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Retirement Saving in the UK: a Life-Cycle Analysis

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Retirement Saving in the UK: a Life-Cycle Analysis

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Abstract

Purpose – This paper studies long term savings accumulation in the UK. We use cross-sectional information from the extensive dataset of the Family Resources Survey to compare long term saving amongst different ethnic groups with our control group, the native population. We reflect on whether different groups are more likely to suffer poverty in retirement.

Design / Methodology / Approach – In our analysis we apply the life cycle framework to explain saving profiles. This theoretical model has been used extensively in the field of economics and can be applied to empirical studies to examine changes in income and saving patterns over the life-course. The framework contends that individuals make savings decisions to smooth consumption over different phases of their life-cycle.

Findings – Our findings indicate that socio-economic factors are key elements in determining whether individuals plan for retirement, if factors are controlled for the differences in saving behaviours between ethnic minorities and the control population decrease considerably. Asian women, with good education and social standing display greater saving rates than the control group, while the socio-economic disadvantage suffered especially by Pakistani and Bangladeshi women is key to their inability to save long-term. High levels of poverty in retirement are more likely to be caused by the interaction of low levels of education, part-time work and long spells of unemployment than by ethnicity.

Originality / Value – Our important contribution to the debate on savings by ethnic minorities is the extension of the life-cycle model to specific sections of the population, to proffer new insights into their saving / dis-saving patterns, and ultimately their welfare in retirement.

JEL: J15, J16, D01

Keywords: Cultural Differences, Retirement Saving, Life Cycle

Introduction

The recent trends in welfare cuts, implemented by many western governments, often imply a shift of responsibility for retirement income onto the individual through private pensions and personal saving schemes. The importance of understanding saving behaviours across sections of the population cannot be underestimated (Tavor and Garyn-Tal, 2016) as many employers in the UK are also seeking to ameliorate the costs and risks of Defined Benefit pension schemes by replacing them with Defined Contribution schemes. The changes to public and occupational pension schemes introduced recently in the UK imply a transfer of risk and responsibility for retirement income from state and employers to individuals / employees. Further, the low private pension coverage amongst low earners is regarded to be a contributing factor to the high levels of pensioners' poverty (Barr and Diamond, 2008).

Although over the last decades many aspects of the lives of ethnic minorities in the UK have improved owing to greater integration and multiculturalism, there is extensive recent evidence that some disadvantage still exists, as poorer job opportunities, interrupted job histories, greater levels of self-employment and unemployment are more frequent amongst ethnic groups (Malveaux 1999; Clark and Drinkwater 2000; Blackaby *et al.* 2002; Cabinet Office 2003; Pensions Policy Institute 2003; Hoque and Noon, 2004, Vlachantoni *et al.* 2017). Reduced financial resources as well as cultural values and norms contribute to the disadvantage observed in long-term saving and retirement income of ethnic minorities compared with the white majority (e.g. Patrinos 1997; Bauer and Zimmermann 1997; Crossan *et al.* 2011; Lusardi and Mitchell, 2011a, 2011b; Lusardi *et al.* 2012; Seto and Bogan 2013; Feldmann 2013; Kandil 2015). Previous literature shows persistent trends of disadvantage in the labour market for minority ethnic groups, which is often perpetuated in retirement (Johnson 2004; Lewis and Lloyd-Sherlock, 2009; Börsch-Supan *et al.* 2009).

Whilst the relative position of different groups varies depending on the specific labour market indicator chosen, some broad trends can be established from the literature. Large scale social surveys show that white Britons tend to fare best on indicators such as

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3 employment rates and income, with Black Caribbean men, Indian women, and Black
4 Africans occupying intermediate positions, while those of Pakistani and Bangladeshi descent
5 exhibit the weakest labour market attachment (see Modood *et al.*, 1997; Blackaby *et al.*, 2002;
6 Lindley *et al.* 2006; Dale *et al.*, 2006; Salway *et al.*, 2007). There is also conclusive evidence
7 of significant gender effects (Bradley and Healy, 2008) and inter-group differences in the
8 labour market indicating that Pakistani and Bangladeshi women are the most likely to suffer
9 greater difficulties during their working lives as well as in retirement (Ginn and Arber, 2001).
10 In their study on Ethnicity and Gender, Bradley and Healy (2008) show that Pakistani
11 women' unemployment rate in 2004 stood at 20.2 percent, over 10 percentage points higher
12 than Pakistani men and over 16 percent more than their white counterparts.

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15 We use information on cross-sectional data from the Family Resources Survey to
16 investigate savings accumulation for different ethnic and gender groups and reflect on the
17 extent to which they are likely to suffer poverty in retirement (e.g., Guiso *et al.* 2003). The
18 study applies the life-cycle framework to provide important new empirical evidence on the
19 saving behaviour of ethnic minorities based on demographic and socio-economic
20 characteristics and compares the saving behaviour of ethnic minorities to a control group,
21 the white population. After examining the characteristics that emerge from our data we
22 provide an understanding of the social and demographic factors that affect saving profiles
23 over individuals' life course and find that socio-economic characteristics rather than ethnicity
24 itself are key factors in determining whether individuals plan adequately for retirement.

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27 The theoretical framework for our empirical analysis is the life cycle model that stems
28 from Ando and Modigliani's 1963 study and has been used extensively in the field of saving,
29 for example Alessie *et al.* (1997), Tin (1998), Banks *et al.* (1998), Jappelli (1999) (2005),
30 Russo and Gandar (2003), Smith (2006), Blau (2008) amongst others.

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33 Our first important contribution to the debate on savings by ethnic minorities is the
34 extension of the life-cycle model to specific sections of the population, to proffer new insights
35 into their saving / dis-saving patterns, and ultimately their welfare in retirement. We present
36 strong empirical evidence that the differences in saving behaviours are primarily

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3 consequences of differences in education, income and employment status. A second,
4 significant contribution is represented by the empirical analysis on ethnic minorities using a
5 wealth of information from secondary data, while, typically, in past studies, much of the
6 emphasis for accumulating data on ethnic minorities has relied on the analysis of qualitative
7 data.
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13 In accordance with the life-cycle framework, our study assumes that individuals make
14 rational and informed saving decisions by optimising wealth over their lifetime. Rationality of
15 retirement and long-term saving decisions is supported by the findings of Tavor and Garyn-
16 Tal (2016) in their recent qualitative study where they examine risk tolerance and rationality
17 in retirement decision-making. Further, Winter *et al.* (2012) also address the important
18 question of whether, in practice, individuals are more likely to use the rule of thumb rather
19 than rational behaviour in their financial decisions. They suggest that the main saving
20 considerations at the basis of the classical life-cycle model can be addressed by
21 implementing rules of thumb rather than complex financial optimisation problems without
22 great utility loss. We believe that this offers some support to the predictions offered by the
23 life-cycle model even when its assumptions are not guaranteed.
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36 To obtain a better understanding of economic diversity amongst ethnic minorities, we
37 investigate saving participation rates and amounts across the life-cycle and compare them
38 with the majority white population. We provide an in-depth analysis of how different ethnic
39 minority groups plan for retirement through personal savings and test the significance of
40 demographic and socio-economic variables in determining saving behaviours. We focus on
41 saving patterns as a function of age (by controlling for generational differences) which allows
42 us to determine specific saving profiles by ethnic background. Although we find that women
43 of Pakistani and Bangladeshi origins are still the least likely to save for retirement, primarily
44 owing to their disadvantage in terms of education, number of children and employment
45 status, we show that, once we control for socio-economic factors, ethnic groups accumulate
46 financial assets as much if not more than the control group.
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58 The paper is structured as follows: Section 2 reviews the current literature on saving
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3 behaviours; Section 3 describes the survey and data sample; section 4 discusses the
4 application of the life-cycle model; section 5 analyses the findings; section 6 concludes.
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9 **1. Previous Research**

