A value-based approach to the redesign of US state pension plans

Zina Lekniūtė, Roel Beetsma, Eduard Ponds

May 28, 2014

Are state pensions in trouble?

- The practice is to downplay the problem.
- Expected returns discounting for a bond-like liability.
- Pretending the promises are affordable

Sustainability at risk

Lack of shock resilience:

Increasing pension promises
Aging population
Financial crisis

↓

Downwards pressure on funding ratio

↓

Sustainability discussion

Legal pension protection is a matter of state law

State pension promises are generally considered even senior to government debt.

Cutting indexation seems to be a possible way to lower pension obligations in some states.

Detroit example, however, showed that even nominal benefit cuts might be possible.

Why making value transfers explicit?

DC plans more transparent in terms of ownership of assets.

Young DB participants find it difficult to evaluate their position and manage expectations.

Tax payers also not well informed on what risks they are bearing.

Evaluation of positions of participants and taxpayers in terms of risk allocation is needed.

Approach

- Uncertain future cashflows (future contributions and benefits) are treated as embedded generational options.
- We incorporate generational accounting and derivatives valuation into the classic ALM model.
- This allows to put a price tag on the stakes of the relevant stakeholders.

Zero-sum game

- Every policy change leads to value transfers.
- The total value remains the same, the values for separate stakeholders change.
- What some gain, others lose.

Pension fund specifications

- Demographics: US
- Horizon: 75 years
- Initial funding position: 75%
- Asset mix: 50% equity / 50% fixed income
- Contract: Final pay scheme, based on 3 final years
- Accrual: 2% annually
- Discount rate: 8%
- Actuarial cost method: EAN level % amount
- Amortization: level $ open, 30 years

Contribution assumptions in the base contract

Employees:

- 6%

Employers (tax payers):

- NC minus 6%
- 50% of required UAAL amortization
- Sponsor support

Reforms considered (contribution policy)

Base contract:

Plan 0.0 as just explained

Alternatives:

