

Collective DC in Germany

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Agenda

Occupational pensions in Germany

Collective DC in Germany – a brief overview

Recent developments

Actuary's view

Some examples

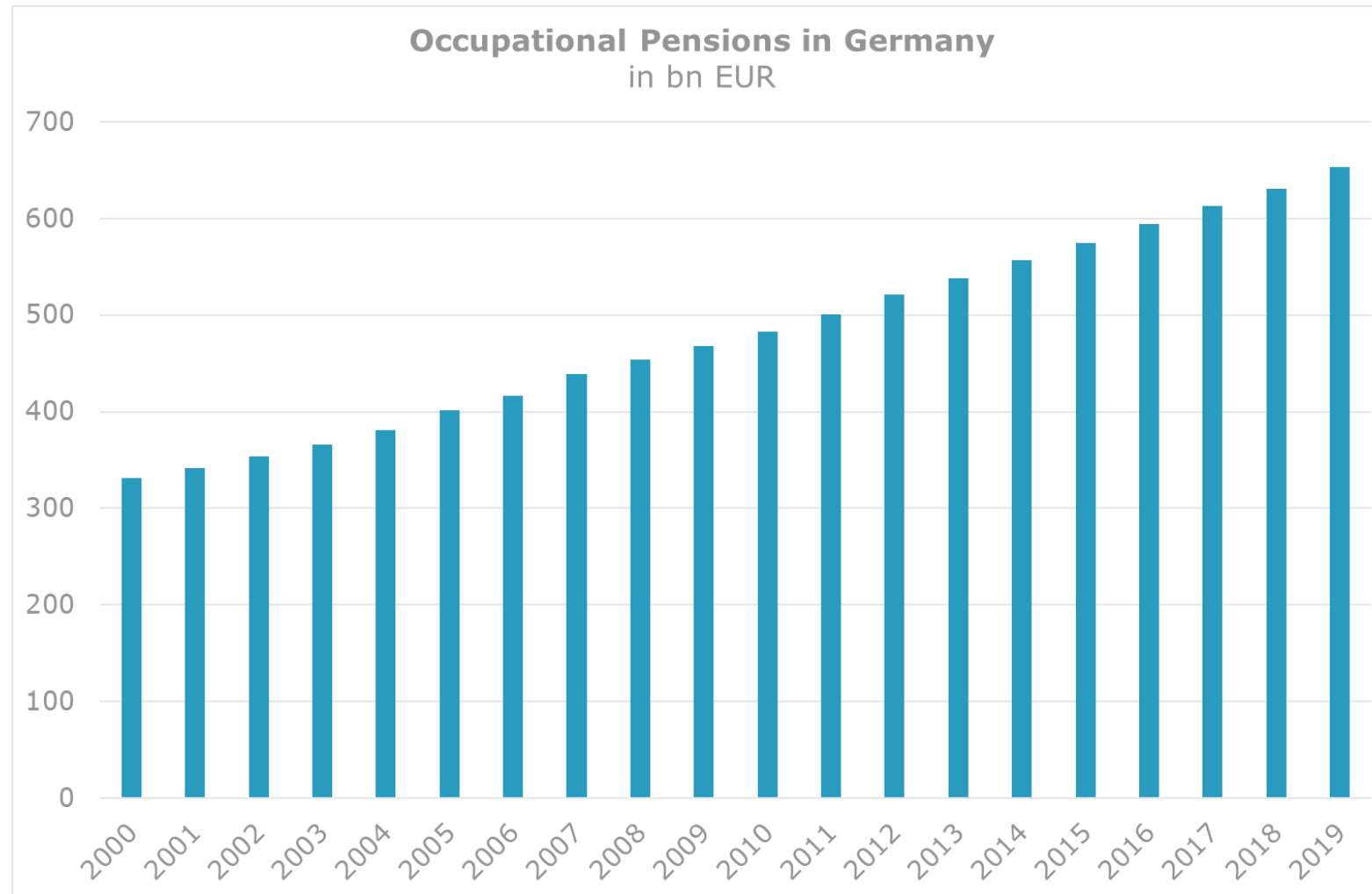
Sources of Retirement Income



Source: OECD (<https://stats.oecd.org/Index.aspx?DataSetCode=IDD>)

- Currently, for German pensioners
 - the **social security pension** is by far the most important source of their income.
 - Pay-as you-go-system (demographic challenge!).
 - Occupational pensions play a minor role, which is desired to be higher.
- In most other countries, the share of occupational pensions is much bigger.
- Intention in Germany to enhance occupational pensions.

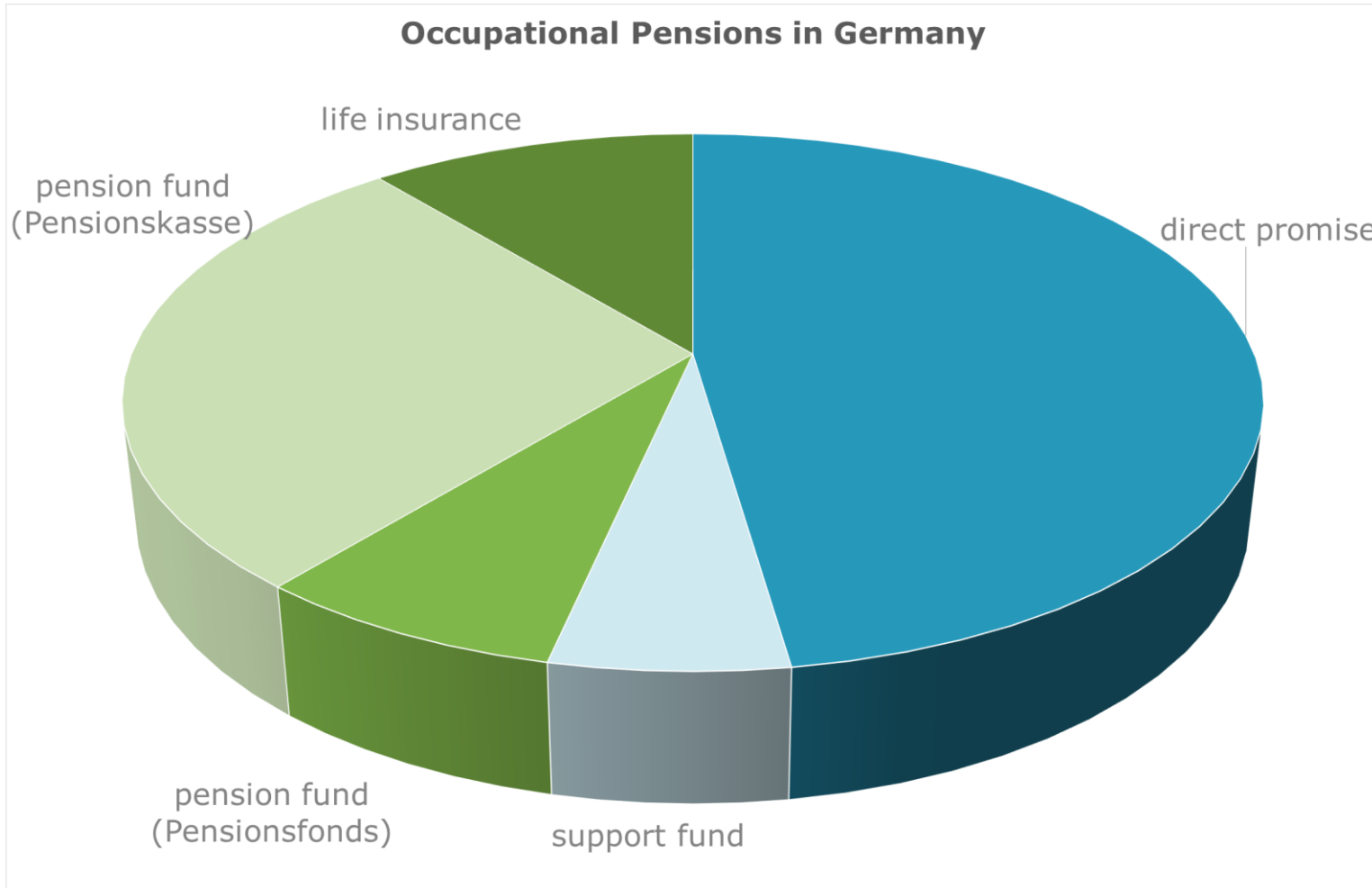
Occupational Pensions in Germany



Source: Schätzlein, BetrAV 8/2021

- reserves of all funding vehicles in Germany
- from a low level steadily increasing
- result of pension reform in 2001/2002 where right to deferred compensation was established
- government's and expert's opinion: not enough