10 The relationship between income and saving accumulation has been the focus of an
11 extensive body of literature, where the life-cycle model has often been used as theoretical
12 framework, since Modigliani and Brumberg's study was published in 1954. Empirical
13 research, however, has so far, led to mixed or inconclusive results, especially when trying to
14 explain saving patterns for low-income individuals (Sherraden and Barr, 2005; Han and
15 Sherraden, 2009). The link between income and saving levels, although important, is often
16 rendered ambiguous by the combined effects of factors such as perceived uncertainty about
17 future income, tax incentives to save and generosity of welfare. The effects of uncertainty
18 about future income on precautionary savings was recently examined by Mastrogiomo and
19 Alessie (2013), who use objective life-cycle income variations as well as subjective
20 expectations about the future to reconcile past conflicting attempts to ascertain the levels of
21 precautionary saving as proportion of total household savings.
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35 Income and savings are also strictly linked to employment status and continuity.
36 Some of the issues commonly raised when discussing ethnic minorities' status in the labour
37 market include migration, stereotyping, alienation, family formation, structure of the economy
38 and discrimination (Berthoud 2000). Berthoud's research highlights how young men from
39 ethnic minority backgrounds face employment penalties in the UK, by using data from the
40 Labour Force Survey. The age, migration history, educational qualifications and family
41 structures of men in their 20s and 30s are analysed showing the contrasts between
42 economic positions of different ethnic groups. Berthoud's findings show that for those of
43 Indian and Chinese background employment rates are similar to those of the white
44 population, while African-Caribbean, Africans, Pakistanis and Bangladeshi groups fare
45 worse in terms of full time employment.
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58 Berthoud indicates that although differences in generations may be relevant in some
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3 cases, for other ethnic groups the comparison between first and second-generation migrants
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5 does not show considerable change in fortune over the years. This is also confirmed by
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7 Blackaby *et al.* (2005), who find that young African-Caribbean men show a continuation of
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9 employment penalty; by contrast, Indian and Chinese men have managed to overcome the
10
11 ethnic penalty and improve their job prospects largely through education.
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13 A study conducted by Bradley and Healy (2008) on the effects of ethnicity and
14
15 gender in employment in the UK shows that not only employment rates amongst ethnic
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17 minorities, especially amongst Pakistani and Bangladeshi were significantly lower than
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19 average (46 and 42 percent compared to an overall rate of 76 percent) but also that women
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21 belonging to these groups fare particularly unfavourably. An interesting finding from this
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23 study is that the percentages of ethnic minority women in part-time work, although still
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25 considerably higher than men's, is slightly lower than their native counterparts. The authors
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27 suggest that this is more likely to be the result 'of discrimination rather than choice' but also
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29 that it may be affected by factors such as the lack of the 'ability of male partners to find work
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31 or cultural values', which emphasise the importance of work, especially amongst Indian and
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33 Caribbean women.
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35 With regard to the large proportions of Pakistani and Bangladeshi women excluded
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37 from formal employment (however they may be working in the family business) Salway
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39 (2006) indicates that it may be a reflexion of class and education, as shown by the low
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41 numbers of women in these groups in Higher Education (HE) or with HE qualifications.
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43 Another possible explanation can be found in the significantly high proportion of married
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45 women in these groups (especially if compared to their white counterparts), whereby, once
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47 married, many decide not to work. In their case it appears that cultural norms can work as
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49 deterrent to work outside the home, especially after marriage, this is also supported by
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51 Bradley *et al.* (2007), who find that many types of formal employment are perceived to be
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53 irreconcilable with domestic responsibilities. Inversely, education, employment and social
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55 status are deemed highly important in Indian families and cultures, which is reflected in
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57 comparatively high employment rates as well as in earnings that are more in line with the
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3 national average. Cultural background is also likely to be a key factor in the success of
4 Caribbean women, both in education and in employment. As many come from very poor
5 families, where mothers are often central / focal figures, girls of Caribbean origin are often
6 brought up to be independent and focussed on educational success as a way to achieve
7 independence and advantageous work conditions.
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13 The heterogeneity in economic performance amongst ethnic minorities in the UK has
14 also been confirmed by recent findings by Battu and Zenou (2010) as well as by Gough and
15 Adami (2013). Battu and Zenou (2010) argue that some groups have a tendency to
16 perpetuate isolation across generations and therefore affect their opportunities in terms of
17 employment. Their findings concur with Gough and Adami's, who, in their study on ethnic
18 minorities' retirement saving, show that while those of Indian and Chinese origins have
19 experienced great improvements in terms of employment, income and long term savings
20 since the 1990s, Pakistani and Bangladeshi still suffer a significant disadvantage in
21 employment which affects their ability to save for retirement. The link between the
22 discrimination suffered by some ethnic groups in the labour market and low saving for
23 pension was also examined by Ginn and Arber in 2001. One of Ginn and Arber's key
24 findings was that ethnicity and gender interact to generate a hierarchy where white men and
25 Bangladeshi women feature the highest and lowest private pension coverage respectively.
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39 Research also shows that ethnic minorities are more likely to be self-employed.
40 There are two sets of causal factors at play here, a 'push factor' whereby ethnic minorities
41 become self-employed due to labour market obstacles, for example discrimination often
42 gives rise to this rational response. The second factor is a 'pull factor' and means that living
43 in areas where many share similar cultural values provides a good environment within which
44 to flourish as a local entrepreneur by virtue of a self-sustaining economy, informal sources of
45 finance, shared religion and language, family support (Clark and Drinkwater, 2000).
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54 Kempson (1998) showed that ethnic groups are also less likely to save through
55 formal channels and investment products compared to the white population. A great deal of
56 money, for example, is channelled into informal mutual savings and insurance associations
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3 with investment in property and businesses more widespread amongst ethnic groups than
4 amongst the population as a whole.
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7 In keeping with Kempson's findings, Nesbitt and Neary (2001) find evidence of
8 alternative investments when studying older Pakistani and Bangladeshi men, who often do
9 not contribute to a private pension due to the nature of their work. Furthermore, culturally, it
10 is also deemed wise to 'invest' in one's children, where inter-generational money transfers
11 can serve as insurance for family members and flow back from adult children to their parents
12 if needed (Frankenberg *et al.* 2002). Large families and elaborate social networks are
13 perceived to be obstacles to making adequate saving for retirement through established
14 financial intermediaries, but they also represent informal safety nets that protect older family
15 members from poverty in old age. Similar interpretations are confirmed by a recent study on
16 saving patterns of ethnic minorities in Britain by Khan (2010), who finds that the proportion of
17 Asian and Black British respondents with no savings stands at over 60%, twice the rate of
18 the white British population, with savings held in a very narrow range of products. The
19 author, however, also suggests that informal saving practices are often used. These can
20 take the form of investment in family business or money transfers between family members,
21 which is part of many ethnic groups' cultural heritage, although family support obligations
22 can vary significantly across cultures (Agree *et al.* 2005).
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39 Furthermore, education and social class have been shown to affect financial
40 capability amongst ethnic groups as sometimes language or cultural barriers may limit
41 access to formal saving vehicles. Lusardi and Mitchell (2007) and Van Rooij *et al.* (2012)
42 examine extensively the importance of financial literacy on wealth. Both studies find a strong
43 and robust evidence of the positive effect that financial knowledge has on retirement
44 planning and savings. Van Rooij *et al.* explain this effect stating that financial education
45 reduces the costs incurred to access and process financial information and by doing so it
46 facilitates financial decisions on saving and retirement plans.
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55 Educational and occupational backgrounds correlate with earnings, incomes and
56 savings throughout life. Economic disadvantage during the life course is often influenced by
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3 ethnicity and gender. In the case of ethnic minorities, it has been said that 'all to a greater or
4 lesser extent are disadvantaged through an interaction between social policies and their
5 'otherness' by living in a foreign country' (Warnes *et al.*, 2004).
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10 11 **2. The Family Resources Survey Data**

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13 This study uses data from the Family Resources Survey (FRS), in which we examine
14 14 waves of cross-sectional individual-year observations from 1994 to 2008. The FRS
15 provides data over a longer timeframe than the English Longitudinal Study of Ageing (ELSA)
16 and more relevant detail on ethnicity and pensions than other datasets such as the British
17 Households Panel Survey (BHPS) and the Labour Force Survey (LFS). The FRS is an
18 extensive, nationally representative, annual dataset that includes detailed financial and
19 demographic data for a large sample of people resident in the UK. The survey is designed to
20 provide information about living standards and the effectiveness of the social security system
21 and is produced by the Department for Work and Pensions (DWP). It uses a two-stage
22 stratified random sample drawn from the small users' Postcode Address File (PAF). Adults
23 aged 16 and above are interviewed each year. The sample size increased over the years
24 from 25,000 households in 1997 to 44,734 in 2008, with an overall response rate ranging
25 between 58% in 2008 and 69% in 1994 (FRS, 2011)¹.
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40 In order to obtain reliable results on people of ethnic background we combine
41 observations for adults aged 16 and above for the years 1994 to 2008. Our initial sample
42 consists of 653,188 individuals, with over 4 per cent of the overall sample being represented
43 by ethnic minority respondents - 47 per cent of respondents in our sample are men
44 (306,890) and 53 per cent are women (346,298). The method of combining independent
45 cross-sectional data is used to obtain larger samples (Jappelli, 1999; Ginn and Arber, 2001)
46 and is particularly useful when studying minority groups. A low response rate to the FRS
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55 ¹ FRS Technical Reports, <http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=9267> accessed
56 July 2011.
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3 among ethnic minorities could tend to underestimate the extent of disadvantage in
4 employment and private saving among these groups.
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7 The FRS is an important source of demographic and socio-economic data. For the
8 purpose of this study the sample is initially broken down by ethnicity, age, gender and
9 employment. We arrange respondents into nine ethnic groups: Indian, Pakistani,
10 Bangladeshi, Chinese, Black Caribbean, Black African, Any Other Asian, Any Other Black
11 and the control group, the white population. The age cohorts are 16-24, 25-34, 35-44, 45-54,
12 55-64 and 65+. The sample is also divided according to employment status, which includes
13 those in 'full time employment', 'full time self-employment', 'part-time employment',
14 'unemployed' and 'not working for other reasons'. The self-employed classification relates to
15 the legal or 'business' perspective of employment. Individuals in the FRS are asked to
16 classify themselves as self-employed using the question, 'Are you working as an employee
17 or self-employed (including Business Start-Up)'. The FRS includes information on earnings
18 for all respondents, whether they classify themselves as employed or self-employed.
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31 Table 1 shows our sample according to age, gender, ethnic background and
32 employment.
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37 [Insert Table 1 here]
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41 White men show the highest percentages of those in full time employment across all
42 ages except those aged above 55. High percentages of men in full time employment are
43 also found amongst respondents of Indian and Chinese origins, while Pakistani and
44 Bangladeshi men feature the lowest full time employment rates and the highest percentages
45 of part timers across all age cohorts. Pakistani men also show the highest proportions of
46 self-employed (up to the age of 54). The consequences of this apparent disadvantage
47 experienced by some ethnic groups in the labour market place are crucial in terms of
48 tendency and ability to save for the future. Our data indicates that potentially a higher
49 proportion of white men have access to private saving schemes throughout their working life.
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3 The higher proportions of those in work after the age of 55 amongst ethnic minorities could
4 be at least partially explained by the necessity rather than the choice to work longer.
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7 The results for women show less heterogeneity. Many women belonging to ethnic
8 minorities are in employment across most age groups. The high percentage of women in full
9 time or part time employment reflects the important changes that have occurred in the UK
10 labour market in the last two decades (Ginn and Arber, 2001). The proportions of those in
11 part time employment, self-employed and not in work, however, are significantly higher
12 amongst Pakistani and Bangladeshi women, who also feature the lowest full time
13 employment rates.
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21 These preliminary results are consistent with Berthoud's (2000) and suggest that
22 Pakistani and Bangladeshi men and women are more likely to be in part time employment,
23 self-employed and experience interrupted work histories. The disadvantage they experience
24 in the workplace may increase the probability of experiencing poverty in retirement or
25 achieving adequate pension entitlements, owing to reduced access to private pension
26 schemes.
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35 **3. Method**

