

DC Defaults & Heterogeneous Preferences

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MASTER THESIS FINANCE, NETSPAR TRACK

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Introduction (1)

- International trend from defined benefit towards defined contribution¹
 - Risk of pension underfunding due to continuous decline of long-term interest rates
 - Collective approach of traditional DB limits freedom of choice

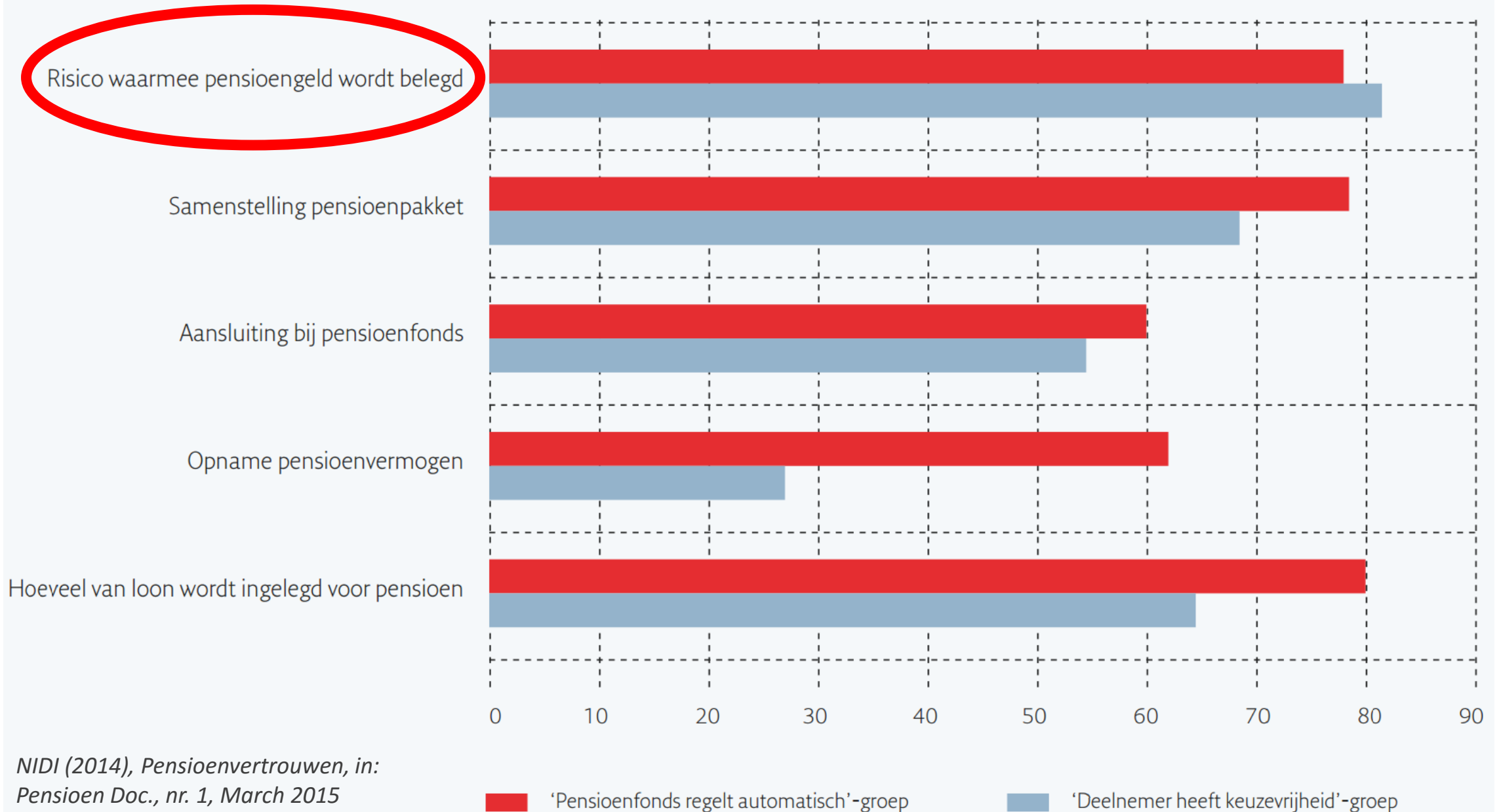
- Thesis: research the introduction of individual DC in the Dutch 2nd pillar
 - In coherence with current 2nd pillar collective system and 1st pillar AOW
 - Research design: split contribution 50% collective, 50% individual (2nd pillar)
 - Focus on asset allocation strategy

