Family as "carrot" for retirement savings: Bequest motive of pre-retirees in urban India

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September 2022

Older working adults are expected to be motivated to accumulate their "nest eggs" for a comfortable retirement. However, much of the wealth they build gets channeled into property assets, which, in the absence of a well-developed reverse mortgage market, is unlikely to help finance future consumption, raising concerns about the adequacy of old age financial preparedness. In this study, we attempt to locate a hidden bequest motive behind wealth accumulation behavior for a sample of older Indian adults using micro data from the first wave of the Longitudinal Ageing Study in India (LASI). Using a log-linear approximation of the Euler equation linking inter-temporal consumption, we test the relationship between consumption and wealth while controlling for inflation and income expectations and infer that individuals with sons are motivated by inter-generational transfer in their saving behavior. This motive is evident in our empirical analysis, where we find the wealth effects of consumption for household heads with sons to be lower than for those without sons. The gender-specific bequest motive emanates from the prevalent culture in India wherein sons are the primary care providers to parents during old age and are also perceived to be the default beneficiary of the parental property. Intentional bequests are thus a part of the retirement planning strategy for Indian households.

KEYWORDS: Ageing, Bequest, Retirement Preparedness, Motives, Saving, Wealth, LASI, India

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1 Introduction

The nature of the bequest motive that influences wealth accumulation has been an area of extensive theoretical and empirical research. While it is widely accepted that inter-generational transfer can better explain the wealth amassed by households (Jürges, 2001; Kotlikoff, 1988; Lockwood, 2018), there is limited agreement on whether the bequest is accidental or intentional. On the one hand, some researchers argue that through the inclusion of altruistic bequests, one can explain the high degree of savings and the low insurance take-up, particularly among the middle-class (Jürges, 2001; Lockwood, 2018); others like Gan et al. (2015) did not find any incremental value of including bequest motive in the estimation of observed saving through a life-cycle model and claimed that bequests are mainly accidental. In this study, we re-look at this long-standing debate by examining the voluntary nature of bequest motive among pre-retiree Indian household heads by examining their consumption smoothing behavior out of wealth accumulated until retirement.

While the existing literature forms the bedrock of our understanding of this area, most of the current research is located in developed countries, which misses out on dimensions unique to some low- and medium-income countries (LMIC). We take the case of India for this paper, which has received limited research attention in this area, perhaps due to data limitations, but with the new LASI data containing detailed information on health, wealth, and socio-economic status (IIPS, 2020), we get an opportunity to uncover some insights into the wealth accumulation motives. India offers a unique context for this study - the limited penetration and development of the capital market might be a reason to believe that bequests could be accidental since individuals hold on to their wealth to fund their consumption in old age. However, at the same time, given the limited state-sponsored old-age support mechanism and the high dependence on family for old age insurance, the retirement wealth might be serving as a signaling tool for the family so they may provide the necessary support.

We develop a structural model of consumption and wealth using the log-linear approximation of the Euler Equation as our underlying and use the microdata on wealth holding of pre-retiree Indian household heads and their per-capita equivalent consumption to empirically test it. Our structural formulation is based on the premise of utility maximization with the belief that rational individuals adjust their consumption behavior due to wealth changes, given their motives for wealth accumulation in the first place. Hence, for an individual holding a bequest motive, the wealth effect on consumption would be lower since the wealth is amassed to pass on to the next generation. Alternatively, for an individual for whom bequest is not a priority but a life-cycle

motive is, a greater positive elasticity of consumption with respect to wealth can be expected (Ando & Modigliani, 1963). We take our agent to have a bequest motive if the individual has a male child. We relate the motive only to male children and not daughters, given the prevalent custom in India wherein it is the son who holds the primary care-giving responsibility towards his elderly parents[1] and not until very recently, he also held the exclusive inheritance rights to the parental property[2]. Hence, the wealth that parents leave intestate generally gets passed on to the son. Therefore we argue that the bequest motive- exchange or altruistic, is held by parents of male children predominantly. In this context, we hypothesize that people with sons would have a lower wealth effect of consumption compared to those without sons, given their inter-generational transfer preferences for wealth accumulation. This specification of taking a proxy for bequest motive follows the approach of Jürges (2001) and Caballé & Moro-Egido (2021) who use having children as a proxy to infer bequest motive. By restricting our sample to older adults, we ensure that their saving motives are more or less aligned with the above, along the lines of Cagetti (2003) and Gourinchas & Parker (2002). We also acknowledge that motives might differ across wealth types; hence, we split it into non-liquid or property wealth and liquid or non-property wealth, where the former is believed to be held for longer-term reasons like retirement and bequest (ibid.). We consider only the individuals residing in urban areas since the labor market features in rural areas are different in terms of the risk and demands they pose, which can lead people in the rural region to have different financial motivations compared to urban residents (Jain & Parshad, 2007). Nevertheless, a similar study in a rural region has the potential to offer beneficial insights.

