their coefficients, i.e. $X_2 = \sum_{j=1}^{J_u} x_j^u \gamma_j^u$. Finally, ϵ is a random error that represents measurement error in Y and is uncorrelated with X_1, X_2, and T. Oster (2016) suggests the following approach to account for omitted variable bias:

(1) Regress Y on T, and report the parameter on T, denoted by β^0, and the R-squared coefficient, denoted by R^0.

(2) Regress Y on T and X_1, and report the parameter on T, denoted by $\tilde{\beta}$, and the R-squared coefficient, denoted by $\tilde{R}$.

(3) Define R_{max} as the overall R-squared of the model, that is the R-squared that would be obtained from a regression of Y on both observables (T, X_1) and unobservables (X_2). Also, define δ to be a parameter that ensures the equality $\frac{Cov(T,X_2)}{Var(X_2)} = \delta \frac{Cov(T,X_1)}{Var(X_1)}$. In other words, this relationship formalizes the idea that the magnitude and sign of the relationship between T and X_1 provides some information about the magnitude and sign of the relationship between T and X_2.[1] Oster shows that $\beta^* = \tilde{\beta} - \delta \frac{\left(\beta^0 - \tilde{\beta}\right)\left(R_{max} - \tilde{R}\right)}{\left(\tilde{R} - R^0\right)}$ is a consistent estimator of the effect of T on Y, β.

But, to estimate β^*, one needs estimates of δ and R_{max}. Oster proposes assumptions for

[1]For example, if $-1 \leq \delta \leq 1$, then the variable of interest (T) is no more correlated with unobservables (X_2) than it is correlated with observables (X_1). The case $0 \leq \delta \leq 1$ has a similar interpretation, with the additional assumption that the relationship between T and X_1 have the same sign as the relationship between T and X_2.

δ and R_{max} that allow one to determine whether β^* is different from zero. Oster proposes that $R_{max} = min\{1.3\tilde{R}, 1\}$, where the $\tilde{R}$ is defined as above.[2] An alternative value for R_{max} is given by Gonzalez and Miguel (2015), who used $R_{max} = \tilde{R} + (\tilde{R} - R^0)$. In addition to these two methods to choose the R_{max}, I will also use a conservative $R_{max} = 1$. After determining the value of R_{max}, Oster suggests that β^* be calculated for the following ranges of δ: $0 \leq \delta \leq 1$.[3] This allows one to construct the set $[\beta^*(\delta = 0), \beta^*(\delta = 1)]$ for different values of R_{max}. If this set excludes zero, the results from the controlled regressions can be considered to be robust to omitted variable bias. In other words, the results indicate that $\beta^* \neq 0$.

5 Results

5.1 Principal Results

To analyze the effects of social class self-identification (identity) on explaining the differences in the goods and household services reported by the wife and the husband, I first present results using an OLS regression, and then apply a bounding strategy.

Column 1 of Table 5 presents a linear model (OLS regression) of the impact of differences in social class self-identification between the husband and the wife on the difference in goods and household services reported. I control for the differences in age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity between the husband and the

[2]The cut-off value of 1.3 is derived from a sample of 65 papers that have used randomized controlled trials. She determined that using this cut-off allowed 90% of the randomized results to continue being statistically significant.

[3]In addition, I will present the results for δ: $-1 \leq \delta \leq 0$.

wife. The results show that a one standard deviation increase in the difference in social class self-identification between the husband and the wife increases by .19 standard deviations an index regarding the differences in assets and home characteristics reported by the husband and the wife. To check the robustness of this result, column 2 incorporates state fixed effects, and column 3 incorporates municipality fixed effects. The coefficient associated with the difference in the social class self-identification between the spouses continues to be statistically insignificant.

It is possible that the estimate of the effect of the differences in the social class self-identification by the spouses is affected by omitted variable bias. Table 6 presents results using Oster's methodology to analyze the robustness of the results presented in Table 5. Panel A presents the results under the assumption that $0 \leq \delta \leq 1$, i.e. assuming that the relationship between the variable of interest and the (aggregated) controls has the same sign as the relationship between the variable of interest and the (aggregated) unobservables. Column 1 estimates bounds using the value of the R_{max} proposed by Oster (2016), which yields a very tight bounds estimate of [0.145, 0.155]. To check the robustness of this estimate of the bounds, I also estimate bounds using the R_{max} proposed by Gonzalez and Miguel (2015) in Column 2. The bounding estimated is: [0.126, 0.155]. To further check the robustness of the results, I use the extreme value that $R_{max} = 1$, which yields a bounding estimate of [0.017, 0.155] in Column 3. Panel B presents the results when $-1 \leq \delta \leq 0$.[4] Using the R_{max} proposed by Oster, the bounding estimated is: [0.155, 0.165]. Using the R_{max} pro-

[4]The case $-1 \leq \delta \leq 0$ assumes that the relationship between T and X_1 has different sign than the relationship between T and X_2.

posed by Gonzalez and Miguel, the bounding is: [0.155, 0.184]. Finally, using a conservative $R_{max} = 1$, the bound is: [0.155, 0.293]. To sum up, the effect of the difference in the social class self-identification between the spouses on the differences in the assets reported is robust when Oster's bounding methodology is used.

