

The value of social security: are formal jobs better?

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Abstract¹

Low and unequal social security coverage are among the most pressing challenges in the Latin American region. There are many hypotheses for this limited coverage. This paper studies two: i) individuals do not contribute because they do not value having access to social insurance, and ii) individuals with low income or low education levels have a lower valuation of social insurance than other groups. Using an indirect method to estimate individual social security valuation based on self-reported job satisfaction, this paper finds these two hypotheses do not hold: there is suggestive evidence that individuals value social security benefits in Mexico and Peru, and results suggest that the value of social security decreases with income (in Peru) or education (in Mexico).

Keywords: Job Satisfaction, Informality, Latin America

JEL Codes: J21, J28, O17.

¹ All errors remain our own responsibility. This paper represents the opinions of the authors and not those of the Inter-American Development Bank or its Board of Directors. Corresponding author: carmenpag@iadb.org

1. Introduction

Despite economic growth in the past years (4 percent on average), the quality of jobs in Latin America—measured by the coverage of social benefits—has hardly changed for all levels of the workforce. The percentage of workers in low-productivity and low-paying jobs has remained stagnant (38 percent in 2000 versus 39 percent in 2010) (ILO 2011). Informal workers typically face low incomes and work in vulnerable and often hazardous working conditions. Despite the fact that their employment is much more economically precarious, these individuals are not generally protected in case of unemployment, accident, sickness or old age (ILO, 2013).

In this context, it becomes crucial to understand the reasons behind the persistency of informality despite economic growth. The analysis of the hypothesis behind the low rates of contribution to social security –a common measure of informality- is relevant for at least four reasons: First, the formality status of a job is the most widely used indicator of job quality in developing countries. Second, there is growing interest in understanding the role of informality in the process of economic development. In particular, there is interest in assessing whether informal activities are the last resort of those who cannot enter the formal sector or, instead, by compensating lower productivity rates with tax evasion they detract workers from formal, more efficient firms, leading to an inefficient allocation of labor and lower total factor productivity (see, for example, Hsieh and Klenow, 2007). The second scenario is more likely when workers have similar valuation for informal and formal jobs. Third, it is useful to investigate to what extent informal work is an attractive option for low income workers in the region as a way to escape from labor laws and social security systems that are poorly designed for the realities of the low and middle income countries. Fourth, assessing the reasons behind low coverage of social security could be a starting point for developing policies to increase access. So far, economic theory and existing policy reviews have pointed out some hints on how to reduce informality, however the problem needs to be further evaluated.

This paper uses an indirect measure for social security valuation in Mexico and Peru. The fact that job satisfaction increases with social security contributions gives information on the valuation of social protection. A positive and significant effect of contribution to social security on job satisfaction would suggest a positive valuation to having access to social protection. Our results show suggestive evidence that individuals value benefits given through social security contributions

in Mexico and Peru. Therefore, it seems that the reasons behind this low coverage are not related with individual low valuation but rather with some of the following: (i) high costs associated with abiding by labor laws (ii) insufficient capacity to absorb these costs for low income individuals; (iii) insufficient capacity of government auditing and control; This paper additionally looks how valuation changes across income and education levels, following hypothesis (ii) mentioned above and finds no evidence that the valuation of social security increases with income or education.

The paper is organized as follows: Section 2 briefly explains the theoretical framework and summarizes the relevant studies, Section 3 describes the data used in this paper; Section 4 presents the empirical approach; Section 5 presents descriptive statistics; Section 6 discusses the estimation results; and finally, Section 7 concludes.

2. Theoretical framework and literature review

In this paper, we assume that the utility function of working in the formal market is given by the addition of the wage and a benefit package that is associated with a formal job. Similarly, the utility function of informal workers is the sum of a wage and a set of benefits of informal jobs. In this way, a worker will decide to work informally if the utility that he can get in the informal economy is higher than the one he can derive from a formal job.

As the access to social insurance system is associated with formal employment, we can expect that if people value social insurance they will also value more jobs in the formal sector (that pay contributions to social security). This simple theoretical framework, which was also used in other papers such as the one developed by Azuara and Marinescu (2011), assumes that the labor market is competitive. This implies that the informality status may be driven by choice rather than exclusion (Perry et al., 2007). It has been argued that workers may prefer the autonomy and independence afforded by self-employment (Maloney, 2004). Workers may also find a greater degree of flexibility, particularly regarding work schedules and hours of work in informal jobs, which may suit people with competing time demands, such as parents of young children or students. Workers may also value the possibility of evading taxes and social security contributions from which they derive little value (Maloney, 2004). This may be particularly relevant if governments provide free-of-charge social services targeted to informal workers (Levy, 2008).

Other authors believe that the informal sector is heterogeneous and segmented (Gunther and Launov 2012). They show that the informal sector is composed of two segments with a distinct wage equation; one is superior to the other in terms of significantly higher average earnings as well as higher returns to education and experience. They suggest that they might be entry barriers into the formal sector, especially in its higher paid sector. Other papers have exploited the market heterogeneity differentiating between performance pay jobs (jobs that receive some premium after performance revision).

Studies have also resorted to studying workers' mobility patterns; if workers prefer formal employment, they should voluntarily move from informal to formal sector jobs while involuntary mobility should go in the opposite direction. Studies of mobility find high rates of mobility across formal and informal salaried jobs and low mobility between formal salaried jobs and self-employment (Maloney, 1999; IDB, 2004; Bosch and Maloney, 2007; Pagés and Stampini, 2007; Green, 2010). They also find that mobility is higher from informal salaried to formal salaried jobs, consistent with a higher preference for formal salaried jobs. Mobility studies, however, do not fully solve the problem because to date, existing data do not permit observing whether mobility is voluntary or involuntary. This makes it difficult to identify whether mobility patterns reflect workers' preferences for a specific type of job, barriers to entry into some occupations, or employers' preferences for certain types of workers.

Economic theory suggests that an increase in the labor costs will be translated into a reduction in formal employment, although this is not necessary the case. If workers value the benefits that are financed with their contribution, they will be willing to accept a lower salary. So, one of the key elements to evaluate the effect of contributions in formal employment is to know whether people value the benefits of the pension system. If individuals perceive little value in the benefits of formalization in relation to its costs, economic theory predicts that individuals and/or firms will seek to evade, giving rise to informality. The evidence also suggests that these effects may differ from country to country. Studies in Chile and Argentina indicate that in these countries decreases in social security contributions are passed on to workers in full as higher wages, without any effect on formal employment (Gruber, 1997 and Cruces et al., 2010). Instead, two studies in Turkey and Colombia found that discounts on social security contributions lead to more formal employment (Betcherman et al., 2010 and Kugler and Kugler, 2003). Similarly, a study in Uruguay found that improving the social security benefits for

certain groups of workers led to an increase in formal employment among the beneficiary group, even when contribution rates increased (Bergolo and Cruces, 2012). The evidence also suggests that the more workers value the benefit, the less impact social security contributions have on formal employment.