Plan 1.1 0% required amortization paid

Plan 1.2 100% required amortization paid

Plan 1.3 amortization spread over 10 years

Plan 1.4 12% contribution by employees

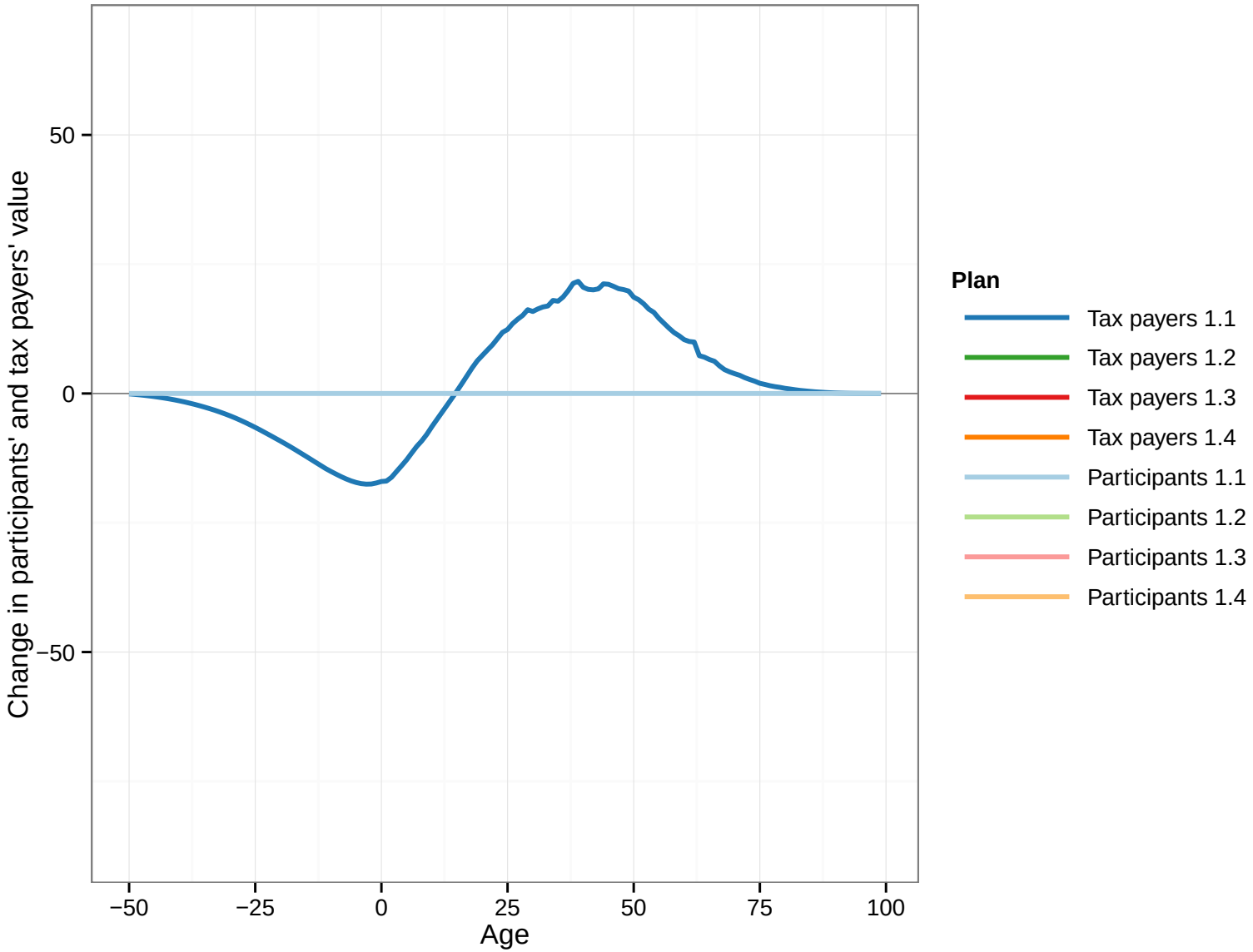
$ value changes. 0% amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.1	0	0	-465	709	-217

% value changes. 0% amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.1	0%	0%	-4%	16%	-3%

