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Unemployment insurance

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Optimal unemployment insurance over the lifecycle

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Research questions

- What is the optimal level of unemployment insurance?
- How do risk aversion, moral hazard and borrowing constraints affect the optimum?
- What is the optimal level at different stages of the lifecycle?
- Can individual savings accounts for unemployment improve welfare?

Outline

- A lifecycle model with unemployment
- Calibration and optimal benefit levels
- A system of individual accounts for unemployment
- Do they improve welfare?
- Preliminary conclusions

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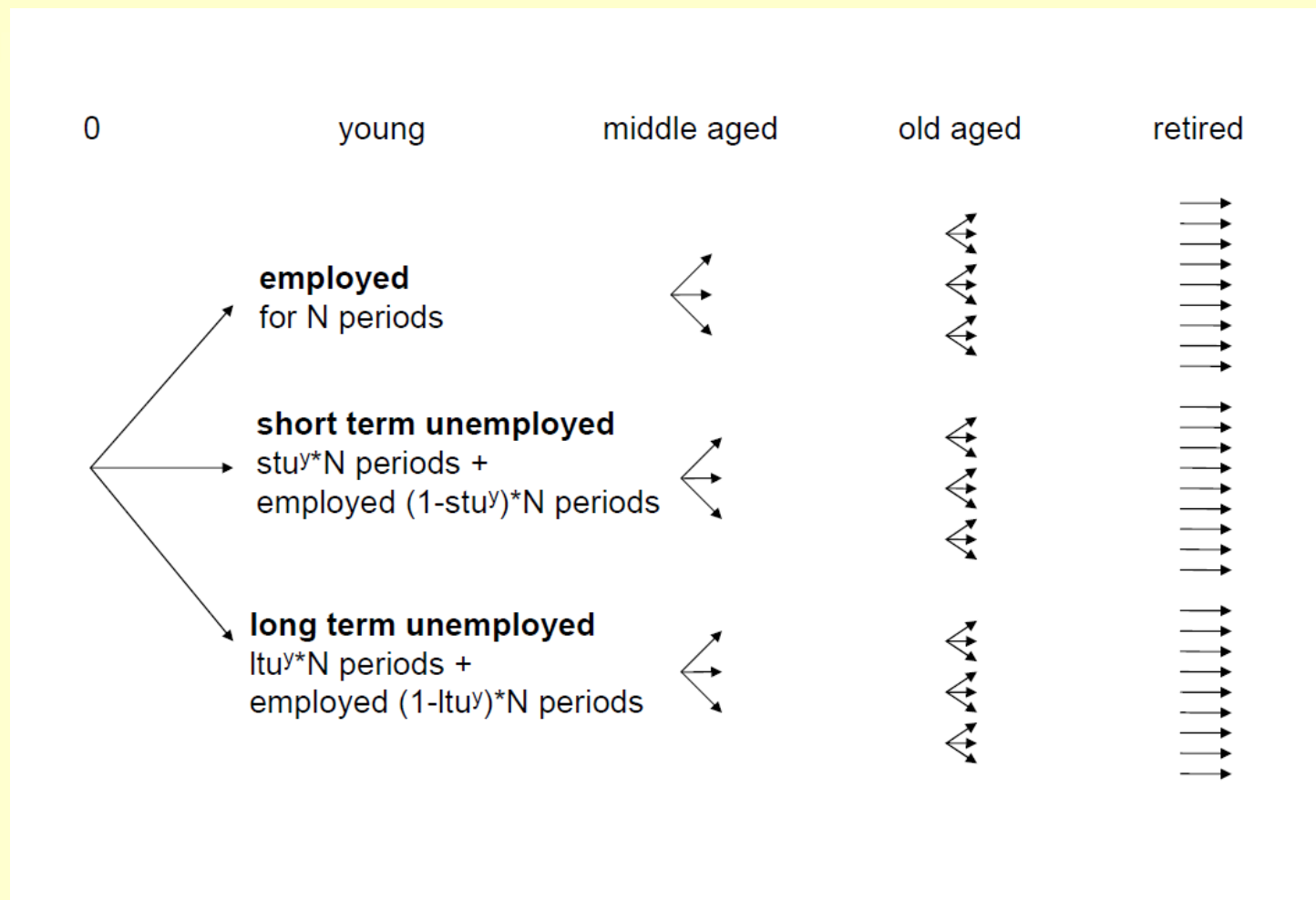
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A lifecycle model of unemployment over the lifecycle

