Social protection at CERN
CERN Pension Fund

CERN Pension Fund – Story of Successes and Challenges

SA Seminar, June 24th 2025

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Outline

- General Information
- History
- Statistics and Status
- Investment and Results
- Active Working Groups

CERN Pension Fund General Information

The purpose of the CERN Pension Fund

Article I 1.01 *The purpose of the Fund is to insure its members and beneficiaries as well as the members of their families* against the economic consequences of the disability and old age of its members and of the death of its members and beneficiaries.*

*Pursuant to a decision of the CERN Council on 17 December 2015, legally registered partnerships are treated as to marriage in determining family rights and obligations within the CERN pension scheme as from 1 January 2016.

CERN Pension Fund

As international organisations, CERN and ESO operate their own social security system, including a pension scheme, the CERN Pension Fund.

Defined benefits

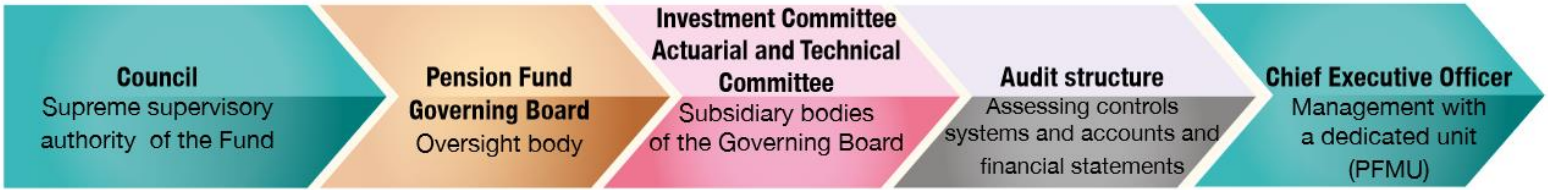
Benefits are promised by CERN at recruitment. Pensions depend on years of membership and reference salary. Not affected by the market volatility.

A solidarity scheme

No member has an individual balance. All benefits are paid from a common fund. Members support one another by **pooling resources and risks.**

Pension Fund - Introduction

- Governance



- The Fund is an integral part of CERN, has no separate legal personality and is under the supreme authority of the Council.

- The oversight of the Fund shall be entrusted to the Governing Board, assisted and advised by the Investment Committee and Actuarial and Technical Committee. The management of the Fund shall be entrusted to the Chief Executive Officer.

Governance Arrangements for the Pension Fund

CERN Council	The Supreme Authority: defines the Pension Fund and its arrangements; acts as ultimate oversight body and approves significant policies or changes. Contributions & benefits: the Council acts on recommendations from the Director-General.
Governance principles	Set out how the Fund is governed.
Governing Board	Primary oversight body. Includes professional (independent) members and representatives from all key stakeholder groups. Meets quarterly to review performance of the Pension Fund.
Investment Committee	Sub-committee (of PFGB) responsible for oversight of investment strategy and related matters. Comprised of two PFGB members and two external professional experts with substantial technical expertise.
Actuarial & Technical Committee	Sub-committee (of PFGB) responsible for oversight of actuarial matters. Includes two PFGB members and three external experts with relevant qualifications and experience.
Chief Executive Officer	Legal representative of the Fund. Analogous to CERN Department Head. Responsible for the Management Unit and all delegated activities of the Fund.

Governance Principles

1 The Fund is an integral part of CERN, has no separate legal personality and is under the supreme authority of the Council. The activities of the Fund are part of the official activities of CERN and benefit from privileges and immunities.

2 The Fund has operational autonomy within CERN and shall be managed in accordance with its Rules and Regulations. The Director-General shall have no responsibilities with respect to the management of the Fund.

3 The assets of the Fund shall be held separately from those of CERN and shall be used solely for the purpose of the Fund. Neither CERN nor ESO shall reclaim, borrow or impose a lien upon the assets of the Fund.

4 The oversight of the Fund shall be entrusted to the Governing Board, assisted and advised by the Investment Committee and Actuarial and Technical Committee. The management of the Fund shall be entrusted to the Chief Executive Officer.

Pension Fund Governing Board (10)

CERN Council (2)

ESO Council (1)

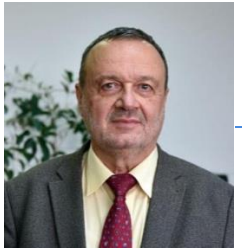
Ex officio (1)

Professional members (2)

CERN Staff Association (2)

ESO Staff Association (1)

GAC-EPA (1)

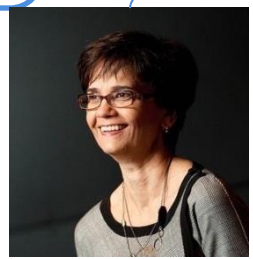


F.Buzatu, Chair

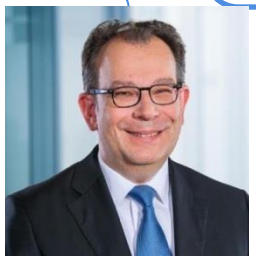
C. Biino

T. Groffmann

R. Bello, IC Chair



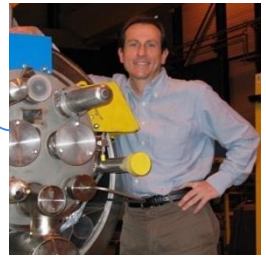
J. Segars, ATC Chair



A. Hilka

P. Charpentier, ATC Member

O. Capatina, Vice Chair



V. Parma, IC Member

A. Delorme

The Pension Fund Management Unit (PFMU)

- Strong and stable leadership of the PFMU provides consistent strategy and beneficiary experience.

Doug Heron
Chief Executive Officer

Elena Manola-Bonthond
Chief Investment Officer

Kandy Mitchell
Chief Operating Officer

	Doug Heron	Elena Manola-Bonthond	Kandy Mitchell
PFMU since	2021	2012	2011
Finance (years)	25	13	25+
Qualifications	Accountancy (CGMA) Investments (MCSI)	PhD, MBA, Investments (CAIA)	Accountancy (CA)
External Boards	2 (UK PF + IO PF)	5 (IO PF + 2 x IO Inv Co + CAIA + Standards body)	
Team		• Team of 17 managing investments • 6 Portfolio Managers • Av experience: 20 years • Quals: PhD, CAIA, CFA, MA • Experience: Barclays, Reuters, Bank of China, BNP, Pictet, Bank of New York, Deutsche Bank, Bank of England	• 5 Benefits Services specialists • 4 accountants • Av Experience: 20 years • Experience: Barclays, UN Joint Staff Pension Fund, Deloitte, CTF Audit, BNP, Real Estate agencies, PwC, Deutsche Bank

The Pension Fund: Strategic Partners

AON (CH)

Actuarial Services
Valuation of liabilities

Northern Trust (UK)

Asset Safe Custody

UBS (CH)

Main Banker
Payments

Apex (IRE)

Investment back-office services

Ortec (CH)

Risk Consultant
Advise on investment risk

Portuguese Court of Auditors

External Auditor
Review annual accounts

CERN / PwC (UK)

