

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

*The impact of the non-negative constraint*

E.M.N. de Beleir BSc.

Supervisors:

Anne G. Balter (UvT)

Rick te Spenke (Deloitte)

Second reader:

prof. dr. B.J.M. Werker (UvT)



# Dutch pension system

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

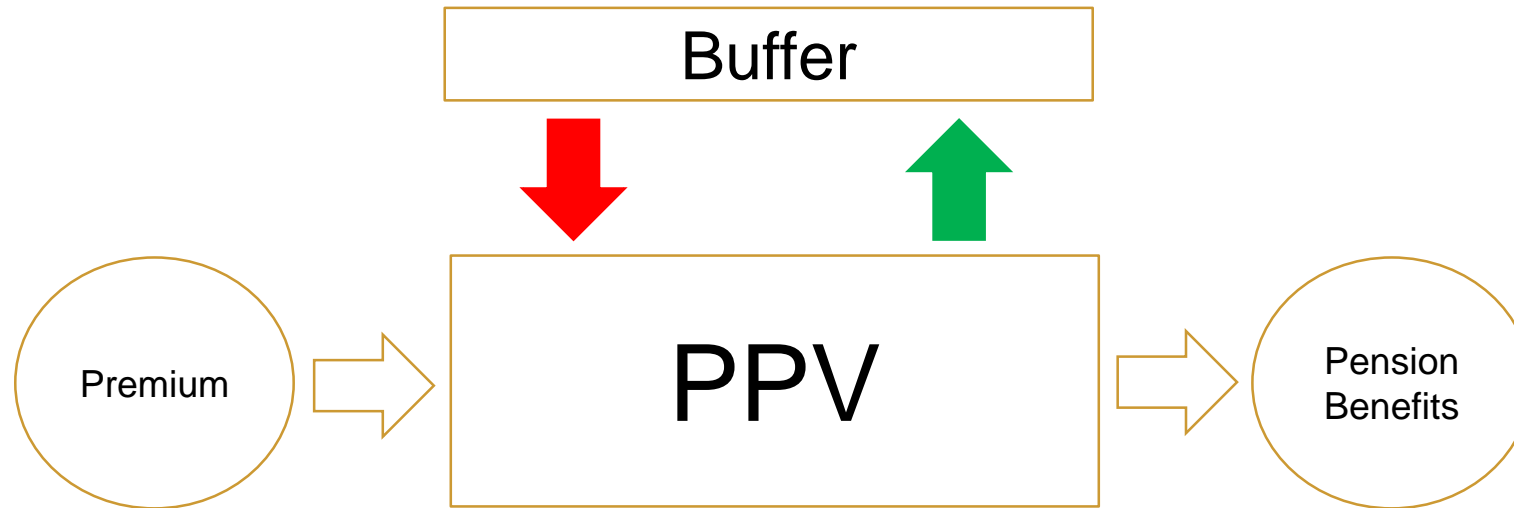
# Pension reform

- 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)

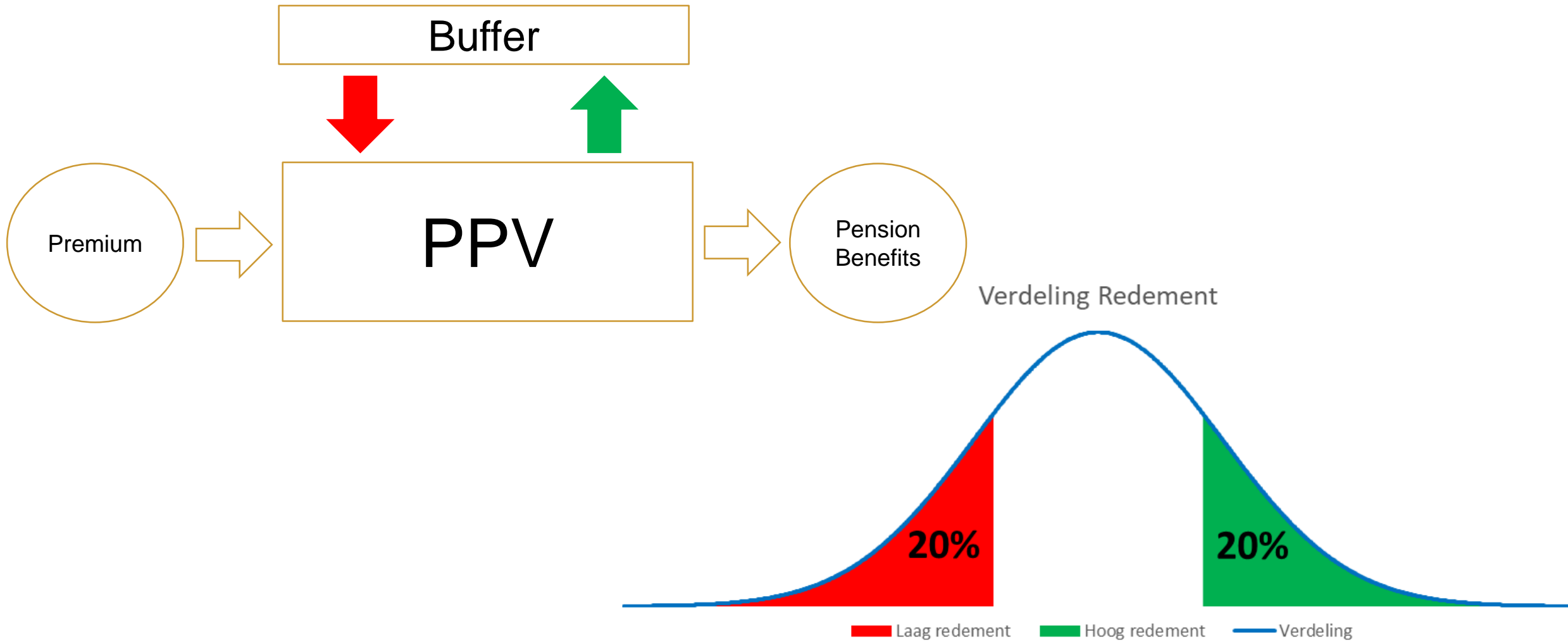
# Intergenerational Risk Sharing (IGR)

