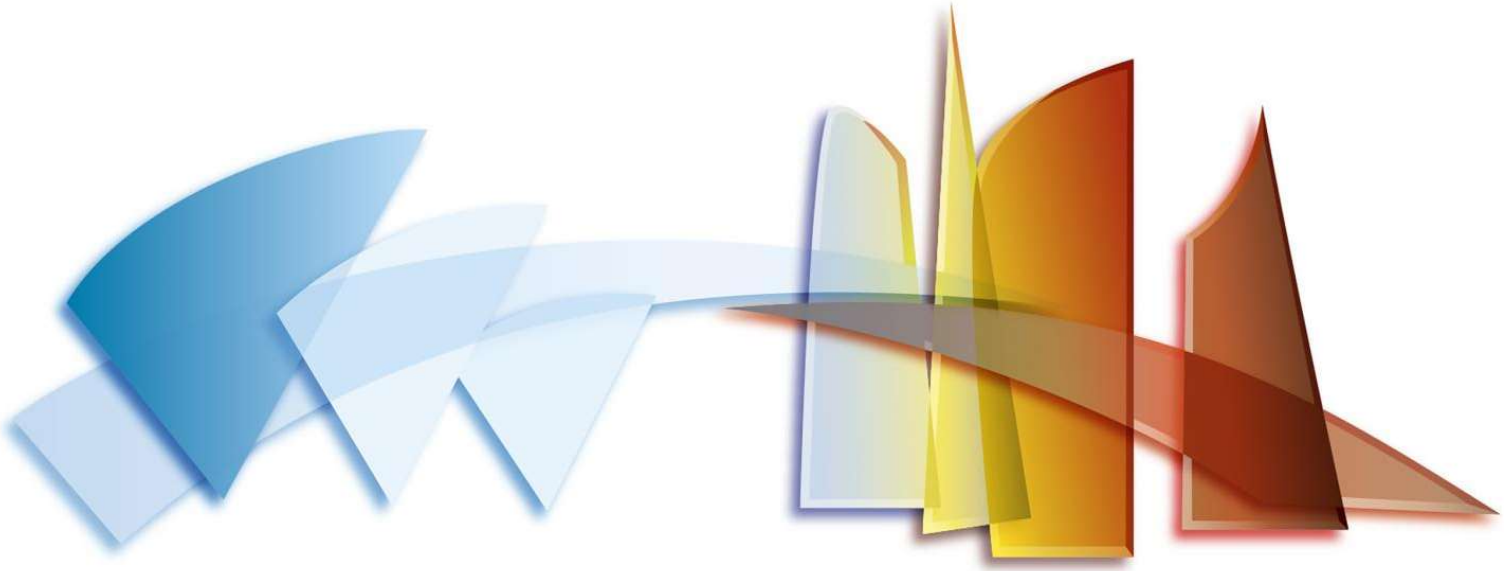
2023 INTERNATIONAL CONGRESS OF ACTUARIES



BRIDGE TO TOMORROW

28 MAY – 1 JUNE 2023 · SYDNEY

Actuaries Institute Australia

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Pay-as-you-go System and Funded System in German Long-Term Care Insurance

– A comparison after more than 25 years

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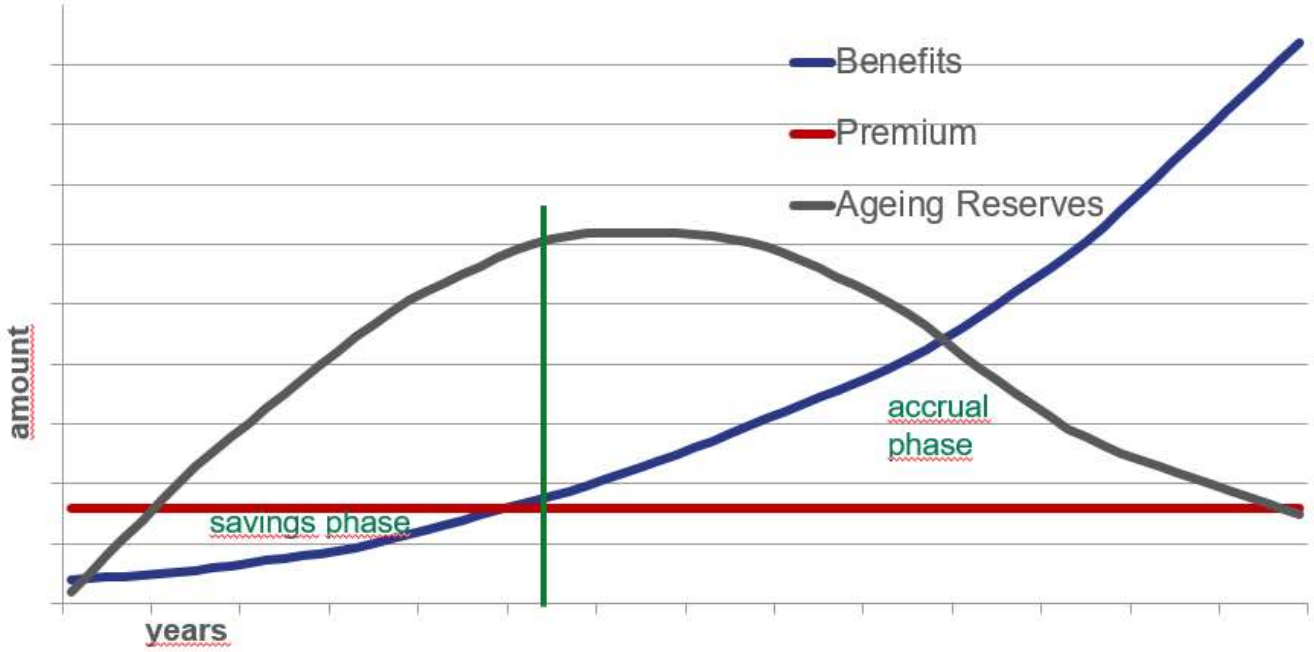
German health insurance system

