

Collective buffers in a new Dutch pension system with individual pension pots.

The impact of the non-negative constraint

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Dutch pension system

- 3 pension pillars
 - First: AOW
 - Second: Occupational pension plan
 - Defined benefit (DB)
 - Defined contribution (DC)
 - “Doorsneesystematiek”
 - Third: private savings

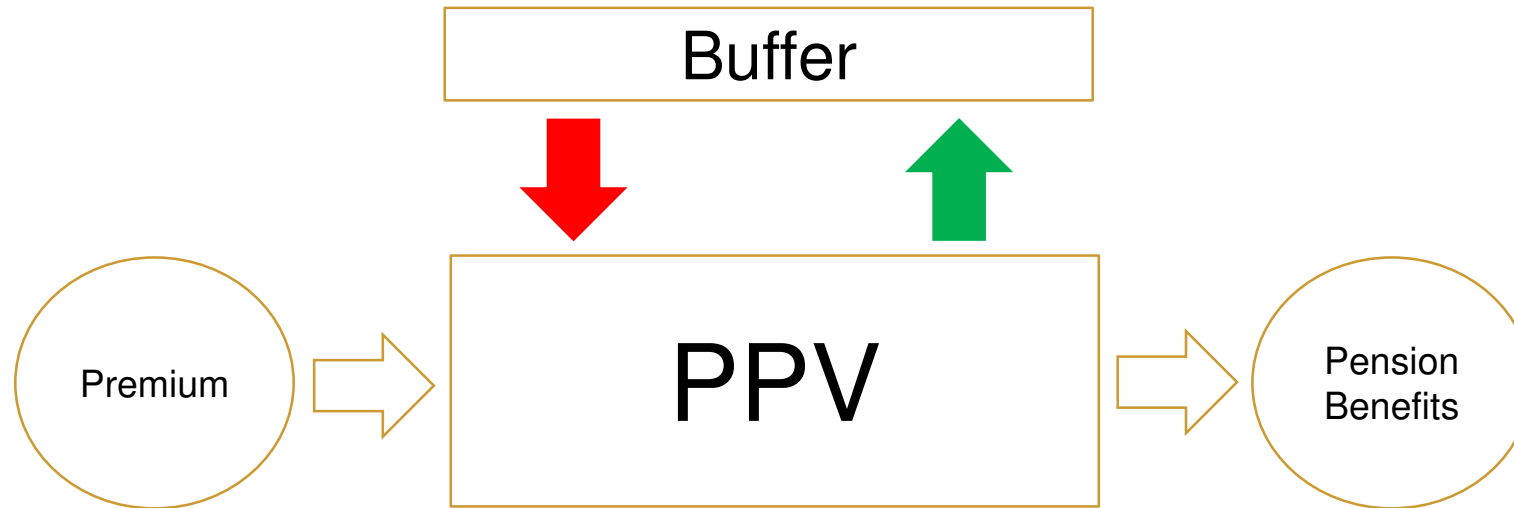
Pension reform

- Abolisch “Doorsneesystematiek”
- Government
 - Personal pension pots with **positive** buffer (based on IV-C-R)
- FNV
 - If personal pension pots → **positive/negative** buffers
 - Since more Intergenerational Risk Sharing (IGR)

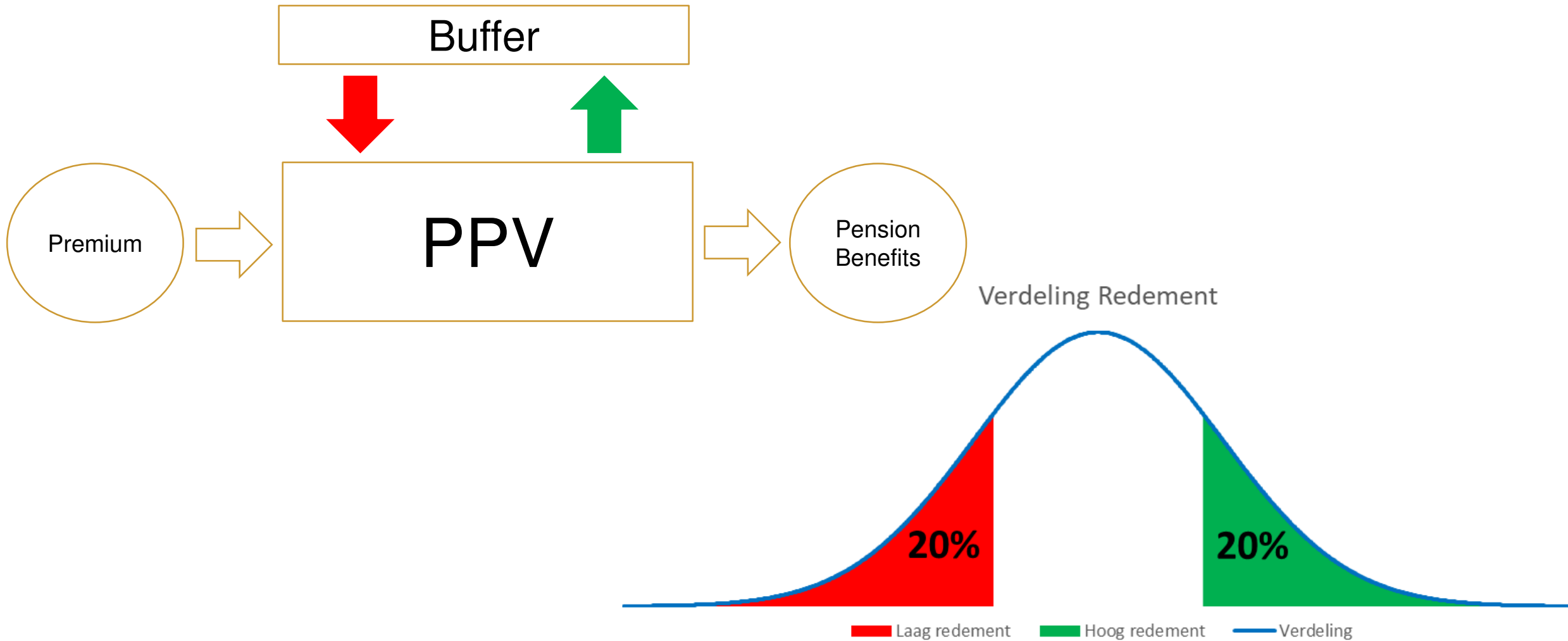
Intergenerational Risk Sharing (IGR)