Setup of the model

- Lifecycle consists of 4 periods:
 - ▶ young, middle-age, old age, retirement
- In first three periods you draw a search technology for employment, outcome either
 - ▶ Employed (good technology)
 - ▶ Short-term unemployed (worse technology)
 - ▶ Long-term unemployed (worst technology)
- After the draw individuals determine their optimal search effort, consumption and savings
- Young unemployed may face a liquidity constraint

Possible lifecycle paths in the model



First order conditions consumption and savings

■ Consumption

- ▶ Without credit constraint: constant until next shock
- ▶ With credit constraint: first the benefit level, then jumps up to higher constant level until next shock

■ Savings

- ▶ current marginal utility = expected future marginal utility

First order conditions search effort

■ Without credit constraint

- ▶ marginal cost of search = marginal utility gain of higher *lifetime* income
- ▶ Note: UI benefits and premiums distort search

■ With credit constraint

- ▶ marginal cost of search = marginal utility gain of higher lifetime income *plus* higher lifetime utility due to consumption *smoothing*

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Calibration and optimal benefit levels

Base calibration

- Risk aversion: 2.0
- Elasticity of unemployment w.r.t. benefits: 0.6
- Wage profiles based on Ter Rele (2007)
 - ▶ Older workers earn more
- Incidence and duration unemployment based on data of De Koning *et al.* (2006)
 - ▶ Young: incidence high but duration low
 - ▶ Old: incidence low but duration high
- Young unemployed are liquidity constrained

Optimal benefit levels (%dif in consumption relative to optimum)

Repl. rate	.1	.3	.5	.6	.7	.8	.9
With borrowing constraint	-1.6	-0.4	-0.1	0.0	0.0	-0.1	-0.5
Risk aversion +100%	-23.2	-2.4	-0.5	-0.2	0.0	0.0	-0.3
Moral hazard +50%	-1.3	-0.2	0.0	0.0	-0.1	-0.3	-0.8
No borrowing constraint	-0.2	0.0	0.0	0.0	-0.1	-0.3	-0.7

Optimal benefit levels over the lifecycle

- A grid search over replacement rate combinations for the three stages in working life
- Without liquidity constraint:
 - ▶ Young .10, middle-age .25 and old age .70
 - ▶ Due to longer duration of unemployment for older workers, increases difference in lifetime utility / insurance gain
- With liquidity constraint:
 - ▶ young .65, middle-age .25 and old age .70
 - ▶ Note: still higher for older workers despite more wealth for the elderly, due to longer duration of unemployment

