Centraal Planbureau

Welfare Analysis Using Lifecycle Paths of Long Term Care Spending.

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Optimal saving and insurance for old age: The role of public long-term care insurance

Netspar Pension Day
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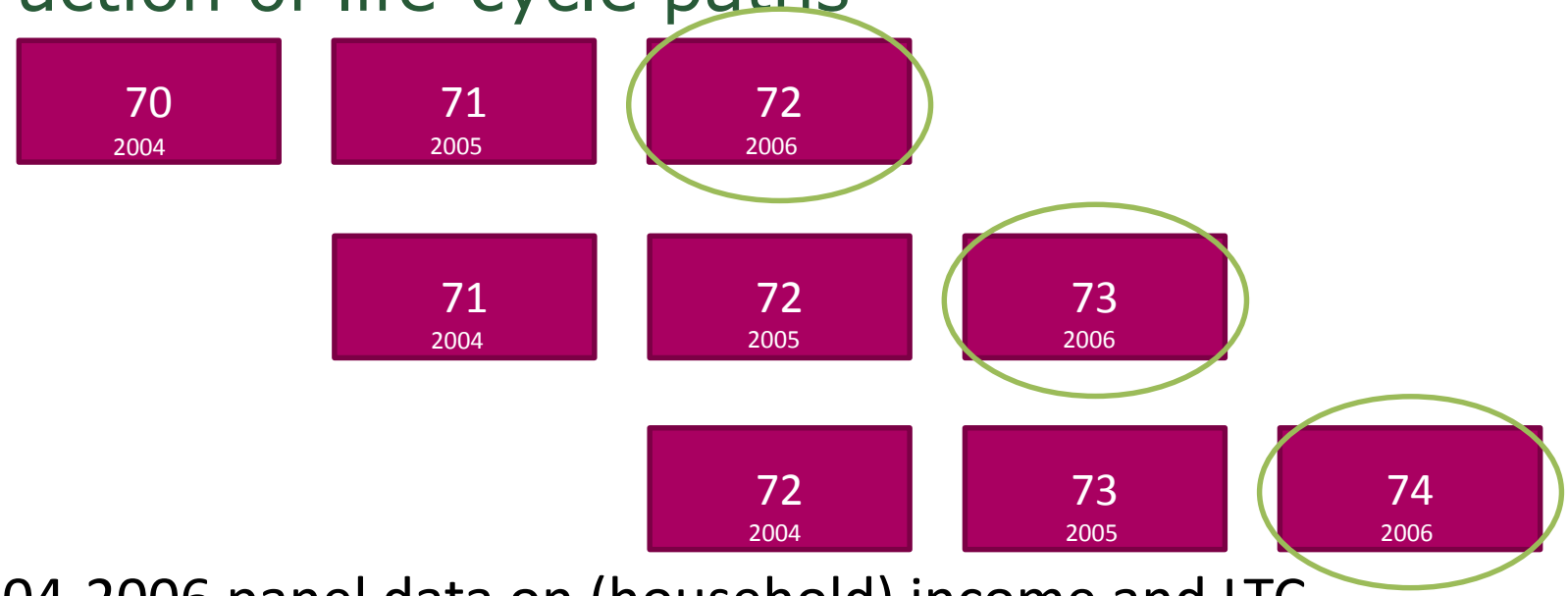
Agenda

- Introduction
- Data
  - Nearest neighbor algorithm
  - Including information on wealth
  - Estimation results
- Model lifecycle consumption
- Policy variants
- Results
- Conclusions/next steps

Introduction

- How to take care of Long term care for the elderly (LTC)?
  - Population ageing
- Large collective system in the Netherlands for elderly care
  - Including home care and institutional care
  - "Insurance" by government (WLZ, WMO)
  - Income and wealth dependent co-payments; increase/decrease?
  - Netspar paper on redistributive effects (Hussem, Wouterse, Ter Rele, 2017)
- This paper: Welfare effects
  - How do co-payments influence saving-behavior?
  - Yes according to lifecycle theory; how much?
  - Interaction with pensions: annuity instead of a lump sum?
  - How to model LTC costs? (Wong et al., 2016, Hussem et al., 2016)

Construction of life-cycle paths



- 2004-2006 panel data on (household) income and LTC
- Start with 20,000 0-year-olds
- Match with best matching neighbor (same characterizations) 1 year older
- Repeat until end of life