Internal Auditor
Perform internal audits

CERN Pension Fund History

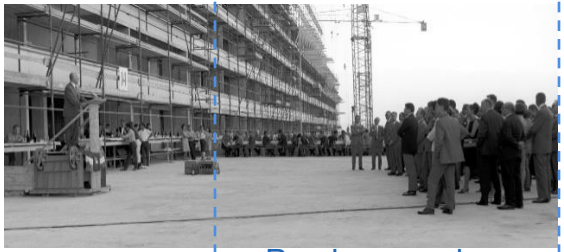
History

1955-56

CERN set up a pension fund to provide social protection for CERN personnel

1964

Purchase and construction of residential building in Grand Saconnex



1967

First retirement pension paid

1971

First ESO members join the Fund

1975

1980

Annual benefit payments of 5 MCHF

1990

Assets of 1 843 MCHF

2000

Average age of retirees and surviving spouses was 68 years

2017

Provided benefits to those based in 48 countries around the world

Today

4 430 members

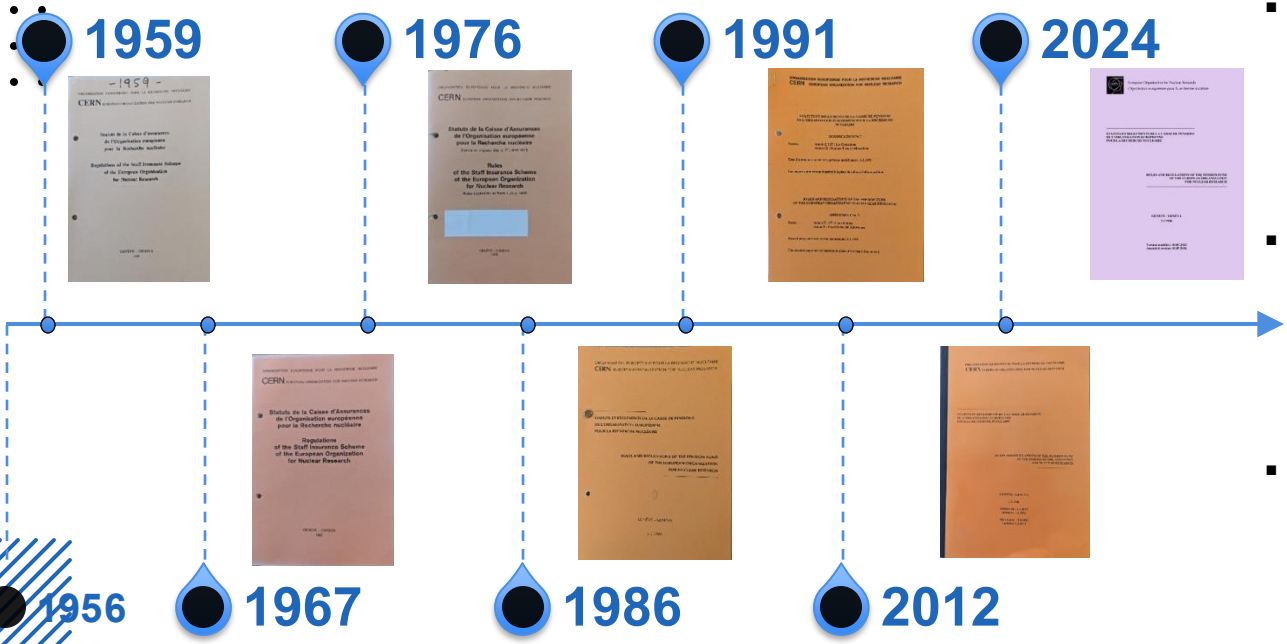
3 700 beneficiaries

332 MCHF benefits paid

4 622 MCHF in assets

Average age of beneficiaries is 75 years

Looking back over seven decades…



- First set of (provisional) Regulations dated 1 June 1956 - substantially the same purpose as today
- Founded as an insurance scheme with separate pension and provident (savings) sections – membership required medical examination and had an upper age limit of 55
- Over the years the PF has evolved with modifications to rules, benefits and contributions to reflect changing conditions inside and outside of CERN
- Today it is a comprehensive system of insurance against the financial consequences of death, disability and old age; supported by best practice standards of governance and providing coverage to 7’500 members and beneficiaries

Terms and conditions applicable to pensions

Parameters	1956-1976	1976-1980	1980-1987	Pre-2012	From 2012
Legal retirement age	65 years M 62 years F	65 years (no reduction after 60)	65 years (no reduction after 60)	65 years (reduction until 65)	67 years (reduction until 67)
Contribution rate	21% basic salary	21% basic salary	21% basic salary until 1985 22% ref. salary	1995 30.00% 2000 30.37% 2005 30.88% 34% ref. salary	31.60% reference salary
Division CERN - Employee	2/3 – 1/3	2/3 – 1/3	2/3 – 1/3	2/3 – 1/3	60% – 40%
CERN Contribution	14%	14%	14.33%	22.67%	18.96%
Accumulation rate	2%	2%	2%	2%	1.85%
Maximum retirement	30 years to 60% 33 years from 1968 to 60%	35 years to 70%	35 years to 70%	35 years to 70%	37 years 10 months to 70%
Pensionable reference salary	Average salary over the last three years	Last salary since 1967	Last salary	Last salary	Average salary over the last three years

Some milestones from the history…

- **1980-1985** Revision of Pension Fund. Active participation of the SA
  - RESCO working group: CERN pension are lower than those of comparable European institutions due to the taxation and family allowances (CERN/1349);
  - Increase in pension entitlements (i.e. pension related to the reference salary instead of the basic salary). Retroactive payments ("*rappel de cotisations*") were requested from active and retired staff as well as the Organization (without the total equivalent of the cumulative capital return) to benefit from the new pension entitlements; Major SA achievements
  - Proposals by CERN management to change to a budgeted system refused by Member States in 1980, proposal to create a debt to the Pension Fund instead.
  - **1987** Re-introduction of reduced pension entitlements in case of early retirement for newly recruited staff
- **1991** Award of additional periods of membership in the Pension Fund to shift-workers. SA achievement
- **1990-1995** Contributions increase in various steps to 30% of reference salary, i.e. an increase of the contributions of the currently and future active members is used to reduce the technical deficit created previously by too low contributions and implied shortfall in net capital returns
- **1996** Guarantees for the pensions of the CERN personnel in the event of the dissolution of the Organization. Major contribution from the SA
- **1996** Study of the calculation of the transfer value and purchase of additional years of membership of the Pension Fund. Proposed by the SA

Some milestones from the history…

- **1998-2001** Compensation to the Pension Fund for the early departure and for the reduction of the active membership (CERN/FC/4074). Major SA achievement
- **2001** Modification of the Rules and Regulations of the Fund (CERN/FC/4511): award of a deferred retirement pension after five years of service (instead of ten years)
- **2005** Equilibrium package – Introduction of partial indexation depending on the funding ratio (CERN/FC/4993)
- **2005** Amendments to the Rules of the Pension Fund - Family Composition. Purchase of surviving spouse pension for marriage of a beneficiary (CERN/FC/4995)
- **2007** Report Levaux: change in the CERN PF governance. Introduction of PFGB in its current form (CERN/2733)

  - The SA preferred the previous composition of the PFGB with direct elections of members and alternates since it provides training period for the alternates.

  - The SA formally opposed the 6 years limit since it makes difficult to find PFGB members with experience in the financial matters

Pension Fund Deficit

- **2010** Pension fund deficit. Analysis of the structural causes (CERN/FC/5415/RA). The SA has expressed its worries on many occasions.

On 31 December 2008, the funding deficit of the CERN Pension Fund (defined as the difference between assets and liabilities) stood at 2.1 Billion CHF.

Past Major Council Decisions Affecting Benefits Granted to Participants. **Estimated Impact (BCHF)**

- 1967 Inflation adjustment of pensions - 1.0
- 1967 Pension based on last salary - 0.2
- 1976 Retirement at 60 without actuarial adjustment - 1.1
- 1976 Increase maximum pension from 60% to 70% of last salary - 0.8
- 1982 Introduction of allowances and complementary pensions - 0.4
- 1986 Introduction of reference salary - 0.5
- 1986 Introduction of fixed sum for surviving spouse negative (difficult to calculate)