Is the difference in social class reported between the spouses explaining the differences in goods or household services reported? To answer this question, I separate the original index in two: an index for the differences in the possession of goods and an index regarding the differences in the household services reported by the spouses. Table 7 reproduces Table 5 with the only difference that the dependent variable is an index of differences in goods reported between the spouses. The coefficient associated with the differences in social class self-identification is positive and statistically significant: .178. This coefficient continues being statistically significant when fixed effects at the level of state (Column 2) and municipality (Column 3) are included. Table 8, presents the results using Oster's methodology to check for the robustness against omitted variables bias. Panel A presents the case when $0 \leq \delta \leq 1$, and different assumptions regarding the R_{max} (Oster, 2016; Gonzalez and Miguel, 2015, and a conservative R-squared), the bounds do not include the zero. When $-1 \leq \delta \leq 0$ and for different assumptions regarding the R_{max} the bounds do not include the zero (see Panel B on Table 8). Thus, Oster's methodology confirms that the results are robust to the problem of omitted variable bias.

Table 9, reproduces Table 5. The dependent variable is an index for the difference in the household services reported by the wife and the husband. Column 1 presents the results for the differences in the social class self-identification between the spouses, and it is ob-

served that the impact of this variable on the difference of household services reported is statistically significant. In particular, one standard increase in the difference between the social class self-identification reported by the spouses increases by .12 standard deviations the index of differences in household services. The coefficient continues being statistically significant when fixed effects at the state level (Column 2) and municipality level (Column 3) are included. Table 10 presents a robustness check of this result using Oster's methodology. Regardless the assumption about δ and R_{max}, the bounds do not include the zero. So, using this bounding strategy the result regarding the effect of differences on social class self- identity on the difference in the household services reported is robust to the problem of omitted variables.

The econometric model assumes that the coefficient associated with social class self-identification (β) is the same regardless of gender (see equations 1a and 1b in the Identification Strategy section). Is it possible that the coefficient associated with social class self-identification is different depending on the gender? To answer this question, I estimate the model presented in Table 5, but giving the flexibility of variation regarding gender. The results are presented in Table 11. The coefficient associated with husband's social class self-identification is 0.177 and the coefficient associated with the wife's social class self-identification is 0.132. The coefficients are statistically significant when I control for state fixed effects (Column 2) and municipality fixed effects (Column 3). Yet, it is observed a decrease in the coefficients of interest when using municipality fixed effects: 0.144 for husbands and 0.097 for wives. Yet, I am not able to reject that the coefficient associated with the husband is statistically different from the coefficient associated with the wife's social class

self-identification. Finally, Table 12 presents the results using the bounding methodology to test how the coefficients associated with husband's and wife's social class self-identification are robust to the problem of omitted variables. It is observed that from the different assumptions regarding δ and R_{max}, the bounds do not include the zero for the coefficient associated to the wife and to the husband.

Until this point, I have presented evidence that when one of the spouses reports being part of a higher social class with respect of the social class reported by the other spouse, then it is observed that the spouse that report being in a higher social class reports more goods and services within the household. Yet, it is not clear if the spouse who reports being in a higher social class is over reporting the goods or it is the case that the spouse that reports being in a lower social class is underreporting the information. From the econometric specification (see equation 1a), it is clear that when there is an increase in the social class reported by the individual i in house j (T_{ij}), then it is observed and increase in the number of assets and services reported with respect the real number of assets and services within the household. Thus from this specification, it is clear that the spouse that reports being on a higher social class is over reporting information. Another argument came from the nature of the individuals participating in the program. PROGRESA was implemented in poor areas in Mexico, thus it is more plausible that individuals are poor than non-poor. Thus, the individuals who claim being in a higher social class potentially are over-reporting the information. Finally, I use an econometric specification to analyze until which extent the individuals are over-reporting the information. This idea assumes that individuals who report higher education and report being in a higher social class report the truth. Then, I interact

the value of social class self-identification with education. If the coefficient associated with this variable is statistically significant, then it opens the possibility that individuals that self-identify in a higher social class and have more education are reporting the truth. Thus, we can conclude that these individuals are reporting the correct information and the individuals who reports being in a lower social class are under reporting the information. Table 13 presents evidence that the coefficient associated with the interaction between education and social class self-identification is not statistically significant. Thus, using this result we can not reject the hypothesis that the individuals are over-reporting the information.

5.2 Robustness Checks

5.2.1 Assortative Mating

The econometric specification supports a model when the outcome of interest (difference in assets and household services reported between the spouses) is explained by the differences between the spouses in the variable of interest (social class self-identification) and controls (age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity). Yet, this specification does not include the possibility of assortative mating between the spouses. Table 14 reproduce Table 5, but including new controls that interact the variables of interest between the wife and the husband. The parameter of interest, i.e. the coefficient associated with the differences in the social class self-identification continues being statistically significant (0.151). Finally, it is observed that the coefficient associated with the interaction between the religiosity of the individuals is statistically significant, i.e. it is observed that

when both individuals are religious, then it is observed a reduction in the differences in the assets reported between the individuals (-0.087).

5.2.2 Problems of information

The transfers from PROGRESA are given principally to the wife, thus it is possible that the husband did not know that the household receives income from PROGRESA. As a consequence, the husband was not careful when answering the survey. Table A1, on the appendix, presents evidence of this situation. It is observed that around 10% of the husbands reported that the household was not receiving transfers from PROGRESA. So, I generate the variable "participation in PROGRESA" which is the difference between the information reported by the husband minus the information reported by the wife. Table 15 reproduces Table 5, but including the variable "participation in PROGRESA" and the interaction of this variable with the variable regarding social class self-identification. The coefficient associate with social class self-identification remains statistically significant (0.151) and I do not observe that the coefficient on "participation in PROGRESA" being statistically significant.