- Risk which can be shared between **living** generations
 - Micro longevity risk
 - Disability risk
- Risk which can be shared with **future** generations
 - Macro longevity risk
 - Stock market risk
 - Inflation risk
 - Interest rate risk
- Discontinuity risk
 - The risk that future generations are not willing to participate in a (pension) system.

Personal pension wealth with collective risk sharing (IV-C-R)



Personal pension wealth with collective risk sharing (IV-C-R)



Model assumptions

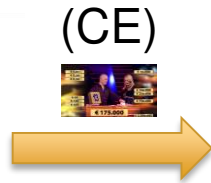
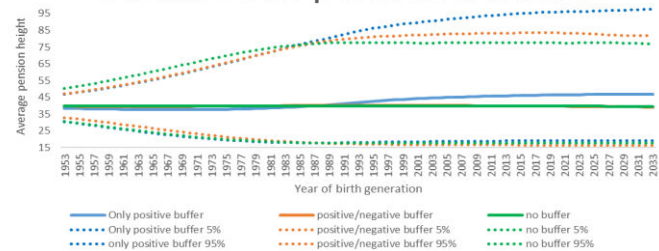
- Pay premium between 25th and 65th year
- Receive pension benefit between 65th and 85th year
- Only stock market risk (no inflation, interest-rate, longevity etc.)
- Black and Sholes financial market (normal distributed returns)

Results

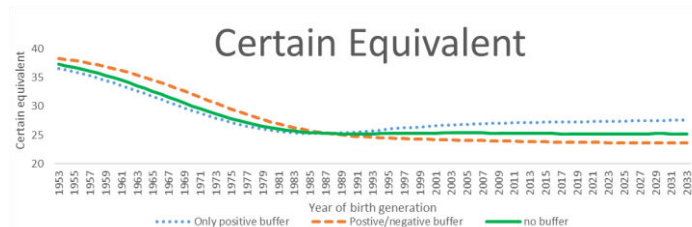
1. System with only positive buffers
2. System with both positive and negative buffers
3. System without a buffer

Certain equivalent (CE)