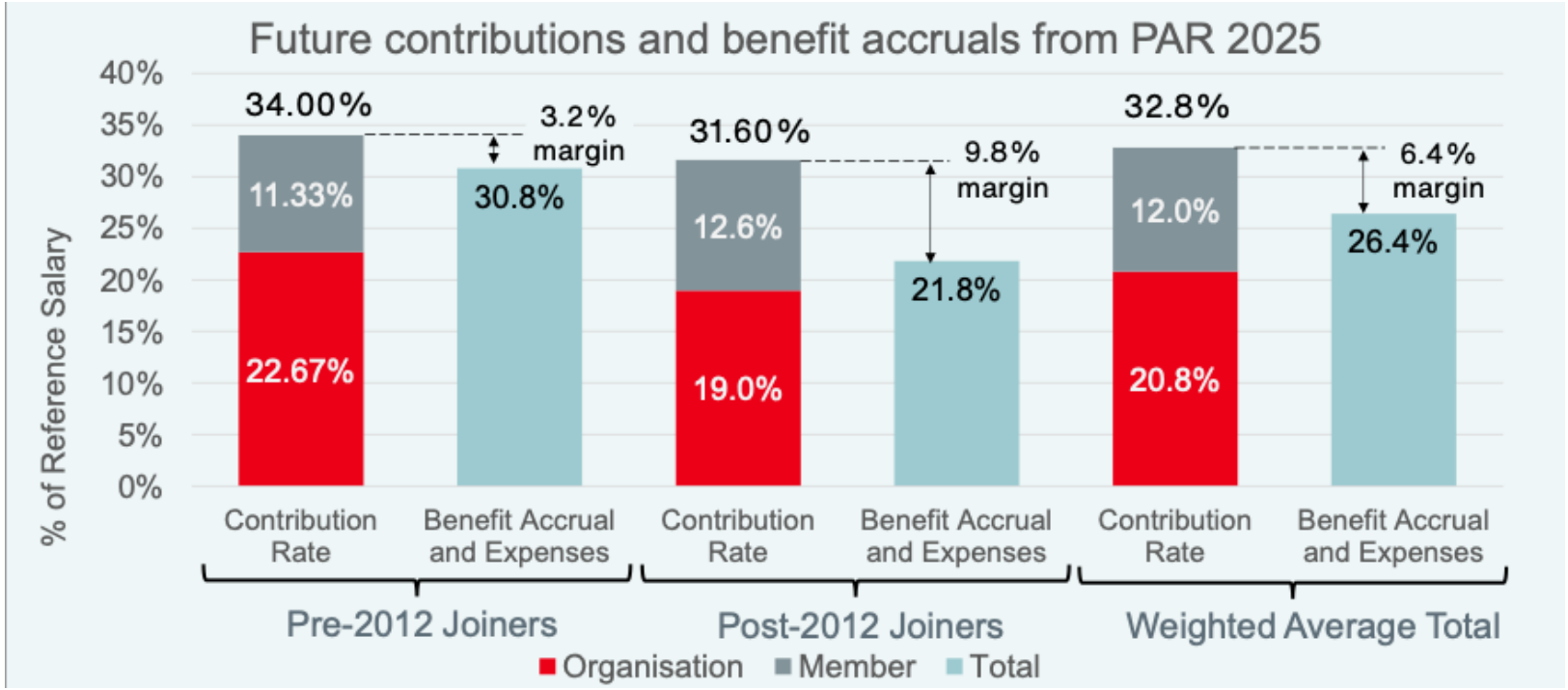
Note: the estimated impacts are not additive due to overlap effects. The estimates correspond to the effect on 2008 liabilities should the decision be reversed.

Without the introduction of recovery measures the deficit of the Fund is forecast to increase by some 80 MCHF per year for the next 5 years. In the same context it is foreseen that the funding ratio will decline to 15.4% in 2033, and that the fund will have run out of money by 2038.

Package of Measures 2010-2012

- **2010** WG2 Report. Proposals:
  - Increase in contribution rate by 3.12 percentage points from 30.88% to 34%.
    Impact: average of +15.5 MCHF/year over 30 years
  - Introduction of a mechanism by which Member States would retrocede to the Fund a percentage of the taxes levied on CERN pensions. Actively promoted by the SA
    Impact: average of +45.3 MCHF/year over 30 years
  - Creation of a buffer fund supported by special contributions from Member States.
    Impact: average of +53.3 MCHF/year over 30 years
- **2010** The measures adopted in December:
  - For members recruited before 2012: increase in contributions from 30.88 % to 34 % of the reference salary (1/3 staff, 2/3 Organization).
  - For beneficiaries recruited before 2012: freezing of pensions up to a cumulative individual loss of purchasing power of 8 %.
  - For the Organizations: additional special contributions until full capitalisation is reached. CERN 60 MCHF/year, ESO 1.3 MCHF/year
- **June 2011 and March 2012** new pension conditions for members recruited from 2012.
  - The SA opposed to the significantly worse conditions for new members

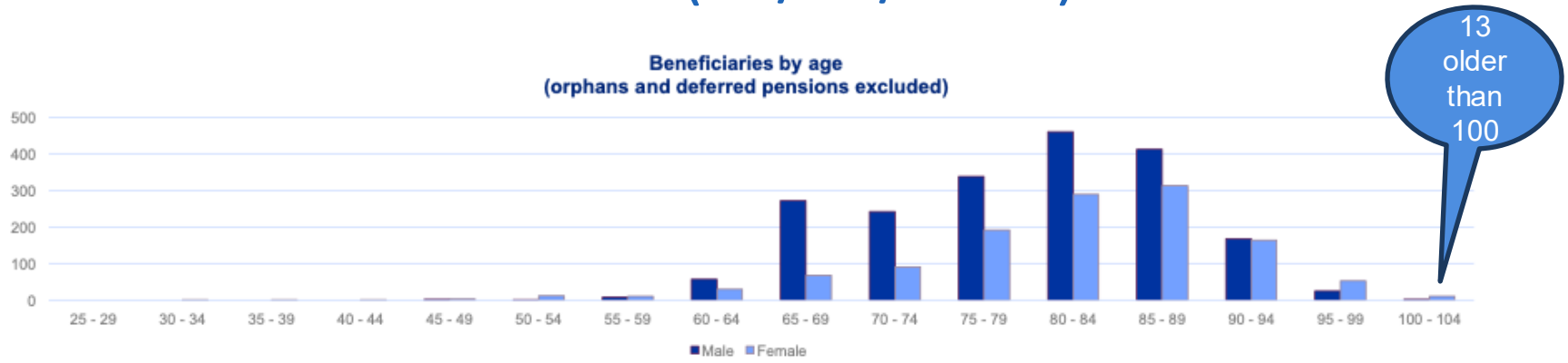
Package of Measures: Effect

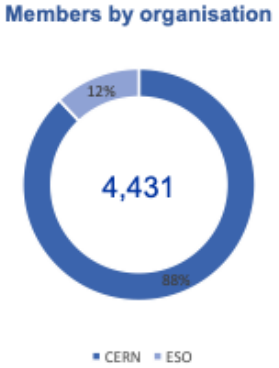


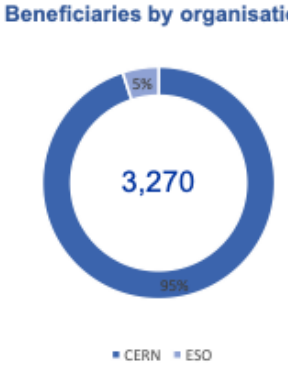
The value of expected new benefit accruals and expenses as % of reference salary is lower than the average contribution rate to the Fund. This means there is a net positive effect to the Fund from providing ongoing benefits to members compared to the contributions received.

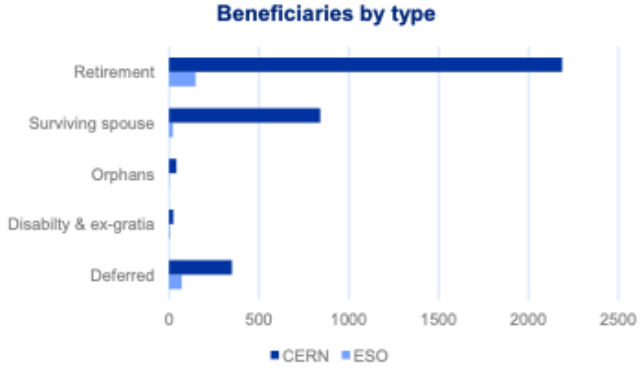
CERN Pension Fund Statistics and Status

Statistics (01/01/2025)



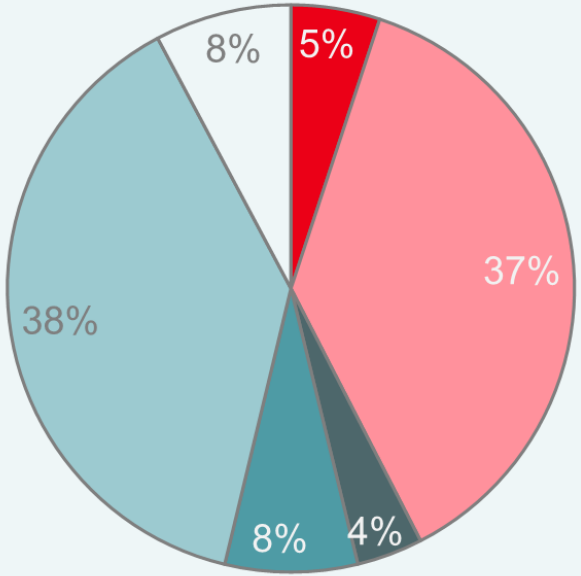




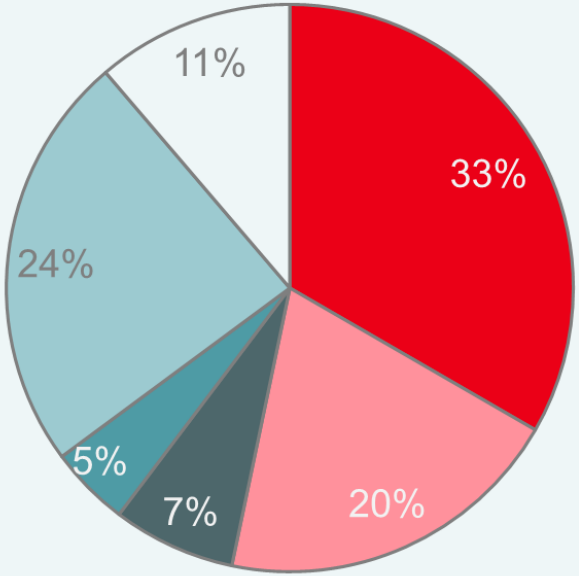


Membership at 1 January 2025

These charts reflect the benefit obligations and membership splits at a specific point in time. It is expected that these proportions will evolve over time given new entrants, withdrawals, transfer value payments, and mortality expected for each category.