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37 Changes in income and saving patterns over the life-course, including retirement,
38 have been documented in a number of studies (Browning and Lusardi, 1996; Alessie *et al.*,
39 1997; Banks *et al.* 1998). The life-cycle theory has its roots in the early papers of Modigliani
40 and Brumberg (1954) and Friedman (1957) and has since been applied by economists to
41 explain the inter-temporal allocation of financial resources across individuals' life-span
42 (Browning and Crossley, 2001). It contends that agents (individuals or households) make
43 savings decisions in order to smooth consumption over different phases of their life-cycle.
44 Different models stemming from this conceptual framework have been tested empirically so
45 far. Within the realm of saving – wealth accumulation over the life course in the UK, Banks *et al.*
46 (1998) apply the life-cycle model to study how households de-cumulate wealth around
47 retirement, while Browning and Crossley (2001) test patterns of income and consumption for
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3 households using the Family Expenditure Survey. Chetty *et al.* (2014) have also recently
4 used the neoclassical life-cycle model to support the findings of their study on retirement
5 saving decisions in Denmark.
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9 We apply the life-cycle framework to explain saving profiles of ethnic minorities. The
10 importance of our analysis lies in the evaluation of whether ethnic minorities are more likely
11 than the rest of the population to be at risk of poverty once in retirement. We examine their
12 saving participation rates and values saved throughout their life. The use of cross-sectional
13 data raises the issue that the individuals interviewed at any point in time belong to different
14 generations for which characteristics such as mortality rates, pension policies, productivity
15 and saving rates may differ. This makes it hard to determine whether declines in saving
16 rates in older respondents are a consequence of lower productivity or whether they are part
17 of the dis-saving behaviour advocated by the life-cycle. To control for cohort effects we use a
18 time series of cross sections (see Jappelli, 1999). With this method, cohorts can be tracked
19 over time and therefore controlled.
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31 We specify the saving participation ratio over the life course, with a dependent
32 dummy variable (the probability to save) that can only take one of two possible values, 1 if
33 the respondent saves an amount greater than zero, 0 otherwise. The probability to save is
34 specified as a function of a polynomial in age, a matrix of socio-economic variables, such as
35 total income (in linear and quadratic terms), employment² and education³; a cohort
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44 ² For the purpose of the regression analysis we re-code employment status into three dummy
45 variables: Full Time employment ($x = 1$ if employed or self-employed full time, $x = 0$ otherwise); Part
46 Time employment ($x = 1$ if employed or self-employed part time, $x = 0$ otherwise) and Not in
47 Employment ($x = 1$ if unemployed, $x = 0$ otherwise).
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51 ³ We use dummy variables to code Education and divide our sample into those with Low Education
52 and those with High Education background. Using FRS data we classify as Low Education School
53 and sandwich course certificates. High Education is defined as university or college degrees,
54 qualification in nursing or similar, open college courses, open-university, correspondence course, any
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3 polynomial specified by the respondent's year of birth⁴, and a set of fixed time effects. To
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5 further enhance the robustness of our model we another three independent dummy
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7 variables, found to be significant in explaining saving behaviour in previous studies, these
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9 are whether the respondent has children, marital status and social class.

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11 In our second regression the dependent variable is the logarithm of total private
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13 savings (the sum of an individual's financial assets) and, for each respondent, is a function
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15 of the same factors used in our first regression. The data on savings for some ethnic groups
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17 is not available until 2000, so while the descriptive statistics are shown for all groups initially
18
19 considered, the regression analysis is restricted to those groups for which we have full
20
21 coverage over the timeframe 1994 - 2008⁵. We run the first regression on savers and non-
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23 savers, while the second regression is run only on the sample of savers, defined as those
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25 respondents with at least one type of savings amongst basic accounts, national savings,
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27 saving for retirement and investments in any given year. We run two separate sets of
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29 regressions for men and women.

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31 Only the results obtained from regressions where the coefficients are significant are
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33 reported here, results on full sample are also available on request. The following ethnic
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35 minority groups were excluded owing to insufficient number of observations on private
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37 savings: Any Other Asian, Black Caribbean, Black African, Any Other Black and Chinese.

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39 Table 2 reports summary statistics on age, year of birth and total weekly income of
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41 our sample of savers.

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49 other course.

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52 ⁴ For the 'Year of Birth' variable the year of birth of the oldest respondent in the sample is taken as
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54 value of reference.

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56 ⁵ The ethnic groups on which we run the regressions are: Indian, Pakistani, Bangladeshi and the
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58 control group.

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5 The age variable is expressed as deviations from 50, while the year of birth is
6 expressed as deviations from 1890, the year of birth of the oldest respondent in our sample
7 (please see Jappelli, 1999). The average and median age is far lower for respondents of
8 ethnic origins than for the white population, with Pakistani men and Indian women being the
9 youngest in the sample. This may reveal an age bias and can be explained partially by
10 greater longevity of the white population but also, importantly, by the tendency of some
11 groups to move back to their country of origin after retirement.
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19 Respondents belonging to the control group show higher levels of income than ethnic
20 minority groups (£329 and £249 per week, average and median values respectively for white
21 men and £170 and £128 per week average and median values for white women). Mean
22 income values of ethnic respondents range between £276, £279 and £297 per week for
23 Pakistani, Indian and Bangladeshi men respectively, while median incomes are £194, £191
24 and £215 for the same groups. For women average weekly incomes vary between £129,
25 £148 and £162 for Indian, Pakistani and Bangladeshi respectively, with much lower median
26 values of £77, £96 and £126 for the same groups.
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37 4. Results

