Social Security Coverage and the Labor Market in Developing Countries

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Abstract[1]

This paper analyzes the reasons behind the low rates of contribution to social security programs in developing countries. Using a large set of harmonized household surveys from Latin America we compare contribution patterns among wage employees, for whom participation is compulsory, with contribution patterns among self-employed workers, for whom participation is often voluntary. In all countries, contribution rates among salaried workers are similarly correlated with education, earnings, size of the employer, household characteristics and age. In addition, contribution patterns among salaried workers are highly correlated with contribution patterns among the self-employed. Our results indicate that on average more than 30 percent of the explained within-country variance in contributions patterns may be accounted for by individuals' low willingness to participate in old-age pension programs. Nonetheless, we also find evidence suggesting that some workers are rationed out of social security against their will.

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1. Introduction

The low coverage of social security programs in developing countries is often attributed to their large rates of informal employment. Implicit in this view is that workers are rationed out of social security against their will because they are unable to find good jobs with benefits. In this paper we examine the validity of this hypothesis to explain the causes of low participation in public old-age pension programs.

Throughout the world, pension plans have been introduced to insure consumption in old age. For salaried workers, participation in these programs is linked to employment, since employers are required by law to register workers and pay contributions to pension administrators. While the rationale for such policies is that, in the absence of compulsory savings many people would not save enough for retirement, many employers have failed to enroll their workers in these plans.

Table 1 presents average contribution rates during the 1990s and the beginning of the twenty-first century for different samples of workers in Latin America. These rates are computed from individual household surveys (see Section 4 for a description of the data). On average, only two out of every five remunerated workers 15 to 64 years old are contributing towards future pensions. While some workers might have contributed in former jobs and thus accrued some future pension rights, current contributions rates are very low, suggesting that a large share of the labor force in Latin America will not receive old-age pensions. Nonetheless, there are large differences across countries. Costa Rica, Chile and Brazil show contribution rates above 50 percent. On the other hand, in Nicaragua, Peru and Paraguay less than 25 percent of workers 15-64 years old participate in such programs. Even if we consider only salaried workers and exclude public sector workers—a group for which compliance with public mandatory programs is higher—no more than 25 percent of private sector salaried workers are contributing toward future pension benefits in those three countries. This is a surprisingly low figure, particularly as contributing to old-age pension programs is compulsory for these workers. Contribution rates among self-employed workers are even lower. With the exception of Costa Rica, which shows contribution rates around 40 percent, non-contribution rates among this group are very high,

even in Brazil, where contributions are compulsory.[2] In many countries less than one in ten self-employed workers are contributing.

We explore the causes behind such low participation rates in various ways. We first present a very simple model of participation in an old age pension program to guide the empirical analysis. This model builds a bridge between the savings/insurance literature and the labor supply literature and shows that some individuals are more willing than others to participate in an old age program. It also discusses cases in which suboptimal contributions and rationing may appear.

We then explore the patterns of contributions among salaried workers and find striking commonalities in the determinants of participation across countries despite fundamental differences in pension programs (pay-as-you-go versus individual capitalization accounts). In all countries studied, contribution rates strongly increase with the education and the age of a worker, picking up among workers who have some college education and are of prime working age (25-49). Women tend to contribute more than males, while being married and head of the household increases an individual's probability of contributing, particularly for males. Individuals in households with a higher share of non-earners are more likely to contribute, while the size of the household is negatively correlated with the probability of contribution. Individuals working in urban areas at firms with more than five employees, employed full time, and in manufacturing are more likely to contribute than other workers. Workers in households where other members are already contributing and workers with higher earnings are also more likely to contribute. Our results indicate that demand factors (individual and household variables) may account for more than 30 percent of the explained variance, with job related factors also accounting for a substantial share.

The coefficients of demand and job related factors in a Probit or Logit model of social security participation might be biased due to omitted variables. This is particularly relevant in this context because demand and job-related characteristics are expected to be highly correlated. In particular, the danger is that we might be attributing undue importance to demand factors because demand coefficients capture the correlation between worker and household characteristics and some omitted job characteristics. To disentangle these effects, we compare

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[2] The Argentinean household survey does not track contributions among self-employed workers even though contributions for this group are compulsory.

contribution patterns among wage employees, for whom participation is compulsory, with contribution patterns among self-employed workers, for whom participation is often voluntary. Since the latter are free to reveal their preferences for social protection, a comparison between the two groups can shed light on the causes behind low contribution rates. We find strong commonalities between contribution patterns among wage employees and self-employed workers. These patterns suggest that, to a large extent, the low contribution rates observed in Latin America are driven by a combination of certain types of workers' low willingness to participate in social security programs and the State's inability to enforce firms' contributions for workers not willing to participate. Yet, quite importantly, our evidence also suggest that some groups of workers, such as workers earning wages below the minimum wage, or part-time employees, might be rationed out of social security against their will.

The rest of the paper is organized as follows. Section 2 provides a brief description of old-age pension systems in Latin America, and Section 3 presents a simple model of the determinants of contributions to old-age pensions programs. Section 4 discusses the data used in this paper, and Section 5 presents the results of studying contribution patterns for wage employees and self-employed workers in a large number of countries. Finally, Section 6 concludes and provides some implications for social protection policies.

2. Profile of Pension Systems and Contribution Rates in Latin America

2.1. Pension Programs in Latin America

Latin American countries present a variety of old-age pension programs. Here we focus on the 11 countries included in our empirical analysis (Argentina, Brazil, Chile, Colombia, Costa Rica, El Salvador, Mexico, Nicaragua, Paraguay, Peru and Venezuela). Up to the 1970s, all of them relied on publicly administered pay-as-you-go systems in which contributions from the active population afforded the benefits of inactive pensioners; pensions were defined by governments according to a formula based on previous salaries and contributions. Chile was the first country to introduce mandatory private individual capitalization accounts in 1981, and it has been the model for many other reforms of social security systems around the world (Acuña and Iglesias, 2001). The origin of the privatization movement was mainly driven by financial problems; the public social security systems were highly indebted and facing an aging population, which jeopardized sustainability.

Mexico (1997) and El Salvador (1998) adopted systems of individual capitalization accounts based on the Chilean model. Individual accounts are privately managed and supervised by a governmental agency. Pensions depend upon the balance accumulated in the personal account and the type of payout chosen after retirement (schedule withdraw, permanent life annuity or temporary income with deferred life annuity). In Chile, Mexico and El Salvador, the government guarantees a minimum subsidized pension. In Mexico, new entrants have to affiliate with the new system, while affiliates with the previous pay-as-you-go system can choose at retirement to opt for the new or the old system. On the other hand, in El Salvador at the time of reform, some people affiliated with the old system were forced to remain in the pay-as-you-go scheme (older than 55/50 for men/women) while others were free to choose (middle age). New entrants are only allowed to participate in the new private system.

Peru (1993) and Colombia (1994) introduced a parallel private capitalization accounts system that competes with the pay-as-you-go system. Workers are free to choose between the two modalities. In Colombia, for example, they are able to switch every three years.

Alternatively, Argentina (1994) and Costa Rica (2000) introduced reforms to combine the main characteristics of both systems. The public system is kept as a basic pillar, but it is complemented by individual capitalization accounts.

Finally, Nicaragua and Venezuela have laid the legal foundations for reforms but they have not implemented them, while Brazil and Paraguay maintain their public pay-as-you-go systems. It should be noted, however, that in Brazil some parametric reforms have been carried out in order to homogenize different pensions systems among the different governmental levels. A broader discussion about structural reform is currently taking place as well.

In most cases, the reforms have increased the years of contributions necessary to retire and the contribution rates. The goal has been to increase the link between the contributions and the benefits obtained from the system and therefore strengthen its financial sustainability

In all the countries studied, social security contributions are compulsory for wage employees and are voluntary for the self-employed (except in Brazil and Argentina, where contributions are also compulsory for the self-employed). Table 2 presents a description of the Social Security Systems in the eleven Latin American countries under study.

3. A Simple Model of Participation in Old Age Pension Programs

In this section, we adapt the De la Rica and Lemieux (1993) model of health insurance to model the decision to participate in pension programs in Latin America. This simple model is useful in that it helps to clearly state some predictions regarding which workers are more likely to contribute to social security programs. We first consider the case when participation is voluntary and then develop the case when participation in the program is compulsory but enforcement is weak.

3.1. Voluntary Participation

Assume a two-period economy where individuals (workers) have the possibility to participate in a pension program to insure consumption in the old age. In the first period, individuals work, consume, save for the second period, and decide whether to contribute a fraction t of their labor income W towards future pensions; in the second period, they retire and consume their first-period savings and the pension B. Workers can only participate in the plan through their employers, who in turn collect the contributions and transfer the funds to the pension program administrator. Participation in this program is voluntary; workers decide whether to participate based on whether they are better off receiving the pension and paying tW than otherwise. Assume that worker i's preferences can be represented by:

$$U(C_{1i}, C_{2i}) = u(C_{1i}) + \frac{1}{1+\rho_i} u(C_{2i})$$

where C_{ji} denotes consumption in period j by individual i and ρ_i is the individual i discount rate. Assume further that $u'(C_{ji})>0$ and $u''(C_{ji})<0$. Given a pension program indexed by (t, B), workers will choose consumption levels that maximize their utility function subject to their inter-temporal budgetary constraint given by

$$(1-t)\ W_i = C_{1i} + \frac{1}{(1+r)}\ (C_{2i} - B) \tag{1}$$

where r denotes the interest rate The solution of this maximization problem yields $u'(C^{*}_{1i})/u'(C^{*}_{2i}) = \frac{(1+r)}{1+\rho_i}$. That is, consumption in the first period will be higher (lower) than

9

consumption in the second period if interest rates are lower (higher) than the discount rate. Thus, if $r = \rho_i$ then $C^*_{1i} = C^*_{2i}$.

Worker i will prefer to participate in the pension benefit program if

$$U(C^*_{1i}(t,B), C^*_{2i}(t,B); t, B) \geq U(C^*_{1i}(0,0), C^*_{2i}(0,0); 0,0) \qquad (2)$$

and condition (2) will hold if and only if

$$tW_i \leq \frac{1}{1+r} B \quad (3)$$

that is, if the present value of the pension is no less than the cost of the contribution. The higher the discount rate and the higher the tax relative to the pension, the less likely it is that a worker will voluntarily participate in the pension plan. In a pay-as-you-go system, pension benefits are given by **$B = \alpha We$**, where α denotes the income replacement value of pensions and **e** is an adjustment factor to account for the fact that workers with a higher life expectancy at the time of retirement receive a higher pension The higher the life expectancy, the higher is the total payoff awarded by the plan and the more likely it is that a worker is willing to participate. It is therefore expected that, in pay-as-you-go systems, women will be more likely to participate in retirement plans than men.[3] In addition, since survival probabilities increase with permanent income, participation in social security programs will tend to increase with income levels or with factors, such as education, that raise permanent income levels for individuals.[4] Instead, in an individual capitalization system, the benefit $B = (1+r)tW$ is linked to the contribution and the interest rate, and therefore relatively less favorable to individuals with higher life expectancy. Individuals whose discount rates are above the interest rates yielded by individual accounts will not voluntarily participate.

Let us now look at the supply side. In order to participate in the program, workers need to get jobs. Let a_i denote the marginal product of labor of worker i, and let Wr_i be the reservation wage of such worker. In addition, let s_i denote the difference between the marginal product and the reservation wage for worker i, $s_i = a_i - Wr_i$. Positive surpluses may arise because specific skills make a worker more productive in a given firm than in other jobs, or due to rents generated

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[3] This effect is accentuated by the fact that the legal retirement age tends to be lower for women (see Section 2).
[4] There is ample evidence that income or variables associated to socio-economic status such as education are strongly linked to life expectancy. See for example Kitagawa and Hauser (1973), Rogot et al. (1992), and Elo and

by imperfect competition in the labor market. The division of the surplus between employers and employees will depend on their relative bargaining power. Let β denote the share of the surplus that accrues to workers after bargaining and W_i the wage paid to a worker.

In this environment, workers will accept jobs as long as $W_i \geq Wr_i$, and firms will hire workers as long as $a_i \geq W_i$, while the wage that a worker will receive would be $(Wr_i + s_i*\beta)/(1+t)$ for a worker who chooses to participate, and $Wr_i + s_i*\beta$ for a worker who chooses not to. This implies that when workers are free to choose whether to contribute or not, firms simply collect contributions from workers who have given them instructions to do so. The pension program will not affect firms' labor costs and therefore the existence of such program will not change employment decisions by firms.

