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Household Consumption and Savings over the Life-Cycle: Role of Demographics and Durables

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Abstract

Using a novel panel survey, we show that households in India build a stock of physical assets over their life-cycle — an 80% growth at its peak. Saving for these lumpy asset purchases comes at the cost of crowding out non-durable consumption. Unlike the US, family-adjusted non-durable consumption in India has a flat profile that is neither due to smoothing nor subsistence income. Using reported intentions of durable purchases, and event studies around actual purchases, we also show that future durable purchase motive indeed increases the household savings rate, anywhere between 4 and 10% in the case of housing.

Keywords: Consumption smoothing, household finance, financial inclusion, durable goods, housing, household heterogeneity, panel data, pseudopanel, equivalence scales, extended family.

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1 Introduction

Despite rapid advances in financial inclusion, both, the access and use of savings and credit through formal banking institutions remain challenging in developing economies. In terms of financial savings, Badarinza et al. (2017, 2019) draw attention to the stark difference between developed and developing countries. In the case of the former, almost 40% of assets comprise of financial instruments, with the rest in durable goods and property. In the case of large developing countries like India, China, Philippines, Thailand, and South Africa, the number hovers only at around 10%. When it comes to liabilities, despite durable goods and real estate forming the bulk of their assets, there is very little borrowing that occurs to finance these purchases in the latter group of countries. They note that the vast bulk of debt is unsecured credit often taken from informal money lenders or family members, often for emergencies (Demirgüç-Kunt and Singer, 2017), and not for long-term financing. This is often attributed to a number of factors — prohibitive interest rates, lack of trust in financial institutions, or government in the case of public ownership of banks (La Porta et al., 2002), low levels of financial literacy (Cole et al., 2011), and so on. However, no matter the reason, such methods are clearly inefficient compared to the various ways that risk averse households in developed countries can insure themselves against fluctuations over the life-cycle (Angerer and Lam, 2009; Gomes and Michaelides, 2005; Jacobs and Wang, 2004).

In this paper, using a large longitudinal household survey from India, a country where long term formal credit is not easily available or costly, we show that the inability to smooth the purchase of durables and physical assets, leads to excessively flat consumption of non-durables over the life-cycle. To emphasize the point, we provide a comparison of the excessively flat profile of Indian households with that of the more familiar hump-shaped profile of US households. This also manifests in savings rates (defined as the excess of income over non-durable consumption), that are positive and increasing over the life-cycle until peak earning years. In other words, not only does the flat profile of consumption not reflect the canonical consumption smoothing, but neither does it reflect subsistence consumption due to low and flat income profiles. We reinforce our findings by conducting empirical exercises which show a) that the short-term intentions to purchase lumpy

durables or physical assets affect savings behavior of Indian households and at the same time, b) how the latter evolves around actual purchases.

Examining the consumption and savings behavior of households in India is especially appealing for a number of reasons. While the importance of financial development in economic growth is well recognized (Beck et al., 2010; King and Levine, 1993; Zingales, 2015), and has also spawned a flourishing literature within the Indian context (Agarwal et al., 2021; Allen et al., 2012; Ayyagari et al., 2020; Burgess and Pande, 2005; Cole, 2009; Cole et al., 2011; Kendall, 2012) there is very little known on its implications for life-cycle consumption and savings in India and other emerging economies (except China). Being one of the largest and fastest growing countries, the Indian case becomes naturally attractive. Further, over and above high growth rates, the Indian government implemented a massive push towards financial inclusion (Agarwal et al., 2017) overlapping our period of study, making the setting all the more interesting.

Our primary data source is a recently introduced longitudinal survey on household expenditures and income that allows us gain novel insights into the life-cycle consumption and savings behavior as well as accumulation of physical asset for Indian households. The survey covers 98.5% of the population and interviews more than 150,000 households every four months, recording details on expenditures, incomes, indicators for a range of asset and liabilities, and demographic data. Rich indicators pertaining to intentions as well as actual purchases of various consumer durables like house, car, two-wheelers, farm equipment, and livestock are provided. The survey provides a unique opportunity to not only draw important inference on how the accumulation of these assets impact other important financial decisions of Indian households, but also explore various key margins of heterogeneity.

Our analysis proceeds in two three steps. In order to understand how investments in lumpy durables and physical assets might alter financial decision making of Indian households, we first examine life-cycle patterns of physical assets, consumption and savings by estimating age effects using a semiparametric regression model.[1] We begin by using the survey data in conjunction with

[1]In household finance and macroeconomics, life-cycle models remain central to the study of consumer and investor behavior as well as studying optimal consumption and portfolio choice allocation (Bairoliya and McKiernan,

other sources to document that accumulation of durables in households is anything but smooth. Even after controlling demographic factors, durable goods exhibit a clear hump over the life cycle. While we do not have data on expenditures on homes, we show a similar pattern for home ownership. We complement these asset accumulation profiles by also documenting very low rates of borrowing over the life-cycle using both data on the extensive and intensive (monthly loan payments) margin. If anything borrowing is at its highest during the peak household earning years. With this background, we then proceed to characterizing the life-cycle profile of non-durable consumption. To provide a comparative perspective from a developed country with easier access to credit, we construct similar profiles for U.S. households using data from the Panel Study of Income Dynamics (PSID).

We find life-cycle growth of household consumption in India, without adjusting for demographic factors, to be a little smaller but roughly comparable to that of the U.S. Specifically, household non-durable expenditures grow by 50% and 36% for U.S. and Indian households respectively. However, once we adjust for demographic factors, this similarity disappears. Unlike the U.S., where households continue to exhibit consumption growth over the life cycle after adjusting for demographics, Indian households exhibit almost no consumption growth whatsoever. In other words, Indian households exhibit a flat consumption profile over their life cycle and any observable growth is only due to changes in family size and composition. To better understand the Indian results, we look at differences across households along three key dimensions — nuclear vs. extended families, rural vs. urban households, and occupational differences. These margins of heterogeneity are important from two different standpoints 1) demographics (extended vs. nuclear families) and 2) levels of financial inclusion (urban vs. rural, farming vs. non-farming households, occupational differences). We find clear differences in the consumption profile across the households in each of the three dimensions. While nuclear households or those living in urban areas

2021; Catherine, 2021; Cocco et al., 2005; Fagereng et al., 2017; Hubener et al., 2016; Wachter and Yogo, 2010). Different flavors of these models have been used by researchers to make a common prediction — a hump-shaped consumption profile over the life cycle. This is attributable to factors like uninsurable permanent income leading to precautionary savings early in the life-cycle (Gourinchas and Parker, 2002), family demographics (Browning and Ejrnæs, 2009), absence of annuities combined with bequests (Hansen and İmrohoroğlu, 2008), loss aversion (Pagel, 2017), the interaction between housing collateral and non-durable consumption (Yang, 2009) and so on.

look closer to the U.S., the experiences of extended families as well as those living in rural areas are starkly different. Specifically, family-adjusted consumption exhibits no growth in the case of extended or farming households or those living in rural areas. However, the growth is modest even for those living in the urban areas (roughly 10% growth relative to age 24) despite greater access to financial markets for these households. These results point to our first key finding — there might be significant crowding out of non-durables consumption expenditures by major durable purchases over the life cycle of Indian households.

In order to disentangle age effects from calendar time and birth cohort effects, we use a flexible semi-nonparametric regression framework for estimating all the life-cycles profiles presented in the paper. We find these profiles are robust to a battery of tests including definitions of household head used in the survey, adjustments for family size, panel estimation techniques using household fixed effects in addition to age and time effects, broader measures of consumption involving imputed values of home production and so on.

While the survey data does not allow us to measure the extent of crowding out directly, we can rule out the possibility that the flat non-durable consumption profile is simply due to a flat income profile of Indian households, and not because of lumpy investments in major durables. We find that income growth for Indian households is actually close to that of U.S. households — 90% vs. 100%. To put it differently, if we define savings broadly as the excess of income over current non-durable consumption expenditures, the savings rate starts at about 3% and reaches 28% when the head of household is approximately 55 years. This pattern is observable across major sub-groups as well. The fact that non-durable consumption after adjusting for family size stays relatively flat while the savings rate starts at positive values and continues to increase in the aggregate implies that households in India substitute a significant part of their consumption by a growing stock durable goods, physical, and/or financial assets.

In the second and third parts of the paper, we investigate how demand for physical assets shape household's savings behavior, by looking at a) effect of intentions to purchase physical assets as well as b) event study around actual purchases, respectively. We focus on four major types of

physical savings that lead to lumpy purchases: house and land, cars, tractors, and cattle. The last two are more applicable for farming households. We use survey instruments relating to households' intentions to purchase major consumer durables in a tight window of four calendar months. We estimate the effect of these intentions of future durables purchases on current savings rate. We find that these intentions are highly predictive of both actual future purchases as well as current savings rate. A positive reported intention to buy a house for instance, increases current savings rate by roughly 4 to 10 percentage points. Next, we conduct event-time analysis to analyze household's savings rate around the actual purchases. Event studies have been widely used in various fields of finance to understand the effects of policies on different outcomes of interest (see Faccio et al. (2006); Garmaise et al. (2020); Henry (2000) for instance). Since, we have high frequency survey data on household's consumption and income, we are able to pin-point the precise timing of durable purchases and analyze savings rate around this event. We find that in most scenarios, household's savings rate increases all the way leading to the purchase and decline thereafter.

Thus, in this paper, we provide a perspective that is not only different from that observed in high-income countries but also shed new light on how lack of access to credit markets might interact with the timing of consumption, especially in the case of lumpy durables, in creating a flat consumption profile despite growth in income. We find households in urban areas with relatively more financial inclusion enjoy modest growths in consumption while those in rural areas or extended families experience zero to negative growths. In relation to the current state of the research, over and above the numerous studies on the U.S., UK, etc, our work complements a number of papers on China. Chamon and Prasad (2010) present an early influential study documenting the inverted u-shaped profile of the savings rate. While their paper shows a lack of relationship between savings and future durable goods purchases, our paper in contrast finds a strong correlation between the households' savings rate and both their intentions as well as actual future purchases of major durables. Gan (2010) studies the effect of housing wealth on consumption growth in Hong Kong and finds significant consumption sensitivity to changes in housing wealth. They show that these changes reflect housing being used as a form of precautionary savings, and thus in spirit

similar to some of our arguments in this paper. Apart from China, the literature is very limited. De Magalhães and Santaeulàlia-Llopis (2018) examine panel data from Malawi and note that households have relatively flat consumption profiles and do not accumulate wealth over the life-cycle. The contrasting results between China, a high growth country where households depress consumption at the beginning of the life-cycle to accumulate assets and Malawi, a low growth country, where it stays relatively flat with little or no asset accumulation, provides further motivation for our analysis.

2 Empirical strategy

2.1 Data and key empirical measures

Our primary source of data is the Consumer Pyramids Household Survey (CPHS). This is a nationally representative longitudinal survey where each household's information is recorded tri-annually (once every four months). Approximately 158,000-165,000 households were interviewed in each wave during the period of our analysis, 2014-2019. Households are asked detailed questions about their monthly expenditure and income, or in the case of durables, assets, and liabilities – indicators about ownership, intentions, and purchases – over the previous four months. Additionally, the survey records demographic and income information on household members as well as their employment status, expectations about the economy, and their financial well-being. A detailed discussion on the CPHS survey estimates, comparison to other available measures of consumption expenditures and incomes, as well as it's growing popularity among researchers is provided in appendix A.

The CPHS constitutes several modules. This study draws on expenditures, incomes (of households and individual members), assets and liabilities, and people of India (household member demographics and socioeconomic characteristics). From the expenditure categories, we construct a measure of non-durable consumption that includes expenditures on food, intoxicants, clothing & footwear, cosmetics & toiletries, recreation, restaurants, rent and bills, power & fuel, transport,

health, education, and miscellaneous expenses.[2] The idea is to stay as close as possible to the PSID (US) equivalent of non-durable expenditures. Households also report total income as well as income contributed by each household member in every wave. Later in the paper, we use wealth indicators like reported intentions to purchase major durables such as houses, cars, two-wheelers, tractors, cattle, etc. as well as actual reported purchases to analyze their implications for savings behavior. Finally, we use information from the "People of India" modules of the survey to understand the demographic structure and living arrangements of Indian households. In particular, we utilize information on total family size, age, and gender composition of the households.

A second data source, for comparisons to the US, is the Panel Study of Income Dynamics (PSID). It is a well known longitudinal dataset which started in 1968 with a nationally representative sample of over 18,000 individuals living in 5,000 households in the U.S., and who were followed annually henceforth.[3] The study covers the years between 1968 and 2017 and contains detailed information on earnings, expenditures, and employment. Historically, PSID only collected information on food and housing expenditures. However, starting in 1999, it also started adding questions about spending on transportation, healthcare, education, utilities, and childcare. Expenditures are reported weekly, monthly, or yearly depending on the spending categories. The non-response rate is fairly low in PSID, and together with its long panel structure, has made it an attractive dataset for studying life-cycle facts about American households. For our analysis, we use data beginning with the 2005 surveys. Further details on sample construction and comparison of the two data sources are provided in the appendix section A.

2.1.1 Physical assets and durable goods

CPHS does not report expenditures on durables but provides a detailed inventory of major and minor durable goods owned by the households. We impute the price of these goods and use the

[2]Two categories are excluded - appliances and equal monthly installments (EMI). The appliance category, despite its name, also records expenditures on a host of durable electronic goods. However, it was unclear to what extent it records this data accurately. For example, a down payment on a mobile phone or a car would not be included here. EMIs mostly reflect payment on loans for homes, vehicles, and other durables. We use EMI's in the paper separately to get a sense of formal financing.

[3]The survey was conducted annually between 1968 and 1997 and bi-annually since then.

information on durable goods ownership in the survey to construct total expenditures on durables. The price data we use come from the 72nd round of the National Sample Survey Organization (NSSO), which is a large-scale cross-sectional household survey on durable and service consumption that was conducted by the Indian government during 2014-15. We obtain the price of durable goods by calculating a weighted (and unweighted) average price of a certain category by state and region (rural/urban sector). The durable goods categories include cars, tractors, washing machines, fridges, coolers, televisions, two-wheelers, generators, laptops, and air-conditioner units (AC's). The prices are then merged with the CPHS data by category-state-region and multiplied by the number of units of durable goods in each category to generate total household durable expenditures. Appendix A.6 provides further details including imputed prices.

2.1.2 Non-durable consumption

Our measure of total non-durable expenditures include major categories like food, non-mortgage housing, clothing, transport, health, education, recreational activities and other miscellaneous items. Both PSID and CPHS data report total household expenditures as well as these major categories. We discuss in detail the similarities and differences in these in appendix A.5.

2.1.3 Savings rate

We construct savings rate as total household income net of non-durable expenditures, divided by total household income. Since the consumption flow from durables has a temporal aspect, and these goods are also used as a a source of precautionary wealth, we do not net out our imputed measure of durable expenditures while constructing the savings rate. Total household income includes income from all sources including private/public transfers, profits, lotteries, wages, overtime, bonus, interest payments, dividends and insurance payments. The survey also reports total income of each household member, which we later use to identify the financial head (highest earning member) of the household and compare it with the reported head in our robustness analysis.

2.1.4 Equivalence scale

A key concern in this literature is the distinction between a household and an individual. The life-cycle predictions are built on individual utility maximization, whereas consumption expenditure data is usually for a household. Here, we use the OECD adult equivalence scale to adjust total household consumption for family size and composition. This scale assigns a weight of 1 to the head of household, 0.5 to each additional adult, and 0.3 to each child. [4] Figure 1 shows a raw comparison in terms of both the family size and the number of children, both of which affect how much household consumption gets scaled. There are interesting differences between the two countries that are worth noting. First, Indian households are on an average larger than U.S. households all through the life-cycle (average family size in the former is roughly double that of the latter between ages 50 and 59). Second, changes in family size are more prominent for the latter as compared to the former. Finally, the distribution of children over the life-cycle of the household differs in non-trivial ways for the two countries. While U.S. households, after an initial increase in the number of children between ages 20 and 40, experience a constant decline over the remaining life, Indian households experience a second, somewhat less prominent hump in the later part. This is due to the presence of grandchildren in extended families.[5][6]

2.2 Empirical specifications

In order to understand how investments in lumpy durables and physical assets might impact household consumption and savings behavior, our empirical analysis proceeds on three fronts. First, we estimate the age effects to understand the growths in consumption and savings rate over the life cycle of the households. Second, we estimate the effect of reported intentions of future purchases on current savings rate, and third, conduct event-study analysis to understand savings

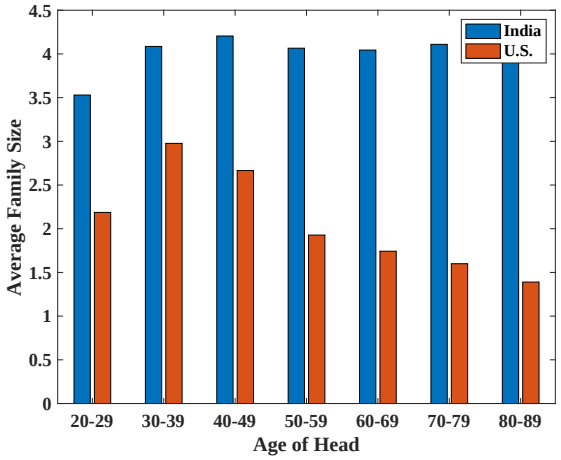
[4] In Section 4.2, we consider the use of alternate consumption equivalence scales.

[5] Extended families including parents and children from outside the nuclear family, are common in Asia, the Middle East, Central/South America, and sub-Saharan Africa, but not in other regions of the world such as North America or Western Europe (Scott et al., 2015)

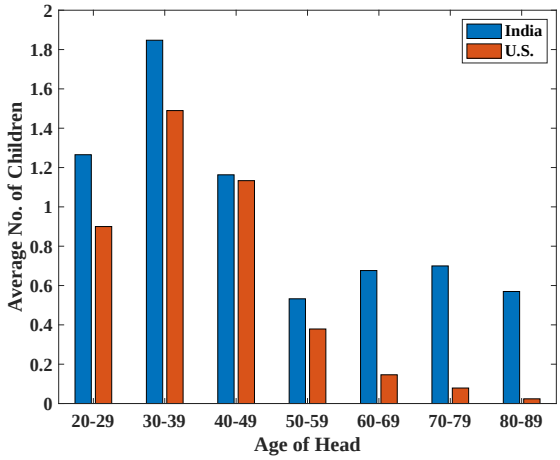
[6] In this paper, we adhere to the common practice of defining a nuclear family as a basic social unit including a couple and their dependent children only. Appendix tables C.3 and C.4 provide details about the likelihood of the presence of different types of family members as well as their average number, respectively, for Indian households.