- Obligation to health insurance for entire population
- Two systems:
  - Statutory health insurance covers 90 % of the population
    - Pay-as-you-go-system
    - Premiums income-dependent
    - Offered by public corporations
  - Private health insurance covers 10 % of the population (civil servants, self-employed, high income)
    - Funded system
    - Premiums depend from starting age, health status and coverage
    - Offered by private health insurance companies

Illustration of a funded system

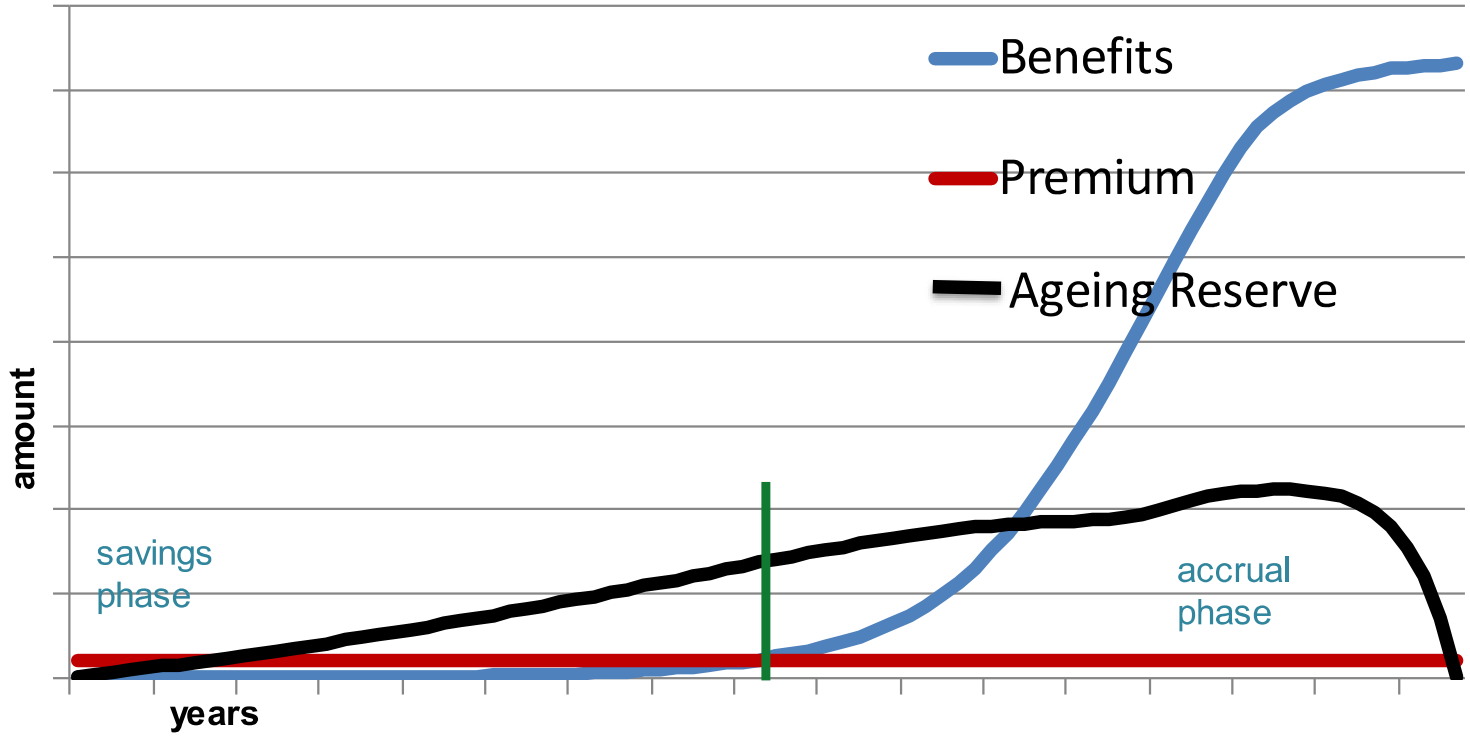


1995: Introduction of Compulsory LTC insurance

- Principle: "Care follows health":
  - LTC insurance with the same insurer as health insurance
  - SPV: Statutory (social) LTC insurance with pay-as-you-go-system
  - PPV: Private LTC insurance with funded system
  - SPV and PPV cover the whole population (contracting obligation)

Calculation of Tariffs in the German PPV

Premiums, Benefits, Ageing Reserves



1995: Introduction of Compulsory LTC insurance

- Political requirements:
  - Range of benefits equal in SPV and PPV
  - Gender-neutral premiums
  - No premiums for children
  - Premium limit in both systems
    - Premiums in SPV currently 3.05 % of income (3.40 % for childless persons), maximum 147.54 EUR / 164,48 EUR per month), 50 % payed by employer
    - Premium in PPV must not exceed the maximum contribution in SPV
    - Premiums in PPV for couples are limited if not both earn an income

Redistribution elements had to be integrated in the classic individual insurance methods

How to integrate financial transfers due to political requirements in actuarial methods?