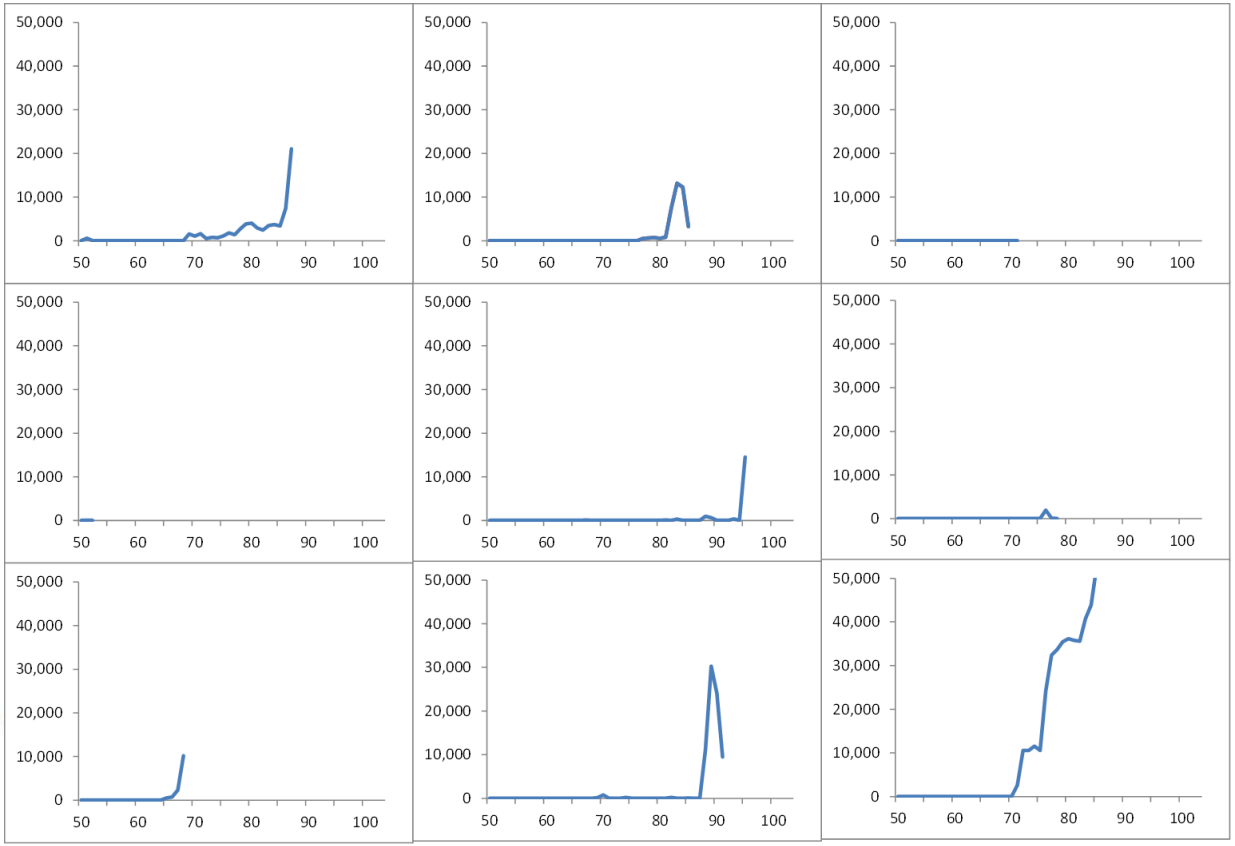
20,000 individual life-cycle paths

10,000 males and 10,000 females include income, household type and LTC-costs

In this paper we use information on individuals, only institutional care

Table 1: LTC costs in the lifecycle paths, from age 65

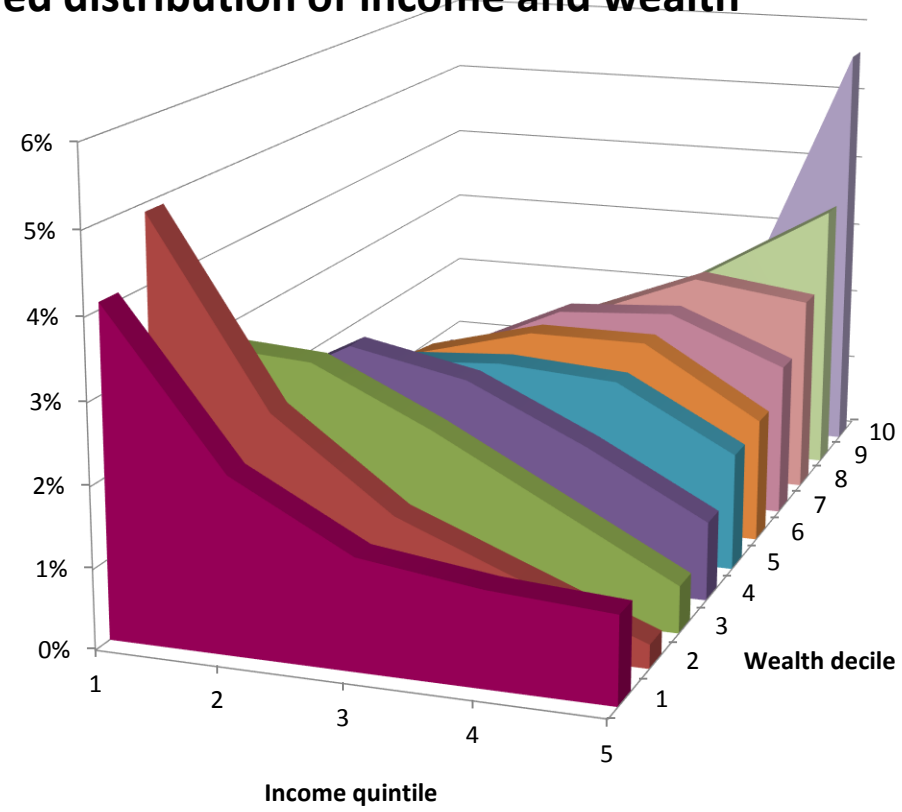