3.2. Binding Minimum Wages

In the former scenario, all workers who wish to participate in the pension program can do so through their employers. This scenario is feasible only when there are no restrictions on wage adjustment. Consider for example the case when there is a binding minimum wage, $\overline{W}$, such that $\overline{W} \geq Wr_i + s_i*\beta$.[5] Firms hire a worker i as long as $a_i \geq \overline{W}$. If $a_i \geq \overline{W}(1+t)$, the firm can hire the worker at the minimum wage, pay the cost of social security and still make a profit. However, per-worker profit is higher if no social security contributions are paid. Instead, if $\overline{W}(1+t) \geq a_i \geq \overline{W}$ worker i is offered a job only under the condition of no social security contributions. In sum, a binding minimum wage may result in inefficiently low pension coverage, since a subset of workers may be denied contributions, even when they are willing to pay for them.

An inefficiently low probability of contributing may also occur if contributions bring additional costs for firms (for instance, because it increases the probability of a tax inspection, or it requires registering a firm). When minimum wages or other restrictions are important, participation is determined by firms and not by workers' willingness to pay.

3.3. Compulsory Contributions

Preston (1996).
[5] It may be argued that if enforcement is imperfect minimum wages will not necessarily bind. Yet, recent evidence for Brazil and Colombia suggest that despite high levels of non-compliance with social security regulations, minimum wages are binding both in the formal and informal sectors. See Maloney and Nuñez (2004) for Colombia, and Lemos (2004) for Brazil.

Assume now that participation is compulsory, wages can freely adjust to compensate for contributions, and enforcement is weak. As in the voluntary participation case, firms will hire workers willing to contribute to the pension program as long as $a_i \geq (Wr_i + s_i * \beta)$. Instead, compulsory participation increases the cost of hiring workers not willing to contribute if the cost of non-compliance is larger than zero. Assume that, with probability $\lambda < 1$, an evading firm is discovered and forced to pay the social security contribution plus a fine $(t+f) (Wr_i + s_i * \beta)$. Firms will choose to abide by the law and affiliate a worker for whom $a_i \geq (Wr_i + s_i * \beta) * (1+t)$ if:

$$a_i - (Wr_i + s_i * \beta)(1+t) \geq a_i - (Wr_i + s_i * \beta)(1 + \lambda(t+f)) \tag{4}$$

which holds if $f \geq t(1-\lambda)/\lambda$.[6] Thus, the higher is the probability of being caught and the higher are the fines, the more likely are firms to comply. To the extent that λ or f increases with the size of the firm, larger firms will be more willing to comply with mandatory programs. Assuming that expression (4) holds, then the employment of workers who are not otherwise willing to participate may decline. This occurs for workers whose marginal product cannot compensate for the tax, that is $a_i < (Wr_i + s_i * \beta) * (1+t)$.[7] In this case contribution rates increase, but at the potential cost of lower employment.

Notice that employment may decline even in the case where condition (4) does not hold and firms choose non-compliance. This is because firms still incur the potential costs associated with being charged a fine. Thus, the employment condition in this case is:

$$a_i \geq (Wr_i + s_i * \beta) * (1 + \lambda(t+f))$$

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[6] Chong and Saavedra (1999) also make the case that entering the informal sector is a decision that both firms and employees make on the basis of cost benefit evaluations that are continuously revised and may vary depending on changes in institutions, regulations, preferences and changes in economic activity.

[7] If $a_i < (Wr_i + s_i * \beta)(1+t)$ but $a_i > Wr_i * (1+t)$ firms could pass on the cost of the contribution to workers without necessarily reducing employment, as long as β declines.

3.4. Self-Employment

Workers may become self-employed, either by choice, or because they do not find jobs as wage employees. Let us denote the returns to self-employment as Wr_i. Workers engaged in self-employment contribute to old-age pension programs if

$$tWr_i \leq \frac{1}{1+r} B \qquad (3)'$$

Enforcement of compulsory contributions in the wage employment sector reduces wage employment among workers unwilling to contribute if $a_i < (Wr_i + s_i*\beta)*(1+t)$. Enforcement results in a higher proportion of contributors among wage employees and a lower share of contributions among the self-employed as workers unwilling to contribute shift to self-employment.

3.5. Summary

The simple model presented above suggests that in economies where enforcement is imperfect participation patterns will, to a large extent, reflect individuals' choices for social protection. Our model also shows that better enforcement will result in higher contribution rates among workers with low willingness to participate, but at the possible cost of lower wage employment and higher self-employment for these workers.

In this model we have assumed perfectly rational individuals. Nonetheless, pension plans are often justified on the grounds of sub-optimal old age savings. The introduction of individuals' myopia or time inconsistency in this simple model would increase workers' disincentives to save and participate in old age pension plans and therefore would reinforce the results described above. In other words, (1) weak enforcement may lead to widespread evasion among those less willing to participate, and (2) enforcement may increase covered workers' welfare at the cost of lower salaried employment.

4. Data

This study draws from a large set of household surveys from 11 countries during the 1990s. Since our methodology involves comparing results within and across countries, we attempted to create a set of consistent variables across countries and over time. This implied, for instance,

eliminating some countries for which individual-level information does not clearly identify whether the individual is contributing to social security or is instead covered through a family member. A related challenge is that, while we focus our attention on old-age pension plan participation, for Brazil, Costa Rica, El Salvador, Mexico, Nicaragua and Venezuela we could not isolate contributions to old-age pensions from contributions to other social security benefits, such as health care. Consequently, in these countries, the definition includes contributions to other social security programs as well.[8]

Another problem is that, while the variable of interest is whether a worker is actively contributing to a pension program, in some countries—namely Colombia, Paraguay, Peru and El Salvador—the question posed in the household surveys refers to the worker's affiliation rather than contribution status. While affiliation is akin to acquiring an option to accrue rights, the option is exercised when an affiliate decides to contribute. In Chile, for example, data from the 1994 CASEN survey indicates that 93 percent of affiliated salaried workers were contributing at the time of the survey. It is unclear, however, how respondents answer in relation to their contribution status when the survey only asks about their affiliation status, since most people do not clearly distinguish these two concepts. Moreover, in all countries the questions refer to the current job, which increases the probability that the worker interprets the question as current contributions. In what follows, we assume that in the four countries mentioned the answers refer to contribution rates.

The data set covers the period 1990-2002; however, the information is not balanced across countries. For Argentina, Mexico, Chile and Costa Rica, the data provide good coverage of the entire period. For Brazil, the data correspond to the period 1992–1999. For Colombia, the data cover the period 1996-1999. For El Salvador, Nicaragua and Venezuela, the information is only available for the later half of the period, and for Paraguay, we only have consistent information for 1998 and 1999. Lastly, for Peru the available years are 1994, 1997 and 2000. The average number of observations per survey and year ranges from 10,900 (Argentina) to 340,000 (Brazil and Mexico). The geographic coverage of the study is nationwide except in Argentina and Mexico, where only urban areas are surveyed. In Argentina, the data are restricted to the Greater Buenos Aires area. Table A.1 provides further information on the countries, years, geographic coverage and average number of observations contained in the data.

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[8] See Table B.1 in Appendix B for a more detailed description on the construction of the social security variable.

We restricted the sample to men and women 15-64 years old who work more than 5 hours per week. We considered two categories of workers: salaried workers and self-employed. Salaried workers are individuals who work for a public or private employer in exchange for remuneration, either wages or salary. The self-employed operate their own economic enterprise or engage independently in a profession or trade, and they hire no employees. We exclude employers and non-remunerated workers from the analysis.[9]

In many countries, workers in the public sector enjoy lower retirement ages, more generous benefits and/or lower contributions to social security program than workers in the private sector. Since we are interested in examining contribution decisions in the context of market economies, we exclude public sector workers, whose contributions are made directly by the State. In Chile and Nicaragua, the surveys do not contain information to identify public sector workers. We assumed that public sector salaried workers were concentrated in the Community, Social and Personal Services Sector (Sector 9, ISIC Revision 2), and we dropped this group from the sample. This assumption is based on the fact that in the rest of the countries nearly 90 percent of the public sector workers are concentrated in the Community, Social and Personal Services Sector.

A further limitation is that household surveys in Argentina and Venezuela do not provide information about social security participation for the self-employed. In addition, contribution rates for Mexico, Nicaragua, Paraguay, Peru, and El Salvador are too low to produce reliable estimates. Therefore, we reduce the analysis of self-employment to three countries: Chile, Colombia and Costa Rica.[10]

To assess a worker's wage relative to the minimum wage, we gather minimum wage levels from individual country statistical reports and Ministries of Labor. Since wages reported in household surveys are net of social security contributions, we use information on total workers' contributions to social security programs (maternity and sickness, pension programs, workplace injuries, unemployment insurance and family allowances) obtained from various issues of *Social Security throughout the World* published by the U.S. Social Security

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[9] While keeping employers and unpaid workers could somewhat increase the size of our sample, we run the risk of mixing three groups (unpaid, employers, self-employed) who are too different to be pooled together in the same model.

[10] While there are enough self-employed workers contributing in Brazil, we do not provide estimates because contributions for the self-employed in Brazil are compulsory

15

Administration, to compute gross wages. We also gather information on firms' contributions to such programs to assess whether gross wages fall in the *MW-MW*(1+t)* interval, where *t* are total contributions to social security paid by firms.

Tables 3 and 4 summarize the means of the variables included in our analysis of wage employees and self-employed workers, respectively. The ratio of contributors among salaried workers ranges from 19 percent in Paraguay to 78 percent in Chile. On average, 50 percent of salaried workers are contributing to mandatory old-age pension programs. The share of contributors among self-employed workers, on the other hand, ranges from 1 percent in Paraguay to 40 percent in Costa Rica. Women make up 30 percent of the salaried workers and 37 percent of the self-employed.

On average, three out of five salaried workers are in the prime-age group (25-49 years old) and have either primary or secondary education. About 43 percent are heads of households, and the share of wage-earners earners in a household also averages 43 percent. In contrast, workers in self-employment tend to be older, less educated and more likely to be heads of the household than wage employees.

The variable *firm size* distinguishes firms with fewer than five workers from larger firms. On average, about 30 percent of employees work for small firms. Sectors of activity are identified at the 1-digit, ISIC-Rev. 2 classification. Due to the reduced number of observations for some countries in Agriculture, Hunting, Forestry and Fishing, this sector is merged with Mining and Quarrying. Between 20 to 30 percent of the salaried employees are in Manufacturing and another 18-25 percent in Wholesale, Retail and Hospitality. Among the self-employed, between 23 and 37 percent are concentrated in Wholesale and Retail and Hospitality.

For salaried workers, non-compliance with minimum wages varies from 3 percent in Argentina to 58 percent in Paraguay. Among the self-employed, the incidence of wages below the minimum wage tends to be higher than among salaried workers. The incidence of part-time work ranges from 4 to 14 percent among salaried workers and is higher among the self-employed.

We further identify if the worker lives in an urban area (except in Argentina, Mexico and Venezuela, where this variable is not available). In both samples, an average of 70 percent of workers reside in urban areas.

5. Empirical Methodology and Results

5.1 Methodology

We estimate the determinants of the probability of contributing to social security using individual-level data. For each country, we estimate this probability, P^s_{ijt}, for worker i in sector of activity j (ISIC 1 digit) in period t, $s=1$ denoting salaried employees and $s=2$ the self-employed. We assume that the probability of contribution is explained by the following model:

$$P^s_{ijt} = F(\alpha^s + Z_i \delta^s_1 + H_i\, \delta^s_2 + F_i\delta^s_3 + S_j\delta^s_4 + T_t\, \delta^s_5) \qquad (5)$$

where Z_i is a vector of individual characteristics, H_i is a vector of household characteristics, F_i are a set of variables related to the job, and S_j and T_t are a set of sector and time dummies, respectively. Finally $F(.)$ represents the c.d.f. of a standard normal variable. Among the personal characteristics, we include age, gender, marital status, level of education and geographic area. In our simple model, decision-making occurs at the individual level; social security decisions, however, are likely to be made at the household level. Consequently, we include controls to account for the following factors: whether the individual is the head of the household, if there are other members contributing to social security, the total number of household members and the share of inactive members by age group (less than 15, 15-64, more than 64). In terms of job characteristics, we control for part-time work (that is, if a person works less than 30 hours per week), firm size and worker's wage in relation to the minimum wage. To capture this latter effect, we divide the wage distribution in brackets distinguishing whether a worker earns a gross wage below the gross minimum wage (*MW*), between *MW* and *MW(1+t),* between *MW(1+t)* and *MW(1+t)²*, between *MW(1+t)²* and *MW(1+t)³,* and above the latter value. The groups of interest are workers who earn wages below the minimum wage and workers who earn wages immediately above the minimum wage. In the first group, contribution rates are expected to be lower because firms cannot register workers at a wage below the statutory minimum. Also, in the second-lowest wage group, firms' contribution to social security cannot be passed on to workers in the form of lower wages and therefore the incidence of social security in firms declines. Taking the bracket *MW(1+t)- MW(1+t)²* as the reference group, a negative and statistically significant coefficient for the income group *MW - MW(1+t),* accompanied by a non-statistically

significant coefficient for the income group $MW(1+t)^2$- $MW(1+t)^3$, would identify a negative effect of wage rigidities on social security contributions. We include two thin wage brackets immediately above the bracket *MW-MW*(1+t)* as control groups in order to distinguish the effects of the minimum wage from pure income effects, which would also lead to lower contribution rates around the *MW*.