Occupational Pensions in Germany: Pension Vehicles



Source: Schätzlein, BetrAV 8/2021

- 5 different **funding vehicles**
 - i.e. different kind of supervision, taxation, labour law
- Currently, 100% of occupational pension in Germany is **DB (defined benefit)**.
 - promise of benefits
 - At the end, it is the employer who stands for the pensions.
- Life insurance and 2 kinds of pension funds
 - are supervised by BaFin.
 - Although a benefit is (also) defined, under IFRS mostly seen as DC (defined contribution).

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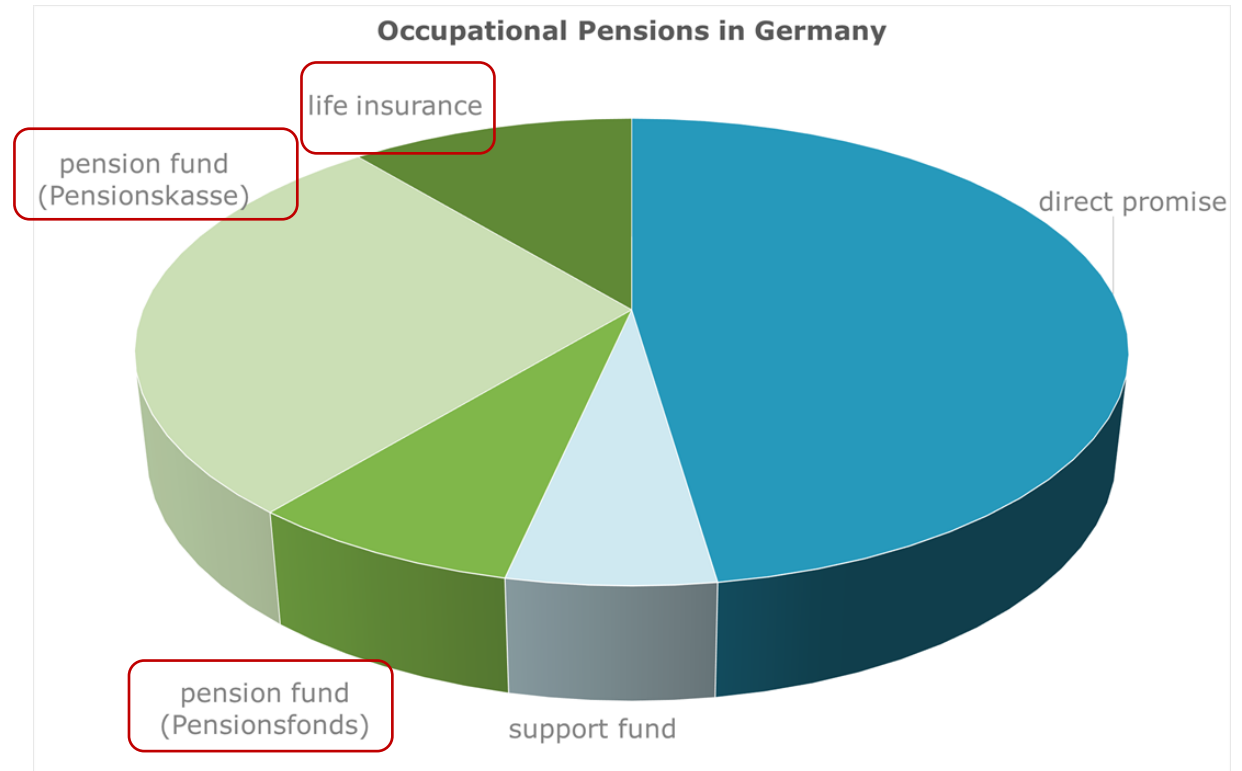
Actuary's view

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Collective DC in Germany

- introduction in January 2018
- aim
 - more occupational pensions in Germany
 - but no more liabilities for employers (esp. no risk for unplanned additional contributions as in DB)
- Use of Collective DC only via [trade union & employer's association](#) and [a collective labour agreement](#) about Collective DC.
 - represent employee's rights and needs
 - funding vehicle/agreement has to ensure involvement of these parties e.g. via a steering committee
 - plan design
 - strategic asset allocation
 - ...

- funding vehicles:
 - [Pensionsfonds, Pensionskasse, life insurance company](#)
 - only those supervised by BaFin