Generational results. 0% amortization



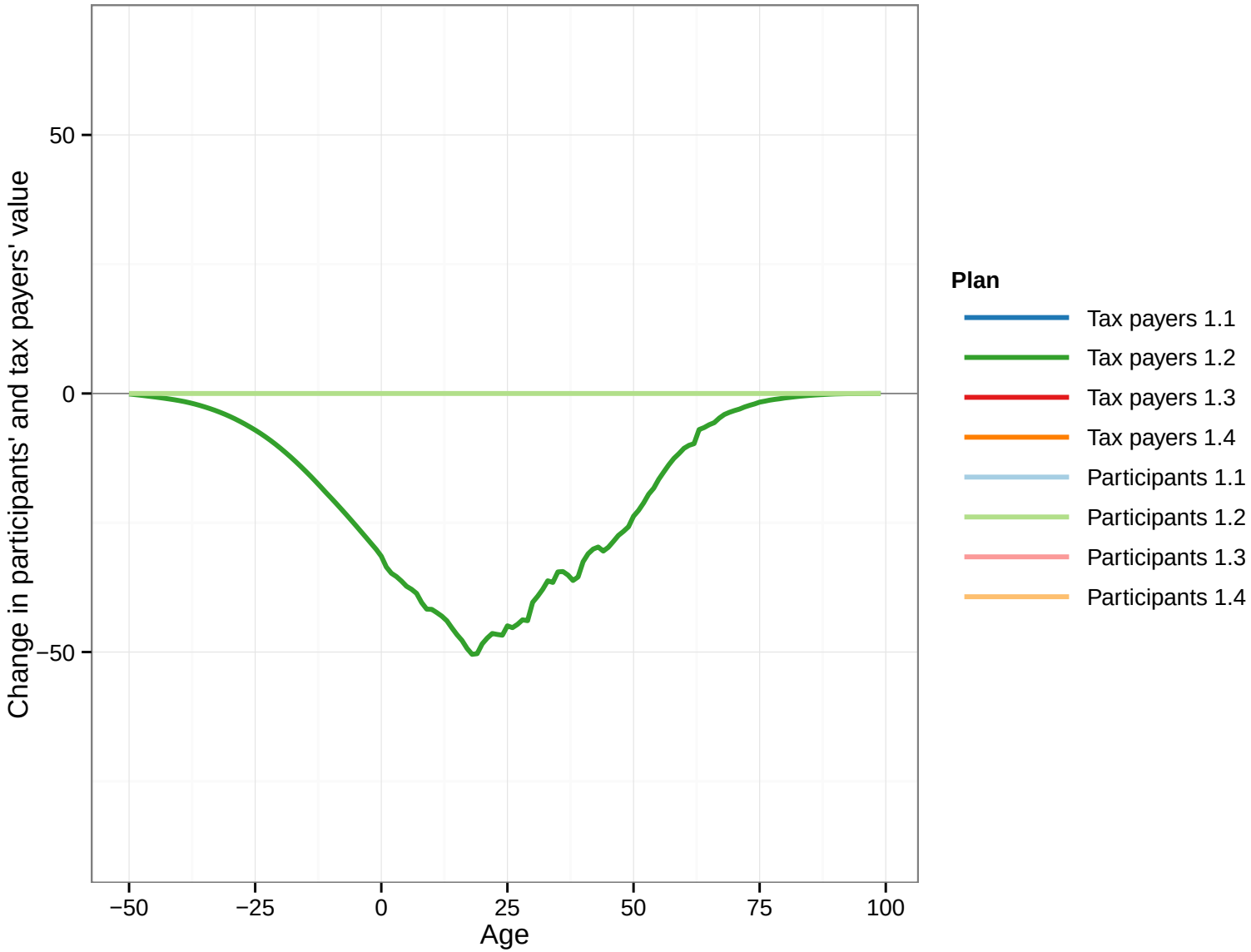
$ value changes. 100% amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.2	0	0	-1562	-1148	2676

% value changes. 100% amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.2	0%	0%	-12%	-26%	32%