We further include a set of time dummies to control for cyclical changes in the interest rate and personal income, and a set of sector variables to account for differences in market power, importance of specific skills or probability of enforcement that may differ systematically across sectors.

In general, it is not possible to infer whether the observed contribution patterns are driven by workers' decisions or firms' choices only by estimating expression (5) for salaried workers. This is because statistically significant coefficients for the supply variables (firm and job characteristics) may reflect sorting decisions by workers rather than rationing decisions by firm, since workers not willing to participate may move to firms with better possibilities to evade. Similarly, statistically significant coefficients for demand variables (individual and household characteristics) may reflect correlation with unobserved supply factors rather than the effect of individuals or household choices. To address this issue, we compare the coefficients estimated for salaried workers, for whom participation is compulsory, with the coefficients estimated for a separate sample of self-employed workers. To the extent that the coefficients on the demand factors look similar across both groups of workers, it is possible to argue that such patterns are the result of workers' decisions rather than the result of correlation with some supply unobservables.

This identification strategy relies on the assumption that the self-employed as a group constitute a good counterfactual for salaried workers. In our case, we will interpret this to be the case if the estimate parameters for demand factors are similar across self-employed and salaried workers. Recent evidence suggests that, at least with respect to their preferences for social protection, self-employed and salaried workers are not greatly different. Barr and Packard (2002, 2003) perform field experiments in Chile and Peru, asking individuals hypothetical questions to measure agents' risk and time preferences through decisions about contributing to a pension program. They find that the self-employed are indistinguishable from salaried workers with

respect to these parameters, and therefore are free to reveal their preferences for social protection.

5.2. Results for Salaried Workers

Individual Characteristics

Table 5 shows the Probit estimates for salaried workers. Across all countries, the probability of contributing to social security is strongly correlated with education. In general, there is a large increase in the probability of contributing if a worker increases his level of education from primary complete to secondary incomplete and an even larger increase when a worker completes secondary education. After this level, even when generally the probability grows, the differences across education groups are much smaller. The fact that this pattern shows across countries regardless of the pension model, even after controlling for wage levels, indicates that the education effect goes beyond the positive relationship between education and old-age survival probability.

The probability of contributing to social security also differs substantially across age groups. In all countries, contribution probabilities are higher for prime-age (25-49) and older workers (50-65) than for workers younger than 25. In Argentina, Brazil, Chile, Costa Rica, Mexico and Venezuela prime-age workers are more likely to be contributing than older workers, while in the rest of the countries the opposite is true. In Nicaragua, Paraguay and Peru, the three countries with the lowest contribution rates, the difference between the contribution rates for men 50-64 year-old and prime-age men is very large. This suggests that one of the reasons for the low contribution rates is that people only start contributing a few years before the retirement age.

The probability of contributing is higher for single women than for single men in most countries. We would expect this to be the case in countries with pay-as-you-go systems, but not in countries with individual accounts. It is interesting that Chile, the country that first switched from pay-as-you-go to individual accounts, does not show such gender differences. For most countries, however, the order is reversed for married women in salaried jobs. To the extent that married women are entitled to a survival pension (if they survive the spouse) or can access their husbands' account balances, which are in many cases higher than the pension they can get

through their own contributions, they have a smaller incentive to contribute relative to that of married men.[11]

Lastly, contribution rates vary with the area of residence. Urban residents have a higher probability of contributing than rural residents. Such differences could be explained by (i) differences in enforcement between rural and urban areas; (ii) higher earning opportunities during old-age in rural areas; or (iii) higher life expectation in urban areas. The exceptions are Costa Rica and Paraguay, where there are no significant differences by residence area.

Interestingly, De la Rica and Lemieux (1993) examine the incidence of health insurance coverage in the United States and Spain and find patterns that are similar to the ones reported here. In both countries, coverage increases with education and experience. Coverage also increases for married individuals, particularly men. Such similarities suggest that the patterns of coverage of social security protection are similar across countries at different levels of development. Our results also confirm earlier results by Packard, Shinkai and Fuentes (2000) for Latin America; these authors attribute such patterns to a lack of access to social security for some groups of workers.

Household Characteristics

The structure of the household strongly affects the probability of participation in ways that are strikingly common across countries. Except in Paraguay and Nicaragua, male household heads are more likely to be contributing than other members of the household. In addition, individuals in households with a higher share of inactive members (relative to the total number of members in the household) have a higher probability of contributing (see Table 5). This probability increases with the age of the inactive individuals. In contrast, individuals in larger households are less likely to contribute.

In addition, our findings strongly contradict the notion that individuals "free-ride" on other household members that are contributing to social security. We find that, in all countries, and therefore regardless of the pension model, the probability of participation increases between 8 and 24 percentage points for workers who have at least one additional household member

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[11] Lower wages and shorter contribution periods result in low accrued rights, or lower account balances for women relative to the benefits they can get through their spouses' contributions or accounts.

contributing. This variable may be capturing unobserved household characteristics that are correlated with the probability of contributing.

Job and Sector Characteristics

Job characteristics are also important in determining contribution probabilities. Part-time workers are much less likely to be contributing to social security than workers employed full-time. Similar results were also found by De la Rica and Lemieux (1993) for Spain and the United States. Workers in low-paid jobs are also less likely to be contributing than workers who earn higher wages. This is especially the case for workers who earn wages below the minimum wage.

On the other hand, only in Costa Rica and Nicaragua is there evidence that workers in the bracket immediately above the MW are less likely to be contributing than workers in the control group (above $MW*(1+t)$ and below $MW*(1+t)^2$), while the marginal effect of those in higher wage brackets does not significantly differ from the control group. For the rest of the countries, the effects of the minimum wage on workers immediately above the minimum, if present, cannot be disentangled from other income effects.

Our results also suggest that workers in larger firms are more likely to contribute than workers in small firms. Differences in enforcement among small and large firms, in training and development of specific skills, or in the existence of rents could explain this effect, whose magnitude is very large. Being employed in a firm of fewer than five employees reduces the probability of contribution from 16 percentage points in Paraguay to 53 percentage points in Mexico.

Finally, contribution probabilities vary by sector. and the patterns are again common across countries. In all, workers in the primary sector (Agriculture and Mining) have a lower probability of contributing than workers in the excluded sector (Manufacturing). This difference ranges from 5 percentage points lower in Argentina to 39 percent in El Salvador. Construction workers are also much less likely to be contributing than manufacturing workers (with an implied difference in participation between 9 and 34 percentage points). Workers in Transport, Storage and Communication and in Community, Social and Personal Services, are also less likely to be contributing than workers in Manufacturing. In contrast, contribution patterns are less clear for workers in Utilities and in Financing, Insurance, and Business Services. In some countries those workers exhibit higher contribution rates than in Manufacturing, while in other

countries the opposite is true. Sector differences may arise from differences in technology and market structure that in turn lead to differences in rents across sectors. They may also reflect differences in enforcement rates across sectors. Packard, Shinkai and Fuentes (2000) also find lower levels of coverage among workers in small firms and those employed in the agriculture, transportation and construction industries.

To analyze the degree of commonality across countries in our study, we compute the cross-country correlations in marginal effects for all the variables of our model. Table A.2 reports the results. The correlations' coefficients are extremely high (above 0.70 in most cases) and statistically significant at the 1 percent level in all cases. This underscores the fact that the patterns of social security coverage are common in all countries of Latin America regardless of the pension system—a result that is unexpected in the light of a simple contribution model and the predictions of reform proponents.

While it is expected that demand (individual and household characteristics) and supply (job, firm and sector characteristics) factors are highly correlated, it is useful to compute the upper and lower bounds of the fraction of the explained variance accounted for by demand factors. To compute these bounds, we first estimate Probit models for each country including only supply correlates. We compute the *lower* bound by comparing the resulting *pseudo R-square* with the ones resulting from the full model (as presented in Table 5) according to the formula (*Pseudo R^2 full-Pseudo R^2 Supply)/Pseudo R^2 Full*. Similarly, we compute the *upper* bound by first estimating a Probit including only demand correlates and comparing this model's pseudo R^2 with the one obtained from the full model according to the formula *1-((Pseudo R^2 full-Pseudo R^2 demand)/Pseudo R^2 Full*). The results of these computations are presented in Table 6. We also perform the same computations with the R^2 obtained from estimating Linear Probability Models (LPM) instead of Probits. While the coefficients resulting from the LPM are very similar to the marginal effects in the Probit, the LPM has the advantage that the R^2 is directly related to the variance of the dependent variable, while the *Pseudo R^2* is not.

Both sets of computations yield similar results. In most cases, demand factors account for between one third and two-thirds of the total explained variance, suggesting that in addition to supply factors, demand variables play an important role in determining the probability of contributing to social security programs. An important exception is Mexico, where supply

variables seem to be the main factor in accounting for the explained variance of social security contributions.

Country Characteristics

How much of the variance in social security contributions can be explained by individual and firm characteristics and how much can be explained by country policies or institutions, such as differences in enforcement or better management of social security schemes? To answer this question we take advantage of the high correlation between marginal effects across countries and run a cross-country estimation pooling all the individual data. We estimate the empirical model reported in Table 5, both with and without country dummies allowing for clustering of the errors at the country level. We then compare these results with the results of estimating a pooled model with only country dummies as explanatory variables. The first column of Table 7 reports the raw differences across countries, while the third column reports the results of adding all the controls. Adding individual, household and firm characteristics reduces the raw differences between the omitted country (Argentina) and the poorest countries (Nicaragua, Peru, Paraguay and El Salvador). Having a higher proportion of less educated, poorer and less advantaged workers, or having a high proportion of smaller firms, reduces affiliation rates in these countries. In El Salvador, for instance, these additional regressors can account for the whole mean difference in contribution rates with Argentina. On the other hand, Argentina's and Mexico's contribution rate looks comparatively lower than those found in Chile, Colombia, and Venezuela when supply and demand factors are accounted for.

The marginal effects on the country dummies suggest that there are significant differences in contribution rates across countries even after accounting for individual, household and firm effects. Similar effects are obtained when individual observations are weighted so that all countries have equal weight. Differences in enforcement or in the overall attractiveness of social security systems may explain differences in country means.

In contrast, country variables have a seemingly small effect on the explained variance. In addition to the pseudo R^2, a measure not directly related to the variance of the dependent variable and biased to be less than one, we include other measures of goodness of fit, such as the count of correctly classified observations, or the R^2 of a Linear Probability model. Neither the pseudo R^2, the R^2 nor the predictions of the model improve much when country dummies are taken into

23

account. Thus, the percentage of cases correctly predicted by the model goes from 78.6 (77.24) to 80.34 (80.61) in the model without special weighs (with special weights), a fairly marginal improvement. Similarly, the R^2 increases from 0.34 (0.35) to 0.38 (0.42) when country effects are added to the model without weights (with weights). In sum, country factors such as institutional enforcement or the attractiveness of the social security program explain differences in mean contribution rates across countries, but explain little of the individual variance in contribution rates.

The analysis above indicates that the patterns of contribution to social security exhibit prominent regularities across countries, individuals, households, firms and sectors. An analysis of variance suggests that in addition to supply factors, demand factors account for a substantial share of the explained variance. In the next section, we compare the patterns of contributions between salaried and self-employment workers. Similar patterns across the two groups would confirm that to an important extent the patterns of contributions among salaried workers respond to the voluntary choices of workers rather than, or in addition to, the evasion decisions of firms.

5.3. Results for Self-Employed Workers

Table 8 presents Probit estimates of the probability of contributing to social security for self-employed workers in Chile, Colombia, and Costa Rica.[12] The results show patterns that are very similar to those found for salaried workers.