Figure 1: Household Composition
by Age of Household Head

(a) Family Size



(b) Children



Notes: Data for the U.S. comes from Panel Study of Income Dynamics (PSID). Children are defined as members living within the same household under the age of 18.

rate changes around actual purchases. The following sections discuss each of these strategies in detail.

2.2.1 Identifying age effects

Following Deaton (1985), we use the repeated nature of both the survey dataset and build a pseudopanel that reduces attrition problems and eliminates the need to control for individual fixed effects as it aggregates across agents.[7] We use the age of the household head to associate a household with a birth cohort bin. We define ten birth cohort bins, each with a length of five years. We generate a balanced psuedopanel by computing group specific means for each age and time period using the population weights provided in each survey. Our choice of the number of cohort bins is driven by sample size considerations where we have large enough observations in each cell to confidently assume that the sample means are good approximations for their population counterparts. Then following Fernández-Villaverde and Krueger (2007), we estimate a flexible

[7]Note that even though PSID has a much longer panel, we use the pseudopanel approach for the sake of uniformity.

semi-non-parametric regression equation for understanding the effect of age, time, and birth cohort on consumption expenditures and savings rate.[8]

$$c_{it} = f(age_{it}) + \alpha_i cohort_i + \alpha_t time_t + \epsilon_{it} \tag{1}$$

where c_{it} is the cohort i average of monthly log consumption at time t, $cohort_i$ is a dummy indicator for each birth cohort, $time_t$ the time indicator for each wave-year period, age_{it} is the age of cohort i at time t, measured in years, $f(age_{it})$ is a smooth function of age_{it}, and finally ϵ_{it} is an independent, zero mean, random error.

We estimate a partially linear regression model (a form of semiparametric regression model) using the Robinson (1988) double residual semiparametric regression estimator.[9] The main difference between several available PLM estimators is the estimation method used to estimate the nonparametric component, since the parametric component is estimated mostly by the least squares method. The Robinson's estimator estimates the non-parametric part of the PLM using a Gaussian kernel weighted local polynomial fit. The optimal bandwidth used minimizes the conditional weighted mean integrated squared error.

In our analysis, we estimate the widely used age-period-cohort (APC) model, treating the multiple available waves of the survey data as repeated cross-sections. There is a clear identification problem in considering all three variables simultaneously in a statistical equation – there exists an exact linear dependency between them because $Cohort = Period - Age$. Following the literature, we use a nonlinear transformation to the age variable, and five year bins for the birth cohort to deal with the collinearity issue.

[8] We model the consumption and income processes separately and do not allow for other age varying factors like health or labor supply to affect these. For instance, Miller and Bairoliya (2021) and Miller et al. (2019) model the joint dynamics of consumption, health, and labor supply evolution using a structural VAR model.

[9] We use STATA's implementation of the estimator using the *semipar* command.

2.2.2 Effect of intentions

A unique aspect of the CPHS data is a series of questions aimed at eliciting intentions to buy durables by type over the next 120 days. We use these reported intentions to make inferences about their contributions to the high savings rate among Indian households.[10] Specifically, we estimate the following equation:

$$s_{it} = \sum_{j=1}^{J} \beta^j z_{it}^j + \alpha X_{it} + \epsilon_{it} \tag{2}$$

where s_{it} is the savings rate of household i at time t (wave), z_{it}^j is reported intentions to purchase durable good j by household i at time t, X_{it} is a vector of controls, and finally ϵ_{it} is an independent, mean zero, random error.

2.2.3 Event study analysis

Since, in our panel data, we observe households making durable goods purchases, we can also look at how the savings rate changes around the durable buying episode, to understand its role in determining overall savings behavior of Indian households. In particular, we estimate the following relationship:

$$s_{it} = \beta^j z_{it}^j + \alpha X_{it} + \epsilon_{it} \tag{3}$$

where s_{it} is the savings rate of household i at time t and z_{it}^j now is reported distance (in time) to durable j purchase instance at say time τ. For instance, when $t = \tau$ (period of the durable goods purchase), $z_{it}^j = 0$, one period after the purchase $(t = \tau + 1)$, $z_{it}^j = 1$, one period before the purchase $(t = \tau - 1)$, $z_{it}^j = -1$, and so on. Finally, X_{it} is a vector of controls and ϵ_{it} is an independent, mean zero, random error. A time period here is a wave.

[10] These reported *intentions* also significantly predict *actual* purchases in the survey. Refer to appendix Table C.5 for more details. Also note that the savings rate is a variable we calculate, and thus there is less concern that a household that reports intentions is also biased towards reporting a high savings rate

3 Results

3.1 Age-effects

We begin with a discussion of physical asset accumulation and the lack of financing by Indian households. We then discuss our findings related to life-cycle patterns in consumption, compare them to the U.S., and explore three major sources of heterogeneity – family type, region, and occupation. Finally we move on to savings for Indian households to get a comprehensive understanding of how the demand for lumpy investments in physical assets might impact household savings behavior.

3.1.1 Physical assets

In the case of the US, households begin to accumulate physical assets, both durable goods and housing early in their life-cycle (Fernández-Villaverde and Krueger, 2011; Yang, 2009) usually financed by various forms of debt. Badarinza et al. (2017) note that among US households with heads 35 years of age or less, as much as 40% have mortgage debt and 60% have other secured debt. The numbers are similar for UK.[11] In the case of India, the numbers are less than 5%. Further, unlike developed economies, it increases over the life-cycle, but reaching only around 10% at its peak at age 65. Using the CPHS data, we are also able to show low prevalence in terms of fraction of households who borrow for homes and durable goods. This is evident from figure C.1 which shows that the likelihood of borrowing from any source for a house and other consumer durables is extremely low (2 to 3%) and remains mostly flat over the life cycle.[12]

Not surprisingly, this early borrowing in the case of US is also reflected in expenditures. Notably, Fernández-Villaverde and Krueger (2011) find an 80% growth in peak durable expenditures relative to age 20 for the U.S. Most of this growth is reached by mid thirties - early in the life-

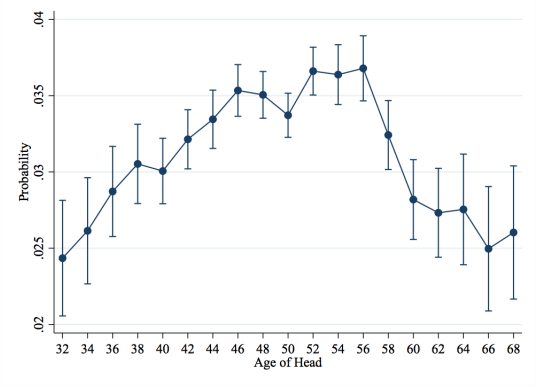
[11] Figure 3 of Badarinza et al. (2017). They use the US Survey of Consumer Finances, the UK Wealth and Assets Survey and a 2012 NSSO (Govt of India) survey on assets and debt.

[12] We also looked at the CPHS data on the probability of monthly installment payments of durables goods and housing separately. They both also exhibit a hump shaped profile with the peak reaching in forties or fifties. In the case of housing the probability is 2% and durables it is 10%. Refer to appendix figure C.1 for details.

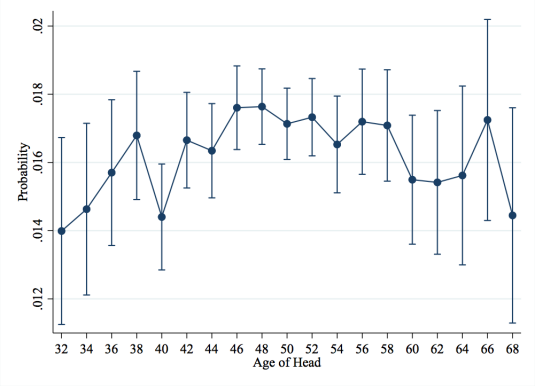
cycle. Using the methodology described in section 2.2.1, we estimate the growth in durable goods for Indian households. Figure 3 provides the estimated age effects. It is obvious that there is substantial growth in these assets over the life-cycle (roughly 80% at its peak). While the growth is comparable, unlike the findings of Fernández-Villaverde and Krueger (2011), this growth is more drawn out with the peak only at age 50. While, we do not have housing expenditures, in appendix figure C.2, we document the age distribution of purchases, for housing and several other durable goods and note that the peak usually reaches in the fifties.

Figure 2: Share of Households Borrowing for Home and Durable Purchases

(a) House



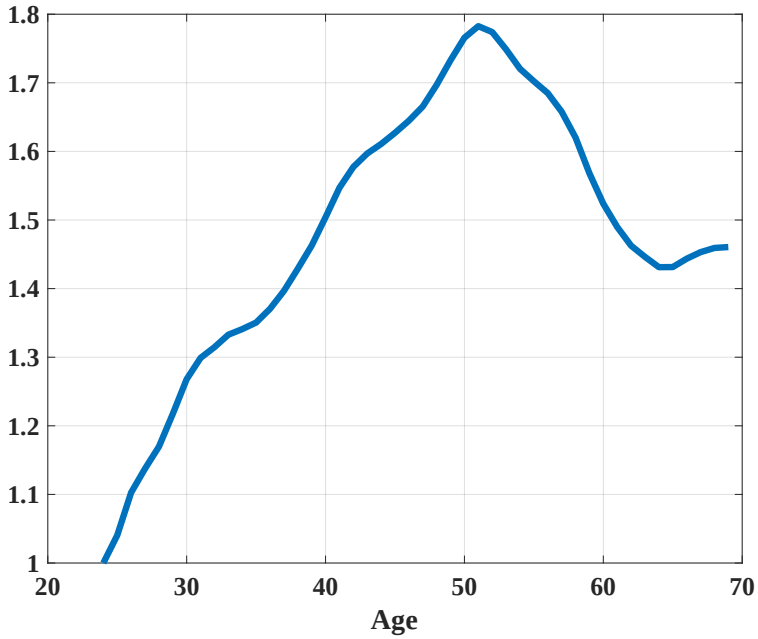
(b) Consumer Durables



Notes: Probability of borrowing for house or consumer durables reflects the fraction of households who have reported any outstanding borrowing to finance house or consumer durable purchases which include refrigerators, air-conditioners, pump-sets, television, mobile phones, computers,music systems, musical instruments, sports gear, cooking range, furnishings, etc.

To summarize, the life-cycle profile of accumulation of physical assets and its financing, are distinctly different between India and the US. This is not surprising given the vastly different levels of financial development. In the next sections, we explore the extent to which this has implications for the life-cycle patterns of consumption and savings rate.

Figure 3: Accumulation of Physical Assets
Over the Life Cycle of Household Head



Notes: Household durable goods index relative to age 24 (household head) is reported. The durable goods index is constructed using information on the possession of major and minor durable goods such as televisions, cattle, tractors, refrigerators, cars, two-wheelers, electric generators, washing machines and so on. Note that housing is not included in this index.

3.1.2 Consumption

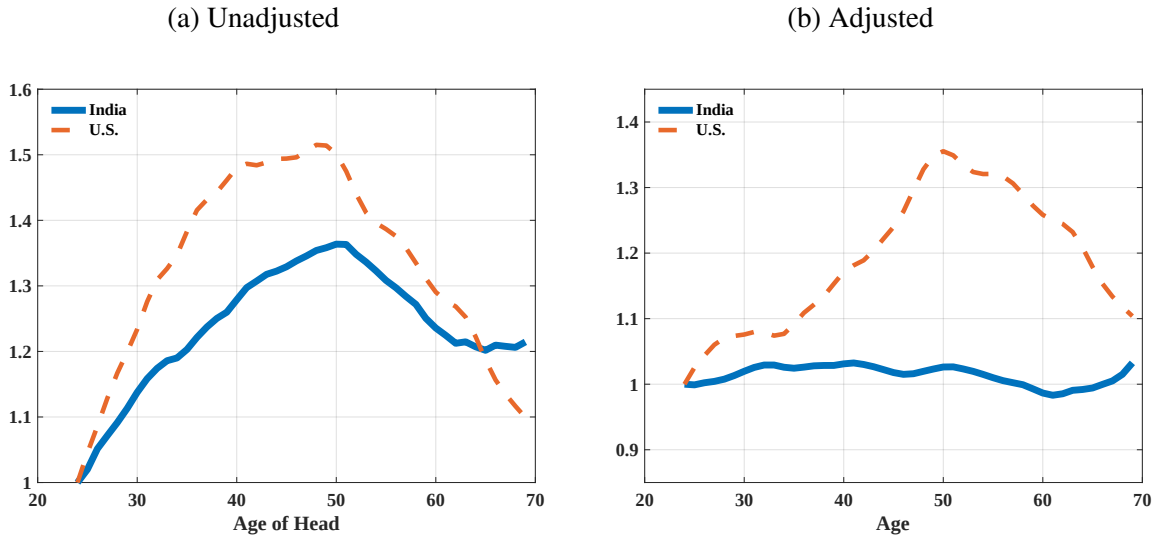
Figure 4 provides a comparison between the evolution of life-cycle consumption between Indian and American households.[13] Panel (a) shows that while total household consumption grows by roughly 50% (as compared to age 24) for U.S. households, it grows by roughly 36% for Indian households.[14] Next, we adjust total household expenditures using OECD equivalents to understand the importance of changes in family size and age composition in determining the growth in consumption. In other words, we would like to understand how much of the growth in total

[13] Refer to column 1 of appendix Tables C.1 and C.2 for time and birth cohort effects for Indian and U.S. households, respectively.

[14] We net out payments towards property taxes and mortgage from PSID to have a more comparable measure with that of Indian household consumption. Figure C.3 in the appendix provides estimates of growth in consumption in the U.S. using total reported household expenditures in the PSID and the measure of expenditures constructed in this analysis by netting out mortgage payments, property taxes, etc.

household consumption is due to the fact that households may get bigger in size over the life-cycle (as proxied by the age of the household head) due to the presence of spouse, children, parents, and other family members. We find the U.S. household consumption grows by more than 30% after adjusting for demographics. These findings are consistent with previous literature that has looked at consumption growth for U.S. households using Consumer Expenditure Survey (CEX) and PSID. However, a surprising finding for India is that almost all the growth in life-cycle consumption seems to be driven by changes in household size and composition. After controlling for that, consumption growth declines from 36% to 3% as seen in panel (b) of Figure 4. These results, as well as the subsequent ones in this sub-section, are summarized in Table 1.

Figure 4: Life-Cycle Consumption
by Age of Household Head



Notes: Household consumption relative to age 24 (household head) is reported for both U.S. and India. Data for the U.S. comes from Panel Study of Income Dynamics. Adjusted refers to total household consumption divided by family size using a modified OECD scale that assigns a weight of one to household head, 0.3 to each child under/of the age of 16, and 0.5 to each adult over the age of 16. Expenditure categories include total expenditures on: 1) food, 2) transportation, 3) education, 4) childcare, 5) healthcare, 6) clothing ,7) household repairs and furnishing, 8) trips and recreational activities, 9) housing (rent, utility, telephone and internet).

To understand if the Indian results are driven by specific sub-groups, we look at differences across households along three key dimensions — nuclear vs. extended families, rural vs. urban households, and occupational differences. These margins of heterogeneity are important from

Table 1: Life Cycle Growth in Consumption and Savings

		Region		Family Type		Occupation		
	Average	Urban	Rural	Nuclear	Extended	Farmers	Self-Emp.	White Collar
Consumption								
Unadjusted (%)	36.37	46.41	30.90	43.87	24.03	30.93	41.03	41.09
Adjusted (%)	3.24	11.32	1.92	7.41	0.39	0	9.77	4.80
Savings rate (p.p.)	24.72	30.68	22.46	25.16	14.85	25.68	27.90	46.49

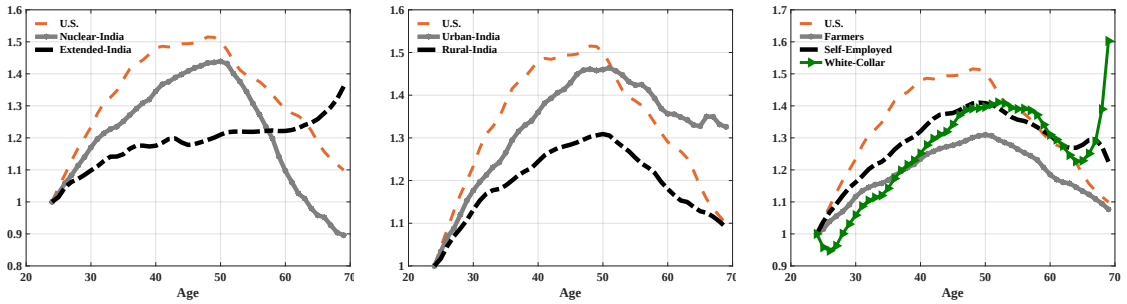
Notes: For consumption, the table reports the percent growth in life cycle consumption or the statistic $\left[\frac{y_{peak}}{y_{24}} - 1\right] * 100$ where y is household's consumption of non durable goods and services, y_{peak} is the peak value of y over the life cycle (between ages 24 and 65) and y_{24} is the value of y at age 24. Adjusted consumption refers to total household consumption divided by family size using a modified OECD scale that assigns a weight of one to household head, 0.3 to each child under/of the age of 16, and 0.5 to each adult over the age of 16. For savings rate, the percentage points difference between peak savings rate (between ages 30 and 65) and age 30 savings rate is reported.

two different standpoints 1) demographics (like in extended vs. nuclear families) and 2) level of financial inclusion (like in urban/rural or farming/non-farming households). Panel (a) of Figure 5 displays the evolution of non-durable consumption for nuclear and extended families. In contrast to our finding that for the representative household, consumption peaks around age 50, we see that there exists substantial differences in the pattern of consumption growth between the two family types. While both groups show a peak consumption of almost 40%, it happens at very different points in the life-cycle. For nuclear families, it is around the same age (50 years) as that of India as a whole. In the case of extended families, it is at a much later age. In the latter case, consumption shows a fairly monotonic increase with a further inflection at 60 capturing the likelihood that these are large inter-generational families. To further investigate this, we repeat the exercise after adjusting for family size using the OECD scale. We present the results in Figure 5d. Adjusted consumption now shows a perceptible decline that bottoms out at middle age before increasing again. This may reflect the possibility that an extended family with a head of household at age 45 has parents who are no longer earners, while those households with heads at age 60 or more, may still be earning while so are their cohabiting adult offspring.[15] It may also reflect some increasing returns to being in a joint family. However, note that expenditures here include only non-durables

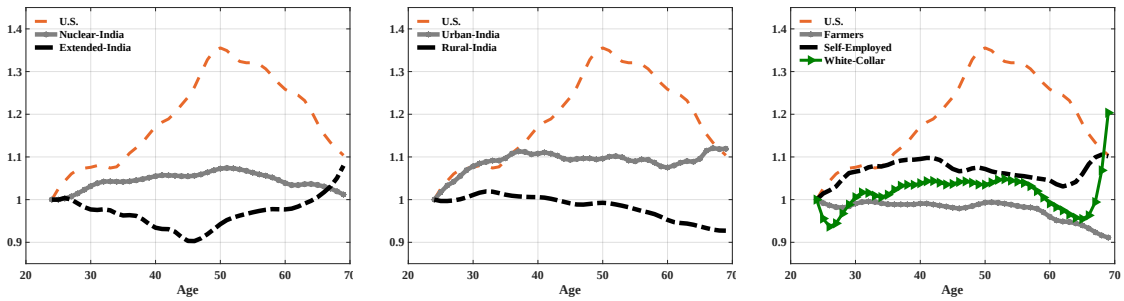
[15] In section 4.1 we discuss the issue of head of household further.

