

Can Non-Contributory Pensions Improve Food Security? The Case of Mexico.

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Abstract

Providing basic pensions to the elderly has become a common policy in many middle-income countries. The rationale behind these programs is to protect beneficiaries from extreme poverty once they are too frail to earn a living. This paper analyzes whether one such program, Mexico's *70 y Más* had any effect on the elderly's food security. Using the age and locality size program eligibility cutoffs, we find positive and significant effects for single men, especially in the lower wealth quintiles. While the results for women are of the same sign, they are small in magnitude and not statistically significant.

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1 Introduction

Mexico, like many other middle-income countries, faces a quickly increasing elderly population. At the same time, its contributory social security system is mandatory only for salaried workers, which represent about half of the working-age population.¹ Even among these workers, imperfect compliance results in an important share of individuals who reach old age without a pension, particularly in rural areas. Given that many of the elderly are particularly vulnerable to poverty, non-contributory pensions, based almost entirely on age and residence requirements, have become a popular way to address this risk. In fact, the stated goal of the program we examine, called *70 y Más*, is to increase the income of elderly individuals who do not qualify for a contributory pension and improve their living standards.

This paper estimates the effect of *70 y Más* on the food security of potential beneficiaries. This is a particularly relevant question, since not having sufficient access to food is probably the most extreme manifestation of poverty. Providing food security should hence be the highest priority of anti-poverty programs. We find that the program decreases the probability that single eligible seniors eat only one meal a day due to lack of economic resources. However, this effect is statistically significant for males only. This is likely due to higher food poverty rates among elderly men compare to elderly

¹We calculate this figure for 2013 using the working-age population (18-65 years old) projection from the Mexican Population Council (CONAPO) and the number of salaried workers from the Mexican Employment and Occupation Survey (ENOE) for that year)

women, reflecting that the latter usually have more family support in old age. Our data seems to support this explanation as the the mean probability that elderly women ate only once a day due to lack of economic resources (0.14) is slightly lower than that of men (0.19). In addition, our estimates are larger for men in the first three wealth quintiles, further confirming that the program effectively improved the living standards of the most vulnerable among the rural elderly. We focus on the subsample of households consisting of elderly individuals living by themselves due to their higher vulnerability compared to those living in more extended or multigenerational households where at least one other income earner is available².

Few studies provide evidence on the impact of *70 y Más* on selected economic outcomes of beneficiaries (Juarez & Pfutze (2015), Galiani, Gertler & Bando (2016)). In particular, Galiani et al. (2016) find a positive effect of the program on both food and non-food consumption for households in localities with 500-3,300 inhabitants. Our paper contributes by providing evidence about the program impact on a variable that examines directly whether the food access and security of the household improved as a result of the program. Another difference with the paper by Galiani et al. (2016) is that we estimate the impact for households in larger localities, those included in the 2009 expansion. Nevertheless, we find results consistent with theirs.

²Far fewer such households report that at least one member had only once a day for lack of money: 11.56% and 9.42% for elderly couples and multi-generational households, respectively. Results for these households, which are available from the authors upon request, are negative but not statistically significant.

2 Program Description

From the 1940s onwards, Mexico started to provide various social protection services (such as health and pensions) through a number of public institutions. The two most important ones being the Mexican Institute of Social Security (IMSS) for the private sector, and the Institute of Health and Social Security for Government Employees (ISSSTE) for federal employees. In addition, there are separate organizations for state level employees, the armed forces, and the parastatal oil company PEMEX. All these schemes are financed by payroll taxes, and thus only cover employees in the formal sector³. The thinking was that Mexico's economic development would eventually bring the entire work force into the formal sector, and that lack of coverage was hence a transitory problem. Only after over two decades of lackluster growth and job creation did the country extend some more basic social protection service to the rest of the population.