	average	std/average
per year	1,320	5.8
lifetime	34,323	2.5



LTC costs per year by age per individual

Link wealth to income

Combined distribution of income and wealth

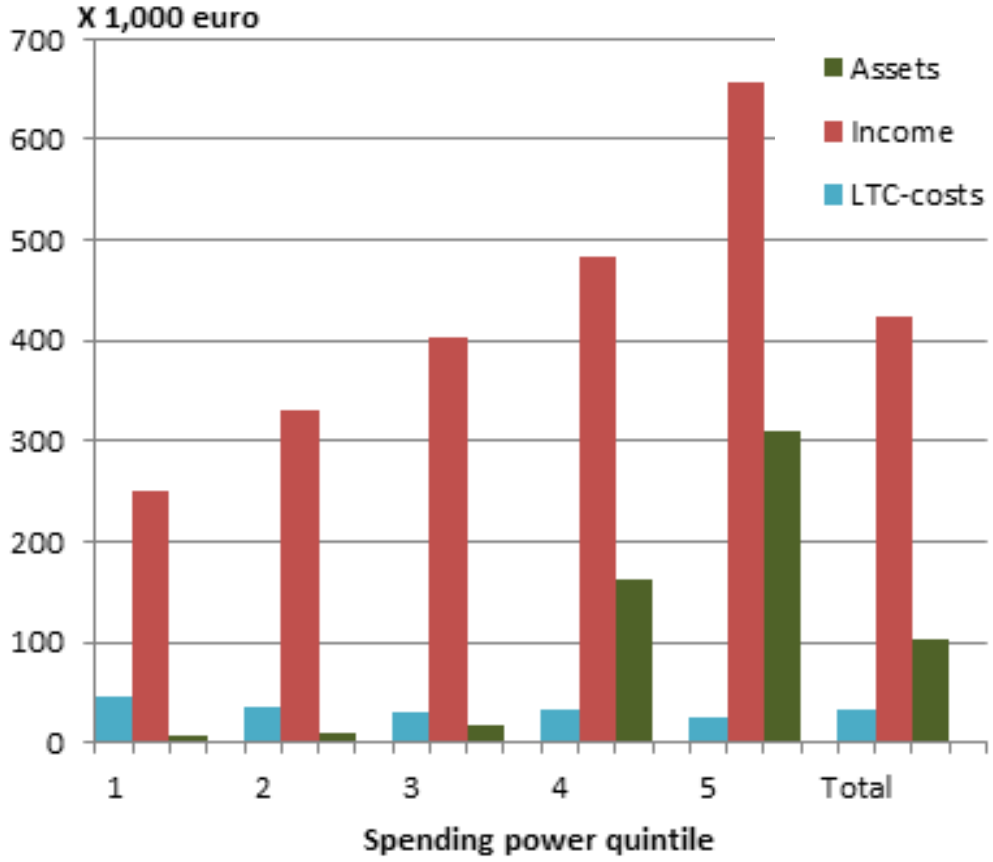


We use the relationship between wealth and income derived from Statistics Netherlands at age 70.