- 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

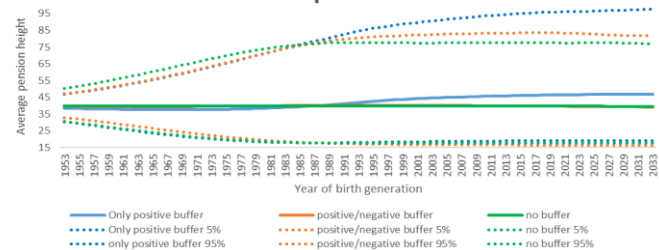
- Pay premium between 25<sup>th</sup> and 65<sup>th</sup> year
- Receive pension benefit between 65<sup>th</sup> and 85<sup>th</sup> year
- Only stock market risk (no inflation, interest-rate, longevity etc.)
- Black and Sholes financial market (normal distributed returns)

# Results

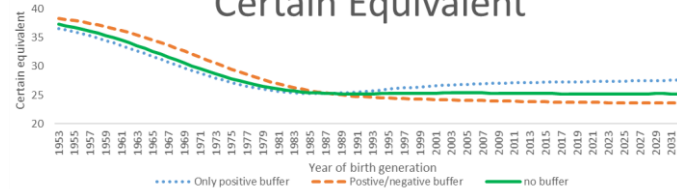
1. System with only positive buffers
2. System with both positive and negative buffers
3. System without a buffer