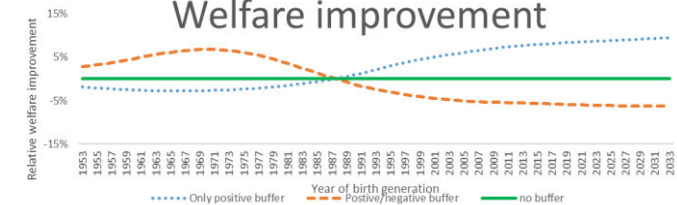
Distribution pension benefits



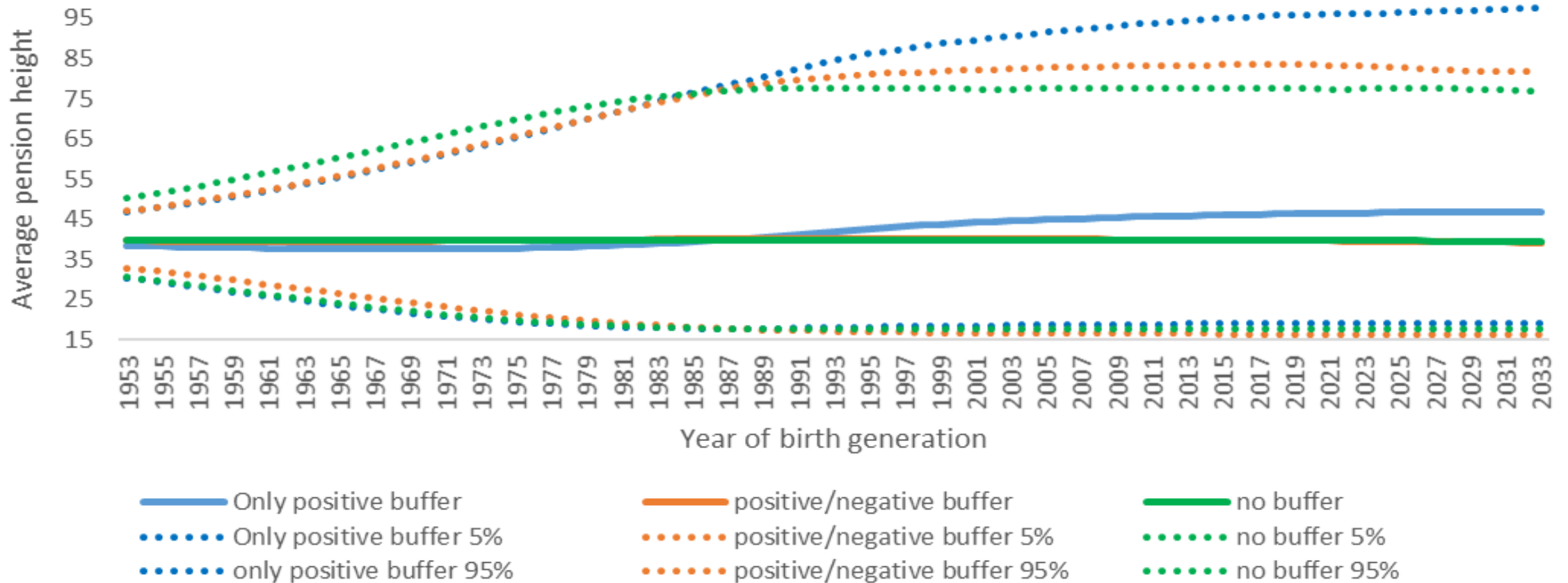
Certain Equivalent



Welfare improvement

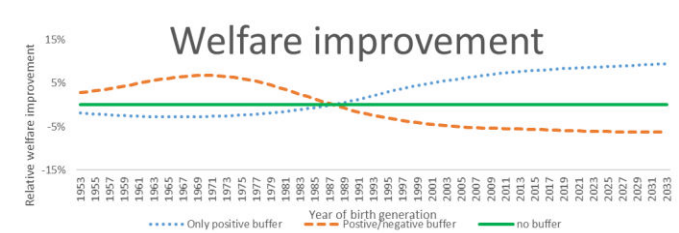
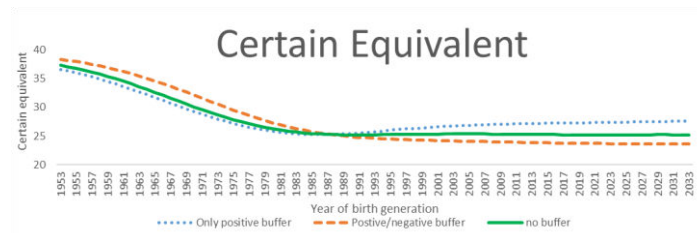
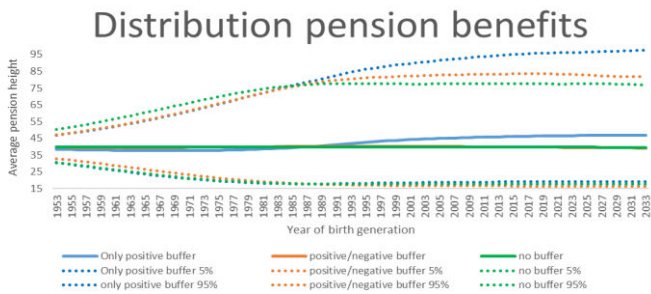


Distribution pension benefits



Results

Certain equivalent (CE)



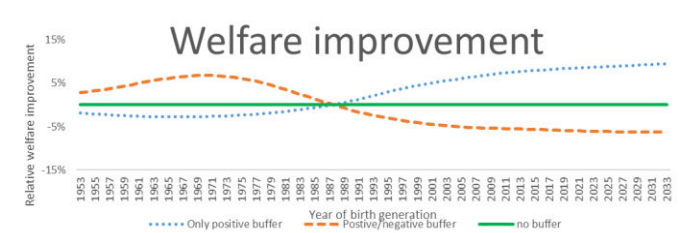
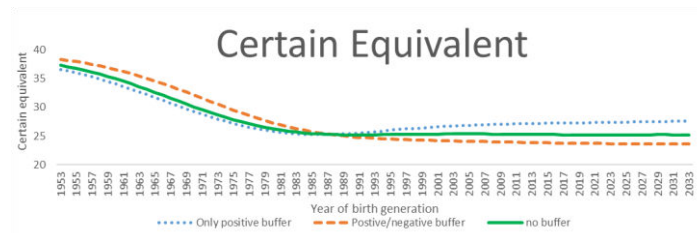
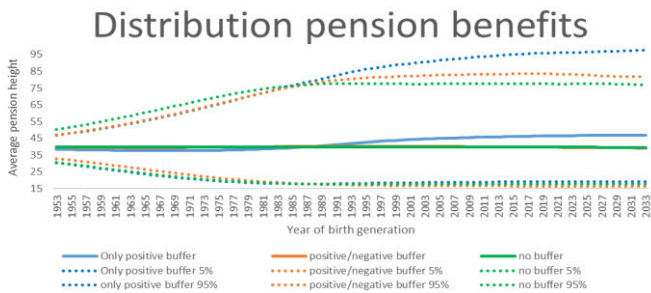
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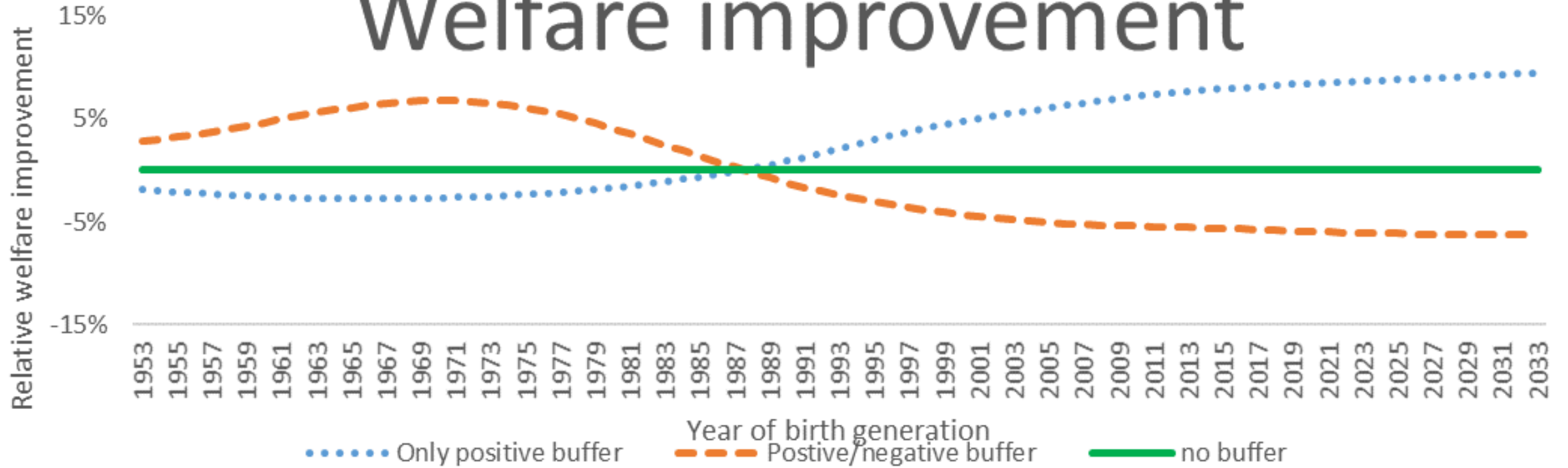