Each life-cycle path is used 5 times for 5 wealth deciles.

Every path has a specific weight to mimic the population frequencies.

Estimation results lifetime amounts



Spending power:

- From both income and wealth
- On age 65
- Certainty equivalent consumption from income and wealth (without own payments)

Model life-cycle consumption of individuals

- Start at age 65
  - Wealth and fixed income (incl. first pillar AOW and pension)
  - Distribution life expectancy and copayments for LTC-costs known to individual, individual realizations are not)
  - LTC-costs are exogenous
- Optimize expected utility over remaining lifetime
  - Choice between consumption and saving
  - People update their expectation on realizations
- Parameters from literature
  - Risk aversion (CRRA utility funaction), discount factor, fixed interest rate for savings

- Safety net: consumption is at least 7,000 euro annually

Result of the model

Maximize expected utility over remaining lifetime until t=T

Discount factor

Surviving probability

$$\mathrm{E}(V_0) = \mathrm{E}\left[\sum_{t=0}^{T}\left(\beta^t u(c_t)\prod_{s=0}^{t} p_s\right)\right]$$

$$u(c_t) = \frac{c_t^{1-\gamma}}{1-\gamma}$$

Standard CRRA utility function; individual wants to smooth consumption

$$CEC = u^{-1}\left(\frac{\mathrm{E}(V_0)}{\sum_{t=0}^{T}\beta^t\left(\prod_{s=0}^{t} p_s\right)}\right)$$

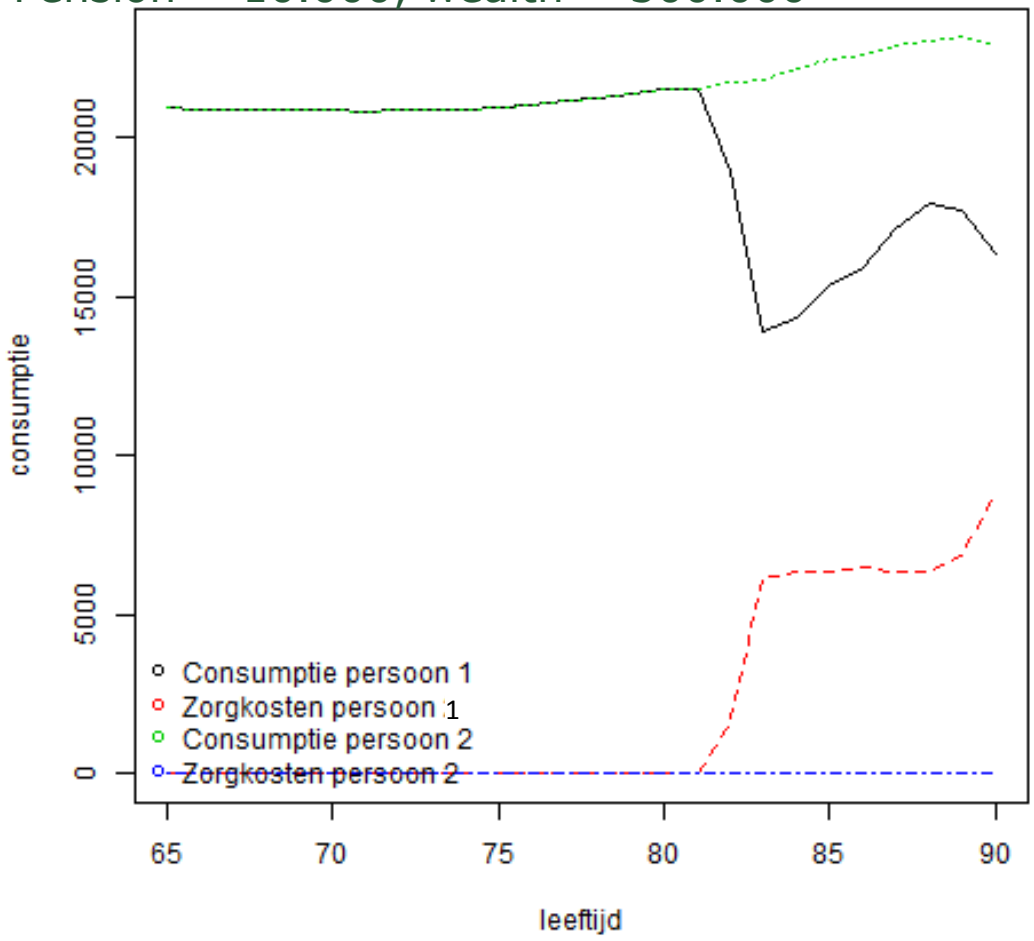
Main outcome is certainty equivalent consumption *CEC:*
Amount of consumption with certainty which has the same utility