The probability of contributing increases with age and education. It is also higher for married men than for married women, and for workers living in urban areas. Yet, unlike the case of salaried workers, there are no overall patterns in the rate of contribution of single women relative to single men.

Household characteristics also have a similar effect on the probability of contribution of self-employed workers than for salaried workers. Contribution rates tend to be higher for household heads relative to other members of the household; the share of inactive members increases the probability of contributing, and that effect is larger for older dependents. Finally, as was the case for salaried workers, the probability of contributing is lower for individuals living in larger households.

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[12] The incidence of contributions among the self-employed in Mexico, Nicaragua, Paraguay, Peru and El Salvador is too small to estimate the probability of contribution in these four countries. In Brazil, contributions among self-

Another strong regularity is that, like in the case of salaried workers, participation declines among the self-employed that work part-time, relative to full-time self-employed. There are also some regularities by sector of activity, but they do not coincide with those found for salaried workers. Thus, contribution rates are higher for workers in the Transport, Storage and Communications, Wholesale and Retail Trade, and Hospitality sectors than for workers in the Manufacturing sector. In most countries, self-employed workers in Community, Social and Personal Services also show higher contribution rates than self-employed workers in the Manufacturing sector. Instead, patterns in the Construction and Agriculture sector tend to be less clear-cut, with some countries showing higher participation in these sectors than in Manufacturing and others showing the reverse.

Table 9 shows the coefficients resulting from correlating the vector of coefficients associated with demand variables (individual and household characteristics) for salaried workers with the same vector of coefficients for the self-employed in the three countries for which we can estimate contribution probabilities for these workers. Remarkably, the correlation coefficients are all above 0.75 and statistically significant at the 1 percent level. This confirms that, despite differences in the overall level of contributions, the patterns of contributions within these two groups of workers are very similar, suggesting that the patterns of contributions among salaried workers are to an important extent determined by individual and household preferences for social protection.

Nonetheless, we have uncovered a few systematic differences in contribution patterns across the two groups, particularly among supply factors. Such differences may help reveal situations in which contribution rates among salaried workers are not the outcome of individual preferences but instead, the results of firms' choices and/or government enforcement. We focus on such differences by estimating a model of contributions pooling the two samples of workers and interacting all variable with a dummy that identifies if a worker is self-employed.

Table 10 summarizes the results of such extended model, again focusing on the three countries for which enough self-employed workers are contributing to social security. While some of the interactions between individual or household characteristics and self-employment are statistically significant, the only pattern that emerges is that the effect of having other members of the household affiliated with social security has a smaller effect on the contribution

employed workers are voluntary.

rates of self-employed workers than among salaried ones. We do not have a good explanation for this effect.

Instead, systematic differences across the two groups arise in the effect of job characteristics, reinforcing the view that for some workers supply factors are an important determinant of contributions. Thus, earning wages below the minimum wage reduces the probability of contributions in both sectors, but the effect is more prominent in the wage employment sector, suggesting that firms that pay wages below the minimum wage are also likely to evade social security contributions (or force workers to register as self-employed). Similarly, part-time workers have a lower probability of contributing to social security, relative to full time workers, in the wage employment than in the self-employment sector. This suggests that, at least for some workers, part-time salaried work might be the result of a deliberate strategy by firms to evade social security. Lastly, it is also worth noting that the distribution of contributions across sectors tends to be skewed towards manufacturing among the salaried and against manufacturing among the self-employed. This pattern appears to emerge from the stricter enforcement of social security laws in the manufacturing sector relative to other sectors of activity among salaried workers.[13]

5.4 Discussion

Similar patterns of contributions of salaried and self-employed workers across individual and household characteristics suggest that demand factors are important in explaining contribution decisions. Therefore, low contribution rates are partly explained by the inability of enforcement authorities to undo the outcomes of voluntary choices. Yet, there is also evidence that at least some workers are rationed out of social security. This is the case for workers employed in part-time jobs or earning wages below the statutory minimum. It could also be the case for workers employed in small firms.

These results seem to be at odds with traditional theories of labor market segmentation stating that workers are rationed out of good jobs with benefits. Yet, recent evidence for Latin

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[13] Notice that stricter enforcement in manufacturing explains both the higher coefficient in manufacturing wage employment and the lower coefficient in manufacturing self-employment. This is because higher enforcement in the manufacturing wage employment is likely to push some manufacturing workers towards the self-employment sector, which in turn reduces the contribution rate among manufacturing self-employed workers. This is so, because enforcement displaces workers with lower willingness to contribute.

America strongly suggests that the dual labor market model may not be a good representation of reality. Maloney (1999) and Bosh and Maloney (2005) study mobility patterns across sectors using detailed panel data for Mexico, Argentina and Brazil and find little evidence in favor of the dualistic model. Navarro-Lozano and Schrimpf (2004) estimate counterfactual wages for formal workers in the informal sector in Mexico and also conclude that there is no evidence of segmentation in the labor market. Gong, van Soest and Villagomez (2004) and Gong and van Soest (2002) estimate dynamic multinomial Logit models to assess mobility patterns in Mexico. Interestingly, they conclude "Many of our findings suggest that, for the lower educated workers, the dualistic view of the labor markets is not a good description." Yet, these authors also overturn traditional views by concluding that the market for higher educated workers seems to behave more according to the dual hypothesis. The work presented in our study suggest that informal sector jobs may be desirable to lower educated workers because they allow them to evade contributions on programs they don't want. Instead, since protection is more valuable for higher educated workers, formal jobs might be more desirable for those workers.

Our results are also in line with a number of recent studies indicating that workers bear a part of the cost of social security contributions in the form of lower wages. Edwards and Cox-Edwards (2002) find that in Chile, after controlling for selection, wages of individuals contributing to social security are 8.5 percent lower than those of non-contributors. Since contributions to social security (health, life insurance and pensions) amount to about 20 percent, more than 40 percent of the contributions are passed on to workers. Gruber (1997), MacIsaac and Rama (1997), Marrufo (2001), Mondino and Montoya (2004), and Heckman and Pagés (2004) also find evidence of sizeable pass-through in Chile, Ecuador, Mexico, Argentina, and in a sample of Latin American countries, respectively. Workers not willing or able to accept a wage cut prefer not to contribute; weak enforcement allows them that option.

6. Conclusions

This paper explores the reasons behind the low rates of contribution to mandatory social security systems in Latin America. Our results indicate that the low rates of contributions are partly explained by demand factors (such as individual preferences), and partly by the nature of the labor market in which contributors work. Weak enforcement has enabled many workers to opt out of social security programs they do not find them beneficial, either because of workers'myopia or because social security systems are not well targeted to workers' needs. Across countries, the pattern is strikingly similar: the unskilled, the young, married women, workers living in large households with many active members, workers without other members of the household contributing to social security, workers with low wages and workers in rural areas find social security programs less attractive than the average worker. Yet, not all non-compliance decisions are the result of workers' choices. The evidence presented in this paper also suggests that some workers are rationed out of social security. This seems to be the case for workers in part-time jobs and earnings below the minimum wage. It is also likely to be the case for at least some workers employed in small firms.

Our findings raise some key implications for public policy. The first one is that toughening enforcement can increase the percentage of contributors to social security but reduce salaried employment for workers unwilling to contribute.[14] The second implication is that the benefits of minimum wage policies should be weighted against their potential adverse effects on social security contributions. A related implication is that part-time work should not be a safe haven for evasion; regulations pertaining to this form of work should be reviewed to eliminate incentives for evasion. Our results also suggest that policies that seek to de-link contributions from labor market participation will not necessarily solve the contribution deficit. Instead, if the problem lies in the fact that the current system is not attractive to a large number of less-advantaged workers, policies intended to increase the coverage of social security programs should alter the current equation of benefits and contributions. This may imply finding alternative financing schemes, in which workers with high willingness to contribute cross-subsidize workers with lower willingness to contribute. It may also imply targeting the package of benefits to the needs and risks of people with low willingness to contribute. The latter is true

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[14] It may also reduce welfare, unless workers are time-inconsistent or rationally bounded in their inter-temporal

even if the current design is the optimal one and workers do not contribute as a result of myopia or bounded rationality. Forcing people to save against their will becomes very difficult in countries with weak enforcement capabilities.

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consumption choices.

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Table 1
Percentage of workers contributing to social security
(In percentages)
National sample: Males and females 15 to 64 years old working more than 5 hours a week

Country	All workers				Salaried Workers				Salaried Workers Private Sector				Self-employed Workers			
	Early 90's [1]	Middle 90's [2]	Late 90's and early 00's [3]	Average all period	Early 90's [1]	Middle 90's [2]	Late 90's and early 00's [3]	Average all period	Early 90's [1]	Middle 90's [2]	Late 90's and early 00's [3]	Average all period	Early 90's [1]	Middle 90's [2]	Late 90's and early 00's [3]	Average all period
Argentina [4]					72.65	71.11	65.26	69.67	67.83	66.85	61.81	65.50				
Brazil	57.14	56.29	53.65	55.69	69.53	69.83	73.28	70.88	75.46	73.63	72.89	74.00	17.39	15.90	16.90	16.73
Chile [5]	64.33	66.73	65.12	65.39	76.75	79.33	77.36	77.81	77.21	79.71	77.41	78.11	23.48	22.43	19.50	21.80
Colombia		36.26	35.63	35.94		52.27	54.49	53.38		45.33	47.30	46.32		8.55	7.45	8.00
Costa Rica	71.03	68.22	65.68	68.31	78.21	75.22	73.85	75.76	72.17	69.31	67.97	69.82	46.00	43.29	37.13	42.14
Mexico [4]	52.07	48.31	49.69	50.02	66.00	62.42	63.76	64.06	60.92	57.39	59.73	59.35	0.19	0.12	0.09	0.13
Nicaragua [5]			20.45	20.45			31.70	31.70			25.09	25.09			1.09	1.09
Peru		21.02	16.18	18.60		37.62	28.70	33.16		27.15	19.25	23.20		2.78	1.47	2.13
Paraguay			16.37	16.37			29.86	29.86			19.14	19.14			1.06	1.06
El Salvador			38.92	38.92			53.91	53.91			46.39	46.39			3.36	3.36
Venezuela						60.22	64.61	62.42		51.24	56.25	53.75				

Notes:
(1) Early 90's: reports average of data available for each country in period 1990-1993.
(2) Middle 90's: reports average of data available for each country in period 1994-1997.
(3) Late 90's and early 00's: reports average of data available for each country in period 1998-2002.
(4) Urban areas.
(5) Workers in the sector 9 (ISIC Rev.2) are considered employed in the public sector.
Source: Individual Country's Household Surveys. See Table A.1 for a description of the data.

