

Housing equity release, old-age income, and public finances

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Very preliminary!

Netspar 29.1.2015

Background

- In Finland (especially), most hhs have most of their wealth in the form of housing.
- By retirement, most have paid back their mortgage. Could increase standard of living substantially by releasing housing equity.
- The simplest way: move to a cheaper house.
- The possibility to buy an annuity should make this option more appealing.
- However, the market for annuities is almost non-existent. The tax treatment of single payment annuities is confiscatory.
- Alternatively, hhs can take a reverse mortgage.
- A market for reverse mortgages is emerging.

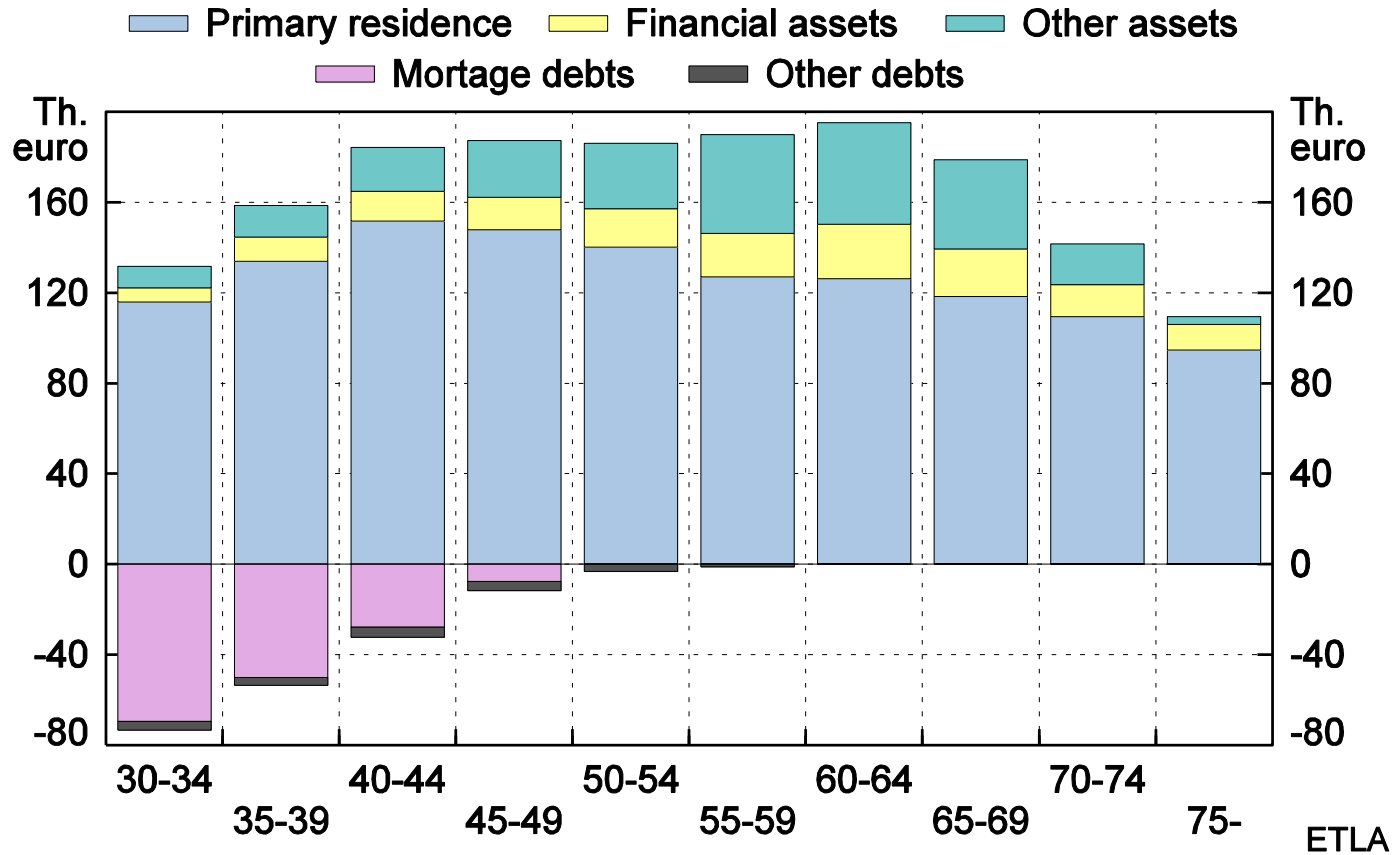
Question and method

- How would the introduction of (tax free) annuities influence housing choices and public finances?
- Use a simple OLG model with housing. Calibrate to Finnish data.
- Take into account the actual tax treatment of owner housing vis-a-vis non-housing consumption and financial savings. Imputed rent goes untaxed.
- Introduce the possibility to annuitize financial savings at old age. Also relax the borrowing constraint at old age (mimic reverse mortgages).
- We are not trying to predict how many would buy an annuity. Rather, seek to evaluate the change in the aggr. tax revenue *relative* to the amount of annuities bought.