The location and identification of motive-led preferences has been made in the literature through life-cycle model simulations (Gourinchas & Parker, 2002; Cagetti, 2003; Lockwood, 2018), overlapping generations model (Caballé & Moro-Egido, 2021) and Euler equation approximations (Christelis et al., 2019; Dynan, 1993). In our study, we make use of the log-linear approximation of the Euler equation linking inter-temporal consumption along the lines of Dräger & Nghiem (2020) and use it to test the direction of the relationship between consumption and wealth – property and non-property while controlling for the inflationary and income expectations, among others. We consider the wealth separately because studies have highlighted that property wealth may be meant for a life-cycle or bequest motive, while non-property wealth may serve a precautionary purpose (Gourinchas & Parker, 2002). Moreover, in the inter-generation living arrangement existent in India that offers (self) consumption insurance through resource sharing (Becker, 1974),

[1] Refer Allendorf (2020) for a study on old-age support expectation among Indian women.

[2] While the law has been enacted, changes are slow to follow. Refer Deininger, Goyal & Nagarajan (2013) for an impact analysis of the changes in the succession act.

the motives are likely to be more skewed towards bequest. Hence, by evaluating the effect on the consumption of property wealth, we will likely get some indication of retirement preparedness behavior.

Our empirical results indicate a significant presence of intentional bequest motive, as evident from the lower consumption effect of property wealth for the individuals with sons compared to those without sons. For every 1% increase in property wealth, consumption increases by 0.09% for household heads with sons compared to 0.13% for the household heads without sons- both significant at 1% level. This differential wealth effect proves that property ownership in India may be motivated by bequests. Our results on the wealth effect are similar in direction to that observed in other developed countries, although the magnitudes differ (Bostic et al., 2009; Campbell & Cocco, 2007; Carroll et al., 2011).

These results offer some explanation for the high degree of property possession among Indian households (Ramadorai, 2017). Given that property wealth is inherently less liquid in nature and the reverse mortgage market in India is not well penetrated[3], the purchase and possession of the property are likely to have a purpose beyond what can be explained by sole retirement or precautionary motive and, bequest appears to be the more logical explanation. The idea of property as a bequest is also aligned with the strategic motive wherein the property asset is bequeathed as an exchange for the care-giving in old age by the family (Bernheim et al., 1985). Although the weakening of the social fabric due to the increased nuclearization of families[4], it will be interesting to see how property ownership evolves in the country.

This study contributes in the broader sense to the literature on retirement preparedness and the role that property wealth plays in the same. Understanding the motives behind wealth accumulation, especially related to property, will also help in assessing the retirement adequacy of households (Venti & Wise (2004) in Suari-Andreu et al. (2019)).

Furthermore, since we also analyze the impact of macroeconomic expectations related to inflation on individual consumption, our study links, at the margin, to the applied macroeconomic literature. With respect to inflationary expectations and consumption, the findings across the research have been mixed - some, like Burke & A. Ozdagli (2013) and Dräger & Nghiem (2020), find the effect of inflation expectation to be positive on consumption expenditure[5], while Ichiue

[3]Within the LASI dataset, among the urban residents, 1.7% hold a reverse mortgage

[4]Changes in social bonds were one reason that led to the enactment of the Maintenance and welfare of Parents and Senior Citizens Act, 2007 (Sathyanarayana et al., 2014)

[5]The effect on durable expenditure is found to be negative by (Burke & A. Ozdagli, 2013) and positive on non-durable expenditure

& Nishiguchi (2015) find negative effects on actual consumption due to higher inflationary expectations. Our study extends this study to a developing country context while also analyzing the effects across multiple segments.

The subsequent paper is structured as follows. Section 2 develops the construction of the structural model on consumption and wealth; Section 3 presents the data and the methods used for the study. Section 4 describes the results, and Section 5 concludes the study and discusses the implications of our findings.

2 Consumption Model

A representative household makes consumption and labor decisions to maximize their lifetime utility, specified in discrete time as

$$U_i = E_i \sum_{1}^{T} (1+\delta)^{1-t} U(C_{it}), \tag{1}$$

Under the condition of optimality, and with utility assuming the form of constant relative risk aversion (CRRA), the utility maximization equation within the constraints relating to the inter-temporal utility of consumption and the constraint on the utility from consumption versus labor, both an implied mandate of optimality, results in the below standard form of Euler equation relating current consumption with expected future consumption (Gali, 2006).

$$C_{it} = E_{it}(C_{it+1}) - \sigma_i^{-1}(i_t - E_{it}(P_{t+1}^{inf}) - \rho_i), \tag{2}$$

Here, the coefficient σ^{-1} is indicative of the elasticity of inter-temporal substitution between current and future consumption, a corollary to the elasticity of saving for the future at the cost of current consumption. $E(P_{t+1}^{inf})$ measures the inflationary expectations at time t for time t+1 and i_t is the nominal interest rate. ρ represents the time preference of individual households[6].

In the survey data we use, consumption values are sought in nominal terms; hence, we perform a linear transformation of the standard form of the equation by subtracting price levels on both sides, as discussed in Dräger & Nghiem (2020), to reformulate the Euler equation in nominal terms as

$$C_{it}^n = E_{it}(C_{it+1}^n) - \sigma_i^{-1} i_t + (\sigma_i^{-1} - 1) E_{it}(P_{it+1}^{inf}) + \sigma_i^{-1}(\rho_i), \tag{3}$$

[6] ρ is actually equal to the negative log of the time preference in the utility maximization problem.