5.2.3 Problems in the ownership of the assets

Assets operate more as private goods than public goods. For example, savings can be of one of the members of the household and not reported to the others. Thus, I decided to exclude goods that can be identified with one of the members of the household such as boat, machinery or work equipment, farm animals, local business, apartment or room for rent, other

land, and savings. The results are presented in Table 17. The coefficient associated with the differences in social class self-identification between the husband and the wife remains statistically significant (0.152).

5.2.4 Using complete tests

To avoid loosing a considerable number of observations, the results presented only use the question with the higher load in the principal component analysis for impulsiveness, self-esteem, anxiety, depression, and religiosity. But, is it observed any change on the coefficient on social class self-identification when using the complete tests, i.e. using all the variables including in the psychological tests? To answer this question, I use principal components (the results are presented in Table A2), and then I recalculate the differences reported between the wife and the husband regarding the psychological variables. The results are reported in Table 17. I observe a considerable decrease in the number of observations (from 847 in Table 5 to 663 in Table 17); yet, the coefficient associated with social class self-identification remains statistically significant (0.178).

6 Summary and Concluding Remarks

I use a unique dataset that asks the same questions of the wife and of the husband regarding the possession of goods and household services; and I find discrepancies in the information reported between the spouses. Using Ordinary Least Squares, the results show that social class self-identity for the wife and the husband is an important variables that explains the discrepancies observed in the possession of goods and services.

Researchers and policy makers need to be careful about how the data are used. For example, when using data to construct a proxy means test, policy makers recognize that individuals have incentives to underreport income. As a consequence, they use variables such as the possession of assets to proxy the real income of the households. It is assumed that these variables are free of systematic measurement error. Yet, this paper presents evidence that contradicts this assumption. In this sense, it is necessary to implement strategies that can provide incentives to individuals to accurately report the data.

7 References

Altonji, J., T. Elder, and C. Taber (2005). "Selection on Observed and Unobserved Variables: Assessing the Effectiveness of Catholic Schools". *Journal of Political Economy*, 113(1), pp. 151-184.

Akerlof, G. and R. Kranton (2000). "Economics and Identity", *The Quaterly Journal of Economics*, 115(3), pp. 715-753.

Anderson, E. (2000). "Code of the Street: Decency, Violence, and the Moral Life of the Inner City", New York: W.W. Norton & Company.

Beck, A., G. Brown, N. Epstein, and R. Steer. "An Inventory for Measuring Clinical Anxiety: Psychometric Properties", *Journal of Consulting and Clinical Psychology*, 56 (6), pp. 893-897.

Becker, G. (1974). "A Theory of Social Interactions", *Journal of Political Economy*, 82(6), pp. 1063-1093.

Brown, G., W. Miller and L. Lawendowski (1999)."The Self-Regulation Questionnaire", *Innovations in Clinical Practice: A Source Book*. Vol. 17, pp.281-289.

Gonzalez, F. and E. Miguel (2015). "War and Local Collective Action in Sierra Leone: A Comment on the use of Coefficient Stability Approaches." *Journal of Public Economics*, 128, pp. 30-33.

Grulke, N. , B. Harald, G. Blaser, M. Geyer, E. Brahler, and C. Albani (2003). "Measuring Religious Attitudes: Reliability and Validity of the German version of the Systems of Belief Inventory in a Representative Sample", *Mental Health, Religion & Culture*, 6(3), pp. 203-213.

Judge, G. and L. Schechter (2009). "Detecting Problems in Survey Data Using Benford's Law", *Journal of Human Resources*, Vol. 44, pp. 1-24.

Martinelli, C. and S. Parker (2009). "Deception and Missreporting in a Social Program", *Journal of the European Economic Association*, vol. 7 886-908.

Mazar, N. and D. Ariely (2006). "Dishonesty in Everyday Life and Its Policy Implications", *American Marketing Association*, Vol. 25(1), pp. 2-21.

Meyer, B. and N. Mittag (2015). "Using Linked Survey and Administrative Data to Better Measure Income: Implications for Poverty, Program Effectiveness and Holes in the Safety Net", NBER Working Paper No. 21676.

Onwujekwe, O., K. Hanson, and J. Fox-Rushby. “Some Indicators of Socio-economic Status may not be Reliable and Use of Indices with these Data Could Worsen Equity", *Health Economics*, 15, pp. 639-644.

Oster, E. (2016). “Unobservable Selection and Coefficients Stability: Theory and Evidence". *Journal of Business Economics and Statistics*, Forthcoming.

Palomar Lever, Joaquina (2015). “Rendimiento Académico, Ajuste psicosocial y Bienestar Subjetivo en Adolescents Hijos de Beneficiaries del Programa de Desarrollo Humano Oportunidades.” México, Universidad Iberoamerica.

Philipson, T. And A. Malani (1999). “Measurement Errors: A Principal Investigator-Agent Approach”, *Journal of Econometrics*, Vol. 91(2), pp. 273-298.

Rosenberg, M. (1965). *Society and the Adolescent Self-image*, Princeton, NJ: Princeton University.

