Collective DC in Germany

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Occupational pensions in Germany

Collective DC in Germany – a brief overview

Recent developments

Actuary’s view

Some examples
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

- 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

Source: Schätzlein, BetrAV 8/2021
Occupational Pensions in Germany: Pension Vehicles

- 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).

Source: Schätzlein, BetrAV 8/2021
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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:

  - Zielrente
  - Target annuity
  - Nahles-Rente
  - Nahles-annuity
  - Defined Ambition
  - Sozial-partner-rente
  - Social Partners Model
  - Poker-Rente
  - Zocker-Rente
  - Pay and Forget
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!**

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

2002

- Guaranteed interest rate 3.25%
- Mortality table DAV 1994 R

- Guaranteed interest rate 0.25%
- Mortality table DAV 2004 R

⇒ 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:

  - **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?

- **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
**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
Actuary’s View: What is Collective DC?

- **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

<table>
<thead>
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<th>Assets</th>
<th>Liabilities</th>
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Collective DC in Germany

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

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

  - 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**

  - Individual accounts per employee
  - Part of collective savings account (if stipulated)
  - Part of additional collective reserve (if stipulated)

  - Amount to be annuitised

- In general, same assumptions as for calculation of funding level (i.e. present value of benefits):
  - Mortality table
  - Administration cost
  - Interest rate

- Could be more prudent.
- However, funding level shall not be higher than 125%.
A First Summary

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

**collective reserves: contribution and usage**

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**calculation of first annuity**

- Individual accounts per employee
- Collective savings account
- Pensioner’s collective account
- Additional collective reserve

**re-calculation of annuity**

- 125%
- 110%
- 100%

**annuity**
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Actuary's view

Some examples
Some Examples

- Let’s focus on the annuity payment phase!

![Diagram showing collective reserves: contribution and usage]

- **calculation of first annuity**
  - individual accounts per employee
  - collective savings account
  - pensioner’s collective account
  - additional collective reserve

- **re-calculation of annuity**
  - 125% _______________________
  - 110% _______________________
  - 100% _______________________
Example 1: Annuitisation

- 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.

Annual annuity, assuming capital of 100,000 EUR at age 65
Example 2: Different Actual Interest Rates

- **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.

Annual annuity, assuming capital of 100,000 EUR at age 65, assumed interest rate 5%, Heubeck 2005
Example 3: Smoothing via Asset Allocation

- **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

Annual annuity, assuming capital of 100.000 EUR at age 65, assumed interest rate 5%, Heubeck 2005
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.
Example 4: Smoothing via Corridor

- 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.
Life
- product development
- biometric risks
- life settlements/TEPs

Non-Life
- product design • pricing
- reserving • DFA
- risk management

Health
- actuarial modeling
- claims management
- portfolio analyses

Actuarial Consulting
- Solvency II • embedded value • asset liability management
- ERM • value- and risk-based management • data analytics
- project management • market entries • inforce management • strategic consulting
- large-scale actuarial projects • actuarial tests
- support in case of capacity constraints

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