In this paper we contribute to this growing literature. In order to measure whether people value social insurance we use an indirect methodology using job satisfaction. To our knowledge this is the first study that uses this methodology to measure valuation of social insurance, although this approach was used to estimate valuation of similar things such as performance pay (Cornelissen et al., 2011), relative pay (Card et al., 2010) and part-time work (López Bóo et al., 2010). This methodology is particularly valuable in this area of study since the self-reported valuation is usually unreliable (Jaramillo, 2013), thus in fact, this indirect method seems to be a better approach to study this topic.

3. Data

The analysis in this paper uses information from a household database conducted in Mexico City, Mexico, and Lima, Peru in 2008. The Inter-American Development Bank conducted the surveys with the help of two specialized local agencies. The surveys are representative at the urban level and gather data from individuals living in household that were between 25 to 55 years old and are employed at the time of the survey. Additionally, a qualified respondent answered information about the household. In Mexico, the data contain information on 3,700 individuals and in Peru about 6,800 individuals employed at that time. In both countries the surveys are similar as possible, so comparability between countries results is possible.

The sample used in this paper consists of all respondents between 25 and 55 years old who were employed at the time of the survey. For each country, the survey asked people about their individual characteristics, living conditions, income, education attainment, and health status. It also contains information on job satisfaction. The survey additionally contains information on whether salaried workers would rather be in self-employment and vice versa, which is useful in assessing workers' preferences, and asks the reasons why they would rather switch occupation.

4. Empirical approach

Main Variables

The dependent variable in the analysis is job satisfaction, which is measured with the question: “Are you satisfied with the work you do?” and the possible answers are a scale from 1 to 4. In the scale 1 means “very unsatisfied”, 2 “unsatisfied”, 3 “satisfied”, and 4 “very satisfied”. In Peru, there are five categories, one of them includes “indifferent”.² Using scale indicators of job satisfaction are more reliable than single ones (dummy variables) as explained by Gao and Smith (2010), therefore in this paper the of the job satisfaction variable will be used for most of the analysis, but in order to develop some robustness checks and control for possible endogeneity problems discussed later, we will also use a dummy variable of job satisfaction. This variable takes the value of 1 if the person reported that they were satisfied or very satisfied with the work they do, and 0 otherwise. As the results will show, the transformation of the dependent variable does not change the results significantly with regard to our variable of interest.

The variable of interest is an indicator variable with value of 1 if the person contributed to the pension system in the last three months and 0 otherwise. We define informal workers as those who are not enrolled in social security and do not enjoy the protections of labor laws. We refer to this as the benefit-based definition. In addition, we have used an alternative definition based on access to health care system constructed with a different variable as a robustness check and the results show the same patterns.³

Empirical approach

We examine the determinants of self-reported job satisfaction (JS_i) as a function of: (1) X_i that identifies contribution to the pension system (our definition of formality); (2) a vector Z_{1i} of observable basic personal characteristics (gender, salaried, age, marital status, education, health status); (3) a vector Z_{2i} of additional personal characteristics (thought how to finance old age, smoking habits, planner, present oriented, risk aversion, time to check budgets, access to six month of income in case of an emergency) ; (4) a vector Z_{3i} of job characteristics such as hours of work, industry, firm size and earnings. Lastly, ε_i denotes an error term. Therefore:

$$JS_i = U(X_i, Z_{1i}, Z_{2i}, Z_{3i}, \varepsilon_i) = \alpha + X_i B_0 + Z_{1i} B_1 + Z_{2i} B_2 + Z_{3i} B_3 + \varepsilon \quad (1)$$

² We performed estimation using different codifications of the job satisfaction variable and all results are robust to this.

³ Results available upon request.

where B_1, B_2, B_3 are vectors of coefficients. As the dependent is a categorical ordered variable, we use an Ordered probit model in order to use the variability in response; marginal effects for the “very satisfied” option are reported. In addition, we use a linear probability (OLS) model with a dummy dependent variable of job satisfaction.

In this paper we test two different hypotheses. The first one is whether people value the social protection and the second one is whether there are differences among groups with different education, income and age levels. If people value the social protection we can expect to see that the coefficient on contribution has a positive and significant association with job satisfaction. So this would suggest that informality cannot be attributed to a lack of valuation. Still, the second hypothesis is relevant in the sense that it could be the case that only people with higher level of education or income value the social protection. This could suggest that the decrease in contribution rate in the lower section of the income distribution in the Latin American countries could be associated with different valuations among social segments. If this is the case, different policies approaches should be implemented to foster contribution among groups at the low end of the distribution.

In order to examine whether there are differences among social groups we run the models separately for each group and add an interaction term between income, education and age. We estimate the models using Ordered probit and also present the marginal effects for the “very satisfied” option.

The main methodological challenge to be addressed in explaining the effects on job satisfaction of contribution to the pension system arises from the violation of the zero conditional mean assumption due to omitted variable bias. It is possible to think of unobservable characteristics that affect both job satisfaction and contribution to social security such as unobserved job characteristics or some innate, non-observable traits, like individuals’ ability or sociability.

In order to account for the endogeneity of the contribution variable we use instrumental variables estimation. We use two different instruments; the first one is the number of friends that contribute to the pension system. The questionnaire asks individuals: “Think in 5 of your closest friends (no relatives): How many of them currently contribute to the pension system?” This variable is expected to be positively and significantly correlated with the individual contributing to the

pension system, and it is quite likely that hold the exclusion restriction in which the effect of friends contributing to the pension system does not affect the worker’s job satisfaction other than through the endogenous variable. However, this exclusion restriction might be violated if some of the friends work at the same place as the person answering the questionnaire, an information that we cannot observe in the data.

As this first instrument might present some problems, we also present a second instrument which is associated with the ability to comprehend a pension statement. In the questionnaire, the interviewee receives a pension statement and has to answer some basic questions that aim to know if the person can locate some information in the pension statement such as the balance in the account, period that covers, and total commission charged. Following those questions, he is asked to give his perception about “You would say that this pension statement is?” The possible answers are: “easy to understand?”, “not so easy to understand?”, “difficult to understand?”, “very difficult to understand?”, “can’t read”. We use the former question as an instrument and we expect that this variable will be positively and significantly correlated with the individual’s contribution status while holding the exclusion restriction. This instrument, however, might be correlated with an omitted variable such as individual’s ability.

Both instruments are highly correlated to social security contributions and have high F test (higher than 10). As regards to the exclusion restriction, the first may be correlated to unobserved work characteristics if more than one friend works in the same place. The second may be correlated to ability. However, the fact that coefficients come very similar in both cases suggest that the exclusion restrictions may hold.

For both instrument we suggest a 2SLS as following:

$$Y_i = \xi_{1i}B_0 + Z_{1i} B_1 + Z_{2i}B_2 + Z_{3i}B_3 + \varepsilon_i \quad (2)$$

where Y_i is a dichotomous variable that takes the value of one if the individual is satisfied or very satisfied with its job, and zero otherwise; ξ_{1i} is the instrument; Z_{1i} is a vector individual characteristics; Z_{2i} is a vector of additional personal characteristics; Z_{3i} is a set of job characteristics. For the instrument on the number of friends that contributes, the instrument is a

continuous variable that takes the value from 0 to 5. The other instrument, how easy is to understand the pension statement, can take the values 1 to 4 representing the scale “very difficult to understand” to “very easy”.

