Inter-generational Transfers and Precautionary Saving

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Extended Abstract for SED
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Abstract

This paper examines the effects of inter-generational altruism on late-in-life wealth accumulation. We designed and fielded a new survey to better measure transfers from parents to descendants as part of the Vanguard Research Initiative. New survey features include a carefully defined family inventory, a break-down of transfers into four categories, and a path of past and future expected transfers three years before and after. We also asked Strategic Survey Questions (SSQs) to identify preference parameters related to the desire to insure family risks via transfers. We use these new transfer measurements and SSQs to study the dynamics of parent-to-child giving by estimating a life-cycle consumption-savings model. Agents in our model save for consumption smoothing, uncertain medical and long-term care needs, inter-vivos transfers to cover uncertain family needs, and bequests. We find that there is a large and uncertain family need risk, and parents save in order to help when their descendants most need it, rather than at the end of life. Precautionary saving induced by family risks is quantitatively important in determining elderly wealth levels and inter-generational wealth transmission patterns.

Key words: retirement savings, inter-vivos transfers, strategic survey questions
JEL classification: D14, D91, E21, H31, J14
1 Introduction

This paper examines the effects of inter-generational altruism on late in life wealth accumulation. We designed and fielded a new survey to measure past and future expected transfers from parents to descendants. We use this new measurement to study the dynamics of parent-to-child givings by estimating a life cycle model. Specifically, the life-cycle savings model we develop permits transfers both during and at the end of life, as well as preference differences for the timing of transfers. Previous studies on inter-generational bequest motives have largely under studied the inter-vivos giving channel. We find that this channel is important empirically, and that its inclusion introduces a new precautionary savings motive that impacts saving and inter-generational wealth transfer patterns.

This extended abstract reflects the structure of the intended paper. After reviewing the literature, we first provide an in-depth description of the unique data set we collected and explain the features that (by design) allow us to separate out timing of transfer preferences. We then describe our model and estimation procedure before presenting preliminary results and counterfactual analysis.

2 Literature

The paper is related to a number of papers in the savings literature that try to understand why retirees save so much wealth rather than decumulate according to a standard life-cycle model. One dollar saved during the older ages is fungible between several pockets - the individual’s own consumption, the individual’s potential medical bills, transfers made during life to descendants or bequests made at the end of life. Rational decision makers would spend this dollar optimally in expectation, dictated by their preference. The difficulty in this literature is to weigh the relative importance of each motive in a realistically rich environment.

The foremost competing motives are the bequest motives, and precautionary savings motives for mortality risks and uncertain medical expenses. There are several related papers that try to weight different candidates in a heterogeneous-agent life-cycle model. De Nardi, French, and Jones (2010) consider a framework that allow for bequest motives and heterogeneity in medical expenses and life expectancies. They highlight the importance of savings for medical expenses, and the role of uncertainty in expenses. However, they do not deny the role of bequest motives, even with a not so wealthy sample that makes the estimation of bequest utility parameters very imprecise. They find that bequests are luxury goods that are potentially quite important for the richest retirees. Ameriks et al. (2011) study the
“annuity puzzle” that retirees show little interest in longevity insurance. Their work highlights the importance of “public care aversion,” that retirees are averse to simultaneously running out of wealth and being in need of long term care. They identify that such aversion, in conjunction with the bequest motives, is important for the low demand for annuities and high savings. Ameriks et al. (2015) look at a similar problem but develop more fully the so-called Strategic Survey Questions that identify preference parameters using a novel application of stated-preference technology. Valid identification of preference parameters is valuable exactly because of the mixing nature of various motives for savings in later life. They have again verified that both bequest motives and costly long-term care spending are important for retirees. Lockwood (2012, 2013) address the same annuity puzzle and also study the bequest motives. In the 2012 paper, he simulates the demand for annuities by 65-69-year-old single retirees in the 2006 wave of the HRS and finds that with five out of the six bequest utility functions estimated in the literature (with the one in De Nardi, French, and Jones (2010) as the exception), the demand for annuities is much reduced. This means that the bequest motives can explain a large proportion of the saving motives of the retirees. Lockwood (2013) follows up to study the low demand for long-term care insurance to insure the health cost risks in later life. The simulation obtains a similar result that low rates of long-term care insurance coverage, especially in combination with the slow rate at which many retirees draw down their wealth, matches well with a reasonable bequest motive.