Since the expectation of future consumption is not observable, a strategy to solve this equation could be to replace expected consumption with realized consumption over the subsequent period (in a panel data setting), an approach similar to the one used by Dynan (1993). Another approach would be to use the explicitly sought values on expectations for the future through a survey as done by Dräger & Nghiem (2020) and Christelis et al. (2019). In the cross-sectional data we work with, the expectation for future consumption is missing, so we exploit the relationship between consumption and income similar to that from the Ando & Modigliani (1963) framework instead and write consumption at time t+1 as a function of the income at t+1, average lifetime income and wealth at t+1. An implicit assumption is that the expectations of consumers regarding their consumption are rational and are likely to be in close alignment with future consumption. A representative functional form of consumption at t+1 as a linear combination of income and wealth is:

$$C_{it+1} = f(Y_{it+1}, \overline{Y}_i^{LT}, W_{it}) \tag{4}$$

We now expound each term in RHS of (4) under the assumption that the household heads have rational expectations and believe that the value of income and wealth at t+1 is a function of their respective past values adjusted by a factor representing anticipated growth and risks. The income of the household head at t+1 is therefore assumed to be a function of income at time t, higher by a factor (1+i) where i is the annual growth rate in income. For computational simplicity, we will assume income growth to be the same as the interest rate. And π represents the self-perceived chances of job retention chances until (t+1). Hence, the future income is represented by the following:

$$Y_{it+1} = (1 + i_t)(\pi_{it})Y_{it} + \epsilon_1, \tag{5}$$

The average lifetime income is obtained using an index, α, to represent the current age relative to the age when income is at the average lifetime level, as specified below:

$$\overline{Y}_i^{LT} = \alpha_{it} Y_{it} + \epsilon_2, \tag{6}$$

Hence, the consumption function in (4) can be formed using (5) and (6) as:

$$C_{it+1} = \beta_1(1 + i_t)(\pi_{it})Y_{it} + \beta_2\alpha_i Y_{it} + \beta_3 W_{it} + \epsilon_3 \tag{7}$$

We substitute the future consumption expectation with C_{it+1} obtained as above in the Euler

equation in (3) to arrive at the following reduced form Euler equation[7] We have hence expressed the Euler equation in terms of job insecurity, current income, wealth, interest rate, and inflationary expectations.

$$\begin{aligned} C_{it} =& \beta_1(1+i_t)(\pi_{it})Y_{it} + \beta_2\alpha_{it}Y_{it} + \beta_3 W_{it} - \sigma_i^{-1} i_t + \\ & (\sigma_i^{-1} - 1)E_{it}(P_{it+1}^{inf}) + \sigma_i^{-1}(\rho_i) + \epsilon_4 \end{aligned} \tag{8}$$

A drawback of using the log-linearized approach for the estimation of motives for savings is the fact that the time preference specified by ρ above will become part of the intercept and hence cannot be estimated. The risk aversion is still estimable through the σ coefficient of inflationary expectations. Although, since our focus is the relationship between wealth and saving, this equation will suffice our requirement. A simplified version of this equation can be written as below, where we reduce the time preference to the constant term as it is assumed to be time-invariant. The interest rate is also assumed within the intercept term due to it being the same for all individuals in our cross-sectional data. We will empirically estimate the above relation through the following regression setup:

$$C_i = \eta_0 + \eta_1(\pi_i)Y_i + \eta_2\alpha_i Y_i + \eta_3 W_i^P + \eta_4 W_i^L + \eta_5 E_i(P_i^{inf}) + \tau X_i^{control} + \epsilon \tag{9}$$

Here $X_i^{control}$ represents the set of controls that can also influence consumption decisions, including age, years of education, household size, marital status, health status, caste, religion, parental co-residence status, family type, region type, and occupation. We have split wealth into its constituents - Non-liquid or property wealth W^P and liquid wealth W^L as the motivations behind each of their accumulation could be different, as discussed earlier. The difference in the regression coefficient of property wealth for the segment with and without sons will be indicative of the bequest motive.

[7] We ignore the superscript n denoting nominal values as all the subsequent values will be specified in nominal terms.

3 Data & Method

3.1 Data

We have used the data from the Longitudinal Ageing Study in India (LASI) for the purpose of this study. LASI is a nationally representative survey of 72,250 older adults aged 45 years and more or their spouses, irrespective of age, present across 42,949 households in rural and urban areas. The survey was conducted between Apr '17 to Dec '19. We use the data for urban adults only from this survey, where a four-stage sampling design was followed. In each state/union territory, the first stage involved the selection of a primary sampling unit (PSU) comprising sub-districts/tehsil/taluka, with their number proportionate to the number of households in the state/region. Implicit stratification basis female literacy was done by arranging all PSUs in the order of female literacy before the selection of PSU. Within each PSU, explicit stratification using the number of households in the sub-district, female literacy level, the proportion of scheduled castes & scheduled tribes, and the proportion of males in non-agricultural activities was done to select wards or Secondary sampling units (SSU) within the PSU as part of the second stage. In the third stage, the Census enumeration blocks were randomly selected, and 35 households were selected from these blocks in the final stage. Oversampling of the metro region and households with a person aged 65 and above was done, latter through the inclusion of 4 additional such households from every Census enumeration block. Data for Sikkim state is not present in this version, although it is unlikely to change our results much due to the small contribution of the state to the country's population.