Results

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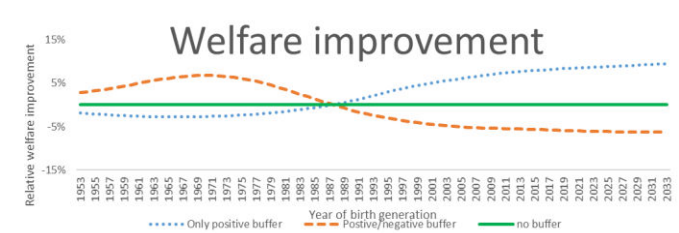
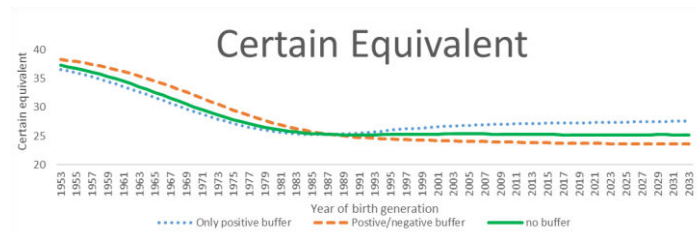
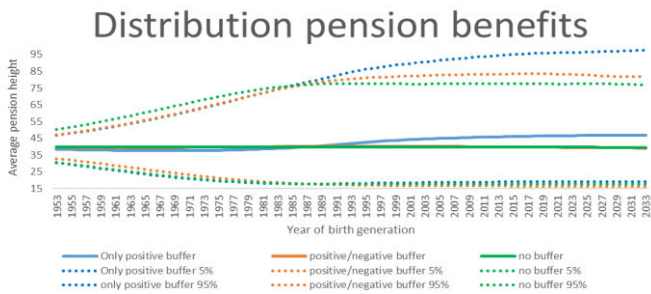


