

A cross-country study of saving and spending in retirement

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January 19, 2017

Motivation

- Empirical studies show that retirees hold on to their assets and keep on saving well into their later years.
 - United States: Dynan et al. (2004).
 - The Netherlands: Van Ooijen et al. (2015).
 - Australia: Wu et al. (2015).
- Contradicts theoretical findings for the smoothing of consumption over the life-cycle (Modigliani and Brumberg 1954).
- Existing literature (De Nardi et al. 2016) focuses on rational explanations: Precautionary savings and bequest
- Financial choices can be explained by behavior and psychological factors (Shefrin and Thaler 1988; Canova et al. 2005; Beshears et al. 2011) but not much attention paid in retirement savings literature.

Institutional settings

Common features:

- Non contributory public pension + mandatory privately managed private pensions/superannuation.
- Total replacement rate of around 70%.

Differences:

- **Australia:** DC system with choice of benefits. No requirement to annuitize, retirees mostly take account-based pensions (phased-withdrawal products)
- **The Netherlands:** DB system where the legislation only mandates the annual maximal accrual of pension rights, following a defined benefit philosophy. Retirement income can only be paid out as a lifetime pension.

Research Questions

- What is the relative importance of behavioral, rational or psychological drivers for saving in retirement?
- To which extent do institutional settings in the Netherlands and Australia explain (potential) observed differences in preferences?
- What is the influence of age, (expected) health shocks, and other major life events on saving motives?

Rational (saving) motives

- According to De Nardi et al. (2016) the saving motives of the elderly essentially break down into two categories:
precautionary savings for risks the elderly face and the **bequest** motive.
- Elderly may not dis-save because of **liquidity** constraints (Wärneryd 1995; Costa-Font et al. 2009; Andreu et al. 2015).
- The role of inter generational **transfers**, both post-mortem and inter-vivos, has gained considerable attention in the economics literature (Alessie and Kapteyn 2001; Masson and Pestieau 1997).

Behavioral & Psychological (saving) motives

- The behavioral life-cycle hypothesis has gained prominence (Shefrin and Thaler 1988).
- We consider the tendency to **delay** the decision making process (see, e.g., Beshears et al. (2009); Brown et al. (2016)), and **habit** formation (see, e.g., Alessie and Lusardi (1997)).
- The psychology literature suggests: tendency to view money as a **protection** against social risk (Goldberg and Lewis 1978; Furnham 1984; Forman 1987).
- Top of the motivation to save more are abstract goals such as **self-esteem**, or **self-gratification** (Canova et al. 2005).

Categories of saving motives

Table: Potential list of saving motives

Rational	Behavioral	Psychological
Precautionary Precautionary (health) Life-span risk (intended) Bequest Liquidity Intra-household bequest Inter-vivos	Habit formation: wealth Habit formation: savings Habit formation: spending Procrastination Silo	Autonomy Speculation Security Self-esteem Self-gratification Political risk

Pre-test (1)

- **Aim of the pre-test:** select a subset of saving motives from a potential list of 19 identified from economic theory and relevant literature.
- The pre-test was fielded to a sample of 100 people aged 50 in each of the Netherlands and Australia in September/October 2016.
- We used the commercial web panel providers Pureprofile in Australia and Survey Sampling International (SSI) in the Netherlands .

Pre-test (2) - (incomplete) Example of saving motives shown

You want to ensure that :

- you will not outlive their wealth. [Life-span risk]
- you will be able to leave a bequest to your dependents or estate. [(intended) Bequest]
- the level of your monthly savings remains constant over time. [Habit formation]
- you will have savings in one account to leave a bequest to your dependents or estate and savings in another account for unforeseen expenditures. [Silo]
- you have enough money to have peace of mind. [Security]
- you are protected against a change in the superannuation/pension rules. [Political risk]

Pre-test results

- Rational and psychological motives seem to be more relevant for Australians and Dutch.
- 'Intended bequest' does not score among the top 10 reasons to save in both Australia and the Netherlands.
- However, respondents do have a bequest motive as indicated by the fact that the silo motives score among the top 10 motives.
- As expected, life-span risk scores higher in Australia (top 8) than in the Netherlands, where it is the least preferred saving motive.
- On the other hand, political risk scores much higher in the Netherlands (top 4) than in Australia (top 10).