1. Broadbent, Palumbo, & Woodman (2006)

Introduction (2)

- Individual DC: complex choice architecture
 - *“Participants often follow the path of least resistance”²*
 - Theory: implement optimal strategies
 - Reality: behavioral biases may result in suboptimal strategies
 - Need for default strategies

Procent dat vrijheid/automatisch geregeld (zeer) belangrijk vindt



Introduction (2)

- Individual DC: complex choice architecture
 - *“Participants often follow the path of least resistance”²*
 - Theory: implement optimal strategies
 - Reality: behavioral biases and bounded rationality result in suboptimal strategies
 - Need for default strategies

- Participant heterogeneity raises difficulties
 - The default should match with the characteristics of the participants
 - However: a uniform default may not apply to all participants

Problem formulation

“What is the welfare loss of a uniform DC default asset allocation strategy for a heterogeneous group of participants?”

Methodology (1)

- Study heterogeneous participant profiles
 - Varying along various dimensions: primarily wage level, wage growth, risk aversion
 - Simulate total pension income (1st + 2nd pillar)
 - Evaluate default asset allocation strategies

- Total pension income
 - AOW: risk-free flat-rate benefit
 - CDC: accrual based with positive/negative indexation (fictitious pension fund)
 - IDC: asset account (2-asset mix), nominal annuity at retirement age

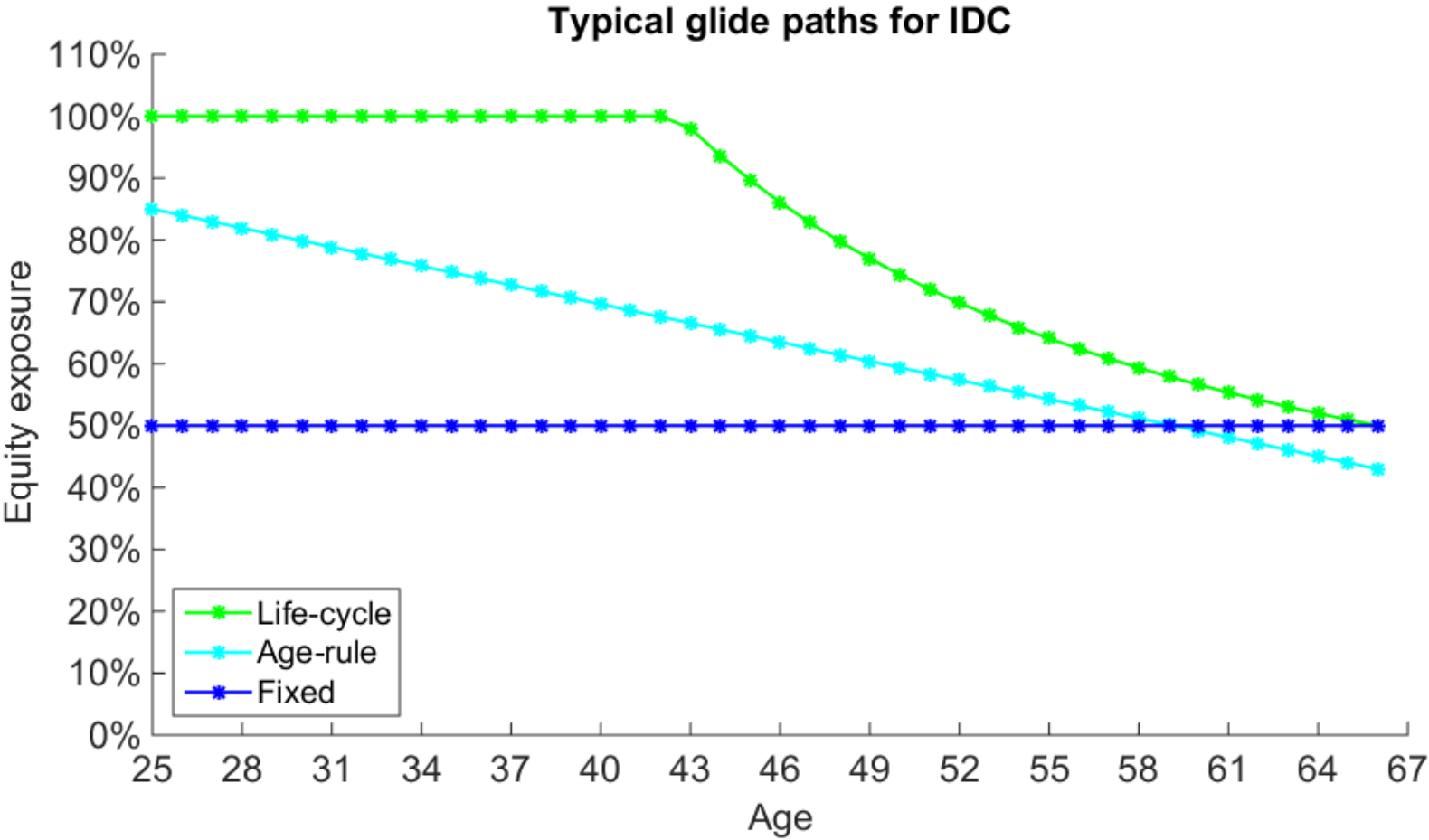
Methodology (2)