Zung, W. (1965). “A Self-rating Depression Scale", *Arch Gen Psychiatry*, 12, pp. 63-70.

8 Tables and Figures

Figure 1: Differences in Goods and Household Services Reported between the Husband and the Wife

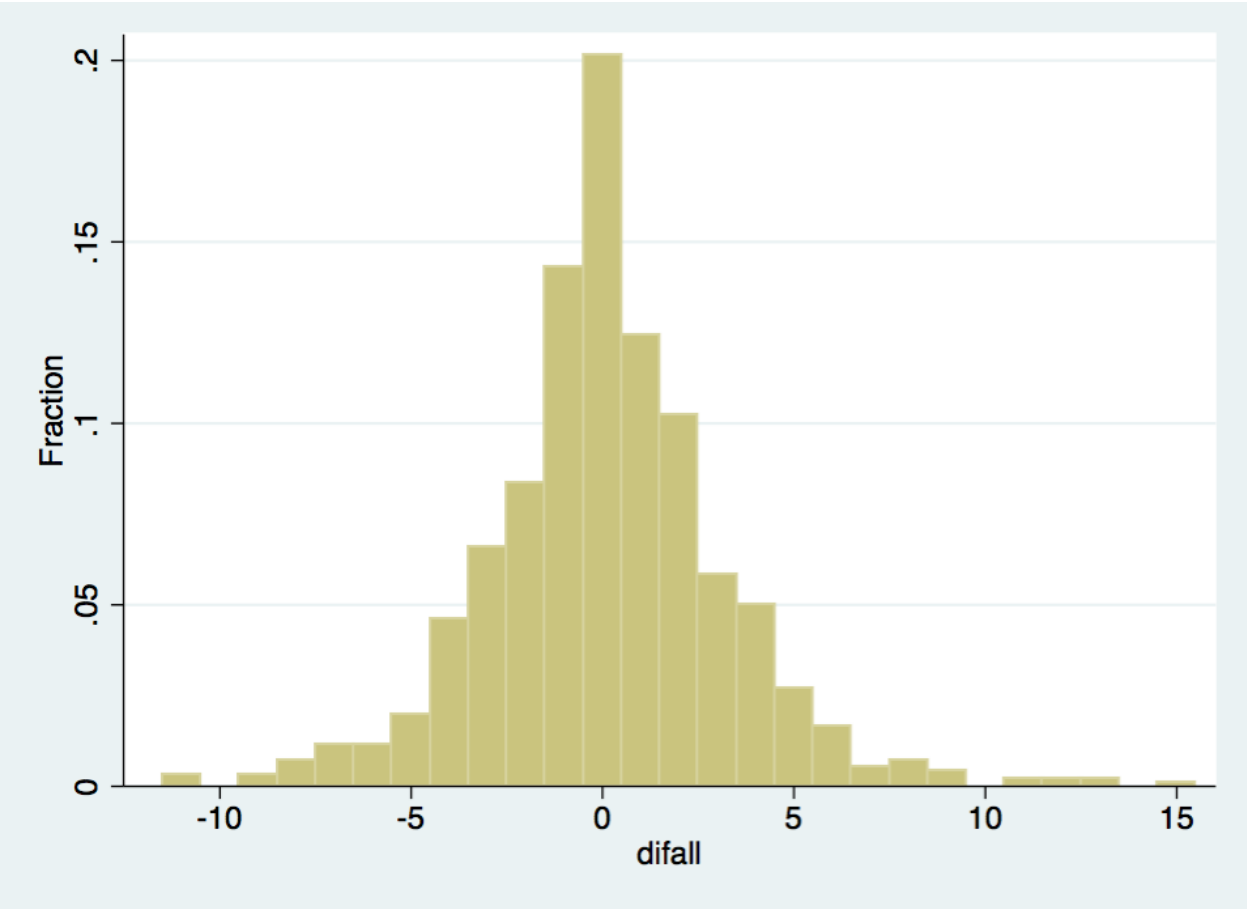

Table 1: χ^2 **Tests Between Benford's Law and Some Items**

Variable	χ^2 man	χ^2 woman
Income	167.6 ***	157.2 ***
Light bulbs	523.3 ***	623.43 ***
Number of rooms	599.4 ***	619.7 ***

Source: PROGRESA experiment.
**** indicates 99% significantly different from Benford's Law.*