The literature seems to have suggested that bequest motives are relatively negligible compared to other forces for saving. However, parental altruism does not necessarily manifest only in end-of-life bequests, but also in the form of inter-vivos transfers. Retirees could save precautionarily for potential needs in the family, especially uncertain needs from children. Inter-vivos transfers and bequests are often treated as the same in a theoretical model where an individual lives only one period (Farhi and Werning, 2010, 2013; Piketty and Saez, 2013; Kopczuk, 2001, 2013). Such simplification ignores distinctions along several lines, which arise from different timing. Yet in a life-cycle model, timing could be everything. Ignoring this component could increase the need of a strong bequest motive to accommodate the savings patterns, thus potentially bias estimation exercises and result in misleading policy implications, such as works mentioned above that take a quantitative approach to disentangle savings motives for bequests and long-term care expenses.

Intuitively, if a parent has made a lot of inter-vivos transfers during life, she might feel less

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1 Bequest motives could also be strategic (in exchange for old age support) or accidental (see surveys by Laitner, 1997, Masson and Pestieau, 1997, Kopczuk, 2012). We would like to focus on the altruistic aspect of the motives in this paper, which are more tied with saving motives in later life.
obliged to leave a large bequest. In other words, there could be a substitutability between transfers at different stages of the life cycle. Ignoring potential inter-vivos transfers could bias the estimation for the bequest motives upward. Another big advantage of inter-vivos transfers over bequests is the former’s timely fashion in meeting descendants’ specific needs along their life paths, which could be very uncertain. Young people are more likely to be borrowing constrained thus need financial help from parents now and then. The same amount of wealth might be of greater utility value for the descendants if made earlier or exactly when they happen to need it. Thus inter-vivos transfers may display a large variance over time. Moreover from a policy point of view, inter-vivos transfers are probably the easiest and cheapest way of avoiding estate tax - both intentionally and indirectly (via the potential substitutability), particularly for those wealthiest with wealth above the estate tax exemption level (Poterba 1997, 1998). By indirect tax avoidance, we mean the following behavioral response: If a retiree cares only about end-of-life bequests, taxing more on estates would not alter her behavior much regarding how and when to transfer wealth to her children. On the contrary, if she cares also about inter-vivos transfers, heavier estate taxes that imply a certain deduction of received bequests would prompt her to transfer more earlier in life to avoid high taxes.

Similarly on the empirical side, there are only a handful of studies that look at inter-vivos transfers and bequests together, mainly due to data availability. McGarry (1999a, 1999b) are two pioneer papers that study the wealth transfer patterns both within life and at the end of life. She finds that while bequests are often divided equally between recipients (or correlated only with indicators of recipients’ permanent income), inter-vivos transfers are more likely to be negatively correlated with recipients’ current income (1999b). This observation suggests that even if the two transfer means can be motivated by the same altruistic force, there must be some substantial distinctions that make the giving patterns so different. Moreover, while wealthy parents do appear to make “early bequests,” they rarely do so to take full advantage of tax-free giving in order to avoid estate taxes (1999a). McGarry (2013) largely confirms this observation. Kopczuk (2007) is another interesting piece of work that studies bequest and transfer behavior of the wealthy shortly before death. He finds direct evidence for “deathbed” estate planning - the onset of a terminal illness leads to a very significant reduction in the value of estates reported on estate tax returns, which cannot be explained by real shocks to net worth such as medical expenses or lost income. The result suggests that wealthy individuals actively care about their estates and do respond in behavior when a large shock hits and much uncertainty is resolved, but that this preference is dominated by some other desire to hold on to their wealth while alive.