We present for group *g* the loss of alternative *a* compared to a baseline financing scheme *0* without co-payments

$$\frac{CEC_{g,a} - CEC_{g,0}}{CEC_{g,0}}$$

Example smoothing consumption: 2 individuals

Pension = 10.000, wealth = 300.000



Policy variants

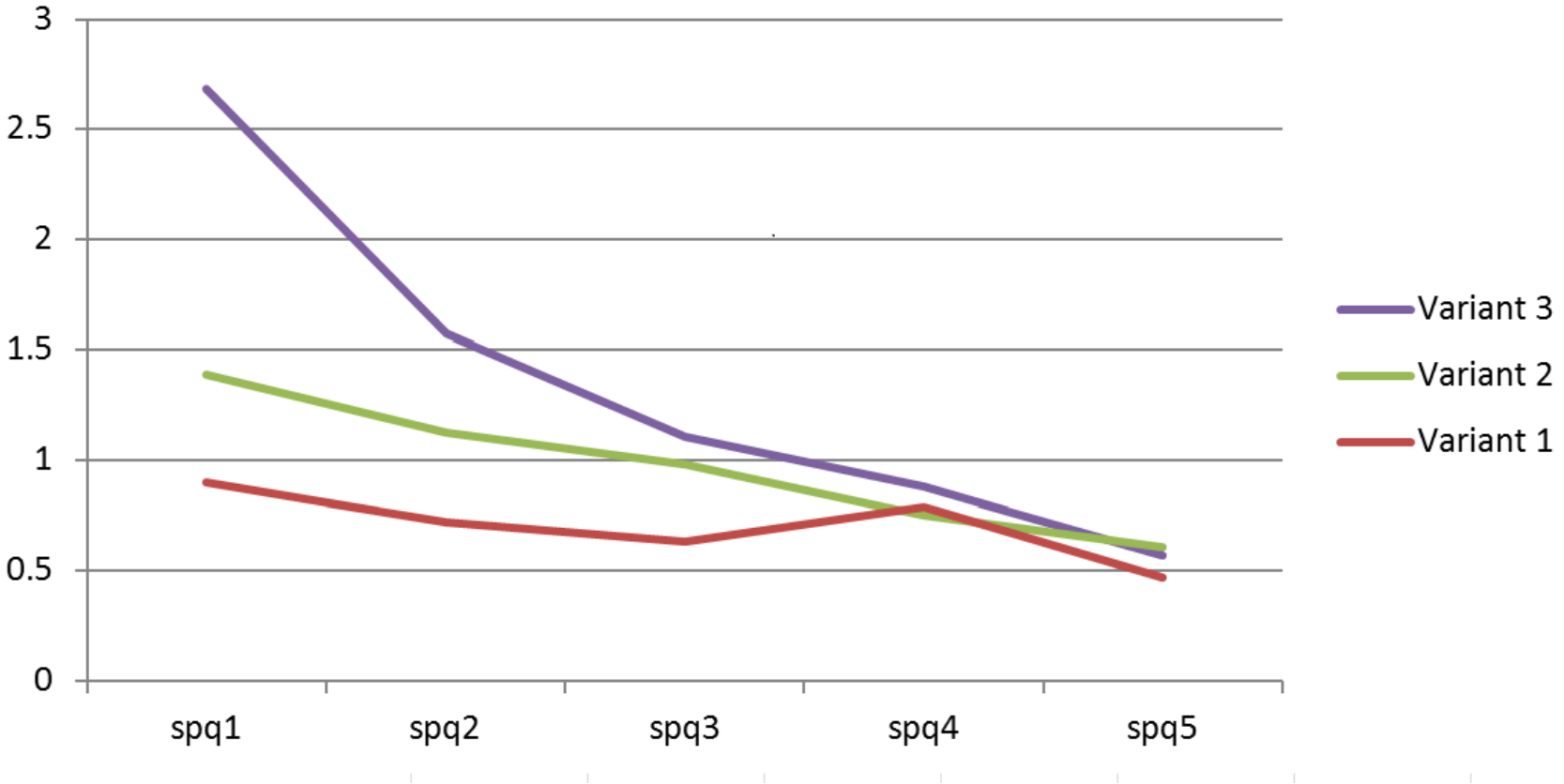
- Part of LTC financed by copayments currently approximately 10%
- Copayment is income and wealth dependent, maximized on expenditures and 27,000 euro per year
- In this paper modelled as follows:

