Retirement Decisions in Indonesia

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Abstract

Over the last two decades, social scientists have made substantial advances in understanding the labor supply and retirement decisions of older people in the developed world using dynamic models that capture forward-looking behavior and uncertainty about health, productivity, and income. Much less is known, however, about retirement decisions in developing countries, where government-based social security systems and private pensions rarely exist. Although here too individuals smooth consumption over the life cycle, the mechanisms and constraints are quite different from those observed in the developed world. In the absence of significant formal institutional support, older individuals in developing countries rely on their own labor income, private savings, and family support in the form of transfer payments, coresidence, and participation in family businesses. In this paper, I build and estimate a structural dynamic model of labor supply for older individuals in Indonesia that incorporates these mechanisms.

Over the last two decades, social scientists have made substantial advances in understanding the labor supply and retirement decisions of older people in the developed world using dynamic models that capture forward-looking behavior and uncertainty about health, productivity, and income. Individuals smooth consumption over the life cycle and respond to long-term incentives. In developed countries, most workers depend on government-based social security systems and private company-based pensions to smooth their consumption.

In contrast, we know much less about the retirement behavior of people in developing countries. While it is natural to expect that here too people are forward thinking and smooth consumption over time, the mechanisms and constraints are quite different from those in the developed world. In the United States, for example, individuals become eligible for Social Security benefits at 62 and 65 and there are discrete jumps in the number of people leaving the labor force at these ages. Few developing countries however, have significant institutional programs for old age support. As a result, labor force participation declines steadily with age, without the discrete jumps observed in the U.S. Instead, individuals rely on households and extended families that are much larger and more complex than their developed country counterparts for support in the form of transfer payments, co-residence, and participation in family businesses. Health also plays a different role in a developing context. Because jobs are often more physically intensive in the developing world, poor health may be much more of a constraint on an individual's ability to work. This, combined with less advanced and often scarce health care resources makes the constraint of poor health substantially different in a less developed context. In this paper I build and estimate a structural dynamic model of labor supply for older individuals in Indonesia that incorporates these mechanisms.

Indonesia is the world's fourth largest country and one at a middle level of socioeconomic development. Over the past several decades, Indonesia has undergone massive socioeconomic and demographic change. Infant mortality has fallen from 145 per 1000 live births in the early 1970s to 46 per 1000 in the late 1990s. Over this same period, the total fertility rate per woman declined from 5.6 children to 2.6 children and life expectancy increased from 48 years in 1970 to 65 years in 1998 (UNICEF (2000), Indonesia Central Bureau of Statistics

(2003)). Indonesia has gone from being one of the poorest countries in the world during the 1960s to one of the wealthiest in the developing world before the economic crisis in the late 1990s. Households remain large and complex, and half of all workers work in the informal sector. Few Indonesians receive any pension benefits. In 1975 government employees became eligible for some benefits that allowed retirement near age 55 and in 1992 these benefits were made available to some private employees. But by 2002 only about 5.7 million people (6.7% of the labor force) were participating in a pension program. Even relative to other Asian countries such as Taiwan or Malaysia, Indonesia's pension system is very underdeveloped.(Brodjonegoro and Simanjuntak, 2002; Leechor, 1996)

In this context, a dynamic structural model is a useful way to study retirement. It allows for factors such as declining productivity, co-residence, transfers, health, and a changing socioeconomic environment to be incorporated into the model and therefore into people's labor supply decisions. The structural nature of the model allows one to examine the relative importance of these factors. This method also allows for simulation experiments to see the effects of a variety of potential policies and technology shocks. For example, one could propose a large scale social security system and see how individuals might react. Similarly, the model can be used to see how individual behavior might change in the face of shocks to health care, life expectancy or productivity.