38 The results of the first regression are illustrated in Tables 3 and 4 and show how
39 saving participation ratios change over the life course for men and women separately⁶.
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45 [Insert Table 3 here]
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49 [Insert Table 4 here]
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55 ⁶ The same regression was also run for each saving type independently but these results are not
56 reported here for brevity, however they are available upon request.
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3 Tables 3 and 4 show a double set of results; in columns (1), (4), (7) and (10) we
4 regress the probability to save on a fifth order age polynomial, without the socio-
5 demographic controls, this represents the life-cycle model, while in columns (2), (5), (8) and
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7 (11) we run the regression including socio-economic control variables used in Jappelli (1999)
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9 as well as in Ginn and Arber (2001). Lastly, columns (3), (6), (9) and (12) include further
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11 control variables that were found to be significant determinants of saving and investments by
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13 Becker and Dimpfl (2016), Bertocchi *et al.* (2011) as well as Guiso *et al.* (2004). The number
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15 of children, marital status and social class were therefore added to improve the robustness
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17 of our initial model. The inclusion of the first set of socio-economic variables in our
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19 regression shows that full time work has a crucial effect on the likelihood to save across all
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21 groups. Although Bangladeshi men are less likely to be in full time work than other ethnic
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23 groups, those who are, display an increase of 17% in the probability to save, compared to
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25 16% for the control group. The effect of full time employment on the likelihood to save is
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27 positive but weaker for Indian men at 7.3%. For Pakistani men and women the results are
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29 not statistically significant. Results for female respondents are similar, for all ethnic groups,
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31 with the likelihood to save amongst those in full time employment being far greater than
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33 when working part-time, especially for white and Indian women, 15.4% and 13.2%
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35 respectively, and nearly 8% for Bangladeshi women. It is important to note that overall
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37 Bangladeshi women show a greater disadvantage in the work environment, with a very low
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39 participation ratio in full time employment throughout their life course thus affecting their
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41 saving participation rates. However the results so far show that full time employment is a key
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43 factor in explaining the decision to save across all groups examined.
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48 Education has a noticeable effect on saving participation ratios. The coefficient for
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50 the dummy 'High Education' is positive and significant for all groups. Interestingly, high
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52 levels of education have a considerably greater impact on saving rates amongst ethnic
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54 groups than within the control group, for both the male and female samples. Specifically,
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56 Pakistani men and Bangladeshi women display higher correlation between education and
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58 saving rates. This can be explained, to some extent, by a greater awareness that
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3 respondents from these groups may hold of financial difficulties that can be caused by low
4 education⁷.
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7 The analysis on income shows that coefficients are statistically significant only for the
8 control group, for both the male and female samples. The negative sign of the income
9 coefficients and the positive sign of the squared income indicate a hump-shaped income
10 curve, implying that those in the middle income levels save the most.
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14 Our enhanced model shows that for the male sample, number of children is
15 significant only for the white group, for which an additional child in the family reduces the
16 probability to save by nearly 6%, while for the same group belonging to high social class has
17 a positive, significant effect on the probability to save of 6.5% and by a similar extent (6.6%)
18 on Bangladeshi men. The number of children is a significant determinant of saving for white
19 women, who see their probability to save reduce by nearly 5% (4.8%) for each additional
20 child in the family. Being single has an important negative effect on saving for white (-5%)
21 and, even more so, for Pakistani (-14%) women. This large negative effect can be explained
22 with the additional costs of living that individuals must sustain when living on their own,
23 which, in the case of Pakistani women is amplified by the greater proportions of those in part
24 time and low paid work. Social class has a very powerful positive effect on most ethnic
25 female groups except Bangladeshi (for which is not significant), with a coefficient
26 representing respectively an increase of nearly 24% and over 12% in the probability to save
27 if belonging to a high social class for Indian and Pakistani women, compared to nearly 7%
28 for the control group. These results reveal the highly significant explanatory power of
29 ethnicity with gender and social class in the analysis of long term saving. The findings from
30 our extended model also support the importance of employment and education for all groups
31 examined.
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51 In Figures 1a and 1b we plot the results for men and women to show the saving
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55 ⁷ The results presented here may also be affected by an unquantifiable bias due to a greater number
56 of educated respondents amongst some ethnic groups.
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3 participation ratios of ethnic groups over their life course.
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7 [Insert Figure 1a here]
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11 [Insert Figure 1b here]
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15 The data shows that when we control for socio-economic factors, Pakistani men
16 display the highest propensity to save over their life course, although it declines sharply early
17 in life (at the age of 30) and levels off after retirement. High self-employment rates, large
18 families and alternative saving vehicles can help explain the saving patterns of Pakistani
19 men. The saving participation ratio for Indian men is lower than that of the control group but
20 follows a similar trend with both groups showing the highest probability to save between the
21 ages of 35 and 50. The data shows that Indian men tend to experience a small increase in
22 their saving participation ratio in later life, which cannot be explained by the life-cycle theory.
23 This in part could be based on the realisation that they are living longer and therefore they
24 need to make provisions for an extended old age. Bangladeshi men, like Pakistanis, display
25 a higher propensity to save up to the age of 35, after which their saving participation declines
26 and, by the age of 65, becomes the lowest amongst the ethnic groups examined. This may
27 be explained with their higher propensity in investing in a family business, property or in their
28 children's education.
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43 Figure 1b indicates that, controlling for socio-economic status, the saving
44 participation ratios for Pakistani⁸ women are similar to those of the control group. Indian
45 women also follow a similar pattern, although their likelihood to save over their life is
46 constantly lower than for the control group. With the exception of Bangladeshi women,
47 saving participation rates remain constant over time, however while women in the control
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55 ⁸ The graph for Pakistani and Indian women stops at the age of 70 due to the small number of
56 observations after that age
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3 group are most likely to save between the age of 30 and 45, Indian and Pakistani women's
4 propensity to save increases even in their later years. This concurs with the general
5 sentiment especially amongst the middle-aged female population, who have been unable to
6 save enough during their working life, and therefore have a greater need to save for
7 retirement later in life. Bangladeshi women show rapidly declining saving participation ratios,
8 especially after the age of 40. The disadvantage they experience in the workplace, with low
9 probability of being in full time employment, together with larger families, affects their
10 propensity and ability to save throughout their life.

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Next we examine the levels of saving, using separate equations for males and females. The results are shown in tables 5 and 6.

[Insert Table 5 here]

[Insert Table 6 here]

The outcomes of the basic regression on the age polynomial are displayed in columns (1), (4), (7) and (10), the results of a regression where an initial set of socio-economic control variables are added are shown in columns (2), (5), (8) and (11) while the results of an enhanced regression model including additional control variables are displayed in columns (3), (6), (9) and (12).

Results show that education is a key positive determinant of the levels of saving but only for the control group. The number of children has again significant explanatory power for saving levels, where the high negative values of the coefficients show the very large impact of this variable on the amounts saved by women of all ethnicities, but especially by Indian and Bangladeshi women.

Education is statistically significant only for the control group and indicates that higher education increases saving accumulation by 8.3 per cent. Although the coefficient is not significant, the regression indicates a positive effect on saving accumulation amongst

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3 ethnic minority men. The results remain unchanged when using the enhanced model with
4 added socio-economic variables. This is not surprising, especially within younger
5 generations, as they are more likely to come from disadvantaged backgrounds than the
6 control group and may have had some experience of financial difficulty and hence more
7 prone to saving. Cultural attitudes to savings along with an emphasis on higher education
8 therefore might help explain why educated Asian men show higher saving levels. It should
9 be noted, however, that the percentages of those with higher levels of education and full
10 time employment are quite low, particularly among Bangladeshis and Pakistanis. None of
11 the coefficients on employment status are statistically significant.

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21 The data on women indicates that for all ethnic groups, including the control group,
22 income levels have a significant and positive effect on how much people save. The income
23 coefficients are positive across all groups, but for ethnic minority women (Indian, Pakistani
24 and Bangladeshi), the income levels are a greater determinant of their savings. The data
25 reveals that Asian women save more than white women on similar income levels. The
26 coefficients on employment status are not statistically significant for any of the ethnic groups
27 examined, while education is statistically significant only for the control group, increasing
28 their saving accumulation by 36.8 percent. Being single has a strong significant and positive
29 effect on saving levels for both men and women of all ethnicities, which indicates that
30 amongst those who do save, individuals who are not married are able and willing to save the
31 most. Social class, is a significant and positive determinant of how much individuals save, its
32 effect is strongest for Pakistani men and Bangladeshi women. This may be due to
33 specificities within these cultures, whereby those of Asian origins may have been raised in
34 environments where saving for their children and extended family is perceived to be a moral
35 duty whenever possible.

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52 Figures 2a and 2b illustrate the saving profiles for ethnic groups plotted against age,
53 for men and women separately.

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58 [Insert Figure 2a here]

[Insert Figure 2b here]

The coefficients for the age polynomial indicate that for Indian men the saving pattern follows the hump-shaped curve typical of the life-cycle model, with the accumulation of saving reaching the highest values between the ages of 45 and 50. The data shows a steep fall in the amounts saved by Indian men after 50 and especially around the normal retirement age of 65. This is in line with the theoretical framework of the life-cycle but it markedly indicates the exposure to a fast saving de-cumulation which can lead to poverty owing to inadequate retirement provisions made during the working life. Pakistani⁹ men display higher savings in the early stages of their life followed by considerable dis-saving around the age of 55. This can be attributed, at least in part, to investment into a family business or self-employment, marriage and children. The saving profile of Bangladeshi men shows a stable upward trend over the life course. The steady increase in savings in later years could be a consequence of high self-employment rates and cultural factors, for example building up financial wealth to pass on to their children.

The saving profiles of women indicate that ethnic minorities tend to have lower saving ratios than the control group over their whole life cycle. Saving accumulation for Indian women remains stable in their young age before declining relatively early in life, with a large drop in savings around the age of 45 and negative saving accumulation after the age of 55. For Bangladeshi women savings decline slowly but steadily over their life course, while Pakistani women display stable saving accumulation ratios over their working lives and beyond. The low but stable levels of savings amongst Bangladeshi and Pakistani women may result from the higher probability of being in part-time jobs¹⁰. The abrupt decline in

⁹ The graph for Pakistani men stops at the age of 70, owing to the small number of observations after that age.

¹⁰ Some results for Pakistani and Bangladeshi women are not statistically significant, therefore their

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3 saving accumulation experienced by Indian women early in life could be attributed to the
4 sharp reduction in their employment rates after the age of 50. This can be attributed to the
5 widespread trend, amongst Asian women, of retiring early to look after grandchildren or
6 other members of their extended family.
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10 11 12 13 **5. Conclusions**