As the instruments that we are using in this paper control for different aspects of the contribution behavior, socio-cultural and ability, we will also present an overidentification instrumental model using more than one instrument. Finally as an additional robustness check we will estimate instrumental variables with order probit and probit with a new Stata routine⁴. Using this program we will re-estimate the regressions without assuming linearity. In addition, the order probit \ with instrumental variables estimation will allow us to use the whole range of the dependent variable and thus make a better use of the available data.

5. Descriptive Statistics

Before describing the individual level data, it is important to contextualize the countries under study. The table 1 presents some basic information about the Mexico and Peru in terms of regulations and policies in the area of social protection. In both countries the contribution is mandatory for salaried workers; however in Peru and Mexico most self-employed occupations have a voluntary program. In order to receive a contribute pension workers need to contribute for 25 years in Mexico and 20 years in Peru. Similar differences can be seen in the non-contribute system where the minimal age to receive benefits is 70 and 65 respectively. The non-contributive benefit is around 2.1 dollars per day in Mexico and 2.6 dollars in Peru.

The variable job satisfaction in Mexico shows that 50 percent of workers are satisfied with their jobs and 41 are very satisfied. In Peru, 61 are satisfied and 7 are very satisfied with their jobs (see Graph 1).

Table 2 reports weighted summary statistics for Mexico and Peru for the sample of employed individuals between 25 to 55 years old. In Mexico about 31 percent of the workers in the sample are self-employed while this number in Peru is higher at about 45 percent. Around 36 percent of the workers in Mexico contribute to the pension system, but in Peru this number is

⁴ David Roodman developed the Conditional (recursive) mixed process estimator with multilevel random effects and coefficients.

almost 10 percentage points lower. There are around 2 percent self-employed that reported to contribute to social security in Mexico and 3 percent in Peru; 16 percent of workers in small firms that contribute in Mexico and 8 percent in Peru. In Mexico there are more workers in large firms than in Peru (45 percent and 34 percent), and in both countries the percentage of those contributing is larger relative to workers in small firms (61 percent in Mexico and 65 percent in Peru).

In addition, 62 percent of the workers in the sample are males in Mexico and 59 percent in Peru. In Mexico's sample 40 percent have at least 40 years old and in Peru this group is formed by 38 percent of the workers. The population in this sample is urban, and consequently, individuals have in average higher education. 26 percent of workers have less than secondary education completed in Mexico and 23 percent in Peru, 29 percent in Mexico have completed high school while this number in Peru is 39 percent. Workers with superior education are 45 percent in Mexico and 38 percent in Peru. In terms of health in Mexico there are more workers that reported having a chronic illness (12 percent in Mexico and 9 percent in Peru). Additionally, the number of married people in Mexico is higher than in Peru, with 51 percent and 32 percent respectively.

Although Mexico presents a higher contribution rate than Peru, workers in that country tend to think less about how they will finance the old age (36% in Mexico and 42% in Peru) and are less likely to plan with a lot of details (52% in Mexico and 62% in Peru). In addition, Mexican workers are more present oriented (42% in Mexico and 36% in Peru), make less time to check the household budget (55% in Mexico and 77% in Peru) and smoke more than Peruvian workers (32% and 13% respectively). In both countries around 25-26 percent of the workers are risk averse and 37 percent of them can get six month of income in case of an emergency.

The average number of hours worked in the sample is more than 200 hours a month, and in Peru the monthly hours worked in average is higher than in Mexico. The work related income, measure in logarithms of US dollars adjusted by 2008 purchasing power parity, shows that the earnings are higher in Mexico relative to Peru (8.8 vs. 7.3). In terms of worker's occupation, manufacturing represents only 10-16 percent of workers in the sample, which seems within the average for an urban sample.

Contribution to social security revised

As we have presented, there are around 36 percent of the workers in Mexico that contribute to the pension system and 26 percent of Peru. If we compare the group that contributes with the one that does not contribute to the pension system we can identify that there are significant differences in terms of education and income. However, the data does not show differences in the contribution rate among age groups.

As can be expected, the contribution rate increases with education. In Peru, the distribution of people that contribute to the pension system shows that less than 7 percent have less than secondary education completed, 28 percent have secondary completed and 65 percent tertiary or more. The numbers for Mexico are quite similar, with 15 percent of the people that contribute with less than secondary education, 25 percent with secondary education completed and 60 percent for the higher level of education.

A similar tendency can be observed in the income distribution. If we divide the sample in three income groups, we can observe that the higher income segment is the one that concentrates most of the affiliates. In the Peruvian sample 55 percent of the people that contribute to the pension system belong to the high income group, while 34 percent is within the middle income and only 11 percent can be categorized as low income. In Mexico, the high income group is also the one that presents a higher proportion of affiliates with 41 percent, followed by the middle income group with 33 percent and the low income segment with 26 percent.

This data confirms the regional tendency; the distribution of contribution rates is not equally distributed within the society. There are particular problems in the vulnerable groups, where the contribution rate is lower than the one observed among the wealthy class. In the next section we will estimate the valuation of the social protection system in order to observe whether the differences in contribution rates might be associated with different valuations of the social security.

6. Estimation Results

Table 3 reports the results of estimating model (1) for Peru for a sample of workers aged 25-55 years old. All specifications (columns from 1 to 6) show a positive and significant coefficient for the “contribute” variable as expected. This suggests that contributing to the social security system increases job satisfaction and therefore, indirectly it shows that individuals value having access to social protection. The first specification, with no controls, reports that contribution is associated

with an increase in the probability of being very satisfied with the job of 10 percentage points, this coefficient is significant at 1%. The coefficient is robust to the addition of basic characteristics as controls in column (2). Salaried, male and older workers (more than 40 years old) are less likely to report they are very satisfied with their jobs. Similar results have been found in other papers (IDB, 2009; Madrigal and Pages 2008 and 2009, Perry et al 2007) where workers report a preference for being self-employed. In addition, workers in large firms (10 or more), with higher education attainment, and married are more likely to report being very satisfied with their jobs. Column (4) shows a slight decrease of the coefficient of interest to 9 percentage points when other personal characteristics are included, however it is very robust. Having thought about how to finance old age, being a planner, and being able to access to money in an emergency increases the probability of reporting job satisfaction, while being present oriented (versus future) decreases this probability. Adding job characteristics such as hours of work or industry does not change the results or the magnitude and significance of the relevant coefficient (column 5). When adding monthly income in column (6) the coefficient of formality decreases to 7 percentage points and remains significant at 1%. As expected, the coefficient on earnings is positive, and its magnitude suggests that a 10% increase in income is associated with an increase in the probability of job satisfaction of 1 percentage points. Column 7 uses a dummy dependent variable that takes the value of 1 if the person is satisfied and very satisfied with their job, and 0 otherwise. The coefficient is 12 percentage points which is similar to the results obtained with the ordered probit model in columns 1-5 considering this results are reported for the very satisfied category.