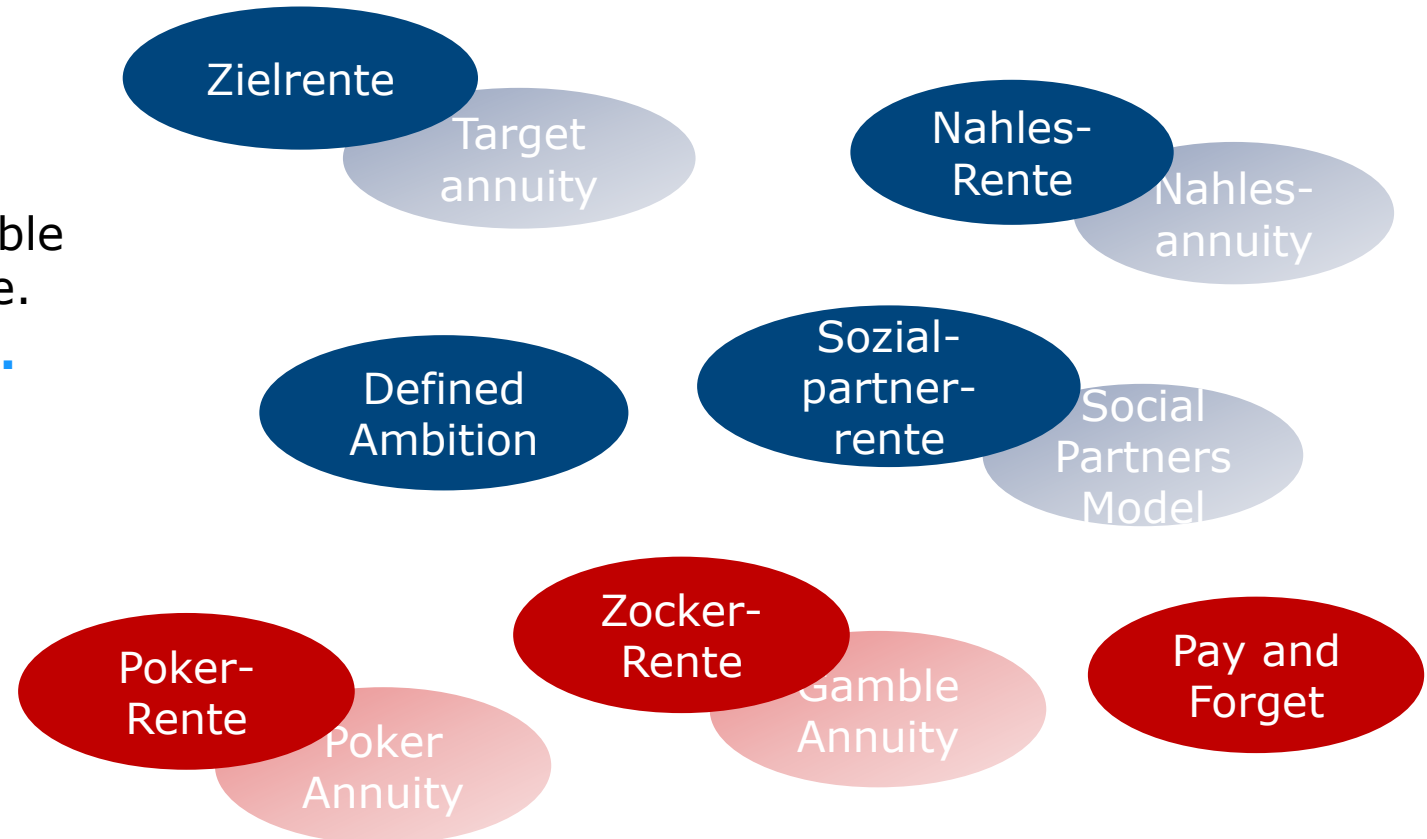


Collective DC in Germany

- benefits
 - old-age, disability, death
 - old-age benefits have to be **life-long** → no lump sum payment
- **guarantees...**
 - ...are not provided.
 - ... are even forbidden – also not possible that funding vehicle gives a guarantee.

→ **Employees bear total investment risk.**

- So far, no collective DC established yet.
- But many names for collective DC:



Collective DC in Germany

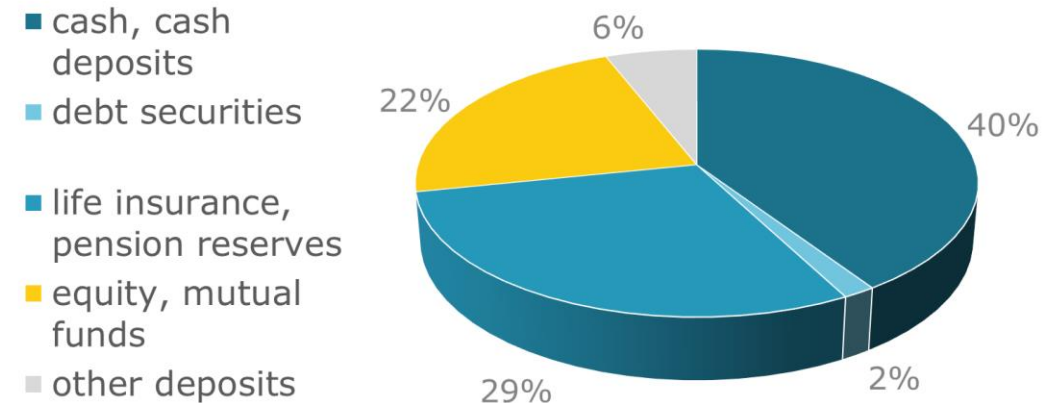
- **After more than 4 years: Why is there not a single collective DC yet?**

- Germans are risk-averse.
 - example: large amount of financial assets with low return profile in Germany (s. right).
 - Representatives of worker's council appear to be incapable to communicate such kind of occupational pension.
 - Everybody is talking about the risks to reduce paid annuities, only a few see the opportunity for high benefits.

RISK!

opportunity

**Financial Assets of Households in
2020: EUR 6951 bn**



Source: Deutsche Bundesbank 2021,
Monatsbericht 5/2021

- complicated legal issues: supervisory law vs. labour law (esp. collective labour law)

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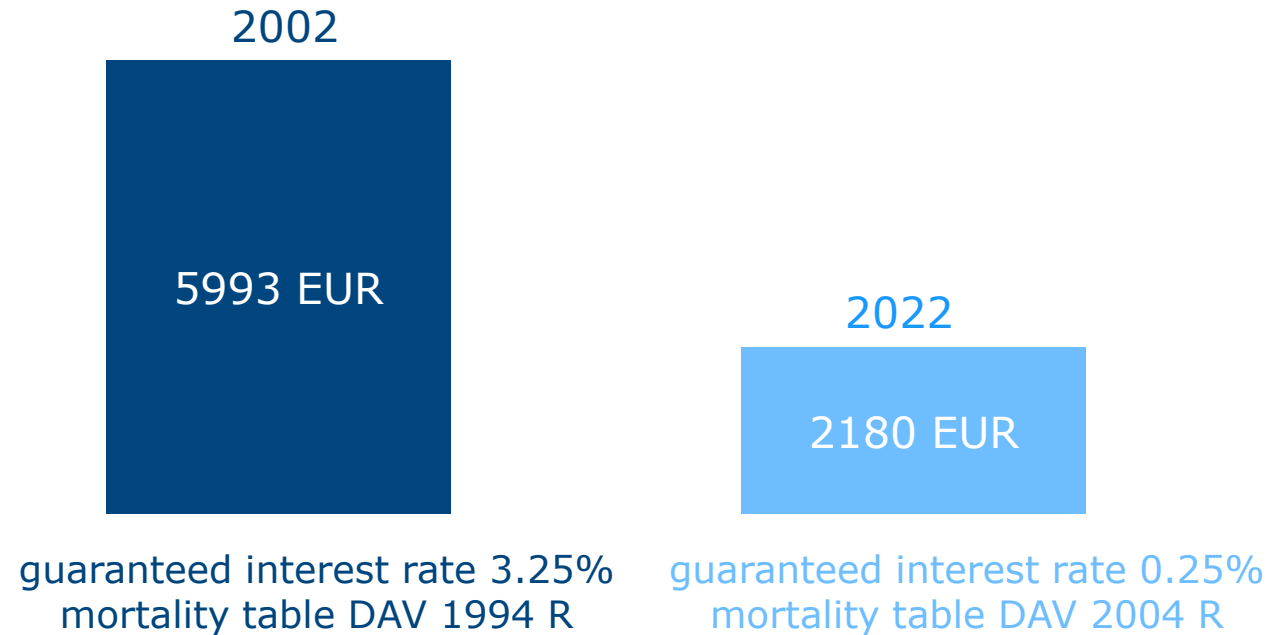
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Recent Developments

- high inflation
- Advantage of Collective DC is seen, as traditional DB systems were reducing guaranteed benefits (for new business only!) during the last two decades.
 - Example for a monthly contribution of 100 EUR for 40 years and a life-long guaranteed annuity starting at age 65 (assuming typical cost structure, male)



➔ Huge reduction of guaranteed benefits due to decrease of guaranteed interest rate and update of mortality table.

Recent Developments

- several announcements regarding collective DC
- coming soon
 - collective labour agreement for chemical industry



- collective labour agreement limited to employees of insurance companies Talanx and Zurich (funding vehicle = employer)



- several other providers in waiting position (e.g. Nürnberger Versicherung & Bankhaus Metzler, BVV, Das Rentenwerk)

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Actuary's View: What is DC?