Welfare improvement



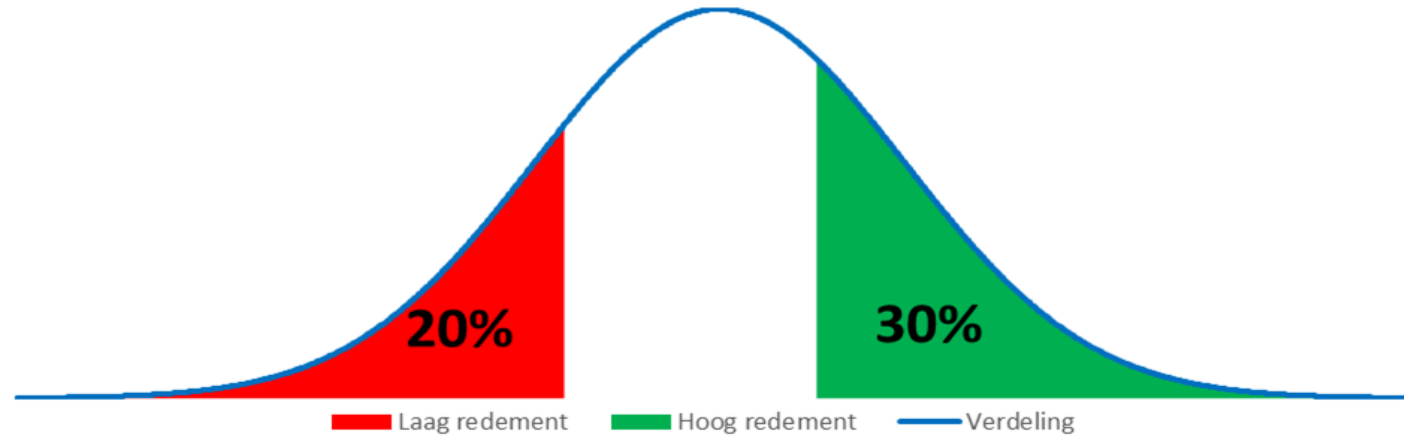
Results

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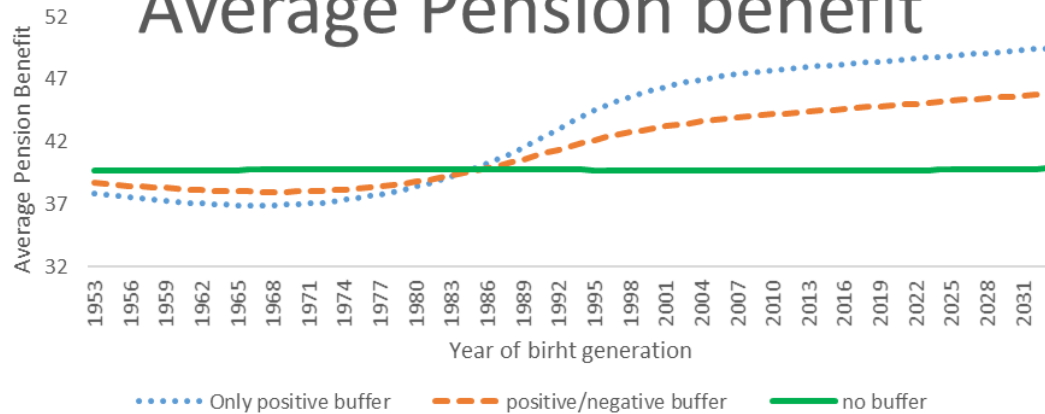