## Certain equivalent (CE)

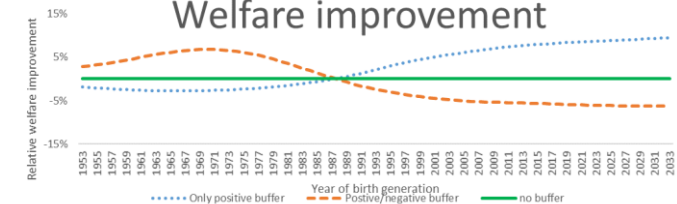
### Distribution pension benefits



### Certain Equivalent

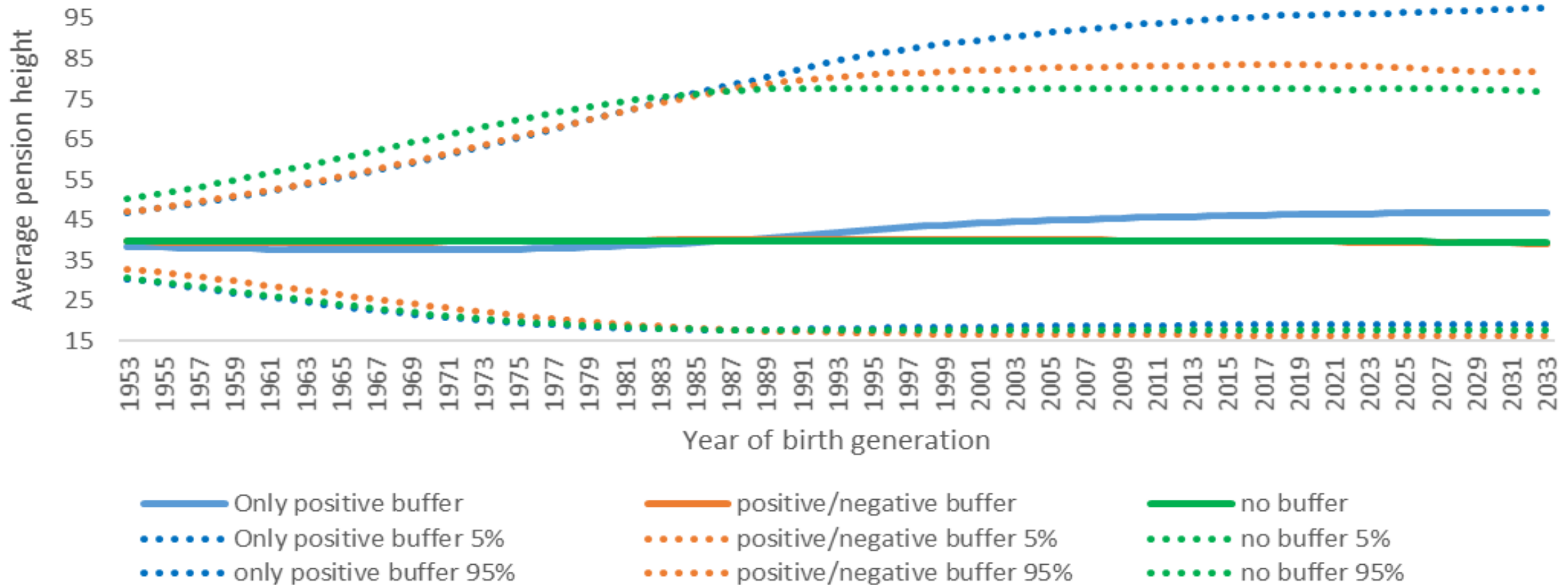


### Welfare improvement





## Distribution pension benefits

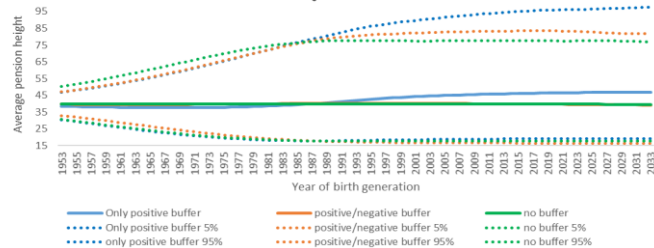


# Results

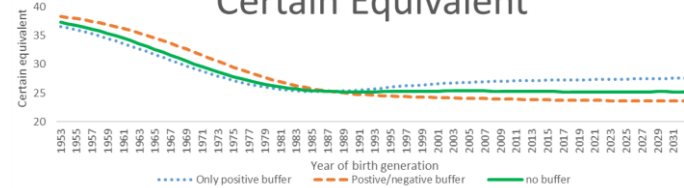
## Certain equivalent (CE)



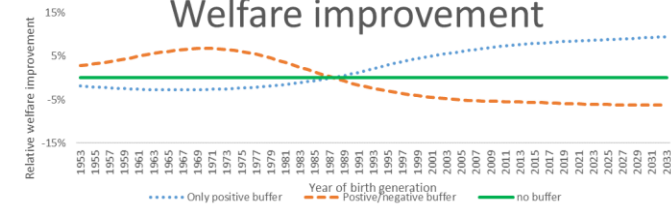
### Distribution pension benefits



### Certain Equivalent



### Welfare improvement



# Results

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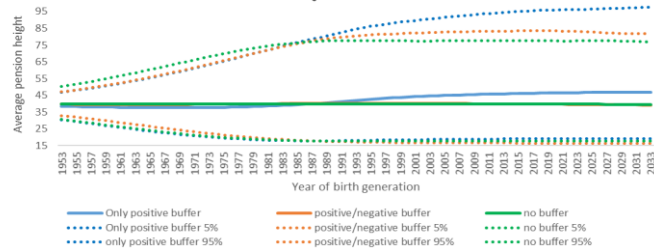


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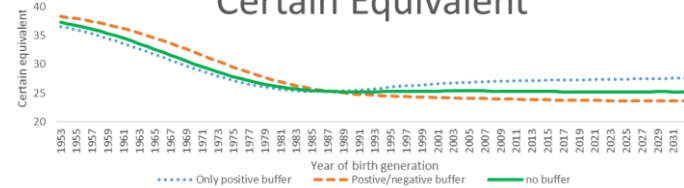
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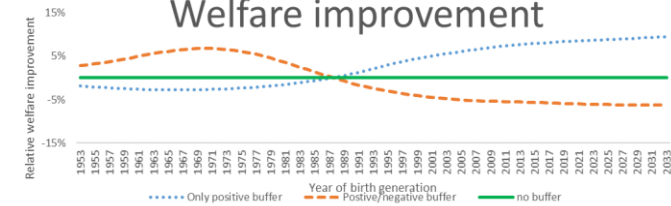
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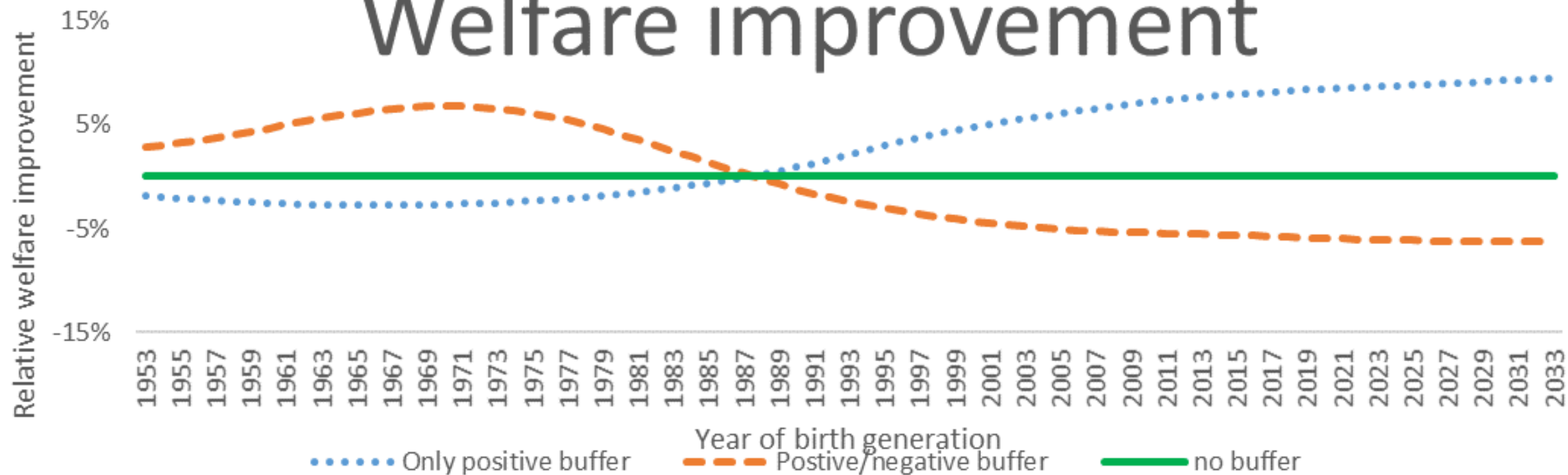