Table 2: **Descriptive Statistics: Household Services and Goods**

	Husband's report of possession of (%):	Wife's report of possession of (%):	Percentage that do not match (%)	Husband: Yes Wife: No	Husband: No Wife: Yes
Household services					
Toilet	74.4	75.3	24.5	11.7	12.8
Kitchen	76.9	78.4	23.8	11.2	12.6
Drainage	53.6	49.2	16.8	10.6	6.2
Gas	81.0	82.3	15.9	7.3	8.6
Hot water	16.0	14.6	15.6	8.6	7.0
Bath shower	23.2	19.0	15.4	9.9	5.5
Piped water	80.5	82.3	15.2	6.7	8.5
Electric light	95.5	96.9	4.9	1.7	3.2
Goods					
Music device	59.7	57.5	32.9	17.5	15.4
Bicycle	42.7	36.5	30.2	18.3	11.9
Farm animals	29.6	31.0	25.6	12.1	13.5
Washing Machine	42.7	43.1	24.0	11.8	12.2
Gas stove	20.0	21.8	22.9	10.7	12.2
Refrigerator	63.5	65.1	21.3	9.8	11.5
Living room	23.7	23.0	18.7	9.7	9.0
Automobile	19.4	16.2	13.7	8.5	5.2
Landline	15.7	16.6	13.5	6.3	7.2
Photographic camera	8.4	6.6	10.9	6.4	4.5
Other land (apart from home)	8.3	6.5	10.7	6.3	4.4
Television	90.9	90.6	8.4	4.4	4.0
Machinery or work equipment	5.5	3.0	7.0	4.8	2.2
House, apartment or room to rent	4.3	3.7	7.0	3.8	3.2
Motorcycle	5.2	5.5	5.6	2.6	3.0
Savings	1.9	3.6	4.9	1.5	3.4
Local business	2.7	2.8	3.6	1.7	1.9
Canoe or boat	2.0	1.7	2.2	1.2	1.0

Source: PROGRESA experiment.

Table 3: **Wife vs. Husband: Social Class Self-Identification**

		Wife					
		Extremely Poor	Poor	Medium Class (low)	Medium Class (medium)	Medium Class (high)	Rich
Husband	Extremely Poor	39	47	33	20	2	3
		(4.39)	(5.29)	(3.72)	(2.25)	(0.23)	(0.34)
	Poor	49	118	97	39	7	5
		(5.52)	(13.29)	(10.92)	(4.39)	(0.79)	(0.56)
	Medium Class (low)	32	58	94	46	13	12
		(3.60)	(6.53)	(10.59)	(5.18)	(1.46)	(1.35)
	Medium Class (medium)	8	33	49	29	8	4
		(0.90)	(3.72)	(5.52)	(3.27)	(0.90)	(0.45)
	Medium Class (high)	3	7	10	6	4	0
		(0.34)	(0.79)	(1.13)	(0.68)	(0.45)	(0.00)
	Rich	0	4	4	4	1	0
		(0.00)	(0.45)	(0.45)	(0.45)	(0.11)	(0.00)

Source: PROGRESA experiment.
Note: The relative frequency of each cell is reported in parentheses.

Table 4: **Basic Descriptive Statistics**

	Husband	Wife
Age	48.64	44.89
	(12.89)	(12.10)
Years of School	3.92	4.04
	(3.74)	(3.61)
Impulsiveness	2.11	2.06
	(0.99)	(1.00)
Self-esteem	3.48	3.53
	(0.74)	(0.72)
Religiosity	2.10	2.05
	(1.15)	(1.12)
Anxiety	1.51	1.63
	(0.81)	(0.88)
Depression	1.92	2.27
	(0.94)	(1.00)

Source: PROGRESA experiment.
Standard errors in parentheses

Table 5: **OLS Estimates: Effects of Social Class Self-identification and Self-control on the Index of Differences in Goods and Household Services**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.194***	0.175***	0.155***
	(0.049)	(0.038)	(0.035)
Age (Husband-Wife)	-0.047	-0.048	-0.056
	(0.041)	(0.043)	(0.044)
Years of School (Husband-Wife)	0.030	0.073**	0.067*
	(0.036)	(0.035)	(0.038)
Impulsiveness (Husband-Wife)	-0.010	-0.029	-0.027
	(0.042)	(0.042)	(0.044)
Self-esteem (Husband-Wife)	-0.015	-0.030	-0.015
	(0.039)	(0.035)	(0.033)
Anxiety (Husband-Wife)	0.089**	0.082**	0.080*
	(0.041)	(0.039)	(0.040)
Depression (Husband-Wife)	-0.034	-0.016	-0.002
	(0.046)	(0.043)	(0.040)
Religiosity (Husband-Wife)	0.005	0.010	-0.016
	(0.038)	(0.037)	(0.037)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.05	0.11	0.20
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: **Bounding Methodology: Effects of Social Class Self-identification on the Index of Differences in Goods and Household Services**

	(1)	(2)	(3)
	Oster (2016)	Gonzalez and Miguel (2015)	($R_{max} = 1$)
	Panel A :	$0 \leq \delta \leq 1$	
Social Class Self-Identification (Husband-Wife)	[0.145, 0.155]	[0.126, 0.155]	[0.017, 0.155]
	Panel B :	$-1 \leq \delta \leq 0$	
Social Class Self-Identification (Husband-Wife)	[0.155, 0.165]	[0.155, 0.184]	[0.155, 0.293]

Intervals in brackets are the bounds. The bounding controls for the differences in age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity between the husband and the wife.