Table 4 shows results for Mexico for a sample of workers 25 to 55 years old. As in Table 3 all specifications show a positive and significant coefficient that suggest that contributing to social security increases the probability of being very satisfied with the job between 7 and 13 percentage points and in this way a positive valuation for having this benefit. Column (1) shows the effect without controls. Contributing to social security increases the probability of reporting a very satisfied condition by 13 percentage points. When adding basic characteristics, column (2), the coefficient of the variable of interest decreases to 10 percentage points. Salaried workers and the ones with health problems are less likely to report being satisfied with their jobs when including basic characteristics. More educated, older and married workers in larger firms are more likely to report higher job satisfaction. When including other personal characteristics the coefficient of contribute decreases to 7 percentage points in column (3). Being a planner, making time to check household budgets and being able to access to money in an emergency increases the probability of

reporting job satisfaction, as in Peru, while being risk averse decreases this probability. Adding monthly hours worked and working in the manufacture sector increases slightly the contribution coefficient (Column (4)). Column (5) adds the monthly income, which has a positive sign as expected, with an effect on job satisfaction of around 0.08 percentage points. Column (6) uses a dummy dependent variable for job satisfaction. The results show a smaller coefficient, but positive and significant at 5%.

Results in Tables 3 and 4 show a positive and significant valuation for the access to social security in Peru and Mexico, respectively. The coefficients for contribution resulting from the full specification in column (5) are very similar in both countries (7% in Peru and 8% in Mexico) which implies that in both countries, workers value the access to social insurance.

Table 5 splits the sample in groups by education, income and age for Peru. Column (1) shows the results in Table 3 (column 5) for reference. When splitting the sample by education the coefficients of contribution to social security are positive and significant (columns 2 to 4) for all education groups. In order to assess whether the coefficients are different by education groups, column (5) shows interactions of educational levels and contribution status (showing only the relevant coefficients). With respect to the omitted variable “less than secondary education” the interaction coefficient of secondary and tertiary education with contribution are not significant. This suggests that more educated workers are not likely to value more contributing to social security as workers with less education. Columns 6 to 8 split the sample by income levels; again the coefficients for contribution are significant and positive for all income groups. In column 9, the interactions of middle income and upper income with contribution relative to the low income interaction are not significant suggesting that there is a similar valuation in all income groups. Finally, in columns 10 and 11 the sample is split by age and both coefficients are positive and significant. In column 12 the interaction is significant and positive suggesting that older workers that contribute value more social security benefits than younger workers.

In sum, these results suggest that workers of all income and education levels have a similar valuation of social security. Therefore, in Peru, the low contribution rate of low income or low education workers cannot be explained by valuation differences.

Table 6 repeats the exercise in table 5 for Mexican workers. Column (1) shows the results in Table 4, specification in column 5 for reference. When splitting the sample by education the coefficient of contribution to social security is positive and significant for secondary education only (columns 2 to 4). In order to compare their effects column (5) shows interactions of educational levels and contribution status (showing only the relevant coefficients). With respect to the omitted variable “less than secondary education” the interaction coefficient of secondary and tertiary education with contribution are not significant as it was found for Peru in Table 5. This suggests that more educated workers are not likely to value more contributing to social security as workers with less education. Columns 6 to 8 split the sample by income levels and the coefficient for contribution are significant and positive for the middle income group. In column 9, the interactions of middle income and upper income with contribution relative to the low income interaction are not significant suggesting that there is a similar valuation between the three groups. In columns 10 and 11 the sample is split by age and only the coefficient for younger workers is positive and significant. In column 12 the interaction is significant and negative suggesting that older workers that contribute value less social security benefits, in contrast with the results found for Peru.

Dealing with endogeneity

Results in Tables 7 and 9 for Peru and Mexico show instrumental variables estimates using a dummy dependent variable of job satisfaction. The results in both tables are shown in two panels: panel A uses as instrument the number of friends that contribute to the pension system and panel B uses as instrument a variable that measures how easy is to understand a pension statement. Both tables also show a set of OLS results that allow comparing the magnitude of the coefficient with 2SLS models. In Table 7 for Peru results in column 5 (when no interactions are used) show that when correcting for endogeneity using a 2SLS procedure the coefficient for contribution is still positive, significant at 1% but larger than OLS regardless of the instruments used in panel A and B. This suggests a downward bias of OLS. The same results for Mexico, table 9 column 5, show the coefficient of interest is not significant.

Table 7, specifications 6 to 8, present the results with interactions and instruments. For these regressions, the instruments for the interaction variables were constructed multiplying the exogenous variable of the interaction and the instrument. The coefficients on “contribute” in columns 6 to 8 in panel A are statistically significant and of higher magnitude in absolute value than the OLS results. Once we account for the possibility of endogeneity, we obtain that people with

higher income value \social security less than middle income people. Panel B shows these results with the second instrument and they are similar to those discussed before. The lower valuation of social protection of higher income segments could be associated with the access to other forms of income to finance old age or health benefits, other than social insurance. It is quite probable that middle and high income population can have access to saving and other types of investment, and thus their dependence on social security is lower.

Finally, tables 8 show robustness checks to different instruments and methods of estimation for Peru. The results of columns 2 show the instrumental variable approach with order probit and overidentification. These results, which are better in the sense that they are not assuming linearity, show that when accounting for the endogeneity problem, the coefficient of interest is still positive and statistically significant. This implies that contributing to the pension system increases the probability of being very satisfied with the job. The second segment of the table, specifications 3 to 5, suggests that when using a dichotomous definition of job satisfaction the results are robust. In general, results found with different instruments and methods are similar.

The results with interactions and instruments for Mexico are presented in table 9. In panel A, when using the instrument on number of friends that contribute to the pension system, we can observe that the interaction for secondary education is statistically significant and negative. This could suggest that people with secondary education value less the social protection than workers with a lower level of education. However, this relation is not observed with the second instrument. In panel B, the second stage results indicate that the age have some effect on job satisfaction. In this case, older workers that contribute to the pension system have a lower probability of being satisfied with the job, suggesting older workers have a lower valuation of social protection than young people. Still in this case, this is only observable for one of the two instruments used.

The last table of the paper, table 10, presents the robustness check of the instrumental variable approach. As in Peru, the estimation using order probit and instrumental variables show that the coefficient of interest has a positive and statistically significant effect on job satisfaction. Similarly, when estimating the results accounting for the fact that the dependent variable is dummy, the results in general show positive and significant results for the contribute variable. This reinforces the conclusions obtained in table 9, which suggests that contribution is something valuable for workers in Mexico.

Actions versus valuation

All the analysis we have done so far suggests that the probability of being satisfied with one's job increases when people contribute to the pension system. This conclusion indicates that workers value having access to social protection. In addition, the results also suggest that if anything, the valuation decreases with income.

This is particularly interesting if we compare this valuation with actual contribution rates. As we have described in section 5, the contribution rates are much higher among groups with high education and earnings but this is not translated into different valuation between those groups. These results suggests that lower valuation of social protection benefits among lower income people is not the reason driving high informality levels in Mexico and Peru, at least among workers 25 to 55 years old.