Generational results. 100% amortization



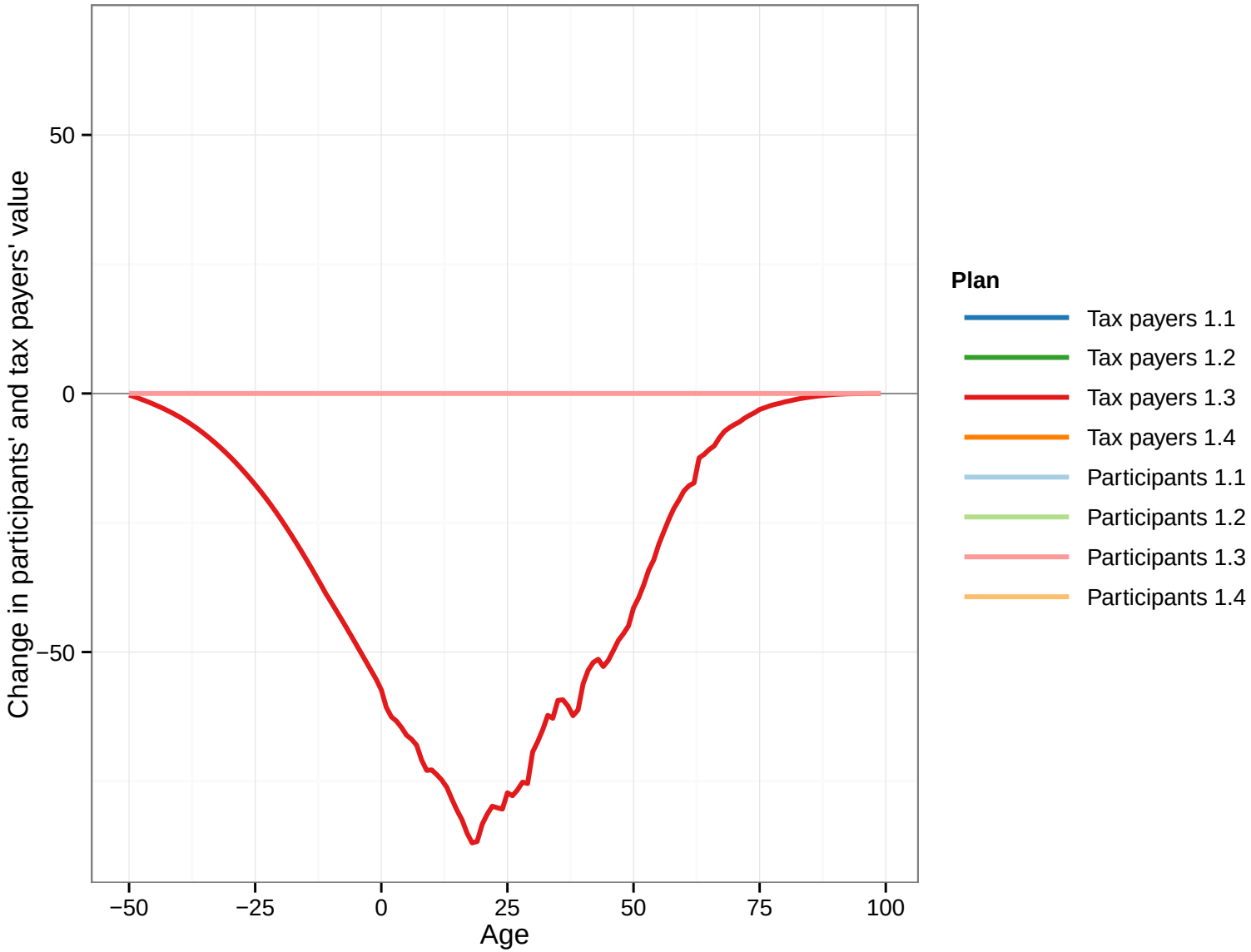
$ value changes. 10 years amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.3	0	0	-2914	-1992	4828