Table 7: **OLS Estimates: Effects of Social Class Self-identification on the Index of Differences in Goods**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods			
Social Class Self-Identification (Husband-Wife)	0.178***	0.155***	0.136***
	(0.053)	(0.041)	(0.038)
Age (Husband-Wife)	-0.017	-0.015	-0.026
	(0.047)	(0.047)	(0.050)
Years of School (Husband-Wife)	0.018	0.052	0.052
	(0.036)	(0.036)	(0.040)
Impulsiveness (Husband-Wife)	0.017	-0.003	-0.001
	(0.039)	(0.038)	(0.037)
Self-esteem (Husband-Wife)	-0.003	-0.017	-0.005
	(0.040)	(0.036)	(0.036)
Anxiety (Husband-Wife)	0.073	0.068	0.066
	(0.049)	(0.046)	(0.047)
Depression (Husband-Wife)	-0.024	-0.010	0.002
	(0.048)	(0.045)	(0.041)
Religiosity (Husband-Wife)	-0.013	-0.010	-0.038
	(0.036)	(0.034)	(0.034)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.04	0.10	0.20
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: **Bounding Methodology: Effects of Social Class Self-identification on the Index of Differences in Goods**

	(1)	(2)	(3)
	Oster (2016)	Gonzalez and Miguel (2015)	($R_{max} = 1$)
	Panel A :	$0 \leq \delta \leq 1$	
Social Class Self-Identification (Husband-Wife)	[0.126, 0.136]	[0.107, 0.136]	[0.002, 0.136]
	Panel B :	$-1 \leq \delta \leq 0$	
Social Class Self-Identification (Husband-Wife)	[0.136, 0.146]	[0.136, 0.165]	[0.136, 0.270]

Intervals in brackets are the bounds. The bounding controls for the differences in age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity between the husband and the wife.

Table 9: **OLS Estimates: Effects of Social Class Self-identification on the Index of Differences in Household Services**

	(1)	(2)	(3)
Dep Var: Index of differences in Household Services			
Social Class Self-Identification (Husband-Wife)	0.121***	0.118***	0.106***
	(0.033)	(0.031)	(0.031)
Age (Husband-Wife)	-0.068**	-0.073**	-0.073**
	(0.030)	(0.031)	(0.031)
Years of School (Husband-Wife)	0.033	0.068**	0.055
	(0.035)	(0.032)	(0.033)
Impulsiveness (Husband-Wife)	-0.044	-0.054	-0.053
	(0.042)	(0.043)	(0.047)
Self-esteem (Husband-Wife)	-0.025	-0.034	-0.023
	(0.035)	(0.033)	(0.033)
Anxiety (Husband-Wife)	0.068*	0.061	0.061
	(0.035)	(0.037)	(0.038)
Depression (Husband-Wife)	-0.031	-0.018	-0.007
	(0.044)	(0.043)	(0.043)
Religiosity (Husband-Wife)	0.028	0.034	0.025
	(0.036)	(0.038)	(0.040)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.03	0.07	0.14
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: **Bounding Methodology: Effects of Social Class Self-identification on the Index of Differences in Household Services**

	(1)	(2)	(3)
	Oster (2016)	Gonzalez and Miguel (2015)	($R_{max} = 1$)
	Panel A :	$0 \leq \delta \leq 1$	
Social Class Self-Identification (Husband-Wife)	[0.101, 0.106]	[0.091, 0.106]	[0.009, 0.106]
	Panel B :	$-1 \leq \delta \leq 0$	
Social Class Self-Identification (Husband-Wife)	[0.106, 0.110]	[0.106, 0.120]	[0.106, 0.203]

Intervals in brackets are the bounds. The bounding controls for the differences in age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity between the husband and the wife.

Table 11: **OLS Estimates: Effects of Social Class Self-identification on the Index of Differences in Assets and Household Services**

	(1)	(2)	(3)
Dep Var: Index of differences in Assets and Services			
Social Class Self-Identification (Husband)	0.177***	0.169***	0.144***
	(0.044)	(0.041)	(0.040)
Social Class Self-Identification (Wife)	-0.132***	-0.110***	-0.097***
	(0.044)	(0.034)	(0.033)
Age (Husband)	-0.045	-0.034	-0.057
	(0.076)	(0.080)	(0.085)
Age (Wife)	0.102	0.108	0.107
	(0.081)	(0.080)	(0.086)
Years of School (Husband)	0.037	0.094**	0.104**
	(0.040)	(0.038)	(0.045)
Years of School (Wife)	-0.020	-0.040	-0.025
	(0.052)	(0.047)	(0.049)
Impulsiveness (Husband)	-0.018	-0.023	-0.040
	(0.045)	(0.047)	(0.045)
Impulsiveness (Wife)	-0.015	0.010	-0.004
	(0.037)	(0.035)	(0.040)
Self-esteem (Husband)	0.009	0.009	0.034
	(0.049)	(0.041)	(0.039)
Self-esteem (Wife)	0.028	0.046	0.050
	(0.035)	(0.032)	(0.033)
Anxiety (Husband)	-0.003	-0.006	0.004
	(0.045)	(0.044)	(0.043)
Anxiety (Wife)	-0.129***	-0.118***	-0.107***
	(0.041)	(0.037)	(0.039)
Depression (Husband)	0.003	0.012	0.039
	(0.046)	(0.042)	(0.037)
Depression (Wife)	0.040	0.021	0.029
	(0.044)	(0.044)	(0.047)
Religiosity (Husband)	-0.003	-0.002	-0.041
	(0.040)	(0.035)	(0.034)
Religiosity (Wife)	-0.012	-0.024	-0.032
	(0.031)	(0.033)	(0.032)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.06	0.12	0.22
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: **Bounding Methodology: Effects of Social Class Self-identification on the Index of Differences in Assets and Household Services**

	(1)	(2)	(3)
	Oster (2016)	Gonzalez and Miguel (2015)	($R_{max} = 1$)
	Panel A :	$0 \leq \delta \leq 1$	
Social Class Self-Identification (Husband)	[0.144, 0.146]	[0.144, 0.150]	[0.144, 0.168]
Social Class Self-Identification (Wife)	[-0.097, -0.097]	[-0.098, -0.097]	[-0.101, -0.097]
	Panel B :	$-1 \leq \delta \leq 0$	
Social Class Self-Identification (Husband)	[0.142, 0.144]	[0.138, 0.144]	[0.120, 0.144]
Social Class Self-Identification (Wife)	[-0.097, -0.096]	[-0.097, -0.095]	[-0.097, -0.092]

Intervals in brackets are the bounds. The bounding controls for the differences in age, years of school, impulsiveness, self-esteem, anxiety, depression, and religiosity between the husband and the wife.