Collecting information on wealth, consumption, and income can be very challenging, especially in a relatively lower-income country like India, where people may also provide incorrect values of personal wealth expecting receipt of benefits, but LASI has used various methods to ensure the accuracy of wealth data and manage the missing value problem. It identified sub-assets under major assets so that respondents are able to recall best. If respondents were not able to recall, they were provided multiple random ranges within which they could estimate their wealth to lie. Furthermore, the information on housing wealth that is not available in most surveys has also been included herein, helping us work on this problem specifically. We have used additional imputation wherein the respondent specified owning a specific wealth type but did not give any value. LASI also has detailed information on the family structure, which we use in our analysis.

3.2 Method

Our study is restricted to urban individuals who are the head of their respective households and working (as of the survey date). We apply this restriction to ensure we only use the information of those who can be expected to have controlling power over their financial decision-making[8]. We use data for individuals who are more than 45 years of age since it is for this age group that people can be expected to have the motive to save for retirement and bequest (Cagetti, 2003; Gourinchas & Parker, 2002) and hence their wealth effect on consumption which we test for will be accordingly motivated. Literature classifies non-liquid wealth as serving the life-cycle motive; hence, by considering the relation between this wealth and consumption only for the pre-retirees[9] segment, we can test for these motives. We consider two sub-samples to test for the presence of bequest motives - household heads with at least one son and household heads without sons. Through this setup, we test our hypothesis that individuals with sons have a stronger bequest motive than those without sons, which will reflect in their tendency to consume less of their wealth than those without sons. The son's dependence of the bequest motive draws from the Indian cultural setting. In most parts of the country, the practice of patrilocality is followed, and this arrangement automatically makes the son and his family responsible for the care of his parents in old age, who more often than not co-reside with their sons (Sathyanarayana et al., 2014). The succession act until 2005 also gave the son, if any, a default and exclusive right to the parental property (GOI, 1956). While new laws have been passed so that the daughters have an equal right to the parental property and obligation towards parental maintenance in old age [10], the older practices are slow to fade, and hence, the bequest motive that parents hold will also be conditional on their having a son.

We also make the implicit assumption that individuals are making their financial decisions on their own accord and that saving does not happen by chance. This assumption has been proven empirically through earlier studies which found that wealth accumulation is dependent on the ability to save and not on pure chance (Haider & Jun, 2020). We also control for family structure and parent co-residence status as these variables can potentially influence the consumption of the household and the decision-making authority held by the household head. Two types of family structures have been defined - nuclear and joint where, the former is one wherein the household

[8] While a household is composed of multiple members with possibly divergent preferences (Scahner, 2015; Metzger, 2018), this restriction allows us to assume that observed behavior is in alignment to the preferences of the household head, thereby enabling us to use a unitary model.

[9] We use the nomenclature of pre-retirees as we are considering only those individuals who are also working.

[10] The Hindu Succession (Amendment) Act, 2005 and The Maintenance and Welfare of Parents and Senior Citizens Act, 2007 are the two noteworthy gender equalizing acts in this context.

head either lives alone or with his/her spouse or children or both; all other types of family structures have been classified as joint.

The survey data has information on consumption values available at a household level, for our analysis, we modify the consumption to a per-capita level using the square root equivalent scale. We include only the regular anticipated expenses of food and utilities and not other expenses in this analysis as the respondent is likely to have the highest control only on these. The medical expenses related to doctor's fees, tests and hospitalization, are excluded, and so are expenses on durable goods. We also use the income at the individual level since our household head will likely hold the highest discretionary power over the same.

We initialize the alpha parameter that represents the income at age t relative to the average lifetime income by adopting its value from the National Transfer Accounts database for India[11]. A graphical representation of the same is shown in Figure 1. Since the functional form of the labor income has a kink at age 60, we represent the ratio of labor income to average lifetime income as a second-order polynomial function before the age of 60 and an exponentially declining function from the age of 60 and later as below[12]:

$$\begin{aligned} \alpha^{-1} &= -0.0023age^2 + 0.2219age - 2.9252 && \text{for age in [15,59]} \\ &= 100.3331e^{-0.075age} && \text{for age greater than equal to 60} \end{aligned}$$

Income security is found based on a question that seeks the likelihood of retaining the current job during the next year [13]. We use this information to get the expected income for the next year. The inflationary expectation is measured using a variable that explicitly seeks information on which direction the respondent expects the price to change in the coming year. But, most of the respondents answer that the price will increase in the coming year, likely making an adaptive expectation guess. Hence, we do not rely only on this variable but also leverage another question wherein respondents are asked to value a set of essential goods like food, housing, utilities, clothing, and other important items that they can get in INR 1000 in today's value at tomorrow's prices. If the respondent expects the price to rise as per the first question, we further check his/her response

[11] Retrieved from https://ntaccounts.org/web/nta/show/Country%20Summaries on 12th Aug' 22

[12] We use inverse sign as this is the ratio of labor income to average lifetime income.

[13] The question in the survey seeks the expectation of job loss during the next year, but since we require expected income in future, we subtract the job loss probability by 1 to get the expectation of job retention during the next year.