Table 2: Social security systems in Latin America

Country	Argentina	Brazil	Chile	Colombia	Costa Rica	El Salvador	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Social Security System (Pensions)	Dual	Pay-as-you-go	Individual Capitalizacion Accounts	Parallel	Dual	Individual Capitalizacion Accounts	Individual Capitalizacion Accounts	Pay-as-you-go	Pay-as-you-go	Parallel	Pay-as-you-go
Year of Social Security Reform	1993	-	1980	1993	1999	1996	1995	2000	-	1992	1998
Actual implementation	July 1994	-	May 1981	April 1994	February 2000	April 1998	July 1997	Not yet implemented	-	January 1993	Not yet implemented
Is it Voluntary the new system?	Yes	-	Yes, for self-employed	Yes	No	Yes, for workers between 36 and 55/50 years old	Yes, for already insured	-	-	Yes	-
Is it Mandatory the new system?	No	-	Yes, for workers entering the labor force in 1982	No	Yes	Yes, for new entrants after 1998	Yes, for new entrants after July 1997	-	-	No	-
Age of retirement: men	64 (65 since 2001) and 30 years of contributions	65 and 35 years of contributions for urban, 60/30 rural	65 and 20 years of contributions	60 (rise to 62 in 2009) 1000 weeks of contrib.	61 and 11 months with 466 monthly contrib. (reduced to 240 if age 65)	60 with 25 years of contrib. or just 30 years contrib.	65 and 1,250 weeks of contributions	60 and 750 weeks of contributions	60 with 25 years or age 55 with 30 years of contributions	65 (and 20 years of contributions in pay-as-you-go)	60 and 750 weeks of contributions
Age of retirement: women	59 (60 since 2001) and 30 years of contributions	60 and 30 years of contributions for urban, 55/25 rural	60 and 20 years of contributions	55 (rise to 58 in 2009) 1000 weeks of contrib	59 and 11 months with 466 monthly contrib. (reduced to 240 if age 65)	55 with 25 years of contrib. or just 30 years contrib.	65 and 1,250 weeks of contributions	60 and 750 weeks of contributions	60 with 25 years or age 55 with 30 years of contributions	65 (and 20 years of contributions in pay-as-you-go)	55 and 750 weeks of contributions
Early Retirement for ICA (2)	-		Allowed if pension equals at least 50% of average wage over last 10 years and is at least equal to 110% of minimum old-age pension	Allowed if ICA is sufficient to purchase an annuity equal to 110% of minimum wage.	-	Alowed if pension equals at least 60% of basic earnings or 160% of current minimum pension	-			Allowed if the ICA is at least 50% of average indexed earnings in last 10 years	
Pension Contribution Rate (1999)	27	28.125	13	13.5	7.25	10.5	9.1	5.25	21	11	6.75
Total Social Security Contribution Rate (1999) (1)	46	29.125	21	29.8	27	21	23.1	15	21	21	14.2
Self-employed contribution to Social Security	Mandatory	Mandatory	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary	Voluntary
	No	Yes	No	No	No	No	No	No	Yes	No	Yes
	PBU=2.5 MOPRE, + 1% for every contrib. year above 30 + PC= 1,5% for evey year contrib. old system + PAP=0.85% for every contrib. year after 1994 or	70%, plus 6% after 30 years of contributions	ICA	65% plus 2% for each 50 weeks of contrib. between 1,000-1,200, max. of 73%. Plus 3% for each 50 weeks 1,200-1,400, max. of 85%.	60% plus 0.0835% for each month of contribution above 240.	ICA or 30% of base salary plus 1.5% for each additional year.	ICA or 35% plus 1.25% per year of contribution beyond 500 weeks	40% plus 1.365% for each 50 weeks of contrib. Or 45% + 1.591% if less than twice minimum wage	100% or 80% plus 4% for each year over age 55 and up to age 59	ICA or 50% plus 4% for each additional year of contributions beyond 20	9,000 bolivars a month (or fixed amount), plus 30% of base salary
	Avg. last 10 years	Avg. last 36 months	-	Avg. last 10 years	Average of the highest 48 monthly wage during last 5 years of cource	Avg last 120 months of earnings	Avg earnings during last 250 weeks of contribution	Avg earnings during last 5, 4, or 3 years (based on contrib. of 15, 20, or 25 years)	Avg earnings during last 3 years	Avg earnings in the last 5 years	Avg earnings the highest five years in the last 10 years.

Notes: (1) Social Securit Account. MOPRE stands acronym for Additional ... vidual Capitalization pension). PAP Spanish

Source: Country Laws a

34

Table 3
Mean of the variables for the sample of salaried workers

Variable	Argentina	Brazil	Chile	Colombia	Costa Rica	El Salvador	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Contributing to social security	0.6520	0.7396	0.7811	0.4631	0.6899	0.4639	0.5927	0.2536	0.1902	0.2387	0.5480
Female	0.3165	0.3006	0.2388	0.3923	0.3015	0.3046	0.3372	0.1926	0.3446	0.3025	0.2992
Married	0.5807	0.2704	0.6293	0.5275	0.5064	0.4852	0.5513	0.5587	0.5631	0.5117	0.5198
Age											
15-24	0.2513	0.3252	0.2100	0.2582	0.3346	0.3275	0.3130	0.3910	0.3448	0.3082	0.3009
25-49	0.5948	0.6037	0.6701	0.6575	0.5794	0.5772	0.6028	0.5195	0.5725	0.5889	0.6151
50-64	0.1539	0.0711	0.1199	0.0844	0.0859	0.0953	0.0842	0.0895	0.0826	0.1030	0.0841
*Education****											
Less than primary complete	0.0700	0.1713	0.1263	0.1113	0.1940	0.3234	0.1094	0.4912	0.1971	0.1052	0.1564
Primary complete	0.2732	0.1537	0.0741	0.1544	0.3719	0.1153	0.1859	0.1470	0.2637	0.1167	0.2212
Secondary incomplete	0.2188	0.3897	0.3190	0.2583	0.1980	0.2513	0.3439	0.2046	0.2879	0.1745	0.2833
Secondary complete	0.1991	0.1891	0.2733	0.2888	0.1132	0.1870	0.1638	0.0781	0.1548	0.3387	0.1835
College incomplete	0.1339	0.0351	0.1519	0.0860	0.0946	0.0642	0.0606	0.0543	0.0664	0.1655	0.1053
College complete	0.1050	0.0610	0.0555	0.1012	0.0381	0.0587	0.1366	0.0249	0.0301	0.0994	0.0503
Household composition											
Head of the household	0.5068	0.4726	0.5238	0.4112	0.4457	0.4452	0.4519	0.4166	0.4251	0.3620	0.3729
Other members contributing to social security	0.4669	0.7062	0.6710	0.4474	0.7502	0.4197	0.6891	0.2585	0.1775	0.2825	0.5760
Share of household members with positive income	0.4978	0.5337	0.4572	0.4944	0.4400	0.4302	0.4748	0.4155	0.4935	0.4549	0.4171
Share of household members less than 15 and out of the labor force	0.1995	0.2300	0.2015	0.2428	0.2602	0.2809	0.1905	0.3272	0.2953	0.2615	0.1539
Share of household members 15 to 64 and out of the labor force	0.2684	0.2096	0.2131	0.2322	0.2688	0.2530	0.3105	0.2270	0.1838	0.2358	0.2824
Share of household members older than 64 and out of the labor force	0.0327	0.0223	0.0244	0.0287	0.0272	0.0292	0.0227	0.0216	0.0202	0.0320	0.0258
Total number of members in the household	4.1745	4.4619	4.6391	4.8024	4.8861	5.0874	4.6838	6.2909	5.2187	6.0426	5.6704
Geographic area											
Urban	na	0.9339	0.8411	0.9008	0.4769	0.6766	na	0.6233	0.7499	0.8032	na
Income Intervals in relation to Minimum Wage											
Wage < Minimum Wage	0.0296	0.0813	0.1671	0.3794	0.3765	0.3586	0.0996	0.1337	0.5848	0.3836	0.4120
Min. Wage < Wage < Min. Wage (1+t)	0.0338	0.0465	0.0014	0.1517	0.1545	0.1159	0.0715	0.0310	0.0806	0.0373	0.1102
Min. Wage (1+t) < Wage < Min. Wage $(1+t)^2$	0.0662	0.0607	0.0017	0.1016	0.1366	0.0900	0.0905	0.0524	0.0510	0.0485	0.0570
Min. Wage $(1+t)^2$ < Wage < Min. Wage $(1+t)^3$	0.1187	0.0803	0.0024	0.0934	0.1034	0.0772	0.1055	0.0603	0.0606	0.0343	0.0545
Min. Wage $(1+t)^3$ < Wage	0.7517	0.7313	0.8274	0.2739	0.2290	0.3583	0.6328	0.7226	0.2229	0.4962	0.3663
Firm											
Part time worker	0.1144	0.0468	0.0383	0.0820	0.0941	0.0990	0.0701	0.0974	0.1374	0.1322	0.0541
Small firm (<5 workers)	0.2965	0.1419	0.1807	na	0.3156	0.3421	0.2330	0.4000	0.4918	0.4121	0.3064
Sector											
Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying	0.0038	0.0094	0.2318	0.0620	0.2111	0.1810	0.0103	0.3635	0.0629	0.1817	0.1092
Manufacturing	0.2910	0.3798	0.2354	0.2400	0.2187	0.2724	0.3000	0.2117	0.2100	0.2001	0.2041
Electricity, Gas and Water	0.0078	0.0093	0.0146	0.0062	0.0026	0.0054	0.0089	0.0204	0.0022	0.0066	0.0089
Construction	0.0574	0.1214	0.1157	0.0612	0.0731	0.1029	0.0574	0.1075	0.0930	0.0848	0.1069
Wholesale and Retail Trade and Restaurants and Hotels	0.2230	0.2396	0.1999	0.2620	0.2219	0.2122	0.2210	0.2180	0.2315	0.1943	0.2462
Transport, Storage and Communication	0.1252	0.0843	0.0997	0.0840	0.0557	0.0700	0.0709	0.0616	0.0912	0.0591	
Financing, Insurance, Real Estate and Business Services	0.1239	0.0349	0.1030	0.0993	0.0492	0.0729	0.0299	0.0151	0.0749	0.0682	0.0842
Community, Social and Personal Services	0.1678	0.1212	na	0.1855	0.1677	0.0832	0.3015	na	0.2639	0.1730	0.1815
Number of observations	25,846	229,892	165,218	71,534	46,234	46,552	972,734	4,578	4,732	6,593	119,552

Notes: Education categories (**)
contribution rate. In Chile and Nic

. *t* denotes social security

35

Table 4

Mean of the variables for the sample of self-employed workers

Variable	Chile	Colombia	Costa Rica
Contributing to social security	0.2176	0.0797	0.4016
Female	0.2832	0.3761	0.2763
Married	0.7092	0.6462	0.6993
Age			
15-24	0.0890	0.1101	0.0966
25-49	0.6418	0.6816	0.6764
50-64	0.2691	0.2083	0.2270
*Education ***			
Less than primary complete	0.2000	0.2275	0.2581
Primary complete	0.1210	0.2127	0.3871
Secondary incomplete	0.3408	0.2655	0.1766
Secondary complete	0.2066	0.1902	0.0940
College incomplete	0.0925	0.0393	0.0664
College complete	0.0391	0.0648	0.0327
Household composition			
Head of the household	0.5903	0.5384	0.6338
Other members contributing to social security	0.4940	0.2805	0.5516
Share of household members with positive income	0.4097	0.4705	0.4077
Share of household members less than 15 and out of the labor force	0.1915	0.2650	0.2678
Share of household members 15 to 64 and out of the labor force	0.2143	0.2330	0.2890
Share of household members older than 64 and out of the labor force	0.0286	0.0289	0.0291
Total number of members in the household	4.4800	4.8623	4.5556
Geographic area			
Urban	0.8032	0.8363	0.4539
Income Intervals in relation to Minimum Wage			
Wage < Minimum Wage	0.1601	0.5171	0.4453
Min. Wage < Wage < Min. Wage (1+t)	0.0006	0.0969	0.0842
Min. Wage (1+t) < Wage < Min. Wage $(1+t)^2$	0.0014	0.0872	0.0885
Min. Wage $(1+t)^2$ < Wage < Min. Wage $(1+t)^3$	0.0082	0.0642	0.0842
Min. Wage $(1+t)^3$ < Wage	0.8297	0.2347	0.2979
Firm			
Part time worker	0.1427	0.1866	0.2425
Sector			
Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying	0.1904	0.0526	0.2365
Manufacturing	0.1176	0.1248	0.1425
Electricity, Gas and Water	0.0011	0.0028	0.0002
Construction	0.1003	0.0827	0.0925
Wholesale and Retail Trade and Restaurants and Hotels	0.3049	0.3740	0.2324
Transport, Storage and Communication	0.0909	0.0819	0.0817
Financing, Insurance, Real Estate and Business Services	0.0351	0.0460	0.0424
Community, Social and Personal Services	0.1600	0.2353	0.1717
Number of observations	69,732	52,233	15,826

Notes: Education categories (**) are mutually exclusive. The data refers to self-employed working more than 5 hours a week. The coverage of the sample is national. t denotes social security contribution rate.

Table 5
Probit estimates of the probability of contributing to social security. Salaried workers. Marginal effects.