- DC = unit-linked?
 - So far we have unit-linked in Germany within private pensions.
 - Unit-linked annuities in private pensions are only partially unit-linked.
 - important in Germany: taxation as life insurance product

savings phase: no guarantee

annuity phase: guaranteed minimal annuity

- hence, guaranteed minimal annuity during the annuity payment phase
- Collective DC within occupational pensions is fully unit-linked.
 - same tax advantages as DB

savings phase: no guarantee

annuity phase: no guaranteed minimal annuity

- even no guarantees in the annuity payment phase

Actuary's View: What is DC?

- No guarantees for the employee?
 - Sure! Guarantee that the payment of the old-age annuity is life-long!
 - Only the amount is not guaranteed.
- What about longevity risk?
 - Components of longevity risk:

longevity risk

systematic risk –
Cannot be managed by
pooling of individuals.

Life expectancy may increase
stronger than expected
before annuitization.

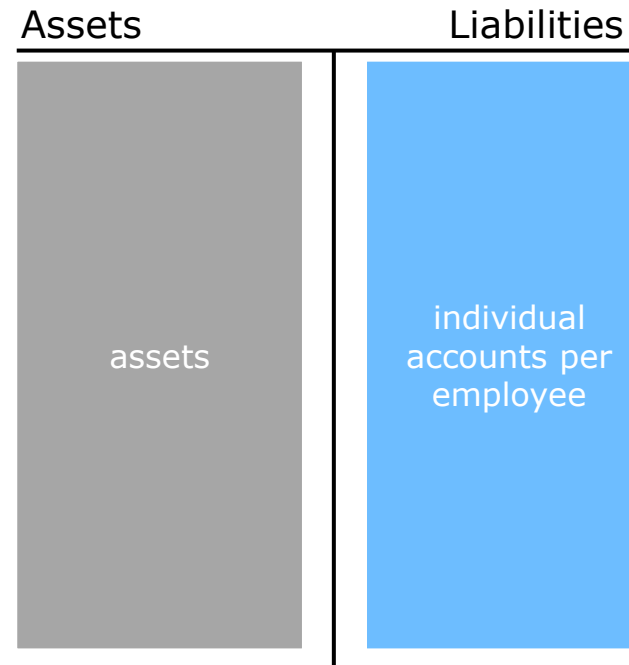
Life expectancy may increase
stronger than expected *after*
annuitization.

unsystematic risk –
can be managed by
pooling of individuals

An individual policyholder by
pure chance lives longer than
her average life expectancy.

Actuary's View: What is DC?

- DC = pay and forget?

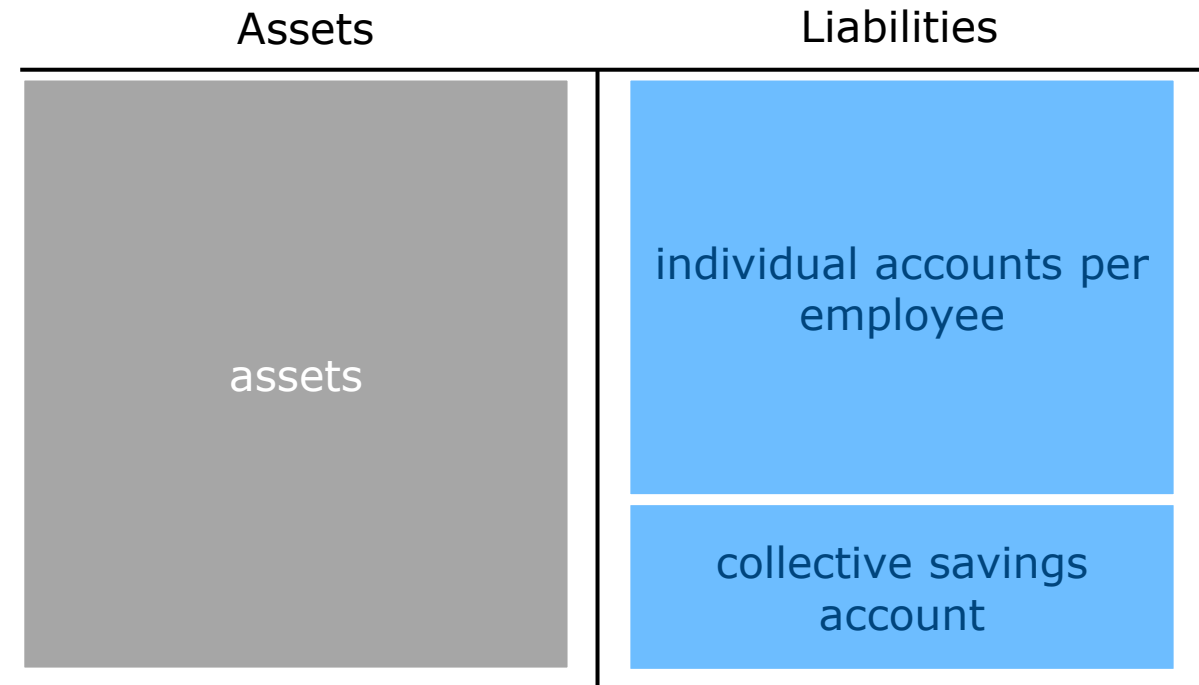


Not as simple as that!

Actuary's View: What is *Collective* DC?

savings phase

- **Element 1: collective savings account**
- During the **savings phase**
 - individual accounts (“planmäßig zuzurechnendes Versorgungskapital”) per employee
 - contributions
 - interest/earnings on contributions
 - in addition possible
 - collective savings account
 - **belongs to all claimants**
 - aim: buffer to smooth employee's accounts
- Two possible variants for Collective DC
 - individual model: sum of assets = sum of individual accounts
 - collective model: sum of assets = sum of individual accounts + collective savings account



annuity phase

Actuary's View: What is *Collective* DC?

- **Element 2: pensioner's collective account**
- during the **annuity payment phase**
 - actuarial reserves = assets
 - Assets determine actuarial reserve for whole portfolio of pensioners. → collective view
 - In contrast to guaranteed annuities where actuarial reserves equal actuarial present value of annuities.
 - Calculation of actuarial reserves in the payment phase like an account:

| |
|---|
| actuarial reserves beginning of year |
| + additional money for new pensioners |
| - benefits paid and administration cost |
| - earned interest |
| = actuarial reserves end of year |

| Assets | Liabilities |
|--------|----------------------------------|
| assets | individual accounts per employee |
| | collective savings account |
| | pensioner's collective account |

Actuary's View: What is *Collective* DC?

savings phase

annuity phase

- **Element 3: additional collective reserve**
- For claimants and pensioners an **additional contribution („Sicherungsbeitrag“)** could be stipulated.
 - Paid by employer.
 - aim: additional buffer function, e.g.
 - Can be used to smooth accounts.
 - additional payment to individual accounts at the end of savings phase
 - Avoid decrease of benefits paid
 - Belongs to claimants and pensioners.
 - amount e.g. 3% of all contributions made by employees

| Assets | Liabilities |
|--------|----------------------------------|
| assets | individual accounts per employee |
| | collective savings account |
| | pensioner's collective account |
| | additional collective reserve |

Actuary's View: What is *collective* DC?