Table 13: **Are Spouses Over-reporting or Under-reporting?**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.194***	0.175***	0.155***
	(0.049)	(0.038)	(0.035)
Years of School (Husband-Wife)	0.031	0.074**	0.068*
	(0.035)	(0.034)	(0.037)
Social Class Self-Identification* Years of School (Husband-Wife)	-0.010	-0.010	-0.019
	(0.038)	(0.037)	(0.034)
Age (Husband-Wife)	-0.047	-0.048	-0.056
	(0.041)	(0.043)	(0.044)
Impulsiveness (Husband-Wife)	-0.009	-0.028	-0.026
	(0.043)	(0.042)	(0.044)
Self-esteem (Husband-Wife)	-0.014	-0.029	-0.014
	(0.039)	(0.035)	(0.034)
Anxiety (Husband-Wife)	0.088**	0.081**	0.079*
	(0.041)	(0.038)	(0.040)
Depression (Husband-Wife)	-0.033	-0.016	-0.001
	(0.047)	(0.043)	(0.040)
Religiosity (Husband-Wife)	0.004	0.009	-0.017
	(0.038)	(0.037)	(0.037)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.05	0.11	0.20
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 14: **OLS Estimates: Effects of Social Class Self-identification and Self-control on the Index of Differences in Assets and Household Services (Assortative Mating)**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.194***	0.175***	0.151***
	(0.047)	(0.038)	(0.035)
Age (Husband-Wife)	-0.038	-0.036	-0.042
	(0.040)	(0.041)	(0.043)
Years of School (Husband-Wife)	0.030	0.069*	0.066*
	(0.036)	(0.034)	(0.037)
Impulsiveness (Husband-Wife)	-0.003	-0.023	-0.025
	(0.043)	(0.043)	(0.043)
Self-esteem (Husband-Wife)	-0.013	-0.027	-0.014
	(0.039)	(0.035)	(0.035)
Anxiety (Husband-Wife)	0.082**	0.075*	0.077**
	(0.041)	(0.038)	(0.038)
Depression (Husband-Wife)	-0.026	-0.008	0.006
	(0.043)	(0.040)	(0.039)
Religiosity (Husband-Wife)	0.007	0.014	-0.009
	(0.037)	(0.036)	(0.036)
Social Class Self-Identification (Husband*Wife)	0.022	0.030	0.023
	(0.036)	(0.035)	(0.038)
Age (Husband*Wife)	0.054	0.065*	0.031
	(0.044)	(0.039)	(0.042)
Years of School (Husband*Wife)	0.005	0.037	0.044
	(0.044)	(0.036)	(0.041)
Impulsiveness (Husband*Wife)	-0.018	-0.006	-0.027
	(0.041)	(0.041)	(0.040)
Self-esteem (Husband*Wife)	0.026	0.040	0.064*
	(0.046)	(0.039)	(0.037)
Anxiety (Husband*Wife)	-0.081*	-0.076*	-0.062
	(0.042)	(0.042)	(0.039)
Depression (Husband*Wife)	0.023	0.020	0.050
	(0.049)	(0.049)	(0.048)
Religiosity (Husband*Wife)	-0.039	-0.049	-0.087***
	(0.034)	(0.035)	(0.030)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.06	0.12	0.22
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 15: **Spouse Does Not Know that Household Participates in PROGRESA (Problems of Information)**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.190***	0.172***	0.151***
	(0.050)	(0.041)	(0.038)
Participate in Progresa (Husband-Wife)	0.062	0.019	-0.054
	(0.099)	(0.095)	(0.117)
Social Class Self-Identification* Participate in Progresa (Husband-Wife)	-0.054	-0.044	-0.048
	(0.094)	(0.091)	(0.103)
Age (Husband-Wife)	-0.049	-0.049	-0.060
	(0.042)	(0.043)	(0.045)
Years of School (Husband-Wife)	0.033	0.075**	0.068*
	(0.037)	(0.036)	(0.039)
Impulsiveness (Husband-Wife)	-0.013	-0.032	-0.031
	(0.043)	(0.042)	(0.045)
Self-esteem (Husband-Wife)	-0.017	-0.031	-0.016
	(0.039)	(0.034)	(0.033)
Anxiety (Husband-Wife)	0.085**	0.079**	0.079*
	(0.043)	(0.039)	(0.041)
Depression (Husband-Wife)	-0.032	-0.014	0.001
	(0.046)	(0.043)	(0.041)
Religiosity (Husband-Wife)	0.008	0.011	-0.013
	(0.039)	(0.038)	(0.038)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.05	0.11	0.20
Observations	837	837	837