- First:
  - Exact actuarial calculation with age- and gender-dependent net premiums with ageing provisions
  - Pure risk premiums for children and persons born before 1916 (no ageing provisions)
- Second:
  - Transfer from ♂ to ♀ due to unisex-premium demand
  - Transfer to children due to premium-free demand
  - Transfer from young to old due to premium limit

Formula for gender-neutral premiums

As gender-neutral (unisex) premium $P x^u$
at age x the premium of men with a factor c has been set (since 2015 c = 1):

$$P x^u = \frac{A_x^u}{a_x^u}$$

with
$A x^u = A x^m$ (present value of benefits),
$a x^u = \frac{a_x^m}{c}$. (annuity present value)

The amount of transfer which is necessary to finance this gender-neutral premium was 282 m EUR in the year 2021, which is about 6.7 % of the total premium income in the PPV

Formula for Exemption from contributions for children

The Transfer for the non-contributory co-insurance of children amounts to about 2.3 m EUR per year (0.05 % of total premiums in the PPV)

$$\text{UK} = \sum_j P^b(\text{j})$$

with $P^b(\text{j})$ individual gender-dependent (bisex) premium for premium-free child j (taking into account reductions in transfer requirements from surplus funds)

Formula for transfer from young to old

The transfer requirement from young to old, i.e., the amount necessary to limit premiums to the maximum contribution of the statutory LTC insurance, adds up to 276 m EUR (6.5 % of the total premium income in the PPV):

$$UG = \sum_j \max\{P^u(j) - (12Hg(j)(1-\sigma) - \Gamma_{pool}); 0\}$$

with

P^u(j)	individual gender-neutral premium for "normal paying" insured person j
$Hg(j)$	maximum pemium for insured person j
σ	safety loading
Γ_{pool}	maximum unit cost loading accepted by the PPV pool

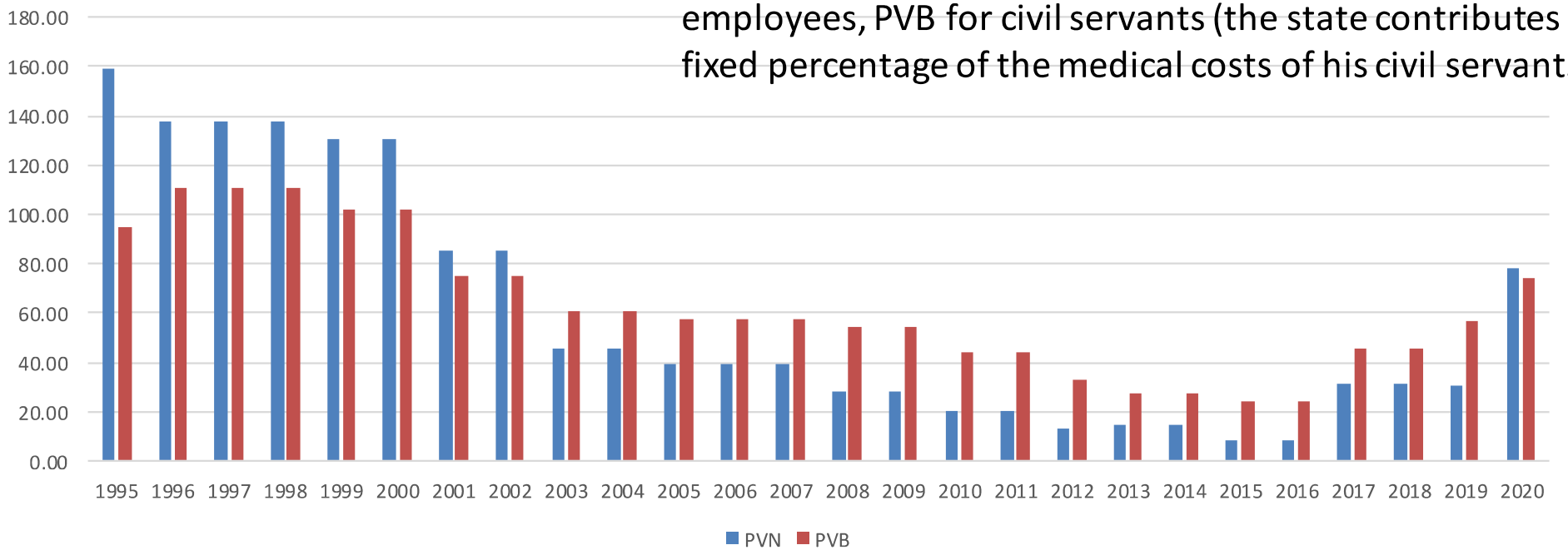
Development of the transfer volume in course of time

- Due to the basic political conditions the transfer volume started with 31 % of the aggregate premium income
- Over time, the transfer volume has been significantly reduced:
  - An increasingly large proportion of older insured persons already had a certain savings phase
  - The apportionment requirement for those insured who were already benefit recipients when long-term care insurance was introduced was reduced by their mortality
  - Safety loading could be used to reduce the transfer volume