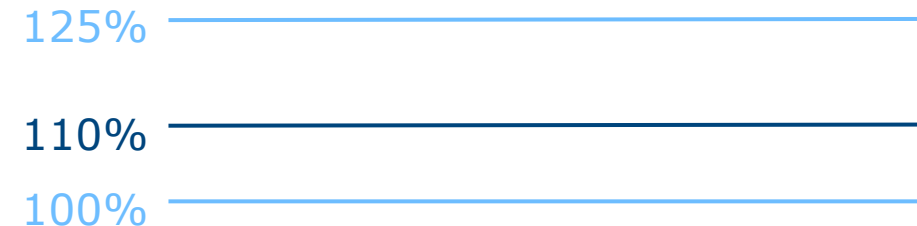
annuity phase

- **Element 4: Admissible corridor for funding level during the annuity payment phase**

| | |
|-----------------------------------|------------------|
| pensioner's collective account | := funding level |
| present value of benefits | |

- calculation of present value of benefits
 - best estimate plus (small) safety margin
 - Esp. reg. interest rate: recognition of asset portfolio (current and planned)
- Funding level is defined for pensioners only.

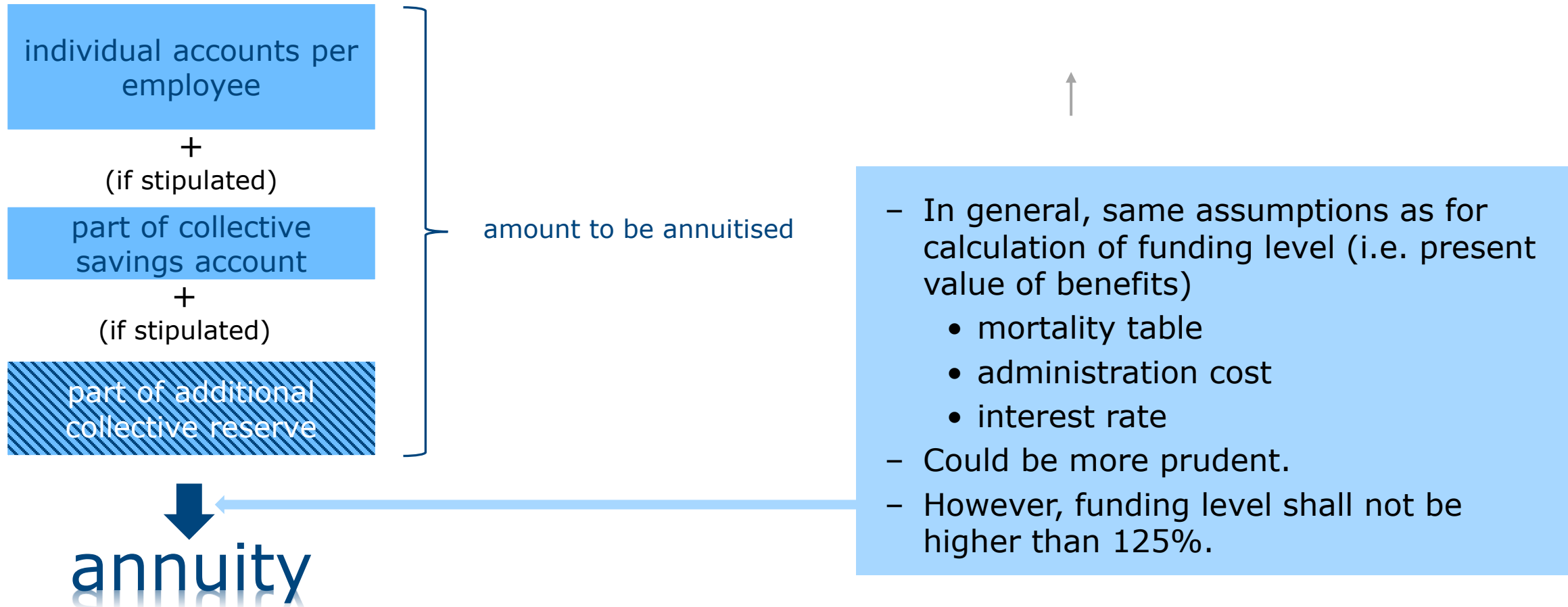
- Funding level shall...
 - ...not be higher than 125%.
 - If so, increase benefits
 - such that afterwards funding level is at least 110%.
 - ...not be smaller than 100%
 - If so, reduce benefits.



- Funding level to be checked at least annually.

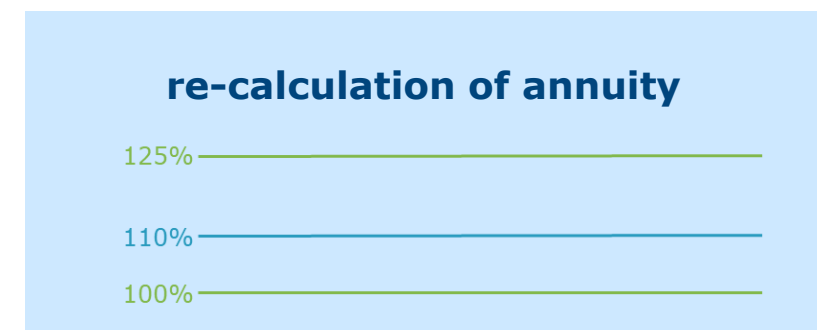
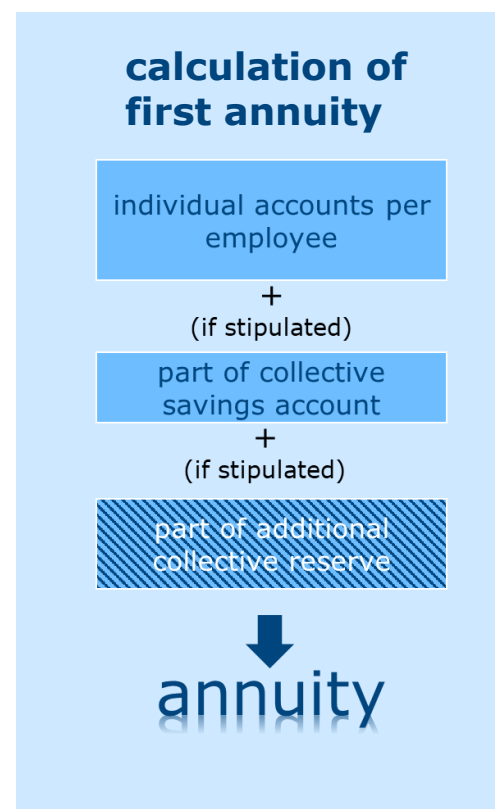
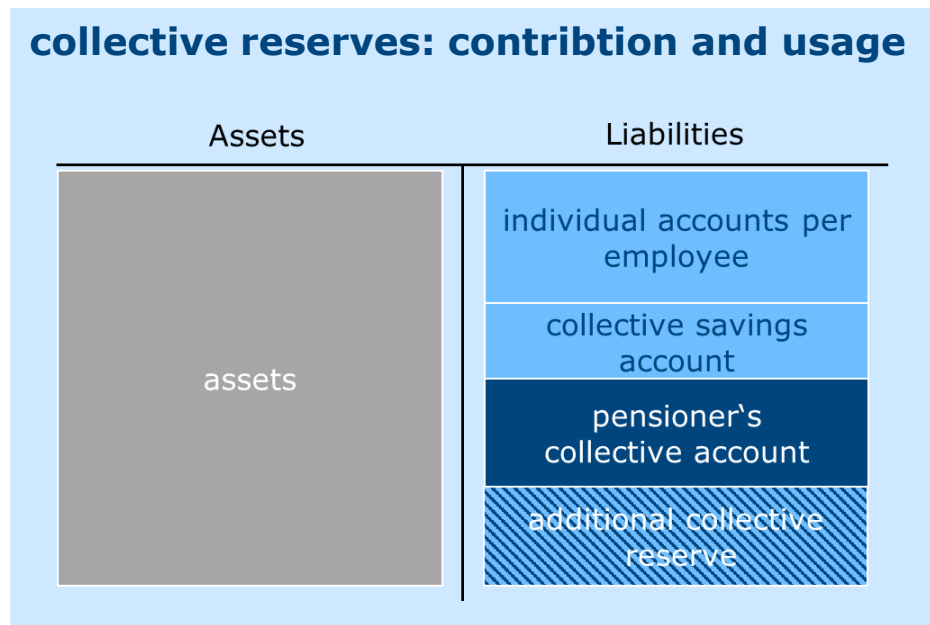
Actuary's View: What's more?