The only data source we know that consistently collect information on inter-vivos trans-
fers are the Health and Retirement Study (HRS). While we shall explain in later sections the advantages of our survey, Table 1 provides a snapshot of comparison for existing surveys that have some information on transfers. We compare our survey against the HRS, Survey of Consumer Finances (SCF), and the Panel Study of Income Dynamics (PSID) in the following aspects: population surveyed, unit of observations, whether recording a family inventory, whether inter-vivos transfers are asked in detailed categories and whether documenting the past transfers as well as future expectations. The VRI not only oversamples the wealthier population - the most relevant population for studying wealth transmission, but also documents inter-vivos transfers in much detail.

Table 1: Comparison of existing surveys

<table>
<thead>
<tr>
<th>Features</th>
<th>VRI</th>
<th>HRS</th>
<th>SCF</th>
<th>PSID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted population</td>
<td>Elderly</td>
<td>Elderly</td>
<td>Representative</td>
<td>Representative</td>
</tr>
<tr>
<td>Unit of observations</td>
<td>HH</td>
<td>Individual/HH</td>
<td>HH</td>
<td>Individual/HH</td>
</tr>
<tr>
<td>Family inventory</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Transfers</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Starting in 2013</td>
</tr>
<tr>
<td>Transfer categorized</td>
<td>Full</td>
<td>Partial</td>
<td>N/A</td>
<td>Partial</td>
</tr>
<tr>
<td>Transfer paths</td>
<td>Past and future</td>
<td>Past</td>
<td>N/A</td>
<td>Past</td>
</tr>
</tbody>
</table>

Notes: VRI = the Vanguard Research Initiative panel; HRS = the Health and Retirement Study; SCF = the Survey of Consumer Finances; and PSID = the Panel Study of Income Dynamics. Elderly = Elderly populations, typically those above 55 inclusive; HH = households; Family inventory refers to a complete inventory of family members; Transfer categorization refers to documenting transfers for different motives; Transfer paths refers to documenting transfers for the past and also beliefs for the future.

3 Data

We use a unique dataset from the Vanguard Research Initiative (VRI). The VRI is a large sample of Vanguard clients aged above 55 that agreed to participate in a series of ongoing surveys. Crucially, this sample consists of individuals who have significant financial resources for whom issues of wealth accumulation, insurance purchase, and inter-generational transfer are extremely relevant (for a detailed description, see Ameriks et al. (2014)). Prior to this study two surveys have been conducted. The first utilized a new approach to wealth measurement, while the second focused on measuring preference for long term care expenditure and its impact on savings. For more details on the VRI and previous studies using this sample, we refer the reader to http://ebp-projects.isr.umich.edu/VRI/.

This study relies heavily on a new survey fielded to this sample that focused on parent-
to-child wealth transmission. Measurement of wealth transfers consisted of two distinct modules. First, we asked respondents to categorize inter-vivos transfers into four types: education expenses, health expenses, specific expenses (wedding, car repair, housing and house repair, etc.), and other gifts or monetary transfers. By doing so we document inter-generational transfers beyond direct monetary transfers that have been the focus of previous surveys (e.g., the Health and Retirement Study). In a second module, we utilize a class of survey instruments called “strategic survey questions” (SSQs) designed to help identify preferences that are difficult to recover from behavioral data (see Barsky et al. (1997) for a classical implementation of this method). In these questions respondents are placed in a particular scenario where they are faced with specific tradeoffs. They then are asked to make decisions that are revealing of their underlying motives. Specifically given a particular age, health, family need status, and wealth level, we ask them to allocate wealth between inter-vivos transfers/own consumption and bequests/own consumption. Because these are the relative tradeoffs faced by individuals in our model, we are able to interpret responses to these scenarios in our model and identify the preference parameters that are consistent with reported decisions.