Outline of the results

- The introduction of tax-free single payment annuities may well *increase* tax revenue.
- The possibility to annuitize financial savings increases the opportunity cost of housing.
- As a result, financial savings and non-housing consumption increase relative to owner housing which is tax favoured.
- Reverse mortgages have the opposite effects.
- Depends on the preferences, however.

Household portfolios by age group, median values



Household problem

$$\max_{\{c_j, h_j, a_{j+1}\}_{j=1}^J} \sum_{j=1}^J \beta^{j-1} \prod_{i=1}^j S_i u(c_j, h_j)$$

subject to

$$(1 + \tau^c)c_j + h_j + a_{j+1} = h_{j-1} - (1 + \tau^c)\delta h_{j-1} + R_j a_j + e_j + (1 - \tau^b)\bar{b}$$

$$b_{j+1} = h_j - (1 + \tau^c)\delta h_j + R_{j+1}^b a_{j+1}$$

$$a_{j+1} \geq -(1 - \gamma_j)h_j$$

$$\text{where } R_j = 1 + (1 - \tau^a)r \text{ or } R_j = \frac{1 + r}{S_j}$$

Baseline calibrations

- Model period 5 years; $r=8\%$; $\delta = 0.083$.
- $\tau^c = 0.2, \tau^a = 0.3, \tau^b = 0.1$
- Earnings profile and survival probabilities from the data.
- CES-CRRA preferences:

$$u(c, h) = \begin{cases} \frac{[\varphi(c, h)]^{1-\sigma}}{1-\sigma}, & \text{for } \sigma > 0, \sigma \neq 1 \\ \log \varphi(c, h), & \text{for } \sigma = 1 \end{cases}$$

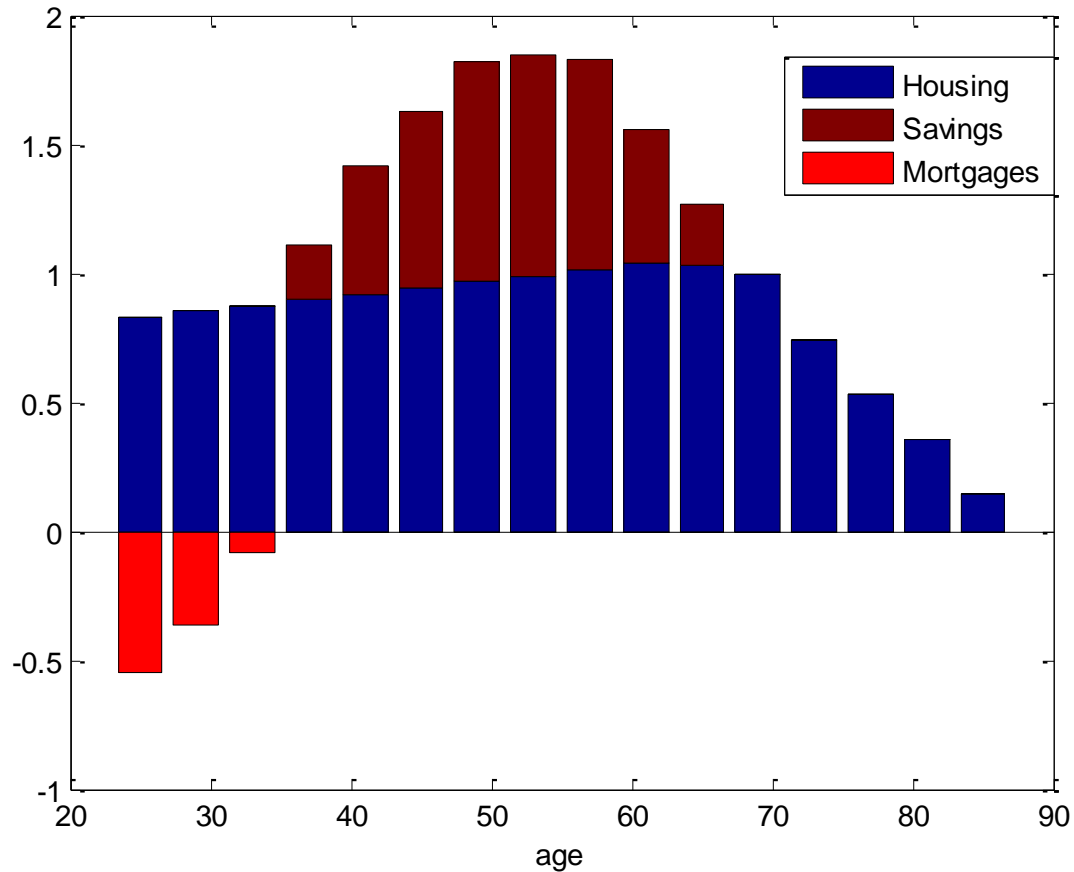
$$\varphi(c, h) = \begin{cases} (\alpha c^\rho + (1-\alpha)h^\rho)^{1/\rho}, & \text{for } \rho \leq 1, \rho \neq 0 \\ c^\alpha h^{1-\alpha}, & \text{for } \rho = 0 \end{cases}$$