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15 We examine life-long saving arrangements in the UK by applying the life-cycle
16 framework. Our empirical analysis adds an important dimension to the debate on long-term
17 saving by testing for the effects of socio-economic factors on saving decisions of ethnic
18 groups during different phases of their life. By merging consecutive waves of the Family
19 Resource Survey, we were able to obtain a dataset rich with information on ethnic minorities
20 and so overcome the issue of small samples.
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27 We show that employment, educational background, income and social class are
28 significant factors in determining how individuals plan and prepare for retirement. The
29 disadvantage in terms of employment suffered by some ethnic groups is instrumental to their
30 inability to save on a long-term basis. Particularly, the disadvantage suffered in the
31 workplace by Pakistani and Bangladeshi women is still very high, however our findings also
32 show that women belonging to Asian ethnic groups, with good education and social standing
33 display greater saving rates than the control group.
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41 Importantly, the differences between ethnic minorities and the white population
42 decrease significantly once we control for variables that are highly correlated to the
43 probability of saving, such as employment status, education, number of children, marital
44 status and social class. These results are at odds with the perceived cultural barriers and
45 inter-generational support which have been advocated to explain lower savings in the past
46 and may be instrumental in explaining higher levels of poverty in old age amongst some
47 ethnic groups. In other words high levels of poverty in old age are more likely to be caused
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57 statistical analysis remains somewhat limited.
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3 by the interaction of factors such as low levels of education, high proportions of part time
4 work and unemployment as well as high number of children which are more often, but not
5 exclusively, associated with some ethnic groups.
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9 Our life-cycle analysis shows that white men tend to accumulate savings more
10 smoothly over their life than most ethnic men, particularly Pakistani, for whom saving de-
11 cumulation starts very early in life. The hump-shaped curve of saving accumulation
12 displayed by Indian men is in agreement with the life-cycle model, but also shows evidence
13 of the high risks of falling into poverty around and after retirement age when dis-saving
14 becomes significant.
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21 We find strong empirical evidence that ethnic women are less likely to save than their
22 white counterparts and display trends of substantial saving de-cumulation very early in life,
23 particularly, the lack of long-term savings shown by women of Bangladeshi and Pakistani
24 origins is of concern. This appears to stem from the financial disadvantage they experience
25 during their working lives and is likely to lead them into poverty after retirement. These
26 results are in line with previous studies (Ginn and Arber, 2001; Blackaby *et al.*, 2005),
27 reinforcing the significance of the link between the disadvantage experienced in terms of
28 education and employment by specific groups and lower levels of long-term savings.
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37 Private savings are becoming an increasingly important source of retirement income
38 and our research indicates that, in the UK, there are still differences in saving levels between
39 the white majority and ethnic groups. The financial disadvantage that starts with the
40 employment status is an issue that affects those of Pakistani and Bangladeshi origins more
41 than others and is likely to be perpetuated and exacerbated in the years to come unless
42 adequately addressed. Although most ethnic groups show a positive propensity towards
43 saving at the start of their working lives, overall, our research shows that the culmination of a
44 life-long disadvantage has a significant effect on their ability to save long-term and closer to
45 retirement.
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Table 1. Sample according to age, gender, ethnic background, employment status (%).

		WHITE	Indian	Pakistani	Bangladeshi	AO Asian	Black Caribbean	Black African	AO Black	Chinese	All
MEN	N	296,282	3,073	1,823	2,168	700	1,276	1,058	86	424	306,890
Age 16 to 24	FT Self Employed	3.0%	0.7%	1.2%	0.6%	1.4%	0.7%	0.0%	0.0%	0.0%	2.9%
	FT Employed	56.8%	33.3%	24.1%	27.6%	21.1%	33.1%	17.9%	14.3%	16.0%	55.2%
	PT or Self Employed	9.6%	17.6%	20.4%	13.3%	22.5%	14.1%	20.1%	0.0%	17.9%	10.0%
	Unemployed	15.1%	12.1%	11.1%	17.1%	12.7%	20.4%	18.7%	28.6%	5.7%	15.0%
	Not Working for AOR	15.5%	36.3%	43.2%	41.4%	42.3%	31.7%	43.3%	57.1%	60.4%	16.9%
	N	28,269	421	324	362	71	142	134	7	106	29,836
Age 25 to 34	FT Self Employed	8.6%	6.7%	14.2%	6.9%	6.9%	4.3%	2.7%	7.7%	8.4%	8.5%
	FT Employed	73.3%	68.3%	46.0%	43.9%	53.7%	59.7%	55.8%	65.4%	55.1%	72.4%
	PT or Self Employed	4.1%	10.0%	17.3%	13.2%	12.4%	5.9%	15.0%	3.8%	12.1%	4.6%
	Unemployed	6.8%	6.3%	9.6%	16.1%	6.4%	12.9%	9.2%	0.0%	5.6%	6.9%
	Not Working for AOR	7.2%	8.7%	13.1%	19.8%	20.6%	17.2%	17.3%	23.1%	18.7%	7.6%
	N	50,245	760	544	620	218	186	294	26	107	53,000
Age 35 to 44	FT Self Employed	11.8%	13.2%	21.7%	10.0%	10.8%	8.3%	10.4%	0.0%	12.2%	11.9%
	FT Employed	71.2%	61.7%	44.8%	49.9%	56.2%	65.6%	56.1%	61.3%	68.9%	70.5%
	PT or Self Employed	4.1%	10.7%	13.7%	13.2%	13.5%	3.9%	8.6%	19.4%	10.0%	4.4%
	Unemployed	4.7%	5.8%	8.7%	10.5%	4.3%	9.2%	11.0%	9.7%	1.1%	4.8%
	Not Working for AOR	8.2%	8.5%	11.1%	16.4%	15.1%	13.1%	13.9%	9.7%	7.8%	8.4%
	N	56,917	726	415	561	185	360	374	31	90	59,659
Age 45 to 54	FT Self Employed	12.9%	17.1%	24.1%	12.9%	14.2%	10.6%	9.1%	18.2%	30.9%	13.0%
	FT Employed	64.6%	52.7%	31.1%	49.1%	55.1%	62.8%	63.6%	54.5%	47.1%	64.1%
	PT or Self Employed	5.1%	5.6%	15.6%	8.8%	6.3%	4.4%	6.7%	0.0%	4.4%	5.2%
	Unemployed	4.6%	6.0%	8.6%	7.9%	7.9%	8.9%	7.3%	18.2%	2.9%	4.6%
	Not Working for AOR	12.9%	18.5%	20.6%	21.4%	16.5%	13.3%	13.3%	9.1%	14.7%	13.0%
	N	52,525	514	257	318	127	180	165	11	68	54,165
Age 55 to 64	FT Self Employed	9.8%	12.5%	8.6%	5.3%	7.0%	10.6%	6.0%	0.0%	10.3%	9.8%
	FT Employed	38.8%	30.1%	15.7%	31.2%	54.4%	40.4%	52.0%	0.0%	41.4%	38.7%
	PT or Self Employed	8.5%	5.8%	10.0%	8.8%	8.8%	4.3%	6.0%	0.0%	10.3%	8.5%
	Unemployed	4.1%	4.6%	12.1%	5.9%	1.8%	4.3%	8.0%	25.0%	13.8%	4.1%
	Not Working for AOR	38.8%	47.1%	53.6%	48.8%	28.1%	40.4%	28.0%	75.0%	24.1%	38.9%
	N	46,219	329	140	170	57	141	50	4	29	47,139

Table 1 - Continued

		WHITE	Indian	Pakistani	Bangladeshi	AO Asian	Black Caribbean	Black African	AO Black	Chinese	All
WOMEN	N	333,974	3,223	1,995	2,543	872	1,665	1,357	123	546	346,298
Age 16 to 24	FT Self Employed	0.6%	0.4%	0.6%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%	0.6%
	FT Employed	44.4%	26.6%	14.9%	18.6%	21.6%	22.0%	16.1%	23.8%	12.4%	42.9%
	PT or Self Employed	16.4%	14.7%	11.3%	15.8%	16.5%	23.2%	17.7%	28.6%	15.2%	16.4%
	Unemployed	8.7%	8.0%	8.3%	15.8%	5.2%	10.4%	7.0%	4.8%	8.6%	8.8%
	Not Working for AOR	29.9%	50.2%	65.0%	49.8%	56.7%	43.9%	59.1%	42.9%	63.8%	31.3%
	N	30,288	462	363	442	97	164	186	21	105	32,128
Age 25 to 34	FT Self Employed	2.0%	1.3%	1.8%	0.8%	0.7%	0.7%	0.9%	0.0%	4.7%	1.9%
	FT Employed	42.3%	38.0%	18.7%	24.0%	39.4%	41.3%	32.8%	45.2%	41.2%	41.6%
	PT or Self Employed	22.1%	13.2%	11.8%	12.9%	13.5%	21.0%	15.7%	12.9%	14.9%	21.6%
	Unemployed	4.2%	5.1%	4.0%	6.8%	3.8%	5.0%	4.8%	6.5%	0.7%	4.3%
	Not Working for AOR	29.5%	42.5%	63.7%	55.5%	42.6%	32.0%	45.9%	35.5%	38.5%	30.6%
	N	57,871	871	619	782	289	300	458	31	148	61,369
Age 35 to 44	FT Self Employed	2.6%	2.1%	2.2%	3.5%	3.2%	1.2%	1.9%	0.0%	4.1%	2.6%
	FT Employed	36.9%	33.1%	14.8%	28.1%	29.7%	51.3%	38.5%	42.5%	31.4%	36.7%
	PT or Self Employed	32.0%	20.4%	13.3%	13.5%	23.3%	22.7%	15.2%	17.5%	17.4%	31.3%
	Unemployed	3.2%	2.9%	1.7%	5.0%	3.7%	3.4%	4.3%	7.5%	2.5%	3.3%
	Not Working for AOR	25.3%	41.6%	67.9%	50.0%	40.2%	21.3%	40.1%	32.5%	44.6%	26.1%
	N	62,282	722	458	606	219	497	421	40	121	65,366
Age 45 to 54	FT Self Employed	3.1%	3.3%	4.1%	1.2%	2.2%	1.9%	3.4%	5.9%	9.4%	3.1%
	FT Employed	40.4%	32.2%	15.2%	34.3%	50.4%	47.3%	55.1%	52.9%	41.7%	40.3%
	PT or Self Employed	28.5%	21.5%	11.5%	12.2%	20.0%	20.5%	18.2%	11.8%	19.8%	28.1%
	Unemployed	2.6%	2.3%	4.7%	6.4%	2.2%	5.7%	3.4%	5.9%	4.2%	2.7%
	Not Working for AOR	25.4%	40.6%	64.5%	45.9%	25.2%	24.6%	19.9%	23.5%	25.0%	25.9%
	N	55,128	512	296	344	135	264	176	17	96	56,968
Age 55 to 64	FT Self Employed	1.7%	0.9%	0.7%	0.5%	4.1%	1.1%	0.0%	0.0%	5.1%	1.6%
	FT Employed	17.4%	15.6%	3.0%	19.3%	24.7%	20.9%	36.0%	10.0%	25.6%	17.4%
	PT or Self Employed	20.5%	9.1%	6.0%	7.9%	21.9%	13.2%	10.7%	0.0%	15.4%	20.3%
	Unemployed	1.2%	2.1%	1.5%	2.0%	2.7%	1.1%	1.3%	0.0%	5.1%	1.2%
	Not Working for AOR	59.2%	72.3%	88.8%	70.3%	46.6%	63.7%	52.0%	90.0%	48.7%	59.4%
	N	49,396	339	134	202	73	182	75	10	39	50,450