Figure 5: Life-Cycle Consumption
by Family Type, Region, and Occupation

(a) Family Type - Unadjusted (b) Region - Unadjusted (c) Occupation - Unadjusted



(d) Family Type - Adjusted (e) Region - Adjusted (f) Occupation - Adjusted



Notes: Nuclear families are defined as those comprised only of the household head, their spouse, and children. Extended families include all other members like siblings or parents of the household head, son-in-laws or daughter-in-laws, other relatives, etc. Adjusted refers to total household consumption divided by family size using a modified OECD scale that assigns a weight of one to household head, 0.3 to each child under/of the age of 16, and 0.5 to each adult over the age of 16.

and services. Other than utility expenses, most of the benefits of joint consumption is likely to come from durables.

Beyond inter-generational families, households in India also insure against income shocks by relying on local networks in the absence of formal institutions. Particularly important are caste networks (Munshi and Rosenzweig, 2016). While informal networks can exist in both rural and urban areas, the likelihood is much stronger for the former where seasonal fluctuations in incomes are also more salient. At the same time, access to financial markets is relatively larger for the latter. In the next set of figures, we examine whether consumption growth is different for rural and urban households. Figure 5b displays the consumption paths for the two groups along the life-cycle. Not

surprisingly, urban households experience much faster growth (46%) compared to rural households (31%) with the former almost comparable to the peak values for the U.S. However, once we adjust for family size, the relatively flat profile resurfaces (Figure 5e). In the case of urban households, there is still a slight but noticeable increase in the early years, while in the case of rural households, there is initially a flat, followed by a declining consumption profile toward the later years.

Finally, we look at the heterogeneity in consumption growth across different occupations of the household head. In particular we explore life-cycle consumption patterns for three distinct groups: farmers, self-employed, and white-collar workers.[16] As the nature of income shocks would expectedly be very different across these different groups, so would the extent of consumption growth. Figures 5c and 5f show the unadjusted as well as adjusted consumption, respectively, for these groups.[17] We find that across these households, farmers experience the least growth in consumption (both unadjusted and adjusted). The peak consumption growth for both self-employed and white-collar worker households looks very similar. However, the latter experiences a prominent growth in consumption after age 65. We found that this is primarily driven by a growth in income at these ages.[18]

An important source of distinction between U.S. and Indian households lies in the composition of non-durable expenditures. U.S. households are likely to spend far more on their own – or their children's higher education – and also on health expenditures. In the case of India, old age health expenditures are often borne by adult children even if they are not part of an extended household. Beyond that, home production of important categories such as food are likely to differ considerably between the two countries. Transportation is an example of another category that is likely to be more salient for U.S. households. Some of these differences, in terms of shares, are apparent in Table A.1. To gain further insight, Appendix Figure C.4 compares the evolution of total household

[16] Appendix section B provides details on how we construct these.

[17] Appendix Figure C.6 provides estimates of both adjusted and unadjusted life-cycle consumption by education status of the head.

[18] The retirement age for government services in India is 60, while it ranges from 60-65 in the private sector. Therefore, the high growth in consumption and income for household heads with white collar jobs between the ages of 65 and 69 could be driven by the presence of CEOs and other successful professionals in the survey. This rise indeed goes away when we winsorize the consumption expenditure distribution, trimming the top and bottom 1% of the observations.

consumption spending on food, non-mortgage housing, education, health, and transportation. We plot data for the U.S., India as a whole, and for urban and rural India. We find that while growth in food and transportation expenditures in urban India is similar to that of the U.S., there are stark differences in education and health expenditure growth, which remains negligible for Indian households. Housing expenditures (net of mortgage payments) grow substantially more for Indian households. Appendix Figure C.5 confirms that the stark differences in consumption spending between Indian and U.S. households are not driven by differences in education and medical spending alone. Even after we eliminate these spending sources and re-estimate our life-cycle profiles, we find substantial differences in growth rates between the two countries.

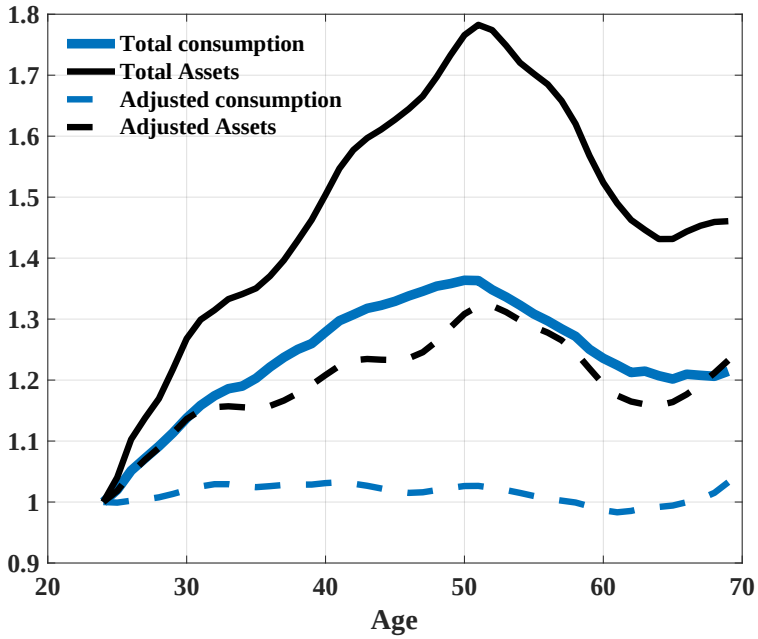
These results point to our first key finding vis-à-vis the association between physical assets accumulation and its impact on consumption behavior of households — significant crowding out of non-durable consumption expenditures to save for major durable purchases. This is further illustrated in figure 6 which shows both estimated age-effects for consumption and physical assets, unadjusted as well as after adjustments for family size and composition are made.[19] While all the growth in consumption disappears after demographic adjustments, physical assets continue to grow significantly ($\approx$ 40% growth in peak assets relative to age 24). This is in sharp contrast with the experience of U.S. households where both durable and non-durable expenditures grow significantly even after demographic adjustments are made, and the former peaks early in the life-cycle. Next, we analyze the savings behavior by taking into account life-cycle earnings of the Indian households.

3.1.3 Savings rate

While the difference between Indian and US demographic adjusted consumption is striking, a concern is whether this simply reflects an equally flat income profile. Indeed, the earlier generation of research on consumption smoothing and savings in India was mostly focused on the inability of households to formally insure themselves against short term income volatility, and failure to

[19] This figure combines Figures 3 and 4 (India only), while also adding the demographic adjustment for the former.

Figure 6: Life-Cycle Consumption and Physical Assets Accumulation
by Age of Household Head



Notes: Household durable goods index relative to age 24 (household head) is reported. The durable goods index is constructed using information on the possession of major and minor durable goods such as televisions, cattle, tractors, refrigerators, cars, two-wheelers, electric generators, washing machines and so on.

accumulate assets for the long term.[20] Though there is still a large fraction of the population mired in poverty, our imputed life-cycle profile of durable expenditures already provides evidence that this is less relevant now. A more direct way to investigate this further is to look at the life-cycle of savings rates.

In order to understand the savings behavior, we can use the CPHS income data in conjunction with savings. When we estimate the age effects for income along similar lines as consumption, we find that growth in total household income in India is comparable to that of the U.S. While U.S. households experience a roughly 100% growth in income (as compared to age 24), Indian counterparts experience about 90% growth. The fact that Indian households exhibit income growth

[20]Rosenzweig (2001), for example, notes that households generally tend to save more for short term precautionary (high frequency, i.e., seasonal shocks) rather than for life-cycle reasons. De Magalhães and Santaeulàlia-Llopis (2018) observe the same for Malawi.

close to that of the U.S., but lower consumption growth is *prima facie* evidence that it is not income per se that constrains non-durable consumption.[21]

A flat consumption profile with a growing life cycle earnings profile indicate increasing savings rate for Indian households. Figure 7 displays patterns in the evolution of savings rate.[22] For India as a whole, we find a substantial increase in the savings rate — increasing from 3% to roughly 28% over the life-cycle.[23] This is true for all types of households – urban, rural, nuclear, extended, farming, self-employed, and white-collar workers. While urban households experience a peak savings rate of 37%, the rural savings rate peaks at roughly 23%. Interestingly, extended families also exhibit a similar increase. This is despite the non-overlapping life-cycles of residents in many such families. This is especially intriguing given that the per adult consumption also drops to its lowest value around the peak savings age. Moreover, they have a higher savings rate than nuclear families all through the life-cycle, and in fact also start off at a higher rate than all the other sub-groups.

There are three interesting things to note along the occupation margin.[24] First, the savings behavior of self-employed households closely resembles that of India as a whole, especially between ages 55 and 70. Second, white collar worker households have the highest savings rate of all groups considered here (roughly 80% at its peak), and the rate rises sharply between ages 65 and 69. Third, farming households are the only major group that starts off with negative savings rates, though in their case, it also increases over time and reaches a peak of 20%. Put another way, these graphs suggest that income per equivalent adult increases faster than consumption per equivalent adult until around the age of 55. Furthermore, while the savings rate drops after that, it remains positive.

All in all, we find that Indian households maintain a flat consumption profile despite experiencing significant growth in income over the life-cycle. However, a growing savings profile over

[21] Refer to appendix figure C.7 for estimated life-cycle income of both Indian and U.S. households as well as by different sub-groups for the former (C.8 and C.9).

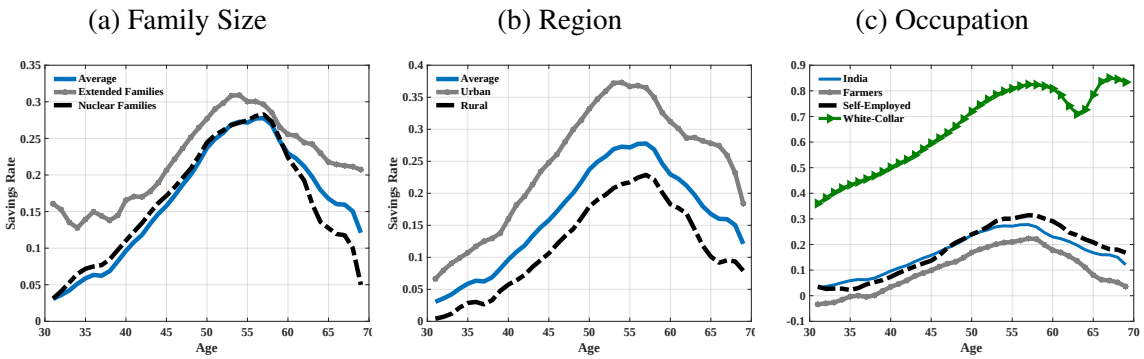
[22] Since the differences between India and the U.S. with respect to consumption and income have been discussed at length, we restrict our attention to India for this and the remaining sections of the paper.

[23] Refer to column 3 of appendix Tables C.1 for time and birth cohort effects.

[24] Appendix Figure C.10 provides these savings rate profiles by education status of the household head.

the life-cycle could mean motives to purchase lumpy physical assets or it could also be the case that Indian households are saving for other reasons such as retirement, medical expenditure risk, insuring against life-cycle income risk (precautionary motive), and so on. As noted earlier, others such as Badarinza et al. (2017) have highlighted the lack of financial savings in countries like India. In the next two sections, we provide further evidence that the accumulation of savings is at least partly driven by the need to invest in physical assets.

Figure 7: Life-Cycle Savings Rate
by Age of Household Head, Family Type, Region, and Occupation



Notes: Savings rate is computed as total household income net of total non-durable consumption as a fraction of total household income.

3.2 Intentions

Table 2 provides OLS estimates of reported intentions to purchase major durables such as houses (or plots of land), cars, two-wheelers, tractors and cattle on savings rate. Since intentions to purchase these assets may overlap, we include each of them separately as a distinct control. Column (1) provides the estimates for a base specification with no other controls, while subsequent columns repeat the estimation with additional controls. In particular, to isolate intentions from any pure life-cycle and income effects on savings rates, we also add controls for the age of the household head (column 3) and measures of household ownership of durable goods and the education status of the head (column 4). Overall, we find that reported intentions of durable purchases have strong and significant effects on household's savings rate. For instance, in column (4) with full

controls, reported intentions to purchase a house or a car increases household's savings rate by 3.67 and 2.75 percentage points (p.p.), respectively. Intentions to purchase a two-wheeler has a somewhat lesser (1.18 p.p.) albeit significant effect on savings rate as well. Intentions for tractor and cattle purchase increase savings rate by 1.93 and 1.30 p.p., respectively.

Appendix Tables C.6-C.12 provide these estimates separately for urban and rural areas, extended and nuclear families, farmers, self-employed, and white-collar worker households, respectively. It is interesting to note that intentions to purchase a house have somewhat higher effect on savings rate in rural areas than urban areas (4.91 vs. 3.14 p.p. increase, respectively). It is in fact highest for farmers (6.26 p.p.) and lowest for white-collar workers (1.64 p.p.). It is not surprising that car purchase intentions have significant effects on savings rate in urban areas and for non-farming households only (after controlling for household assets and education). While intentions for tractor and cattle purchase have insignificant (or smaller) effects on savings for urban households, they increase the rural savings rate by 7.52 and 3.82 p.p., respectively. The effects are similar for farmers. Taken together, these exercises confirm that the desire to purchase these high-value assets is an important motive for savings.

Appendix Table C.13 provides the effect of reported intentions to purchase other smaller durables like television sets, washing machines, coolers, power inverters, computers, and refrigerators on savings rate. We find that intentions to purchase all of these, with the exception of power inverters, have positive and statistically significant effects on the savings rate.

3.3 Event-study

Figure 9 shows savings rates around the period of major durable purchase such as houses, cars, two-wheelers, tractors, and cattle for Indian households. In all these cases, we either find an increase in savings up to the period of actual purchase and/or a decline soon after the purchase. The evolution of savings rates is particularly clear for house/land purchases (Figure 9a). With respect to the others, we see patterns that are also more or less consistent – especially for tractors and cattle. In many of these cases, one can see that the savings rate continues to increase in the

Table 2: OLS Estimates of Intentions to Purchase Durables on Savings Rate in India

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0964***	0.0881***	0.0876***	0.0367***
	(25.73)	(24.00)	(24.01)	(10.51)
Intend to By Car=1	0.122***	0.103***	0.101***	0.0275***
	(44.65)	(38.68)	(37.87)	(10.80)
Intend to Buy 2-Wheeler=1	0.0109***	0.00540*	0.00477*	0.0118***
	(4.86)	(2.45)	(2.17)	(5.63)
Intend to Buy Tractor=1	0.0349***	0.0302***	0.0281***	0.0193***
	(5.97)	(5.26)	(4.92)	(3.53)
Intend to Buy Cattle=1	0.00113	-0.00648*	-0.00597	0.0130***
	(0.35)	(-2.04)	(-1.89)	(4.29)
Time Dummy		0.00529***	0.00302***	0.00272***
		(120.84)	(47.13)	(44.33)
Birth Cohort		-0.0306***	0.000580	0.00218**
		(-277.06)	(0.75)	(2.94)
Age of Head			-0.110***	-0.115***
			(-66.46)	(-72.09)
Age of Head $\times$ Age of Head			0.00270***	0.00277***
			(79.52)	(85.23)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000199***	-0.0000203***
			(-87.72)	(-93.36)
Durable Goods Index				0.00242***
				(226.57)
Education				0.00828***
				(231.04)
Constant	0.291***	0.397***	1.557***	1.522***
	(1307.92)	(582.88)	(54.65)	(55.79)
Observations	2073080	2073080	2073080	2073080

Notes: The table estimates equation 2. Each observation is a household-wave. Intention to buy takes a value of 1 if the respondent plans to purchase the product over the next 120 days. The durable goods index gives higher weights to those that have lower probability of ownership in the sample along the lines of Karmakar and Narayanan (2020).
t statistics in parentheses. $^{*}\ p < 0.05$, $^{**}\ p < 0.01$, $^{***}\ p < 0.001$

wave immediately after the purchase. In our view, this does not undermine the broad patterns. Irrespective of the best planning and foresight, unforeseen expenditures can always arise with such large purchases. The decline in savings immediately following the purchase is apparent for most durables but quite stark for housing (savings rate declines by roughly 7 p.p following a house purchase). Note that even though we observe households in our survey for multiple years, we can only reliably estimate these event-time relationships for a limited number of waves surrounding these purchases as these could be happening toward the beginning or end of the time horizon over which we observe the households.