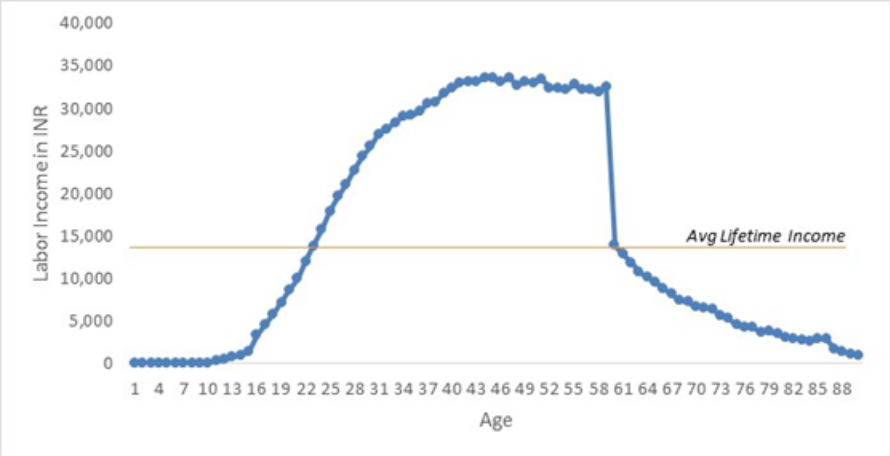

Figure 1: Labor income by age (Source: Author's graphical representation of data from NTA India Database)

in the second detailed question and use the second response as the final one.

We use the log values of consumption, income, and wealth given our starting point of log-linear specification of the Euler equation in (2). All flow financial values like consumption and income are normalized to monthly frequency; wealth is as on the survey date. The housing debt has been excluded from the property wealth; hence the property wealth is the net property wealth. Other debt is considered a separate covariate since netting the non-property wealth with this debt resulted in many negative values. We restrict our analysis to property owners only since we are interested in the wealth effect on consumption from property wealth, and only owners will have non-zero wealth. However, property ownership can itself be a manifestation of the different motives that individuals hold, and the two populations may not be similar. The difference between the two samples - property owners and non-owners is also evident in the significance of lambda in the regression without controls. To account for the resulting selection bias, we use the two-step Heckman's correction and report the Inverse Mills ratio in our regression outputs; we use the variables of caste, religion, monthly income of the head, household size, and the number of children to estimate the property ownership in the first stage following Das et al. (2019). [14]. We trim the outliers in our data as identified basis Cook's distance.

We collapse some categorical variables, like religion and marital status into fewer categories basis intuitive appeal. There are about 35 different states, and we use the government-identified

[14]Please contact the author for first stage probit results for all regressions.

zone councils[15] to restrict them to 6 categories of regional councils.

Despite controlling for many covariates, we acknowledge that the relationship between property wealth and consumption can be endogenous. One primary source of endogeneity is that respondents might not share the correct details in the survey either intentionally or because of a genuine inability to recollect correctly. This can lead to specification bias on account of measurement error. The second source of endogeneity could be due to reverse causality. Assuming that individuals smooth consumption inter-temporally, the consumption at time t would be similar to consumption at *t+1*, and the latter is what will impact the wealth value at *t+1*. This can create bias in our results. Furthermore, there can be many other variables that can influence consumption beyond what we could observe, like thriftiness, which can lead to bias on account of omitted variables. While we tried to circumvent these issues through instrument variables, we could not find many strong instruments for the cross-sectional data we have. The first instrument we attempted to use was the average value of land and building held by people across states at a gender and occupation level as obtained from the All India Debt & Investment Survey-2019. While this instrument seemed appropriate since property values have a regional variation and as the time-frame of both the surveys was close to each other, it was likely that the property wealth held by our survey respondents could be related to the average property wealth held by people from their state belonging to the same gender and occupation[16]. However, the two were not significantly related in a multiple regression setting. The other instrument explored was the proportion of people who owned housing property at a state level. This was used to instrument whether a person held property or not in our data. The belief was that the financial decisions of a person are influenced by their social setting, as suggested by considerable research in the context of saving behavior (Gomes et al., 2021; Raue et al., 2020). While a state-level social footprint may only be realistic for some, the state norms should likely have some influence on individual household financial decisions. However, the relationship was again not found to be strong enough. Since the use of weak instruments can itself lead to significant bias in the estimates, which we intended to remove in the first place, we do not run the instrument variable regression (Andrews et al., 2019; Bound et al., 1995) and restrict it to OLS.

We will revisit this study once the second panel of the LASI data becomes available, and we can control for some of these time-invariant heterogeneities using panel regression techniques. In this study, we try to control for some of these endogeneities by using extensive controls. In the

[15]Retrieved from the portal by Indian Ministry of Home Affairs, https://www.mha.gov.in/zonal-council
[16]Ong et al. (2022) use a similar instrument for housing prices

following section, we discuss the regression results.

