Research Brief

The life-cycle argument: Age as a mediator of pharmacists' earnings

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Abstract

Background: Age diversity poses challenges to pharmacy employers and managers. A life-cycle argument has been presented to explain pharmacists' age-related differences at work.

Objectives: Explore responses of pharmacists' wage-and-salary earnings in three age groups (younger than 40, 40–54 years, and 55 years plus) to labor input and human-capital variables.

Methods: A survey questionnaire was mailed to registered pharmacists in South Florida, USA. An earnings function was formulated and tested, using ordinary least squares, for each age group separately to compare the direction, magnitude, and statistical significance of each determinant on earnings. The covariates were number of hours worked, type of pharmacy degree, years of professional experience, gender, number of children, and whether the pharmacist had completed a residency and/or attained a specialty board certification.

Results: The model showed better fit and statistical significance for practitioners under 40 and 55 years or older. The number of hours worked was the overwhelming determinant, but the magnitude of its influence was different for the three age groups. Human-capital indicators provided evidence in support of the life-cycle argument.

Conclusion: The wage-and-salary earnings of pharmacy practitioners were mediated by age group in their response to labor input and human-capital variables.

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Introduction

Age diversity in the workforce poses challenges to pharmacy and other health care managers.[1] Organizations trying to prevent knowledge loss while finding suitable replacements for retiring employees find that the interaction of workers of all ages, motivated by different values and expectations, may bring conflict.[2] Understanding similarities and differences of individuals at various stages of their work lives may improve communication, increase satisfaction, and raise productivity.

The objective of this study was to explore wage-and-salary responses of pharmacists grouped in three non-overlapping age brackets to the

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number of hours worked and human-capital stock. Disparities in response were considered indicators of how practitioners differed at various ages in conditions under which they were remunerated for professional services.

Life-cycle argument

During the last half century economists have developed and polished the life-cycle hypothesis of consumption and savings to explain the influence of aging on individual outcomes.[3–5] According to this view, people optimize their utility by smoothing out savings patterns over their lifetime, consuming as a function of their life-cycle income rather than current income. Since consumption/savings decisions are linked to labor outcomes through inter-temporal utility optimization attempts, one may apply the life-cycle concept to an earnings function. Workers of different ages may experience different labor input and/or human-capital returns. Nothing related to pharmacists' aging and earnings has been published.

Methods

Age groups

This article was based on survey data gathered in 2006–2007 (see below). Three age groups were identified: younger than 40, 40–54 years, and 55 years or older. These age groups were designed to describe work life stages and accorded with classifications used in other studies.[6,7]

Data

Studies based on national and international data sets exhibit greater stochastic disturbance terms than those confined to smaller regions. Variations in the cost of living, tax structures, migration patterns, and cultural practices may be incorrectly interpreted as age-group disparities in an earnings determination model when, in fact, they originate from unobserved characteristics. Moreover, the effect of these variations may hide/blur the true influence of identified covariates. Narrowing the scope to persons performing identical activities in the same place at the same time provides a more rigorous methodology for exploring labor disparities.[8] This study was restricted to South Florida, USA, defined as the eight counties comprising the southern tip of the peninsula, and serviced in September 2006 by 5846 licensed pharmacists. A survey questionnaire

was mailed in October 2006, and a reminder in January 2007, to all of them.

A total of 140 questionnaires were returned undelivered, and 1478 pharmacists responded (a 26% rate). This rate compared favorably with those of similar undertakings.[9–12] Of the responses, 391 pharmacists (32%) younger than 40, 478 pharmacists (38%) 40–54 years, and 374 pharmacists (30%) 55 years plus provided data for every variable in the model developed below. This is similar to the age distribution of the South Florida pharmacist population.

Model and variables

Separate functions with identical covariates were estimated using ordinary least squares for the three groups to compare the direction, magnitude, and statistical significance of the coefficients. An alternative pooled model, in which the age-group effect would be identified by dummy variables, was dismissed because of its likely incorrect assumption that the earnings responses to covariates were equal for all pharmacists regardless of age[13]; age-group disparities in these responses provided evidence supporting the life-cycle argument.

The model interpreted, for each age group, pharmacists' earnings as a function of average workweek and human-capital covariates relevant to the life-cycle argument as follows:

$$\ln E_{ij} = \alpha_i + H_{ijk}\beta_{ki} + X_{ijk}\gamma_{ki} + u_{ij}$$

where

ln E_{ij} was a vector of natural logarithm values of annual wage-and-salary earnings, in dollars, reported by the jth pharmacist of the ith age group;

H_{ijk} was a matrix of values ($k = 2$) of the linear and quadratic terms of average number of hours worked per week by the jth pharmacist of the ith age group;

X_{ijk} was a matrix of values ($k = 6$) of human-capital characteristics: type of pharmacy degree, professional experience (linear and quadratic terms), gender, number of children, and whether the jth pharmacist of the ith age group had completed a residency and/or attained a specialty board certification;

u_{ij} was a vector of normally and independently distributed stochastic disturbance terms, with mean zero and variance σ_i^2, pertaining to the jth pharmacist of the ith age group;