### Welfare improvement



# Results

## Welfare improvement



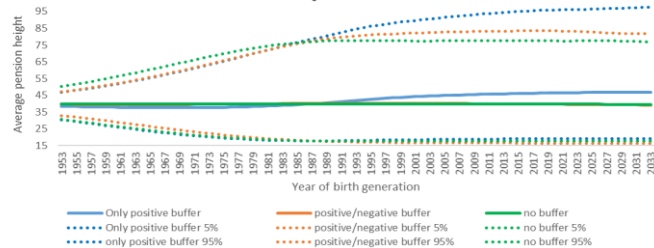


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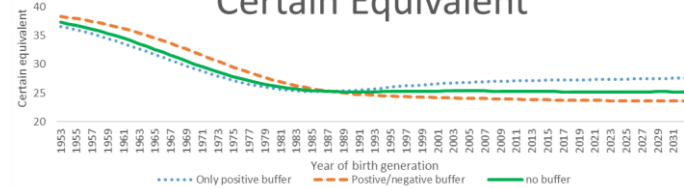
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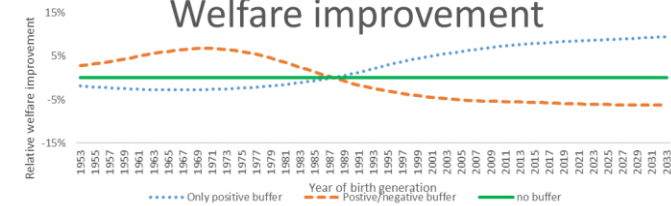
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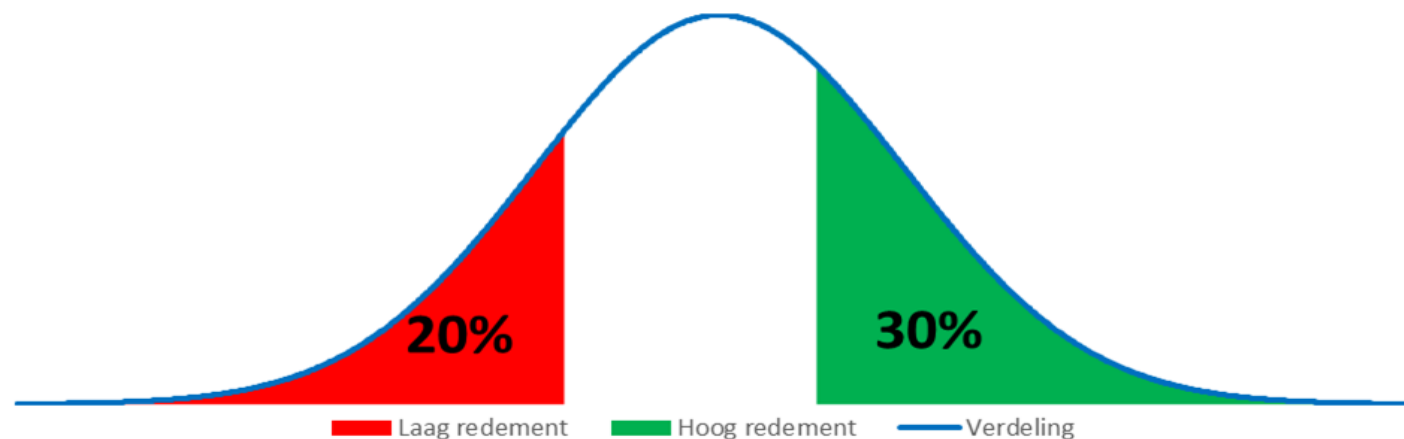