Benefit Obligation



Membership Count

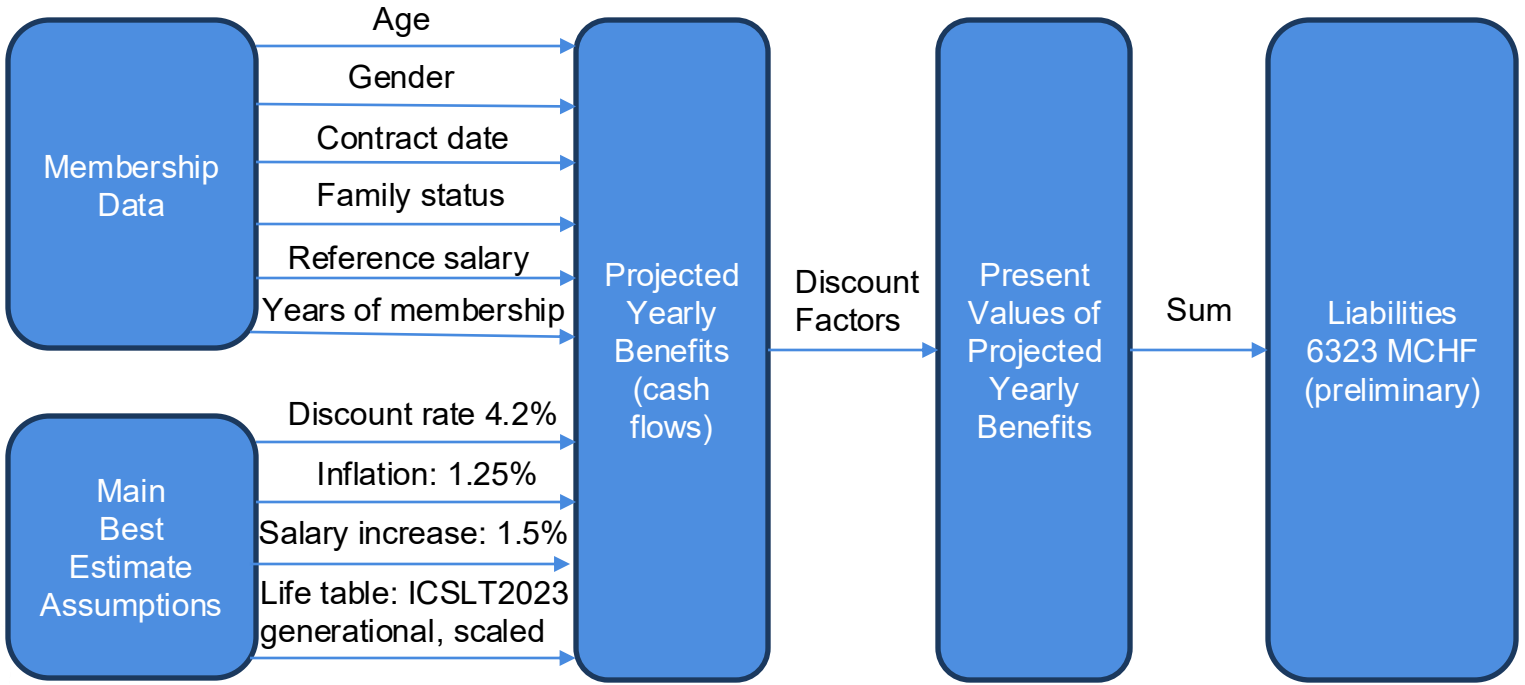
- Members (post 2012)
- Members (pre 2012)
- Deferred Pensions
- Retirees (post 1987)
- Retirees (pre 1987)
- Disabled, spouses and children

Total benefit obligation: CHF 6,323 million at 1 January 2025

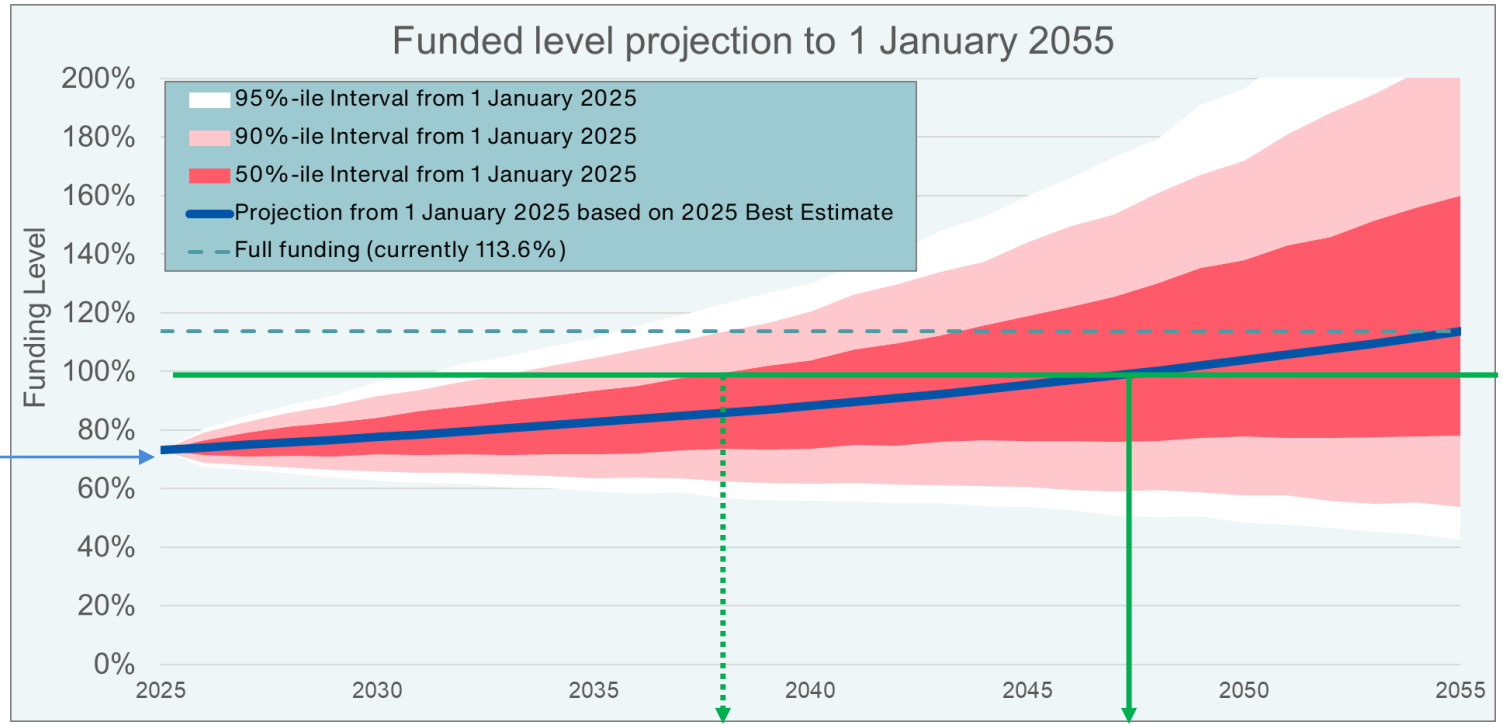
Total membership count: 8,246 at 1 January 2025