The responses to this survey document three important facts. First, asking only about monetary transfers and gifts significantly underestimates inter-vivos transfers (especially those paid to a third party): the amount of transfers documented in the VRI is at least twice those in the HRS after re-weighting the two samples to have comparable wealth distribution. Second, the inter-vivos giving margin is active throughout life. Transfers in the education category are much higher when recipients are young, while those in the gift category remain flat before increasing sharply later in life, thus hinting at estate planning. Transfers in the other two categories also are significant in size with similar intuitive patterns. Third, respondent wealth transfers are predicted by the recipients state as measured by the recipients’ perceived economic status relative to the parent.

4 Structural model

Having demonstrated the measured importance of altruistic motives and inter-generational transfers, we utilize a structural model to quantify their impact on retirement savings. Recent models of late in life savings have focused on two key saving motives: bequests and medical/long-term care expenses. Previous studies (Lockwood (2012, 2014)) find that a luxury bequest motive can explain a large proportion of the saving of retirees. Ameriks et al. (2015) however finds that the strength of bequest motives in these studies is incompatible with survey responses in which respondents report end-of-life bequest motives to be low.
One possible way to reconcile these findings is to allow for an inter-vivos transfer motive. Given the similarities in family transfers made during life and an end-of-life bequest motive, omitting the inter-vivos channel could bias estimation of bequest motives upwards, thus explaining the differences in studies and resulting in misleading policy implications such as estate taxes.

More importantly however, the inter-vivos channel is necessary to realistically account for observed transfer patterns. Inter-vivos transfers respond to recipients’ specific, possibly uncertain, needs along their life paths. Because altruistic parents should optimally transfer money to recipients when marginal utility is high, a single lump sum at the end of life is a poor theory of behavior and not what we observe in our data. From a policy perspective, transfers are probably the easiest and cheapest way of avoiding estate tax, particularly for those wealthiest with wealth above the estate tax exemption level (Poterba (1997, 1998)). If a retiree cares only about post-tax end-of-life bequests but not transfers, taxing more on estates may motivate higher savings to offset the tax loss in the estate. However, if she also can leave inter-vivos transfers, heavier estate taxes would prompt her to transfer more earlier in life to avoid high taxes later. The optimal inter-generational wealth transfers are thus a function of estate taxes, gift taxes, end-of-life bequest preference, and inter-vivos bequest preferences, and all must be modeled to effectively model transfer behavior.

We thus build an incomplete markets model of heterogeneous retirees, who save precautionarily when faced with health and mortality risks, the potential need for long-term care, and uncertain family need risks and who value consuming, making a transfer to the family, and leaving a bequest. Importantly, individuals are allowed to make transfers each period and at the end of life. The model environment is presented below.

4.1 Consumers

Time is discrete and the life-cycle horizon is finite. Consumers start from retirement at $t_0 = 55$ and live till at most $T = 108$, when every model agent has to die. They are heterogeneous over wealth ($a \in [0, \infty)$), age ($t \in \{55, 56, \ldots, 107\}$), income age-profile ($y \in \{y_1, y_2, \ldots, y_5\}$), gender ($g \in \{m, f\}$), health status ($s \in \{0, 1, 2, 3\}$ corresponding to healthy, sick, need long-term care, and death), health cost ($h \in H_g(t, s)$ with support $\Omega_H(t, g, s)$ to be discretized), and family need ($\kappa \in K(t)$ with support $\Omega_K(t)$). Each model period (also a year), consumers choose consumption for themselves ($c_o \in [c_o, \infty)$), transfers to family ($c_f \in [0, \infty)$), and savings ($a'$). Each consumer has a perfectly foreseen deterministic income sequence and receives a risk free rate of return, $1 + r$, on savings. They cannot borrow. The uncertainty a retiree is over health/death, health cost, and family need process, which we
will elaborate later.