### Welfare improvement

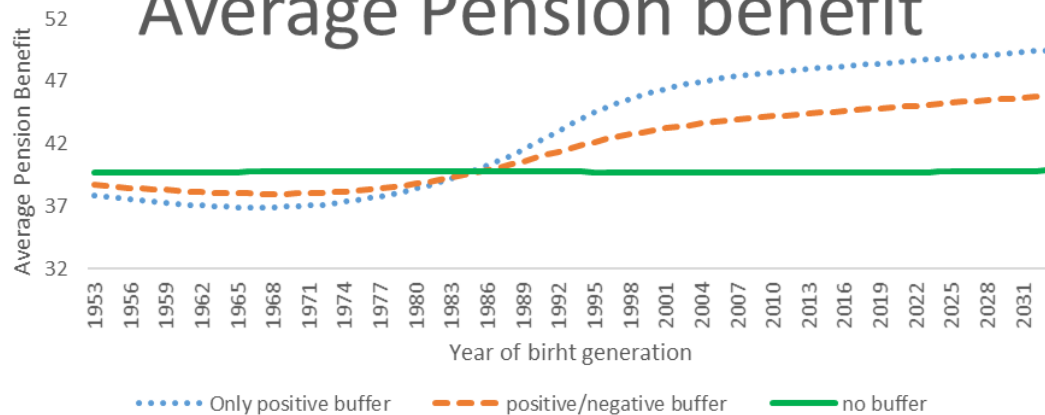


# Model adjustment: risk premium

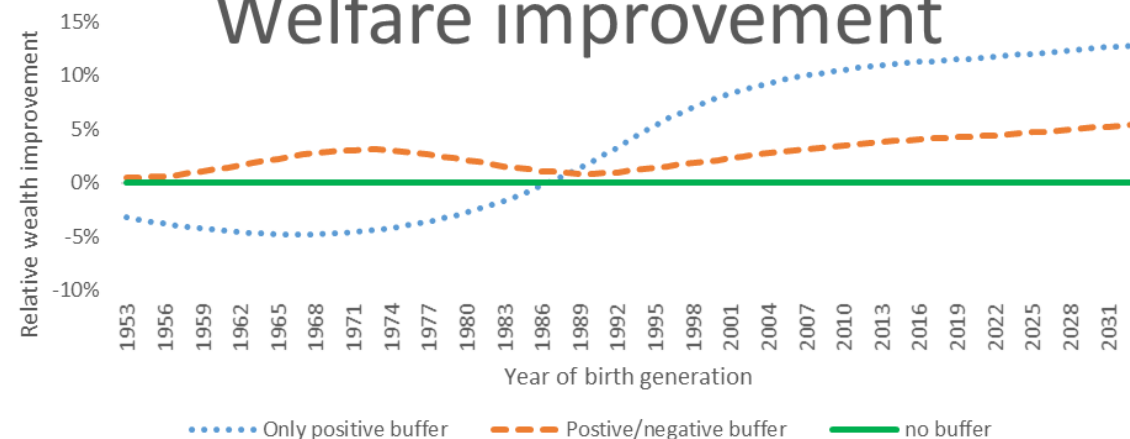
Verdeling Redement



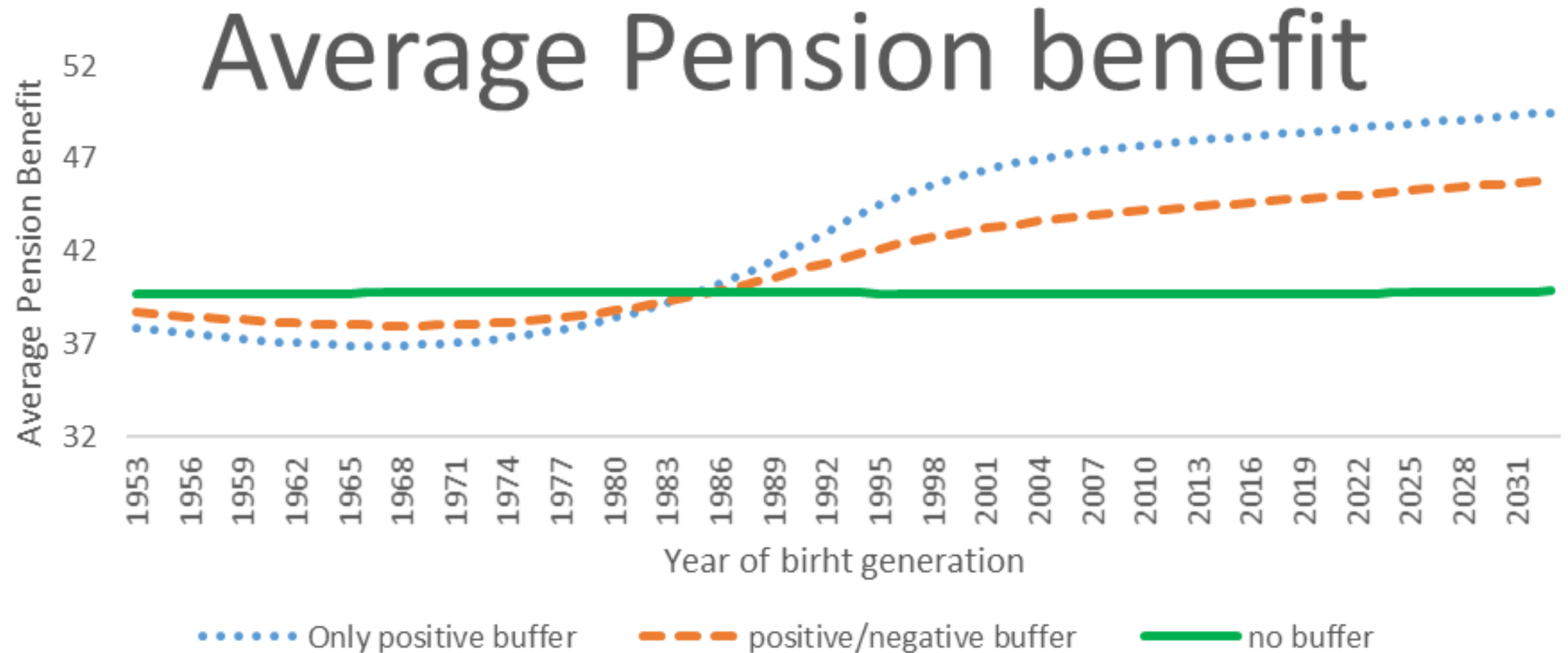