Blocks of saving motives

Table: Final list of saving motives

Rational	Behavioral	Psychological
Precautionary Precautionary (health) Life-span risk (intended) Bequest Liquidity Intra-household bequest Inter-vivos	Habit formation: wealth Habit formation: savings Habit formation: spending Procrastination Silo	Autonomy Speculation Security Self-esteem Self-gratification Political risk

General description

- **Methodology:** vignette (or stated-choice) experiment.
- There are three broad categories of households which differ by: lifetime income/liquid wealth, implied endorsement (or not) and health status.
- Only individuals aged 50-64 and not yet retired receive an invitation to participate.
- For the Netherlands, we use the LISS and the CentER panel, which includes in total 1600 households in our age category.
- For Australia, participants are recruited via the commercial web panel provider - 'PureProfile'.
- Sample size: 1000 participants in each country.
- Eligible participants are then categorized based on their gross household income.

Treatment category 1: wealth & income

- The first category consists of three sets of hypothetical households.
- These households consist of two recently retired individuals aged 65. They are in good health and expect to stay so at least until they reach the age of 70.
- They own the house they live in (without a mortgage), and do not have any plans to move or sell the house.
- If one of them dies, the widow(er) would receive less pension income. The reduction in pension income corresponds to a proportional decrease in expenditures.
- The households in this stage differ in the liquid wealth available and lifetime income.

Treatment category 1: wealth & income

The different wealth and income combinations are calculated as follows:

- Pension wealth = Net Present Value(Income - Age pension);
- Savings = $\max(5\% \cdot \text{Pension wealth}, 3 \text{ months salary})$.

		Lifetime income	Liquid wealth
(Ia)	[high wealth, low income]	Statutory age pension + Annuity from savings	Pension wealth
(Ib)	[low wealth, high income]	Statutory age pension + Annuity from pension wealth	Savings
(Ic)	[middle wealth, middle income]	Statutory age pension + Average annuity (Ia) and (Ib)	Average pension wealth Ia and savings Ib

Treatment category 2: implied endorsement

- Same household composition as in Treatment category 1.
- Implied endorsement is often used by governments to alter spending and savings decisions without restricting individuals' choices.
- We include a fourth hypothetical household, which is obliged to withdraw a minimum amount each financial year from their pension wealth.
- We use this to test whether individuals use these minimum withdrawals as a reference point “as government knows best”.

Treatment category 3: health expectations

- We consider four different health expectations (from good to bad) for the future.
- The household:
 - ① expects that both of them will remain healthy, at least until the age of 75.
 - ② expects that within 10 years one of them will develop some difficulties with activities of daily living (ADL).
 - ③ that one of them will die within 10 years, but that the survivor will remain healthy at least until the age of 75.
 - ④ that one of them will die within 10 years, and that the partner will develop some ADL limitations.

Example (1)

The participant is required, for each of the eight hypothetical households, to

- choose a consumption stream among a choice of five, and
- in two rounds of best/worse choice sets indicate which savings motives accompany this decision.

Example (2)

Part A

Below we describe the financial situation and preferences of five hypothetical households. Each of the following households consists of two individuals currently 65 years old who have just retired. Both are in good health and expect to stay so at least until they reach the age of 70.

The household has a net of taxes yearly lifetime income of \$33,500 (\$2,792 fortnightly) and the wealth at retirement is \$1,524,000. The households own the house they live in, without a mortgage. They don't want to move or sell their house. If one member of the household dies, the survivor will receive less income but also spend less. The reduction in income is roughly equivalent to the reduction in spending.