4.2 Government

The government provides a consumption floor for consumers’ own consumption, \( c_o = \underline{c_o} \), via transfers \( e \) to represent welfare. We abstract from taxation in this decision problem for now. The cost of this consumption floor is that a consumer’s wealth has to be zero for the next period, while the benefit is that the government policy provides a pre-determined level of consumption. The trade-off between these two forces helps pin down the consumption floor parameter.

4.3 Risks

The consumer faces three kinds of idiosyncratic risks in the model, health, health expense, and family state. We model health as having four states: \( s = 0 \) represents good health, \( s = 1 \) poor health, \( s = 2 \) a need for long-term care (LTC), and \( s = 3 \) for death. The health state evolves exogenously according to a Markov chain, where the transition matrix, \( \pi_g(s' | t, s) \) depends on age, gender and previous health state. We also allow for stochastic health cost \( h \) as a function of age, gender, and previous health state when the health state is good or poor, and additionally a function of income and wealth when in need of LTC.

More importantly, we introduce an underlying preference shifter \( \kappa_t \), which affects the marginal utility that an individual receives from family transfers. The shifter also has two components, a constant mean \( \mu_\kappa \) and a normal idiosyncratic shock with variance \( \sigma_\kappa^2 \).

\[
\begin{align*}
\kappa_t &= \mu_\kappa + \sigma_\kappa \times \xi_t \\
\xi_t &\sim \mathcal{N}(0, 1)
\end{align*}
\]

The idiosyncratic term, \( \xi_t \), is discretized with five values. This preference shifter is designed to capture the lumpy nature of family transfers observed empirically, and can be interpreted as the recipients marginal utility of wealth at time \( t \).

4.4 Utility functions

We modify the standard consumption preferences along two lines, health and family need. The consumer derives utility from her own consumption as well as transfers to the family, with the two components aggregated via a Cobb-Douglas functional form between own
consumption and family consumption (i.e. transfers to the family),

\[ u(c_o, c_f; s, \kappa) \equiv \frac{\theta(s)}{1 - \sigma} (c_o^{\psi}(c_f + \kappa)^{1-\psi})^{1-\sigma} \]

The term \( \theta(s) \) adjusts marginal utility when the consumer is in the LTC state \( (s = 2) \) relative to other health states, as is shown to be important in Ameriks et al. (2015). Thus, we specify

\[ \theta(s) = \begin{cases} 
1 & \text{if } s = 0, 1 \\
1 + \theta_{LTC} & \text{if } s = 2 
\end{cases} \]

If \( \theta_{LTC} \) is positive (negative) than wealth is valued more (less) in the LTC and its value is estimated.

The main innovation comes from incorporating utility from transfers. In the Cobb-Douglas aggregation, \( \psi \in [0, 1] \) is the share parameter on own consumption. \( \kappa \) is the time-varying preference shifter interpreted as the family need process. The higher \( \kappa \) is, the lower the marginal utility from transfers to family will be. If \( \kappa > 0 \) transfers are a luxury good, and no transfers are made except at sufficiently high wealth levels.

Upon death \( (s = 3) \), the consumer receives no income and pays all the mandatory health and LTC costs. Any remaining wealth is left as a bequest, \( b \), which the consumer values with the warm-glow utility function developed in De Nardi (2004).

\[ v(b) = \theta_{beq} \frac{(b + \kappa_{beq})^{1-\sigma}}{1 - \sigma} \]

### 4.5 The consumer’s problem

The consumer’s problem can be written recursively as

\[
V(a, y, t, s, h, g, \kappa) = \max_{a', c_o, c_f} \mathbf{1}_{s \neq 3} [u(c_o, c_f; s, \kappa) + \beta \mathbb{E}V(a', y, t + 1, s', h', g, \kappa')] + \mathbf{1}_{s = 3} v(b)
\]

s.t.

\[
\begin{align*}
a' &= (1 + r)a + y + e - c_o - c_f - h - 1_{s = 2}h_{LTC} \\
a' &\geq 0 \\
c_o &\geq c_o \\
c_f &\geq 0 \\
e &= \max\{0, c_o + h - [(1 + r)a + y]\} \\
b &= \max\{(1 + r)a - h', 0\}
\end{align*}
\]
where the functional forms for \( u(c_o, c_f; s, \kappa) \) and \( v(b) \) are given above.