Actuarial Calculations: Some details

Assets: calculated using their market value or independent valuation in case of illiquid classes (real estate, private equity). 4620 MCHF



Funded level = Assets/Liabilities



73.1%

Full Funding = 100% + Fluctuation Reserves
Fluctuation Reserves depend on the investment strategy (expected return and risk (CVaR))
Large extrapolation error (solid green – extrapolation, dashed green – one sigma away)

Investment and Results

Asset Classes

Cash

Diversification, synthetic assets, derivatives, pensions

Precious metals

•Store of value, diversification of risk

Hedge Funds

•Risk management; access to uncorrelated returns through active management

Private Equity and Venture Capital

•Access to early-stage capital growth with a premium for complexity and risk

Real Assets

•Real estate, timber, infrastructure: Store of value, stable income and protection from inflation

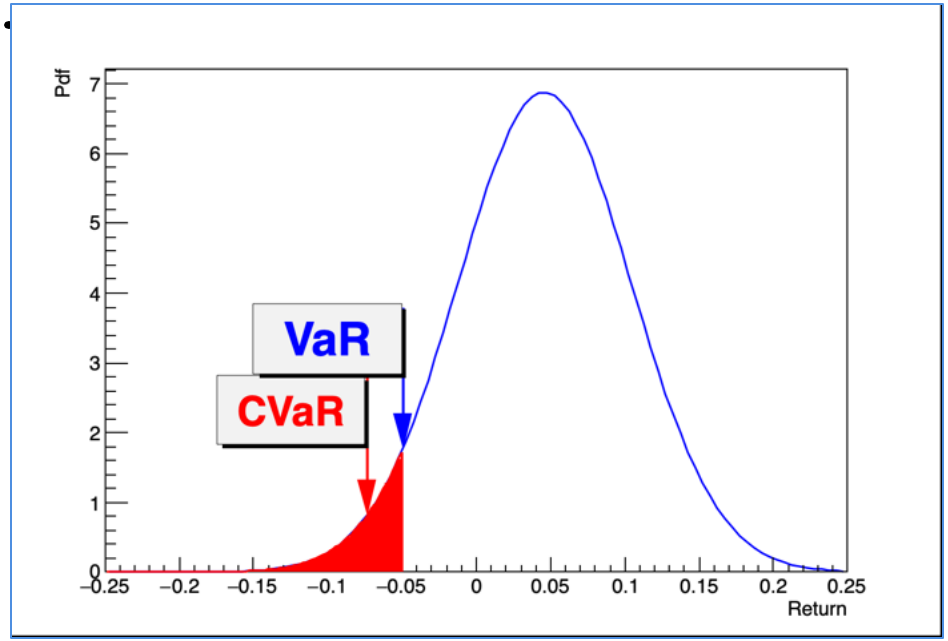
Equities

•Access to capital growth and income from corporate profits

Fixed Income

•Benefit of liquidity, with premium over cash deposits for limited default risk

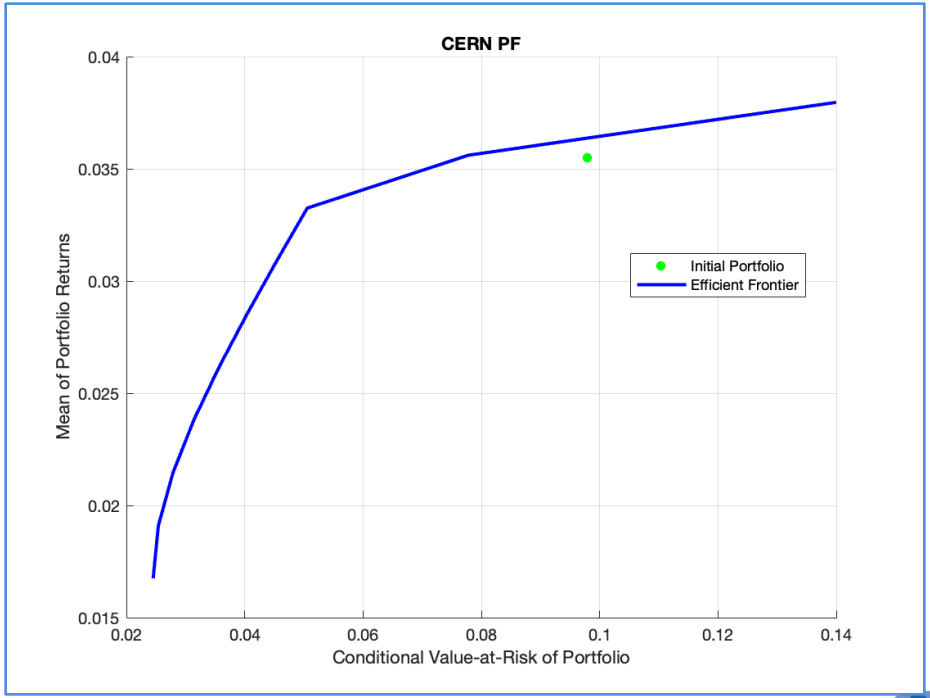
Risk Measure – Conditional Value at Risk



- Value at Risk (VaR) at given confidence level (*CL*) $\alpha \in (0, 1)$ is the return where the probability of smaller return is $1 - \alpha$. Typically, α=95%.
- Conditional value at risk (CVaR) at 95% CL is the average of the lowest 5% of returns.
  - Account for the distribution tails
- The risk consultant (Ortec) proposes risk limit in terms of CVaR @ 95%CL that is approved by the PFGB. The risk limit initially was -8%, since 2024 is -10%.
- The portfolio optimization is maximizing the return while respecting the CVaR limit.

Strategic Asset Allocation (SAA)

- The SAA is the result of the portfolio optimization provided by the risk consultant (Ortec).
- The Ortec model calculates the expected return and standard deviation for each asset class together with the correlations between the asset classes.
- The constrains for the asset classes consider the liquidity, the cash needs, etc.
- The SAA is on the efficient frontier corresponding to the CVaR limit. The proposed portfolio is approved by the PFGB.



Risk of the Current Asset Allocation vs Risk Limit

CVaR (investment risk) remains within the limit
Risk limit 2023: -8% + -2pp error margin
Risk limit from 1.1.2024: -10%

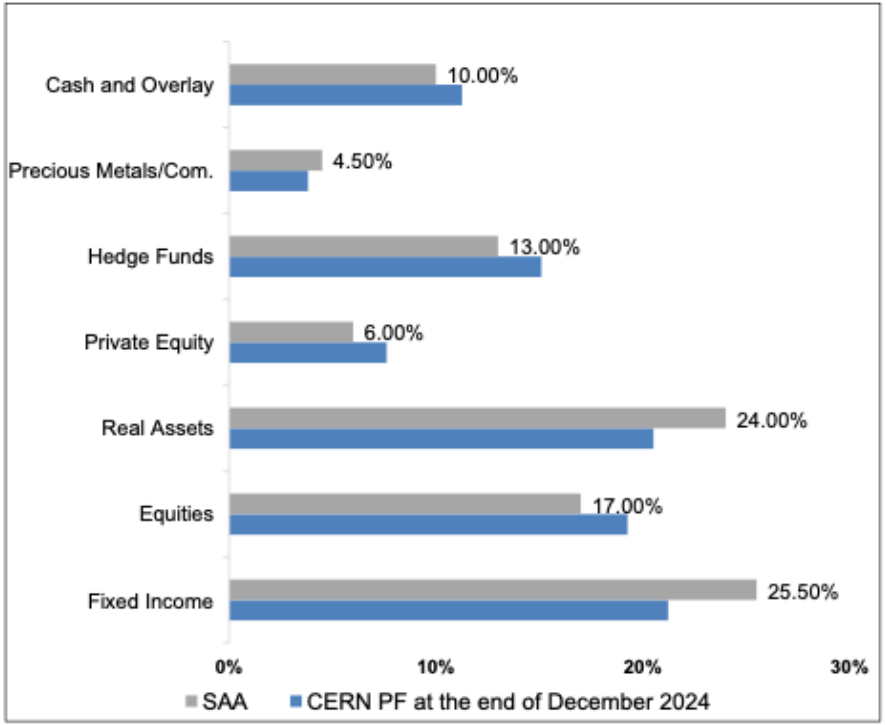
Date	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024
CVaR	-7.4%	-8.10%	-8.4%	-8.8%	-8.8%	-8.8%	-8.7%	-8.4%	-8.6%	-8.3%	-9.1%	-9.5%

Probability of a loss greater than -10% is also calculated.