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 16: **OLS Estimates: Effects of Social Class Self-identification on the Index of Differences in Assets and Household Services (Problems in the Ownership of the Assets)**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.180***	0.171***	0.152***
	(0.045)	(0.036)	(0.034)
Age (Husband-Wife)	-0.059	-0.059	-0.064
	(0.040)	(0.042)	(0.044)
Years of School (Husband-Wife)	0.030	0.072**	0.067*
	(0.033)	(0.033)	(0.035)
Impulsiveness (Husband-Wife)	-0.011	-0.031	-0.034
	(0.044)	(0.044)	(0.047)
Self-esteem (Husband-Wife)	-0.026	-0.036	-0.026
	(0.036)	(0.032)	(0.031)
Anxiety (Husband-Wife)	0.081**	0.075*	0.069*
	(0.040)	(0.038)	(0.038)
Depression (Husband-Wife)	-0.035	-0.023	-0.009
	(0.048)	(0.046)	(0.044)
Religiosity (Husband-Wife)	0.014	0.017	-0.008
	(0.036)	(0.036)	(0.037)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.04	0.09	0.18
Observations	847	847	847

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 17: **OLS Estimates: Effects of Social Class Self-identification on the Index of Differences in Assets and Household Services (Using the Complete Tests)**

	(1)	(2)	(3)
Dep Var: Index of differences in Goods and Services			
Social Class Self-Identification (Husband-Wife)	0.222***	0.197***	0.178***
	(0.049)	(0.041)	(0.041)
Age (Husband-Wife)	-0.047	-0.046	-0.043
	(0.059)	(0.058)	(0.061)
Years of School (Husband-Wife)	0.031	0.069*	0.065*
	(0.036)	(0.035)	(0.039)
Impulsiveness (Husband-Wife)	0.013	-0.007	-0.030
	(0.053)	(0.054)	(0.054)
Self-esteem (Husband-Wife)	-0.084*	-0.092**	-0.063
	(0.045)	(0.039)	(0.039)
difcanse	0.082	0.078	0.087
	(0.061)	(0.059)	(0.055)
difcdepe	-0.064	-0.052	-0.043
	(0.058)	(0.059)	(0.058)
Religiosity (Husband-Wife)	0.042	0.051	0.042
	(0.048)	(0.042)	(0.050)
State Fixed Effects	No	Yes	No
Municipality Fixed Effects	No	No	Yes
R^2	0.06	0.12	0.22
Observations	663	663	663

Clustered standard errors displayed in parenthesis at the municipality level.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

9 Appendix

Table A1: **Does Your Household Receive Income from PROGRESA?**

		Wife	
		Yes	No
Husband	Yes	743	29
	No	97	18

Table A2: **Latent Variable Scales**

Scale Name	Scale Survey Question	Factor Loadings
Self-esteem	[1] I am satisfied with myself	0.3856
Eigenvalue: 2.4	[2] I am able to do things as well as others	0.4345
	[3] I am a person of worth, at least on an equal plane with others	0.4741
	[4] I have good qualities	0.4620
	[5] I have a positive attitude toward myself	0.4736
Self-control	[1] You are very impulsive	0.4138
Eigenvalue: 2.5	[2] You lose your control quickly	0.4528
	[3] You do things even though you know they are wrong	0.4401
	[4] You say inappropiate things	0.4459
	[5] When you get angry, you are violent	0.4808
Religiosity	[1] You wonder why God Abandoned you	0.5125
Eigenvalue: 2.5	[2] You wonder why the church does not help you with your problems	0.5185
	[3] You wonder what did you do to God in order to punish you	0.5298
	[4] You feel that God has punished you	0.4334
Depression	[1] Your work performance is lower than before	0.1301
Eigenvalue: 9.1	[2] You sleep badly at night	0.2045
	[3] You feel worse in the morning	0.2208
	[4] You are more irritable than before	0.2111
	[5] Your sexual interest has decreased	0.1648
	[6] you have felt like dying	0.2087
	[7] You cry or feel like crying	0.2158
	[8] You have a hard time concentrating	0.2170
	[9] You have a headache	0.2132
	[10] You have decreased your appetite	0.2261
	[11] You feel apathetic	0.2382
	[12] You feel tired	0.2498
	[13] You feel insecure	0.2490
	[14] You feel nervous	0.2573
	[15] You feel obsessive	0.2359
	[16] You feel pessimistic	0.2398
	[17] You feel sad	0.2476
	[18] You feel afraid of some things	0.2244
	[19] You feel pressure in your chest	0.2487
	[20] You feel that you less useful to your family	0.2304
Anxiety	[1] Horror	0.1982
Eigenvalue: 10.1	[2] Sweating not due to heat	0.1928
	[3] Feeling dizzy	0.2196
	[4] Drowning sensation	0.2289
	[5] Blush	0.2024
	[6] Accelerated heartbeat	0.2340
	[7] Nervousness	0.2279
	[8] Afraid that the worst happens	0.2195
	[9] Fear of losing control	0.2199
	[10] Affraid to die	0.1719
	[11] Fear	0.2169
	[12] Tingling hands	0.2239
	[13] Insecurity	0.2184
	[14] Stomach ache	0.2053
	[15] Numbness	0.2235
	[16] Difficulty breathing	0.2328
	[17] Difficulty relaxing	0.2277
	[18] Weakening of the legs	0.2213
	[19] Weakening	0.2342
	[20] Trembling body	0.2386
	[21] Heat waves	0.2130