The results we have discussed in our paper seem to be in line with the current literature. The work developed by Miguel Jaramillo (2013) reports similar findings. He did an experimental analysis of micro firms in Lima to analyze the demand for formality. In the experiment, the firms that were part of the treatment group received incentives for formalization in the form of a subsidy and guidance to obtain an operating license. The result of this exercise shows that “most firms see more benefits (advantages) than costs (disadvantages) in being formal, yet about half of firms does not get their licenses when the associated money cost is reduced to zero” (Jaramillo, 2013: 41). The low formalization rate might indicate that for some firms formalization is not an optimal option even when costs are reduced to zero. This study also shows that there is a contradiction between the entrepreneurs reported willingness to become formal and what they do when they face the real opportunity. Thus, this paper also presents that the valuation of formality is high even when the real formalization rate is low. Unfortunately, there is still uncertainty about why this contradiction happens.

7. Concluding remarks (Very preliminary)

In the context of growing job informality this paper contributes to the literature by examining worker's preferences (valuation) of jobs. Benefits derived by the social security contributions seem to be valued by workers controlling for a wide set of individual and job characteristics. Our results show suggestive evidence that individuals value benefits given through social security contributions

in Mexico and Peru. In addition, the results also suggest that for Peruvian workers valuation decreases with income, and for Mexico people with secondary education or older workers tend to have a lower valuation than less educated or younger ones.

Given these results it is important to further test for and investigate the potential reasons behind the low participation in social security by low skilled workers. In this paper, we rule out one possible explanation, that low valuation is what drives low participation. Still, it could be the case that even when low skill workers value the social protection they cannot afford it. In addition, it is relevant to study the business where these people work. If these workers can find jobs mostly in informal companies, it is quite unlikely that they can contribute to the pension system. To access social security-sponsored health benefits, poor workers have to travel long distances or receive attention in very poorly staffed centers.

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Graphs and Tables

Table 1. Basic information of the countries under study

		Peru	Mexico
Pobreza 25-59 años		20.1	10.2
Regimen contributivo	Tipo de regimen	Régimen de beneficio definido (t)	Régimen de beneficio definido (p)
		Régimen de contribución definida	Régimen de contribución definida
	Número mínimo de años requeridos para recibir una pensión contributiva	25	20
Pensiones no contributivas	U\$S por día ppa	2.1	2.6
	Edad	70	65
	Elegibilidad	focalizada / no tener pensión	focalizada / regional y no tener pensión
Obligación de cotizar asalariados		obligatoria	obligatoria
Obligación de cotizar cuenta propia		obligatoria y voluntaria (dependiendo de tipo de trabajador no asalariado)	voluntaria
Salario mínimo	Media del ingreso laboral (\$ PPA diario)	11.4	10.1
	Salario mínimo/salario mediano	0.6	1.1
	% trabajadores con ingresos por debajo salario mínimo	24.5	47.4

Source: LIBRO COBERTURA!

Gráfico 1. Job Satisfaction in Mexico and Peru

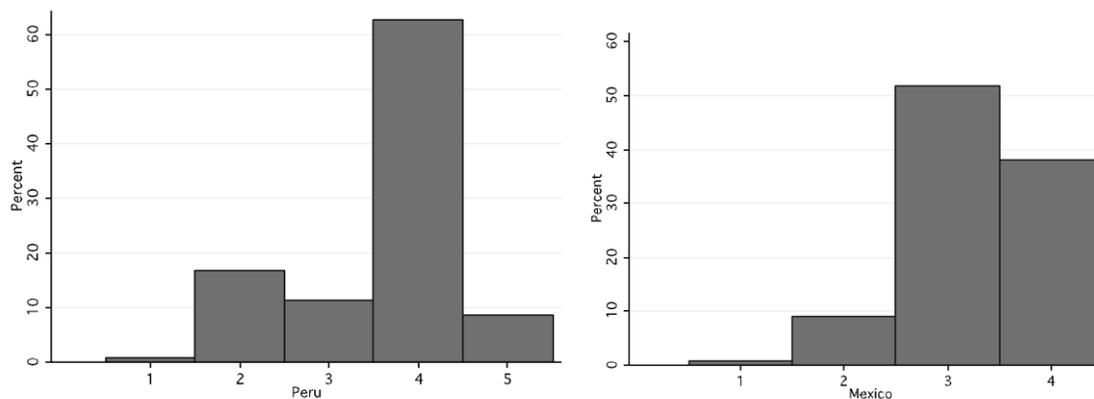


Table 2. Descriptive Statistics

Weighted sample of workers 25-55 years old

		Mexico			Peru		
		Mean	SD	N	Mean	SD	N
Job Satisfaction	Very unsatisfied (VU)	0.008	(0.089)	3731	0.009	(0.094)	6939
	Unsatisfied (U)	0.082	(0.275)	3731	0.183	(0.386)	6939
	Indifferent (I)	---	---	---	0.131	(0.337)	6939
	Satisfied (S)	0.498	(0.500)	3731	0.608	(0.488)	6939
	Very satisfied (VS)	0.411	(0.492)	3731	0.070	(0.254)	6939
	Job satisfaction Dummy (1= S or VS)	0.910	(0.286)	3731	0.678	(0.467)	6939
Basic characteristics	Contribute	0.361	(0.480)	3731	0.275	(0.447)	6924
	Salaried	0.707	(0.455)	3731	0.551	(0.497)	6939
	Male	0.624	(0.484)	3729	0.588	(0.492)	6939
	Older (1= More than 40 years)	0.404	(0.491)	3731	0.378	(0.485)	6939
	Married	0.509	(0.500)	3731	0.315	(0.465)	6939
	Chronic health condition	0.123	(0.329)	3731	0.087	(0.282)	6939
	Less than secondary completed	0.264	(0.441)	3729	0.231	(0.421)	6939
	Secondary completed	0.291	(0.454)	3729	0.386	(0.487)	6939
	Tertiary or university	0.445	(0.497)	3729	0.383	(0.486)	6939
	Education high (1= Secondary completed or more)	0.736	(0.441)	3729	0.769	(0.421)	6939
Other Personal Characteristics	Have thought some/much how to finance old age	0.335	(0.472)	3731	0.421	(0.494)	6921
	Smoke	0.316	(0.465)	3728	0.132	(0.339)	6938
	Plan with a lot of detail	0.522	(0.500)	3731	0.620	(0.485)	6939
	Present oriented	0.417	(0.493)	3731	0.359	(0.480)	6938
	Risk averse	0.262	(0.440)	3712	0.254	(0.435)	6894
	Make time to check household budgets	0.548	(0.498)	3730	0.774	(0.418)	6922
	Access to get six months of income if needed	0.374	(0.484)	3714	0.378	(0.485)	6924
Job characteristics	Hours worked (by month)	212.5	(65.351)	3633	222.2	(77.274)	6655
	Manufacture	0.102	(0.303)	3722	0.157	(0.364)	6896
	Large firm (1= Firm of 10 people or more)	0.451	(0.498)	3731	0.339	(0.473)	6939
	Log of monthly Income (US dollars, PPP adjusted 2008)	8.826	(0.736)	2658	7.333	(0.560)	6627
	Log of monthly income- low income group ⁽⁺⁾	8.047	(0.627)	886	6.694	(0.275)	1856
	Log of monthly income- Middle income ⁽⁺⁾	8.783	(0.120)	796	7.302	(0.157)	2518
Log of monthly income- Upper income ⁽⁺⁾	9.488	(0.365)	976	7.977	(0.312)	2255	

Note: ⁽⁺⁾ The income categories are based on terciles of the income distribution. The values shown are in US dollars, PPP adjusted 2008. The number of observations in each category is not equal because there are many individuals in the sample that reported the same level of income.