Date	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	Jun 2024	Jul 2024	Aug 2024**	Sep 2024**	Oct 2024**	Nov 2024**	Dec 2024**
CAA	1.3%	2.0%	2.3%	2.6%	2.8%	2.8%	2.7%	0.9%	1.0%	1.0%	1.3%	1.3%

** The values as of Aug 2024 reflect a probability of fund return below -10%. The values before Aug 2024 reflect a probability of fund return below -8%.

Strategic asset allocation vs current. Net asset value



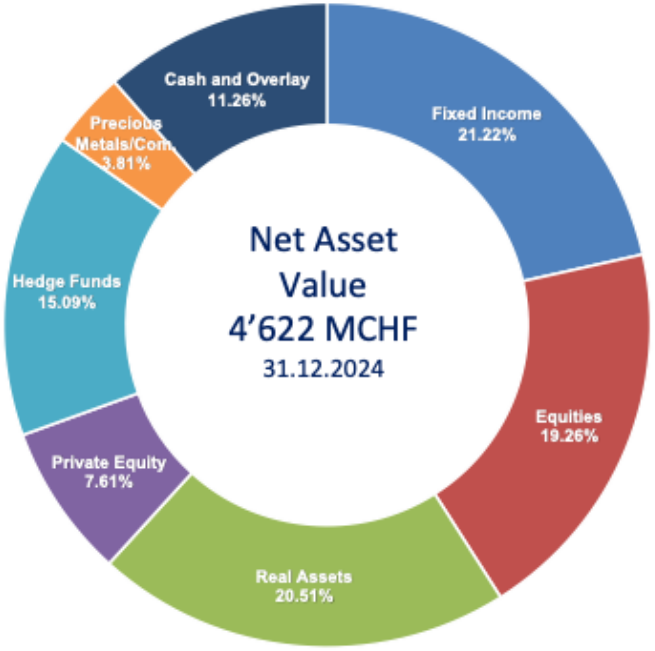
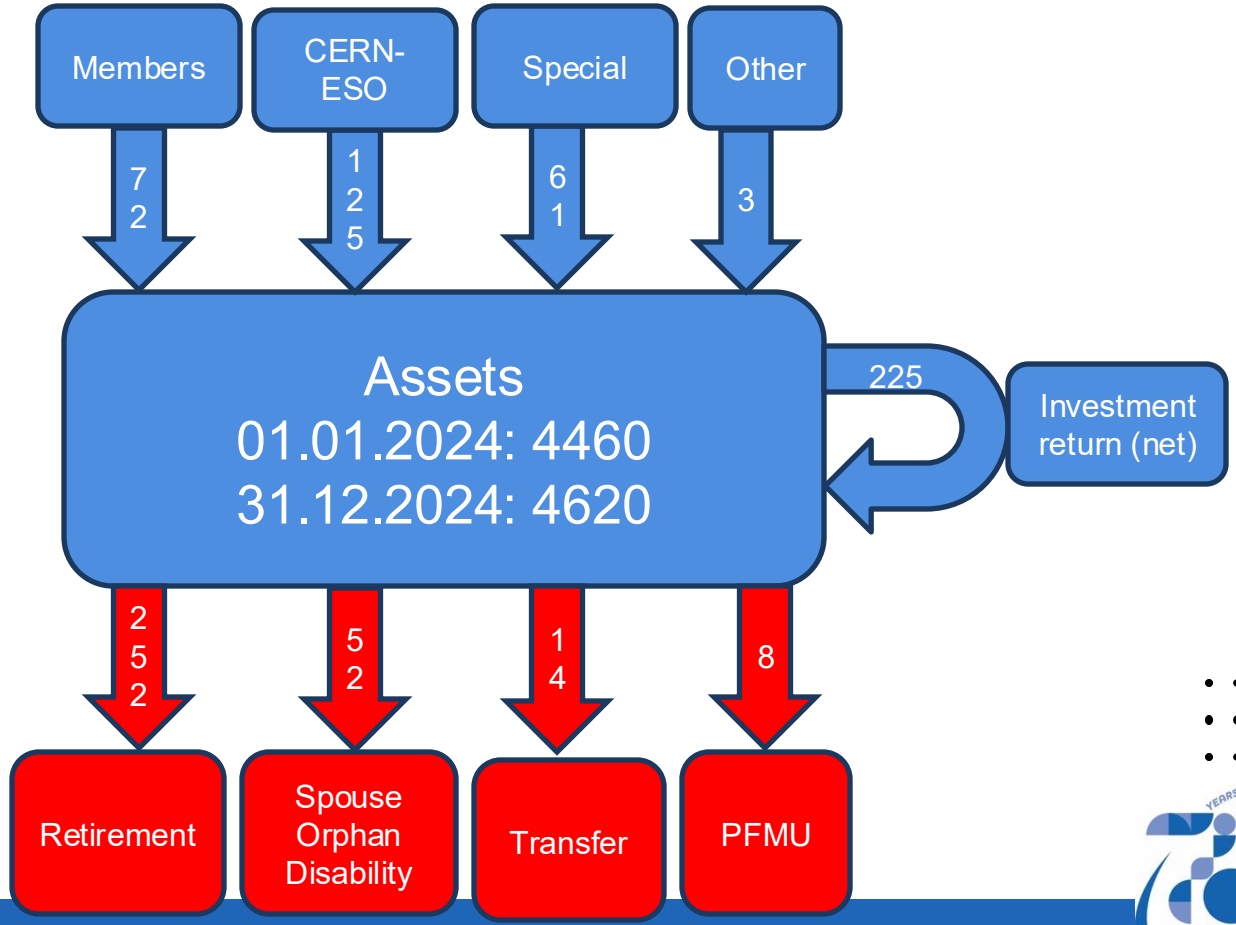


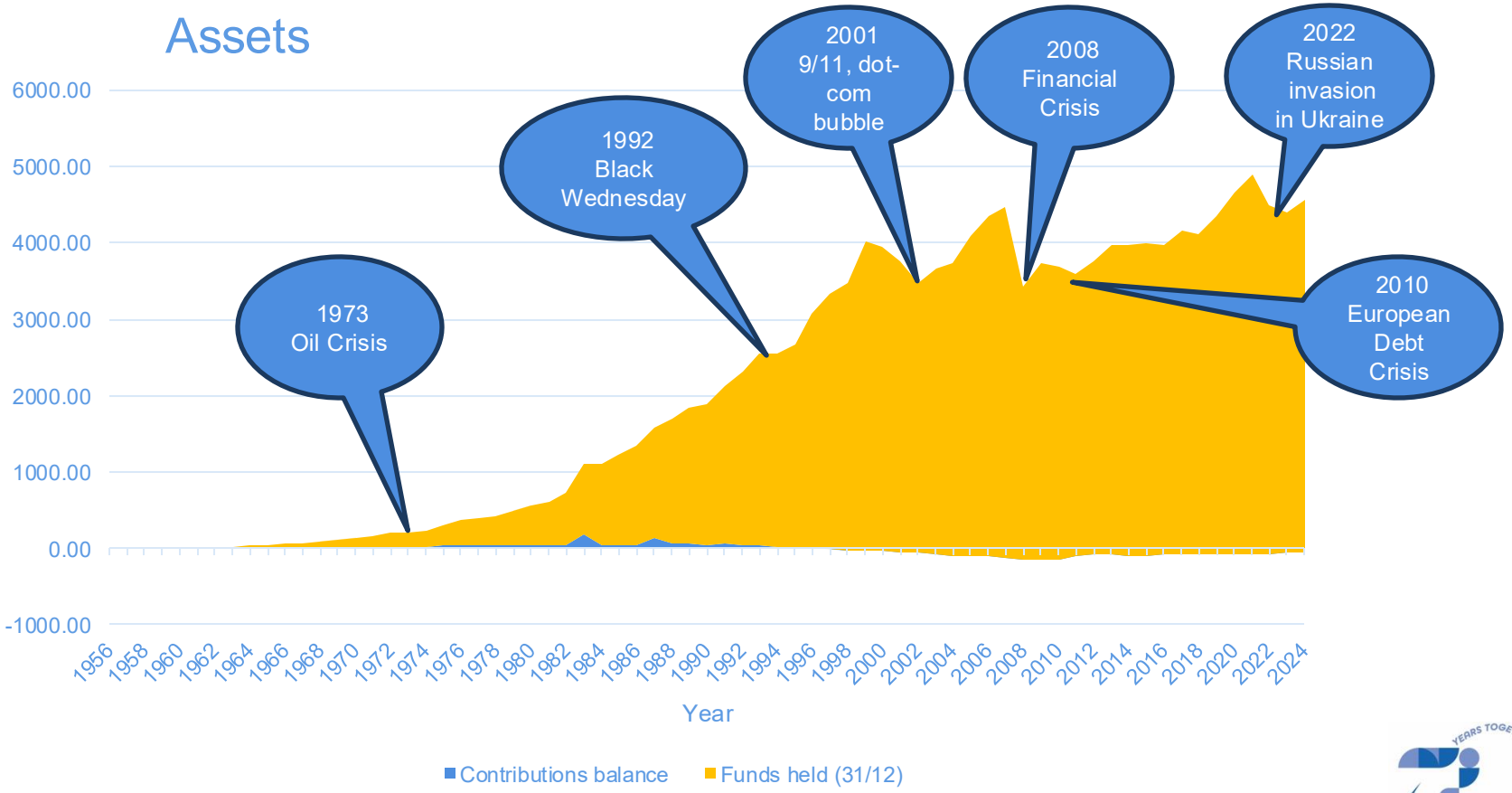
Chart: current asset allocation % and total asset value at the end of December 2024