The *70 y Más* program started in 2007, paying a monthly cash transfer of 500 (at the time around US\$40) pesos to individuals aged 70 and older in localities with less than 2,500 inhabitants, the smallest in the country. Between 2007 and 2009 the program expanded rapidly to increasingly larger localities up to those with less than 30,000 inhabitants, while maintaining the age 70 cutoff. After that, no further expansions took place until 2012, when the program finally included the remaining localities at the national level.

³In theory everyone else is allowed to participate voluntarily in IMSS, but in practice very few do (Levy 2008).

Later changes to the program aimed at excluding individuals who receive some other public sector pension from the benefit. Since we employ data from the 2010 Mexican Population Census, collected between May 31 and June 25 of that year, we are able to take advantage of the 30,000 inhabitants cutoff for eligibility. Our data is hence observed almost 18 months after the program had been expanded to what will be our treatment localities.

Since at the time the program's only two eligibility criteria were based on age (70 or older) and residence in an eligible locality, the benefit could be received irrespective of any other income (such as a public or private pension). To enroll in 70 y Más, an individual only needed to present an official ID, proof of age (either a birth certificate or unique population ID number, CURP), and a utility bill to verify the address. However, overall coverage of the IMSS (and Other) pensions is fairly low as widespread evasion and frequent transitions between formal and informal employment often prevents workers from accumulating the necessary number of years making contributions to qualify. In our own sample, only 25% of respondents aged 70 or older report the receipt of a public pension.

3 Data and Empirical Strategy

We use data from the extended questionnaire of the 2010 Mexican Population Census, which was applied to a 10 percent random sample of the population about one year and a half after the program's expansion to localities with

less than 30,000 inhabitants. This questionnaire includes three questions about food security, in which the household respondent is asked to report whether, due to lack of economic resources, in the three months prior to the interview: (i) any household member had only one meal a day; (ii) any household member had nothing to eat in a given day; and (iii) the household ran out of food. We report results only for the first question. This is because the number of households who report any of the latter two is only about one-third to one-half the number of those who report the first, leaving us with a fairly rare outcome. Moreover, the households that do suffer from these more severe outcomes are almost a perfect subset of the one that report that some household member only had one meal: we only observe 12 single men and 17 single women who reported either of the latter two outcomes, but not the first.

Our sample consists of single individuals aged 60 and older living by themselves, in localities with 25,000 to 35,000 inhabitants. We have a total of 70 such localities, of which 41 are in the treatment group (25,000-29,999 inhabitants) and 29 in the control group (30,000-35,000). Similar to the identification strategy in Juarez & Pfütze (2015) this allows us to exploit both the age and locality population cutoffs for program eligibility in a difference-in-differences (DD) approach. In one dimension, our treatment group are individuals living in localities with 25,000-29,999 inhabitants. The time (before-after) dimension distinguishes between those aged 60-69 (before) and those aged 70 or older (after). While a simple DD, the restriction

to localities in close proximity to the eligibility cutoff provides us with two close to identical groups, which can safely be assumed to fulfill the parallel trends assumption underlying this identification strategy. Juarez & Pfütze (2015) provide detailed evidence to support this similarity.

Table 5 shows summary statistics for our sample of 737 single elderly males and 1,133 single elderly females. The share of single elderly males who had only one meal a day (0.19) is larger than the corresponding share of single elderly females (0.14). Between 55 and 63 percent of males and females in our sample are at least 70 years old and about 52-55 percent of them live in treated localities. Females are about a year older than males, which is not surprising given the higher longevity of women. Finally, the mean locality population is slightly less than the eligibility cutoff, which is consistent with the fact that a bit more than half on households in our sample are in the smaller localities.