Model adjustment: risk premium

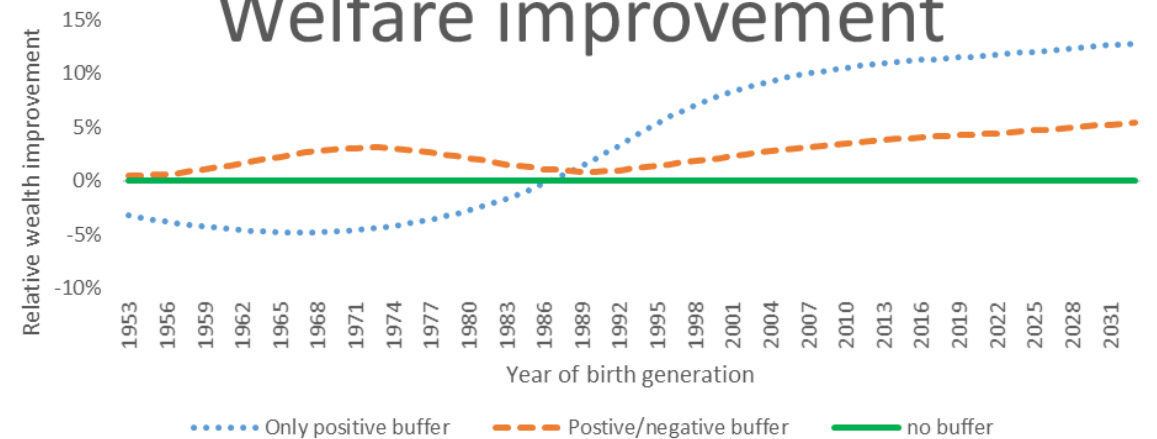
Verdeling Redement



Average Pension benefit

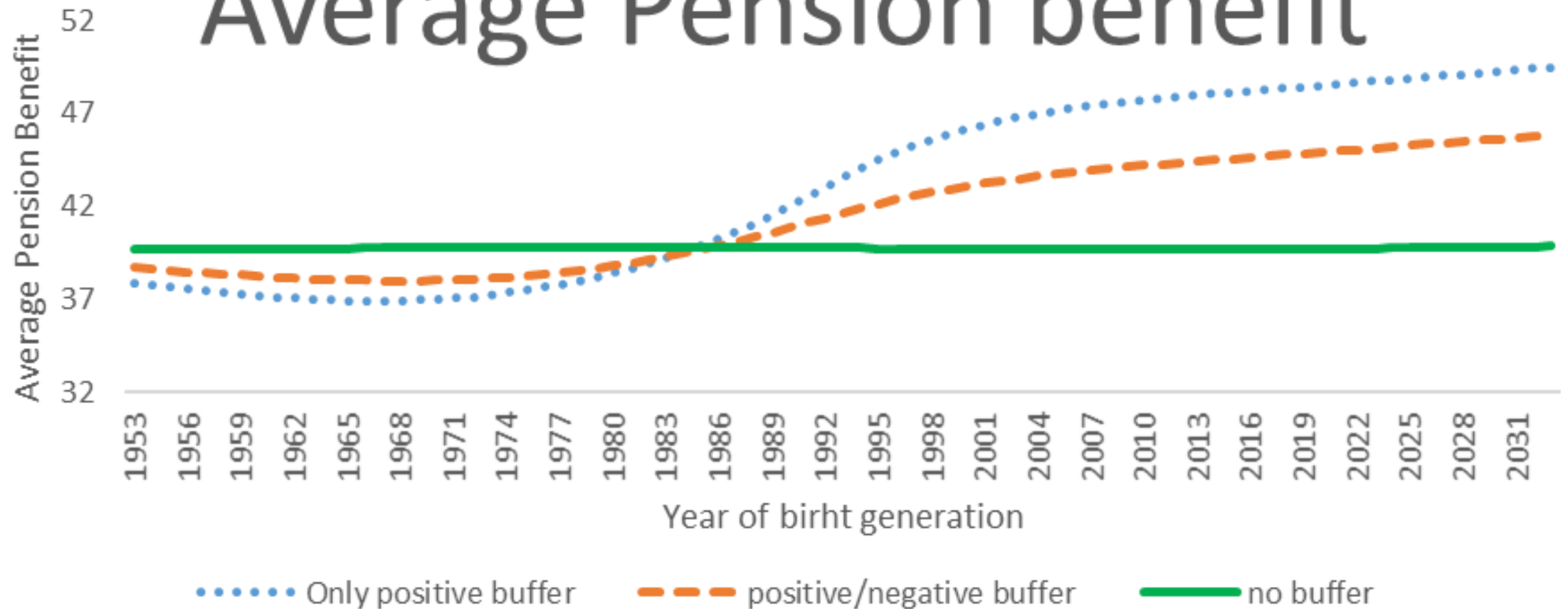


Welfare improvement



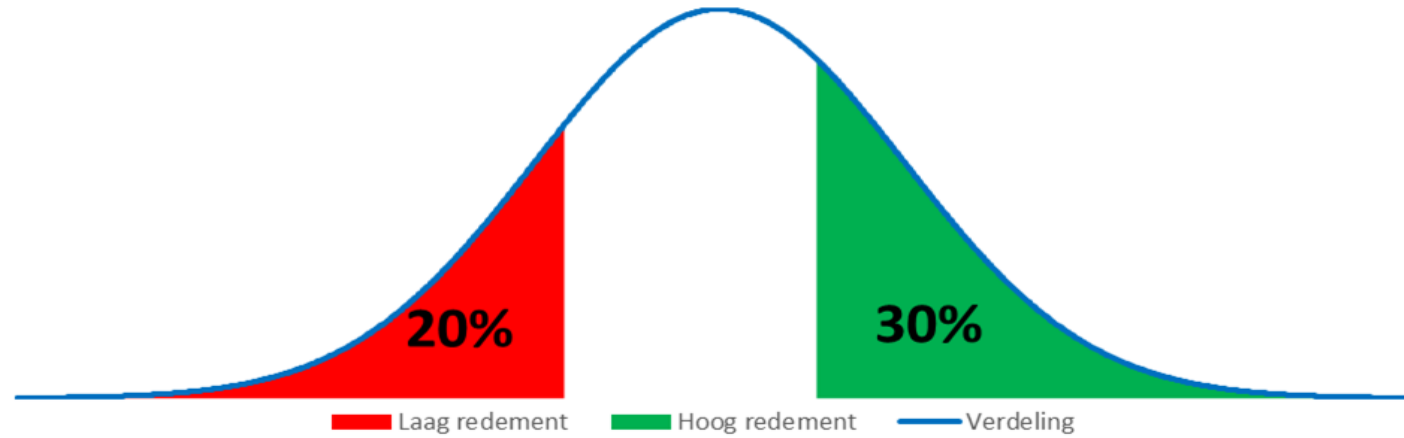
Model adjustment: risk premium

Average Pension benefit

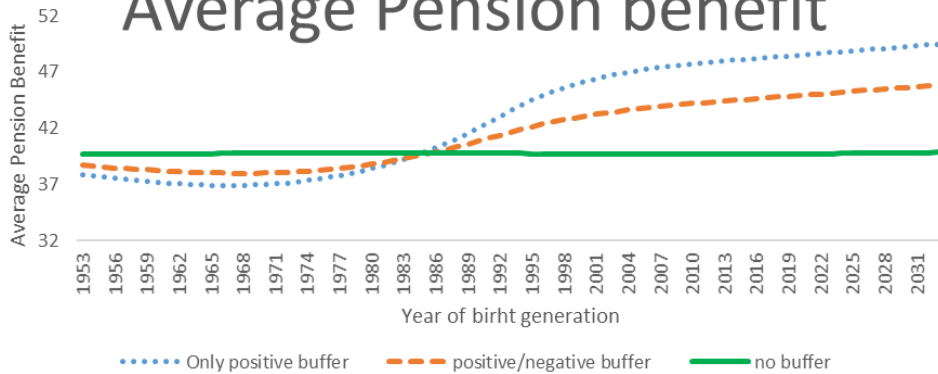