Variable	Argentina	Brazil	Chile	Colombia	Costa Rica	El Salvador	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Female	0.0514	0.0676	0.0074	0.0787	0.0984	0.1850	0.1065	0.0246	0.0038	-0.0282	0.0547
	(0.0148)***	(0.0037)***	(0.0083)	(0.0126)***	(0.0090)***	(0.0178)***	(0.0046)***	(0.0404)	(0.0249)	(0.0223)	(0.0094)***
Married	0.0209	0.0530	0.0471	0.0332	0.1146	0.0507	0.0552	0.0122	0.0486	0.0567	0.0409
	(0.0144)	(0.0037)***	(0.0063)***	(0.0121)***	(0.0112)***	(0.0144)***	(0.0048)***	(0.0242)	(0.0196)**	(0.0166)***	(0.0073)***
Married * Female	0.0231	-0.0337	-0.0618	0.0247	-0.2887	-0.0480	-0.0658	0.0743	-0.0255	-0.0351	-0.0351
	(0.0216)	(0.0066)***	(0.0127)***	(0.0164)	(0.0202)***	(0.0211)**	(0.0072)***	(0.0537)	(0.0266)	(0.0222)	(0.0117)***
Age											
25-49	0.1164	0.0741	0.0710	0.1226	0.0914	0.0747	0.0616	0.0790	0.0347	0.0929	0.0819
	(0.0133)***	(0.0034)***	(0.0064)***	(0.0099)***	(0.0085)***	(0.0130)***	(0.0043)***	(0.0226)***	(0.0174)**	(0.0156)***	(0.0068)***
50-64	0.1070	0.0174	0.0584	0.1534	0.0555	0.1162	0.0485	0.2192	0.1787	0.1997	0.0735
	(0.0157)***	(0.0055)***	(0.0068)***	(0.0158)***	(0.0126)***	(0.0236)***	(0.0066)***	(0.0597)***	(0.0482)***	(0.0382)***	(0.0113)***
25-49 * Female	-0.0078	0.0020	0.0290	0.0057	0.0331	0.0134	0.0095	-0.0163	0.0543	0.0993	0.0630
	(0.0213)	(0.0055)	(0.0098)***	(0.0153)	(0.0139)**	(0.0217)	(0.0067)	(0.0434)	(0.0359)	(0.0375)***	(0.0116)***
50-64 * Female	0.0167	0.0116	0.0277	-0.0387	0.0377	-0.0168	-0.0296	-0.1124	-0.0040	0.0342	0.0733
	(0.0291)	(0.0110)	(0.0152)*	(0.0287)	(0.0248)	(0.0446)	(0.0120)**	(0.0284)***	(0.0526)	(0.0528)	(0.0210)***
Education											
Primary complete	0.0013	0.0420	0.0271	0.0797	0.0719	0.1324	0.0403	-0.0034	0.0411	0.0095	0.0310
	(0.0144)	(0.0032)***	(0.0061)***	(0.0121)***	(0.0068)***	(0.0154)***	(0.0044)***	(0.0220)	(0.0234)*	(0.0231)	(0.0076)***
Secondary incomplete	-0.0096	0.0538	0.0435	0.1250	0.0833	0.1546	0.0744	0.0407	0.0759	0.0416	0.0607
	(0.0154)	(0.0029)***	(0.0051)***	(0.0113)***	(0.0079)***	(0.0123)***	(0.0042)***	(0.0237)*	(0.0259)***	(0.0243)*	(0.0076)***
Secondary complete	0.0682	0.1030	0.0949	0.2515	0.1362	0.2717	0.1205	0.0843	0.1463	0.0680	0.1176
	(0.0152)***	(0.0031)***	(0.0053)***	(0.0110)***	(0.0086)***	(0.0150)***	(0.0046)***	(0.0355)**	(0.0357)***	(0.0221)***	(0.0081)***
College incomplete	0.0583	0.0866	0.0997	0.3078	0.1219	0.3049	0.0997	0.2614	0.1548	0.0888	0.1309
	(0.0170)***	(0.0054)***	(0.0054)***	(0.0125)***	(0.0103)***	(0.0244)***	(0.0064)***	(0.0603)***	(0.0490)***	(0.0278)***	(0.0095)***
College complete	0.0570	0.1210	0.0971	0.3459	0.1034	0.3098	0.0690	0.2065	0.1636	0.1712	0.1176
	(0.0184)***	(0.0042)***	(0.0077)***	(0.0124)***	(0.0165)***	(0.0321)***	(0.0051)***	(0.0707)***	(0.0607)***	(0.0356)***	(0.0136)***
Household composition											
Head of the household	0.0908	0.0621	0.0757	0.0975	0.1018	0.0650	0.0389	0.0074	0.0172	0.0591	0.1121
	(0.0152)***	(0.0038)***	(0.0063)***	(0.0123)***	(0.0119)***	(0.0155)***	(0.0052)***	(0.0249)	(0.0219)	(0.0190)***	(0.0078)***
Head of the household * Female	-0.0721	-0.0243	-0.0685	-0.0114	-0.0914	-0.0646	-0.0417	0.0656	0.0040	-0.0117	-0.0698
	(0.0257)***	(0.0076)***	(0.0161)***	(0.0176)	(0.0207)***	(0.0226)***	(0.0082)***	(0.0576)	(0.0346)	(0.0320)	(0.0135)***
Other members contributing to social security	0.0858	0.0875	0.1005	0.2422	0.0818	0.1219	0.1173	0.1391	0.0910	0.0971	0.1492
	(0.0067)***	(0.0016)***	(0.0028)***	(0.0052)***	(0.0040)***	(0.0082)***	(0.0017)***	(0.0142)***	(0.0124)***	(0.0081)***	(0.0035)***
Share of household members less than 15 and out of the labor force	0.1267	0.1140	0.1284	0.2467	0.1068	0.0780	0.1662	0.1355	0.0933	0.1118	0.0730
	(0.0281)***	(0.0071)***	(0.0139)***	(0.0204)***	(0.0193)***	(0.0286)***	(0.0090)***	(0.0487)***	(0.0358)***	(0.0337)***	(0.0188)***
Share of household members 15 to 64 and out of the labor force	0.2109	0.1941	0.1889	0.3485	0.1798	0.1032	0.1566	0.2150	0.1357	0.2123	0.1388
	(0.0243)***	(0.0067)***	(0.0134)***	(0.0185)***	(0.0185)***	(0.0287)***	(0.0076)***	(0.0522)***	(0.0356)***	(0.0315)***	(0.0130)***
Share of household members older than 64 and out of the labor force	0.2773	0.2229	0.2111	0.3629	0.1590	0.1590	0.2433	0.2027	0.2284	0.2470	0.1810
	(0.0397)***	(0.0139)***	(0.0233)***	(0.0357)***	(0.0347)***	(0.0614)***	(0.0169)***	(0.1222)*	(0.0698)***	(0.0548)***	(0.0299)***
Total number of members in the household	-0.0230	-0.0220	-0.0214	-0.0363	-0.0213	-0.0139	-0.0281	-0.0133	-0.0137	-0.0109	-0.0203
	(0.0029)***	(0.0007)***	(0.0011)***	(0.0019)***	(0.0017)***	(0.0024)***	(0.0008)***	(0.0033)***	(0.0032)***	(0.0026)***	(0.0010)***
Geographic area											
Urban		0.0304	0.0254	0.1435	-0.0192	0.0203		0.0467	0.0148	0.0536	
		(0.0042)***	(0.0045)***	(0.0131)***	(0.0063)***	(0.0094)**		(0.0168)***	(0.0144)	(0.0128)***	

37

Table 5 (Cont.)
Probit estimates of the probability of contributing to social security. Salaried workers. Marginal effects.

Variable	Argentina	Brazil	Chile	Colombia	Costa Rica	El Salvador	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Income Intervals in relation to Minimum Wage											
Wage < Minimum Wage	-0.3218	-0.1907	-0.0980	-0.1091	-0.1908	-0.1516	-0.1158	-0.0826	-0.1058	-0.0425	-0.0794
	(0.0316)***	(0.0063)***	(0.0425)**	(0.0099)***	(0.0093)***	(0.0140)***	(0.0060)***	(0.0280)***	(0.0242)***	(0.0247)*	(0.0094)***
Min. Wage < Wage < Min. Wage (1+t)	-0.1491	-0.0595	0.0288	-0.0106	-0.0340	-0.0035	-0.0343	-0.0732	-0.0302	-0.0025	0.0514
	(0.0261)***	(0.0062)***	(0.0492)	(0.0112)	(0.0107)***	(0.0172)	(0.0064)***	(0.0340)**	(0.0214)	(0.0339)	(0.0111)***
Min. Wage $(1+t)^2$ < Wage < Min. Wage $(1+t)^3$	0.0641	0.0402	-0.0068	0.0375	0.0158	-0.0206	0.0403	-0.0524	-0.0321	0.0105	0.0312
	(0.0156)***	(0.0044)***	(0.0448)	(0.0128)***	(0.0118)	(0.0202)	(0.0055)***	(0.0350)	(0.0226)	(0.0373)	(0.0129)**
Min. Wage $(1+t)^3$ < Wage	0.1790	0.1586	0.0516	0.0775	0.0171	0.1137	0.0938	0.0472	-0.0102	0.0937	0.1072
	(0.0154)***	(0.0046)***	(0.0389)	(0.0113)***	(0.0106)	(0.0172)***	(0.0048)***	(0.0310)	(0.0218)	(0.0253)***	(0.0096)***
Firm											
Part time worker	-0.3634	-0.4003	-0.3573	-0.3550	-0.3859	-0.2693	-0.3944	-0.1007	-0.0849	-0.1057	-0.3533
	(0.0124)***	(0.0062)***	(0.0138)***	(0.0084)***	(0.0112)***	(0.0097)***	(0.0043)***	(0.0176)***	(0.0108)***	(0.0099)***	(0.0085)***
Small firm (<5 workers)	-0.3515	-0.3593	-0.1986		-0.3042	-0.4514	-0.5333	-0.2474	-0.1605	-0.1924	-0.3986
	(0.0081)***	(0.0039)***	(0.0060)***		(0.0064)***	(0.0066)***	(0.0023)***	(0.0141)***	(0.0140)***	(0.0093)***	(0.0046)***
Sector											
Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying	-0.0570	-0.1404	-0.0734	-0.1257	-0.0660	-0.3942	-0.3803	-0.1792	-0.0686	-0.0694	-0.2546
	(0.0524)	(0.0116)***	(0.0063)***	(0.0150)***	(0.0093)***	(0.0063)***	(0.0083)***	(0.0177)***	(0.0149)***	(0.0132)***	(0.0088)***
Electricity, Gas and Water	0.1451	0.1044	-0.0090	0.0546	0.0365	0.0020	0.0749	0.2196	-0.0641	0.0377	0.0663
	(0.0397)***	(0.0094)***	(0.0185)	(0.0354)	(0.0568)	(0.0417)	(0.0141)***	(0.0679)***	(0.0309)**	(0.0584)	(0.0285)**
Construction	-0.2933	-0.2005	-0.0851	-0.2581	-0.3405	-0.2023	-0.2545	-0.1320	-0.1070	-0.0911	-0.2446
	(0.0176)***	(0.0040)***	(0.0082)***	(0.0109)***	(0.0140)***	(0.0096)***	(0.0047)***	(0.0140)***	(0.0093)***	(0.0106)***	(0.0079)***
Wholesale and Retail Trade and Restaurants and Hotels	-0.0291	-0.0345	-0.0047	-0.1076	-0.0458	-0.1082	-0.0781	-0.0632	-0.0341	-0.0295	-0.0518
	(0.0103)***	(0.0030)***	(0.0063)	(0.0078)***	(0.0094)***	(0.0103)***	(0.0036)***	(0.0172)***	(0.0149)**	(0.0131)**	(0.0069)***
Transport, Storage and Communication	-0.1084	-0.0286	-0.0806	-0.1503	-0.1576	-0.2317	-0.1906	-0.0790	-0.0703	-0.0691	-0.2075
	(0.0126)***	(0.0043)***	(0.0088)***	(0.0106)***	(0.0167)***	(0.0098)***	(0.0049)***	(0.0225)***	(0.0120)***	(0.0123)***	(0.0097)***
Financing, Insurance, Real Estate and Business Services	0.0574	-0.0173	0.0124	0.0776	-0.0846	0.0399	-0.3826	0.1790	-0.0521	-0.0153	0.0460
	(0.0125)***	(0.0074)**	(0.0088)	(0.0116)***	(0.0184)***	(0.0220)*	(0.0059)***	(0.0865)**	(0.0140)***	(0.0174)	(0.0102)***
Community, Social and Personal Services	0.0888	-0.0039		-0.1240	-0.1528	-0.1602	-0.2837		-0.0466	-0.0349	-0.1552
	(0.0116)***	(0.0041)		(0.0087)***	(0.0114)***	(0.0134)***	(0.0032)***		(0.0166)***	(0.0139)**	(0.0076)***
Number of observations	22,232	227,739	115,749	68,782	41,383	34,850	898,504	4,552	4,699	6,568	106,032
Log likelihood	-10712.77	-97119.39	-46275.87	-36549.28	-17822.36	-12332.2	-423435.88	-1589.31	-1616.88	-2371.96	-51441.49
Pseudo R2	0.25	0.26	0.21	0.23	0.31	0.48	0.31	0.38	0.29	0.34	0.29

Notes: The sample covers private sector employees working more than 5 hours a week. See table A.1 for a description of the years included in the estimation for each country. Robust standard errors in parentheses. *significant at 10%, **significant at 5%, ***significant at 1%. The specification includes year dummies in all countries. *Min. Wage* and *t* denote minimum wage and social security contributions, respectively The omitted categories are the workers 15 to 24 years old, less than primary complete, manufacturing, the share of household members with positive income and the group where the Min. Wage (1+t) < Wage < Min. Wage (1+t)2. The coverage of the sample is national, except in Argentina where data refers to Greater Buenos Aires and Mexico.