Source: Family Resources Surveys 1994–2008 (authors' analysis)

Table 2. Summary statistics of savers

		MALE		FEMALE	
		Mean	Median	Mean	Median
WHITE	AGE	-2.7	-4.0	-1.5	-3.0
	YEAR-OF-BIRTH	60.6	62.0	59.4	61.0
	TOTAL INCOME	328.8	249.0	170.4	128.0
Indian	AGE	-8.88	-12.00	-11.72	-15.00
	YEAR-OF-BIRTH	68.41	72.00	71.32	74.00
	TOTAL INCOME	279.18	190.50	128.95	76.50
Pakistani	AGE	-11.72	-14.00	-11.51	-14.00
	YEAR-OF-BIRTH	70.73	73.00	70.40	72.00
	TOTAL INCOME	275.96	194.00	147.61	96.00
Bangladeshi	AGE	-11.18	-13.00	-11.19	-14.00
	YEAR-OF-BIRTH	69.01	72.00	69.10	72.00
	TOTAL INCOME	297.26	215.00	162.35	126.00

Source: Family Resources Surveys 1994–2008 (authors' analysis)

Table 3. Regression results on the likelihood to save, male sample.

Dependent Variable Independent Variables	WHITE		Indian		Pakistani		Bangladeshi					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AGE	0.001 (0.75)	-0.000 (-0.17)	-0.002** (-1.96)	-0.000 (-0.05)	-0.015 (-1.31)	-0.015 (-1.29)	-0.006 (-0.28)	-0.005 (-0.21)	-0.005 (-0.20)	-0.002 (-0.19)	-0.014 (-1.33)	-0.017 (-1.59)
AGE^2	-0.000*** (-6.91)	0.000 (1.50)	0.000 (1.36)	-0.000 (-1.24)	-0.000 (-1.13)	-0.000 (-1.11)	-0.000 (-0.34)	0.000 (0.17)	0.000 (0.31)	-0.001*** (-2.62)	-0.000 (-0.97)	-0.000 (-1.05)
AGE^3	0.000*** (7.93)	0.000*** (5.95)	0.000*** (5.58)	0.000 (1.20)	0.000* (1.66)	0.000* (1.65)	-0.000 (-1.52)	-0.000** (-2.10)	-0.000** (-2.13)	-0.000 (-1.10)	-0.000 (-0.53)	-0.000 (-0.54)
AGE^4	-0.000 (-1.54)	-0.000*** (-5.30)	-0.000*** (-4.32)	0.000 (1.24)	0.000 (1.38)	0.000 (1.21)	0.000 (1.25)	0.000 (0.89)	0.000 (0.77)	0.000* (1.87)	0.000 (0.60)	0.000 (0.69)
AGE^5	-0.000*** (-3.51)	-0.000*** (-3.47)	-0.000*** (-3.62)	-0.000 (-0.75)	-0.000 (-0.84)	-0.000 (-0.83)	0.000*** (2.60)	0.000*** (2.73)	0.000*** (2.74)	0.000 (1.61)	0.000 (0.52)	0.000 (0.52)
TOTAL INCOME		-0.000*** (-6.11)	-0.000*** (-7.82)		-0.000 (-0.32)	-0.000 (-0.31)		0.000 (0.82)	0.000 (0.80)		-0.000 (-0.52)	-0.000 (-1.08)
TOTAL INCOME^2		0.000*** (5.80)	0.000*** (7.87)		-0.000 (-0.31)	-0.000 (-0.32)		-0.000 (-1.47)	-0.000 (-1.40)		-0.000 (-0.10)	0.000 (0.44)
FT EMPLOYED		0.160*** (60.71)	0.134*** (45.79)		0.073** (2.46)	0.070** (2.24)		0.060 (1.24)	0.071 (1.31)		0.170*** (8.02)	0.143*** (5.83)
PT EMPLOYED		0.049*** (9.77)	0.025*** (4.92)		-0.009 (-0.27)	-0.011 (-0.38)		-0.062 (-1.21)	-0.055 (-1.00)		0.006 (0.20)	-0.016 (-0.53)
HIGH EDUCATION		0.027*** (7.52)	0.020*** (5.47)		0.082** (2.32)	0.082** (2.31)		0.099** (2.35)	0.100** (2.35)		0.084*** (3.13)	0.078*** (2.89)
NO OF CHILDREN			-0.057*** (-3.96)			-0.060 (-1.54)			-0.052 (-1.05)			0.076 (0.55)
NOT IN A COUPLE			-0.009*** (-2.91)			0.040 (0.67)			-0.018 (-0.21)			-0.014 (-0.45)
HIGH SOCIAL CLASS			0.065*** (21.51)			0.014 (0.46)			-0.037 (-0.53)			0.066** (2.44)
Observations	179337	157679	157679	814	780	780	497	457	457	1718	1513	1513
Adjusted R-Squared	0.014	0.032	0.035	0.1	0.111	0.108	0.023	0.044	0.039	0.021	0.068	0.07

Notes: The standard errors reported in parentheses are computed using the White's heteroskedasticity estimator, ***p < 0.01, **p < 0.05, *p < 0.10. The regression includes a fifth-order polynomial in year-of-birth. The age variable is expressed in deviations from 50.

Source: Family Resources Surveys 1994–2008.

Table 4. Regression results on the likelihood to save, female sample.

Dependent Variable Independent Variables	WHITE		Indian		Pakistani			Bangladeshi				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AGE	-0.000 (-0.04)	-0.004*** (-3.32)	-0.006*** (-5.37)	0.013 (1.23)	0.008 (0.78)	0.005 (0.47)	0.003 (0.16)	-0.003 (-0.12)	-0.013 (-0.65)	-0.012 (-1.46)	-0.026*** (-2.80)	-0.027*** (-2.88)
AGE^2	-0.000*** (-6.59)	0.000*** (2.70)	0.000** (2.28)	0.000 (1.23)	0.001* (1.94)	0.001** (2.03)	0.000 (0.20)	0.000 (0.85)	0.000 (1.04)	-0.001** (-2.14)	-0.000 (-1.32)	-0.000 (-1.21)
AGE^3	0.000*** (8.86)	0.000*** (5.66)	0.000*** (5.67)	0.000 (0.59)	0.000 (0.80)	0.000 (0.80)	0.000* (1.92)	0.000 (1.42)	0.000* (1.70)	0.000 (0.97)	0.000 (1.11)	0.000 (1.09)
AGE^4	-0.000 (-1.29)	-0.000*** (-6.91)	-0.000*** (-4.46)	-0.000* (-1.82)	-0.000 (-1.37)	-0.000* (-1.89)	-0.000 (-0.33)	-0.000 (-0.43)	-0.000 (-0.08)	0.000* (1.83)	0.000 (1.20)	0.000 (1.23)
AGE^5	-0.000*** (-2.99)	-0.000 (-0.13)	-0.000 (-1.34)	-0.000 (-1.59)	-0.000 (-1.10)	-0.000 (-1.61)	-0.000 (-1.23)	-0.000 (-1.03)	-0.000 (-1.45)	-0.000 (-0.61)	-0.000 (-1.00)	-0.000 (-1.03)
TOTAL INCOME		-0.000*** (-7.51)	-0.000*** (-7.99)		-0.000 (-0.06)	0.000 (0.04)		-0.000 (-0.16)	-0.000 (-0.04)		-0.000 (-0.04)	0.000 (0.10)
TOTAL INCOME^2		0.000*** (4.78)	0.000*** (4.97)		0.000** (2.17)	0.000** (2.05)		0.000 (0.33)	0.000 (0.14)		-0.000 (-0.13)	-0.000 (-0.42)
FT EMPLOYED		0.154*** (51.75)	0.122*** (37.68)		0.132*** (2.62)	0.077 (1.41)		0.027 (0.49)	-0.033 (-0.56)		0.088*** (3.22)	0.065** (2.04)
PT EMPLOYED		0.097*** (33.93)	0.072*** (24.22)		0.106* (1.82)	0.065 (1.15)		0.060 (1.08)	0.032 (0.59)		0.093*** (3.37)	0.075** (2.53)
HIGH EDUCATION		0.046*** (10.97)	0.036*** (10.97)		0.066* (1.67)	0.062* (1.67)		0.070* (1.72)	0.071* (1.72)		0.102*** (3.71)	0.095*** (3.71)
NO OF CHILDREN			-0.048*** (-5.22)			0.059 (0.41)			0.047 (0.32)			-0.052 (-0.51)
NOT IN A COUPLE			-0.050*** (-20.10)			-0.051 (-1.50)			-0.140*** (-4.14)			-0.035 (-1.52)
HIGH SOCIAL CLASS			0.068*** (21.60)			0.238*** (2.90)			0.123** (2.08)			0.037 (1.27)
Observations	202,116	177,914	177,914	894	858	858	608	549	549	2,053	1,832	1,832
Adjusted R-Squared	0.008	0.029	0.034	0.103	0.137	0.152	0.056	0.064	0.084	0.015	0.036	0.037

Notes: The standard errors reported in parentheses are computed using the White's heteroskedasticity estimator, ***p < 0.01, **p < 0.05, *p < 0.10. The regression includes a fifth-order polynomial in year-of-birth. The age variable is expressed in deviations from 50.