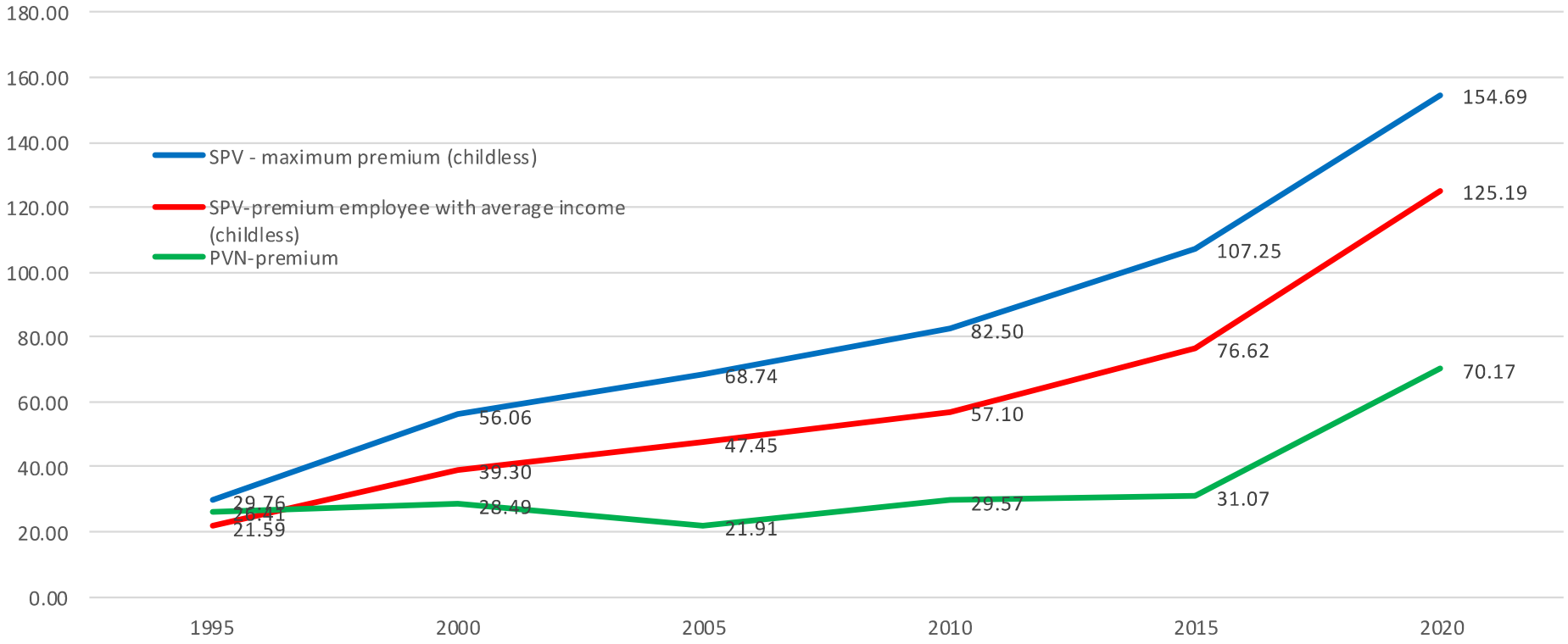
But political election giveaways led to a significant increase in LTC insurance spending from 2015 onwards, which is reflected in premiums and transfer volume

Development of the transfer volume in course of time

2 Tariffs in PPV: PVN for self-employed and high-income employees, PVB for civil servants (the state contributes a fixed percentage of the medical costs of his civil servants



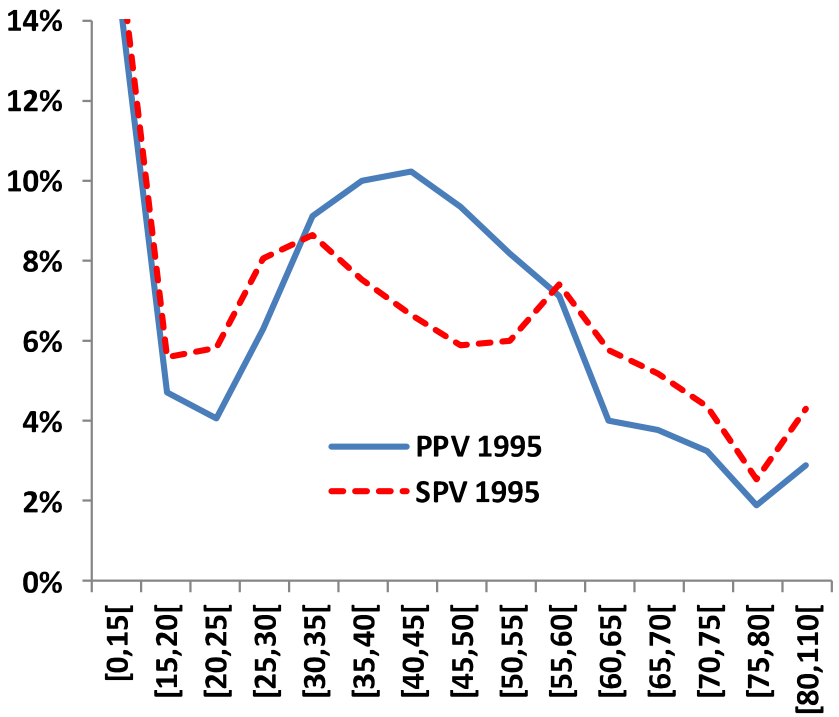
Development of the premiums in the course of time