% value changes. 10 years amortization

Plan	Future PP	Current PP	Future TP	Current TP	R
1.3	0%	0%	-23%	-44%	57%

Generational results. 10 years amortization



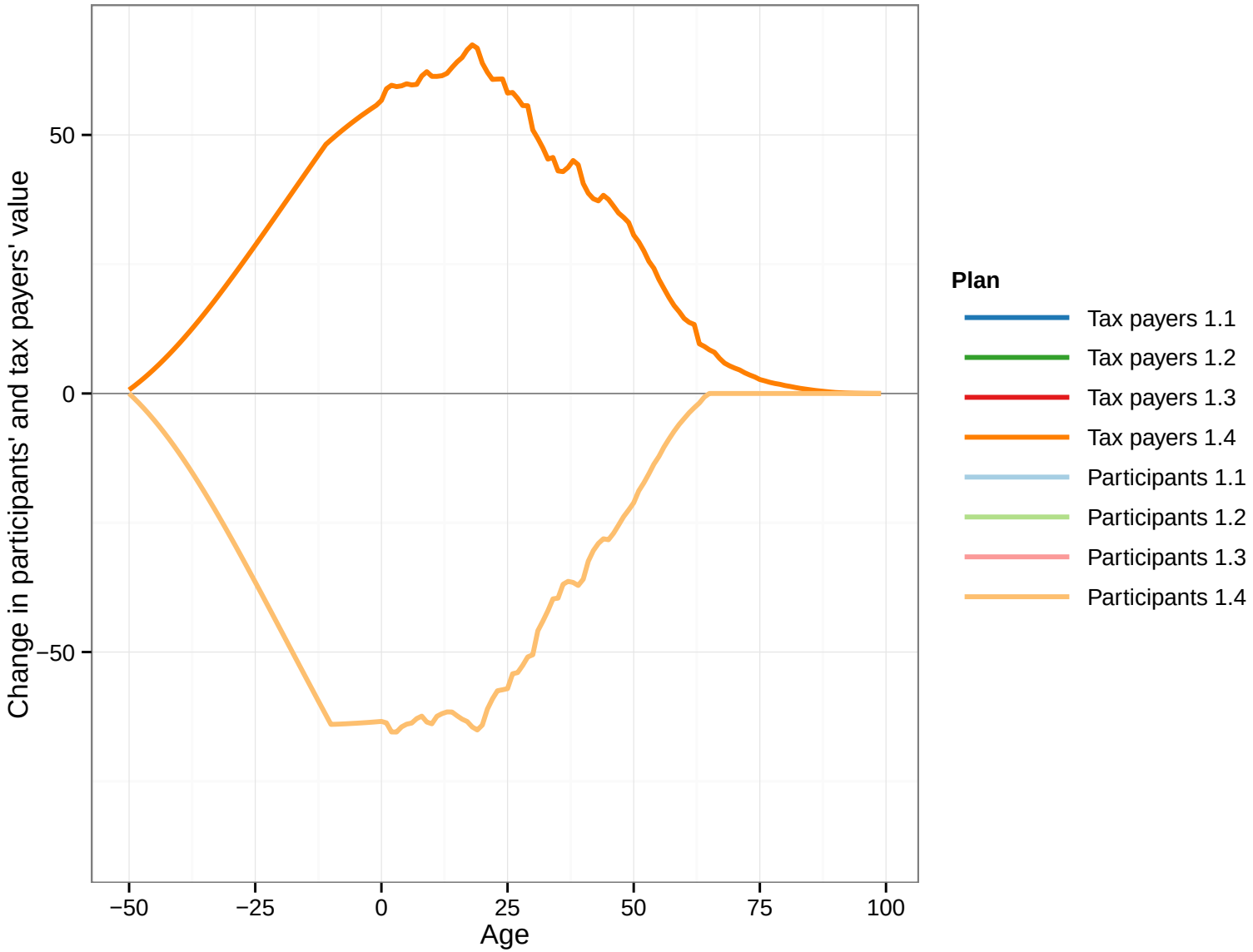
$ value changes. 12% employee contribution