4 Robustness

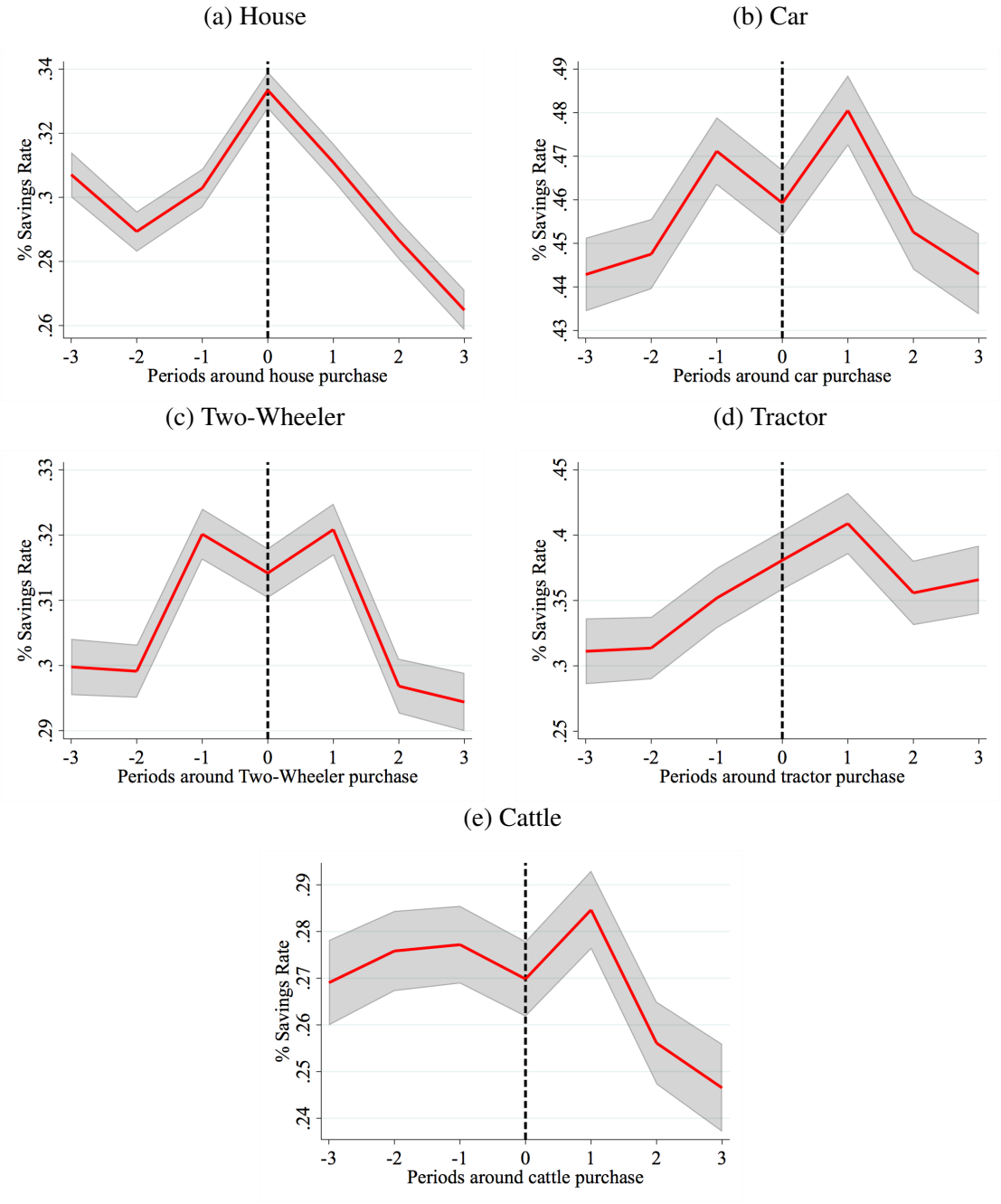
So far, our analysis has focused on the aggregate, and some large sub-groups that characterize households in India. We now revisit some of our results after factoring in definition and measurement issues that are likely to be pertinent not just for India but developing countries in general. We consider alternative definitions of the head of household, adult equivalents, and the treatment of home production for consumption. We also check the robustness of life-cycle measures to alternate polynomial functions of age.

4.1 Household head

We use the self-reported status to ascertain the household head in the survey data. Since the focus of the paper is to understand the patterns in the evolution of consumption, income, and savings over the life-cycle, it is important that the reported head of the household is an actual head and not a "figurative head." In other words, measurement errors in determining the head of the household could be problematic for our analysis of consumption and income growth over the life-cycle of the household, which is proxied by the age of the head. Household heads in census and surveys are usually individuals who are primary earners, and/or primary decision makers.[25] It is

[25]Refer to Smith (1992) for an interesting history of family and households and Budlender (2003) for a discussion on identifying a household head in data collection.

Figure 9: Savings Rate and Durable Purchase Event



Notes: The graph reports household savings rate around the time of durable purchase. Controls include dummies for calendar time, birth cohort, and a third order age polynomial.

unclear if this is the case in the context of developing countries with different cultural norms and living arrangements. This can be particularly problematic in multi-generational households, which

comprise roughly 30% of our sample. In such a setting, it is conceivable that households may be reporting the head based on seniority in terms of age and not household decision making.

Table 3: Share of Households With Heads as Primary Earning Members

	Avg.	Urban	Rural	Extended	Nuclear	Farmer	Self-Emp.	White-Collar
Share	0.78	0.76	0.78	0.47	0.92	0.81	0.85	0.90

To deal with this issue, we repeat our analysis, reclassifying the head on the basis of earnings status. Specifically, we use the earnings information for each household member to determine the highest earner and designate this person as the financial head. Table 3 provides some insights on the overlap between the reported head and the financial head as constructed above. For India as a whole, the financial head is also the reported head for a majority (78%) of households. However, there are some interesting differences worth noting. Predictably, in the case of extended families, only half of the reported heads are also the prime earners. It is also interesting to note that living in a rural versus urban area does not predict divergence between the two definitions. Households where the reported head has a white-collared job are most likely to have the same person as the financial head. Appendix Figure C.11 goes further and traces the likelihood of the financial head being the same as the reported head by age, for different regions, family type, and occupation. The figures clearly show the "seniority" factor – older households are more likely to have reported a "figurative head" than a financial head. This is particularly true in extended families where only 20% of the reported household heads are also the financial heads at age 70, the analogous statistic being 70% for nuclear families.

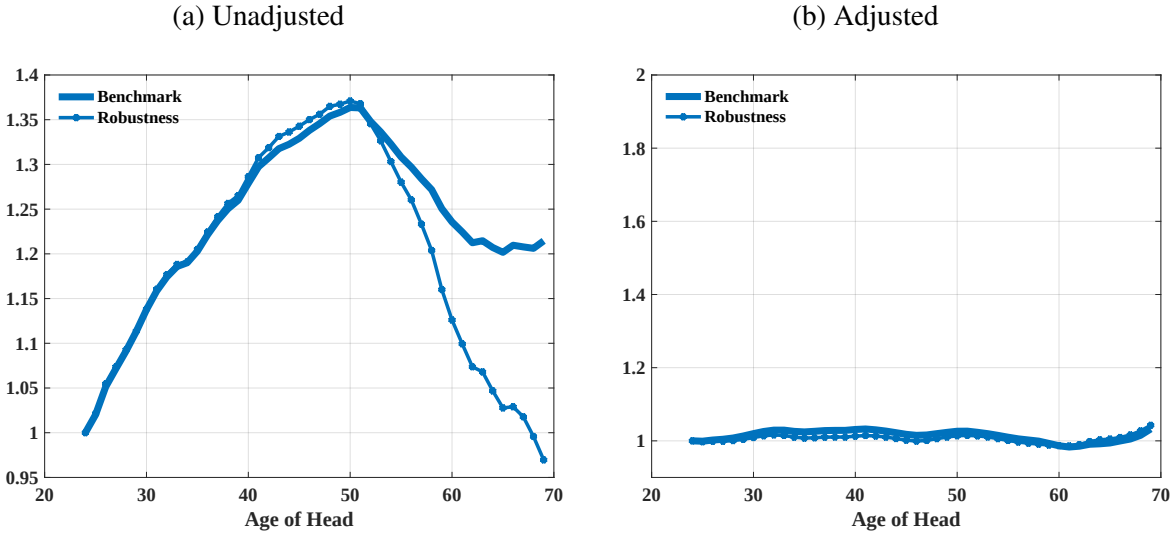
Figure 10 shows both the household (i.e., unadjusted) and the adult equivalent (adjusted) life-cycle consumption profiles when we only consider households where the heads are also the primary earners.[26] For easier comparison, we also include the benchmark consumption profiles (i.e., using reported household head). The unadjusted consumption still peaks around age 50 with a roughly 37% growth (compared to age 24) as earlier. However, the decline in consumption after age 50

[26]We drop all household-wave observations from our sample where the reported head and financial heads are not the same.

is much more pronounced compared to the benchmark. This indicates that while potential measurement errors in determining the household head may not have any effect on our measurement of consumption growth over the life-cycle of Indian households, it could result in underestimating the decline in household consumption at later ages. Indeed, the decline now closely resembles that of nuclear families (Figure 5a). Adjusted consumption patterns remain unaffected.

Appendix Figure C.12 reports the savings rate of households after dropping heads who are not financial heads. We find the same hump-shape pattern even though the levels are somewhat lower. We also revisited the consumption profile of extended families. Recall that the consumption per equivalent adult bottoms at around age 50. It turns out that even when we restrict the sample to only those extended families where the head of household is also the primary earner, this pattern does not change. In other words, the u-shaped behavior is not due to a mislabeling of the household head. The profile is displayed in appendix Figure C.13.

Figure 10: Head Robustness: Life-Cycle Consumption
by Age of Household Head



Notes: This robustness exercise drops all households where the head is not the primary earning member.

4.2 Consumption scales

Adjusting total household consumption by an equivalence scale allows us to capture the effects of changing demographics on life-cycle consumption patterns. In our benchmark analysis, we have used an OECD scale that assigns a value of one to the household head, 0.5 to each additional adult, and a value of 0.3 for each child. In order to test the sensitivity of our result to a specific form of scaling, we use an alternate household equivalence scale proposed first by NRC (1995), and later used by Scholz et al. (2006), Love (2010), and Nie (2020). This scale is given as:

$$n_i = (n_{Ai} + 0.7 * n_{Ki})^{0.7}$$

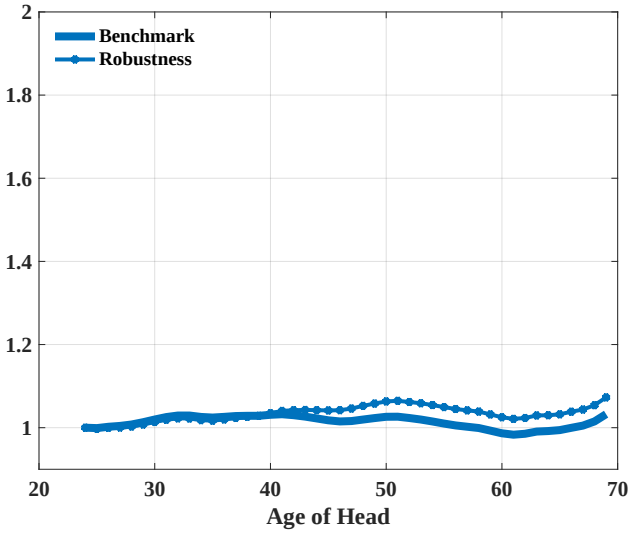
where n_{Ai} is the total number of adults in the household i including the head and n_{Ki} is the total number of children. This formulation allows the equivalence scale to distinguish between household composition effects (the different consumption requirements of adults relative to children) and economies of scale.[27] Figure 12 provides adjusted consumption expenditures using both the benchmark OECD and the NRC (1995) scale. We find that the latter results in slightly higher growth in adjusted consumption over the life-cycle than the OECD scale. Specifically, adjusted consumption now grows by 6.5% (3% in benchmark) over the life-cycle and reaches its peak at age 51 (41 in benchmark). The general pattern of relatively smooth consumption is largely unchanged though.

4.3 Home production

We next explore the possibility of home production crowding out some of the expenditures on non-durable consumption. There are two important types of home production that are relevant. First, households may engage in agricultural production for self-consumption. This is more likely

[27]For a couple with two children, the value is 2.35 while it is 2.1 for OECD. In India, within family resource allocation tends to be highly skewed in favor of males, which neither scale addresses. For more on the intra-household inequality in resource allocation, see Browning et al. (2013). Calvi et al. (2021) argue that the OECD parameters over-correct for economies of scale and lead to significantly lower consumption based poverty rates in Bangladesh.

Figure 12: Scale Robustness: Adjusted Life-Cycle Consumption
by Age of Household Head



Notes: This figure compares consumption when using the OECD equivalent scale (Benchmark) to that proposed by NRC (1995): $n_i = (n_A + 0.7 * n_K)^{0.7}$.

to happen in rural areas. Second, there are standard household chores that constitute home production for which there are market alternatives (including the hiring of domestic help – a common phenomenon in urban Indian middle-class households). Thus analyzing consumption expenditures and its growth over the life-cycle may not be reflective of actual growth in consumption.

While it is extremely difficult to get a good estimate of the total value of home production being carried out by households, the survey data utilized in this analysis calculates imputed values based on self reports that allow us to deal with the first problem. Households are asked about the "total quantity of agricultural or commercial goods produced that were self consumed by the household in the last month." The value of home production is then derived by multiplying the quantity of the agricultural goods produced by the household and the price of the crop in the local market. For self-employed households, goods taken from their own "kirana" (grocery) stores or restaurants or those earned in kind through the barter system are also included in this estimate. Table 4 provides some summary statistics of the monthly estimated value of home production in rupees. It is interesting to note that these estimates are quite small compared to expenditures

on monthly non-durable consumption and somewhat larger in rural areas than in urban areas as expected.

We add these imputed values of home production to our non-durable consumption expenditure measure and re-run the benchmark analysis to estimate life-cycle profiles of consumption.[28] Figure 13 reports both adjusted and unadjusted consumption profiles. We find that there are no significant effects of food production on the growth of consumption over the life-cycle – both when adjusted and unadjusted for demographics. Appendix Figure C.14 shows these profiles by region and family type. As expected, the small differences are due to rural areas and extended families as urban profiles remain completely unchanged.

Female labor force participation in India is one of the lowest in the world, and in fact has been declining during this period (Deshpande and Singh, 2021). Since women do most of home production, are we severely underestimating the *growth* in life-cycle consumption? While it is hard to take this into account in our empirical analysis, it seems unlikely. A major component of home production centers around child rearing, which is likely to be more pronounced during the earlier years of household's life-cycle. This would raise consumption during that phase. In other words, if we added this, it would lower consumption growth and not increase it. Second, as shown earlier, the bulk of rural income growth and almost half of urban total household income growth comes from increasing labor force participation. While Indian women are expected to shoulder the responsibility of household chores even if they have careers, at least on the margin, there are some households where market goods and services substitute home production over the life-cycle. Combined, these phenomenon would suggest a flatter, and not steeper, slope for consumption.

4.4 Alternate specification

Nonparametric regression estimators have become common tools for researchers as they allow for a flexible relationship between the control and the dependent variables of interest. Here, we would like to test how robust our estimate of consumption growth is to the use of a standard

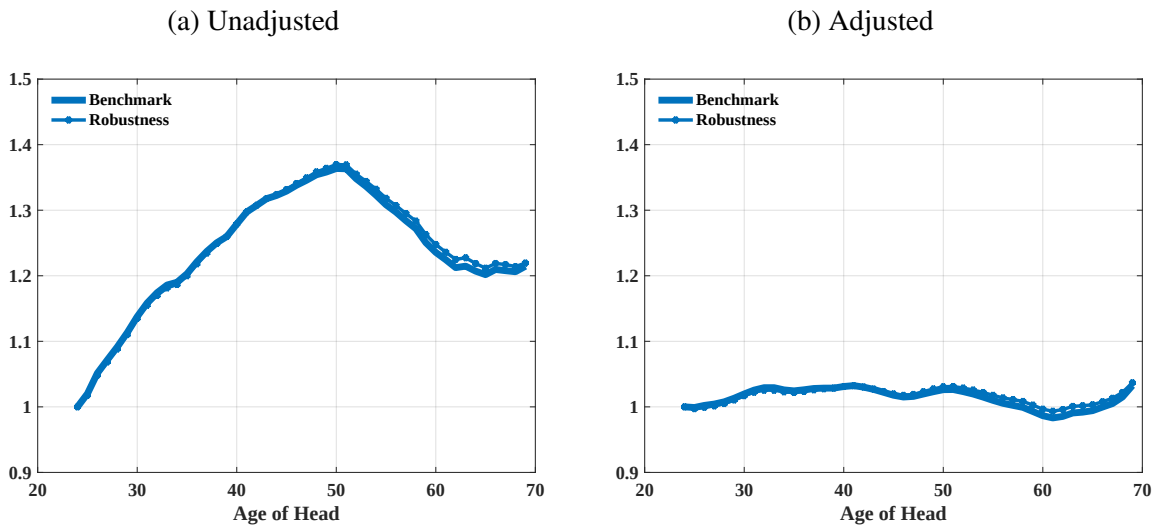
[28] The survey already includes these imputed values in total household income but not in consumption.

Table 4: Estimated Annual Value of Home Production
By Region Type

	Home Production		Non Durable Expenditures	
(in USD PPP)	Mean	Std. Dev.	Mean	Std. Dev.
Average	158.14	647.85	5945.14	3269.56
Urban	36.59	343.84	7381.07	4039.94
Rural	216.22	743.88	5258.96	2557.93

Notes: Home production here refers to the imputed value of agricultural and commercial goods produced for self-consumption.

Figure 13: Home Production Robustness: Life-Cycle Consumption
by Age of Household Head



Notes: This robustness exercise adds estimates of home production to household consumption expenditures.

parametric regression model. We use the same benchmark controls for birth cohort and time and a third or fourth order polynomial for age to estimate the non-linear relationship. Specifically, $f(age_{it})$ is now a third or fourth order polynomial of age age_{it} in equation (1). Table 5 shows that our estimates of consumption growth over the life-cycle vary somewhat across specifications. Unadjusted consumption growth varies between 33 and 36% while adjusted growth varies between 3 and 4%.

Table 5: Life-Cycle Consumption Growth in India
Under Alternate Specifications

	Unadjusted		Adjusted	
Spec.	Δ^*	Peak Age	Δ^*	Peak Age
Third order polynomial	1.33	48	1.04	37
Fourth order polynomial	1.34	47	1.04	41
Nonparametric	1.36	50	1.03	41

Notes: *Δ refers to the ratio of peak consumption expenditures to age 24 consumption expenditures. Peak age refers to the age at which highest life-cycle consumption is attained.

5 Conclusion

Using a recently introduced, nationally representative panel of Indian households, we investigate the patterns in life-cycle consumption, income, and savings rate to understand the role played by the lack of access to financial markets on these behaviors. We find that Indian households build a repository of consumer durables over the life-cycle – an 80% growth in the peak value of physical asset stock compared to age 24. While the literature finds similar growth for the U.S. households, this is achieved early in the life-cycle and the mechanism for financing differs significantly. Unlike U.S. households, these expenditures by Indian households are paid upfront in full — making these lumpy purchases. This results in crowding out of consumption of non-durable goods and services, as we find no growth in these whatsoever once family size adjustments are made.

Specifically, we find that the growth in total non-durable consumption expenditures in India

is close to that of the U.S. households ($\approx$ 50%). However, stark contrasts are revealed when comparing family size adjusted expenditure profiles. While U.S. households still experience a 30% growth in expenditures, all the growth in non-durable consumption disappears for Indian households. This presents a puzzle given that Indian households experience a significant growth in income, even after adjusting for family size. To investigate this further, we estimate the age-profile of savings rate for Indian households and find that it exhibits a prominent hump where household income net of non-durable expenditures grows from 10 to more than 30% between ages 35 and 55. The finding that non-durable consumption, after adjusting for family size, stays relatively flat while the savings rate continues to grow, implies that households in India do not smooth consumption in the traditional life-cycle-perfect markets sense. Instead, they accumulate durable goods and physical assets.