The value function has three components, corresponding to the flow utility from consumption, expected continuation value of a living individual, and the warm-glow bequest utility of the newly deceased retiree. The budget constraint indicates again that wealth next period is equal to zero if the government-provided consumption floor steps in via a transfer \( e \). The retiree cannot borrow, transfers to the family must be nonnegative (i.e. no transfers from the family, which is captured in the definition of income), and a retiree cannot leave a negative bequest.

4.6 Couples

We need to further discuss how we could adapt the environment and value functions in order to accommodate married couples. The main difficulty is that we would like to pool the structural estimation with singles and couples at the same time, and also assume the same preference parameters across the two groups. The reason we would like to accommodate the couples is that they are more likely to have children, thus to transfer more potentially. On the other hand, we would like to assume common preference parameters for parsimonious specifications and consistent interpretations of the parameter values.

We take the approach of converting expenditures, income, and wealth of couples by using the equivalence scale for two adults. There are several reasons why we choose this intermediate step between focusing on only singles (Rust and Phelan (1997), French (2005), French and Jones (2010), De Nardi, French and Jones (2010)) and a full-flown model for the couples (Van der Klaauw and Wolpin (2008)). First, we essentially assume couples make joint decisions on expenditures towards the family (in most cases by family we mean children). This is a reasonable assumption for the question of interest here, as parents tend to make decisions jointly when it comes to children.\(^2\) Second, the literature on retirement studies usually either use singles or couples as the main sample, but we would like to pool everyone together, therefore we need to convert couples into singles for consistently estimating key parameters such as the parameter of relative risk aversion. Studies like Blau and Gilleskie (2006) and Casanova (2010) do not have to convert first, as they focus on married couples only.

The equivalence scales seek to answer the question, “how much money does a household need to spend to be as well off as a single person living alone?” (Browning, Chiappori, and Lewbel (2013)) The emphasis is on expenditure or consumption, rather than income and wealth, as the former enters utility directly. There are different types of equivalent scales,

\(^2\)We acknowledge that there is a literature discussing strategic games between husband and wife.
and they have been applied in a lot of empirical work such as evaluation of income and consumption inequality, retirement studies (Skinners (2007)), and cross-country comparisons. Let $\gamma > 1$ denote the consumption deflator for a couple of two. For our purpose, we keep the utility function the same, yet make a major change is the relative price of consumption, where the budget constraint becomes

$$a' + \gamma(c_o + c_f + h) \leq (1 + r)a + y + g$$

Apart from the above change, we need to make a few additional minor changes for the adaptation. The married couples would have different life-cycle income profiles, and their mandatory medical expenses would be scaled up according to the equivalence scale as well. We assume that there is no divorce, and the couple “die” when the mortality risk hits the household head.

5 SSQs

As in all models of retirement savings, it is hard to pin down preference parameters with behavioral data on wealth accumulation alone. Therefore, we utilize our designed SSQs to aid in identification. In our survey we asked two distinct sets of SSQs that examined importance of inter-vivos transfers and bequests. The first trade-off is between own consumption and transfers to the family while the respondent is living, and the other is between own consumption and bequests at the last year of life. We present the corresponding model for the first set of questions in detail here.