We estimate the impact of the program with the following linear probability model by OLS:

$$\begin{aligned}
 y_{h,l} = & \alpha_0 + \alpha_1 \text{Locality} < 30,000_l + \alpha_2 \text{Age}70_{+h,l} + \alpha_3 \text{Locality} < 30,000_l * \text{Age}70_{+h,l} \\
 & + \beta_1 \text{Locality Population}_l + \beta_2 \text{Age}_{h,l} + \gamma X_{h,l} + u_{h,l}
 \end{aligned}
 \tag{1}$$

where $y_{h,l}$ is a dummy variable equal to 1 if the single member of house-

hold h in the locality l had only one meal a day due to lack of economic resources in the three months prior to the interview; $Locality < 30,000_i$ is an indicator variable for whether the locality has less than 30,000 inhabitants and, thus, it is eligible for the program; $Age70+_{h,l}$ is an indicator for whether the single member of the household has at least 70 years old, and so is eligible for the program. We also control for linear terms in locality population and age of the single household member ($Locality\ Population_l$ and $Age_{h,l}$). Additional controls at the household and locality level are included in $X_{h,l}$. These controls are a dummy for whether the single household member speaks an indigenous language, a dummy for whether she is handicapped, her years of schooling, the household wealth index,⁴; locality characteristics like elevation, female population share, elderly population share, indigenous population share, average fertility, average years of schooling, labor force participation, female labor force participation, unemployment, female unemployment, and share of population with health insurance. The error term $u_{h,l}$ is clustered at the locality level in all specifications.

One potential threat to identification that needs to be addressed is selection bias. The concern being that the program itself affected the elderlies' choice of living by themselves, though it could be argued that if selection was present it would induce a bias working against our findings. This issue

⁴Following Filmer & Pritchett (2001), we constructed a principal components wealth index based on 20 household variables that measure the durables asset holdings and quality of the dwelling. We construct this index using the full 10 percent Census sample, and we also use it to show results for relatively poor households in the next section.

is addressed in table 2. We estimated the same model as discussed above on all the elderly living in sample localities⁵. It can be seen that the interaction term between locality size and age group is statistically insignificant. So is the estimated on treatment vs. control locality. For women, the probability of living by themselves increases at age 70, probably reflecting the increased risk of widowhood.

The coefficient of interest is α_3 , which captures the double difference in outcomes attributed to program eligibility in both the age and locality dimension. In our data, we are not able to observe directly whether or not an individual receives the benefit. We therefore estimate an intention-to-treat effect that captures differences based on the program's eligibility criteria. This is not a concern in our case because program reports indicate that participation rates in the program were practically 100 percent in treated localities by the end of 2009.⁶ In addition, using the same data Juarez & Pfitze (2015) show that program eligibility effectively increased the receipt of government transfers (which include the 70 y Más benefit) using the same set-up as above, but had not significant effect on receiving a public pension.

⁵Instead of 70, we have 71 localities. One of these no elderly living by themselves were sampled.

⁶Please refer to "Informe de la Evaluacion Especifica de Desempeno 2009-2010," available at <http://www.coneval.gob.mx>.

4 Results

Table 3 reports the results of our estimation. We show them separately for men and women, and for each we also report results for a subsample of households in the three lowest wealth quintiles, and with and without the additional control variables discussed in the previous section. We also ran the same specifications shown here on elderly living in two-person households with their spouse, and on those living in multi-generation households. We did not find any statistically significant results for these groups. This should not be surprising, as the additional household members can be expected to provide some protection against the most severe manifestations of poverty/footnoteIn the interest of brevity, we did not include these results here, but they are available upon request..

The results are very consistent across all specifications. Columns 1-4 show that the program has a negative effect on the probability of eating only one meal per day for men, which are all significant at the 5 percent level. These effects range from 9.9 to 13.7 percentage points, and they are larger in magnitude for men in the three lowest wealth quintiles (columns 2 and 4) than for the full sample (columns 1 and 3). Overall, these effects are large, compared to the mean probability of eating only one meal a day of 0.19 in Table 5. This indicates that the benefit is big enough to almost eliminate this kind of food insecurity. In addition, including household and locality controls does not change the estimated impacts in a significant way,

but mostly strengthens them (columns 3 and 4).