In the second part of the analysis, we focus on understanding the drivers of the high savings rate for Indian households. While we do not directly observe the expenditures incurred on purchasing physical assets like housing, cars, cattle, and so on, we do observe a physical inventory of all major and minor durable goods owned by the households as well as reported intentions to purchase these in a tight window of four calendar months and actual purchase instances within the same timeframe. We utilize the panel structure of our data set in the second part to see how reported intentions or actual purchases shape the savings rate of these households. We document two interesting findings. First, we find that reported intentions to purchase physical assets are predictive of actual purchases and these intentions to purchase physical assets and durables increase savings rate. For instance, house buying intentions increase the savings rate by roughly 4 to 10 percentage points (across specifications), and in rural areas, intentions to buy cattle or a tractor increases the savings rate by 3.8 and 7.5 percentage points (specification with full controls), respectively. Second, the household savings rate goes up over the life-cycle leading to the actual purchase and then decline after the purchase for a majority of the durable purchases. In addition, we also find that the durable purchases seem to be distributed around the middle of the life-cycle where the savings rate peaks. We also conduct a host of robustness tests to check the sensitivity of our key findings.

While our results provide a fresh perspective, it is also important to consider and address some of the limitations. Readers might be concerned that unlike the literature that has emerged from the U.S. and other countries, ours relies on a panel that has a much shorter time frame of six years. While a longer panel would have been ideal, the growth of the Indian economy during this period has also been rapid. Real per capita consumption expenditures both in the survey data and national accounts statistics average 6-6.5% growth annually. In other words, cumulative growth in expenditures during this period was easily equivalent to what one might see in the U.S. over more than a decade. Furthermore, even for the U.S. there is some recent evidence suggesting that life-cycle analysis using long panels may generate artificial humps that hide systematic time variation (Aksoy et al., 2020). Similarly, Chamon and Prasad (2010) find evolving patterns for China.

A related criticism with respect to a short panel is that younger households might be consuming more in anticipation of higher income growth compared to older households. This can naturally cause the consumption profile to appear smoother than the underlying data. This is a genuine concern especially in a fast growing economy. However, India has now been growing rapidly for more than two decades. Thus, even those household heads who are in their forties and fifties would have formed similar expectations at the start of their earnings cycle. Moreover, urban households, where these effects might be stronger, actually show steeper growth.

A third concern is whether specific macro-events might have affected our conclusions. Since our analysis ends prior to the COVID-19 pandemic, the other remaining crisis is the demonetization experiment in late 2016. Interestingly, the few household analyses of consumption expenditures have found very few effects (Chanda and Cook, 2022; Wadhwa, 2019), and even the macroeconomic effects seem to have quickly dissipated (Chodorow-Reich et al., 2020; Lahiri, 2020).

There can also be concerns about whether the survey correctly records income and consumption. As we noted earlier, consumer expenditures closely match that of a recent government survey. The usual concern is whether income is recorded accurately. This is a problem with all surveys – especially at the higher end of the distribution. In our view, the bigger surprise here is the high savings rates. If income is being under-reported, then that would mean even higher savings rates,

which would reinforce some of the novel findings of the research.

One area where more research needs to be done is the actual composition of savings. While we observe a large and increasing gap between household income and consumption and provide evidence that consumer durables play an important role, we are unable to determine the extent to which savings can be decomposed into financial savings, durables purchases, and jewelry. While this decomposition would be informative, it's already well documented that the bulk of Indian household assets are in the form of physical assets, and very little in financial assets. Badarinza et al. (2017) observe this for 2013, and the subsequent national survey reinforces this for 2019 (GOI (2021)), i.e. book-ending our period of study. Gold jewelry too remains an important vehicle for savings. Unlike other major asset purchases, the survey data indicates that households smooth their gold purchases over the life-cycle. This is not surprising since, apart from being viewed as an inflation hedge, jewelry has been an important component of dowry and wedding expenses more generally, and families tend to incrementally accumulate it over many years.

In summary, this study provides what we believe is a first in-depth view of life-cycle consumption and savings in India. In doing so, we provide a perspective that is not only different from that observed in high-income countries but also sheds new light on how lack of access to credit markets might interact with the timing of consumption especially in the case of lumpy durables. While we have used the US as a reference for our analysis of consumption, there is a swathe of countries between ones like the US with easy access to credit, and India, with limited access to credit. Our finding of flat non-durable consumption but rising savings rate to finance durables and physical assets, should be salient for many of these economies.

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Online Appendix

A Data

A.1 Recent literature using CPHS

Over the past few years, researchers have increasingly relied on the data to study household responses to important macro events in India such as demonetization in 2016 (e.g. Chanda and Cook (2022); Chodorow-Reich et al. (2020); Karmakar and Narayanan (2020); Lahiri (2020)). The data has also been used extensively to investigate the effects of the COVID-19 pandemic (Anand et al., 2021; Gupta et al., 2021; Malani and Ramachandran, 2022; Mohanan et al., 2021). Apart from these studies, researchers have also employed the data to study a range of topics from financial inclusion (Agarwal et al., 2021) to labor market participation (Deshpande and Singh, 2021).[29] The survey represents 98.5% of the total population in India, and about two-thirds of the respondents live in urban areas and one-third live in rural areas. While this is the opposite of the actual composition of the Indian population, survey weights are designed so that the aggregate values are representative of the entire country.[30]

A.2 Comparing CPHS with other surveys

How comparable are the CPHS survey estimates to other measures of consumption expenditures and incomes? While detailed survey data on incomes are hard to come by, we can compare consumption expenditures. Even though the Indian government withheld the release of the latest round of the consumption expenditure survey, a 2014-15 survey on durable goods and services also asks a question on total household consumption expenditures (Government of India (GOI), 2016).[31] The monthly household consumption expenditures from the 2014 CPHS surveys can be compared to these. The latter values for India as a whole, rural, and urban were INR 7,951 (USD 550), INR 6,802 (USD 471) and INR 10,270 (USD 711) respectively. These are 97%, 102%, and 91% of the government survey counterparts – surprisingly close numbers.[32] Another way to evaluate reliability is to look at growth rates. While there are no other annual surveys on expenditures, over the period of analysis (2014-2019), the per-capita real consumption expenditure growth was

[29] Traditionally applied microeconomic studies have relied on NSSO expenditure and employment surveys which were repeated cross sections and did not record income data. Complicating matters, the Government of India decided not to publish the NSSO 2015-16 survey results. Researchers have also relied on Rural Economic & Demographic Survey (REDS), a rural panel of households. Apart from being rural and a relatively smaller sample (about 9000), REDS was last conducted in 2006. Another survey is the IHDS by the University of Maryland. It was conducted in both 2004-05 and 2011-12, and has a panel component.

[30] The rationale for surveying more urban households is due to the larger heterogeneity in this population. Vyas (2020) provides a useful introduction to the survey.

[31] The Govt. of India surveyed 83,600 households across India during 2014-15.

[32] While a precise mapping of sub-categories is difficult, we find that the non-durable expenditures were also 97%, 99%, and 91% respectively. This is especially reassuring given some questions raised regarding the survey recently by Somanchi (2021). One of the concerns is that estimated consumption of rural households might be too high, while income might be too low. Even if this concern is valid, it would actually reinforce our finding of high savings rates. Gupta et al. (2021) also addresses some of the concerns.

6.7%, which was only a little higher than the national accounts per-capita private consumption expenditure growth of 6.2%.[33]

A.3 CPHS sample construction

In order to construct our sample, we first merge all wave-year files (2014 to 2019) for household income and expenses. In each wave, households are required to report income and expenditure information for the previous four months, giving us household-month-year level data. Since previous literature using this data has found little variation in expenditures at the month level for a given wave, we only use average monthly expenditures for each wave, giving us a household-wave-year level dataset. Next, we merge all the wave-year files for the "People of India" module containing demographic information for each household member in each wave-year.[34] Table A.1 provides some summary statistics that we discuss further below, and also in relation to the U.S. PSID data.

A.4 Comparing CPHS with PSID

Table A.1 compares summary statistics of household expenditures and income for both India and the U.S. While columns 2 and 4 provide annual expenditures and income (converted to USD PPP for India) for both countries, columns 3 and 5 compare the share of major consumption categories as a fraction of total non-durable consumption expenditures. A few important differences become obvious. In India, food takes up a little more than half of all non-durable expenditures, whereas for the U.S., this is only 22%. Interestingly, non-mortgage housing related expenditure shares that include rent, utilities, and communications are roughly the same in both countries. Transportation, not surprisingly, is a much higher share in the U.S. as is health. Appendix section A.5 provides a detailed discussion about each expenditure category for both countries. With respect to demographics, the age of head of household is higher in India. Given that India is a younger population, this reflects the importance of extended households. Within extended households, the nominal head might be a patriarch and not the main earner or the financial decision maker. In our robustness section, we re-examine life-cycle profiles by redefining the head of household to be the primary male earner. Lastly, the family size and also the OECD adult equivalent scales differences between the two countries are as expected.

A.5 Expenditure Categories

A.5.1 Food

In CPHS, we sum up expenditures on three broad items — food, intoxicants and restaurant meals. Food items include cereals & pulses, edible oils, spices, vegetables & fruits, meat, fish & eggs, milk & milk products, ready-to-eat food, spices, bread, snacks, noodles & pasta, flakes,

[33]The government's most recent (2017-18) expenditure survey was never released due to concerns regarding the numbers being lower than their earlier 2011 survey. We should note that despite the 6.2% annual growth, the CPHS estimates only surpassed the government's 2011 values in 2018.

[34]Our data run from the first wave of 2014 through the second wave of 2019. The end date is due to funding limitations but in any case with the COVID-19 pandemic, waves from 2020 would be less useful. In general, the non-response rate averages about 15%. Attrition with such a large and frequent survey is certainly a problem, though approximately 100,000 households answered the survey for at least 14 out of the 17 waves that we cover.

Table A.1: Comparison of PSID and CPS dataset

	CPHS		PSID	
	Mean	Fraction	Mean	Fraction
Age of household head	50.02		47.14	
Family size	4.09		2.31	
OECD scale	2.34		1.49	
Annual expenditures	8,476.09		38,388.44	
Annual income	12,216.55		76,665.31	
Adjusted expenditures	3,955.65		26,243.38	
Food	3,472.57	0.54	7,860.95	0.22
Non mortgage housing	1,473.57	0.21	8,377.49	0.27
Transport	1,869.79	0.03	9,722.70	0.24
Health	176.52	0.02	3,326.08	0.08
Education	279.83	0.03	1,399.44	0.02
Clothing	779.55	0.11	1,554.67	0.04
Recreation	37.88	0.00	2,613.33	0.06
Observations	974442	974442	61005	61005

Notes: The expenditure data for CPHS is in USD PPP converted values. Non-mortgage housing expenses in PSID include rent, utilities, internet charges etc.; the housing category in CPHS includes housing, power, and communication fees. Others in PSID include repairs and furnishing expenses; others in CPS include miscellaneous expenditures.

muesli & oats, confectionery & ice-creams, health supplements, tea, coffee, sweeteners, and beverages, juices & bottled water. Intoxicants include liquor and tobacco products. Restaurant meals include food and non-alcoholic beverages consumed in restaurants or snack joints.

In PSID, we use the total family food expenditure variable which includes expenditures for food at home, delivered, and eaten away from home. We do not have any measures of intoxicants reported separately in PSID. Even though households report annual expenditures on food starting 1999, we restrict our analysis to years between 2005 and 2019 as some of the other expenditure items like clothing, trips etc (present in CHPS) only became available in PSID starting 2005.

A.5.2 Housing

Non-mortgage housing expenditures in CHPS include expenditures on rent and bills, power and communication. Rents and bills include household expenditures on house rent, water charges, society charges, and any other taxes. Power expenditures are a sum total of the household expenditures on cooking fuel, petrol, diesel and electricity. Finally, communication expenditures include household expenditures on landline telephone bill and mobile phone charges.

PSID reports several categories of housing expenditures like mortgage and loan payments, rent, property tax, insurance, and utilities including gas, electricity, water and other items. Since, mortgage payments are not included in CHPS, we restrict the expenditures to those other than mortgage-related. Specifically, we exclude mortgage and loan payments, property tax and insurance from total housing expenditures.

A.5.3 Clothing

Expenditures in CHPS in this category include clothing, footwear and cosmetics. While former includes household expenditure on clothing (such as garments, jackets, woolens, etc), clothing accessories and footwear, latter includes household expenditure on cosmetics and toiletries including dental care products and bathing soap.

Clothing expenditures in PSID reported by households include expenditures incurred on on clothing and apparel, including footwear, outerwear, and products such as watches or jewelry. As far as we know, PSID does not report any expenditures separately on cosmetics.

A.5.4 Transportation

In CPHS, transport expenditures relate to various modes of transport and other charges. including "Daily Bus/Train/Ferry Fare", "Auto-rickshaw/Taxi Fare", "Outstation Bus/Train Fare", "Parking Fees", "Toll Charges and Airfare". Note that expenditures related to vehicle purchase are reported separately and not included in our measure.

Transportation related expenditures in PSID include expenditures for vehicle loan, lease, and down payments, insurance, other vehicle expenditures, repairs and maintenance, gasoline, parking and car pool, bus fares and train fares, taxicabs and other transportation. We net out vehicle down payment and lease related expenditures from this measure to get a more comparable measure to CHPS.

A.5.5 Health

CPHS data report health expenditures related to expense on medicines, doctor's fees, X-Ray tests, hospitalization fees, premium for health insurance, etc.

Health expenditures in PSID include total family health care expenditures including spending on hospital and nursing home, doctor, prescription drugs and insurance.

A.5.6 Education

In CPHS, this is the sum total of household expenditure on education. It includes expenses on stationery, school/college fees, private tuition fees, additional professional education, overseas education, hobby classes and other items of education.

Education expenditures in PSID include all schooling related expenditures.

A.5.7 Recreation

Recreation expenditures in CPHS include expenditure on electronic storage devices, entertainment and games/toys. Electronic storage devices include pen drives, hard disks, memory cards, CDs, DVDs, cassettes, records and other mediums. Entertainment includes movie tickets, theatre tickets for drama, music concerts or general entertainment programs, tickets and subscriptions to entertainment clubs such as discotheque, tickets to sports events like tournament matches or other sports events, tickets to the zoo, tickets to museums, art galleries, planetariums, circus, theme parks, etc. Games/toys includes all kinds of indoor or outdoor toys or sports equipments or materials for children and/or adults.

Recreation category in PSID inlcude expenditures on trips and vacations, including transportation, accommodations, and recreational expenses on trips as well as on other recreation and entertainment activities, including tickets to movies, sporting events, and performing arts and hobbies including exercise, bicycles, trailers, camping, photography, and reading materials.

A.5.8 Others

In CPHS data, the other category include household expenditure on domestic help/laundry, repair of vehicles, remittances sent, social obligations, religious obligations, etc. It includes all household expenses that were excluded from the above categories.

To keep the definitions close, we include expenditures on home repairs and maintenance as well as furnishing in PSID in this category as well as expenditure on household furnishings and equipment, including household textiles, furniture, floor coverings, major appliances, small appliances and miscellaneous housewares.

A.6 Durable Goods and Physical Assets

Table A.2 below provides the prices and share of households owning each type of physical assets by region —urban and rural. Note that we exclude housing and livestock from our measure of the value of the stock of physical assets owned by households. This is due the fact that NSSO dataset used in imputing prices does not provide expenditures on either.

Table A.2: Price and Distribution of Durable Goods by Sector

	Price				Share (%)	
	Rural		Urban		Rural	Urban
	mean	s.d.	mean	s.d		
Two-wheelers	48045.77	10565.78	51714.02	9163.42	52.1	70.5
Cars	330098.92	143932.66	456889.21	150094.70	3.5	12.7
Tractors	205178.77	168800.84	126272.99	90364.00	4.3	0.4
Cooler	5438.09	1660.02	7969.82	7496.36	32.5	50.0
Fridge	13156.90	2493.34	14549.15	2996.25	37.8	72.7
AC units	29264.96	18935.65	30190.64	5633.47	2.5	13.7
Generator	13329.04	5984.94	18062.56	9292.29	10.3	25.5
Television	12190.13	5729.27	18020.45	6336.04	87.1	97.8
Washing machine	11809.07	3013.60	13518.15	3382.45	12.8	37.3
Laptop	22510.20	7311.12	27582.81	7469.56	2.3	14.3
Observations	309		326			

Prices of durable goods are in 2014 rupees, from the 72th round of NSSO dataset (July 2014 - June 2015). The price of tractors is only available for rural households, while the price of AC units (air conditioners) is only available for urban households. We use the available prices to impute for the value of the asset stock in CPHS.

B Occupational Classification

The "People of India" files provide information on the occupation of each household member including the head. Appendix table B.1 below shows the various occupations of the head and it's distribution in our sample for overall and for both urban and rural areas. Given these classifications, three broad groups emerge for the working-age head — those working on farm or related activities, those working on their own business and those working in professional white-collared jobs. Given this we re-code occupations for the analysis conducted in this paper into the following three groups. First we define farmer as those working as *Agricultural Labourer*, *Organised Farmer*, *Small Farmer* or *Wage Labourer*. We classify self-employed as those reported as *Qualified Self Employed Professionals*, *Self Employed Entrepreneur*, *Self employed professional*, *Small Trader/Hawker/ Businessman without Fixed Premises* or *Businessman*. Finally we combine categories such as *White collar worker*, *White Collar Clerical Employees*, *Legislator/Social Worker/ Activists*, *Manager* and *White-Collar Professional Employees and Other Employees* into a single white-collar category. Since reported occupation of the head can change over multiple observed waves leading to retirement, we classify household head's occupation based on the one reported at the time of first interview.