At retirement the household has to plan how much they expect to save and spend, based on their income and current wealth. The following table shows five different spending plans together with the income and wealth for different ages (if they survive). If the wealth is exhausted then the household has to adapt their spending to the income.

Finally, you can assume that the prices don't change over time.

What plan do you advise the households to choose, based on your own preferences?

	Lifetime income	
	Annual	Fortnightly
	\$33,500	\$2,792

	Spending	
	Annual	Fortnightly
<input type="radio"/> Spending Plan 1	\$85,850	\$7,154
<input type="radio"/> Spending Plan 2	\$81,750	\$6,813
<input type="radio"/> Spending Plan 3	\$57,600	\$4,800
<input type="radio"/> Spending Plan 4	\$33,500	\$2,792
<input type="radio"/> Spending Plan 5	\$31,850	\$2,654

	Wealth			
	At age 65	At age 75	At age 85	At age 95
	\$1,524,000	\$1,000,500	\$477,000	\$0
	\$1,524,000	\$1,041,500	\$559,000	\$76,500
	\$1,524,000	\$1,283,000	\$1,042,000	\$801,000
	\$1,524,000	\$1,524,000	\$1,524,000	\$1,524,000
	\$1,524,000	\$1,540,500	\$1,557,000	\$1,573,500

Example (3)

Lifetime income	
Annual	Fortnightly
\$33,500	\$2,792

Spending	
Annual	Fortnightly
\$85,850	\$7,154
\$81,750	\$6,813
\$57,600	\$4,800
\$33,500	\$2,792
\$31,850	\$2,654

Wealth			
At age 65	At age 75	At age 85	At age 95
\$1,524,000	\$1,000,500	\$477,000	\$0
\$1,524,000	\$1,041,500	\$559,000	\$76,500
\$1,524,000	\$1,283,000	\$1,042,000	\$801,000
\$1,524,000	\$1,524,000	\$1,524,000	\$1,524,000
\$1,524,000	\$1,540,500	\$1,557,000	\$1,573,500

Spending Plan 1	\$85,850	\$7,154
Spending Plan 2	\$81,750	\$6,813
Spending Plan 3	\$57,600	\$4,800
Spending Plan 4	\$33,500	\$2,792
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Below you see five saving motives (reasons to save).

Please indicate which reason is the most important for this household, based on your own preferences, and which saving motive is the least important.

MOST important reason to save	2nd MOST important reason to save	Reasons to save	2nd LEAST important reason to save	LEAST important reason to save
<input checked="" type="radio"/>	<input type="radio"/>	The household wants to ensure that they are able to enjoy life now as well as later.	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	The household wants to ensure that they will be able to finance unforeseen health and aged care expenditures.	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	The household wants to ensure that they will be able to leave a bequest to their dependents or estate.	<input type="radio"/>	<input checked="" type="radio"/>
<input type="radio"/>	<input type="radio"/>	The household wants to ensure that they have enough cash on hand at any time	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	The household wants to ensure that they remain financially independent.	<input type="radio"/>	<input type="radio"/>

Variable selection

Section 2: Planning and personality traits

Planning horizon and time preference	Fisher and Montalto (2011)
Retirement planning	Agnew et al. (2013); Jacobs-Lawson and Hershey (2005)
Future time perspectives	Jacobs-Lawson and Hershey (2005)
Subjective life expectancy	Teppa et al. (2015)
Risk attitude	Dohmen et al. (2011)
Conscientiousness instrument	Agnew et al. (2013); Agnew et al. (2016)
Impulsiveness	Tsukayama et al. (2012)
Ten-item personality inventory	Gosling et al. (2003)

Section 3: Pension arrangements and financial competence

Pension knowledge questions	Bateman et al. (2016)
Financial literacy	Lusardi and Mitchell (2011); Agnew et al. (2013)
Numeracy	Lipkus et al. (2001)
Wealth	Agnew et al. (2013); Agnew et al. (2016)