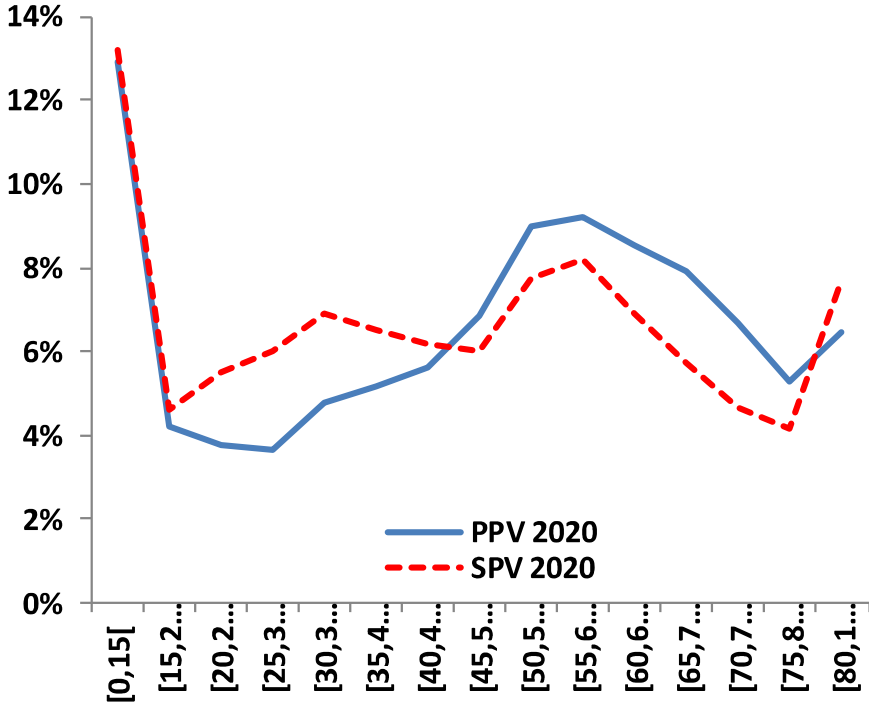


Change of the age structure in both systems I

- At the start of german LTC insurance, the PPV had a younger age structure than the SPV
- This has shifted dramatically over the last 25 years
- The PPV has a higher share of the population in the retirement ages up to 75
- However, the SPV still has a higher share in the near-nursing ages 75 and older
- The ageing of the PPV portfolio had no impact on premiums, as they had already been included in the initial calculation
- The ageing of the SPV portfolio led to significant increases in premiums – this is the consequence of the pay-as-you-go-system