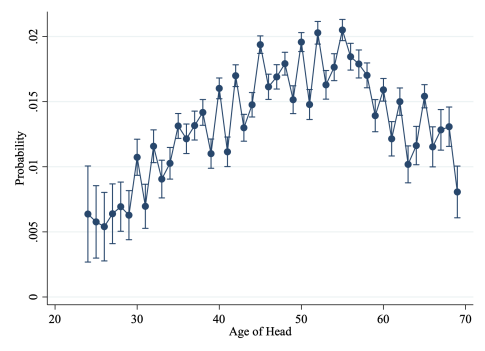
Table B.1: Occupation of Household Head

	All	Urban	Rural
Agricultural Labourer	4.14	0.74	11.24
Businessman	8.77	11.66	2.74
Home Maker	6.76	7.36	5.51
Home-based Worker	0.64	0.77	0.37
Industrial Workers	3.96	4.97	1.86
Legislator/Social Worker/ Activists	0.06	0.06	0.05
Manager	0.32	0.45	0.06
Non-Industrial Technical Employee	1.52	1.87	0.79
Organised Farmer	4.13	1.04	10.59
Qualified Self Employed Professionals	0.46	0.63	0.10
Retired/Aged	10.30	12.07	6.61
Self Employed Entrepreneur	9.28	11.42	4.82
Self employed professional	0.75	0.94	0.33
Small Farmer	9.32	1.50	25.66
Small Trader/Hawker/ Businessman without Fixed Premises	3.93	4.88	1.93
Student	0.01	0.01	0.01
Support Staff	7.16	8.89	3.55
Unoccupied	0.46	0.49	0.39
Wage Labourer	19.66	19.34	20.35
White Collar Clerical Employees	3.69	4.76	1.46
White collar worker	1.24	1.65	0.39
White-Collar Professional Employees and Other Employees	3.44	4.52	1.19
Total	100.00	100.00	100.00

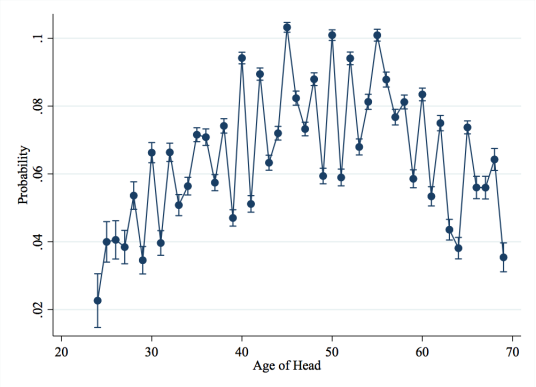
C Additional Figures and Tables

Figure C.1: Borrowing For Home and Durable Purchases

(a) Probability of Making an Installment Payment for House



(b) Probability of Making an Installment Payment for Durables



Notes: Consumer durable include refrigerators, air-conditioners, pump-sets, television, mobile phones, computers,music systems, musical instruments, sports gear, cooking range, furnishings, etc. Installment payments refer to "equal monthly installments" (EMI) for house and for durables respectively.

Table C.1: OLS Estimates of Birth Cohort and Time Effects on Consumption, Income and Savings Rate of Indian Households

	Ln(Consumption)	Ln(Income)	Savings Rate
Birth Cohort Dummy = 2	0.00334	-0.0299**	-0.0283***
Birth Cohort Dummy = 3	-0.0137	-0.0901***	-0.0556***
Birth Cohort Dummy = 4	-0.0525***	-0.137***	-0.0566***
Birth Cohort Dummy = 5	-0.0730***	-0.162***	-0.0486*
Birth Cohort Dummy = 6	-0.0632***	-0.157***	-0.0477*
Birth Cohort Dummy = 7	-0.0496*	-0.135***	-0.0375
Birth Cohort Dummy = 8	-0.0511*	-0.113***	-0.0138
Birth Cohort Dummy = 9	-0.0613*	-0.0968**	0.0209
Birth Cohort Dummy = 10	-0.0748**	-0.0769	
Time Dummy = 2	0.0421***	0.0416***	0.00692
Time Dummy = 3	0.00813	0.0122	0.0212**
Time Dummy = 4	0.0319***	0.00871	-0.00537
Time Dummy = 5	0.0470***	0.0135	-0.0117
Time Dummy = 6	0.116***	-0.0228**	-0.126***
Time Dummy = 7	0.134***	-0.00740	-0.113***
Time Dummy = 8	0.0831***	-0.0246**	-0.104***
Time Dummy = 9	0.0293***	-0.0509***	-0.0942***
Time Dummy = 10	0.0450***	0.0171*	-0.0211**
Time Dummy = 11	0.0933***	0.0844***	-0.0153*
Time Dummy = 12	0.182***	0.140***	-0.0534***
Time Dummy = 13	0.185***	0.206***	0.0118
Time Dummy = 14	0.208***	0.232***	0.00157
Time Dummy = 15	0.217***	0.243***	-0.00129
Time Dummy = 16	0.246***	0.278***	0.0176*
Time Dummy = 17	0.236***	0.275***	0.0332***
Observations	780	780	663

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.2: OLS Estimates of Birth Cohort and Time Effects on Consumption and Income of U.S. Households

	Ln(Consumption)	Ln(Income)
Birth Cohort Dummy = 2	-0.0153	0.00359
Birth Cohort Dummy = 3	0.0805*	0.0449
Birth Cohort Dummy = 4	0.0485	0.0501
Birth Cohort Dummy = 5	0.0985	0.128
Birth Cohort Dummy = 6	0.0100	0.0323
Birth Cohort Dummy = 7	-0.0581	-0.109
Birth Cohort Dummy = 8	-0.0542	-0.173
Birth Cohort Dummy = 9	-0.00880	-0.155
Birth Cohort Dummy = 10	-0.0116	-0.163
Birth Cohort Dummy = 11	-0.00906	-0.147
Birth Cohort Dummy = 12	-0.0536	-0.248
Birth Cohort Dummy = 13	-0.0753	-0.305
Birth Cohort Dummy = 14	-0.0347	-0.263
Time Dummy = 2	0.0280	0.0155
Time Dummy = 3	-0.0147	0.0359
Time Dummy = 4	-0.0434	-0.0352
Time Dummy = 5	-0.0629*	-0.00155
Time Dummy = 6	-0.0691*	0.0114
Time Dummy = 7	-0.0563	0.0290
Time Dummy = 8	0.0663	0.0914
Observations	505	505

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.3: Household Composition by Age of Household Head

Age Group	Spouse	Children			Parents	Grand children	Others	Number
		0-5	6-10	11-16				
20-29	0.87	0.54	0.38	0.05	0.17	0.00	0.12	3.53
30-39	0.92	0.23	0.63	0.44	0.11	0.00	0.05	4.09
40-49	0.89	0.05	0.21	0.55	0.07	0.03	0.08	4.20
50-59	0.83	0.10	0.13	0.18	0.03	0.18	0.26	4.07
60-69	0.75	0.13	0.21	0.16	0.01	0.37	0.45	4.04
70-79	0.69	0.10	0.21	0.22	0.00	0.47	0.52	4.11
80-89	0.59	0.06	0.15	0.22	0.00	0.51	0.56	4.11
Total	0.84	0.12	0.26	0.33	0.06	0.15	0.21	4.10
Observations	2356598							

Notes: Columns 2-8 report the fraction of households reporting the presence of respective members. Others in the extended family refer to presence of siblings, their families or other relatives living in the same household. Family size refers to the total number of members in the household.

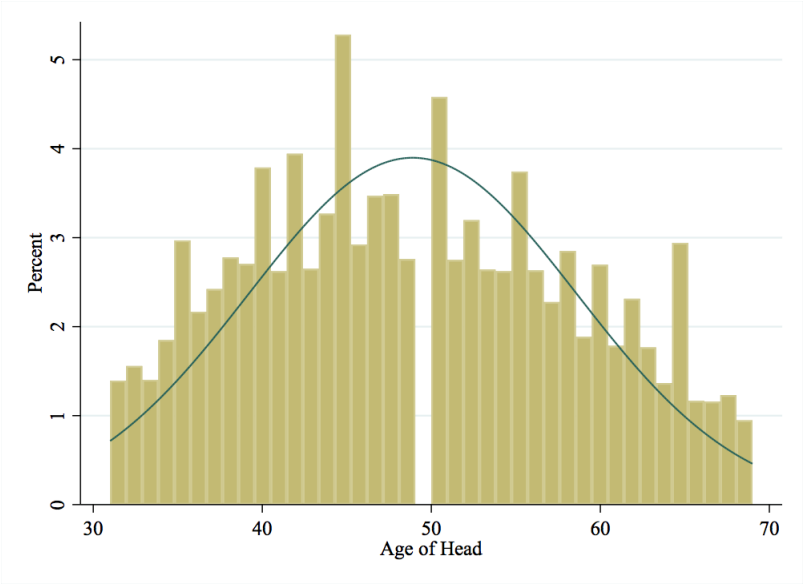
Table C.4: Average household size by age of household head

Age Group	Children			Parents	Grand children	Others
	0-5	6-10	11-16			
20-29	1.29	1.35	1.22	1.25	1.48	1.68
30-39	1.18	1.48	1.47	1.20	1.55	1.62
40-49	1.18	1.31	1.51	1.14	1.51	1.27
50-59	1.23	1.34	1.34	1.07	1.70	1.16
60-69	1.21	1.37	1.40	1.04	1.89	1.14
70-79	1.18	1.33	1.39	1.05	1.99	1.14
80-89	1.16	1.32	1.35	1.04	2.02	1.14
Total	1.21	1.39	1.46	1.16	1.83	1.19
Observations	1472085					

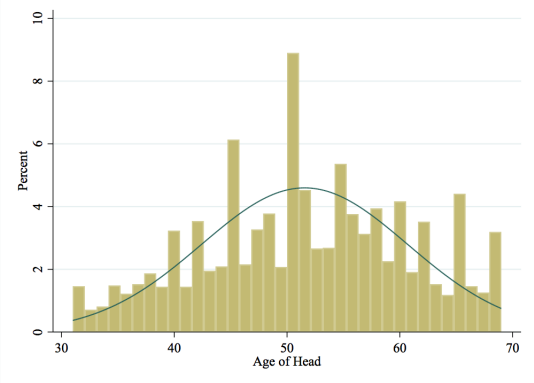
Notes: Columns 2-7 report the average number of each type of member present in the household, conditional on having them. Others in the extended family refer to presence of siblings, their families or other relatives living in the same household.

Figure C.2: Age Distribution of Head at the Time of Major Durable Purchase

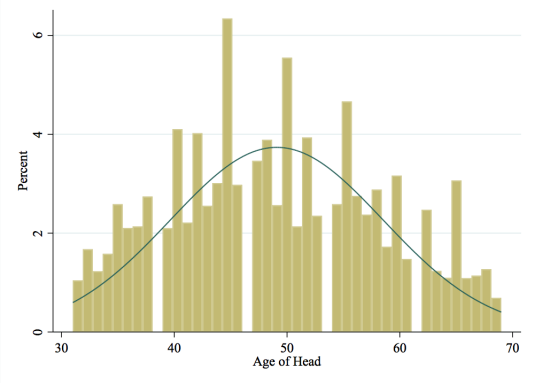
(a) House



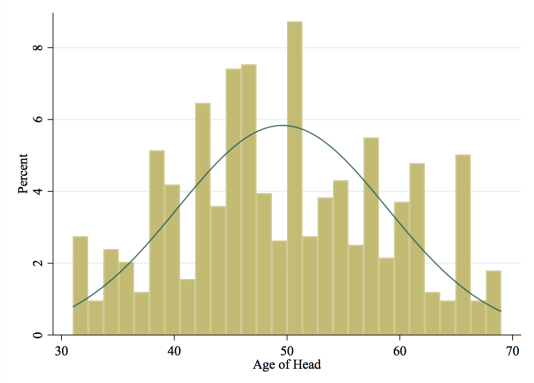
(b) Car



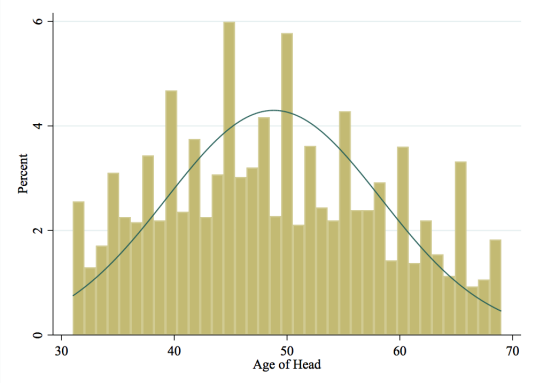
(c) Two-Wheeler



(d) Tractor

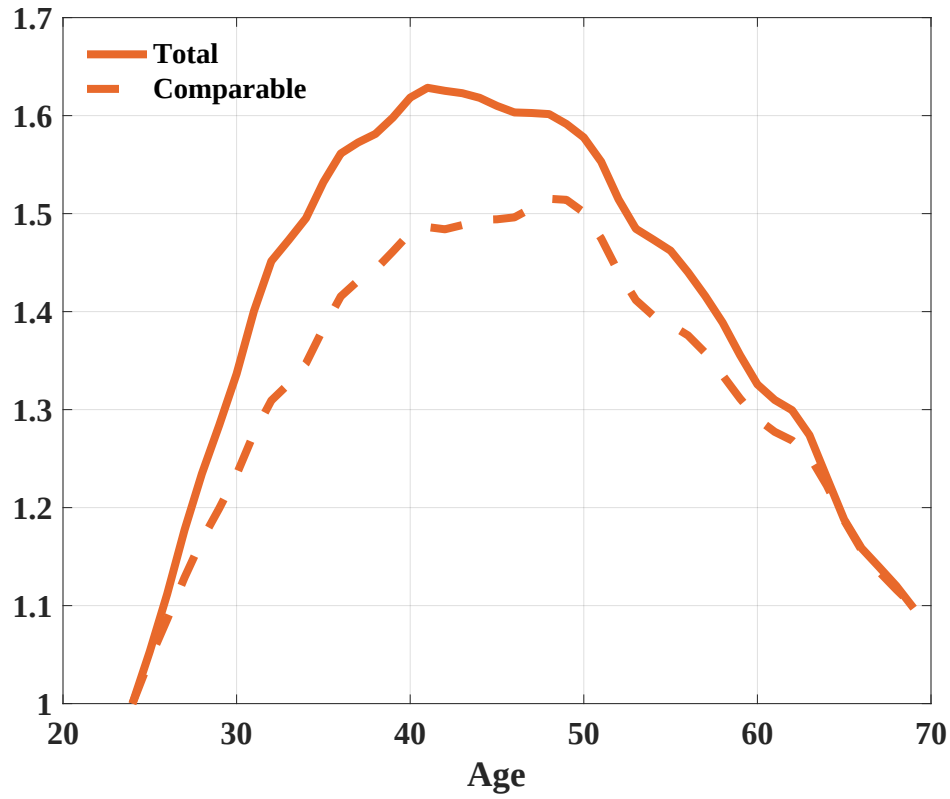


(e) Cattle



Notes: The graph reports the age distribution (household head) conditional on observing a major durable buying event at that age.

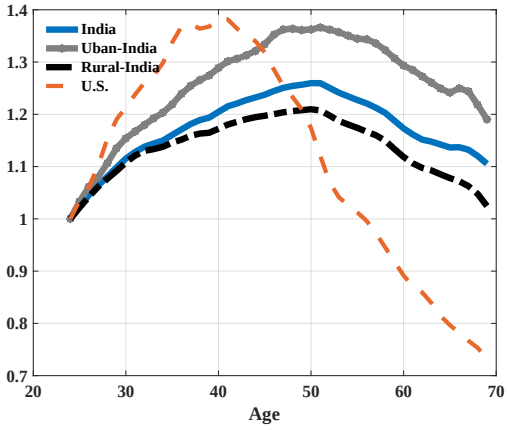
Figure C.3: Unadjusted Life-Cycle Consumption in the U.S.
by Age of Household Head



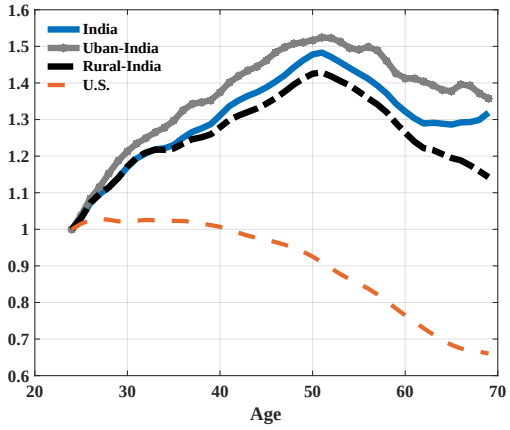
Notes: Total household consumption relative to age 24 (household head) is reported. Data for the U.S. comes from Panel Study of Income Dynamics. Comparable categories include total expenditures on 1) food 2) transportation 3) education 4) childcare 5) health care 6) clothing 7) household repairs and furnishing 8) trips and recreational activities 9) housing related to rent, utility, telephone and internet. Total consumption includes, in addition to comparable categories, mortgage, property taxes and home owner's insurance.