Spending patterns preferences (The Netherlands)

	Vignette no. 1,2,3 and 4			
	(la) High wealth low income	(lb) Middle wealth middle income	(lc) Low wealth high income	(la) + implied endorsement
105%· High income	18%	16%	10%	16%
High income	40%	44%	54%	43%
Middle income	26%	31%	29%	26%
Low income	9%	6%	4%	10%
95%·Low income	6%	3%	4%	5%

	Vignette no. 5,6,7 and 8							
	(la) High wealth / low income				(lc) Low wealth / high income			
	#1	#2	#3	#4	#1	#2	#3	#4
105%· High income	16%	13%	17%	17%	7%	7%	9%	6%
High income	43%	38%	41%	36%	57%	49%	56%	49%
Middle income	25%	34%	27%	28%	29%	36%	26%	33%
Low income	10%	11%	11%	13%	3%	5%	5%	7%
95%·Low income	5%	4%	4%	6%	3%	3%	5%	6%

Note: #1 represents 'both healthy', #2 represents 'one healthy and the other one develops an ADL', #3 represents 'widow in good health' and #4 represents 'widow who developed an ADL'.

Saving motives preferences (1) (The Netherlands)

Table: Vignette no. 1,2,3 and 4

Saving motive	(la)	(lb)	(lc)
	High wealth low income	Middle wealth middle income	Low wealth high income
Precautionary	3.26	3.33	3.36
Precautionary (health)	3.52	3.55	3.57
Life-span risk	1.92	1.82	1.81
(intended) Bequest	1.66	1.67	1.67
Liquidity	3.62	3.54	3.57
Intra-household bequest	3.38	3.47	3.45
Autonomy	3.60	3.57	3.57
Security	2.67	2.62	2.64
Self-gratification	3.77	3.81	3.76
Political risk	2.78	2.79	2.79

Saving motives preferences (2) (The Netherlands)

Table: Vignette no. 5,6,7 and 8 (mean)

Saving motive	(Ia) High wealth low income				(Ic) Low wealth high income			
	# 1	# 2	# 3	# 4	# 1	# 2	# 3	# 4
Precautionary	3.28	3.42	3.34	3.27	3.22	3.34	3.22	3.28
Precautionary (health)	3.40	3.76	3.57	3.84	3.43	3.64	3.49	3.65
Life-span risk	2.01	1.96	1.94	2.03	1.89	1.97	1.99	1.98
(intended) Bequest	1.57	1.55	1.55	1.51	1.75	1.69	1.63	1.63
Liquidity	3.61	3.71	3.71	3.72	3.62	3.66	3.65	3.66
Intra-household bequest	3.56	3.42	3.72	3.65	3.46	3.46	3.71	3.60
Autonomy	3.57	3.50	3.48	3.40	3.58	3.46	3.47	3.46
Security	2.58	2.49	2.49	2.52	2.54	2.49	2.48	2.50
Self-gratification	3.83	3.73	3.74	3.57	3.75	3.62	3.69	3.62
Political risk	2.61	2.47	2.49	2.50	2.74	2.69	2.66	2.63

Discussion

- Participants report advise spending plans which reduce most of the capital by the age of 95.
- Health shocks increase savings but not dramatically.
- Global top 5 and bottom 2 saving motives are consistent throughout the 8 treatments.
- Self-gratification scores in de top two for most household types.
- Precautionary savings related to health score among the top 2 when ADL limitations are present.

Next steps

- Running the same experimental survey in Australia (field late January).
- Do the health shocks and implied endorsement have effect on an individual basis?
- To which extent do institutional settings in the Netherlands and Australia explain (potential) observed differences in preferences?
- What is the influence of, age, health shocks, and other major life events on saving motives?
- What is the influence of personal characteristics, cultural background, education, literacy on saving motives?

Thank you for your attention



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