Labor Force Participation of Elderly in Mexico

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Introduction

Changes in population age structure in Mexico are yielding a higher proportion of population in working ages. However, after 2027 the country enters demographically in a very special situation. A positive growth of the elderly population will occur and this is judged to be perennial. It is not thought to levels of fertility increase and expectation is that mortality continues to decline until to reach a perennially elderly population.

Given these expected changes, there is a need to consider the dynamics and relationships between demographic characteristics and economic dependence associated with elderly. It is important to prevent its effects and mitigate its consequences. There are several mechanisms to achieve economic livelihood in the elderly. One is through the right to a pension from the state or the company where he worked through his years of working life. However, empirical evidence in Mexico show that a small proportion of the elderly is covered by pensions and a large number receive an insufficient pension (Valencia, 2005). Another option is the support given by the family, neighbors and friends, especially among women at older aged (Tuirán and Wong, 1993; and Montes de Oca, 2000 and 2001). But, such aids are not sufficient and appropriate to meet the needs of this population, is very common that the aids are conditioned by the economic possibilities of each case. Furthermore, it should conclude that family ties are weakened and structural transformations of the family in the coming decades will present a reduction in the number of children (Zuñiga, 2004). There is also the option to save enough to buy the goods and necessary services for the retirement. However, the ability of individuals to save depends largely by economic conditions of the population throughout their life cycle (Ham, 2003).

In this regard, the issue of labor force participation of the population at older ages becomes important. The question is how people survive into old age. Independent of whether or not they are pensioned, an option is working. The results of the Population and Housing Census 2010 show that 30.6% of the individuals aged 60 or older participate in the labor market. Our main objective in this paper is to review which factors are determinants of the labor force participation of elderly in Mexico. Based on the Census data we estimated a logistic regression model, separately for the three age groups (60-64, 65-74 and 75+).

Data

The data used in this paper are from de Population Census 2010 conducted by the Mexico's National Institute of Statistics and Geography.

Given the need to consider clustering and statistical generalizations of elderly persons is proposed to use the following classification of three age groups: young elderly (60-64 years), older adults (65-74 years) and elder old people (75 years and over) (Ham, 2003). Criteria are influenced by the existing classifications, social security rules and statistics of health and aging.

The descriptive analysis show that labor force participation of elderly in Mexico emerges as a livelihood option the face of low social security coverage and low amount of the stipends. According to the Population and Housing Census 2010, 30.6% of the elderly population is working. This category includes who worked at least one hour the week before the interview and who had a job, but did not work (represent less than one percent). In the analysis by age groups, we found that in the young elderly the percentage of the working population is 43.9%,

decreasing to 31.1% in the older adults and reduced to 15.0 in the elder old people (Figure 1). These results are consistent with the characteristics associated with the life cycle and. The participation in the labor market is conditioned by the health conditions and the loss of social and economic capacity and efficiency.

The non-working elderly population represents 69.4%. Figure 1 shows that the percentage increases significantly with the age, and it becomes 56.1% at ages {60-64}, 68.9% in group {65-74} and 85.0% in the last section of {75 +}. Moreover, among the non-working population, the activity status more declared was housework, a condition that increases substantially in the last age group, since 35.8% of the individuals identified this activity. These results reveal the feminization of the elderly population. Next, the percentage of pensioner or retiree is 18.3% in the ages {75 +}.

