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Health, pension benefits and longevity: How they affect household savings? ☆

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ABSTRACT

This paper analyses the impact of health, pension systems and longevity on savings. It uses a simple life-cycle model embodying social transfers (health care and pension expenditures) and changes in longevity to determine the level of household savings. From this model, we derived an econometric specification, augmented with the effects of public budget balances. The model is estimated for a panel of 22 OECD countries for the period 1970–2009. From the point of view of incentive to save, we find that health transfers have a similar impact as pension replacement rates. Welfare reforms that reduce replacement rates without reforming health system may not have all the expected impact on household savings. In line with life-cycle theory, we found that longevity increases saving ratios.

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Introduction

The life cycle hypothesis is the main framework used in economics to model the relations between age, consumption and saving behaviour. It has been largely used to understand households' saving behaviour, design pension reforms and manage the effects of ageing. While main predictions of the life cycle theory tend to be supported by empirical evidence, there is a large debate about how observations fit with the theory. Notably, the tendency for consumption to decrease in old age, which seems to contradict the idea that households save in order to maintain their consumption level after retirement. Another issue is related to the significant levels of savings are observed at old age. The literature has developed several explanations discussed below. Along the lines of Kahneman and Tversky (1979), some authors have also questioned the hypothesis of rationality. Given that agents do not seem to save enough for retirement, Bernheim et al. (2001) argue for

example that the latter is difficult to reconcile the life-cycle model and may result from household behaviour not governed by rational, farsighted optimization.

Nonetheless, recent contributions to this discussion (notably Aguiar and Hurst, 2005, 2013; Hurd and Rohwedder, 2003) have showed that an extended version of the life-cycle model can address some of the above concerns. In this context, in this paper we use a life-cycle model integrating the impact of pension replacement rates, together with old-age transfers and longevity. This model provides an intuition about the qualitative relationships between savings and its determinants. On its basis, we develop a reduced-form including provision of public health care as an explanatory variable of savings, which is estimated through a panel annual data set including 22 OECD countries from the period 1970–2009.

Our approach relies on a number of previous papers, which aimed to reconcile observed saving behaviour facts with the life-cycle theory. Concerning the impact of welfare systems, our starting point is the seminal paper by Feldstein (1974) who highlighted a negative link between Pay-As-You-Go (PAYG) pension systems and household savings. Subsequently, Hubbard et al. (1995) showed that means-tested social insurance can have significant saving disincentives for the population groups with lower life-time income. Empirical tests on the impact of pension systems on household saving have produced mixed results (e.g. Edwards, 1996; Baillu and Reisen, 1997; Callen and Thimann, 1997; Corsetti and Schmidt-Hebbel, 1995; Bosworth and Burtless, 2004;

Murphy and Musalem, 2004). Sample heterogeneity, however, has made these results difficult to compare.[1] The empirical results presented in this paper would tend to endorse the view that welfare systems may generate disincentives to save.

Concerning the impact of longevity, Bloom et al. (2003) argued that higher life expectancy should lead to an increase of precautionary savings. Empirical work, however, has also found an opposite sign. More recently, Bloom et al. (2007) have shown that in the absence of strong saving retirement incentives, such as in PAYG systems, an increase in longevity does not induce higher savings.[2] This remains an empirical issue to be addressed. Our results support a positive link between longevity and savings.

The impact of health consumption on savings can be related, among others, to an observed fall in consumption in other consumption goods after retirement. This is a stylized fact observed in most OECD countries (e.g. US, UK and Italy), across time periods and for different measures of household spending. It seems to contradict the hypothesis that marginal utility of consumption should be the same before and after retirement. A possible explanation would be to assume that retirement may occur as the result of non-anticipated shock on real income. This uncertainty could generate a fall in consumption at retirement,[3] but the estimated impact of this effect is small (see Blau, 2008). Thus, other explanations should be considered. Accordingly, some authors (e.g. Browning and Lusardi, 1996; Browning and Crossley, 2001) suggest that a deterioration of health status, a decrease of family size or increased mortality risk could reduce the marginal utility of consumption. Allowing for uncertainty, Banks et al. (1998) argued that unanticipated shocks occurring around the date of retirement could explain the fall in spending within the context of the life-cycle model, while Bernheim et al. (2001) argued that workers do not adequately foresee the decline in income associated with the retirement or the risks associated with different retirement saving and pension schemes (Clark and Strauss, 2008).