Change of the age structure in both systems II

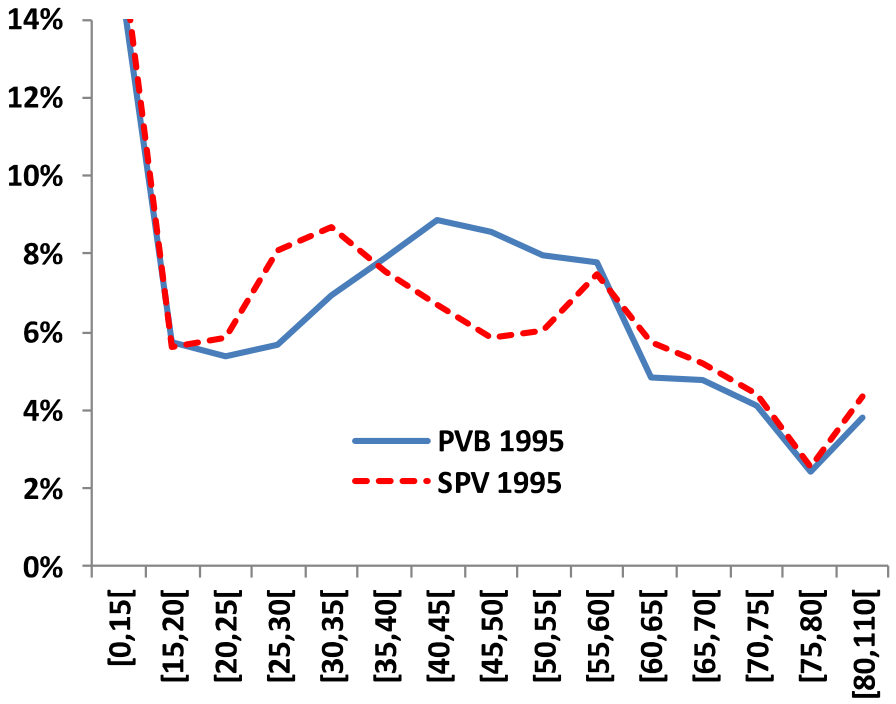


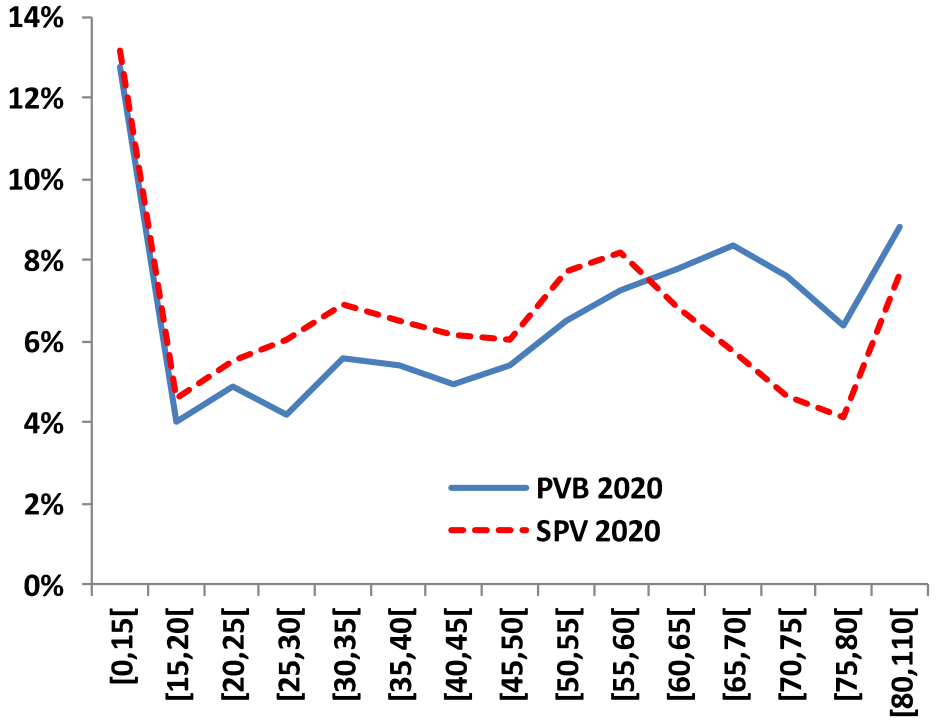


Change of the age structure in both systems III

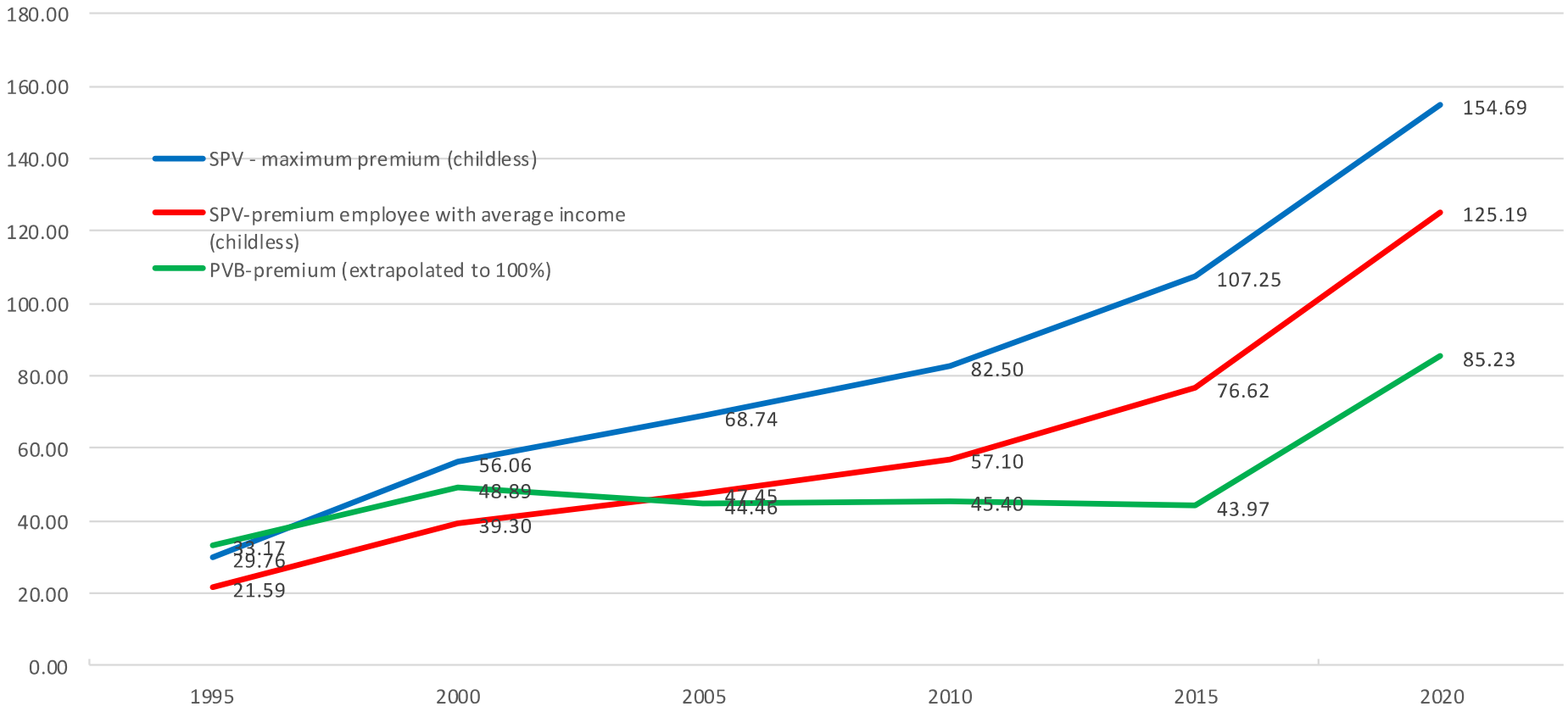
- The better development of the funded system can be seen even more clearly in the civil servant population
- Even at the start of LTC insurance, the age structure of SPV and PVB was very similar
- Meanwhile, the PVB has a much less favorable age structure than the SPV from age 60 onward
- But because the higher future expenditure for nursing care in the PVB was already included in the initial calculation, the demographic development had no influence on the premiums in the funded system.