Source: Family Resources Surveys 1994–2008.

Table 5. Regression results on savings, male sample.

Dependent Variable: Independent Variables	LN(1+TOTAL SAVINGS)											
	WHITE			Indian			Pakistani			Bangladeshi		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AGE	0.075*** (9.49)	0.062*** (6.34)	0.067*** (6.95)	-0.066 (-0.26)	-0.111 (-0.37)	-0.197 (-1.08)	-0.249** (-2.06)	-0.378*** (-2.75)	-0.301** (-2.36)	0.129 (1.52)	-0.011 (-0.10)	-0.002 (-0.02)
AGE^2	-0.000 (-1.18)	-0.000 (-0.05)	0.000 (0.24)	-0.018** (-2.07)	-0.020* (-1.91)	-0.016 (-1.16)	-0.023** (-2.38)	-0.028** (-2.28)	-0.025** (-2.30)	0.001 (0.17)	0.003 (0.65)	0.002 (0.59)
AGE^3	-0.000*** (-2.65)	-0.000*** (-2.83)	-0.000** (-1.97)	0.001* (1.80)	0.001 (1.61)	0.001 (1.55)	-0.001** (-2.38)	-0.001* (-1.72)	-0.000 (-1.52)	0.000** (2.01)	0.000** (2.26)	0.000** (2.26)
AGE^4	0.000 (1.41)	0.000 (1.18)	-0.000** (-2.09)	0.000 (0.06)	0.000 (0.22)	-0.000 (-0.16)	0.000** (2.30)	0.000** (2.53)	0.000** (2.35)	-0.000 (-0.44)	-0.000 (-1.29)	-0.000 (-1.25)
AGE^5	0.000 (0.93)	0.000 (0.87)	0.000** (2.01)	-0.000 (-1.44)	-0.000 (-0.82)	-0.000 (-1.12)	0.000** (2.46)	0.000** (2.62)	0.000** (2.43)	-0.000** (-2.17)	-0.000*** (-2.77)	-0.000** (-2.50)
TOTAL INCOME		0.000*** (8.65)	0.000*** (8.76)		0.002 (0.94)	0.003 (1.07)		0.001 (0.33)	0.002 (1.00)		0.002** (2.18)	0.002** (2.08)
TOTAL INCOME^2		-0.000*** (-7.20)	-0.000*** (-7.28)		-0.000* (-1.81)	-0.000* (-1.96)		-0.000 (-0.22)	-0.000 (-0.66)		-0.000* (-1.96)	-0.000* (-1.93)
FT EMPLOYED		-0.175 (-0.78)	-0.160 (-0.84)		-0.040 (-0.07)	-0.022 (-0.04)		-0.359 (-1.14)	0.307 (0.88)		-0.780 (-1.14)	-0.786 (-1.07)
PT EMPLOYED		-0.023 (-0.45)	-0.037 (-0.74)		0.683 (0.94)	0.906 (1.20)		-0.045 (-0.08)	-0.007 (-0.01)		-0.121 (-0.25)	-0.172 (-0.33)
HIGH EDUCATION		0.080** (2.53)	0.085*** (2.75)		0.309 (0.59)	0.358 (0.66)		0.250 (0.59)	0.413 (0.97)		0.530 (1.11)	0.444 (0.92)
NO OF CHILDREN			-0.292* (-1.73)			0.000 (.)			0.000 (.)			-0.116 (-0.32)
NOT IN A COUPLE			0.909*** (41.64)			-1.124 (-1.24)			1.223** (2.61)			0.298 (0.78)
HIGH SOCIAL CLASS			0.084*** (3.61)			-0.312 (-0.40)			1.191*** (3.43)			0.144 (0.48)
Observations	45,724	40,171	40,171	111	110	110	95	87	87	288	255	255
Adjusted R-Squared	0.021	0.021	0.054	0.021	0.055	0.047	0.141	0.073	0.156	0.062	0.08	0.071

Notes: The standard errors reported in parentheses are computed using the White's heteroskedasticity estimator, ***p < 0.01, **p < 0.05, *p < 0.10. The regression includes a fifth-order polynomial in year-of-birth. The age variable is expressed in deviations from 50.

Source: Family Resources Surveys 1994–2008.

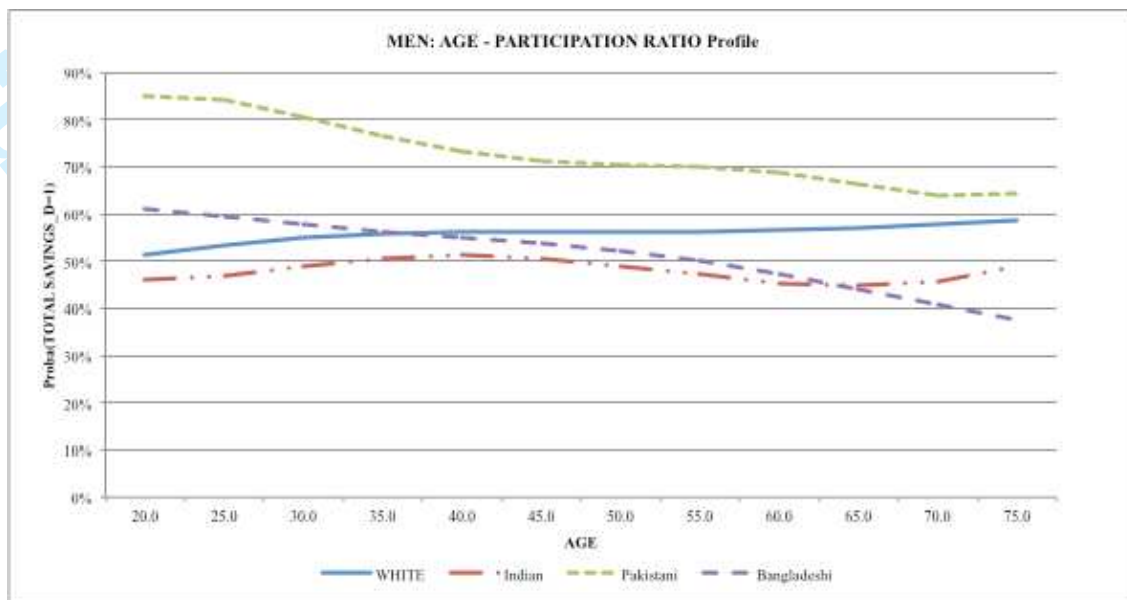
Table 6. Regression results on savings, female sample.

Dependent Variable Independent Variables	WHITE		Indian			Pakistani		Bangladeshi				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
AGE	0.050*** (6.78)	0.008 (0.93)	0.008 (0.98)	-0.524* (-1.83)	-0.649** (-2.28)	-0.067 (-0.25)	-0.007 (-0.02)	0.103 (0.22)	0.253 (0.49)	0.135 (1.19)	-0.020 (-0.12)	0.060 (0.40)
AGE^2	-0.000 (-1.04)	0.000* (1.89)	0.000** (2.02)	0.006 (0.24)	0.008 (0.31)	0.013 (1.29)	-0.034 (-1.03)	-0.014 (-0.33)	-0.005 (-0.12)	0.002 (0.67)	0.000 (0.07)	-0.002 (-0.44)
AGE^3	0.000 (0.01)	-0.000* (-1.75)	-0.000* (-1.83)	0.001** (2.32)	0.002** (2.59)	0.001 (1.36)	-0.000 (-0.97)	-0.000 (-0.37)	-0.000 (-0.57)	-0.000 (-0.31)	-0.000 (-0.13)	-0.000 (-0.13)
AGE^4	0.000 (1.37)	0.000 (1.21)	-0.000 (-0.85)	-0.000 (-0.36)	-0.000 (-0.31)	-0.000 (-1.53)	0.000 (0.98)	0.000 (0.34)	-0.000 (-0.03)	-0.000 (-0.41)	0.000 (0.27)	0.000 (0.54)
AGE^5	-0.000 (-0.64)	-0.000 (-0.48)	0.000 (1.22)	-0.000 (-1.01)	-0.000 (-0.95)	-0.000** (-2.21)	0.000 (0.92)	0.000 (0.35)	0.000 (0.05)	0.000 (0.07)	-0.000 (-0.19)	-0.000 (-0.05)
TOTAL INCOME		0.002*** (18.96)	0.001*** (16.18)		0.006*** (3.77)	0.006*** (3.95)		0.006** (2.40)	0.006** (2.58)		0.003* (1.75)	0.002 (1.33)
TOTAL INCOME^2		-0.000*** (-6.25)	-0.000*** (-5.94)		-0.000*** (-4.55)	-0.000*** (-4.77)		-0.000* (-1.87)	-0.000* (-1.93)		-0.000 (-1.11)	-0.000 (-0.92)
FT EMPLOYED		-0.214 (-1.25)	-0.209 (-1.06)		-0.504 (-1.16)	-0.703 (-1.52)		-0.347 (-0.77)	-0.311 (-0.51)		-0.074 (-0.22)	-0.331 (-1.01)
PT EMPLOYED		-0.144 (-0.62)	-0.132 (-0.87)		-0.452 (-1.08)	-0.567 (-1.33)		-0.732 (-1.05)	-0.623 (-0.83)		-0.053 (-0.16)	-0.254 (-0.76)
HIGH EDUCATION		0.314*** (11.28)	0.308*** (11.12)		-0.159 (-0.46)	-0.146 (-0.42)		0.201 (0.30)	0.172 (0.24)		0.834 (1.40)	0.319 (0.66)
NO OF CHILDREN			-0.311** (-2.39)			-4.673*** (-11.36)			-0.389 (-0.44)			-6.438*** (-10.70)
NOT IN A COUPLE			0.647*** (33.64)			1.298** (2.61)			2.873*** (3.38)			0.954*** (3.80)
HIGH SOCIAL CLASS			0.080*** (3.43)			0.364 (0.51)			0.016 (0.03)			0.559** (2.24)
Observations	49499	43609	43609	115	115	115	99	89	89	331	296	296
Adjusted R-Squared	0.052	0.074	0.094	0.02	0.119	0.182	-0.03	-0.003	-0.012	0.017	0.049	0.114