- Down payment req. $\gamma = 20\%$ before retirement age, 100% after that.
- Consider different preference parameters σ (CRRA) and ρ (CES).
- Given σ and ρ , choose housing share α and discount factor β to match i) av. net wealth-to-av. income, and ii) average house value-to-av. income.

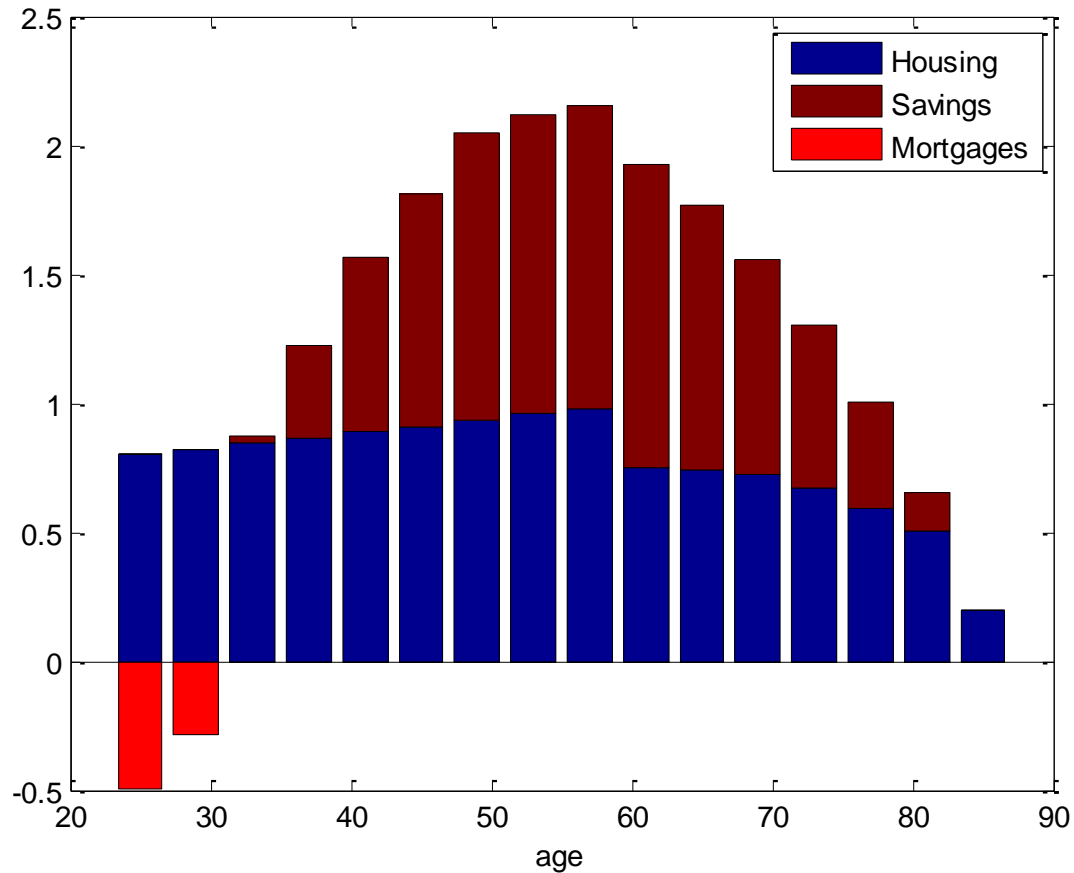
Experiments

- First, introduce annuities by setting $R_j = \frac{1+r}{S_j}$ (instead of $1 + (1 - \tau^a)r$) after retirement age.
