ACTUARIAL ASSOCIATION OF EUROPE

Stress testing for IORPs

AAE Joint Meeting of Insurance, Pensions and Risk Management Committees

15 April 2021

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EIOPA Stress Test 2021 for insurers

- Approach - The 2021 Stress Test exercise assess the resilience of the European insurance industry by a capital and liquidity perspective.
- Scope – EU Insurance Groups
- Scenario - focus on a prolonged COVID-19 scenario in a "lower for longer" interest rate environment.
- Working process:

Stress test for IORPs

- Next Stress test for IORPs is expected in 2022
- Current stage:
  - EIOPA is analysing the last results and especially the impact of low interest rate environment;
  - EIOPA wants to improve further its analytical tool set for stress testing IORPs;
  - IORPs have developed strategic investment allocations to mitigate market risk.

Focus of EIOPA is set on:

- Horizontal approach
- ESG

Horizontal approach

- This is primarily about further development of the cash-flow approach.
- EIOPA would like to have a cash flow method that can be applied to both DB and DC, that would work in all jurisdictions and is suitable for both large and small IORPs.
- EIOPA is interested to assess:
  - The effect on sponsors
  - The effect on pension protection mechanisms
  - The effect on members and beneficiaries
  - The effect of an income shock (Unemployment; Sponsor default; Closing fund)
- Liquidity testing is another aim of the horizontal approach.

AAE position

AAE believes that a cash flow approach provides richer information in addition to a valuation and could even replace a balance sheet approach.

Outstanding question:

- How to take ESG on board?

Added value from Cash Flow Analysis

- Can be used for both DB/hybrid and DC (in consistent way
- Can be used for evaluating conditional cash flows
- Cash Flow Analyses common in Member States
- Common and consistent methodology across EU
- Can provide meaningful and recognisable information to stakeholders.
- Improves insights in risks. Promotion sustainable long term financial policy development whilst avoiding short term value destruction.

What do we want to achieve?

Goal of IORP II Directive:
to facilitate the development of occupational retirement savings and to provide sustainable and adequate occupational pensions to the European citizens, allowing both for the likelihood that pension assets will be adequate to meet benefits and that contingency arrangements are adequate in the event of employer insolvency.

Goal of Cash Flow Analysis:
to give information on the likelihood of whether a pension (insurance) promise can be met

Cash Flows and Valuation

- Generating expected cash-flows
- Assumptions (biometric / economic)
- Valuation

Valuation example

Interest rate 2%

year t=	1	2	...	10	11	12	13	14	15	...	51	52	53	54
Pension payment	0	0	...	1000	1000	1000	1000	1000	1000		1000	1000	1000	1000
Probability	0,996	0,991	...	0,932	0,922	0,910	0,898	0,884	0,869	...	0,00042	0,00022	0,00011	0,00005
Expected cash flow	0	0	...	932	922	910	898	884	869	...	0,42	0,22	0,11	0,05
Discount factor	0,980	0,961	...	0,820	0,804	0,788	0,773	0,758	0,743	...	0,364	0,357	0,350	0,343
Value today	0	0	...	765	741	718	694	670	646	...	0,15	0,08	0,04	0,02
Valuation	**11942,45**													

Interest rate 5%

year t=	1	2	...	10	11	12	13	14	15	...	51	52	53	54
Pension payment	0	0	...	1000	1000	1000	1000	1000	1000		1000	1000	1000	1000
Probability	0,996	0,991	...	0,932	0,922	0,910	0,898	0,884	0,869	...	0,00042	0,00022	0,00011	0,00005
Expected cash flow	0	0	...	932	922	910	898	884	869	...	0,42	0,22	0,11	0,05
Discount factor	0,952	0,907	...	0,614	0,585	0,557	0,530	0,505	0,481	...	0,083	0,079	0,075	0,072
Value today			...	572	539	507	476	447	418	...	0,04	0,02	0,01	0,00
Valuation	**6890,13**													

Cash Flow Analysis

year t=	1	2	…	10	11	12	13	14	15	…	51	52	53	54
Pension payment	0	0	…	1000	1000	1000	1000	1000	1000		1000	1000	1000	1000
Probability	0,996	0,991	…	0,932	0,922	0,910	0,898	0,884	0,869	…	0,00042	0,00022	0,00011	0,00005
Expected cash flow	**0**	**0**	**…**	**932**	**922**	**910**	**898**	**884**	**869**	**…**	**0,42**	**0,22**	**0,11**	**0,05**
~~Discount factor~~	~~0,980~~	~~0,961~~	~~…~~	~~0,820~~	~~0,804~~	~~0,788~~	~~0,773~~	~~0,758~~	~~0,743~~	~~…~~	~~0,364~~	~~0,357~~	~~0,350~~	~~0,343~~
~~Value today~~	~~0~~	~~0~~	~~…~~	~~765~~	~~741~~	~~718~~	~~694~~	~~670~~	~~646~~	~~…~~	~~0,15~~	~~0,08~~	~~0,04~~	~~0,02~~
~~Valuation~~	~~11942,45~~													

Analyses that have been suggested by TF in 2019 :

1. Internal Rate of Return (example):
   - IRR < 4%: OK
   - IRR > 7%: measures needed
   - 4%<IRR<7%: discuss

2. Composite measure:
   - Time to “running out of money” (default);
   - Amount of shortage;
   - Probability of default.

AAE supports further development of a cash flow approach

- AAE's position is that all cash flows that are (implicitly) included in a valuation have to be part of a cash flow analysis (no reduction in information)
  - Remark: In the last stress test there was no explicit cashflow from investment. Assets were considered as an "balance sheet position", which compromised assets returns and use of assets. This could be split into two cash flows, returns and use of assets, and a third column with time value of assets to check the amount used. Within this model the shock scenarios are not limited to be applied only in the first year. And we have more insights for risk management.