Change of the age structure in both systems IV





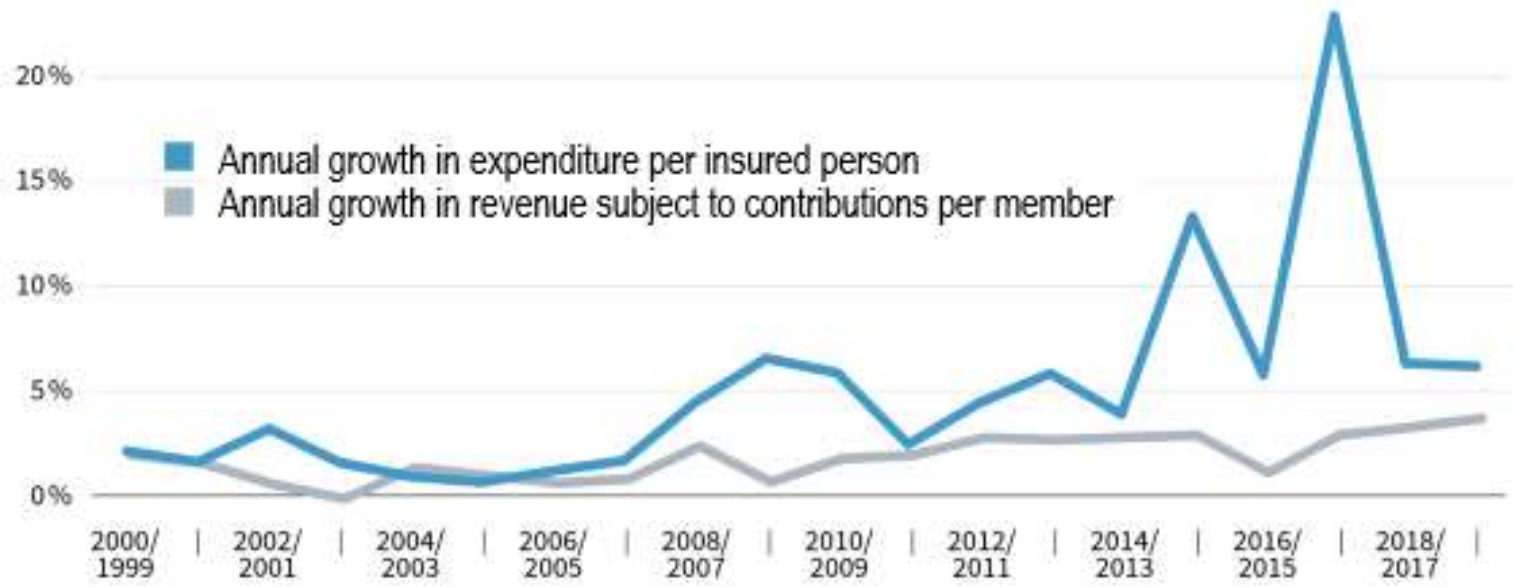
Development of the premiums in the course of time



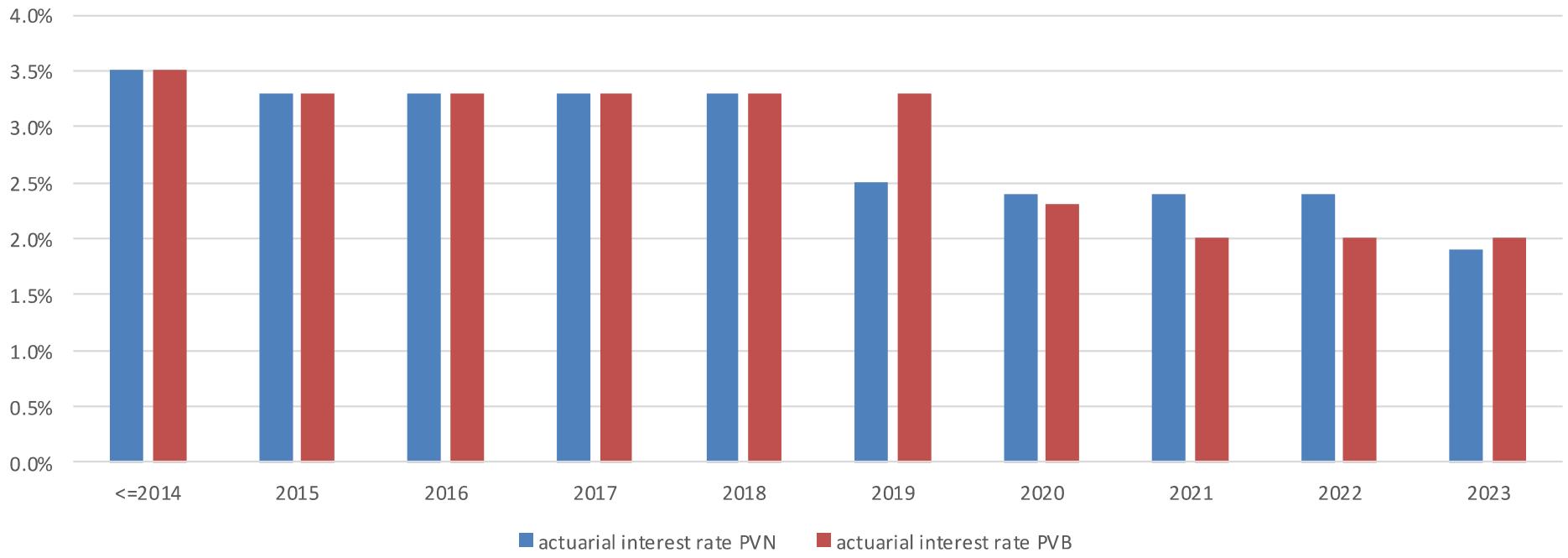
Effects of policy-induced expansions of LTC benefits

- Since 2015, the benefits of long-term care insurance have been significantly expanded by various laws
- This has led to significant increases in premiums in both financing systems – pay-as-you-go and funded system
- The increase in insurance benefits was significantly stronger than the economic development
- At the same time, the actuarial interest rate in the PPV had to be lowered to reflect the interest market
- Nevertheless, the premium trend in the PPV continues to be significantly more favorable than in the SPV