Model adjustment: risk premium

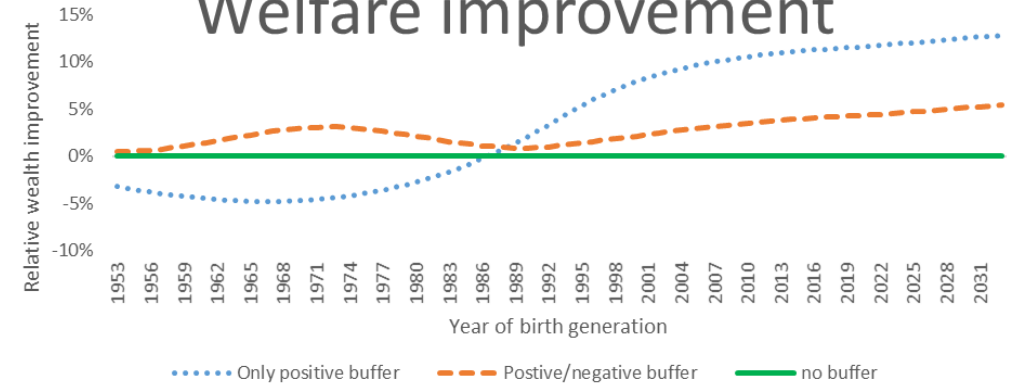
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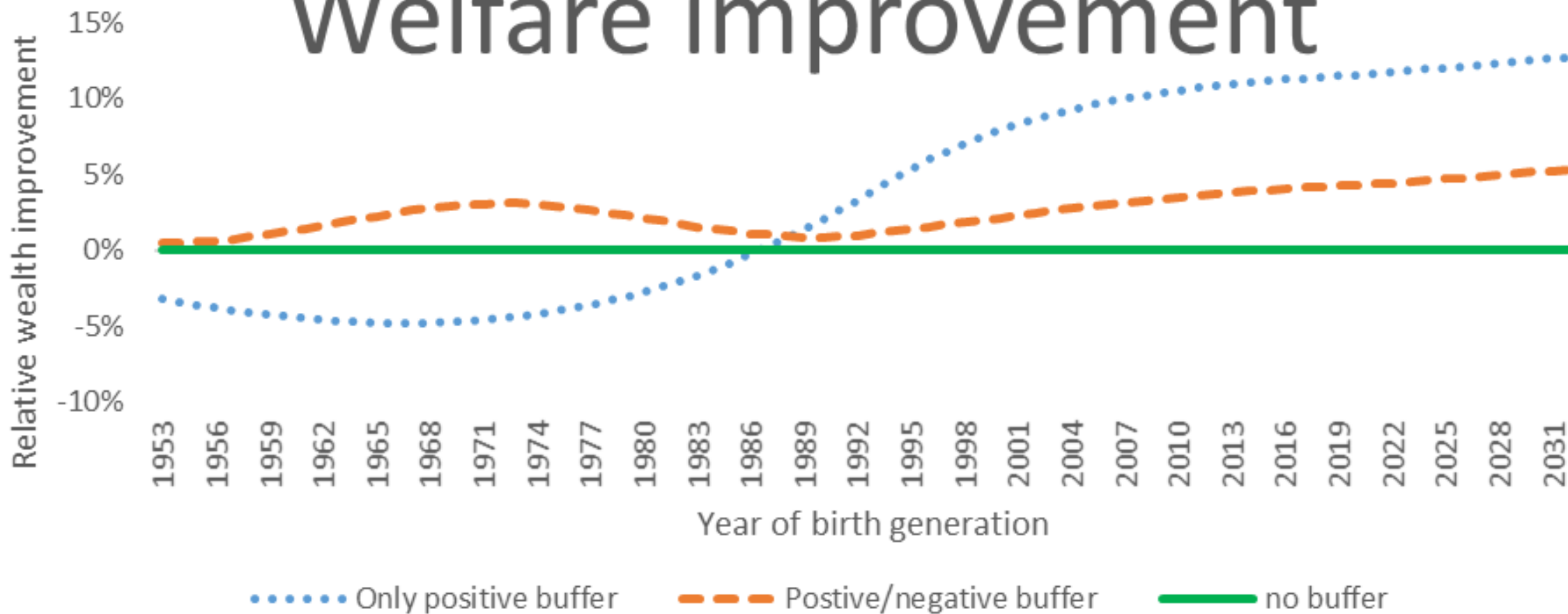


Welfare improvement



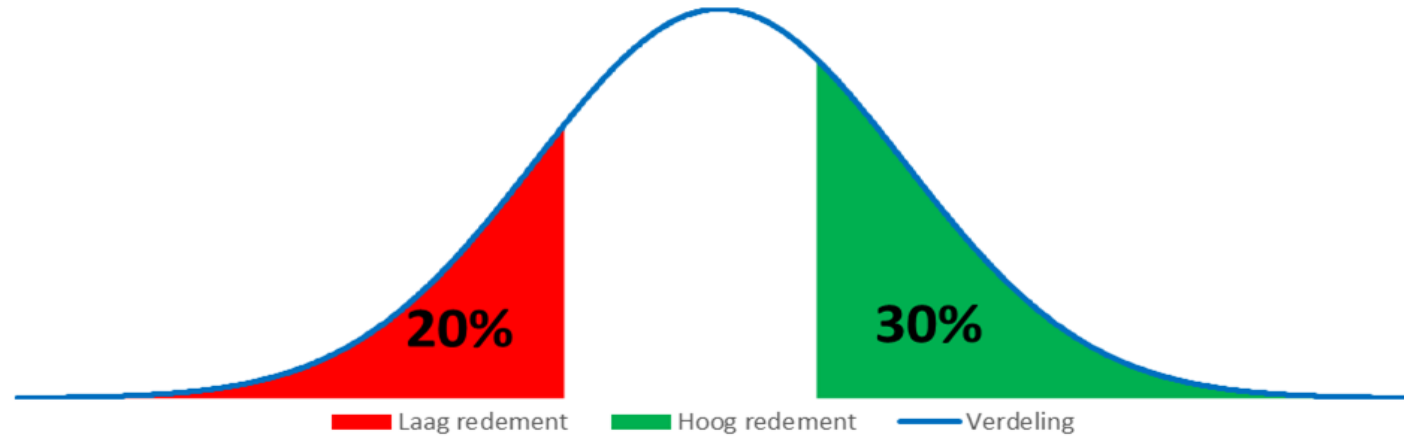
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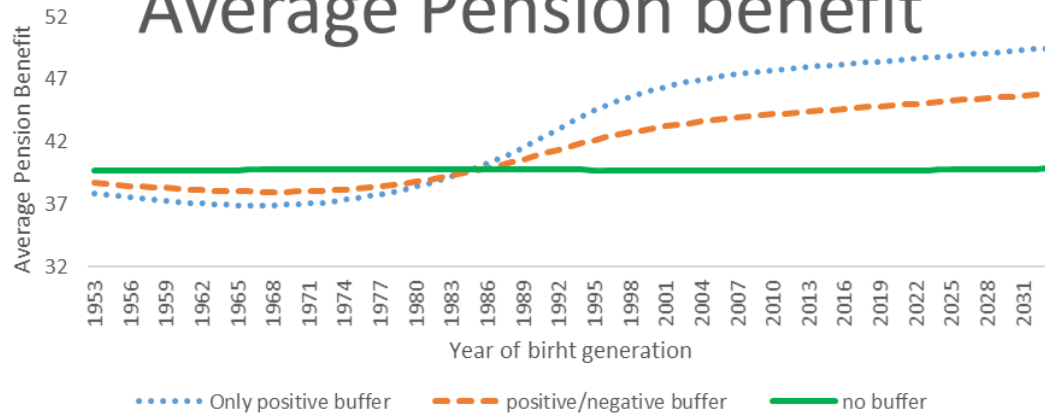