- Preference is captured by:
 - CRRA utility function

$$E[U(C)] = E \left[\sum_t \beta^{t-1} \left(\prod_{s=1}^t p_{x(s),s}^{(g)} \right) \frac{C_t^{1-\gamma}}{1-\gamma} \right]$$

- Welfare measure
 - Certainty equivalent consumption: $E[U(C)] = U(CEC)$
 - Certain annual pension income

Methodology (3)



Results (1) – benchmark welfare losses

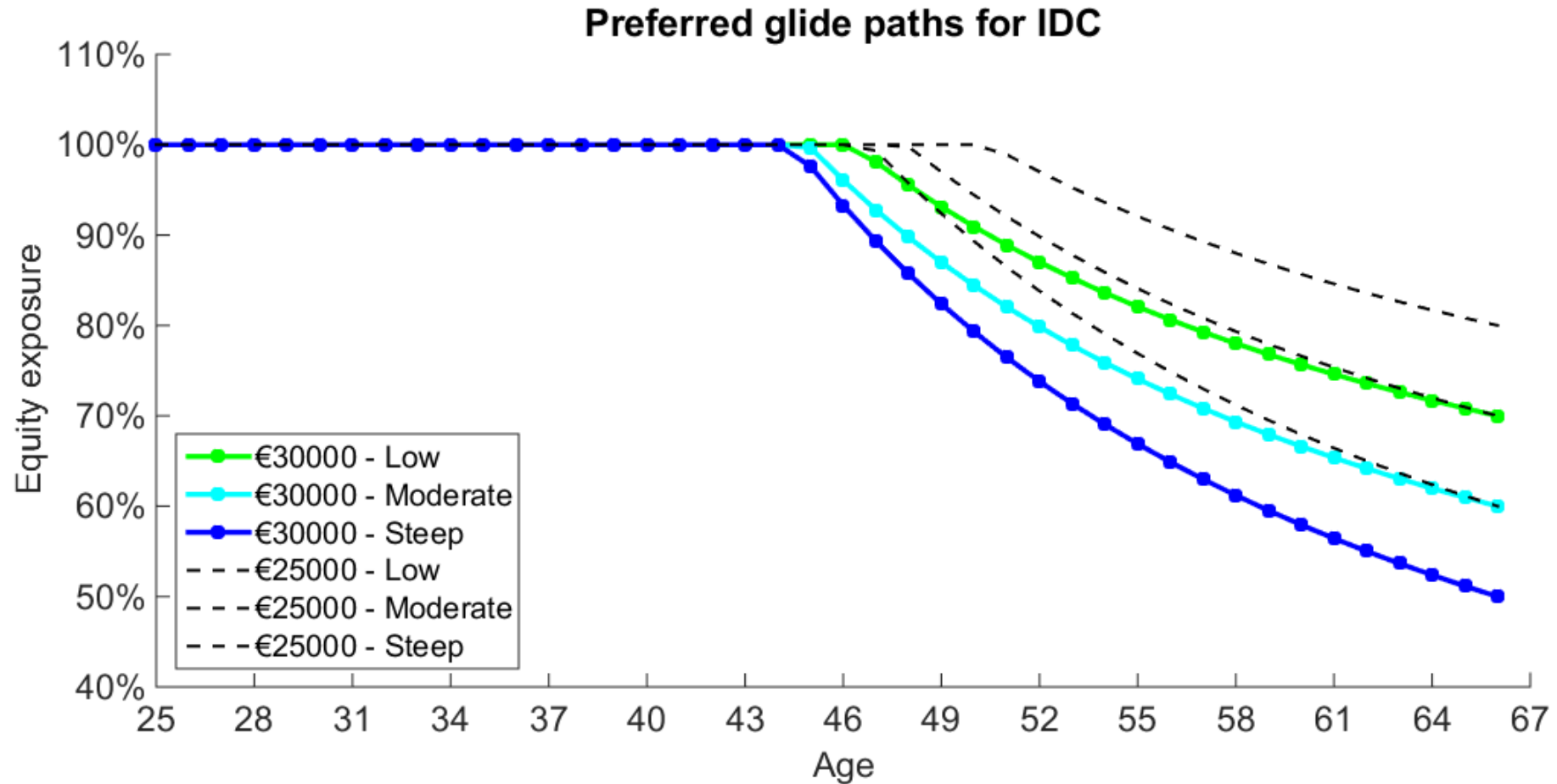
- Benchmark results

- Uniform default life cycle based on: €30000 initial wage, moderate wage growth, $\gamma = 5$