Note: Equity exposure is net of cash and hedges

Pension Fund Cash Flows 2024, MCHF

IN 261 MCHF
OUT 326 MCHF
Contribution
Balance -65 MCHF




Assets
6000.00
5000.00
4000.00
3000.00
2000.00
1000.00
0.00
-1000.00
1956
1958
1960
1962
1964
1966
1968
1970
1972
1974
1976
1978
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1982
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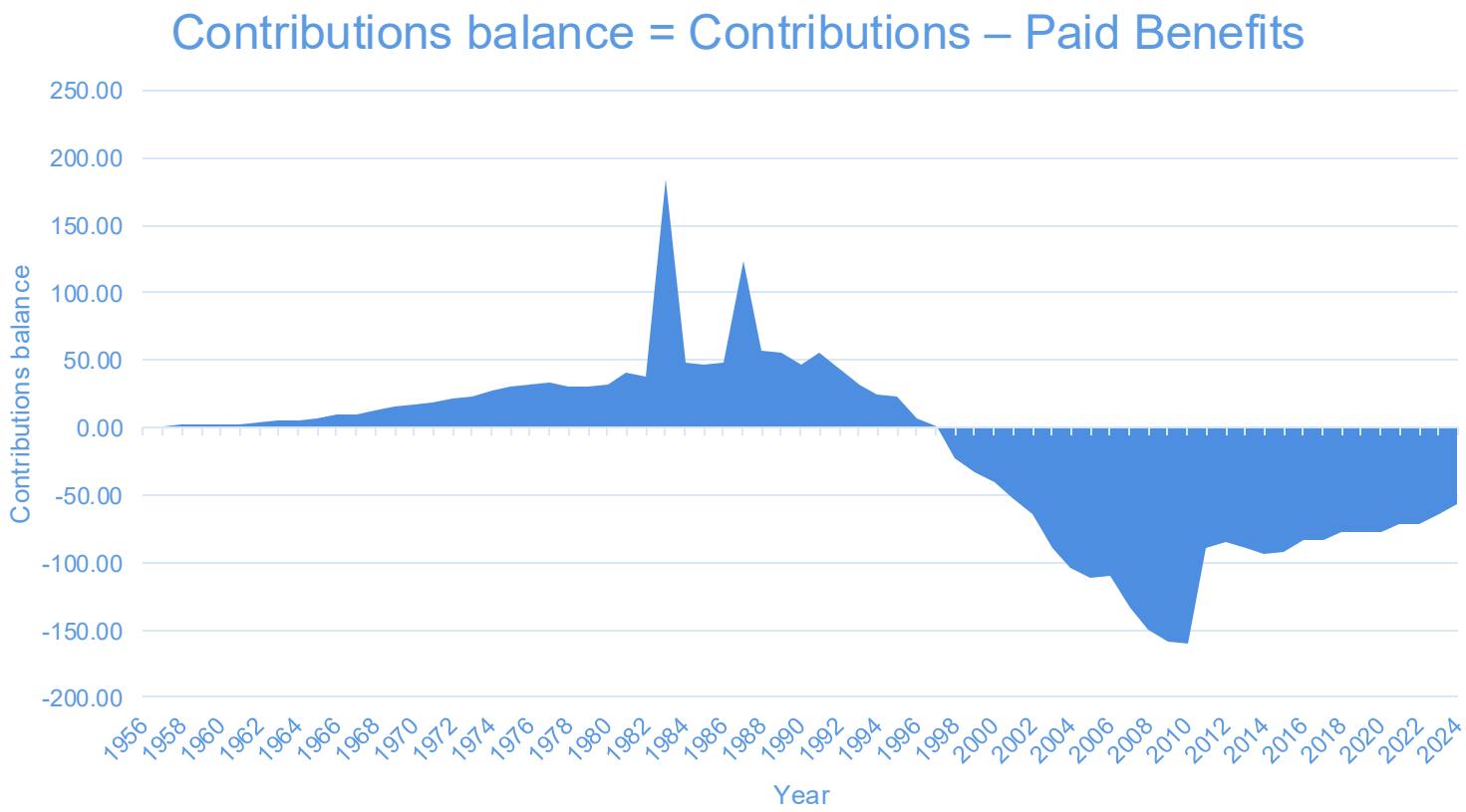
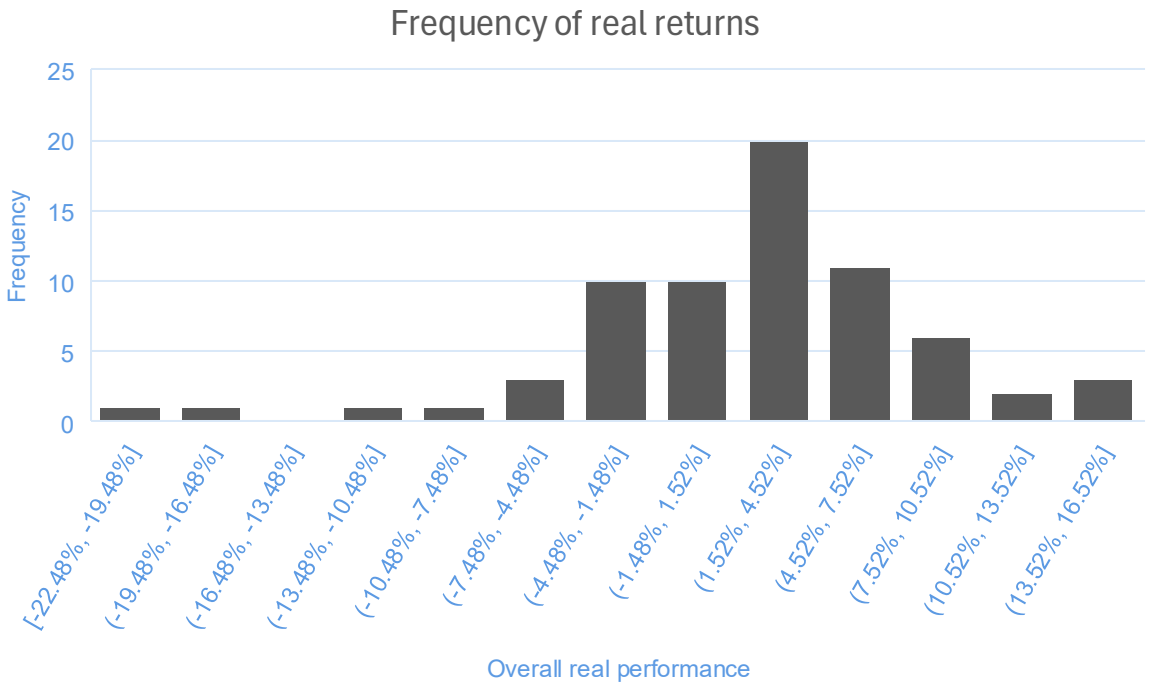
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
Year
1973 Oil Crisis
1992 Black Wednesday
2001 9/11, dot-com bubble
2008 Financial Crisis
2010 European Debt Crisis
2022 Russian invasion in Ukraine
Contributions balance
Funds held (31/12)