- **annuitisation: calculation of first annuity**



A First Summary

- Collective DC in Germany – more than just the asset allocation to choose.
- Actuary's involvement & creativity necessary in several ways:



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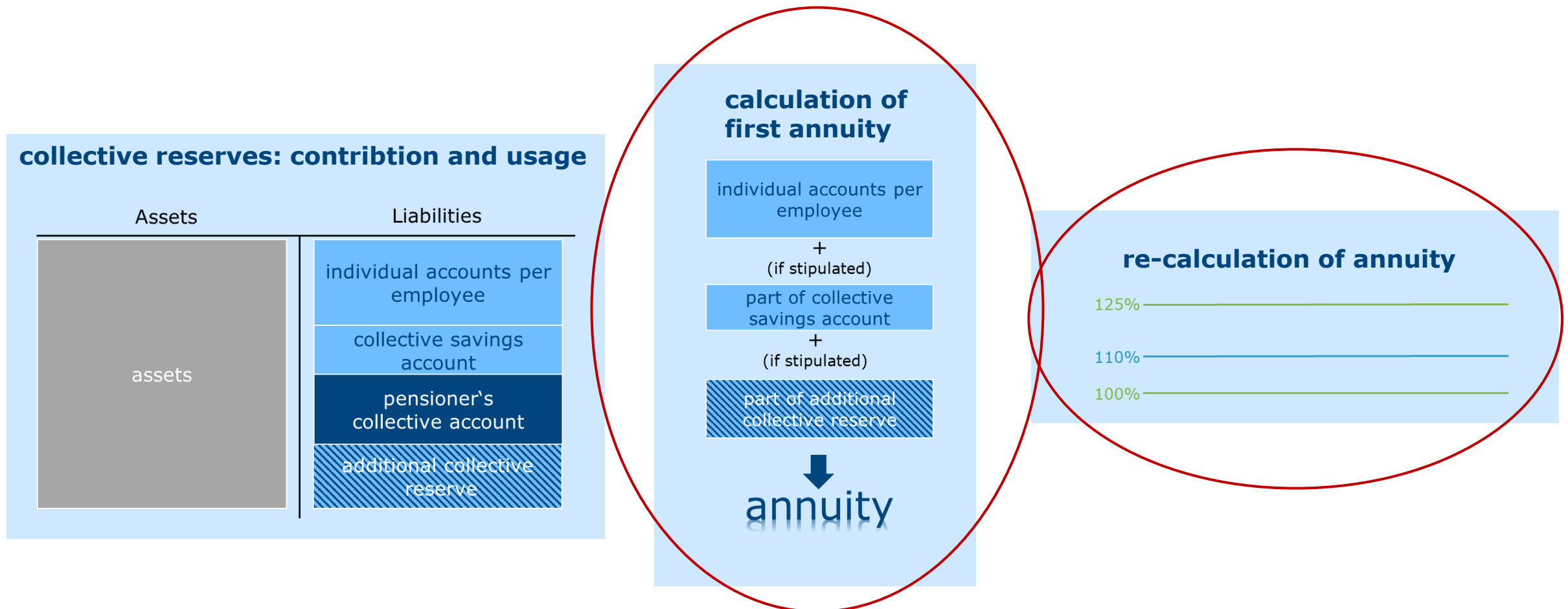
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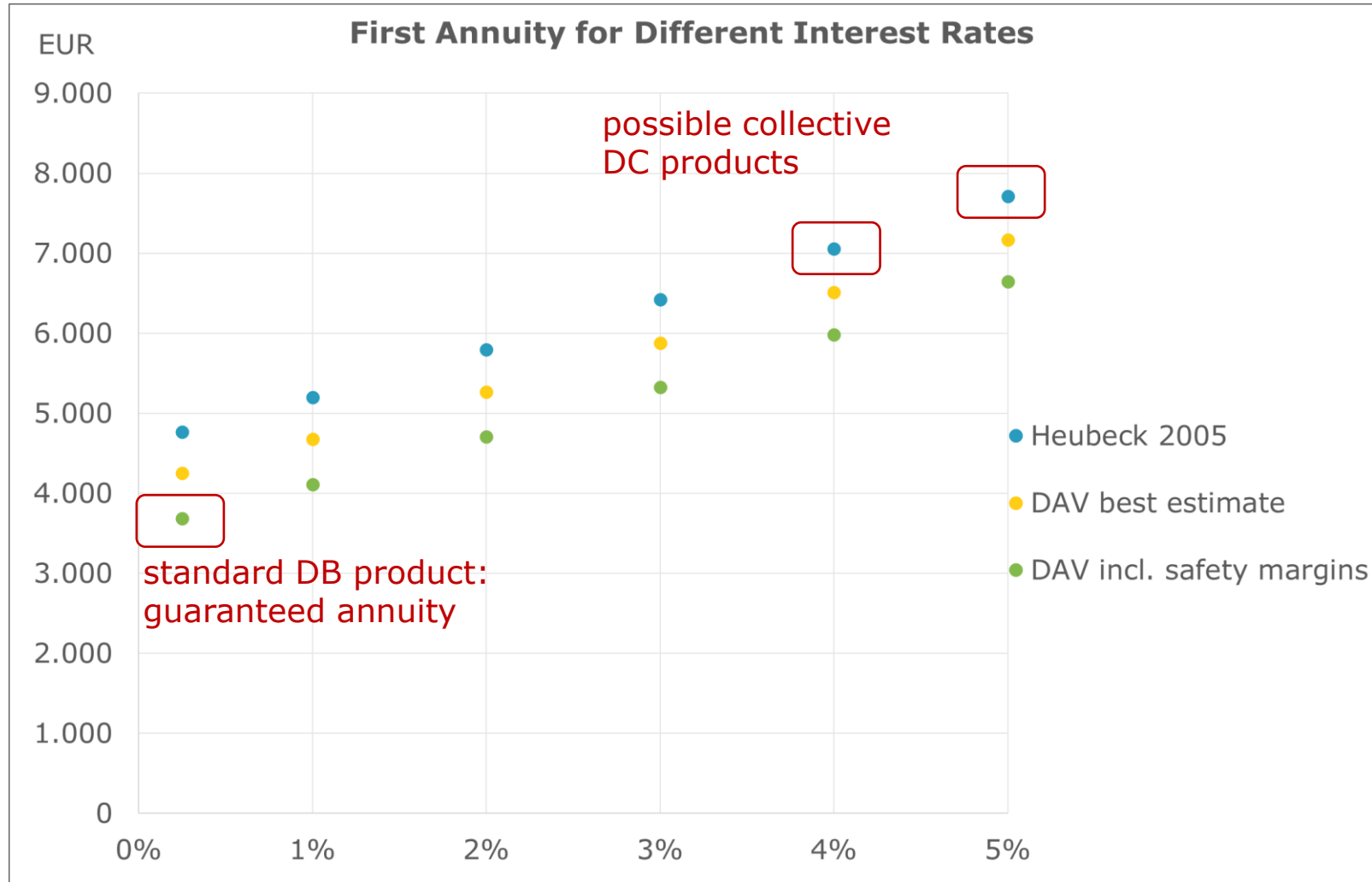
Some examples

Some Examples

- Let's focus on the annuity payment phase!