Notes: The standard errors reported in parentheses are computed using the White's heteroskedasticity estimator, ***p < 0.01, **p < 0.05, *p < 0.10. The regression includes a fifth-order polynomial in year-of-birth. The age variable is expressed in deviations from 50.

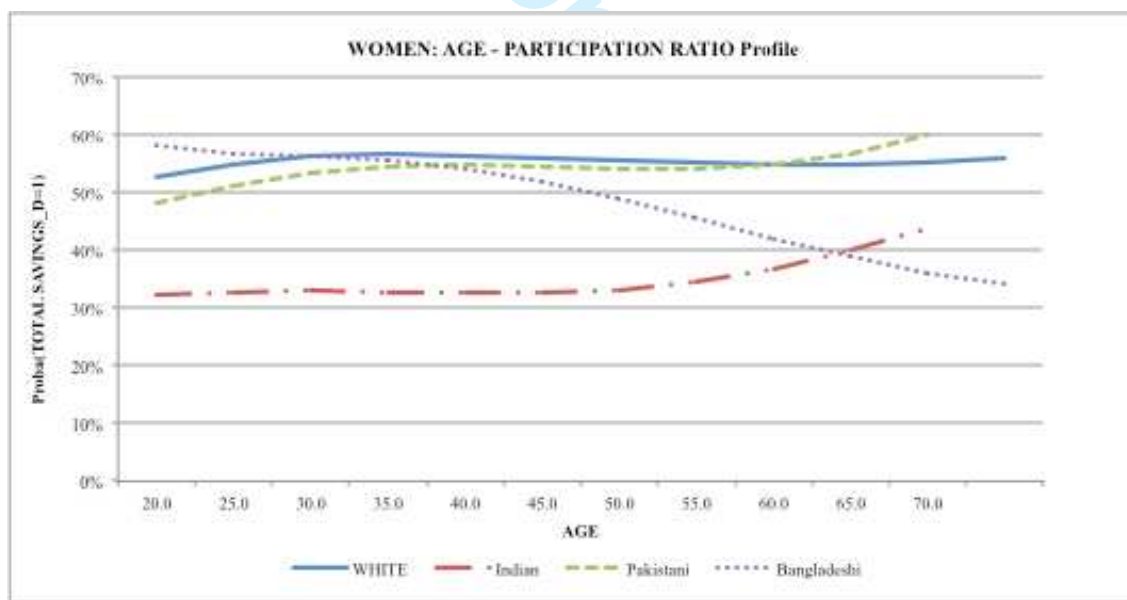
Source: Family Resources Surveys 1994–2008

Figure 1a. Saving participation ratios, male sample



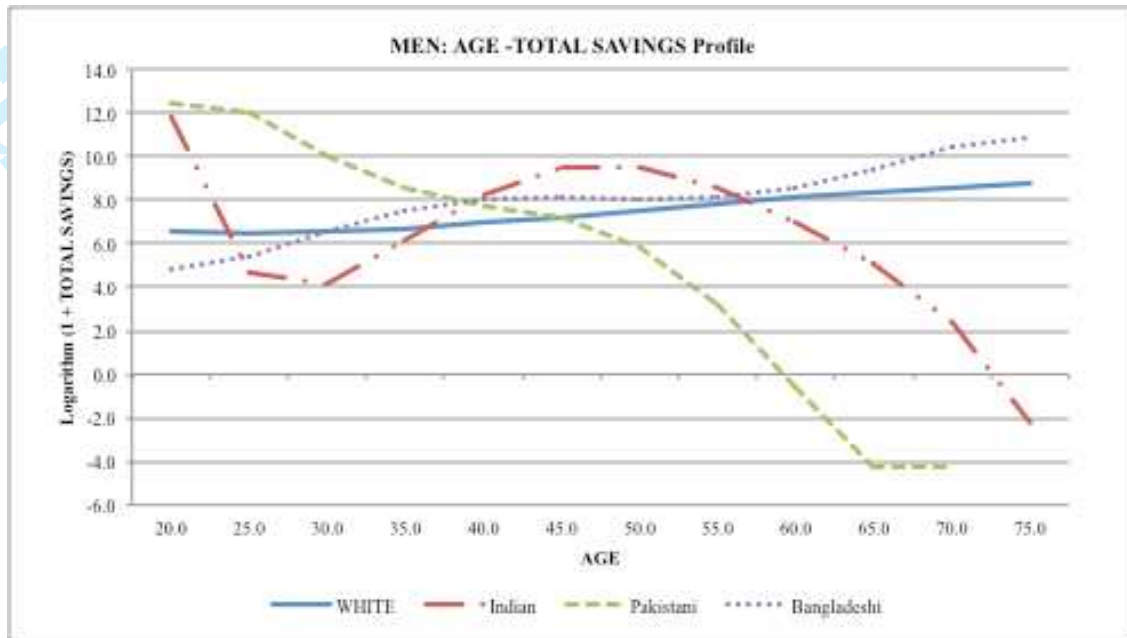
Notes: The minimum and maximum ages represented here are 20 and 75 respectively, owing to the lack of data for respondents younger than 20 and older than 75.

Figure 1b. Saving participation ratios, female sample



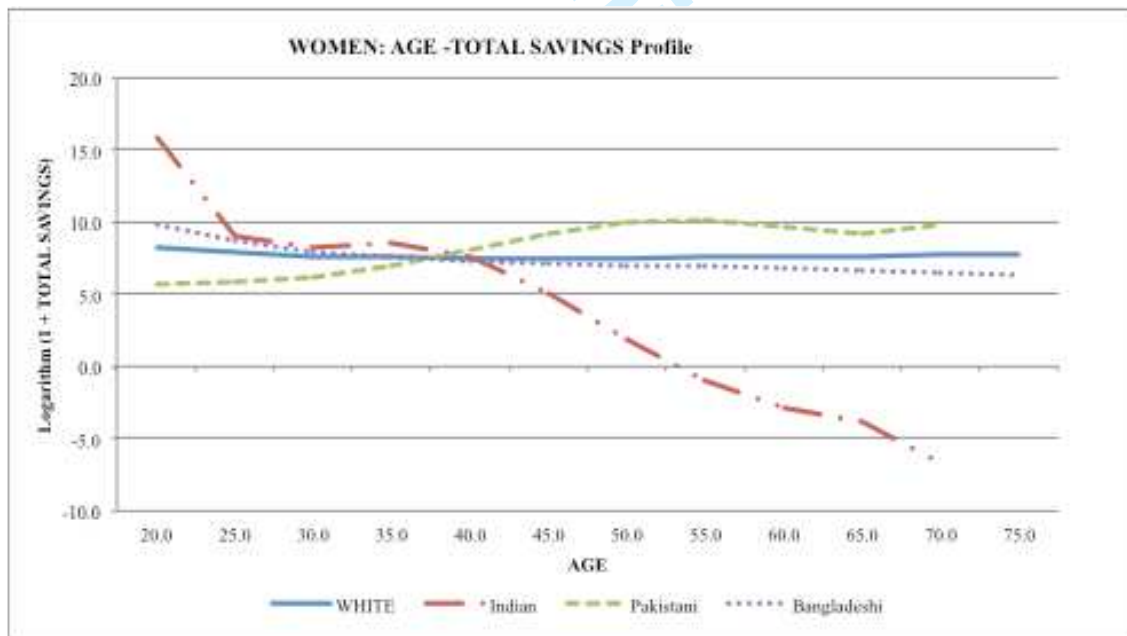
Notes: The minimum and maximum ages represented here are 20 and 75 respectively, owing to the lack of data for respondents younger than 20 and older than 75. The graph for Pakistani and Indian women stops at the age of 70 owing to the lack of observations beyond that age in our sample

Figure 2a. Saving profiles against age, male sample



Notes: The minimum and maximum ages represented here are 20 and 75 respectively, owing to the lack of data for respondents younger than 20 and older than 75. The graph for Pakistani men stops at the age of 70, owing to the lack of observations beyond that age in our sample.

Figure 2b. Saving profiles against age, female sample



Notes: The minimum and maximum ages represented here are 20 and 75 respectively, owing to the lack of data for respondents younger than 20 and older than 75. The graph for Pakistani and Indian women stops at the age of 70 owing to the lack of observations beyond that age in our sample.