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Retirement effects on health in Europe

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ABSTRACT

What are the health impacts of retirement? As talk of raising retirement ages in pensions and social security schemes continues around the world, it is important to know both the costs and benefits for the individual, as well as the governments' budgets. In this paper we use the *Survey of Health, Ageing and Retirement in Europe* (SHARE) dataset to address this question in a multi-country setting. We use country-specific early and full retirement ages as instruments for retirement behavior. These statutory retirement ages clearly induce retirement, but are not related to an individual's health. Exploiting the discontinuities in retirement behavior across countries, we find significant evidence that retirement has a health-preserving effect on overall general health. Our estimates indicate that retirement leads to a 35 percent decrease in the probability of reporting to be in fair, bad, or very bad health, and an almost one standard deviation improvement in the health index. While the self-reported health seems to be a temporary impact, the health index indicates there are long-lasting health differences.

1. Introduction

The notion that retirement harms health is an old and persistent hypothesis (see Minkler, 1981, for a review). Many argue that retirement itself is a stressful event (Carp, 1967; Eisdorfer and Wilkie, 1977; MacBride, 1976; Sheppard, 1976). Retirement can also lead to a break with support networks and friends, and may be accompanied by emotional or mental impacts of "loneliness," "obsolesce," or "feeling old" (Bradford, 1979; MacBride, 1976). Others believe that retirement is a health-preserving life change. Anecdotal evidence suggests that many discussions about the retirement decision include the idea that work is taxing to the individual, thus retirement would remove this stress and preserve the health of the retiree (Ekerdt et al., 1983).

Despite the long-standing debate, there is little conclusive empirical evidence thus far. The inherent problem is that retirement is often a choice, and is often based on health characteristics before retirement. Many of the early studies do not address this, thus they can only infer correlation, not causality. Compounding the problem is that some of the studies find a positive correlation with health (Thompson and Streib, 1958), no correlation with health (Carp, 1967; Atchley, 1976; Kasl, 1980; Rowland, 1977; Haynes et al., 1978; Niemi, 1980; Adams and Lefebvre, 1981), or a negative correlation with health (Casscells et al., 1980; Gonzales, 1980).

A few recent papers try to address the endogeneity of the retirement decision in examining future health. Charles (2004) and Neuman (2008) use age-specific retirement incentives provided by the U.S. Social Security regulations as instrumental variables in the U.S. context. Coe and Lindeboom (2008) also use early retirement window offers as an instrument. The results from these papers combined indicate that retirement has a positive effect on subjective measures of health, but no effect on objective measures of health in the United States. There is no a priori reason to assume that findings from the U.S. situation will hold for European countries, considering the numerous differences in the labor markets, health insurance, and social policies.

Kerkhofs and Lindeboom (1997) assess the effects of work history on the health status of older Dutch workers using fixed effects regressions. This accounts for time-invariant factors that may confound the results, but it does not control for time-varying factors such as a sudden change in the individual environment. Their results suggest that health deteriorates with increased work effort and that increasing retirement ages may negatively influence later-life health outcomes. Lindeboom et al. (2002) use a fixed effect

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control function to assess the effect of life events, such as retirement, on the mental health of older individuals, also in the Dutch setting. They try to control for all transitory changes as well as individual fixed effects. They find no statistical effect of loss of work on mental health two years later. Their approach does not address any physical health effects of retirement. In fact, they control for all physical health deterioration that is observed in the data. Thus, this result may fail to measure the total impact of retirement on overall health.

Bound and Waidmann (2007) examine the health effects of retirement in the U.K. using one wave of the English Longitudinal Study of Aging (ELSA). They examine both self-reported measures of health and objective measures of health measured through blood samples. They find some evidence of a positive health effect of retirement, although temporarily, for men, and no corresponding relationship for women.

Three recent papers examine the relationship between cognitive functioning and retirement. Adam et al. (2006) find a strong association between cognitive decline and retirement, but do not test for causality. Coe et al. (2009) find no causal relationship between cognitive function and retirement in the United States, while Rohwedder and Willis (2010) use cross-country variation in retirement ages and find a strong relationship between retirement and cognitive decline.

We examine the effect retirement has on contemporaneous health and cognitive function in a multi-country setting using within-country variation in retirement behavior using the SHARE dataset. In addition to demographic information, the survey collects detailed information concerning retirement behavior. The health information is rich, and includes self-reported health, diagnoses of diseases, the Euro-D depression index, as well as newer, more powerful predictors of mortality, such as grip strength. We have supplemented the data with information on early and full statutory retirement ages in 11 countries.