Table 3: Average loss of consumption due to co-payments.

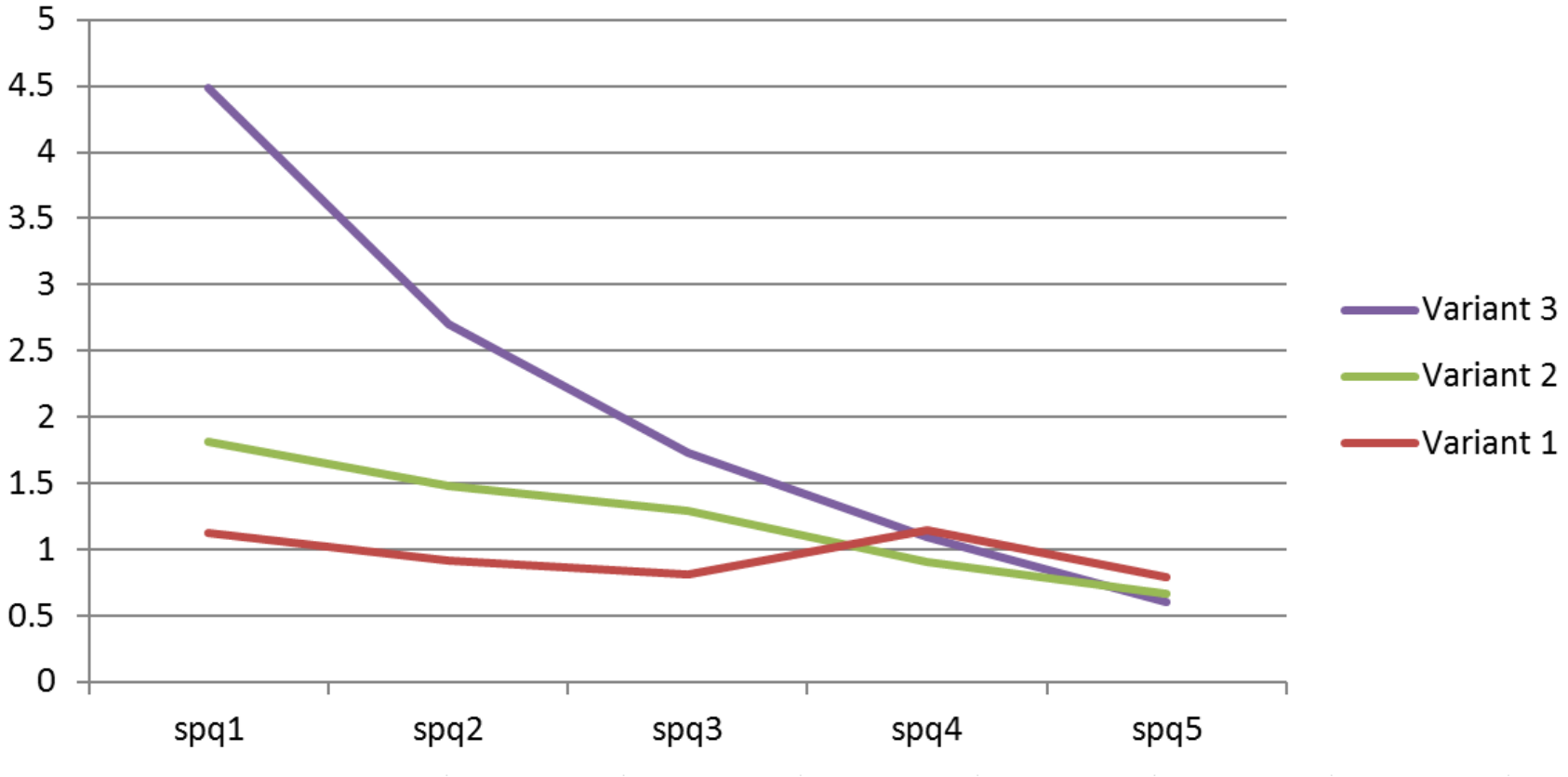
	Co-payment	C	CEC
Variant 1	13 % income + 12 %wealth	0.7	1.0
Variant 2	20 % income	1.0	1.2
Variant 3	13 % LTC costs	1.4	2.1