Figure C.4: Unadjusted Life-Cycle Consumption
by Age of Household Head and Expenditure Categories

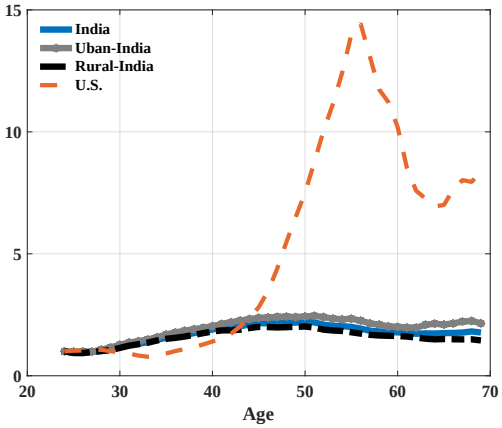
(a) Food



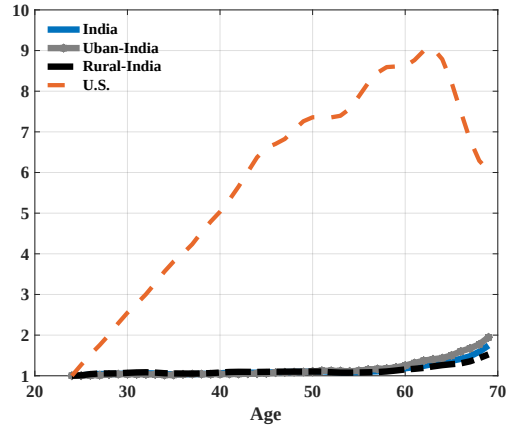
(b) Non-Mortgage Housing



(c) Education



(d) Health



(e) Transportation

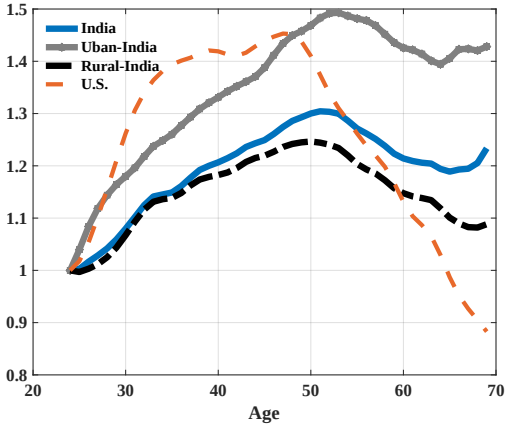
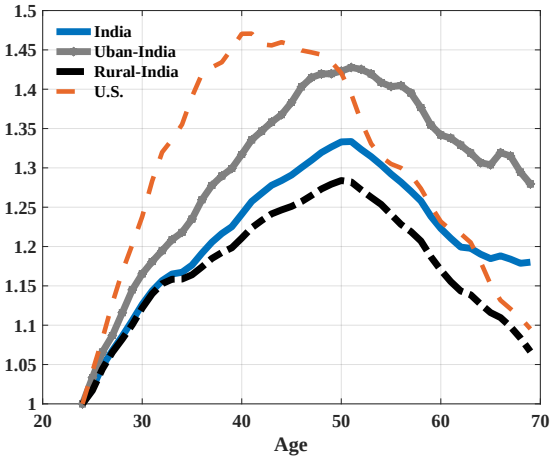
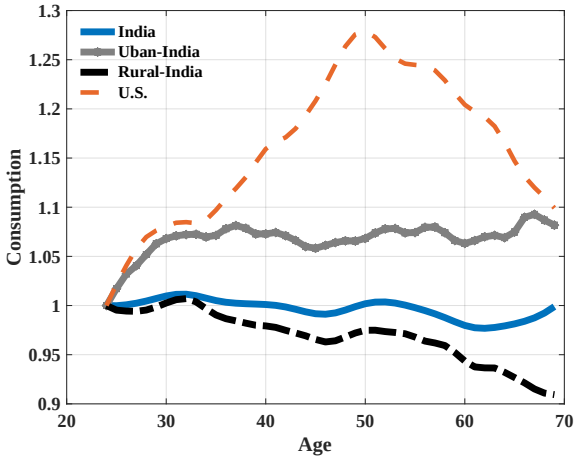


Figure C.5: Life-Cycle Consumption Less Education and Health
by Age of Household Head

(a) Unadjusted



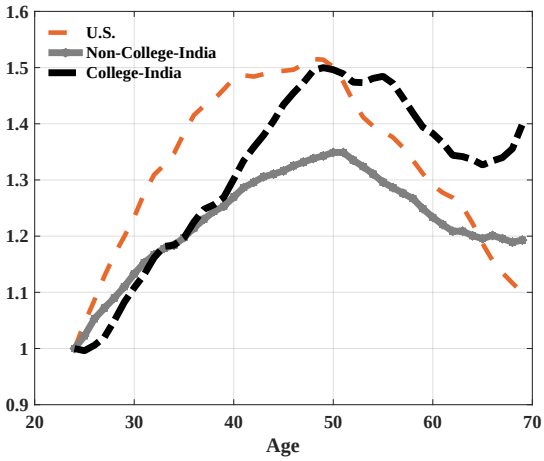
(b) Adjusted



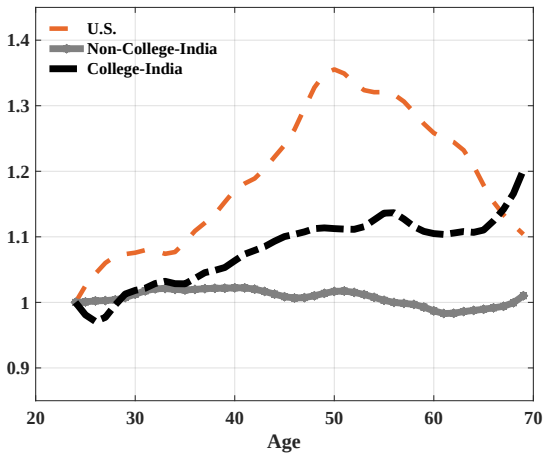
Notes: Consumption relative to age 24 (household head) is reported for both U.S. and India. Data for the U.S. comes from Panel Study of Income Dynamics. Expenditure categories include total expenditures on 1) food 2) transportation 3) childcare 4) clothing 5) household repairs and furnishing 6) trips and recreational activities 7) housing to related rent, utility, telephone and internet. Total household consumption in panel (b) is adjusted for family size by using a modified OECD scale which assigns a weight of one to household head, 0.3 to each children under/of the age of 16 and 0.5 to each adult over the age of 16.

Figure C.6: Life-Cycle Consumption
by Age and Education Status of Household Head

(a) Unadjusted

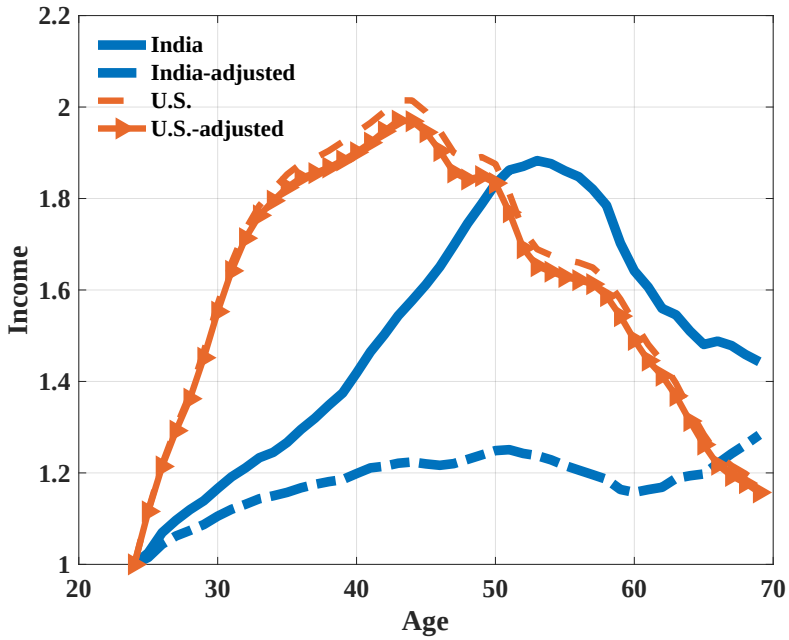


(b) Adjusted



Notes: Household consumption relative to age 24 (household head) is reported for both U.S. and India. Data for the U.S. comes from Panel Study of Income Dynamics. Adjusted refers to total household consumption divided by family size using a modified OECD scale which assigns a weight of one to household head, 0.3 to each children under/of the age of 16 and 0.5 to each adult over the age of 16. Expenditure categories include total expenditures on 1) food 2) transportation 3) education 4) childcare 5) health care 6) clothing 7) household repairs and furnishing 8) trips and recreational activities 9) housing to related rent, utility, telephone and internet. College refers to those with graduate or post-graduate degrees (including doctorate and MPhil degrees). Non-college includes those without any formal education.

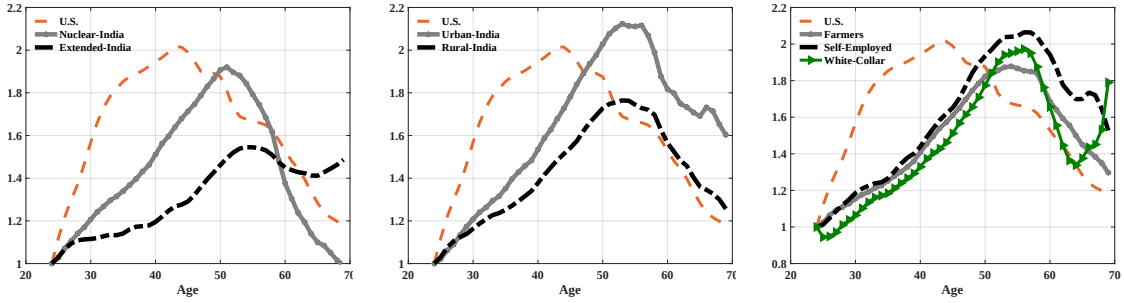
Figure C.7: Life-Cycle Income
by Age of Household Head



Notes: Total household income relative to age 24 (household head) is reported for both the U.S. and India. Adjusted income refers to income per earning member. Data for the U.S. comes from Panel Study of Income Dynamics. Total family income for the U.S. includes total taxable income, transfer income, and Social Security income of household members for a given year. Total family income for India includes income from all sources including private/public transfers, profits, lotteries, wages, overtime, bonus, imputed income, interest payments, dividends, and insurance payments.

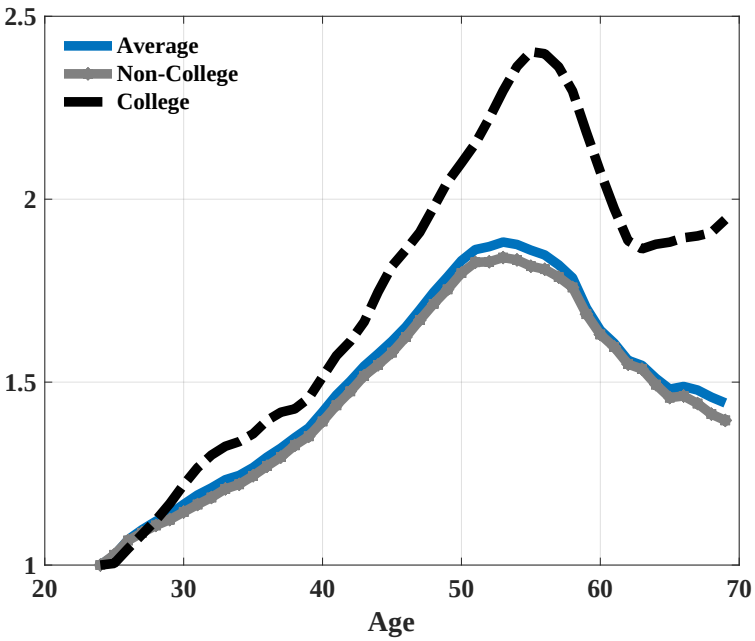
Figure C.8: Life-Cycle Income by Age of Household Head, Family Type, Region, and Occupation

(a) Family Type (b) Region (c) Occupation



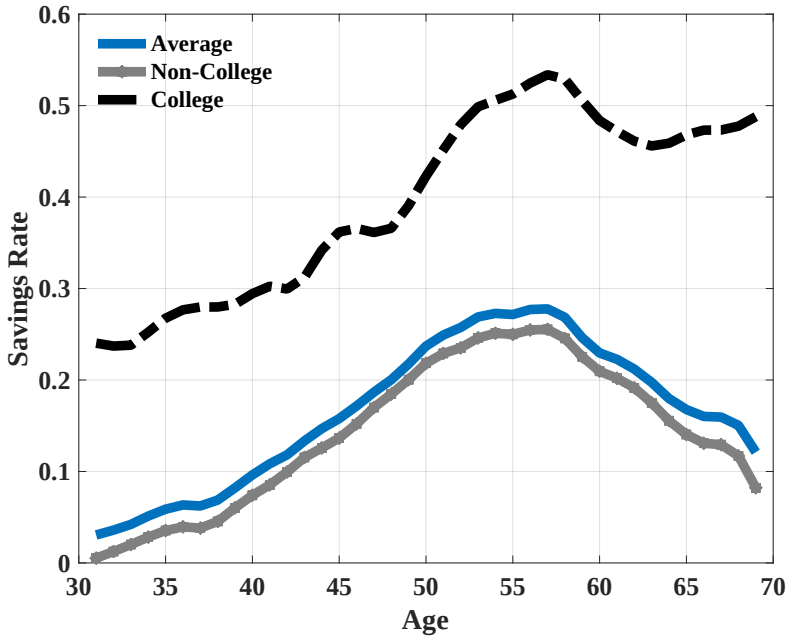
Notes: Total household income relative to age 24 (household head) is reported for both U.S. and India. Data for the U.S. comes from Panel Study of Income Dynamics. Total family income for the U.S. includes total taxable income, transfer income, and Social Security income of household members for a given year. Total family income for India includes income from all sources including private/public transfers, profits, lotteries, wages, overtime, bonus, interest payments, dividends, and insurance payments.

Figure C.9: Life-Cycle Income
by Age and Education Status of Household Head



Notes: Total household income relative to age 24 (household head) is reported. Family income for India includes income from all sources including private/public transfers, profits, lotteries, wages, overtime, bonus, interest payments, dividends and insurance payments. College refers to those with graduate or post-graduate degrees (including doctorate and MPhil degrees). Non-college includes those without any formal education.

Figure C.10: Life-Cycle Savings Rate
by Age and Education Status of Household Head



Notes: Savings rate is computed as total household income net of total non-durable consumption as a fraction of total household income. College refers to those with graduate or post-graduate degrees (including doctorate and MPhil degrees). Non-college includes those without any formal education.

Table C.5: Probit Estimates of Intentions to Purchase Durables on Actual Pruchases in Future

	(1) Bought House	(2) Bought Car	(3) Bought tractor	(4) Bought Cattle
Intend to Buy House in Previous Wave	0.693***			
	(25.02)			
Intend to Buy House 2 Waves Back	0.248***			
	(6.37)			
Intend to Buy Car in Previous Wave		0.535***		
		(19.12)		
Intend to Buy Car 2 Waves Back		0.464***		
		(15.23)		
Intend to Buy Tractor in Previous Wave			0.727***	
			(8.54)	
Intend to Buy Tractor 2 Waves Back			0.455***	
			(4.07)	
Intend to Buy Cattle in Previous Wave				0.657***
				(23.12)
Intend to Buy Cattle 2 Waves Back				0.348***
				(9.41)
Constant	-2.357***	-2.693***	-3.245***	-2.571***
	(-797.14)	(-626.04)	(-360.56)	(-689.99)
Observations	1705700	1705700	1705700	1705700

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.6: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Urban India

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0922***	0.0837***	0.0837***	0.0314***
	(22.53)	(20.90)	(21.03)	(8.33)
Intend to By Car=1	0.120***	0.0997***	0.0972***	0.0318***
	(40.76)	(34.44)	(33.79)	(11.66)
Intend to Buy 2-Wheeler=1	0.0115***	0.00387	0.00273	0.00892***
	(4.27)	(1.47)	(1.04)	(3.59)
Intend to Buy Tractor=1	-0.0147	-0.0146	-0.0165*	-0.0268***
	(-1.76)	(-1.80)	(-2.04)	(-3.50)
Intend to Buy Cattle=1	-0.0255***	-0.0322***	-0.0317***	-0.00806
	(-5.27)	(-6.81)	(-6.73)	(-1.81)
Time Dummy		0.00557***	0.00323***	0.00307***
		(107.57)	(42.85)	(42.83)
Birth Cohort		-0.0313***	0.00103	0.00317***
		(-239.00)	(1.14)	(3.69)
Age of Head			-0.104***	-0.112***
			(-52.89)	(-60.05)
Age of Head $\times$ Age of Head			0.00258***	0.00272***
			(64.38)	(71.69)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000192***	-0.0000201***
			(-71.67)	(-79.02)
Durable Goods Index				0.00231***
				(192.81)
Education				0.00883***
				(215.03)
Constant	0.312***	0.419***	1.453***	1.461***
	(1187.24)	(522.79)	(43.18)	(45.79)
Observations	1413340	1413340	1413340	1413340

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.7: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Rural India

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0769***	0.0674***	0.0658***	0.0491***
	(8.89)	(7.93)	(7.78)	(5.89)
Intend to By Car=1	0.0836***	0.0721***	0.0690***	-0.00204
	(12.91)	(11.31)	(10.87)	(-0.33)
Intend to Buy 2-Wheeler=1	0.0147***	0.0101*	0.0104**	0.0187***
	(3.66)	(2.54)	(2.64)	(4.83)
Intend to Buy Tractor=1	0.111***	0.100***	0.0983***	0.0752***
	(13.23)	(12.19)	(11.99)	(9.32)
Intend to Buy Cattle=1	0.0527***	0.0419***	0.0420***	0.0382***
	(11.84)	(9.56)	(9.63)	(8.89)
Time Dummy		0.00553***	0.00349***	0.00267***
		(68.66)	(29.41)	(22.70)
Birth Cohort		-0.0283***	-0.00109	-0.00000711
		(-140.30)	(-0.76)	(-0.00)
Age of Head			-0.126***	-0.123***
			(-41.29)	(-41.04)
Age of Head $\times$ Age of Head			0.00296***	0.00290***
			(47.47)	(47.25)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000214***	-0.0000210***
			(-51.24)	(-50.93)
Durable Goods Index				0.00255***
				(110.80)
Education				0.00491***
				(60.63)
Constant	0.245***	0.338***	1.817***	1.713***
	(601.03)	(267.13)	(34.70)	(33.21)
Observations	659740	659740	659740	659740

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.8: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Nuclear Families

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.101***	0.0908***	0.0898***	0.0406***
	(22.75)	(20.69)	(20.59)	(9.73)
Intend to By Car=1	0.123***	0.103***	0.0996***	0.0224***
	(37.74)	(32.31)	(31.30)	(7.35)
Intend to Buy 2-Wheeler=1	0.00947***	0.000137	-0.00185	0.00584*
	(3.55)	(0.05)	(-0.71)	(2.34)
Intend to Buy Tractor=1	0.0411***	0.0355***	0.0330***	0.0234***
	(5.87)	(5.14)	(4.81)	(3.57)
Intend to Buy Cattle=1	0.00741	-0.00589	-0.00569	0.0150***
	(1.96)	(-1.58)	(-1.53)	(4.24)
Time Dummy		0.00629***	0.00427***	0.00382***
		(118.62)	(55.21)	(51.47)
Birth Cohort		-0.0278***	-0.000611	0.00146
		(-189.93)	(-0.65)	(1.64)
Age of Head			-0.112***	-0.109***
			(-53.34)	(-54.57)
Age of Head $\times$ Age of Head			0.00279***	0.00270***
			(64.07)	(64.92)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000212***	-0.0000204***
			(-71.46)	(-71.92)
Durable Goods Index				0.00233***
				(177.05)
Education				0.00898***
				(209.05)
Constant	0.258***	0.354***	1.537***	1.405***
	(963.38)	(379.33)	(43.52)	(41.61)
Observations	1435786	1435786	1435786	1435786

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.9: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Extended Families

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0879***	0.0850***	0.0862***	0.0314***
	(13.24)	(12.89)	(13.14)	(5.01)
Intend to By Car=1	0.123***	0.112***	0.109***	0.0456***
	(25.66)	(23.41)	(23.05)	(10.04)
Intend to Buy 2-Wheeler=1	0.0210***	0.0174***	0.0169***	0.0230***
	(5.26)	(4.38)	(4.26)	(6.09)
Intend to Buy Tractor=1	0.0187	0.0176	0.0165	0.0118
	(1.83)	(1.73)	(1.63)	(1.22)
Intend to Buy Cattle=1	0.000218	-0.00507	-0.00548	0.0122*
	(0.04)	(-0.85)	(-0.92)	(2.14)
Time Dummy		0.00242***	0.000787***	0.000761***
		(31.66)	(7.04)	(7.11)
Birth Cohort		-0.0178***	0.00228	0.00256*
		(-87.92)	(1.68)	(1.98)
Age of Head			-0.0812***	-0.0678***
			(-25.87)	(-22.62)
Age of Head $\times$ Age of Head			0.00203***	0.00180***
			(32.47)	(30.16)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000151***	-0.0000139***
			(-37.21)	(-35.83)
Durable Goods Index				0.00237***
				(131.29)
Education				0.00821***
				(127.00)
Constant	0.364***	0.413***	1.231***	0.877***
	(952.56)	(394.31)	(22.61)	(16.87)
Observations	637294	637294	637294	637294