Table 3. Peru- Determinants of Job Satisfaction

Weighted sample of workers 25-55 years old

	(1)	(3)	(4)	(5)	(6)	(7)
	O. Probit (Job Sat)	OLS (Job satisfaction dummy)				
Contribute	0.101*** (0.010)	0.102*** (0.011)	0.091*** (0.012)	0.093*** (0.012)	0.077*** (0.013)	0.126*** (0.024)
Salaried		-0.062*** (0.015)	-0.060*** (0.016)	-0.061*** (0.016)	-0.056*** (0.015)	-0.108*** (0.024)
Large firm (1= Firm of 10 or more)		0.035*** (0.012)	0.031** (0.012)	0.032** (0.014)	0.021 (0.015)	0.070*** (0.023)
Male		-0.017** (0.008)	-0.016** (0.008)	-0.024*** (0.009)	-0.055*** (0.010)	-0.088*** (0.016)
Older (1=More than 40 years)		-0.023** (0.009)	-0.026** (0.010)	-0.026** (0.011)	-0.030** (0.012)	-0.031* (0.017)
Education High (1=Secondary or more)		0.050*** (0.013)	0.037*** (0.013)	0.043*** (0.014)	0.029** (0.013)	0.060*** (0.017)
Married		0.036*** (0.011)	0.028** (0.011)	0.030** (0.012)	0.021 (0.014)	0.029 (0.020)
Chronic health condition		-0.010 (0.019)	-0.010 (0.018)	-0.012 (0.017)	-0.013 (0.020)	-0.046 (0.028)
Tought how to finance old age			0.030*** (0.009)	0.027*** (0.009)	0.020** (0.010)	0.013 (0.014)
Smoke			0.008 (0.009)	0.003 (0.009)	0.003 (0.010)	0.002 (0.018)
Plan with a lot of detail			0.023* (0.013)	0.023* (0.013)	0.032** (0.013)	0.027 (0.020)
Present oriented			-0.042*** (0.010)	-0.042*** (0.012)	-0.044*** (0.013)	-0.062*** (0.017)
Risk averse			-0.009 (0.015)	-0.006 (0.015)	-0.001 (0.018)	0.004 (0.027)
Make time to check household budget			0.017 (0.014)	0.016 (0.014)	0.014 (0.015)	0.015 (0.018)
Access to get six months of income			0.066*** (0.011)	0.065*** (0.011)	0.055*** (0.012)	0.097*** (0.016)
Hours worked (by month)				0.000** (0.000)	0.000 (0.000)	0.000 (0.000)
Manufacture				-0.009 (0.014)	0.003 (0.014)	-0.002 (0.022)
Income monthly (log, PPP U\$S 2008)					0.106*** (0.011)	0.134*** (0.015)
Constant	---	---	---	---	---	-0.358** (0.100)
Observations	6924	6924	6859	6538	6268	6268
Pseudo R ² // R ²	0.022	0.032	0.044	0.045	0.059	0.111

Note: Models 1 to 5 are order probit. Dependent variable is job satisfaction (from 1- very unsatisfied to 5- very satisfied). Marginal effects for “very satisfied” option are shown in the table. Model 6 uses OLS. Dependent variable is job satisfaction (dummy, 1= satisfied/ very satisfied). Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01

Table 4. Mexico- Determinants of Job Satisfaction

Weighted sample of workers 25-55 years old

	(1)	(2)	(3)	(4)	(5)	(6)
	O. Probit (Job Sat)	OLS (Job satisfaction dummy)				
Contribute	0.131*** (0.027)	0.105*** (0.035)	0.072** (0.036)	0.078** (0.034)	0.088** (0.035)	0.050** (0.022)
Salaried		-0.175*** (0.042)	-0.152*** (0.042)	-0.153*** (0.042)	-0.135*** (0.052)	-0.044 (0.040)
Large firm (1= Firm of 10 or more)		0.128*** (0.038)	0.118*** (0.035)	0.124*** (0.037)	0.085** (0.035)	0.026 (0.019)
Male		0.004 (0.017)	0.004 (0.019)	-0.003 (0.021)	-0.020 (0.028)	-0.018 (0.022)
Older (1=More than 40 years)		0.055** (0.028)	0.043 (0.028)	0.042 (0.028)	0.028 (0.018)	0.017 (0.019)
Education High (1=Secondary or more)		0.152*** (0.031)	0.110*** (0.026)	0.112*** (0.026)	0.102*** (0.033)	0.037 (0.029)
Married		0.047* (0.025)	0.045* (0.024)	0.040* (0.024)	0.063*** (0.024)	0.030 (0.027)
Chronic health condition		-0.170*** (0.040)	-0.158*** (0.034)	-0.156*** (0.033)	-0.150*** (0.036)	-0.113** (0.045)
Tought how to finance old age			-0.019 (0.026)	-0.018 (0.027)	-0.020 (0.024)	-0.009 (0.012)
Smoke			0.034 (0.028)	0.035 (0.028)	0.044 (0.032)	0.030 (0.021)
Plan with a lot of detail			0.082*** (0.023)	0.083*** (0.023)	0.074*** (0.024)	0.016 (0.020)
Present oriented			-0.004 (0.020)	-0.003 (0.021)	-0.007 (0.024)	-0.033 (0.025)
Risk averse			-0.067** (0.028)	-0.072** (0.029)	-0.082*** (0.030)	-0.034 (0.024)
Make time to check household budget			0.071*** (0.022)	0.064*** (0.022)	0.089*** (0.030)	0.025 (0.021)
Access to get six months of income			0.145*** (0.023)	0.145*** (0.023)	0.111*** (0.026)	0.048*** (0.015)
Hours worked (by month)				0.000 (0.000)	0.000 (0.000)	0.000** (0.000)
Manufacture				-0.066* (0.037)	-0.063 (0.043)	-0.002 (0.037)
Income monthly (log, PPP U\$S 2008)					0.078*** (0.020)	0.019 (0.013)
Constant	---	---	---	---	---	0.624*** (0.116)
Observations	3731	3727	3689	3583	2563	2563
Pseudo R ² // R ²	0.010	0.051	0.074	0.076	0.087	0.071

Note: Models 1 to 5 are order probit. Dependent variable is job satisfaction (from 1- very unsatisfied to 4- very satisfied). Marginal effects for "very satisfied" option are shown in the table. Model 6 uses OLS. Dependent variable is job satisfaction (dummy, 1= satisfied/ very satisfied). Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01