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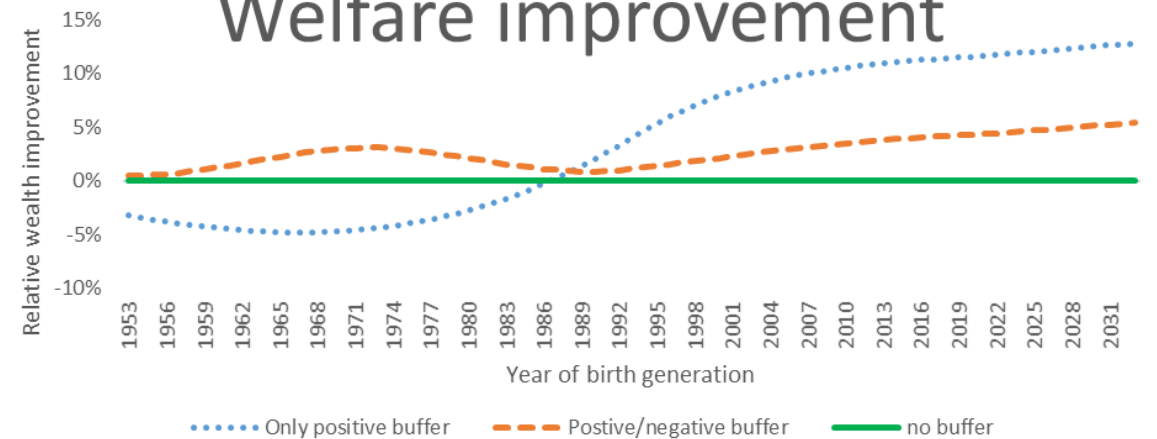
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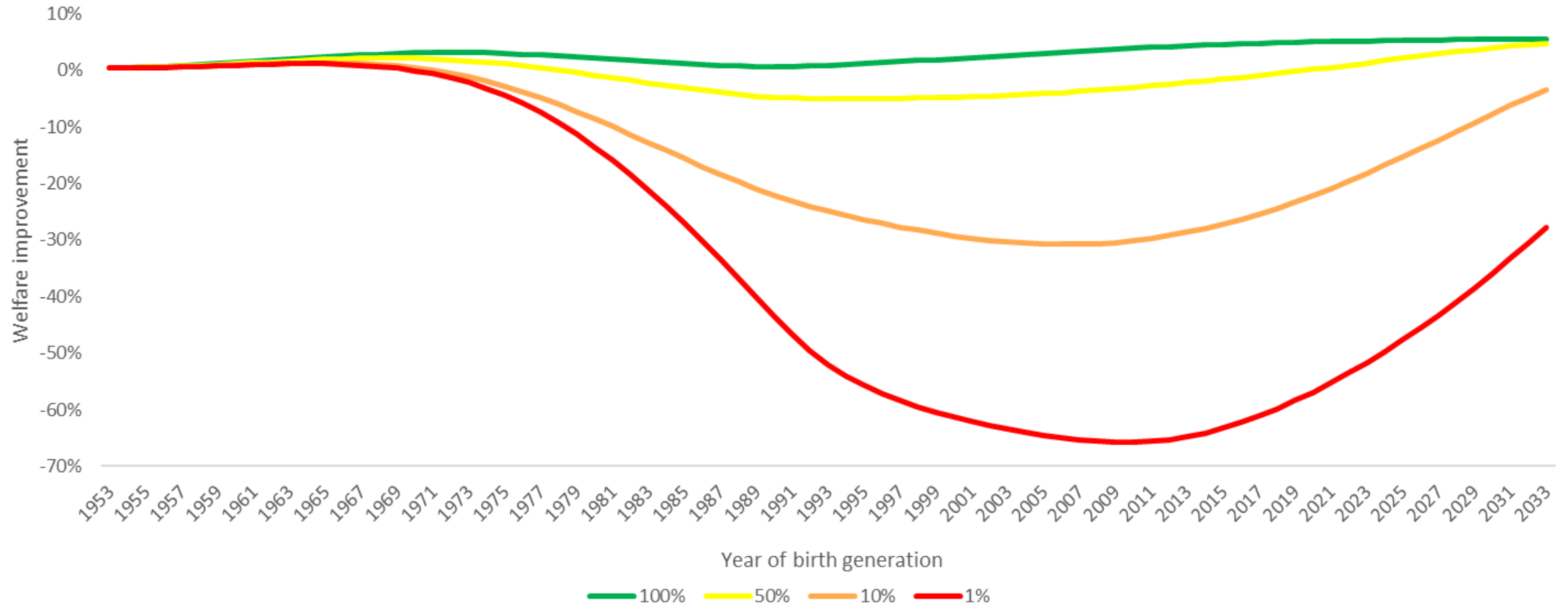


Welfare improvement



Discontinuity risk

Welfare effect different inflow, positive/negative buffers 20/70%



Conclusions

- A buffer can be beneficial for everyone if
 - Negative buffers are allowed
 - A risk premium is provided
 - Future premiums are constant
- Trade-off between discontinuity risk and welfare gains.