Table 6: Fraction of explained variance accounted by demand factors (individual and household characteristics)

	Demand Factors Probit Estimation		Demand Factors Linear Probability Model	
	Lower Bound	**Upper Bound**	**Lower Bound**	**Upper Bound**
Argentina	0.27	0.46	0.23	0.49
Brazil	0.43	0.64	0.38	0.66
Chile	0.48	0.68	0.44	0.69
Colombia	0.69	0.82	0.66	0.84
Costa Rica	0.32	0.50	0.27	0.53
El Salvador	0.21	0.52	0.17	0.60
Mexico	0.15	0.28	0.11	0.31
Nicaragua	0.31	0.61	0.30	0.68
Paraguay	0.40	0.66	0.41	0.72
Peru	0.44	0.74	0.43	0.79
Venezuela	0.26	0.57	0.22	0.60

Notes: The data refers to salaried workers in the private sector working more than 5 hours a week. The coverage of the sample is national, except in Argentina where data refers to Geater Buenos Aires and Mexico. The upper and lower bounds of the fraction of the explained variance are computed as follows: We first estimate a Probit model (or a linear probability model, LPM) only with the supply correlates included in the the specification presented in Table 5. We then compare the Pseudo-R square (or R-square) of this model, with that of the full model (as presented in Table 5) according to the formula (Pseudo R2 Full - Pseudo R2 Supply)/ Pseudo R2-Full. This number constitutes the *lower* bound of the fraction explained by demand factores. We compute the *upper* bound by first estimating a Probit (or LPM) including only demand correlates and comparing this model's Pseudo R2 with the one obtained from the full model, according to the formula: 1-((Pseudo R2 Full - Pseudo R2 demand)/ Pseudo R2 Full)

Table 7
Pooled estimates for 11 countries. Probability of contributing to social security for salaried workers

Country dummies	Probit - Marginal effects	Probit - Marginal effects				Linear regression model			
	No country weights	No country weights		All countries equal weight		No country weights		All countries equal weight	
	Only with country dummies and no other variables	No country dummies	With country dummies	No country dummies	With country dummies	No country dummies	With country dummies	No country dummies	With country dummies
Brazil	0.1056		0.1080		0.1346		0.0754		0.0918
	(0.0000)***		(0.0192)***		(0.0114)***		(0.0150)***		(0.0083)***
Chile	0.1521		0.2164		0.2691		0.1635		0.1732
	(0.0000)***		(0.0133)***		(0.0255)***		(0.0151)***		(0.0142)***
Colombia	0.0456		0.2265		0.2727		0.1751		0.1664
	(0.0000)***		(0.0134)***		(0.0284)***		(0.0210)***		(0.0181)***
Mexico	-0.0206		-0.1057		-0.1046		-0.0746		-0.0680
	(0.0000)***		(0.0073)***		(0.0054)***		(0.0052)***		(0.0040)***
Nicaragua	-0.3510		-0.2688		-0.2184		-0.2124		-0.1886
	(0.0000)***		(0.0173)***		(0.0227)***		(0.0155)***		(0.0244)***
Peru	-0.4339		-0.3290		-0.3154		-0.2153		-0.2407
	(0.0000)***		(0.0116)***		(0.0096)***		(0.0170)***		(0.0151)***
Paraguay	-0.4395		-0.2955		-0.2806		-0.1804		-0.2041
	(0.0000)***		(0.0172)***		(0.0081)***		(0.0190)***		(0.0146)***
El Salvador	-0.1643		-0.0300		-0.0244		-0.0385		-0.0409
	(0.0000)***		(0.0196)		(0.0197)		(0.0159)**		(0.0160)**
Venezuela	-0.0159		0.1806		0.1911		0.1355		0.1146
	(0.0000)***		(0.0172)***		(0.0164)***		(0.0188)***		(0.0113)***
Number of observations	251,283	222,267	222,267	222,267	222,267	222,267	222,267	222,267	222,267
Log likelihood	-155,749.31	-106,214.30	-99,550.30	-107,176.72	-95,219.72	-109,387.06	-102,546.78	-112,894.94	-100,346.13
Pseudo R2	0.08	0.28	0.33	0.30	0.38	0.34	0.38	0.35	0.42
Count R2 (Correctly Classified)	66.94	78.65	80.34	77.24	80.61				

Notes: The sample covers private sector employees working more than 5 hours a week. The estimation is for the year 2000, in those cases where there was no data available for that year, we consider the closest year available. In addition to reported variables, all specifications include the explanatory variables shown in Table 5. Robust standard errors in parentheses. *significant at 10%, **significant at 5%, ***significant at 1%.

Table 8
Probit estimates of the probability of contributing to social security for the sample of self-employed workers. Marginal effects.

Variable	Chile	Colombia	Costa Rica
Female	-0.0338	0.0101	0.0024
	(0.0371)	(0.0109)	(0.0472)
Married	0.0482	0.0139	0.1783
	(0.0128)***	(0.0046)***	(0.0180)***
Married * Female	-0.0873	0.0004	-0.3843
	(0.0180)***	(0.0070)	(0.0175)***
Age			
25-49	0.0424	0.0211	0.1091
	(0.0182)**	(0.0061)***	(0.0209)***
50-64	0.0887	0.055	0.1374
	(0.0234)***	(0.0116)***	(0.0264)***
25-49 * Female	0.1138	0.0188	0.0928
	(0.0484)**	(0.0123)	(0.0554)*
50-64 * Female	0.1765	0.0049	0.0169
	(0.0587)***	(0.0129)	(0.0600)
Education			
Primary complete	0.0163	0.0306	0.1164
	(0.0133)	(0.0058)***	(0.0128)***
Secondary incomplete	0.0398	0.033	0.0995
	(0.0111)***	(0.0055)***	(0.0173)***
Secondary complete	0.1298	0.0611	0.1684
	(0.0143)***	(0.0073)***	(0.0220)***
College incomplete	0.1567	0.1034	0.1383
	(0.0191)***	(0.0149)***	(0.0260)***
College complete	0.3035	0.1781	0.1206
	(0.0297)***	(0.0172)***	(0.0379)***
Household composition			
Head of the household	0.0493	0.0201	0.0858
	(0.0142)***	(0.0051)***	(0.0212)***
Head of the household * Female	-0.0656	-0.0022	-0.0789
	(0.0199)***	(0.0070)	(0.0356)**
Other members contributing to social security	0.1067	0.0502	0.0357
	(0.0062)***	(0.0021)***	(0.0086)***
Share of household members less than 15 and out of the labor force	0.1385	0.0411	0.1362
	(0.0264)***	(0.0086)***	(0.0358)***
Share of household members 15 to 64 and out of the labor force	0.2144	0.0687	0.2888
	(0.0237)***	(0.0078)***	(0.0328)***
Share of household members older than 64 and out of the labor force	0.3591	0.1075	0.3561
	(0.0382)***	(0.0140)***	(0.0605)***
Total number of members in the household	-0.0281	-0.0108	-0.0218
	(0.0030)***	(0.0009)***	(0.0035)***
Geographic area			
Urban	0.0338	0.0161	-0.0469
	(0.0096)***	(0.0038)***	(0.0114)***
Income Intervals in relation to Minimum Wage			
Wage < Minimum Wage	-0.074	-0.0116	-0.052
	(0.0514)	(0.0045)**	(0.0181)***
Min. Wage < Wage < Min. Wage (1+t)	0.0108	-0.0073	0.0014
	(0.1285)	(0.0051)	(0.0235)
Min. Wage (1+t)^2 < Wage < Min. Wage (1+t)^3	-0.0799	0.0144	0.0602
	(0.0525)	(0.0071)**	(0.0247)**
Min. Wage (1+t)^3 < Wage	0.0127	0.02	0.0492
	(0.0603)	(0.0055)***	(0.0195)**
Firm			
Part time worker	-0.0771	-0.026	-0.1039
	(0.0085)***	(0.0028)***	(0.0125)***
Sector			
Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying	-0.019	0.0148	0.0993
	(0.0146)	(0.0096)	(0.0190)***
Construction	0.0348	0.0002	-0.1135
	(0.0164)**	(0.0064)	(0.0190)***
Wholesale and Retail Trade and Restaurants and Hotels	0.0215	0.0122	-0.0079
	(0.0125)*	(0.0047)***	(0.0177)
Transport, Storage and Communication	0.0321	0.0507	0.0735
	(0.0162)**	(0.0088)***	(0.0238)***
Financing, Insurance, Real Estate and Business Services	0.1215	0.0439	0.0087
	(0.0308)***	(0.0108)***	(0.0325)
Community, Social and Personal Services	0.0251	0.0392	-0.0478
	(0.0146)*	(0.0061)***	(0.0186)***
Number of observations	34,229	51,032	13,638
Log likelihood	-16182.2	-11498.71	-7416.76
Pseudo R2	0.11	0.19	0.19

Notes: The sample covers self-employed working more than 5 hours a week. See table A.1 for a description of the years included in the estimation for each country. Robust standard errors in parentheses. *significant at 10%, **significant at 5%, ***significant at 1%. The specification includes year dummies in all countries. *Min. Wage* and *t* denote minimum wage and social security contributions, respectively. The omitted categories are the workers 15 to 24 years old, less than primary complete, manufacturing, the share of household members with positive income and the group where the Min. Wage (1+*t*) < Wage < Min. Wage (1+*t*)2. The coverage of the sample is national.

Table 9
Correlation coefficients between salaried workers and self-employed marginal effects
(Individual and Household Variables)

Country	Correlation Coefficient
Chile	0.8462
	(0.0000)
Colombia	0.7376
	(0.0000)
Costa Rica	0.83
	(0.0000)

Notes: The coefficients are computed correlating the vectors of estimated marginal effects for individual and household variables presented in Tables 5 and 8. In parenthesis the level of significance.

Table 10
Probit estimates of the probability of contributing to social security. Full sample. Marginal effects.