Table 5. Peru- Order Probit with interactions

Weighted sample of workers 25-55 years old

	(1)	Education			Income					Age		
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Base model ⁽⁺⁾	Less than secondary completed	Secondary completed	Tertiary or university	Education interaction	Low income ⁽⁻⁾	Middle income ⁽⁻⁾	Upper income ⁽⁻⁾	Income interaction	Less than 40 years	40 or more years	Age interaction
Contribute	0.077*** (0.013)	0.096* (0.054)	0.109*** (0.018)	0.034*** (0.010)	0.056 (0.038)	0.138*** (0.032)	0.080*** (0.019)	0.022*** (0.008)	0.081*** (0.022)	0.060*** (0.015)	0.109*** (0.016)	0.064*** (0.014)
Secondary education					0.013 (0.013)							
Tertiary or university					0.044** (0.021)							
Secondary-contribute (I)					0.039 (0.030)							
Tertiary-contribute (I)					0.017 (0.042)							
Middle class									0.018 (0.012)			
Upper class									0.060*** (0.020)			
Middle income-contribute (I)									-0.000 (0.028)			
Upper income-contribute (I)									-0.015 (0.030)			
Older (1=> 40 years)												-0.043*** (0.014)
Older-contribute (I)												0.042*** (0.013)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6268	1267	2388	2613	6268	1738	2394	2138	6268	3827	2441	6268
pseudo R-sq	0.059	0.040	0.048	0.056	0.060	0.039	0.032	0.037	0.060	0.061	0.063	0.059

Note: Order probit. Dependent variable is job satisfaction (all categories). Marginal effects for "very satisfied" option are shown in the table. Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01

The income categories are based on terciles of the income distribution. Omitted categories: less than secondary education and lower income. Full specification available upon request. (I)= Interaction term.

⁽⁺⁾ Based model= table 3, specification 5. ⁽⁻⁾ The income categories are based on terciles of the income distribution. The number of observations in each category is not equal because there are many individuals in the sample that reported the same level of income.

Table 6. Mexico- Order Probit with interactions

Weighted sample of workers 25-55 years old

	(1)	Education				Income				Age		
		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
		Base model (+)	Less than secondary completed	Secondary completed	Tertiary or university	Education interaction	Low income (-)	Middle income (-)	Upper income (-)	Income interaction	Less than 40 years	40 or more years
Contribute	0.088** (0.035)	0.070 (0.053)	0.104* (0.060)	0.057 (0.047)	0.111** (0.056)	0.077 (0.053)	0.156*** (0.052)	0.004 (0.061)	0.105 (0.075)	0.123*** (0.041)	0.033 (0.054)	0.127*** (0.037)
Secondary completed					0.107*** (0.036)							
Tertiary or university					0.123** (0.049)							
Secondary-contribute (I)					-0.086 (0.062)							
Tertiary-contribute (I)					0.006 (0.058)							
Middle income									0.053 (0.038)			
Upper income									0.180*** (0.050)			
Middle income-contribute (I)									-0.001 (0.092)			
Upper income-contribute (I)									-0.046 (0.105)			
Older (1= > 40 years)												0.067*** (0.024)
Older-contribute (I)												-0.104** (0.044)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2563	741	760	1062	2563	843	775	945	2563	1003	1560	2563
pseudo R-sq	0.087	0.069	0.087	0.076	0.089	0.077	0.075	0.099	0.091	0.102	0.091	0.088

Note: Order probit. Dependent variable is job satisfaction (all categories). Marginal effects for "very satisfied" option are shown in the table. Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01

The income categories are based on terciles of the income distribution. Omitted categories: less than secondary education and lower income. Full specification available upon request. (I)= Interaction term.

(+) Based model= table 2, specification 5. (-) The income categories are based on terciles of the income distribution. The number of observations in each category is not equal because there are many individuals in the sample that reported the same level of income.

Table 7. Peru- Instrumental variables

Weighted sample of workers 25-55 years old

	PANEL A-- Instrument: Number of friends that contribute to the pension system							
	OLS results				2 nd stage IVreg2 results			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No interaction	Age interaction	Education interaction	Income interaction	No interaction	Age interaction	Education interaction	Income interaction
Contribute	0.141*** (0.031)	0.131*** (0.035)	0.118 (0.092)	0.222*** (0.052)	0.237*** (0.062)	0.226*** (0.062)	0.282** (0.113)	0.377*** (0.121)
Older- contribute		0.030 (0.038)				0.035 (0.076)		
Secondary- contribute (I)			0.090 (0.082)				-0.017 (0.119)	
Tertiary- contribute (I)			-0.019 (0.093)				-0.115 (0.104)	
Middle income - contribute (I)				-0.084* (0.048)				-0.150* (0.091)
Upper income - contribute (I)				-0.112** (0.041)				-0.208* (0.125)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.167 (0.159)	-0.161 (0.160)	-0.157 (0.160)	0.044 (0.219)	-0.047 (0.159)	-0.040 (0.166)	-0.082 (0.154)	0.155 (0.215)
Observations	4110	4110	4110	4110	4110	4110	4110	4110
R-squared	0.132	0.132	0.135	0.134	0.127	0.127	0.131	0.128
F 1st instrum	--	--	--	--	351.15	403.18	127.32	163.78
F 2nd instrum	--	--	--	--	--	588	358.15	544.9
F 3rd instrum	--	--	--	--	--	--	716.78	754.96

	PANEL B-- Instrument: How easy is to understand the pension statement							
	OLS results				2 nd stage IVreg2 results			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No interaction	Age interaction	Education interaction	Income interaction	No interaction	Age interaction	Education interaction	Income interaction
Contribute	0.131*** (0.023)	0.122*** (0.027)	0.110 (0.087)	0.207*** (0.049)	0.384** (0.194)	0.400** (0.185)	0.519 (0.481)	1.036** (0.527)
Older- contribute		0.029 (0.026)				-0.085 (0.154)		
Secondary- contribute (I)			0.073 (0.073)				0.032 (0.442)	
Tertiary- contribute (I)			-0.012 (0.089)				-0.290 (0.401)	
Middle income- contribute (I)				-0.059 (0.045)				-0.616* (0.373)
Upper income - contribute (I)				-0.120** (0.044)				-0.728* (0.414)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.350*** (0.100)	-0.345*** (0.100)	-0.356*** (0.103)	0.035 (0.160)	-0.046 (0.280)	-0.073 (0.306)	-0.164 (0.251)	0.542 (0.342)
Observations	6192	6192	6192	6192	6192	6192	6192	6192
R-squared	0.112	0.112	0.114	0.115	0.081	0.082	0.072	0.025
F 1st instrum	--	--	--	--	30.31	33.55	13.32	7.2
F 2nd instrum	--	--	--	--	--	80.89	70.11	78.64
F 3rd instrum	--	--	--	--	--	--	76.07	98.27

Note: Two instruments are presented: panel a- number of friends that contribute to the pension system (0-5) and panel b- how easy is to understand the pension statement (scale from 1-very difficult to 4-very easy). When using interactions the instrument is constructed by multiplying the exogenous part of the interaction and the instrument (eg. Endogenous variable is "Secondary*contribute", then the instrument is "Seconday*Friends"). For models without instruments (column 1 to 4) the sample was adjusted to the one used for the instrumented specifications in order to facilitate comparison. Dependent variable is job satisfaction (dummy). OLS and IVreg2 results are shown. Omitted categories: less than secondary education and lower income. Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01 (I)= Interaction term.