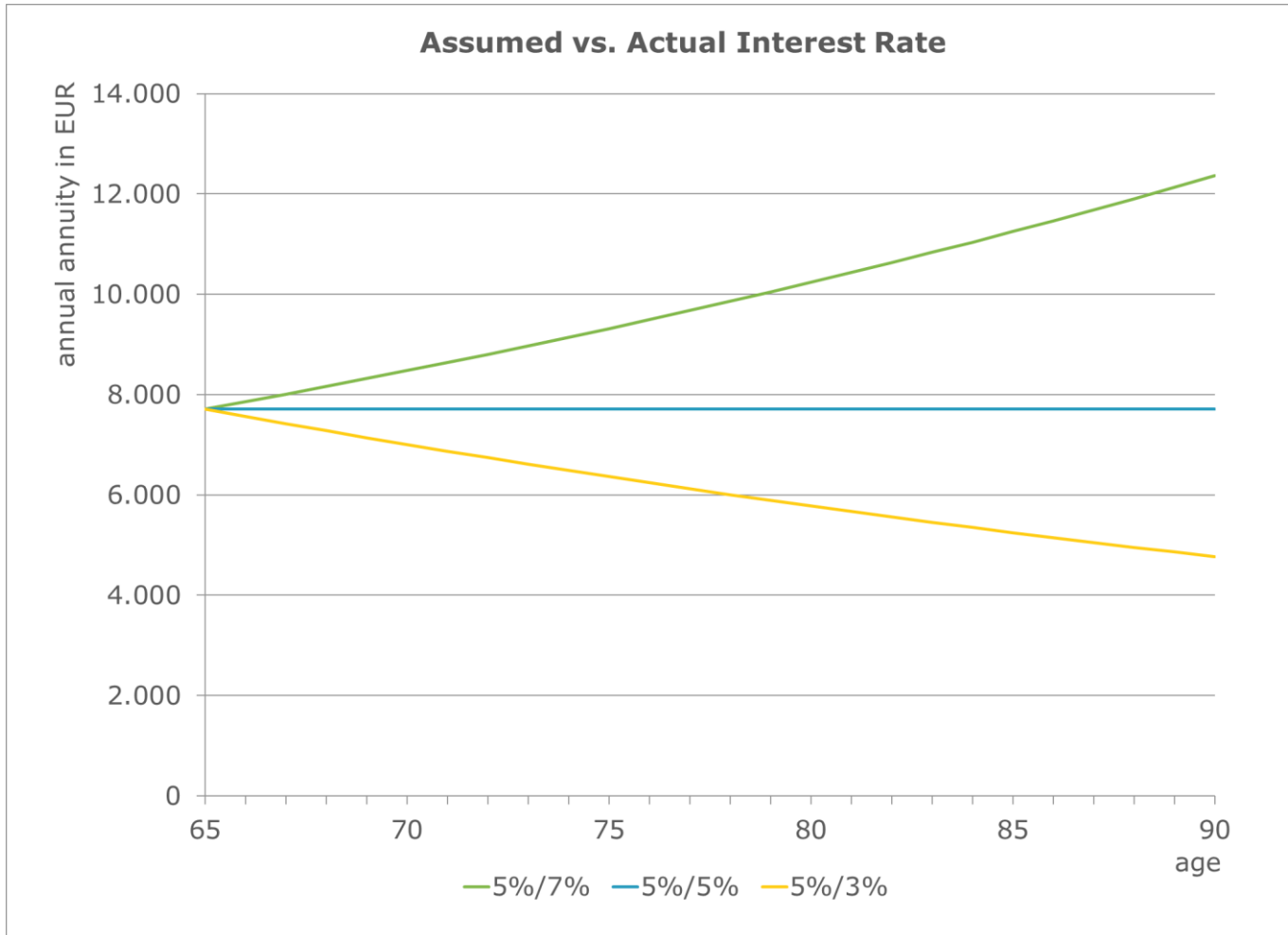
Example 1: Annuitisation



Annual annuity, assuming capital of 100.000 EUR at age 65

- focusing on annuity phase only
- different assumed interest rates (0% to 5%)
- different standard mortality tables in Germany
 - Heubeck
 - occupational pensions
 - best estimate
 - DAV
 - German actuarial association
 - persons with annuity insurance contracts
- First annuity paid within collective DC much higher compared to traditional DB.

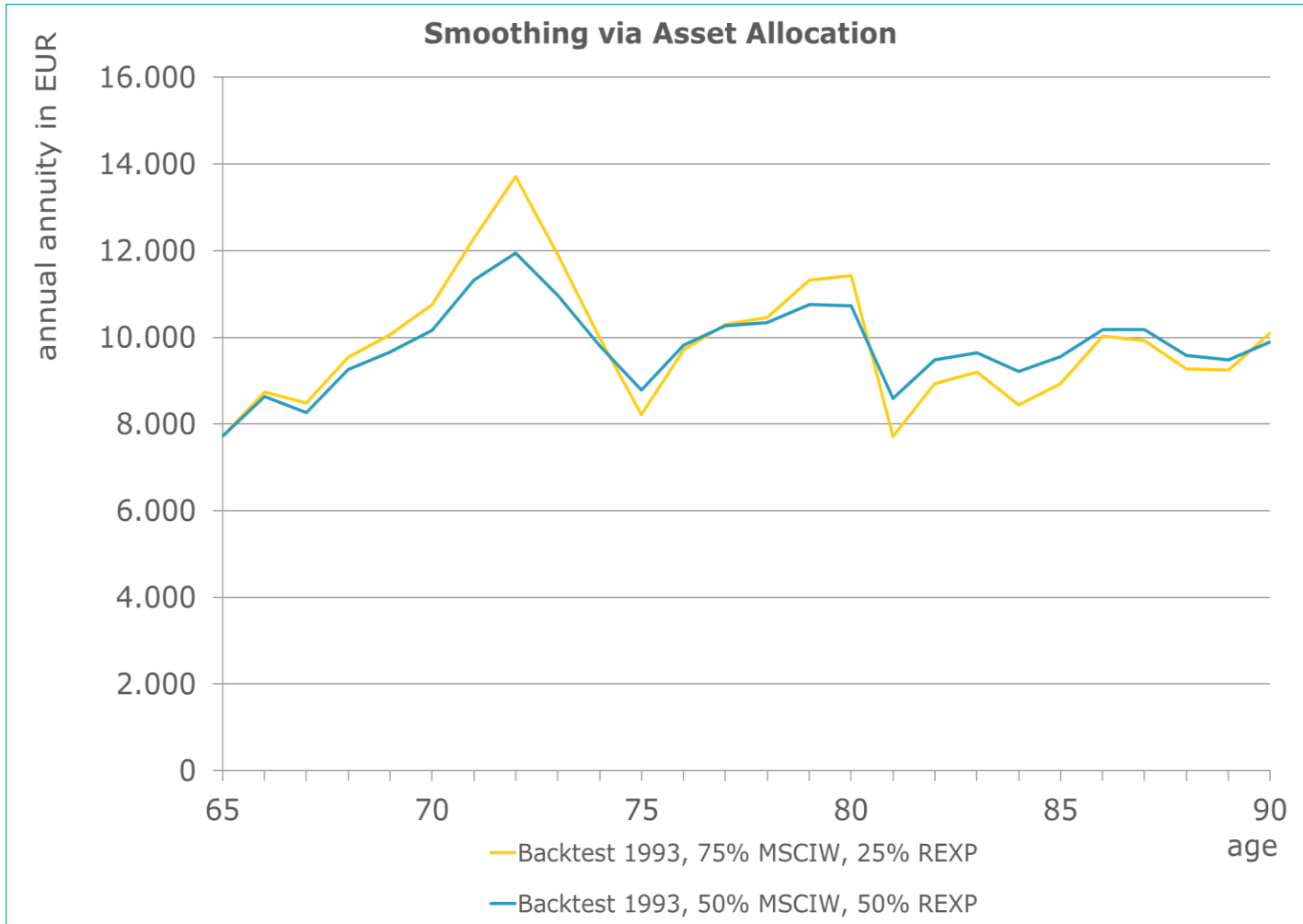
Example 2: Different Actual Interest Rates