Aguiar and Hurst (2009, 2013) argued that when non-durable expenditures are disaggregated into detailed consumption categories, work-related expenditures account for most of the decrease in consumption. Along these lines, Hurd and Rohwedder (2003) suggested that the drop in consumption spending cannot be explained by the simple one-good life cycle model, with forward-looking consumers. Certain work-related consumption expenditures stop at retirement and market-purchased goods and services are substituted by household home production. Notably, long-term care services are often provided informally within families.

We follow the latter argument and consider in our model that a different basket of goods is consumed in active life and retirement, in particular the share of health consumption is typically higher after retirement.[4] This approach has been pursued in a number of papers analysing the impact on ageing on health and productivity (e.g. Aisa and Pueyo, 2013) in a general equilibrium context.

In this paper we rather focus on the impact of welfare systems and argue that the fact that the bundle of consumption at old-age could be twisted towards a heavily subsidised good, such as health care, might decrease savings. To model this less-explored relationship among saving determinants, we use a two-period optimal consumption model, with social welfare transfers and longevity. We use this framework to derived a reduced-form also controlling for other traditional determinants of savings, such as the Ricardian compensation between private and public savings.

The next section motivates the research by describing key empirical facts on age, consumption and welfare goods. The impact of welfare systems and longevity on savings presents the life-cycle model used in this paper. In Econometric estimates combining the different determinants of savings, presents econometric panel estimates. A final section concludes.

Stylized facts on age, consumption and welfare goods

It is well-known that total consumption displays a hump-shaped profile across age-groups. More precisely, the consumption profile is hump-shaped across households headed by individuals belonging to different age groups. This is not equivalent to say that the consumption profile is hump-shaped over the life cycle mainly due to the possible existence of cohort and time effects. Nonetheless, Fernandez-Villaverde and Krueger (2007) suggest that the bias induced by the use of age-groups instead of cohorts may not be very large for the estimation of the hump-shaped consumption profiles. Therefore, the snapshot picture of total consumption per household by age-groups can approximate the life-time consumption profile of a cohort (e.g. static ageing as opposed to dynamic ageing). This approach takes an agnostic view on how a combination of various household characteristics in conjunction with institutional factors in each country affects the life-cycle consumption pattern. Note that when the age-income profile is more hump-shaped than consumption, the above observed age-consumption patterns are still compatible with some consumption smoothing over the life cycle (Attanasio, 1999). Most expenditure items also display a hump-shaped profile, with consumption level per capita increasing steadily with age, peaking at middle-age then decreasing. However, health care is one the few consumption items that tends to increase with age.

Health care is also heavily subsidised in most countries. The shares of publicly provided health services to household income increased steadily since the 1970s (e.g. in France, Sweden, UK and USA, see Fig. 1). By 2003, the ratios of public health expenditures to Household income ranged from 5–7% in UK and US to 10–15% in France and Sweden.

At the same time, average replacement rates also increased in most countries (Fig. 2).[5] For example, in France, Italy and Portugal they had reached close or above 80% by 2003. In US, starting from a lower basis they reached nearly 55%. Only in Sweden they have declined to around 55% following pension reforms.

The impact of welfare systems and longevity on savings

The most widely used framework to study the link between ageing, consumption and saving is the life cycle model (Modigliani and Brumberg, 1954; Ando and Modigliani, 1963; Friedman, 1957). In its simplest version, individuals live two periods. In the first period each person earns a wage from his/her labour supply and, in the second period, the person retires.

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[1] Edwards (1996) found that the social security system has a negative impact on private saving using a sample of 32 countries (developed and developing countries). Baillu and Reisen (1997) also found a positive and statistically significant impact of pension funds on savings using a panel of 11 countries for the period 1982–93. On the other hand, Bosworth and Burtless (2004) did not find any econometrically significant impact on private saving for a set of 11 countries during the period 1971–2000. Murphy and Musalem (2004) considered 43 countries for the period 1960–2002 and found that only mandatory contribution to funded pension systems increase national saving.

[2] This of course only holds when the age of retirement is fixed and not linked to longevity, which is still the case in most social security systems in OECD countries.

[3] Often referred in the literature as a possible 'retirement-consumption' puzzle.

[4] Note that age by itself is not a major driver of health care expenditures, but other factors such as the proximity to death, the effects of income and technological progress. In contrast, the expenditures of long-term care are mainly determined by the age profile (see Oliveira Martins and de la Maisonneuve, 2006 for a discussion).

[5] Average replacement rates are defined here as the ratio between average pension benefits to gross average wages. They were computed using the data OECD Pension and ADB databases.