Separate analyses of accrued liabilities and future accrual

AAE's position is that the effects of the further development of membership and new accrual is important to include in the analysis of stress test. To understand the results in a better was, both analyses should be separated. Cashflow without new accruals and a separate assessment of further accruals. A horizon of 15 to 20 years is what the AAE believes a maximum in order to show meaningful results.

- The analysis of just one year of new membership and accrual can already deliver important insights as to the sustainability of the financial position of the IORP. A "one year approach" could be considered as a measure in the light of proportionality.

Intergeneration balance

AAE believes that it is important to assess the impact of stressed scenarios on generations

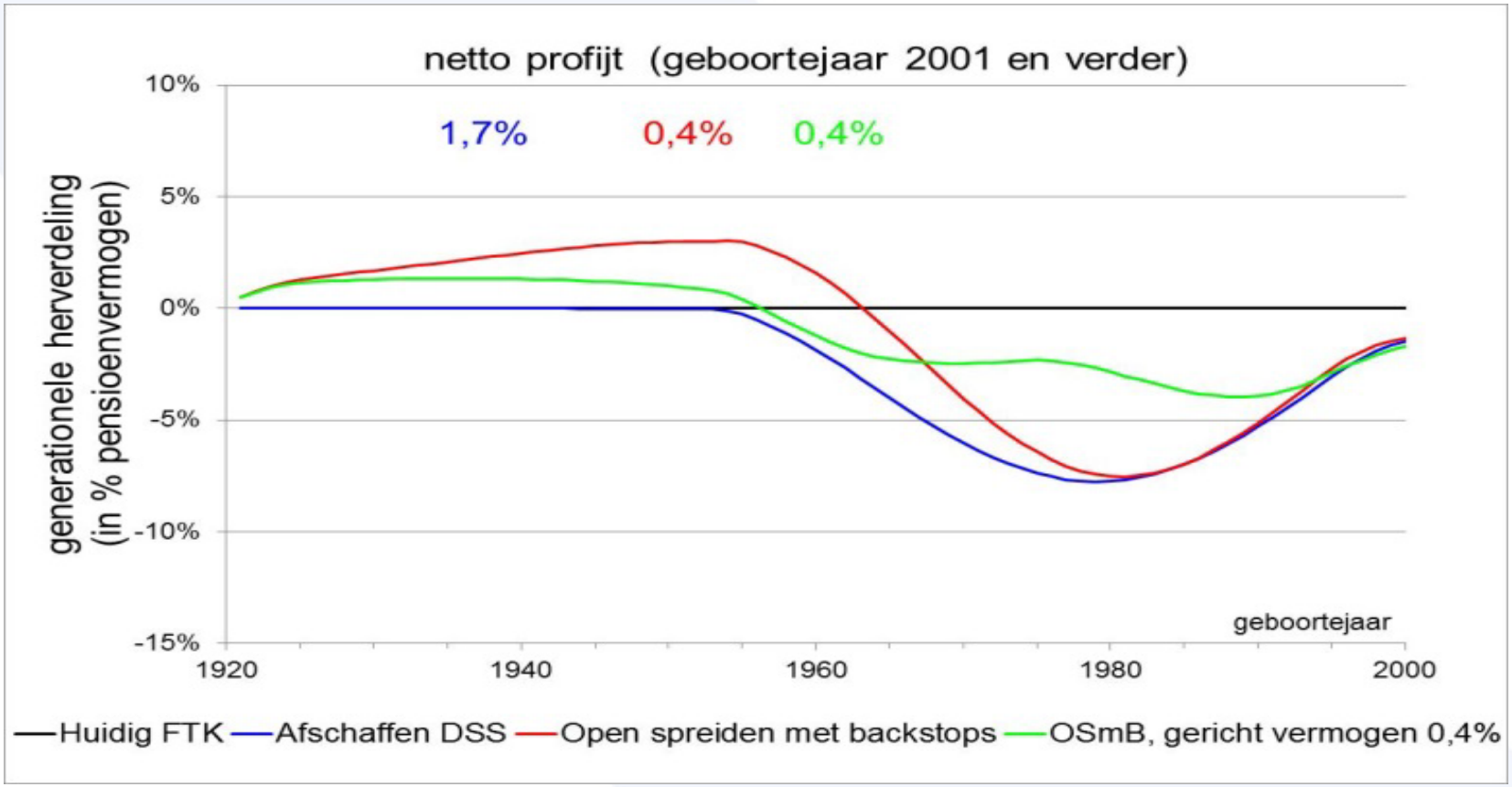
- Confirmed by Art 7 IORP Directive: *"… As a general principle, IORPs shall, where relevant, have regard to the aim of having an equitable spread of risks and benefits between generations in their activities."*

- Assessment of the generational impact due to policy change in pension or changing economic environment (stressed scenarios)

- Actuaries can support highlighting the impact of a stressed scenario on different generations and make suggestions as to how imbalances can be remedied. It is to employees and employer representatives to discuss and decide what actions are needed, if any.

intergenerational balance: a Dutch example

Assessment of the generational impact due to policy change in pension.



Source: paper is published by CPB Netherlands Bureau for Economic Policy Analysis

Possible extensions of CFs' Analysis

- Focus on subcategories members
  - Distribution shock across generations/cohorts, benefits representative plan members
- ESG
  - Possibly implies richer scenario (persistent/developing shock, e.g. development impact global heating by 2° over time)
- Stochastic approach gives more realistic assessment than deterministic one.
- Preferably one set of calculations based on national standards for various purposes

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