Annual annuity, assuming capital of 100.000 EUR at age 65,
assumed interest rate 5%, Heubeck 2005

- **assumed** interest rate for calculation of first annuity: 5%
- **actual** interest rate of underlying asset portfolio during annuity phase:
 - 7%
 - 5%
 - 3%
- In case actual interest rate > assumed interest rate: Annuity increases and vice versa.

Example 3: Smoothing via Asset Allocation



Annual annuity, assuming capital of 100.000 EUR at age 65,
 assumed interest rate 5%, Heubeck 2005

- **actual** interest rate during annuity phase depends on asset allocation.
- Portfolio 75:
 - 75% MSCI World
 - 25% REXP
- Portfolio 50:
 - 50% MSCI World
 - 50% REXP
- Annuity increases/decreases following the development of assets.
- pure DC
- Results of backtest: Portfolio 50 less extreme – smaller increases and decreases → smoothing

Example 4: Smoothing via Corridor

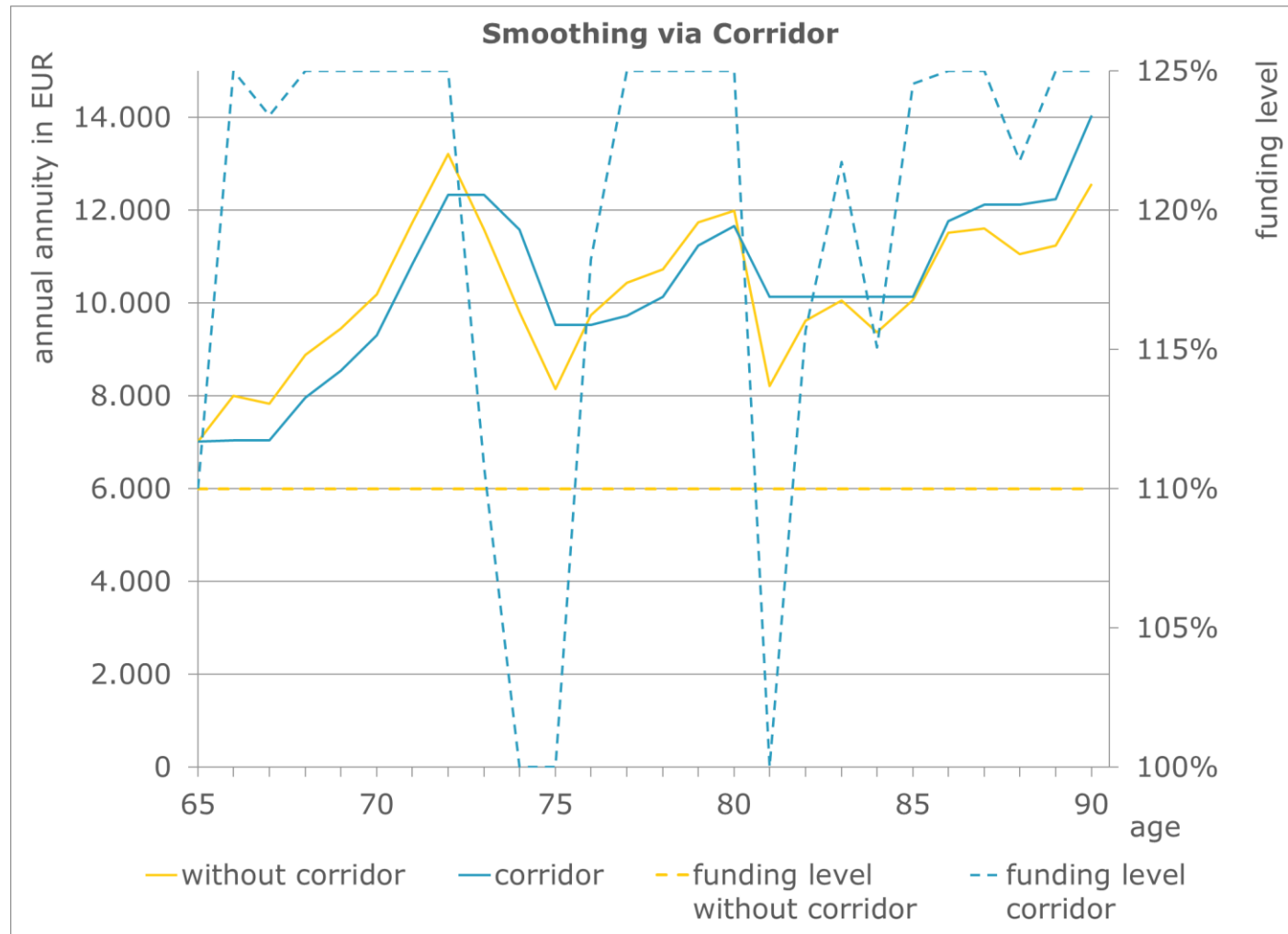
- So far, the corridor for the funding level was not used.
 - Hence, difference between assumptions and actual development does immediately lead to change of annuity.
- Idea: Use corridor for funding level as stated by law.
 - $100\% \leq \text{funding level} \leq 125\%$
 - Reminder regarding increase annuity: Increase such that funding level afterwards is at least 110%.
 - Relevant in the following case:
 - Increase annuity such that funding level is 125%.
 - Decrease annuity such that funding level is 100%.
- Start with buffer to lower the risk to reduce annuities at an early stage.
 - Starting with funding level of 110% decreases the first annuity from 7.714 EUR to 7.013 EUR.

125% —————

110% ◆

100% —————

Example 4: Smoothing via Corridor



Backtest 1993, 75% MSCIW, 25% REXP

- without corridor (**yellow lines**):
 - Funding level constant (110%)
 - Annuity changes constantly (cf. 2 slides before)
- With corridor (**blue lines**)
 - funding level between 100% and 125%
 - Changes nearly annually.
 - **More years with constant annuity.**
- However:
 - Pure corridor not very smooth.
 - Market goes down, but annuity stays constant.
- Possible add-on: Anticipate reduction and start reduction of annuity early (to prepare pensioner).
- Many other options possible.

Conclusion

Collective DC in Germany: More to do than to choose the asset allocation.

German Collective DC during annuity phase similar to annuity pools or tontines.

No standard/benchmarks yet – in fact not a single collective DC working.

What is the future of collective DC in Germany?

- Alternative system do to DB (often year-to-year guarantee even in the savings phase)
- Focus has to be more on the opportunities for higher benefits than on the risk to reduce a (high) benefit.



ifa - What we do