4 Results

The descriptive statistics of the primary explanatory and control variables are presented in Tables 1 and 2 for the sample of property owners that we use. We work with a sample size of about 1200 property owners with their property wealth averaging INR 2.1 Million. The average per capita monthly consumption is INR 5.7K. The average educational level measured as the number of years of schooling for the individuals in our segment is 7.5 years, i.e., close to the primary schooling level, and around 21% have received no schooling. The highest education of the eldest male child is only slightly higher than the highest education of the eldest daughter. The most common religion is Hinduism, followed by Islam and then Christianity. The final consideration set mimics the social stratification found in the larger population with 34% respondents in the General category and 37% in the Other backward class caste category, and the rest in the Scheduled Castes & Scheduled Tribes category. Nearly 85% of our sample is male, a consequence of restricting our sample to household heads and working individuals, both likely to be males[17]. Nearly 83% of the sample is currently married, although, among females, the proportion is much lower. 47% of our sample has wage/salary-based employment, while 31% are self-employed. Wage-based employment includes part-time and full-time employment; nevertheless, it is the primary job held by the respondent. Around 87% of the individuals have male offspring, from whom they will likely expect to get support during old age. For 63% of respondents, the parents are not alive. Of the rest, for almost three-quarters of people, the parents do not co-reside with them but mostly with their other children- this can be accepted on the ground that we restrict ourselves to the working individuals only who might have migrated out. Similarly, 44% of the respondents reside with their immediate family (spouse/children) or alone- we call these out as nuclear families.

To estimate the relationship as specified in Eq(9), we run the regression at an overall and segment level. The results from regressions are shown in Table 3, with standard errors in parenthesis. The first two columns display the output of regressions with and without controls, respectively, run at an overall level. Column (3) shows the result of the regression run only for the household heads with sons, while column (4) is the regression output for those without sons.

The relationship between property wealth and consumption for the pre-retiree household head

[17]To substantiate, for India, 48.53% are females but only 15% household heads are females according to Women & Men in India 2020 MOSPI report and NFHS 2015-16 report

Table 1: Descriptive Statistics of continuous variables

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
Per-capita monthly consumption (INR)	1,201	5,710	2,916	1,056	22,682
Net property wealth (INR)	1,201	2,159,142	3,598,497	5,000	40,000,000
Gross non-property wealth (INR)	1,201	517,010	2,486,017	0	50,300,000
Non-property debt (INR)	1,201	47,796	225,947	0	3,820,000
Expected monthly income, next year (INR)	1,201	14,000	18,885	0	150,000
Monthly average life-time income (INR)	1,201	11,901	22,190	0	519,122
Age (years)	1,201	56	8	45	82
Years of schooling	1,201	7.5	5.4	0	20
Household size	1,201	4.7	2.2	1	16
Years of schooling of son*	1,045	10.2	4.7	0	25
Years of schooling of daughter*	919	9.8	4.8	0	21

*In case of multiple sons/daughters, it will be the years of schooling of the eldest son/daughter. Otherwise, it will be the years of schooling for the only son/daughter. 156 household heads don't have a son and 282 households don't have a daughter.

Table 2: Descriptive Statistics of categorical variables

Variable	Observations	Proportion
Gender of household head		
Male	1,022	0.85
Female	179	0.15
Inflationary expectation		
Prices will go up	1,135	0.95
Prices will stay the same	45	0.04
Prices will go down	21	0.02
Status of residence of parent		
None alive	754	0.63
Co-living (atleast one)	101	0.08
No parent co-living	346	0.29
Occupation		
Agricultural work	144	0.12
Self-employed	375	0.31
Salaried	567	0.47
Others (viz. Family business, industry, others)	115	0.10
Current marital status		
Married or live-in	996	0.83
Widowed	160	0.13
Divorced/Separated/Deserted/Unmarried	45	0.04
Self-perceived health		
Very good - Excellent	388	0.32
Good	534	0.44
Fair - Poor	279	0.23
Religion		
Hindu	859	0.72
Muslim	176	0.15
Christians	107	0.09
Others (viz Sikh, Jains, Parsi, Buddhist, Jewish, none)	59	0.05
Caste		
Scheduled Castes/Tribes	354	0.29
OBC	441	0.37
General	406	0.34
Regional zonal council		
Northern	242	0.20
Central	161	0.13
Eastern	165	0.14
Western	198	0.16
Southern	277	0.23
North-east	158	0.13
Family type		
Nuclear (With at most spouse & single children)	525	0.44
Joint	676	0.56