- Note: No borrowing after retirement age. It is clear that hhs want to annuitize all their financial savings.
- Second, introduce reverse mortgages by lowering γ_j from 1 to 0.5 after retirement age.
- All prices and taxes fixed. The periodic bequest received determined so that it equals the average bequest left.

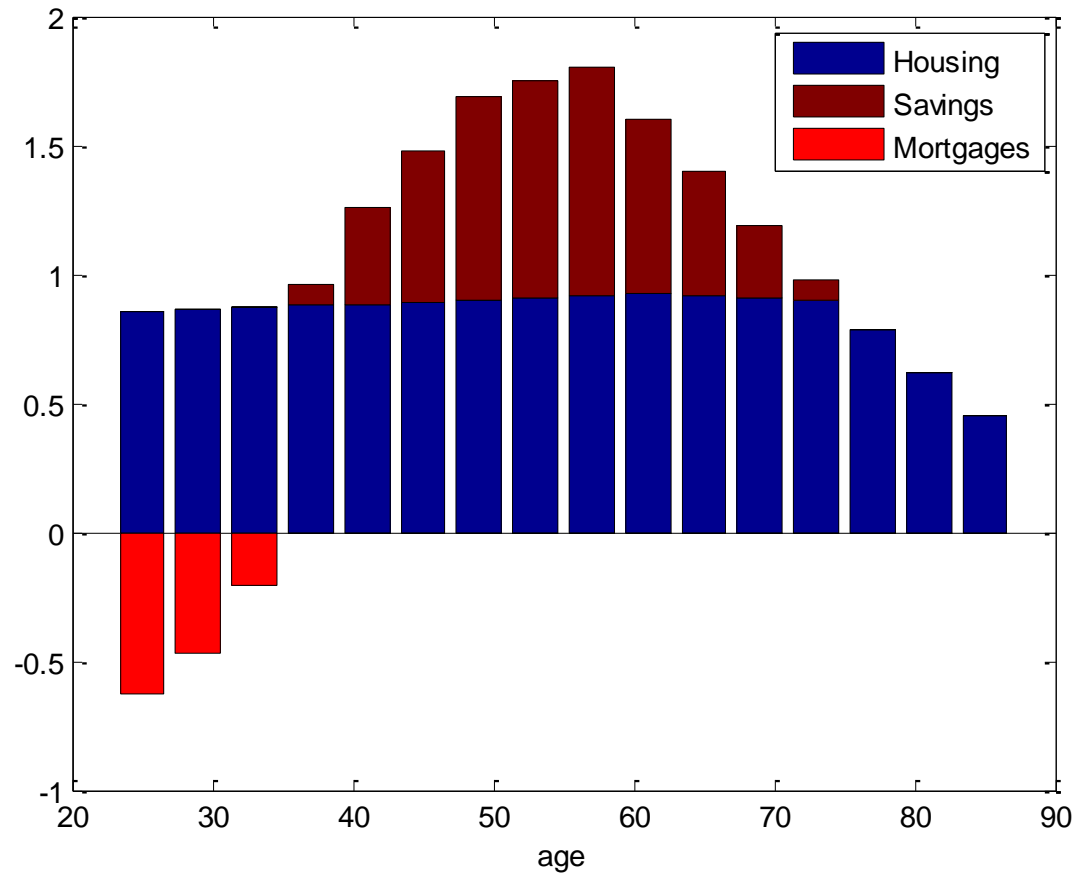
Household portfolios in the baseline case, log utility