We use a single cross-section of data from multiple countries and use the differing retirement ages across countries as exogenous instruments for the retirement decision. Unlike single-country analysis, we can exploit the exogenous variation in retirement policies to explore the effect of retirement on health at different ages, not just age 65, as in the U.K. and U.S. studies. To our knowledge, no other paper in the literature has examined if there are different relationships between retirement and health based on age of retirement.

The paper proceeds as follows. Section 2 discusses the empirical model, while the data and the definition of key variables are introduced in Section 3. In Section 4 we present the results and conclude in Section 5.

2. Empirical approach

2.1. Design

We aim to determine the effect of the binary decision of being retired ($D_i = 1$) on a measure of health (Y_i) (i.e., general health measures, cognitive ability, or depression measures). The traditional approach consists of estimating the following equation by OLS:

$$Y_i = \alpha + \beta D_i + u_i \tag{1}$$

However, a selection problem may arise; namely, D_i can be correlated with the unobservables u_i. This could happen if people self-select into retirement earlier based on their gains to being retired, e.g., those who enjoy their jobs the least retire early to be happier or those with the most physically demanding jobs retire earlier to relieve themselves of the daily strain. If this is the case, OLS estimates of β are not consistent.

The instrumental variables approach we use solves the problem by exploiting the fact that the regressor of interest (retirement) is partially determined by a known, discontinuous function that is not related to individual health (Y_i). The rules determining the eligibility ages for early and full retirement dramatically change the probability of retiring discontinuously as a function of age and the country in which one lives. Thus we can use these age thresholds as instrumental variables to identify the causal relationship between retirement and health. Although retirement and the instruments used are both a function of age themselves, this function is nonlinear and non-monotonic. We can therefore control for a wide range of smooth age effects in health when using early and full retirement ages as instruments.[1]

Let S_i be the age of the individual and $\bar{S}$ the early or full retirement age in that country. The identification strategy exploits the fact that while being above the age threshold does not perfectly determine retirement behavior, it does create a discontinuity in its probability. Using a two-step estimation procedure, we first estimate:

$$E(D_i|S_i) = f(S_i) + \gamma I(S_i \geq \bar{S}) \tag{2}$$

where $f(S_i)$ is a general and continuous function of S and $I(S_i \geq \bar{S})$ is an indicator function for being over the eligibility ages for early and full retirement. γ measures the discontinuity in the propensity score function at $\bar{S}$. We use the predicted values from the first stage in order to estimate:

$$Y_i = \alpha + \beta \widehat{E(D_i|S_i)} + \gamma K(S_i) + w_i \tag{3}$$

where $K(S_i)$ is a general control function. In this paper, we limit the cases we consider to parametric estimation, assuming the same functional form for $K(S_i)$ and $f(S_i)$. This assumption means that this two-stage procedure is equivalent as two-stage least squares, where being over the eligibility ages for early and full retirement are used as instruments.

IV estimation hinges on the assumptions that the instruments are relevant and that there are no other discrete changes to individual health that coincide with the retirement age. Previous literature has shown the relevance of the rules determining Social Security benefits on determining the timing of retirement (see Hurd, 1990, and Lumsdaine and Mitchell, 1999, for reviews; Zissimopoulos et al., 2007; Poterba et al., 2004; Anderson et al., 1999; Samwick, 1998). Likewise, other cross-national research, for example, Gruber and Wise (1999), Gruber and Wise (2004), notes that there is a strong negative correlation between labor force participation at older ages and the generosity of early retirement benefits. In addition, the most recent strand of the retirement and health literature (see Charles, 2004; Neuman, 2008; Bound and Waidmann, 2007; Coe and Lindeboom, 2008; Rohwedder and Willis, 2010) has illustrated that using institutional variation in retirement incentives is a valid identification technique. Although not directly testable, we believe that it is appropriate to assume that there are no other discrete changes to individual health that coincide with the retirement ages. In contrast to the U.S. Medicare program, European health benefits are not contingent on being a specific age, and we are not aware of any other possible causes to produce changes in health at the exact retirement ages set in each country. Finally, since we have an overidentified model, we present Sargan test statistics for the overall validity of the instruments.

[1] This approach can also be seen as an application of regression discontinuity design, as was done in Campbell (1969), Angrist and Lavy (1999), and Van der Klaauw (2003), among others.