## Average Pension benefit



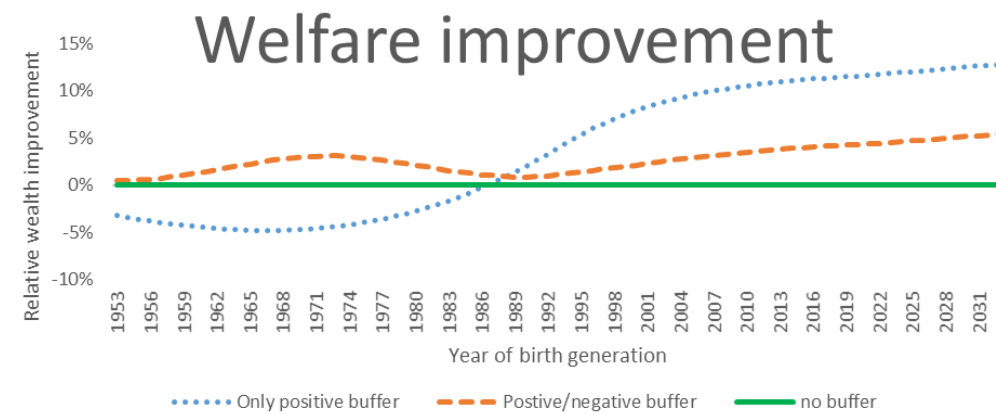
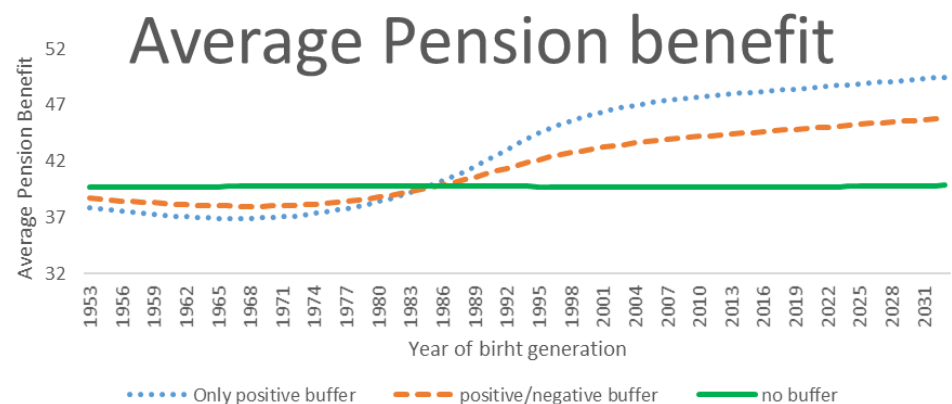
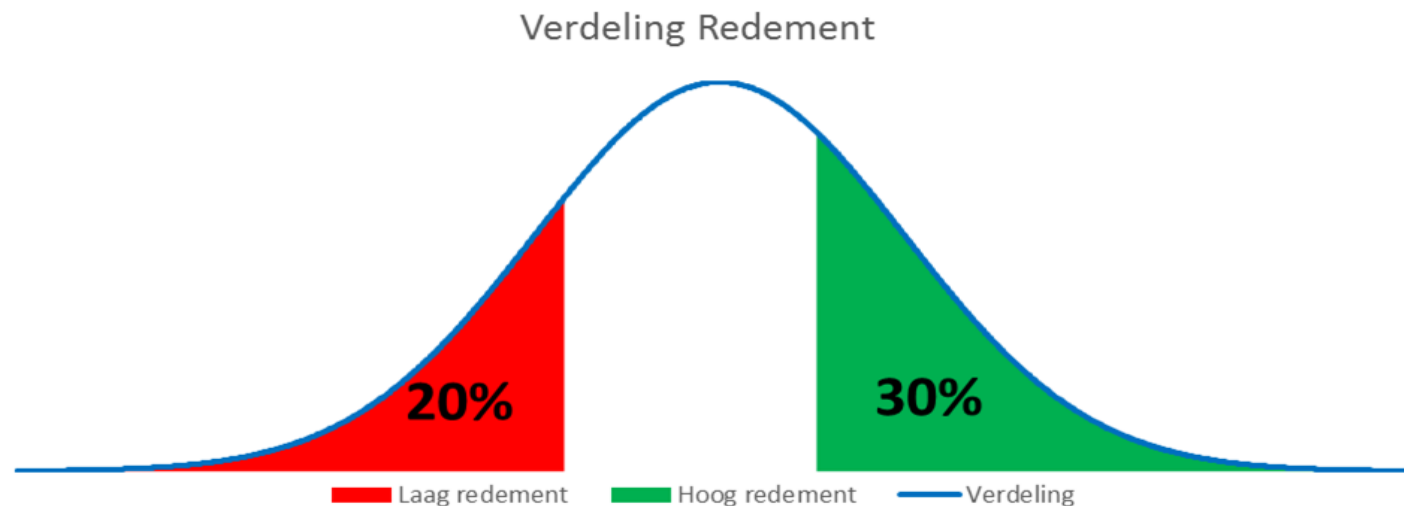
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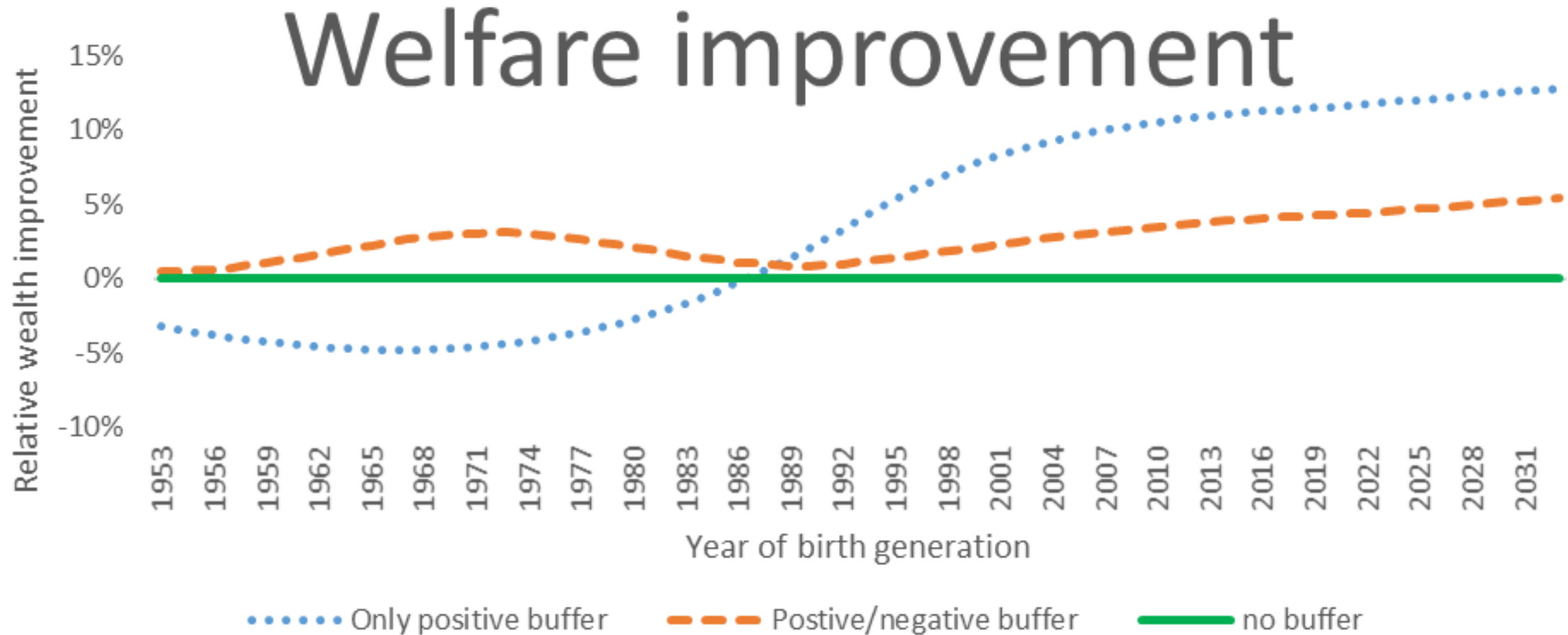