Table 3: Results of regression on mean consumption

Dependent variable: Log of per-capita consumption	(1) Without controls	(2) With controls	(3) Household heads having son	(4) Household heads without son
Log of net property wealth	0.125***	0.100***	0.090***	0.140***
	(0.010)	(0.011)	(0.011)	(0.035)
Log of gross non-property wealth	0.011***	0.010***	0.007***	0.020**
	(0.003)	(0.003)	(0.003)	(0.008)
Log of non-property debt	0.003	0.005*	0.006**	0.005
	(0.003)	(0.003)	(0.003)	(0.008)
Log of Life-time income	0.038***	0.037**	0.043***	-0.001
	(0.013)	(0.014)	(0.015)	(0.058)
Log of expected income	0.027***	0.011	0.003	0.061*
	(0.009)	(0.010)	(0.010)	(0.033)
Inflationary expectations- Ref.: Prices will rise				
Prices to remain stable	-0.059	-0.071	-0.082	0.07
	(0.066)	(0.064)	(0.065)	(0.223)
Prices will go down	-0.017	-0.024	-0.043	0.16
	(0.096)	(0.093)	(0.095)	(0.332)
Gender- Ref: Males				
Female		0.067	0.067	0.047
		(0.057)	(0.063)	(0.153)
Age		-0.002	-0.002	0.001
		(0.002)	(0.002)	(0.006)
# Years of schooling		0.007**	0.002	0.006
		(0.003)	(0.003)	(0.009)
Household size		-0.027*	-0.016	-0.032
		(0.014)	(0.015)	(0.036)
Parent residence- Ref: None alive				
Co-living (atleast one)		-0.073	-0.049	-0.174
		(0.051)	(0.052)	(0.166)
No parent co-living		0.032	0.039	-0.049
		(0.029)	(0.030)	(0.091)
Occupation- Ref.: Agricultural work				
Self-employed		0.231**	0.184*	0.305
		(0.109)	(0.109)	(0.351)
Salaried		0.289**	0.232*	0.356
		(0.132)	(0.131)	(0.441)
Others (e.g. Family business, Industry)		0.239**	0.209*	0.237
		(0.114)	(0.122)	(0.213)
Current marital status- Ref.: Married				
Widowed		-0.126**	-0.109**	-0.104
		(0.052)	(0.054)	(0.169)
Divorced/ Separated/ Never married		0.008	0.018	-0.025
		(0.067)	(0.083)	(0.142)
Self-perceived health status- Ref.: Very good				
Good health		0.052*	0.068**	-0.072
		(0.028)	(0.029)	(0.089)
Fair to poor health		-0.013	-0.002	-0.096
		(0.035)	(0.036)	(0.112)
Religion- Reference: Hindu				
Muslims		0.049	0.073*	0.004
		(0.042)	(0.042)	(0.182)
Christians		0.09	0.075	0.109
		(0.061)	(0.063)	(0.201)
Others		0.09	0.160**	-0.231
		(0.075)	(0.071)	(0.241)
Caste- Reference: Scheduled caste/tribe				
Other backward class		0.077*	0.088**	-0.032
		(0.039)	(0.038)	(0.169)
None		0.097**	0.115***	-0.074
		(0.039)	(0.040)	(0.106)
Regional council- Ref.: Northern zone				
Central zone		-0.157***	-0.169***	-0.036
		(0.044)	(0.045)	(0.186)
Eastern zone		-0.213***	-0.205***	-0.269*
		(0.044)	(0.045)	(0.151)
Western zone		-0.042	-0.034	-0.042
		(0.041)	(0.042)	(0.148)
Southern zone		-0.141***	-0.162***	-0.13
		(0.041)	(0.043)	(0.145)
North-east zone		0.036	0.062	-0.044
		(0.052)	(0.055)	(0.163)
Family Type- Ref.: Joint				
Nuclear		-0.033	-0.001	-0.135
		(0.034)	(0.036)	(0.105)
Highest education of male child			0.016***	
			(0.003)	
Inverse Mills Ratio (IMR)	0.219**	-0.456	-0.341	-0.386
	(0.093)	(0.354)	(0.367)	(0.953)
Constant term	6.059***	6.735***	6.727***	6.127***
	(0.152)	(0.223)	(0.227)	(0.695)
N	1,201	1,201	1,045	156

Standard errors in parentheses
*p<0.1, ** p<0.05, *** p<0.01

is positive, indicating that individuals in India increase their consumption with changes in their property wealth. Without the controls, the change in consumption on account of property wealth is 0.125, which indicates that the percent change in consumption in response to a 1 percent change in property wealth is 0.126. The wealth effect on consumption drops to 0.10 after applying controls but remains significant and positive. However, when the regression is run exclusively for those with sons, the wealth effect drops to 0.09. In contrast, in the regression for households without sons, the wealth effect jumps to 0.14- both significant at the 0.01 level. This difference in the segment regressions indicates the presence of an inter-generational transfer motive when the households have a son. We also ran similar regressions for household heads with and without daughters; no such difference is apparent in the wealth effects for the two segments. This relation seems in alignment with the norm in the country that the male child is the primary caregiver in old age, and it is for eventual transfer to him that the wealth is likely to be amassed. Hence, the absence of a significant wealth effect for individuals without sons is reasonable.

The effect of non-property wealth on consumption is positive and significant, as evident from the first two regressions, although the effect is much smaller when compared to the wealth effect of property. Nevertheless, even here, the household heads with sons have a lower propensity to consume than those without sons. This difference is again indicative of their transfer motives, although this could be for inter-vivo transfers as well, especially since the nature of this wealth is relatively more liquid. Non-property debt effects are positive, possible since it removes some financial constraints to consumption, although it is not significant for all regressions.

The effect of lifetime income is significant and positive at the overall level, validating the Permanent Income hypothesis to some extent. The expected income effect is positive for all and significant for the first regression, although it loses significance after including other covariates. For those without sons, the relationship of expected income is higher and significant compared to those households with sons. This indicates that job loss expectation shocks that influence expected income in the future are absorbed in a household with a son due to informal social insurance. Inflationary expectations positively affect consumption at an overall level, although given that they are heavily skewed across categories and insignificant, we refrain from making inferences on the same. The literature on the effect of inflationary expectations on consumption is also mixed; some, like Dräger & Nghiem (2020), mention that the effects are positive, while Duca et al. (2018) indicate a negative effect. Literature suggests that saving behavior has gender-based variations likely due to disparities in motives and divergent experiences of financial vulnerability across genders (Seguino & Floro, 2003; Duker et al., 2021), although the effect is not significant in

our regressions.