Variable	Chile		Colombia		Costa Rica	
	Var	Var * Self	Var	Var * Self	Var	Var * Self
Self Employed	-0.4046		-0.3925		-0.3556	
	(0.1022)***		(0.0290)***		(0.0397)***	
Female	0.0103	-0.0555	0.0608	-0.0307	0.1135	-0.1198
	(0.0116)	(0.0531)	(0.0100)***	(0.0316)	(0.0105)***	(0.0514)**
Married	0.0648	-0.0018	0.0252	0.0196	0.1312	0.0543
	(0.0086)***	(0.0190)	(0.0092)***	(0.0182)	(0.0128)***	(0.0228)**
Married * Female	-0.0823	-0.0421	0.0194	-0.0192	-0.3038	-0.2418
	(0.0162)***	(0.0333)	(0.0129)	(0.0237)	(0.0197)***	(0.0456)***
Age						
25-49	0.0965	-0.0421	0.0906	-0.0276	0.1038	0.0081
	(0.0084)***	(0.0259)	(0.0071)***	(0.0224)	(0.0096)***	(0.0238)
50-64	0.0851	0.0131	0.1299	0.0132	0.0647	0.0638
	(0.0104)***	(0.0279)	(0.0147)***	(0.0276)	(0.0150)***	(0.0276)**
25-49 * Female	0.041	0.0808	0.0043	0.057	0.0381	0.0515
	(0.0141)***	(0.0450)*	(0.0117)	(0.0382)	(0.0161)**	(0.0521)
50-64 * Female	0.0394	0.125	-0.0285	0.0521	0.0437	-0.0273
	(0.0221)*	(0.0433)***	(0.0206)	(0.0477)	(0.0291)	(0.0678)
Education						
Primary complete	0.0385	-0.0201	0.0637	0.0212	0.0829	0.0279
	(0.0089)***	(0.0190)	(0.0101)***	(0.0174)	(0.0078)***	(0.0145)*
Secondary incomplete	0.0616	-0.0152	0.1006	-0.0063	0.0974	-0.0069
	(0.0073)***	(0.0156)	(0.0096)***	(0.0159)	(0.0093)***	(0.0194)
Secondary complete	0.1357	0.0011	0.2152	-0.0486	0.1627	-0.0211
	(0.0077)***	(0.0173)	(0.0105)***	(0.0149)***	(0.0106)***	(0.0250)
College incomplete	0.1468	0.002	0.2989	-0.0509	0.1447	-0.0263
	(0.0084)***	(0.0212)	(0.0152)***	(0.0202)**	(0.0128)***	(0.0296)
College complete	0.1468	0.1086	0.3427	0.0027	0.1257	-0.0274
	(0.0128)***	(0.0244)***	(0.0158)***	(0.0224)	(0.0203)***	(0.0441)
Household composition						
Head of the household	0.1047	-0.0432	0.0747	-0.0112	0.1165	-0.0286
	(0.0087)***	(0.0210)**	(0.0095)***	(0.0183)	(0.0137)***	(0.0264)
Head of the household * Female	-0.0903	-0.0049	-0.0084	-0.0008	-0.0999	0.011
	(0.0203)***	(0.0361)	(0.0132)	(0.0260)	(0.0222)***	(0.0435)
Other members contributing to social security	0.1396	-0.0076	0.1844	-0.0285	0.0929	-0.0567
	(0.0039)***	(0.0086)	(0.0041)***	(0.0075)***	(0.0045)***	(0.0097)***
Share of household members less than 15 and out of the labor force	0.1784	-0.0075	0.1881	-0.0618	0.1203	0.0158
	(0.0192)***	(0.0379)	(0.0156)***	(0.0309)**	(0.0219)***	(0.0418)
Share of household members 15 to 64 and out of the labor force	0.2624	0.0026	0.2657	-0.0544	0.2036	0.0849
	(0.0186)***	(0.0348)	(0.0142)***	(0.0283)*	(0.0210)***	(0.0388)**
Share of household members older than 64 and out of the labor force	0.2933	0.1496	0.2765	0.0544	0.3974	-0.04
	(0.0323)***	(0.0575)***	(0.0272)***	(0.0512)	(0.0395)***	(0.0719)
Total number of members in the household	-0.0297	-0.005	-0.0276	-0.0058	-0.0243	0.0028
	(0.0016)***	(0.0040)	(0.0014)***	(0.0031)*	(0.0020)***	(0.0040)
Geographic area						
Urban	0.0347	0.0088	0.1001	-0.0565	-0.0203	-0.0311
	(0.0060)***	(0.0138)	(0.0084)***	(0.0174)***	(0.0072)***	(0.0138)**

Table 10 (Cont.)
Probit estimates of the probability of contributing to social security. Full sample. Marginal effects.

Variable	Chile		Colombia		Costa Rica	
	Var	Var * Self	Var	Var * Self	Var	Var * Self
Income Intervals in relation to Minimum Wage						
Wage < Minimum Wage	-0.1301	0.0174	-0.0823	0.0492	-0.2122	0.145
	(0.0531)**	(0.0883)	(0.0074)***	(0.0168)***	(0.0100)***	(0.0170)***
Min. Wage < Wage < Min. Wage (1+t)	0.0412	-0.0327	-0.0079	-0.0125	-0.0386	0.0416
	(0.0720)	(0.1812)	(0.0084)	(0.0189)	(0.0120)***	(0.0247)*
Min. Wage $(1+t)^2$ < Wage < Min. Wage $(1+t)^3$	-0.0094	-0.1234	0.029	0.0154	0.0172	0.0422
	(0.0615)	(0.1255)	(0.0103)***	(0.0212)	(0.0136)	(0.0260)
Min. Wage $(1+t)^3$ < Wage	0.0689	-0.059	0.0603	0.001	0.019	0.0316
	(0.0510)	(0.0951)	(0.0092)***	(0.0168)	(0.0122)	(0.0219)
Firm						
Part time worker	-0.3986	0.1952	-0.2219	0.2606	-0.3953	0.2256
	(0.0128)***	(0.0093)***	(0.0047)***	(0.0204)***	(0.0105)***	(0.0108)***
Small firm (<5 workers)	-0.2367				-0.318	
	(0.0063)***				(0.0062)***	
Sector						
Agriculture, Hunting, Forestry, Fishing, Mining and Quarrying	-0.0987	0.0657	-0.0873	0.158	-0.0736	0.1515
	(0.0083)***	(0.0177)***	(0.0094)***	(0.0339)***	(0.0103)***	(0.0162)***
Electricity, Gas and Water	-0.0138		0.0357		0.0627	
	(0.0246)		(0.0266)		(0.0654)	
Construction	-0.1121	0.1277	-0.164	0.2561	-0.35	0.1826
	(0.0103)***	(0.0150)***	(0.0058)***	(0.0290)***	(0.0132)***	(0.0175)***
Wholesale and Retail Trade and Restaurants and Hotels	-0.0065	0.0319	-0.0794	0.131	-0.051	0.0409
	(0.0087)	(0.0164)*	(0.0056)***	(0.0174)***	(0.0105)***	(0.0195)**
Transport, Storage and Communication	-0.1065	0.1208	-0.1031	0.2836	-0.1698	0.1928
	(0.0111)***	(0.0156)***	(0.0066)***	(0.0243)***	(0.0172)***	(0.0182)***
Financing, Insurance, Real Estate and Business Services	0.0174	0.1015	0.0625	0.048	-0.0923	0.0912
	(0.0125)	(0.0254)***	(0.0099)***	(0.0247)*	(0.0198)***	(0.0324)***
Community, Social and Personal Services			-0.0892	0.2322	-0.1668	0.1033
			(0.0059)***	(0.0197)***	(0.0121)***	(0.0192)***
Number of observations	150,024		119,915		55,023	
Log likelihood	-62457.23		-48370.46		-25212.61	
Pseudo R2	0.35		0.35		0.31	

Notes: For each country the specification includes the variables presented in Tables 5 and 8, plus a set of interactions of these variables with a dummy *self-employed*. The sample covers private sector employees and self-employed working more than 5 hours a week. See table A.1 for a description of the years included in the estimation for each country. Robust standard errors in parentheses. *significant at 10%, **significant at 5%, ***significant at 1%. The specification includes year dummies in all countries. M*in. Wage* and *t* denote minimum wage and social security contributions, respectively. The omitted categories are workers 15 to 24 years old, less than primary complete, manufacturing, the share of household members actively participating in the labor market and the group where the Min. Wage (1+t) < Wage < Min. Wage (1+t)2. The coverage of the sample is national.

Appendix A

Table A.1. Household survey description.

Country	Years included	Month of the survey	Name of the survey	Coverage	Average Number of Observations
Argentina	1990-2002	October	Encuesta Permanente de Hogares	Greater Buenos Aires	10,909
Brazil	1992, 1993, 1995, 1996 -1999	September	Pesquisa Nacional por Amostra de Domicilios	National	336,073
Chile	1990, 1992, 1994, 1996, 1998, 2000	November	Encuesta de Caracterización Socioeconómica Nacional	National	161,529
Colombia	1996, 1997, 1998, 1999	September	Encuesta Nacional de Hogares	National	142,852
Costa Rica	1993, 1995, 1997, 1998, 2000, 2001	July	Encuesta de Hogares de Propósitos Múltiples	National	40,981
El Salvador	1997-2002	January to December	Encuesta de Hogares de Propósitos Múltiples	National	61,032
Mexico	1990-2001	January to December	Encuesta Nacional de Empleo Urbano	Urban	343,296
Nicaragua	1998, 2001	April to August 98; April to September 99	Encuesta Nacional de Hogares de Medición de Calidad de Vida	National	57,920
Paraguay	1998, 1999	August 97 to July 98; August to December 99	Encuesta Integrada de Hogares	National	22,429
Peru	1994, 1997, 2000	May to August 94; September to November 97; May to June 00	Encuesta Nacional de Hogares sobre Mediciones de Niveles de Vida	National	19,398
Venezuela	1995, 1997-2002	July to December	Encuesta de Hogares por Muestreo	National	120,058

Table A.2
Correlation coefficients between estimated marginal effects across countries

Country	Argentina	Brazil	Chile	Colombia	Costa Rica	El Salvador	Mexico	Nicaragua	Paraguay	Peru	Venezuela
Argentina	1.0000										
Brazil	0.9331* 0.0000	1.0000									
Chile	0.8532* 0.0000	0.9206* 0.0000	1.0000								
Colombia	0.7792* 0.0000	0.8641* 0.0000	0.8905* 0.0000	1.0000		`					
Costa Rica	0.8120* 0.0000	0.8751* 0.0000	0.9006* 0.0000	0.8400* 0.0000	1.0000						
El Salvador	0.6881* 0.0000	0.8100* 0.0000	0.7779* 0.0000	0.8645* 0.0000	0.7771* 0.0000	1.0000					
Mexico	0.7173* 0.0000	0.8581* 0.0000	0.8169* 0.0000	0.7947* 0.0000	0.8311* 0.0000	0.8396* 0.0000	1.0000				
Nicaragua	0.7514* 0.0000	0.7371* 0.0000	0.6744* 0.0000	0.8230* 0.0000	0.6188* 0.0000	0.7826* 0.0000	0.6551* 0.0000	1.0000			
Paraguay	0.6930* 0.0000	0.7380* 0.0000	0.7940* 0.0000	0.8655* 0.0000	0.8186* 0.0000	0.8168* 0.0000	0.7689* 0.0000	0.7500* 0.0000	1.0000		
Peru	0.7927* 0.0000	0.8202* 0.0000	0.8539* 0.0000	0.8625* 0.0000	0.8319* 0.0000	0.7694* 0.0000	0.8099* 0.0000	0.7875* 0.0000	0.9025* 0.0000	1.0000	
Venezuela	0.8071* 0.0000	0.8963* 0.0000	0.8944* 0.0000	0.8826* 0.0000	0.8610* 0.0000	0.9066* 0.0000	0.8826* 0.0000	0.7521* 0.0000	0.7592* 0.0000	0.8404* 0.0000	1.0000

Notes: Sample of private sector employees working more than 5 hours a week; The coefficients are computed correlating the vectors of estimated marginal effects presented in Table 5; * Significant at 1%, second line is the p-value.

Appendix B.
Table B1. Construction of the Social Security Variable from the Household Surveys' Questionnaires

Note: (1) In some of the surveys the original word in Spanish was "*afiliado*." However, we assume that the person considers herself "afiliado" when she is contributing to the system.

Construction of the social security variable from the household surveys' questionnaires

Country	Survey question	Coverage	Social security variable
Argentina	In this occupation are you entitled to: Answer: 1) Dismissal compensation; 2) Vacations; 3) 13th salary; 4) Pension; 5) Work insurance; 6) Others.	Dependent workers	Takes value of 1 if answer is Pension
Brazil	Do you contribute in this job to the *Instituto de Previdencia*? Answer: Yes/No.	All workers	Takes value of 1 if the answer is Yes
Chile	Are you contributing to a pension system? Answer: 1) SSS; 2) CANAEMPU; 3) EMPART; 4) INP; 5) AFP; 6) CAPEDRENA or DIPRECA; 7) Other; 8) Not contributing.	All workers	Takes value of 1 if the answer is SSS, CANAEMPU, EMPART, INP, AFP, CAPEDRENA or DIPRECA or other
Colombia	In your job, are you contributing [1] to any social pension institute? Answer: Yes/No.	All workers	Takes value of 1 if the answer is Yes
Costa Rica	What type of Social Insurance do you have? **Directly Insured:** 1) Salaried; 2) By agreement (associations, union, cooperatives, etc.); 3) Own account (voluntary); 4) By the State or family subsidy; 5) Relative of direct insured. **Pensioner:** 6) 7) 8) 9); 10)	All individuals from the survey	Takes value of 1 if the answer is salaried, by agreement or own account
Mexico	In your last week main job, which benefits do you receive? Answer: 1) 13th salary; 2) Vacations; 3) Share in the Benefits; 4) IMSS; 5) ISSSTE; 6) SAR; 7) Housing loan; 8) Medical insurance; 9) Others.	All workers	Takes value of 1 if the answer is IMSS or ISSSTE
Nicaragua	Do you contribute through this job to the Social Insurance (INSS)? Answer: Yes/No.	All workers	Takes value of 1 if the answer is Yes
Paraguay	Are you contributing [1] to any pension system? Answer: Yes/No.	All workers	Takes value of 1 if the answer is Yes
Peru	Are you contributing [1] to any pension system? Answer: 1)ONP; 2) AFP; 3) Police; 4) Other; 5) No.	All workers	Takes value of 1 if the answer is ONP, AFP, Police or other