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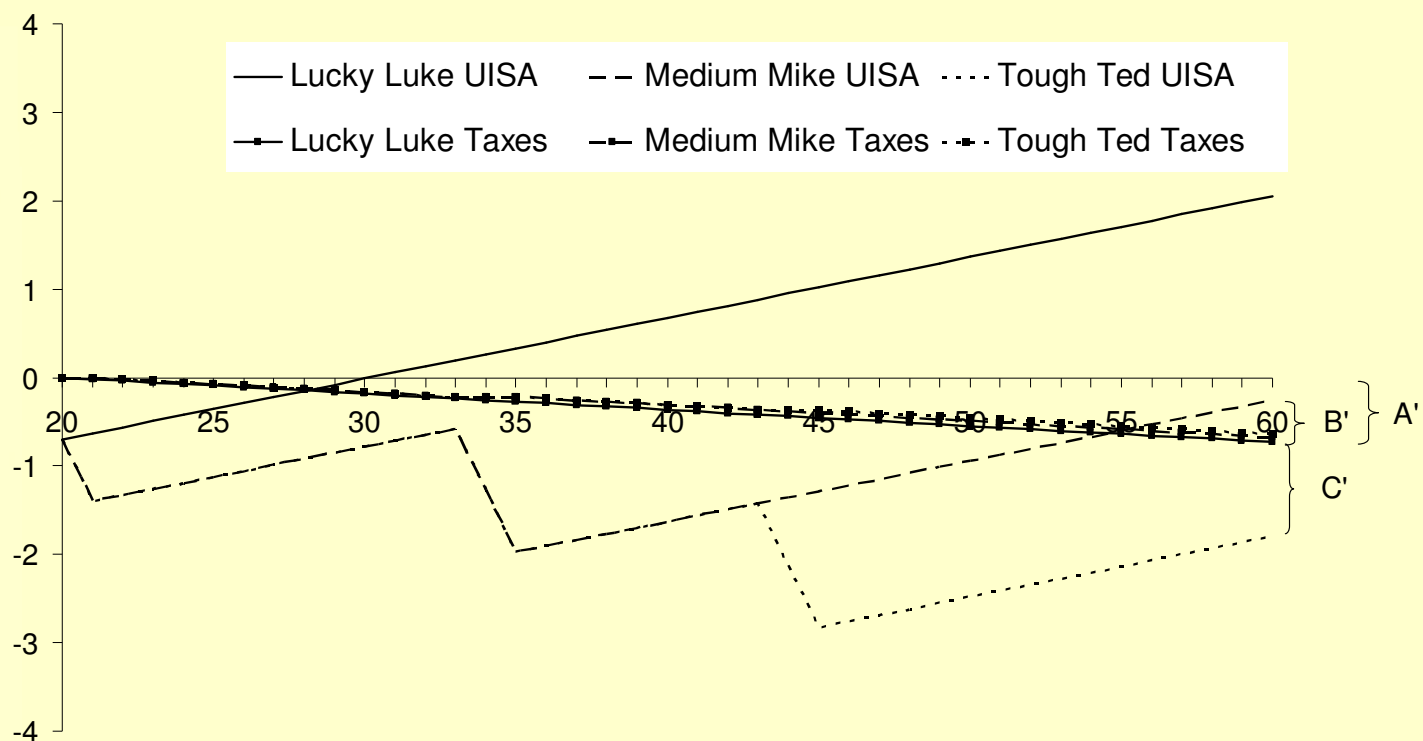
Individual savings accounts for unemployment

Can individual accounts improve welfare?

- The idea is that via individual accounts individuals can smooth the income shock from unemployment over their entire life, reducing the need for costly insurance

- We simulate setup of Feldstein & Altman (1998)
 - ▶ Instead of UI premium we now have mandatory savings
 - ▶ Withdrawals are as in current system
 - ▶ Negative balances allowed
 - ▶ Positive terminal balances go to pension
 - ▶ Negative terminal balances are nullified
 - ▶ This is paid for by a “solidarity tax”

Bookkeeping individual accounts with solidarity tax



First order conditions with individual accounts

■ Consumption

- ▶ Frequently unemployed: lower lifetime income and hence consumption
- ▶ Infrequently unemployed: higher lifetime income

■ Search effort

- ▶ Individuals that expect to end up positive (the majority): premium and benefit wedge disappears
- ▶ Individuals that expect to end up negative: forced savings are de facto a tax, wedge increases

Mandatory savings with replacement rate = .7, homogeneous agents

Savings rate	0%	2%	4%	6%	8%	10%
Liquidity constraint						
CV in %dif of consumption	0.0	0.0	0.1	0.0	0.0	-0.1
'UI rate'	2.63	2.47	2.26	2.23	2.16	2.15
Solidarity tax	1.94	1.20	.84	.58	.43	.32
No liquidity constr.						
CV in %dif of consumption	0.0	0.0	0.1	0.1	0.0	0.0

... but

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- We can do better in the UI system with replacement rates optimized per lifecycle phase
 - With credit constraint and optimal UI over the lifecycle welfare gain optimal UISA is small (CV +0,02%)
 - Without credit constraint and optimal UI over the lifecycle welfare gain disappears
 - Furthermore, given the uncertainty regarding the extent of risk aversion and moral hazard it is easy to pick the wrong combination of replacement and forced savings rates, and we may even have a welfare loss

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Preliminary conclusions

- Can not rule out that current Dutch UI level (70-80%) is optimal, but only when liquidity constraints are relevant for unemployment shocks
- But are they relevant? Problem is we don't really know due to generous UI
- Perhaps still some gains left in differentiating UI replacement rates over the lifecycle
- Individual accounts may lead to a small gain in welfare over current system (the maximum gain is in the order of 1 euro per month per worker), but the gain can easily disappear when we misjudge risk aversion or moral hazard
- Perhaps reap the potential gains with a simpler system: give part of UI benefits to young unemployed as a loan