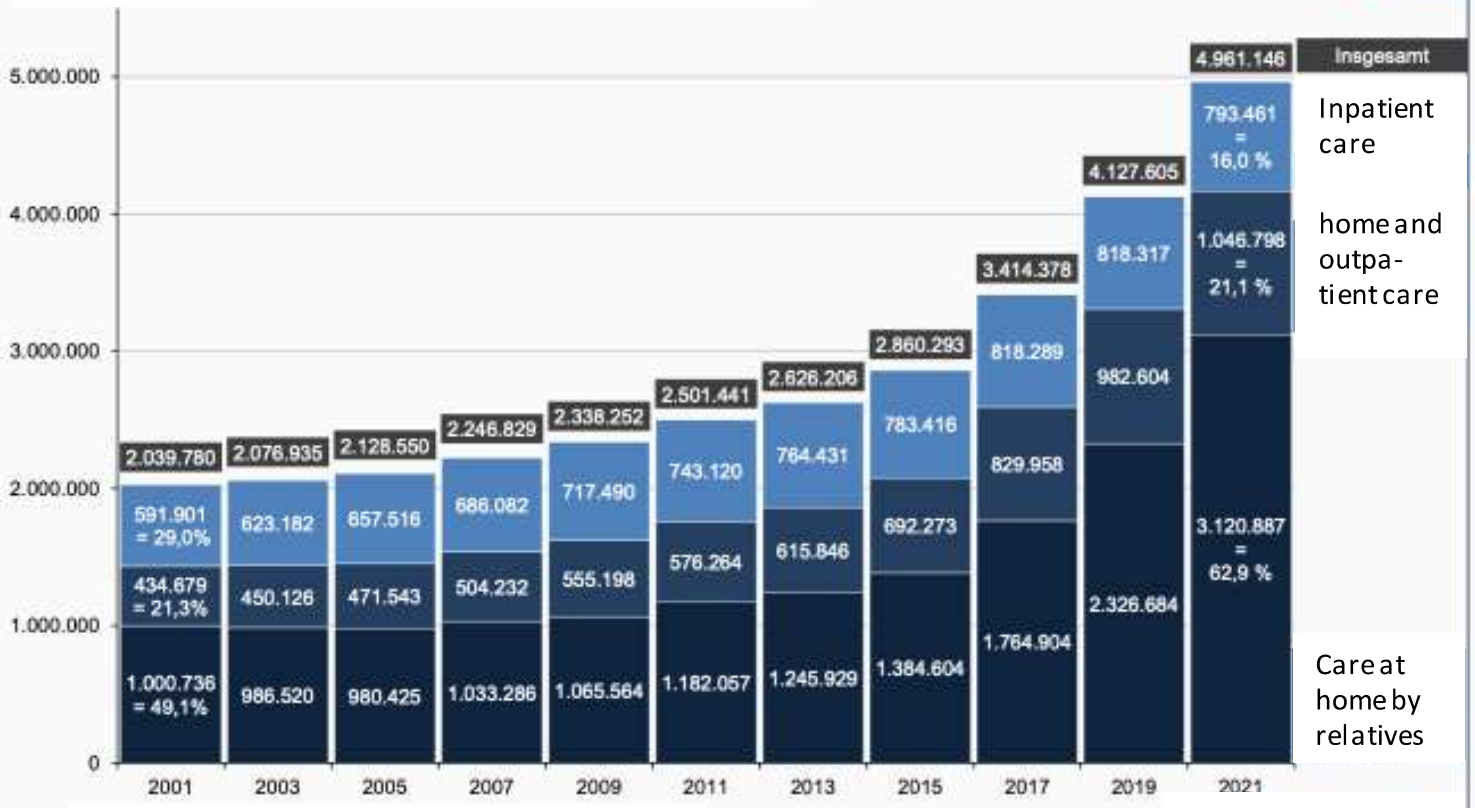
Revenue vs expenditure development of SPV



Actuarial interest rates in the PPV



Persons in need of care by type of care



University Duisburg-Essen, Feb. 2023

Effects of politics since 2015 and of corona

- The number of people in need of care who are cared for only at home by relatives has increased by 125% since 2015 - from 1.38 million people to 3.12 million people in 2021.
- The group who are cared for by a mix of home care and an outpatient care service has also increased by more than 50%.
- The expansion of the criteria for a need for care, in particular the inclusion of people suffering from dementia, was politically desired. However, their financial impact got out of hand.
- The Covid 19 pandemic had a strong effect on nursing home residents: The mortality rate among nursing home residents was particularly high

Conclusions I

- The funded system is better equipped to deal with the problems of the future, especially the demographic problem.
- Since each cohort takes care of itself, the ageing of population, in contrast to the pay-as-you-go SPV, is no reason to raise contributions.
- However, the PPV system is somewhat more susceptible to benefit expansions, since higher benefits also lead to higher actuarial reserves, which must be refinanced accordingly.
- The decline in interest rates is largely priced in with the premium adjustment as of January 1, 2023
- The slight recovery in market interest rates additionally reduces the pressure to further lower the actuarial interest rates

Conclusions II

- The pay-as-you-go system of the SPV is demographically uncertain – fewer contributors in active working life and more insured persons moving into the age range close to nursing care (in particular the baby boomer cohorts).
- Economic crises accompanied by job losses and thus declining contribution revenues also put pressure on the revenue side of the SPV.
- Since 2023, the SPV has been supported from tax funds for the first time
- But this has nothing to do with sustainability.
- It is be financed by new debts, which we will bequeath to younger generations and thus massively restrict their opportunities
- This form of financing competes directly with other acute political goals in the federal budget, such as education, climate protection, digitization, or defense.

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Thank you for your attention!

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Protektor is the Guarantee Scheme of German life insurers