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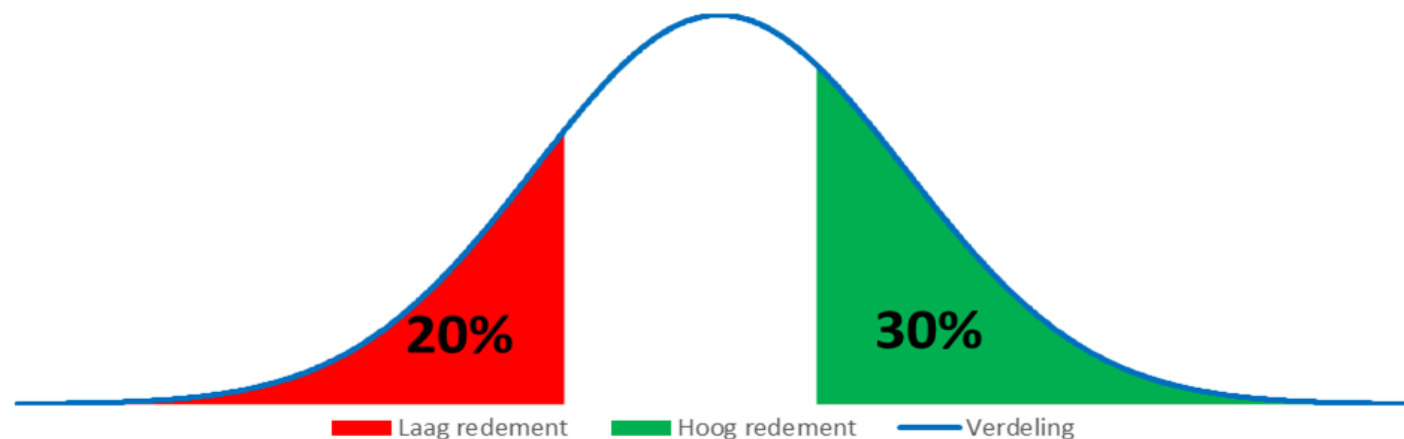
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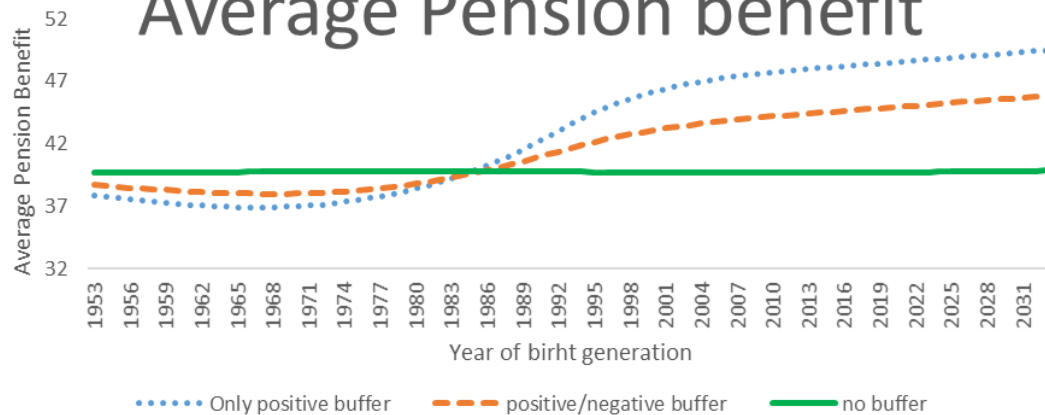