- Safety net 7,000 euro's a year

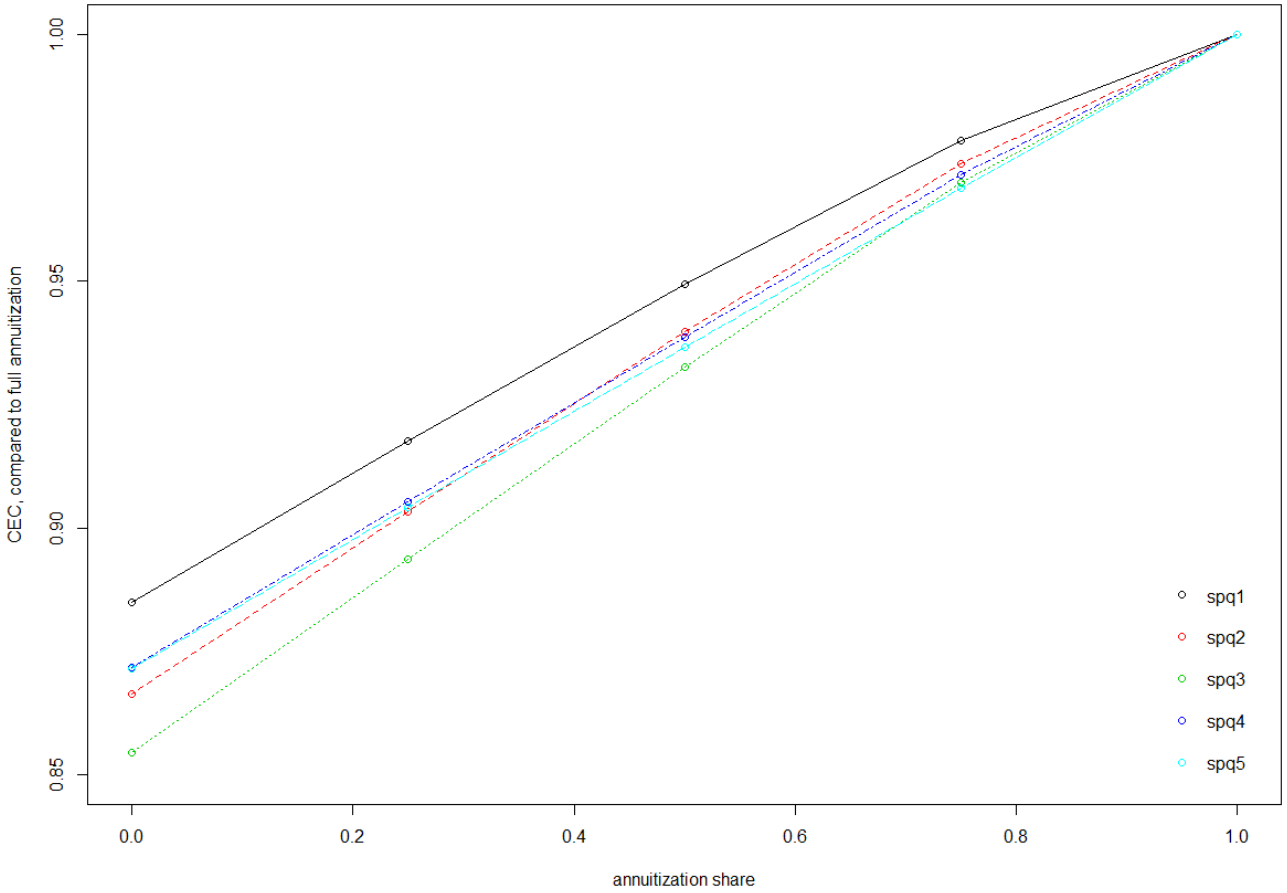
Results: loss of consumption *C*



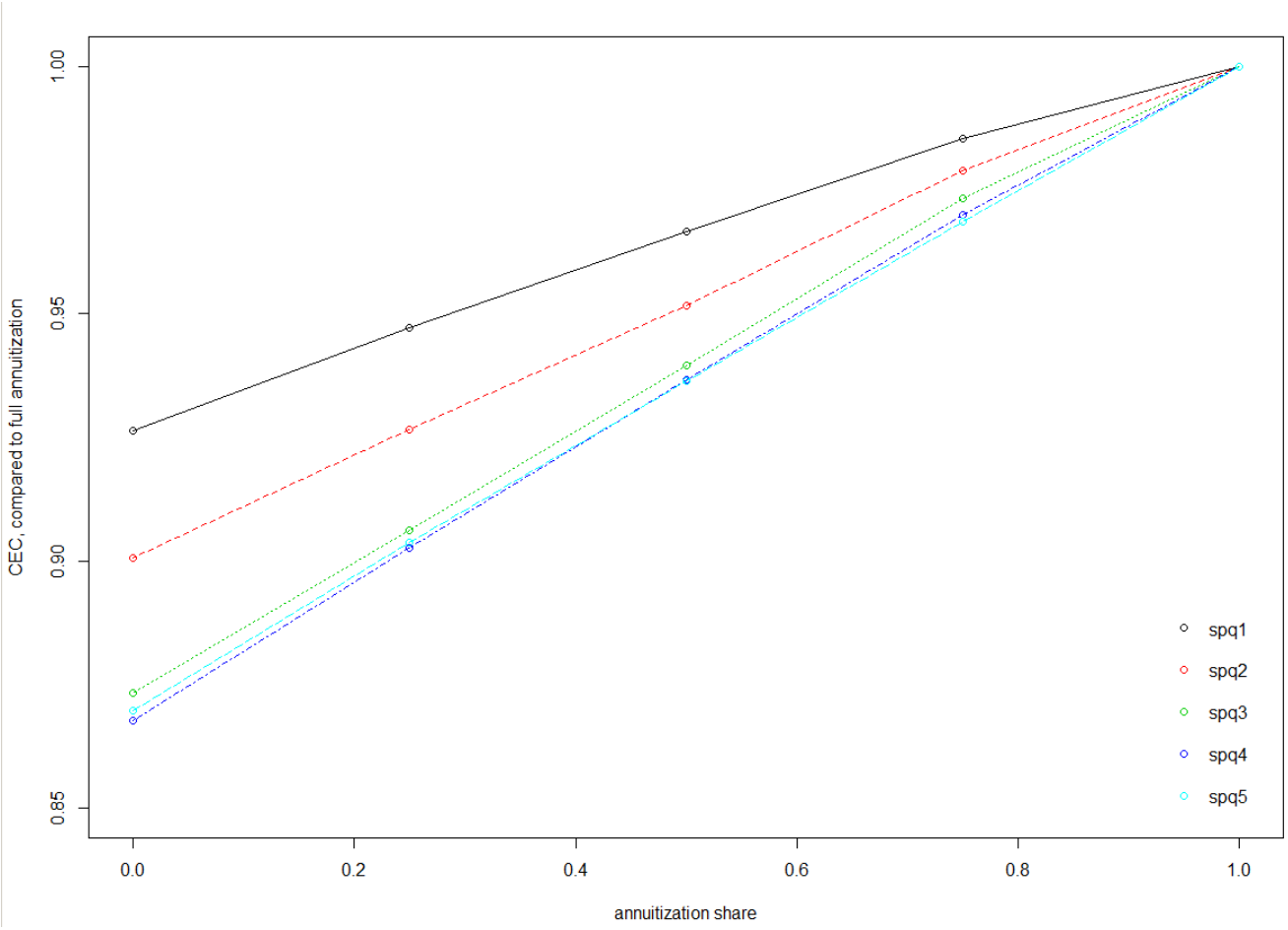
Results: loss of *CEC*



Results wrt full annuitization: no copayments



Results wrt full annuitization : 30% copayments



Conclusions/next steps

- Numerical approach works to give insight in lifecycle model using lifecycle paths

- Huge welfare gains when introducing income and wealth dependent copayments: especially for low spending power groups
- Fixed copayments slightly better for highest spending power groups
- Full annuitization always preferable

Next steps:

- Different results when taking bequest motive into account?
- More (realistic) policy measures
- How to prevent welfare losses/disturbances, e.g. when lump sum is possible?

Household composition in life-cycle paths