Columns 5 to 8 show the same results for women. While all the point estimates are negative, they are an order of magnitude smaller than those for men and statistically insignificant. These gender differences could be explained by the reported relatively higher food poverty rates after age 65 among men compared to women before the program.⁷ . As shown in Table 5, in our data the mean probability that elderly women ate only once a day due to lack of economic resources (0.14) is slightly lower than that of men (0.19), providing support to the hypothesis that women might enjoy more food security, probably due to stronger family support, so the margin of impact for the program is lower. This interpretation is very much in line with the previous literature on the program: Juarez & Pfutze (2015), Amuedo-Dorantes & Juarez (2015), and Juarez (2009) show that elderly women not only receive more transfers from family and friends, but also that these are partially crowded out by *70 y Más*. Any program effect on female welfare will thus be dampened.

5 Conclusions

This study analyzed the effects of Mexico's non-contributory pension program *70 y Más* on beneficiaries' food security. Taking advantage of the 30,000 inhabitants threshold for eligible localities in 2010, we showed that

⁷See "Situacion demografica de Mexico, 2002", CONAPO, available at <http://www.gob.mx/conapo>

the program significantly reduced the risk of only eating a single meal per day for single male beneficiaries. This effect is most pronounced among the relatively poor. No such effect could be found for women. In light of the existing literature, this result is not very surprising as elderly women tend to receive more financial support from friends and family, which should protect them from such penury.

Elderly men, on the other hand, tend to have relatively higher poverty rates compared to elderly women. Moreover, seniors living by themselves are more vulnerable than those living in extended households. Our findings thus strongly suggest that the program is improving the living standards of those who are most vulnerable among the elderly, and provide some evidence that the program succeeded in its stated aim. Future research should aim at establishing the program's causal effects for other poverty-related socioeconomic outcomes.

Table 1: Summary Statistics

| Variable | Males N=737 | | | | Females N=1133 | | | |
|-----------------------------------|----------------|-----------|-------|-------|-------------------|-----------|-------|-------|
| | Mean | Std. Dev. | Min. | Max. | Mean | Std. Dev. | Min. | Max. |
| Only one meal / day | 0.1927 | 0.3947 | 0 | 1 | 0.1377 | 0.3447 | 0 | 1 |
| Dummy=1 if age 70+ | 0.5509 | 0.4977 | 0 | 1 | 0.632 | 0.4825 | 0 | 1 |
| Dummy=1 if locality \$ < \$30,000 | 0.5265 | 0.4996 | 0 | 1 | 0.5596 | 0.4967 | 0 | 1 |
| Age | 72.1153 | 8.5301 | 60 | 105 | 73.068 | 8.4366 | 60 | 101 |
| Locality population | 29772 | 2698 | 25016 | 34658 | 29479 | 2787 | 25016 | 34658 |

Table 2: Effects on the elderly living by themselves.

| | Male | Female | |
|-----------------------------|--------------------------|-------------------------|------------------------|
| Age 70+*Locality <30,000 | .008 (.012) | -.014 (.013) | -.016 (.014) |
| Dummy=1 if age 70+ | -.008 (.015) | .059*** (.017) | .059*** (.016) |
| Dummy=1 if locality <30,000 | .019 (.020) | .026 (.019) | .010 (.018) |
| Age | .003*** (.0009) | .002** (.0008) | .002*** (.0008) |
| Locality population | 6.93e-06** (3.10e-06) | 4.95e-06* (2.59e-06) | 1.07e-07 (3.03e-06) |
| Obs. | 7709 | 9178 | 9137 |
| Num. Localities | 71 | 71 | 71 |
| Wealth Quintiles | All | All | All |
| Additional Controls | No | Yes | No |
| | | | Yes |

Notes: ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Linear probability model with standard errors, clustered at the locality level, in parenthesis. Dependent variables is binary, indicating whether a household member had only one meal a day due to lack of economic resources in the three months prior to the interview.

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