FIGURE 1. Mexico: elderly population by age groups and working condition, 2010
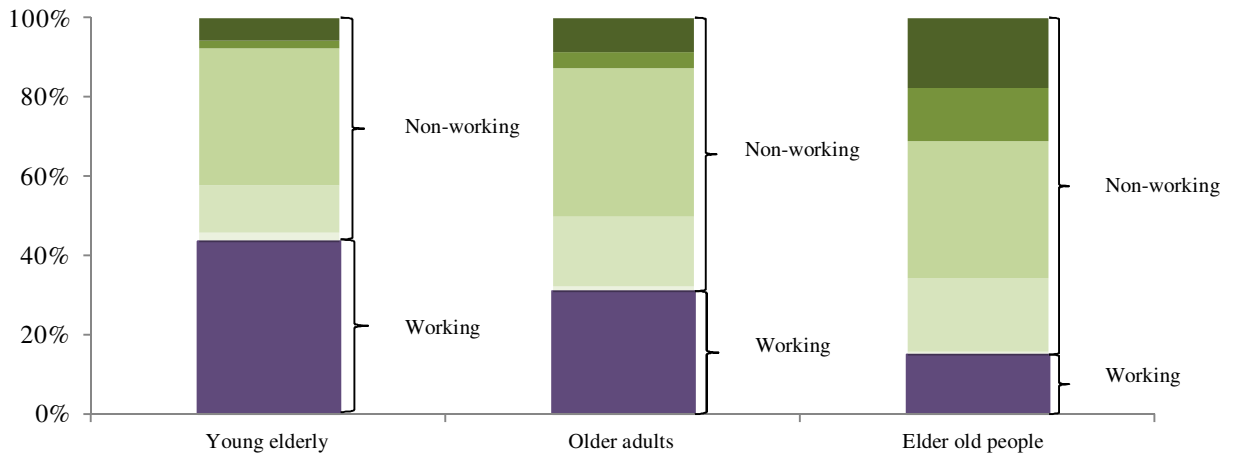
Source: Population and Housing Census 2010, INEGI.

Methodology
The methodology used in this study corresponds to a logistic regression model to estimate the probability of working for people in old age. The logit model is based on the cumulative logistic distribution function and is specified as:

$$P_i = F(Z_i) = F(\alpha + \beta X_i) = \frac{1}{1+e^{-z_i}} = \frac{1}{1+e^{-(\alpha+\beta X_i)}} \tag{1}$$

where e is the base of natural logarithms; P_i is the probability that an individual will make a particular choice, given X_i. Equation (1) can be expressed as:

$$log\frac{P_i}{1-P_i} = Z_i = \alpha + \beta X_i \tag{2}$$

the dependent variable is the logarithm of the odds ratio. Here, P_i are between 0 and 1 and is not linearly related to Z_i. this means that Equation (2) can not be estimated by ordinary least squares. In this paper the model has the following specification:

$$log\frac{\text{Prob (working)}_i}{1-\text{Prob (working)}_i} = \alpha + \beta_1 \text{Individual Characteristics}_i + \beta_2 \text{Household Characteristics}_i + u_1 \tag{3}$$

where the dependent variable is a dichotomous or dummy for people who work at older ages. The independent variables that explain the probability of working is aggregated into two categories: individual and household characteristics. The individual characteristics include:

gender, literacy, marital status, native language, disability and income (government programs, pensions, remittances and aid from other households). Household characteristics variables include: location, type of household and number of people 60 or older. Three models were estimated from the age classification that has been used throughout the research: young elderly, older adults and elder old people.

Findings

This section explains which factors are determinants of the labor force participation of elderly. Figure 1 shows the marginal effects of a change in the significant explanatory variables on the probability of working.

In connection with individual characteristics, we found that after controlling for other exogenous variables, to be a man increases the probability of working in all three regressions, with the most important impact. The marginal effect is 0.55 in the regression for the age group {60-64}, 0.48 in {65-74} and 0.23 in {75 +}.

Also, the probability of working is positively associated with literacy status. The variable has a marginal effect of 0.09 on the age {60-64}, decreased to 0.05 in {65-74} and is 0.03 in {75 +}.

Marital status is negatively associated with the probability of working at ages {60-64}, with a marginal effect of -0.11; while in the older adults also has a marginal effect inhibitor of -0.04. However, in the last section of {75 +} increases the likelihood of working, although the marginal effect is very small (0.01). The widowhood reduces the probability of working in all ages, marginal effects are -0.04 in ages {60-64}, –0.05 in {65-74} and –0.06 in {75+}.

Speak a native language increases the likelihood of working in young elderly and elder old people, with a marginal effect of 0.04. While the marginal effect is 0.06 in {65-74}.

Provide a physical or mental disability reduces the probability of working, at ages {60-64} marginal effect is -0.18, in {65-74} is -0.15 and {75 +} is -0.13.

Receiving money from government programs has a negative effect on the probability of working, except for ages {60-64}, it was not significant. Although marginal effect is very small, -0.02 and -0.01 at ages {65-74} and {75 +}, respectively.