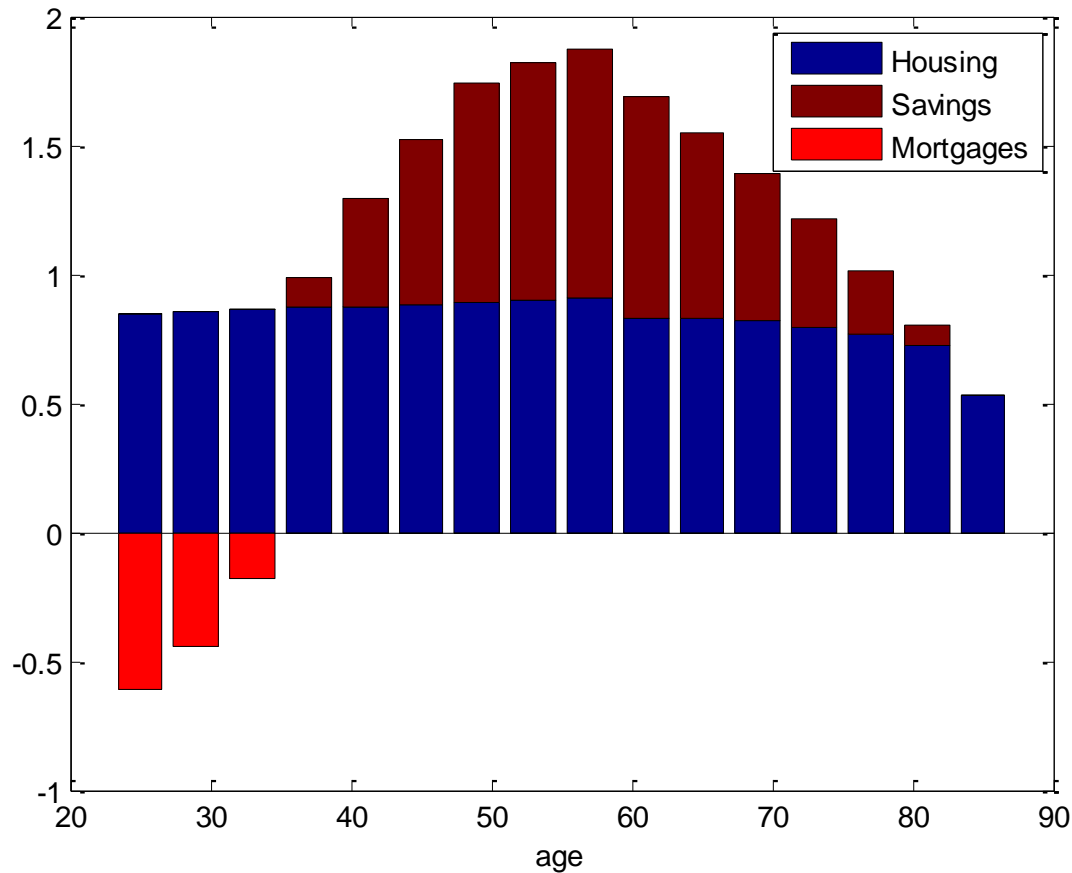
Household portfolios with annuities, log utility



Household portfolios in the baseline case, $\rho=-1$ and $\sigma=3$



Household portfolios with annuities, $\rho=-1, \sigma=3$



The effect of introducing annuities, %

	Non-housing consumption	Housing	Net financial savings	Bequests	Taxes paid
$\sigma = 1, \rho = 0$	4.1	-8.0	126	-6.8	3.7
$\sigma = 3, \rho = 0$	3.8	-9.6	83	-24	0.3
$\sigma = 1, \rho = -2$	2.6	-1.2	96	7.3	3.1
$\sigma = 3, \rho = -2$	1.8	-2.8	41	-8.5	-0.2

The effect of introducing reverse mortgages, %.

	Non-housing consumption	Housing	Net financial savings	Bequests	Taxes paid
$\sigma = 1, \rho = 0$	-1.2	4.4	-38	-24	-2.7
$\sigma = 3, \rho = 0$	-1.0	3.6	-44	-19	-2.4
$\sigma = 1, \rho = -2$	-0.8	1.8	-41	-39	-3.6
$\sigma = 3, \rho = -2$	-0.7	1.3	-38	-33	-3.7

Conclusions

- The possibility to annuitize financial savings increases the user cost of owner housing.
- This encourages households to release housing equity at old age.
- Given the tax favoured status of housing, the introduction of annuities may well increase tax revenue even if the annuities are tax free.
- (The fiscal effects would always be close to zero if the imputed rent was taxed.)
- Reverse mortgages, in contrast, induce households to increase their housing consumption and financial savings. As a result, they tend to decrease tax revenue.