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.10: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Farming Households

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0755***	0.0723***	0.0711***	0.0626***
	(10.70)	(10.50)	(10.39)	(9.21)
Intend to By Car=1	0.0610***	0.0441***	0.0414***	-0.0144*
	(9.99)	(7.41)	(6.99)	(-2.45)
Intend to Buy 2-Wheeler=1	0.0250***	0.0130***	0.0127***	0.0173***
	(7.40)	(3.94)	(3.85)	(5.30)
Intend to Buy Tractor=1	0.0930***	0.0775***	0.0742***	0.0533***
	(11.18)	(9.55)	(9.19)	(6.66)
Intent to Buy Cattle=1	0.0543***	0.0337***	0.0340***	0.0269***
	(12.63)	(8.02)	(8.13)	(6.50)
Time Dummy		0.00749***	0.00508***	0.00460***
		(106.09)	(49.12)	(44.43)
Birth Cohort		-0.0333***	-0.000385	0.000106
		(-180.80)	(-0.31)	(0.09)
Age of Head			-0.122***	-0.120***
			(-44.83)	(-44.31)
Age of Head $\times$ Age of Head			0.00295***	0.00290***
			(52.58)	(51.93)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000218***	-0.0000213***
			(-57.25)	(-56.50)
Durable Goods Index				0.00251***
				(105.92)
Education				0.00122***
				(15.07)
Constant	0.225***	0.333***	1.657***	1.599***
	(624.97)	(284.45)	(35.84)	(34.87)
Observations	802561	802561	802561	802561

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.11: OLS Estimates of Intentions to Purchase Durables on Savings Rate in Self-Employed Households

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0818***	0.0716***	0.0707***	0.0201**
	(11.22)	(10.05)	(9.97)	(2.96)
Intend to By Car=1	0.100***	0.0838***	0.0823***	0.0294***
	(20.33)	(17.35)	(17.12)	(6.38)
Intend to Buy 2-Wheeler=1	0.0170***	0.0123**	0.0117*	0.0117**
	(3.65)	(2.71)	(2.57)	(2.69)
Intend to Buy Tractor=1	0.0272*	0.0324*	0.0310*	0.0117
	(2.04)	(2.48)	(2.38)	(0.94)
Intend to Buy Cattle=1	-0.0163*	-0.0194**	-0.0168*	-0.000970
	(-2.18)	(-2.66)	(-2.31)	(-0.14)
Time Dummy		0.00435***	0.00204***	0.00300***
		(49.56)	(15.86)	(24.27)
Birth Cohort		-0.0341***	0.000505	0.00222
		(-142.25)	(0.33)	(1.50)
Age of Head			-0.160***	-0.161***
			(-45.18)	(-47.54)
Age of Head $\times$ Age of Head			0.00365***	0.00361***
			(50.06)	(51.85)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000258***	-0.0000253***
			(-52.41)	(-53.67)
Durable Goods Index				0.00268***
				(135.66)
Education				0.00636***
				(84.21)
Constant	0.303***	0.444***	2.410***	2.336***
	(674.50)	(297.39)	(40.26)	(40.83)
Observations	459168	459168	459168	459168

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.12: OLS Estimates of Intentions to Purchase Durables on Savings Rate in White Collar Worker Households

	(1)	(2)	(3)	(4)
Intend to Buy House=1	0.0542***	0.0526***	0.0521***	0.0164*
	(6.64)	(6.53)	(6.50)	(2.10)
Intend to By Car=1	0.0450***	0.0430***	0.0417***	0.0257***
	(8.74)	(8.44)	(8.22)	(5.22)
Intend to Buy 2-Wheeler=1	-0.00272	-0.00191	-0.00233	-0.00789
	(-0.40)	(-0.29)	(-0.35)	(-1.23)
Intend to Buy Tractor=1	-0.0156	-0.0187	-0.0189	-0.0124
	(-0.87)	(-1.05)	(-1.07)	(-0.72)
Intend to Buy Cattle=1	-0.0554***	-0.0472***	-0.0457***	-0.0191
	(-4.66)	(-4.01)	(-3.90)	(-1.68)
Time Dummy		0.000205	-0.00110***	-0.000905***
		(1.75)	(-6.32)	(-5.33)
Birth Cohort		-0.0260***	0.00142	0.00211
		(-73.10)	(0.68)	(1.04)
Age of Head			-0.172***	-0.165***
			(-31.99)	(-31.61)
Age of Head $\times$ Age of Head			0.00392***	0.00376***
			(35.02)	(34.54)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000281***	-0.0000268***
			(-36.71)	(-36.06)
Durable Goods Index				0.000856***
				(45.03)
Education				0.00795***
				(83.10)
Constant	0.470***	0.603***	2.811***	2.556***
	(788.41)	(282.16)	(31.57)	(29.52)
Observations	207518	207518	207518	207518

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.13: OLS Estimates of Intentions to Purchase Other Durables on Savings Rate in India

	(1)	(2)	(3)	(4)
Intend to Buy Television=1	0.0550***	0.0446***	0.0443***	0.0230***
	(22.23)	(18.36)	(18.37)	(9.93)
Intend to Buy Refrigerator=1	0.00286	-0.00338	-0.00387	0.0103***
	(1.36)	(-1.64)	(-1.89)	(5.26)
Intend to Buy Cooler=1	0.0226***	0.0136***	0.0137***	0.0148***
	(9.21)	(5.66)	(5.72)	(6.45)
Intend to Buy Inverter=1	0.00553*	0.000193	-0.00129	-0.00723**
	(2.14)	(0.08)	(-0.51)	(-2.99)
Intend to Buy Washing Machine=1	0.0254***	0.0159***	0.0153***	0.0221***
	(14.15)	(9.01)	(8.70)	(13.15)
Intend to Buy Computer=1	0.0846***	0.0700***	0.0683***	0.0108***
	(34.11)	(28.74)	(28.23)	(4.65)
Time Dummy		0.00520***	0.00292***	0.00265***
		(117.63)	(45.53)	(43.02)
Birth Cohort		-0.0307***	0.000563	0.00211**
		(-277.48)	(0.73)	(2.86)
Age of Head			-0.111***	-0.115***
			(-66.61)	(-72.15)
Age of Head $\times$ Age of Head			0.00270***	0.00277***
			(79.68)	(85.29)
Age of Head $\times$ Age of Head $\times$ Age of Head			-0.0000200***	-0.0000203***
			(-87.88)	(-93.42)
Durable Goods Index				0.00243***
				(227.29)
Education				0.00829***
				(231.27)
Constant	0.290***	0.398***	1.562***	1.524***
	(1293.05)	(583.78)	(54.81)	(55.88)
Observations	2073080	2073080	2073080	2073080

t statistics in parentheses

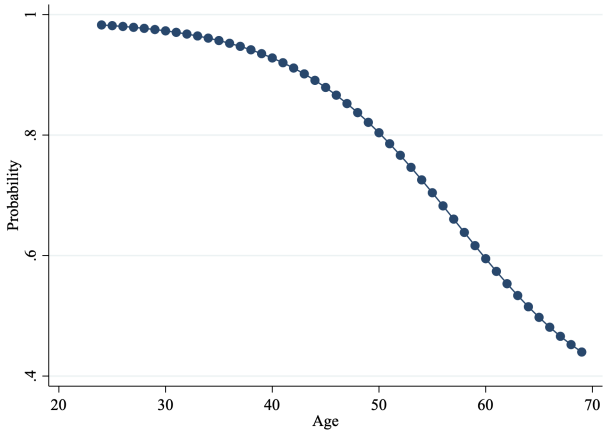
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table C.14: Average Age of Purchasing
Consumer Durables

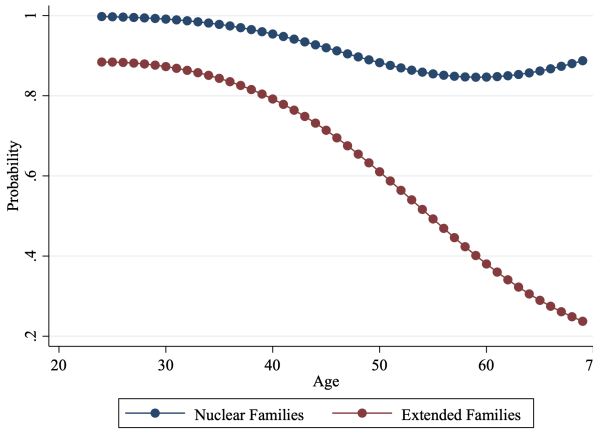
	Avg.	Urban	Rural	Nuclear	Extended	Farmers	Self-Emplyed	White-Collar
House	48.9	48.9	48.8	47.1	53.9	48.2	47.4	47.7
Car	51.3	51.4	51.0	49.5	54.9	51.2	49.7	49.2
2-Wheeler	49.1	49.1	49.0	47.1	54.2	48.6	47.8	47.8
Cattle	48.8	49.0	48.8	46.6	54.1	48.5	46.9	47.3
Tractor	49.9	47.9	50.0	47.1	55.3	49.7	48.4	46.0

Figure C.11: Households With Heads as Primary Earning Members by Age of Head

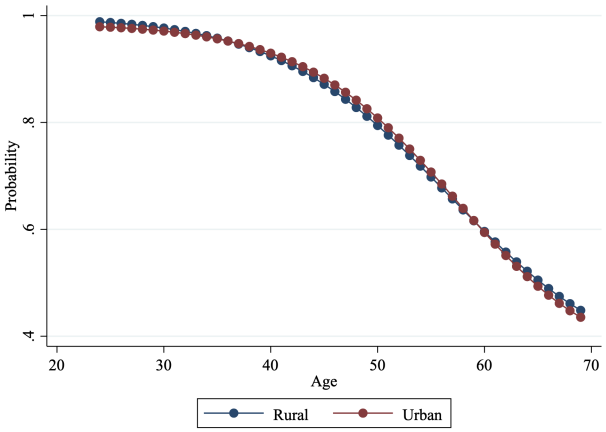
(a) All



(b) By Family Type



(c) By Region Type



(d) By Occupation

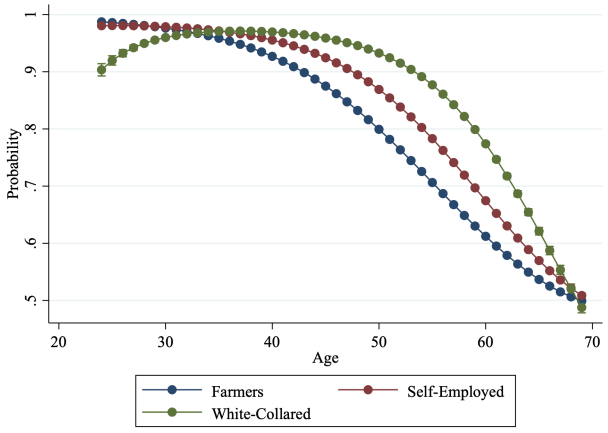
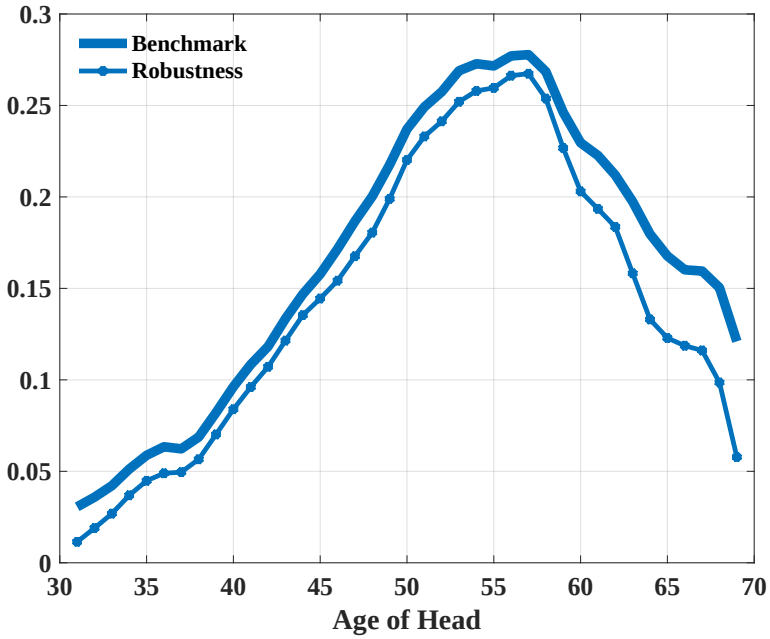


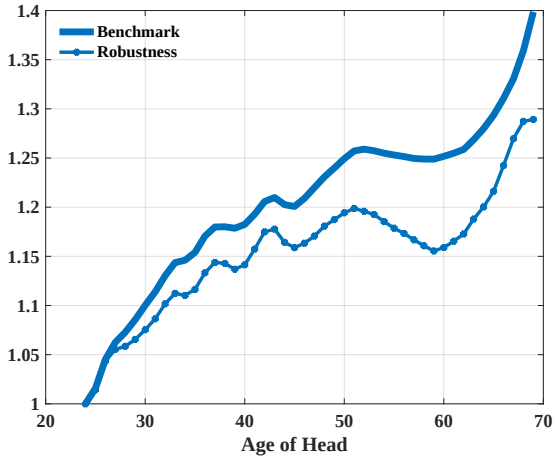
Figure C.12: Head Robustness: Life-Cycle Savings Rate
by Age of Household Head



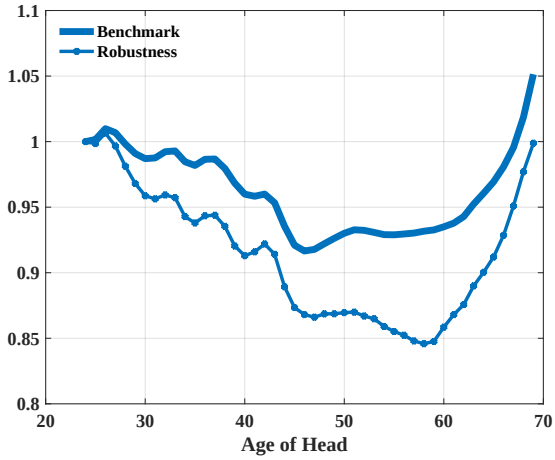
Notes: Savings rate is computed as income net of total non-durable consumption as a fraction of total income. This robustness exercise drops all households where head is not the primary earning member.

Figure C.13: Head Robustness: Life-Cycle Consumption
by Age of Household Head for Extended Families

(a) Unadjusted



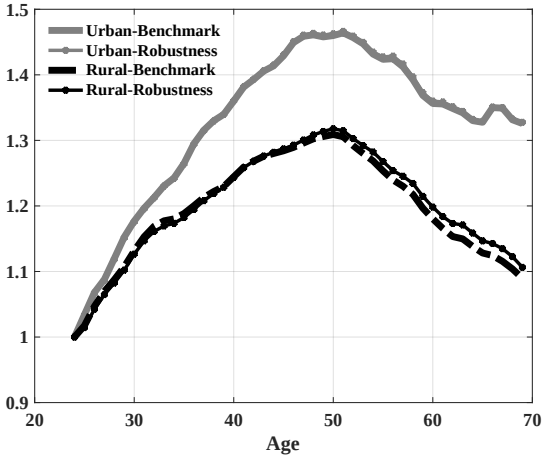
(b) Adjusted



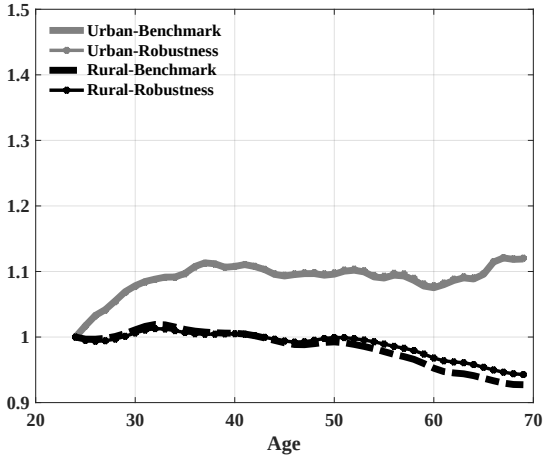
Notes: This robustness exercise drops all extended family households where the head is not the primary earning member.

Figure C.14: Home Production Robustness: Life-Cycle Consumption by Age of Household Head

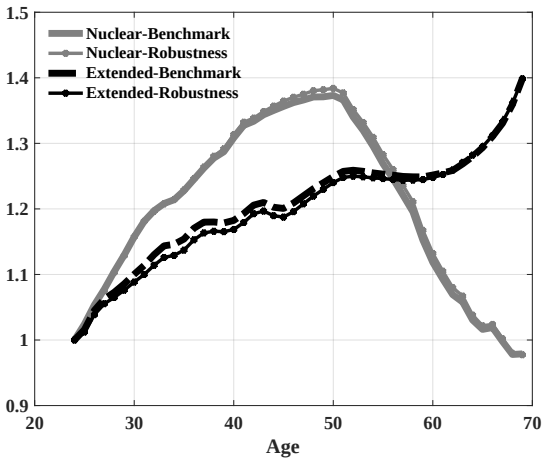
(a) Unadjusted-Region



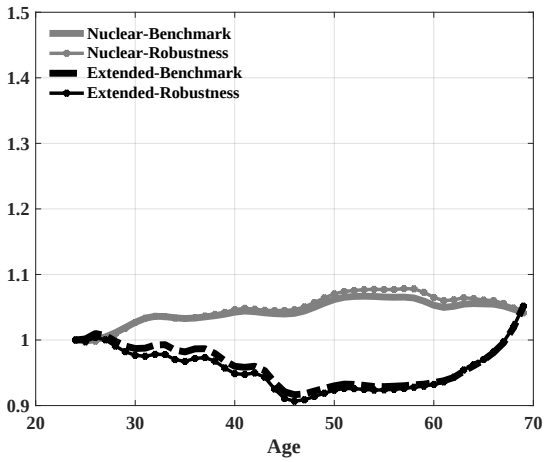
(b) Adjusted-Region



(c) Unadjusted-Family Type



(d) Adjusted-Family Type



Notes: This robustness exercise adds estimates of home production to household consumption expenditures.

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