Applied Economics ›

Volume 38, 2006 - Issue 2



Original Articles

# Demographic change and the UK savings rate

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Pages 119-136 | Published online: 01 Sep 2006

Cite this article https://doi.org/10.1080/00036840500390361



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## Abstract

Microeconomic data are used to explore the effects of a changing age-structure on the UK's aggregate personal savings rate. The findings suggest that changes to the population's age structure have had detectable, sustained, but, relative to the yearly changes observed in the savings rate over the previous century, modest effects on aggregate personal sector savings. It is estimated that the projected changes to the UK's age structure over the next 40 years are likely to raise the UK's savings rate but by no more than two percentage points. No basis is found for the view that the aggregate savings rate will decline as a result of the anticipated ageing of the UK population.

## Acknowledgements

The research reported in this paper is part of the project, The Macroeconomy and Demographic Change undertaken as part of the ESRC programme Understanding the Evolving Macroeconomy. Financial support from the ESRC (ESRC award reference number L138251001) is gratefully acknowledged. Material from the Family Expenditure Surveys used in this paper is Crown Copyright; it has been made available by the Office for National Statistics (ONS) through The Data Archive; it has been used by permission. Neither the ONS nor The Data Archive bear any responsibility for the analysis or interpretation of the data reported here. The authors are grateful for helpful comments from Cliff Attfield, David Winter, Edmund Cannon, Olwen Renowden, Elisabeth Dedman, Ian Tonks and Caroline Joll. We accept full responsibility for all remaining errors.

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# Notes

[1] These figures are based on the 2000-based Principal Projection, which is GAD's central projection.

[2] The FES is an annual cross-section survey of around 7000 households (or around 20 000 individuals). It is a voluntary survey with a response rate of around 70%, collecting detailed information on household and individual consumption and income, and on household and individual characteristics. Until 1993 the data were released on a calendar year basis; since then the data are organized by financial year. This source allows 30 consecutive calendar years of household and individual data from 1969 to 1998 to be derived.

[3] National savings includes personal and corporate sector savings (the private sector), and saving by the government and the rest of the world.

[4] Income data for individuals are explicitly reported in the FES but to derive individual consumption expenditure a regression approach explained below was adopted. The reasons for aggregating over the adult population (over 15) are also explained below.

[5] The FES covers households only and does not include non-profit institutions.

[6] In the FES analysis, imputed rent from owner-occupation was removed from the pre-1992 income and consumption data to ensure consistency over the whole data period.

[7] In the National Statistics personal sector accounts, personal savings are defined as income net of taxes and social contributions – the latter including funded and unfunded pension contributions by employees and employers – minus personal consumption.

[8] Annuities and pensions are treated as identical financial assets. For simplicity income derived from both is referred to as pensions.

[9] The approach adopted has also been used recently by Chesher (1997, 1998) when analysing individual nutrient intake. For earlier applications to consumer behaviour see Mankiw and Weil (1989) and Weil (1994).

[10] For a more detailed discusssion of this procedure see Demery and Duck (2001).

[11] Ignoring, for the moment, bequests.

[12] There is a possibility that some of the estimates of  may be negative. For this reason Deaton and Paxson (2000) employ a different technique to extract the age and cohort effects. This problem does not arise in the present case once age-groups are restricted – as done for reasons explained below – to those aged 16 and above.

[13] The regressions also include year dummies to pick up cyclical influences on income and consumption, influences that are common to all ages and cohorts. Year effects were captured by including a set of $T-2$ year dummies defined from $t=3,\ldots,T$ as where $d_t$ is equal to one if the year is t and is zero otherwise (see Deaton, 1997). The year dummy effects sum to zero by construction.

[14] Deaton and Paxson, in their analysis of Taiwanese and Thai households, also obtain negative income (and consumption) estimates for children and this forced them to use procedures that avoided the need to take logarithms of negative numbers (see Deaton and Paxson, 2000, p. 220).

[15] Jappelli and Modigliani (1998) attempt to overcome this problem by omitting pension income altogether, treating all pension benefits as a ‘decumulation of the stock of pension wealth’ (p. 11). Using Italian cohort data, they find, on making this adjustment a more hump-shaped pattern to the savings-age profile and negative savings for the elderly. Bosworth et al. (1991) also treat all pension benefits as dissaving. Miles (1999) also suggests that part of the measured high savings rates amongst the elderly is due to the treatment of pension benefits.