5.1 The problem

We asked consumers to solve in the survey the problem we now present here mathematically:

$$\max_{c_o, c_f} \quad \mathbb{E} \left[ \frac{1}{1 - \sigma} \left( c_o^\psi \kappa + c_f \right)^{1-\psi} \right]^{1-\sigma}$$

$$s.t.\left\{\begin{array}{l}
c_o + c_f = W \\
\kappa = \mu_\kappa + \sigma_\kappa \times \xi \\
\xi \sim \mathcal{N}(0, 1)
\end{array}\right.$$
The focus now is on the trade-off between own consumption and transfers to the family. The scenario asks the respondents to allocate a certain amount of wealth, \( W \), fixed by us, between own consumption and transfers to the family. The utility functional form corresponds to the one used in the structural life-cycle model. Importantly, we designed the question to eliminate dependence on the continuation value so that the problem would be a static optimization. This simple optimization problem ensures identification of all parameter relevant to the decision. For interactive display of this survey instrument, as well as more information regarding its design and implementation, we refer the reader to http://ebp-projects.isr.umich.edu/VRI/survey_overview.html.

6 Parameter estimates

We follow the two-stage Method of Simulated Moments (MSM) estimation procedure as in Ameriks et al. (2015). In the first stage, we estimate the parameters externally without solving the structural model, while in the second stage, we estimate the preference parameters from the structural model conditional on the first-stage parameter estimates.

Table 2 lays out the strategic survey questions used in the following estimation.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Motives</th>
<th>Scenario Parameters</th>
<th>Preference Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set 1, S3 (mean + std.)</td>
<td>Allocation between ordinary self and family consumption</td>
<td>(a) ( W = $100K )</td>
<td>( \sigma, \mu, \sigma, \epsilon, \psi )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(b) ( W = $150K )</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(c) ( W = $100K )</td>
<td></td>
</tr>
<tr>
<td>Set 2, S2 (mean)</td>
<td>Lottery over spending</td>
<td>Ordinary consumption</td>
<td>(a) ( W = $100K )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(b) ( W = $50K )</td>
</tr>
<tr>
<td>Set 3, S2 (mean)</td>
<td>Allocation between ordinary and ADL states</td>
<td>Ordinary consumption</td>
<td>(a) ( W = $100K, \pi = 0.75 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and ADL expenditure</td>
<td>(b) ( W = $100K, \pi = 0.50 )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(c) ( W = $50K, \pi = 0.75 )</td>
</tr>
<tr>
<td>Set 4, S2 (mean)</td>
<td>Allocation between ADL and bequest states</td>
<td>ADL expenditure and bequest</td>
<td>(a) ( W = $100K )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(b) ( W = $150K )</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(c) ( W = $200K )</td>
</tr>
</tbody>
</table>
6.1 Jointly targeting wealth and SSQ moments

6.1.1 Singles

In the baseline estimation we aim to match both wealth profiles over the life-cycle and the SSQ moments of the singles only. Figure 1 plots the model fit, with the wealth profiles on the left panel and the SSQ moments on the right.

Figure 1: Model fit: wealth and SSQ joint moments

Figure 2 shows the implied expenditure profiles simulated from the baseline model, which are not explicitly targeted. The left panel shows self expenditure profiles, while the right shows those for family expenses. As we do not have data for self expenditure, the left panel only has the model simulated moments.

Figure 2: Implied self and family expenditure moments
Table 3: Parameter estimates: wealth and SSQ joint moments

<table>
<thead>
<tr>
<th>Targeting wealth moments only</th>
</tr>
</thead>
<tbody>
<tr>
<td>σ</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>3.20</td>
</tr>
</tbody>
</table>

The results are still very preliminary, but we would like to share a couple of insights. As shown in Figure 1, the model can match well accumulation at the 25th, 50th, and 75th percentiles of the wealth distribution over the life cycle. With counterfactual analysis we also show that inter-vivos transfers are equally important with bequests in their contributions to the savings patterns. Once this motive has been introduced, bequests motives are estimated weaker compared to previous studies.
References