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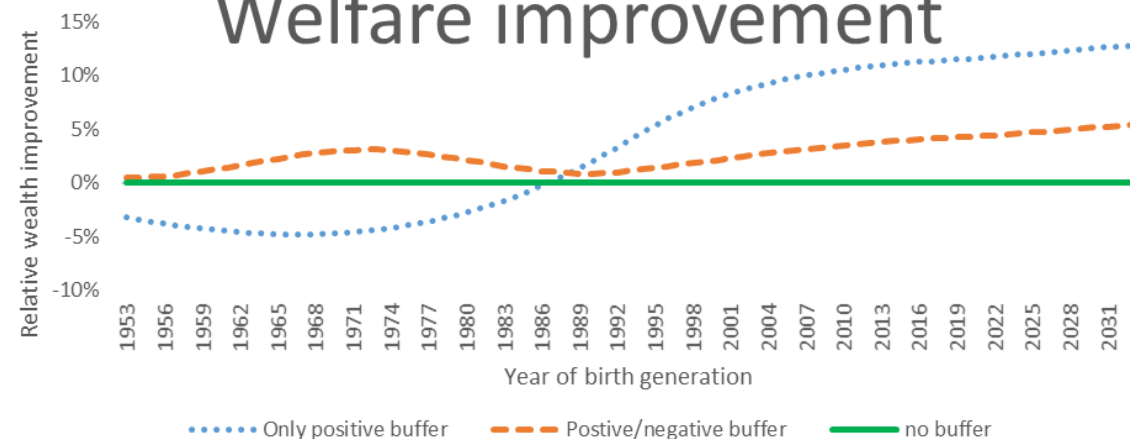
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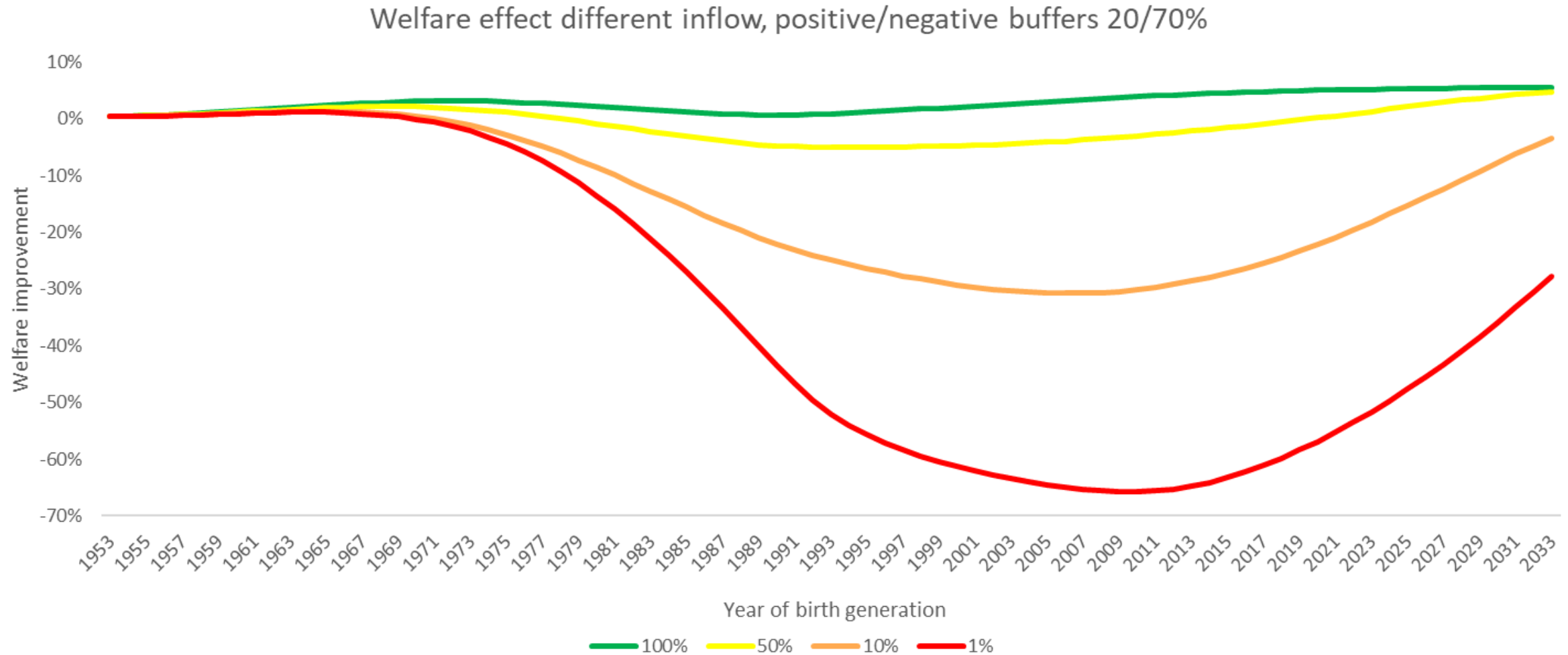
## Average Pension benefit



## Welfare improvement



# Discontinuity risk



# 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.