The effect of age on consumption is mixed and insignificant; years of education is found to influence consumption expenditures positively at an overall level, similar to results from other countries (Fernández-Villaverde & Krueger, 2007). One possible testable explanation could be a higher substitution effect for the more educated individuals compared to the less educated peers. Household size is negatively related to consumption; this is expected since intra-household bargaining has the potential to reduce the allocation to some consumption categories, and economies of scale can reduce the per-capita expenditure. The effect of parents not being alive on consumption is positive, especially if the parents do not co-reside, but none of these are significant.

Compared to agricultural work, individuals in other occupation levels are found to have higher consumption expenditures, possibly due to the greater income security in other occupations. Consumption levels by marital status indicate that widowed heads have lower consumption than married heads. Although, given that more than 80% are married as on survey data, there is little differentiation in the variable. The relation between self-perceived health status and consumption shows that consumption is higher for healthier individuals, although it is not significant or consistent across segments. Other studies exploring the relationship between consumption and health status have found mixed evidence across countries (Finkelstein et al., 2013; Wang & Wang, 2020).

The consumption levels by religion are not all that significant, although compared to Hindus, other religions have higher consumption levels. Other studies also did not find the religions' effects to be significant (John & Mutatkar, 2005). Caste effects are apparent as the consumption levels for scheduled castes, scheduled tribes, and OBCs are lower than other households, as also apparent from the Household Consumer Expenditure in India survey by the National Sample Survey Organization (MOSPI, 2010). Although, in the case of son-less heads, the consumption is lower in general caste categories, though not significantly. The consumption expenditures are generally higher for the northern zone than other zones. Some of the states included in the northern zone, like Punjab and Haryana, have one of the highest monthly per capita consumption expenditures (MOSPI, 2010), and their food consumption, especially that related to milk and milk products is also significantly higher than average, which is likely to result in the coefficients we observe (MOSPI, 2010). Family structure is not significant, although the consumption in a nuclear family is lower than in the joint family types.

We also control for the eldest son's highest education (as a proxy to his economic status) and

find the consumption effect to be positive and significant, indicating the likely income contribution of the son to the household income and consumption expenses. For robustness, we regressed on non-imputed values of property wealth, and the results remained the same. We also run similar regressions for those with and without daughters, and we find that the property wealth effect on consumption is not much different for both, further validating our initial assumption that motives are specific to the gender of the offspring.

5 Conclusion

This research leveraged a unique dataset on older adults in India, the Longitudinal Ageing Study in India- Wave I, carrying detailed information on wealth, income, and consumption to estimate the relation between property wealth, presumed to be meant for retirement, and necessary consumption expenditure. The relationship is modeled along the Euler equation, and the estimates of the impact of wealth changes on consumption are used to uncover hidden bequest motives among Indian households.

Overall, the study finds that the relationship between consumption and property wealth differs if the individual has a son than if he/she does not have a son. For a household head with a son, the wealth effect on consumption was found to be 0.09, whereas for one without a son, the wealth effect is 0.14. We deduce that this stark difference in the wealth effects is due to the difference in the extent of their bequest motives. The effect on consumption due to changes in liquid wealth that comprises financial and other assets also exhibits a similar pattern, again indicative of an inter-generational transfer motive, although the effect on its consumption is much lower compared to property wealth effect. The results are sensitive to demographic controls related to education, age, household size, health, caste, religion, family type, and region. Lifetime income was also found to influence consumption significantly, while expected income was significant for households without sons. Consumption levels were found to be the highest among the northern states, in alignment with similar observations through other country-level consumption expenditure surveys; consumption was also more for those with higher education and more stable occupations.

The more positive relationship between property wealth and consumption for household heads without sons indicates the predominance of the operative effect of inter-generational transfer motive for wealth accumulation. The property wealth that we presume to be meant for retirement expenses is likely being saved to reciprocate the 'altruism' of the child in providing possible care during old age. The bequest motive manifests in the presence of sons since the prevalent cultural norm in

India is that the male child holds the primary responsibility for supporting his parents in the later years and, more often than not, inherits the parental property. In the case of non-property wealth as well, the wealth effect is apparent, which could be indicative of a preference for inter-vivo transfer to sons.

While we could access this rich data on Indian households and conduct this empirical analysis with an extensive set of controls, the study is limited in establishing causality, given the cross-sectional nature of the data and the lack of appropriate instruments. Though the analysis was done in an Indian setting, the results are likely to be applicable in similar countries where state support is limited and old age care-giving is the family's responsibility; further validation of the findings through performing replication studies is likely to provide more significant insights. This study will also be helpful for policy-makers to understand how different wealth types can impact consumption at a household level. Besides, given that property asset makes up the largest share of wealth for most households in India, knowing the motivation behind its accumulation helps design appropriate financial assets that can tap into this non-liquid wealth and release it for economic growth. With an increasing trend of nuclear families, knowledge of the adequacy of retirement funds will assume greater importance, and understanding the motives behind wealth accumulation will provide greater clarity on this subject. The future is old, and planning for it, directly or strategically, can potentially make it bright.

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