Plan	Future PP	Current PP	Future TP	Current TP	R
1.4	-3335	-1105	2963	1477	0

% value changes. 12% employee contribution

Plan	Future PP	Current PP	Future TP	Current TP	R
1.4	-23%	-8%	23%	33%	0%

Generational results. 12% employee contribution



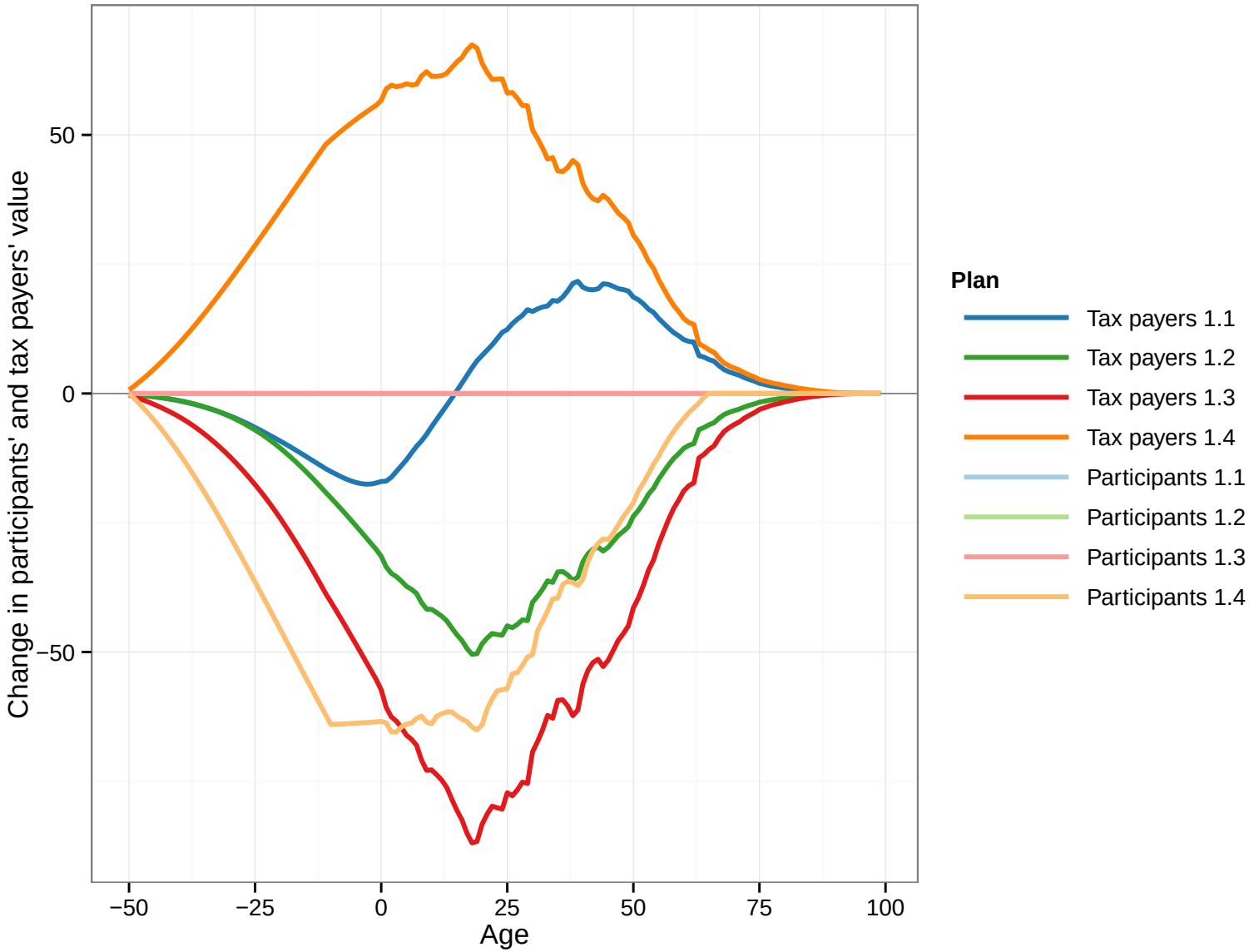
$ value changes

Plan	Future PP	Current PP	Future TP	Current TP	R
1.1	0	0	-465	709	-217
1.2	0	0	-1562	-1148	2676
1.3	0	0	-2914	-1992	4828
1.4	-3335	-1105	2963	1477	0

% value changes

Plan	Future PP	Current PP	Future TP	Current TP	R
1.1	0%	0%	-4%	16%	-3%
1.2	0%	0%	-12%	-26%	32%
1.3	0%	0%	-23%	-44%	57%
1.4	-23%	-8%	23%	33%	0%

Generational results



Conclusions

- Pension fund is a zero-sum game.
- Every reform implies generational transfers.
- VB-ALM tool quantifies the effects.
- This makes comparison of alternative reforms easier.
- It is a decision support tool for decision makers.

Comments and suggestions welcome

zina.lekniute@apg.nl