Contributions Balance



Real Return = Nominal Return - Inflation

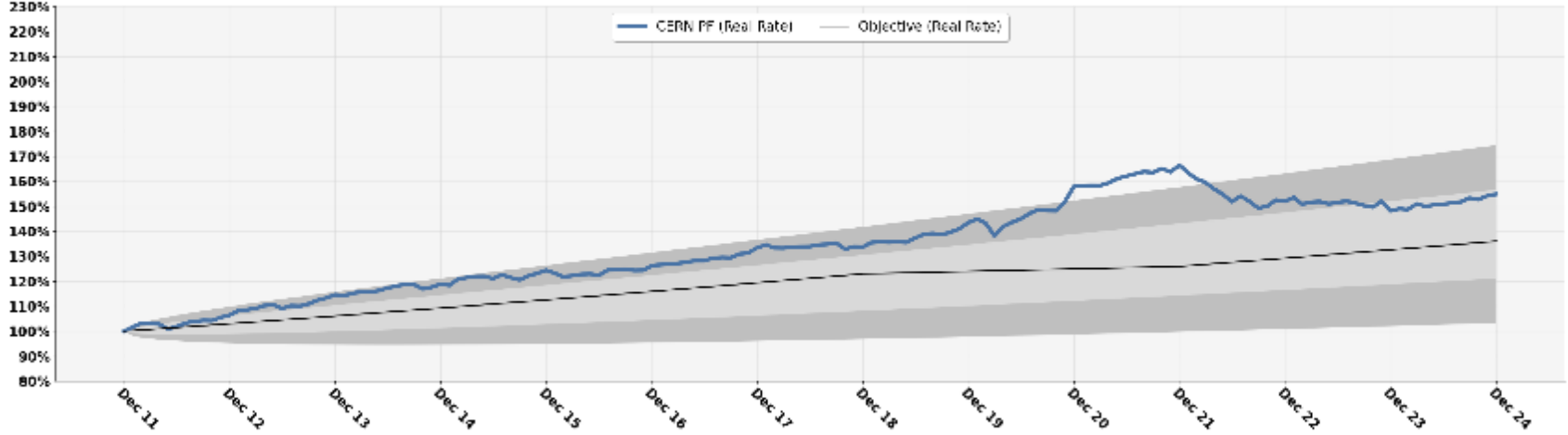


Geom. Mean since 1956 = 1.87%
Geom. Mean since 2012 = 3.17%

Min real return in 2008 = -22.48%
Max real return in 1999 = 15.56%

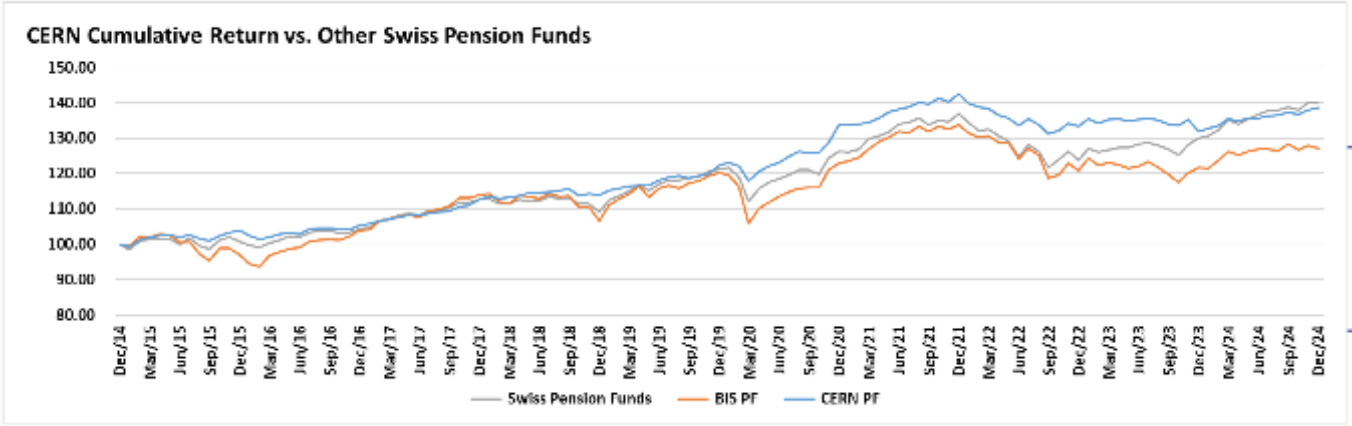
Long term performance vs objective

CERN Pension Fund Cumulative Real Returns vs Objective (real Rate)



Year-To-Date, the real rate of return of the Fund was 1.92 pp above the best estimate real rate.

Comparisons with Swiss Pension Funds



Benchmarking of fund performance is a useful exercise to enable to us to monitor portfolio structures and strategy implementations and their results.

However, each Pension Fund will have its own situation, return needs and risk appetite.

The CERN PF can be said to be lower risk than typical Swiss PFs and therefore has a lower equity allocation and FX risk than peers.

As of end of December 2024

	CERN PF	Peer PF	Swiss Pension Funds
YTD	5.02%	4.43%	7.61%
1Y	5.02%	4.43%	7.61%
5Y annualised	2.55%	1.12%	2.88%
9Y annualised	3.25%	3.04%	3.70%

** UBS Pension fund index: custodian data, limited transparency and intra-annual smoothing on real estate and private equity.*

Source: State Street, Northern Trust, Apex, UBS

Pension Fund – Active Working Groups

Working Group on PF Factors and Parameters

- The working groups have broad membership and have led to balanced discussions
- Updated factors in early retirement
  - New reduction factors based on “best estimate” with PAR2022 parameters in place
  - More favourable to the members of the PF
- Updated rules and prices for purchase of membership periods
  - Some loopholes in the PF rules and regulations closed
- Ongoing work on the transfer values
  - Actuarial studies based on “best estimate” provided
- Discussion on modification of rules for young spouses
  - Wrongly designed protection against “deathbed” marriages became obsolete
- The purchases are now “fair for members and fair for the Fund”.
- Future plans to review fixed sums and allowances.

Working Group on the solutions in case of CERN closing

- In 1996 the Council adopted a plan for foundation under the Swiss law that replaces the CERN PF in case of CERN closing
- The introduction of guarantees for CHIS makes this foundation incompatible with the Swiss law
- Active discussions with Swiss authorities
- The preferred solution is a (single legacy purpose) international organisation that takes care of the activities related to CERN dismantling and of the CERN social system (PF, CHIS) until the death of the last beneficiary

  - This would require changes in the CERN Convention and possibly ratification by the parliaments of the member states

Conclusions

- Since 1955 the CERN Pension Fund has fulfilled its purpose of providing insurance to its members against the final consequences of death, disability and old age, with an excellent service record
- The governance model in place is well-developed and ensures all stakeholders are represented in decision-making
- The PFMU is led by financial experts with substantial experience
- The scheme is maturing, and the number of beneficiaries will soon exceed the number of active members
- The resulting negative cash outflows are serious challenge since they affect the accumulation of assets
- Several decisions in the past have affected the funding level of the PF and still have an influence today
- The investment environment is subject of bigger uncertainties than in the past and achieving positive real returns without excessive risk is challenging
- The PF has sound investment strategy and reliable risk management; its results are among the best in the Swiss pension fund universe
- The package of measures adopted in 2010-2012 leads to projections of full funding in the future, without which the Fund would be in decline
- The SA plays active role in the PF: supports strong governance, raises important questions, monitors the situation and generates new ideas

Additional information & References

- Special Proton: Towards a lasting social protection

- CERN Pension Fund Web site
- Pension Fund Annual Information Meetings

- Articles from ECHO: BUL-SA-2014-048, BUL-SA-2014-055, BUL-SA-2014-063, BUL-SA-2014-079, BUL-SA-2014-080
- CERN Pension Fund Annual Report and Financial Statements for 2023 (and the CDS links there)

- A Governance Framework Designed for Dynamic Asset Allocation: The CERN Pension Fund Model
- Should Pensions Think Like Macro Funds?

END

Thank you for your attention

Many thanks to the PF CEO and the SA Council for the help, slides, information and useful suggestions