

Old-age benefits and retirement decisions of rural elderly in Brazil [☆]

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Abstract

I estimate the impact of social security benefits on retirement decisions of rural workers by studying changes in the rules governing old-age benefits for rural workers in Brazil. I focus on a reform implemented in 1991, which reduced the minimum eligibility age, increased benefits, and extended the program to non-heads of households. Because those benefits come with no strings attached — they are not means or retirement tested — any behavioral response is a pure income effect. The main finding of the paper is that access to old-age benefits is a strong determinant of retirement of rural workers in Brazil: receiving old-age benefits increases the probability of not working by about thirty-eight percentage points and reduces total hours per week by 22½ h. © 2007 Elsevier B.V. All rights reserved.

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What happens when old-age benefits are extended to previously uncovered elderly in developing countries? The accumulated knowledge from studies of developed countries pension systems might be of little relevance, since developing countries are different in a variety of ways.¹ Sources of those dissimilarities include differ-

ences in income levels, stringency of credit constraints, relative importance of non-market activities, labor intensity in production, workers' life expectancy, and the importance of the informal, undocumented sector. Unfortunately, there are still only a few studies about retirement decisions in developing countries.²

On the one hand, small asset holdings, low lifetime income, and poor access to leisure opportunities suggest that working as long as one's body permits may be the more common strategy among the rural elderly in developing countries. That is the "ceaseless toil" description of the behavior of the Chinese elderly: lacking sufficient means of support, only ill health can stop the elderly from working (Benjamin et al., 2003).

On the other hand, poor health and high labor intensity in rural activities may cause work to be particularly arduous and demanding for the elderly in developing

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¹ Meyer (1995), citing Cook and Campbell (1979), calls this problem "interaction of setting and treatment".

² Mete and Schultz (2002) and Benjamin et al. (2003) focus on the effect of health on elderly labor supply in, respectively, Taiwan and China.

countries³ Moreover, underdeveloped financial markets might exacerbate credit constraints, tightening the connection between the minimum eligibility age and the usual retirement age in developing countries (Johnson, 1999 found that few workers retire before becoming eligible to social security in the U.S.).

The main result of this paper illustrates the role of wealth, in the form of annuitized benefit income, in shaping the retirement decision of the rural elderly in Brazil. When given the opportunity of earning a benefit that guarantees their subsistence, withdrawal of the labor force is found to be the preferred decision for about 40% of benefit receivers, despite the benefits coming with no strings attached (there are neither means test nor requirement to retire). More importantly, the estimates in this paper show reduction of labor effort in both market and non-market activities. All results favor the hypothesis that rural work in a developing country might be a heavy burden on elderly workers.

The empirical strategy is based on exploring the sizeable exogenous variation in access to old-age benefits for rural workers — i.e. workers with “occupations directly related to agriculture, ranching, forestry, fishing or small-scale mining” — brought about by the Brazilian social security reform of 1991. The reform in question reduced the minimum eligibility age for old-age benefits for rural workers from 65 to 60 for men and 55 for women; increased the minimum benefit paid to rural old-age beneficiaries from 50% to 100% of the minimum wage; and extended old-age benefits to rural workers who were not heads of households, thus expanding coverage to many married female rural workers.

This policy change provides a unique opportunity to study the labor supply effect of old-age benefits in developing countries for three reasons. First, because Brazilian rural beneficiaries are subject to neither earnings test nor requirement to retire, the decision to apply for a rural old-age benefit is not strategic. As a reasonable first approximation, one does not need to model a dynamically optimizing view of retirement incentives (unlike the treatment of the U.S. social security by Stock and Wise, 1990), which simplifies the relevant economic decision. Second, due to the absence of earnings test or requirement to retire, and the dependence of eligibility for rural benefits only on predetermined characteristics of workers, benefit increases and eligibility extensions under this program

generate a pure income effect.⁴ Third, the structure of the reform allows for the use of instrumental variables for benefit income, addressing problems such as measurement error in the benefits variable (relevant in Brazil’s high inflation setting), and omitted variables bias.

I first use a differences-in-differences-in-differences (triple differences) approach, which compares changes in benefit take-up rates and labor variables for rural and urban workers of different age groups. Then, I move to instrumental variables estimation of the parameter of interest. The gradual build-up of benefit take-up rates, the change in the minimum eligibility age, and the differential increase in benefits for rural workers all provide a set of instrumental variables capturing exogenous variation in social security benefits. In addition, because benefit take-up rates may be correlated with factors that enhance labor market performance, such as ability or education, I analyze the differences in take-up rates and labor supply responses across education groups.

I find results consistent with the pension reform causing a sizeable contraction in the labor supply of the affected rural elderly. Instrumental variables estimates imply that when benefits increase by R\$100 (in Reais of 1997, approximately US\$95), the probability that workers “did not work in the reference week” increases by 10.8 percentage points; a binary variable for receipt of any benefits increases the same probability by 38.0 percentage points. Those estimates imply elasticities of labor force non-participation with respect to benefit values and to benefit receipt roughly equal to 0.8 and 0.5 respectively — a large figure compared to the modern evidence from developed countries (e.g. Krueger and Pischke, 1992) and slightly larger than the one calculated for Union Army pensions by Costa (1998).

The estimates on this paper are based on a comparison between the just-made-eligible by the reform (elderly age 60–64) with the soon-to-be-eligible (elderly age 55–59). Hence estimates might potentially be affected by some behavioral response of the soon-to-be-eligible. If the elderly age 55–59 are able to smooth consumption through borrowing against future income or depleting assets, they might reduce their labor supply in anticipation of future benefits and, as a result, the impact of the reform would be underestimated. On the other hand, if workers are credit constrained, own few assets, or heavily discount their future benefits (as in

³ Previous evidence from developed countries suggests that income effects for low-income are larger than income effects for high-income workers (e.g. Hausman, 1985).

⁴ There are very few papers claiming to estimate pure income effects. Costa (1995) estimates the pure income effect from pensions for Union Army veterans. To my knowledge, that is the only published paper estimating a pure income effect from old-age benefits. Imbens et al. (1999) estimate the pure income effect from lottery earnings and Sevak (2002) studies the wealth effects from unexpected capital gains on retirement.

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