Have a pension or retirement income is also negatively associated with the likelihood of working in elderly. The marginal effects are -0.37 in young elderly, -0.25 in older adults and -0.10 in elder old people.

Receive remittances has a negative effect on the probability of working, with a marginal effect of -0.07 in the age group {60-64}, -0.05 in {65-74} and -0.02 in {75+}. Something similar happens when the elderly population receives money from other people (within the country), since the probability of working also decreases and the marginal effects are -0.09, -0.07 and -0.03.

With regard to household characteristics, the fact that elderly population lives in a rural area decreases their probability of working, with a marginal effect of -0.06 at ages {60-64}. In regression for the group {65-74} variable was not significant. While in the regression for elder old people, the variable increases the probability of working and the marginal effect is 0.02.

Living in a nuclear household increases the probability of working. But this variable presents the least impact, since the marginal effects are 0.005 and 0.003 at ages {60-64} and {75+}, respectively. The variable was not significant between older adults.

The number of elderly persons in the household decreases the likelihood of working in the elderly, with a marginal effect of -0.08 (60-64), -0.05 (65 - 74) and -0.04 (75 +).

Finally, the pseudo-R2 estimates run from 0.26 to 0.20. In the age group {60-64}, 78.2% of total predictions are correct, 71.2% of correct predictions if people work and 83.9% correctly

predicted if not work. While in the ages {65-74} the percentage of total correct predictions is 78.5% and 83.6% in {75+}.

GRAPH 1. Marginal effects of the labor force participation of elderly
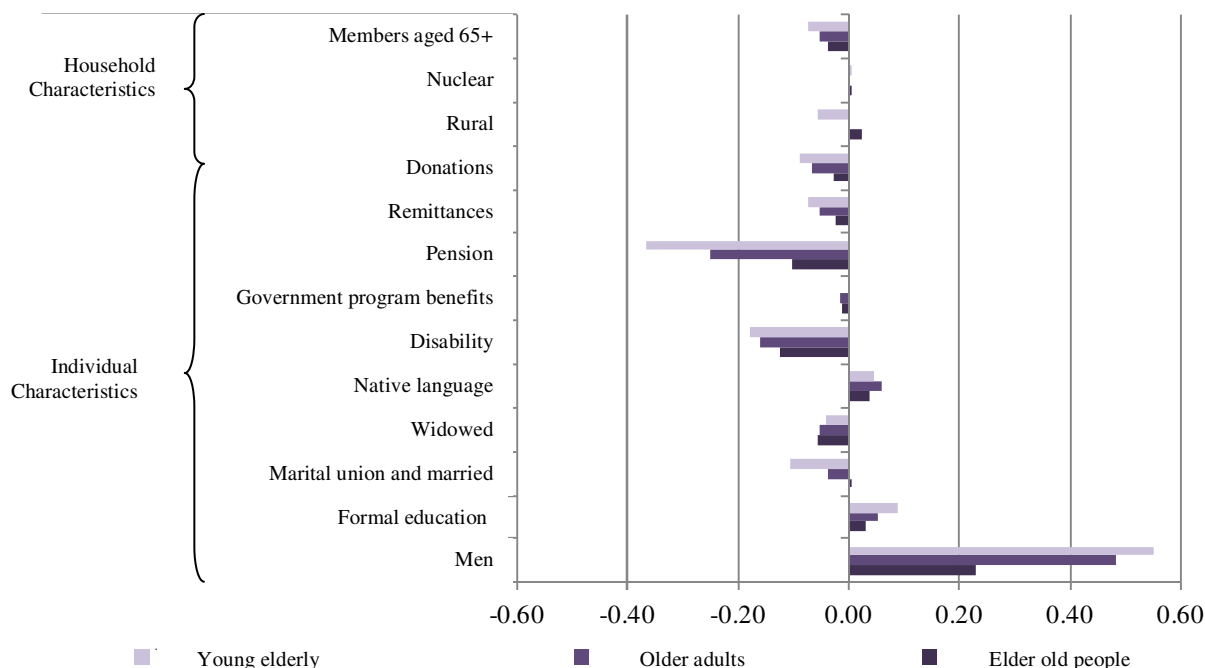
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This paper is a preliminary version which is part of the posdoctoral research. It should be completed by December 2012.