Table 8. Peru- Instrumental variables, robustness check

Weighted sample of workers 25-55 years old

Instruments	Dependent variable: Job satisfaction all categories		Dependent variable: Job satisfaction dummy		
	(1)	(2)	(3)	(4)	(5)
	Order probit – No instruments	CMP-IV Order probit	OLS- No instruments	IVreg2	CMP-IV probit
Friends	0.074*** (0.017)	0.069*** (0.017)	0.141*** (0.031)	0.237*** (0.062)	0.147*** (0.38)
Pension statement	0.081*** (0.013)	0.113** (0.047)	0.131*** (0.023)	0.384** (0.194)	0.154** (0.066)
Friends +Pension statement	0.074*** (0.017)	0.069*** (0.016)	0.142*** (0.031)	0.249*** (0.063) ⁺	0.143*** (0.038)

Note: First to columns show results for Order Probit model, with and without instrumentation. CMP program used to run the IV order probit. Marginal effects for “very satisfied” option shown. The last three columns show OLS results, IVReg2 results and CMP IV probit results. For these models the dependent variable is job satisfaction (dummy). Marginal effects shown for CMP IV probit . For models without instruments (specifications 1 and 3) the sample was adjusted to the one used for the instrumented specifications in order to facilitate comparison. Robust standard errors in parenthesis.

* p<0.1 ** p<0.05 *** p<0.01 ⁺The Hansen J statistic for the overidentification test is 1.601 (p-value 0.206)

Table 9. Mexico- Instrumental variables

Weighted sample of workers 25-55 years old

	PANEL A-- Instrument: Number of friends that contribute to the pension system							
	OLS results				2 nd stage IVreg2 results			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No interaction	Age interaction	Education interaction	Income interaction	No interaction	Age interaction	Education interaction	Income interaction
Contribute	0.059 (0.041)	0.069 (0.041)	0.098 (0.083)	0.078 (0.075)	0.122 (0.092)	0.117 (0.102)	0.336** (0.164)	0.039 (0.176)
Older- contribute (I)		-0.028 (0.041)				0.011 (0.066)		
Secondary- contribute (I)			-0.060 (0.086)				-0.311** (0.153)	
Tertiary- contribute (I)			-0.036 (0.094)				-0.243 (0.179)	
Middle income - contribute (I)				-0.028 (0.082)				0.077 (0.159)
Upper income - contribute (I)				-0.023 (0.077)				0.199 (0.156)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.667*** (0.158)	0.659*** (0.156)	0.637*** (0.166)	0.740*** (0.239)	0.666*** (0.158)	0.669*** (0.152)	0.546*** (0.173)	0.840*** (0.279)
Observations	962	962	962	962	962	962	962	962
R-squared	0.062	0.062	0.064	0.063	0.054	0.053	0.031	0.023
F 1st instrum	---	---	---	---	136.49	108.91	58.95	49.47
F 2nd instrum	---	---	---	---	---	51.88	110.34	143.45
F 3rd instrum	---	---	---	---	---	---	121.75	64.95

	PANEL B-- Instrument: How easy is to understand the pension statement							
	OLS results				2 nd stage IVreg2 results			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	No interaction	Age interaction	Education interaction	Income interaction	No interaction	Age interaction	Education interaction	Income interaction
Contribute	0.051** (0.022)	0.065*** (0.022)	0.078* (0.040)	0.030 (0.047)	0.250 (0.193)	0.399* (0.236)	0.365 (0.351)	0.377 (0.348)
Older- contribute (I)		-0.039 (0.032)				-0.330** (0.128)		
Secondary- contribute (I)			-0.047 (0.043)				-0.117 (0.298)	
Tertiary- contribute (I)			-0.024 (0.035)				-0.160 (0.289)	
Middle income contribute (I)				0.040 (0.075)				-0.134 (0.204)
Upper income - contribute (I)				0.018 (0.073)				-0.196 (0.243)
Basic characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Other Personal Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Job characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.612*** (0.116)	0.601*** (0.118)	0.602*** (0.120)	1.020*** (0.232)	0.660*** (0.145)	0.577*** (0.156)	0.612*** (0.130)	1.022*** (0.291)
Observations	2501	2501	2501	2501	2501	2501	2501	2501
R-squared	0.073	0.074	0.074	0.081	0.013	-0.053	0.008	-0.002
F 1st instrum	---	---	---	---	36.29	21.96	11.94	10.59
F 2nd instrum	---	---	---	---	---	41.02	8.92	55.04
F 3rd instrum	---	---	---	---	---	---	50.98	96.91

Note: Two instruments are presented: panel a- number of friends that contribute to the pension system (0-5) and panel b- how easy is to understand the pension statement (scale from 1-very difficult to 4-very easy). When using interactions the instrument is constructed by multiplying the exogenous part of the interaction and the instrument (eg. Endogenous variable is "Secondary*contribute", then the instrument is "Seconday*Friends"). For models without instruments (column 1 to 4) the sample was adjusted to the one used for the instrumented specifications in order to facilitate comparison. Dependent variable is job satisfaction (dummy). OLS and IVreg2 results are shown. Omitted categories: less than secondary education and lower income. Robust standard errors in parenthesis. * p<0.1 ** p<0.05 *** p<0.01 (I)= Interaction term.

Table 10. Mexico- Instrumental variables, robustness check

Weighted sample of workers 25-55 years old

Instruments	Dependent variable: Job satisfaction all categories		Dependent variable: Job satisfaction dummy		
	(1)	(2)	(3)	(4)	(5)
	Order probit – No instruments	CMP-IV Order probit	OLS- No instruments	IVreg2	CMP-IV probit
Friends	0.024 (0.071)	0.119*** (0.031)	0.059 (0.041)	0.122 (0.092)	0.038*** (0.016)
Pension statement	0.091*** (0.034)	0.243* (0.139)	0.051** (0.022)	0.250 (0.193)	0.048 (0.154)
Friends +Pension statement	0.028 (0.068)	0.127*** (0.032)	0.056 (0.039)	0.164** (0.079) ⁺	0.046*** (0.015)

Note: First to columns show results for Order Probit model, with and without instrumentation. CMP program used to run the IV order probit. Marginal effects for “very satisfied” option shown. The last three columns show OLS results, IVReg2 results and CMP IV probit results. For these models the dependent variable is job satisfaction (dummy). Marginal effects shown for CMP IV probit . For models without instruments (specifications 1 and 3) the sample was adjusted to the one used for the instrumented specifications in order to facilitate comparison. Robust standard errors in parenthesis.

* p<0.1 ** p<0.05 *** p<0.01 ⁺ The Hansen J statistic for the overidentification test is 0.783 (p-value 0.376)