[16] The state pension is treated as a transfer from one generation to the next and the adjustment factor is not applied. The proportion of income attributed to non-state pensions for households with heads aged 65 and above rose from approximately 12% in 1969 to about 30% in 1998.

[17] The authors are grateful to Steve Smallwood of the Government Actuary's Department for providing mortality data for the period 1980–1999.

[18] This latter approach ignores the effects of migration on the grounds that these effects are small over the relevant age group.

[19] In fact there are a small number of people in each year who receive annuity income who are below the age of 50.

[20] Findings reported by Finkelstein and Poterba (2000) and by Murthi et al. (1999) suggest this 25% indexation may be an overestimate (at least for the private sector) and hence the proportion attributed to interest income may be on the high side.

[21] The savings rate implied in Model A corresponds to the personal sector savings rate published in the national accounts (ignoring the equity adjustment discussed above). The implied aggregate savings rates from Model B would be closer to a savings rate derived from a consolidation of the accounts of the personal and financial sectors. However, because Model B underestimates the savings of working individuals, it will underestimate the true ‘consolidated’ savings rate.

[22] The cohort estimates for Model A are virtually identical to those estimated for Model B.

[23] It is assumed that individuals over 80 years old have the same age and cohort characteristics of those aged 80.

[24] The same argument does not apply to the various age groups since each age group appears in each FES data set.

[25] Demery and Duck (2001) estimated age effects after imposing the restriction that cohort effects for income and consumption are the same. They found that the estimates of age effects were largely unaffected but that the restriction itself could be formally rejected. One possible reason for this is that the assumptions about the bequest motive – that bequests are a fixed proportion of lifetime resources – is invalid.

[26] One practical restriction that this method imposes is that the growth rates of the income and consumption cohort effects must be the same. If they are not, the difference between them dominates the projection of the savings rate. In practice, the estimated growth rates were very close.

[27] The choice of the year of birth on which to base these re-estimates does have implications for the savings rate predicted. As a close examination of Figs 5 and 6 reveal, the 1935 cohort effect is low. The estimates reported below were carried out taking the 1935 cohort as the base. The general behaviour of the agggregate savings rate was much the same as that reported below but was approximately one percentage point lower.

[28] The data for the population and savings series were derived from published sources by the authors and are explained fully in Demery and Duck (2003). The early population figures involved a certain amount of interpolation and so the proportions appear a little smoother than they probably really are.

[29] Of course for all the pre-1936 cohorts the growth factor −1.9% rather than +1.9% has been applied. The projections shown for the 1969–1998 period ignore the estimated effects of the year dummies for those years. For the early part of this period the population proportions were only available in five-yearly groups. To construct an aggregate savings rate these proportions were then applied to the average income and consumption of each five-year age group predicted using FES-based estimates of the yearly age and cohort effects.

[30] GAD have also recently produced a 2001-based set of projections. As the ‘Very High Life Expectancy’ variant – the desired variant – was not available for the 2001-based projections, the 2000-based set of projections is used.

[31] The Principal Projection assumes a long term annual net migration of +135 000 from 2002–2003 onwards and this assumption is also used in the Very High Life Expectancy variant. The Young projection is based on a higher long-term net migration figure of +195 000 and the Old variant assumes a lower net migration figure of +75 000.

[32] The projections are annual up to 2026 and then for the individual years 2031, 2036 and 2040. The graph linearly interpolates the shares over the period 2026–2040.

[33] The NS rate is adjusted in the way described in the first subsection of Section II.

[34] Notable recent examples are Paxson (1996), Deaton and Paxson (1997) and Banks et al. (1998). The FES is considered sufficiently accurate for the analysis of consumption and savings. Atkinson and Micklewright (1983) suggest that there is little evidence of under-reporting in the income series, with the exception of investment income. Attanasio and Weber (1993) suggest that for consumption, 'under-reporting is noticeable only on alcohol, a relatively small item. Expenditure on other items is thought to be accurately recorded, thanks to the careful sampling design' (p. 633).