I model retirement behavior as follows. Heads of household take the future into account when making decisions in a standard discounted utility framework. Decisions about labor supply are inherently joint with other members of the household. This is especially relevant in a developing context where households are typically large. In the perfect model, all members of the household (as well as their non-coresident extended family) would individually maximize their own lifetime utility functions and act strategically. I make the simplifying assumption that individuals who are not heads of household let the head do the forward thinking for the household and instead make their choices each period statically in reaction to the state of the world and the action of the household head. This imposes a Stackelberg structure on the household where the head knows how the rest of the household will react

to his or her actions and takes this into account when making decisions.

The per-period utility function takes as arguments the per-capita consumption of the household, the number of hours worked, the health status of the individual, and the numbers of children and adults in the household. Utility increases with consumption and health and decreases with hours worked. The size of the household enters directly to allow individuals to have preferences over privacy.

In each time period, individuals choose to work part-time, full-time, or not at all in a primary job. If they choose to work, they may also take on a secondary part-time job. Jobs can be of three types: government, private sector, or self-employed. By allowing individuals to choose a job sector each period, the model captures the transitions of older workers out of the government sector and into self-employment before they leave the labor force entirely. Wages in each sector are a function of age, hours worked in the period, hours worked in the previous period, health, education, and experience in each sector. I include both age and health because health only captures part of the age-related decline in productivity. Schooling is fixed by the time the individual reaches age 40. Heads of household also decide how much the household will save each time period.

The proposed model takes health status and mortality as exogenous, but allows household heads to have rational expectations over future health conditional on their current characteristics. These heads of household take expectations of their own health and mortality and make decisions about work and saving using this information. Health status in a given time period depends on health status in the previous period, as well as the individual's age and sex and the prices of food and medical care at that time in that region. Allowing health to depend on these prices, in effect, makes health investment endogenous.

Transfer payments to households are not taken as exogenous, but the head is assumed to know the rule that determines the transfer amounts. Keane and Wolpin (2001) use a similar method to model parental transfers to young adults in the United States. Here, transfers

depend on the work status of the individual, the characteristics of any non-coresident children of the individual, and the parents' work and health status. Frankenberg et al. (2002b) and Frankenberg and Kuhn (2003) find evidence that these are key determinants of transfer behavior in Indonesia.

Household composition is summarized by the numbers of adults and children in the household and is assumed to be random conditional on the numbers of adults and children in the household during the previous period and the age, health, and work status of the head of household. Frankenberg et al. (2002a) find evidence that these factors play an important part in determining when older couples coreside with children.

The analysis uses the 1993 and 1997 waves of the Indonesia Family Life Survey. This longitudinal survey of over 7,200 households contains comprehensive data on demographics, work histories, health, household assets and consumption, and non-coresident family members. The work histories include information about wages, hours and job sectors while the health data includes both self-assessed measures such as general health status and ability to perform daily living as well as objective measures such as blood pressure, body mass index, and tests of mobility.

References

Brodjonegoro, B. and Simanjuntak, R. (2002). Pension plan in Indonesia: Avenues for reform. *Hitotsubashi Journal of Economics*, 43(2):151–161.

Frankenberg, E., Chan, A., and Ofstedal, M. B. (2002a). Stability and change in living arrangements in Indonesia, Singapore, and Taiwan, 1993-1999. *Population Studies*, 56:201 – 213.

Frankenberg, E. and Kuhn, R. (2003). The implications of family systems and economic context for intergenerational transfers in indonesia and bangladesh. unpublished.

Frankenberg, E., Lillard, L., and Willis, R. J. (2002b). Patterns of intergenerational transfers in southeast Asia. *Journal of Marriage and Family*, 64:627–641.

Indonesia Central Bureau of Statistics (2003). Population statistics. www.bps.go.id/sector/population.

Keane, M. P. and Wolpin, K. I. (2001). The effect of parental transfers and borrowing constraints on educational attainment. *International Economic Review*, 42(4):1051–1103.

Leechor, C. (1996). Reforming Indonesia's pension system. Technical Report 1677, World Bank.

UNICEF (2000). The state of the world's children. Technical report, UNICEF. www.unicef.org/sowc00.