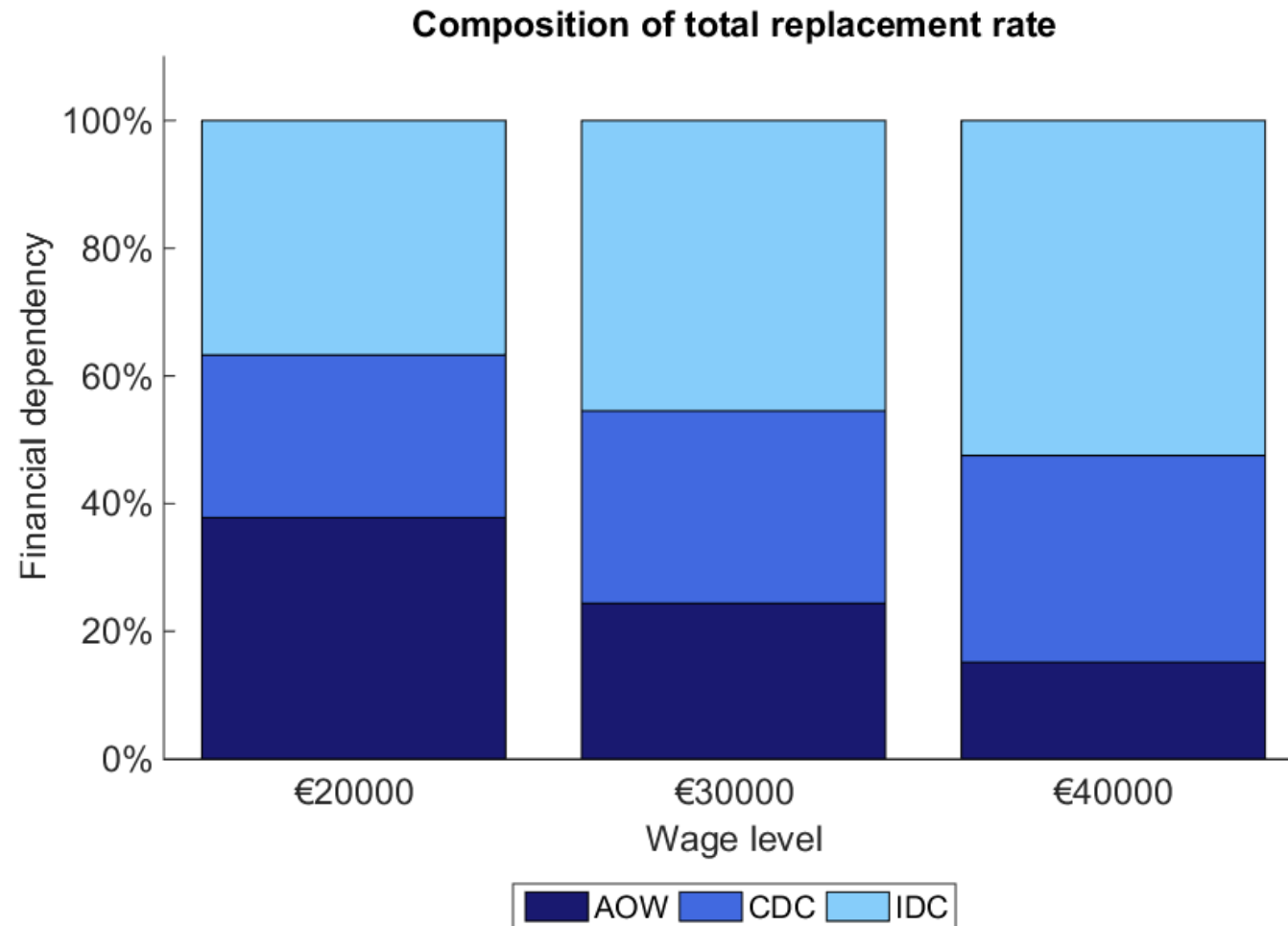
Fixed, age rule, and life cycle asset allocation strategies

Asset mix	CEC (asset mix)	CEC (preferred)	Consumption loss (yearly)
Fixed 0/100%	24425	26396	7.47%
Fixed 40/60%	25685	”	2.69%
Fixed 50/50%	25913	”	1.83%
Age rule	26114	”	1.07%
Life cycle	26396	”	0.00%

Results (2) – wage levels & wage growth



- Dellaert & Turlings (2011):
 - Other sources of pension income (apart from IDC) influence the optimal risk profile
 - *“Should the financial dependency on an individual DC retirement benefit lead to a more defensive or offensive risk profile?”*



Results (3)

- Welfare loss of a uniform default life cycle
 - By allowing for multiple heterogeneous characteristics, welfare losses become more substantial
 - Note: only life cycle strategies!

Consumption loss of a default for heterogeneous participants

Wage level	Wage growth	γ	CEC (default)	CEC (prefer.)	Cons. loss (yearly)	
€25000	Low	4	20721	20965	1.17%	Fixed 50/50: 4.80% Age-rule: 3.75%
€30000	Moderate	5	26396	26396	0.00%	
€35000	Steep	7	31137	32652	4.64%	Fixed 50/50: 2.50% Age-rule: 2.34%

Conclusion & further research

- Conclusion
 - Above all, a life cycle asset allocation strategy is to be preferred
 - Though, participant heterogeneity results in a large variety of preferred risk profiles
 - A uniform default may thus lead to substantial welfare losses for participants
 - Pension funds should consider taking into account characteristics and preferences of participants

- Next steps in research
 - Include housing wealth as an additional heterogeneous characteristic
 - How can home equity provide flexibility in retirement income (and vice versa)?

Thank you for your attention

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