2023 INTERNATIONAL CONGRESS OF ACTUARIES

BRIDGE TO TOMORROW

28 MAY – 1 JUNE 2023 · SYDNEY

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Cost neutral consolidation of partially funded pension schemes

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Background

- In 2017-2021 there was an effort to consolidate the two largest Finnish earnings-related pension schemes into one
  - TyEL: Private sector workers' scheme
  - Municipal sector workers' scheme
- These cover about 90 % of the Finnish work force
  - The resulting scheme would have accounted for over 80 % of all Finnish pension expenditure
  - But the merger never happened

Statutory earnings-related pension scheme

- Arranged into several pension schemes by sector (private, municipal, state, entrepreneurs, farmers, …)
  - Mostly same benefits, differences in financing
  - Employee pays ca. 1/3 of pension contribution and employer pays the rest
  - PAYG schemes with partial funding (funds cover ca. 1/3 of the present value of accrued pension rights)

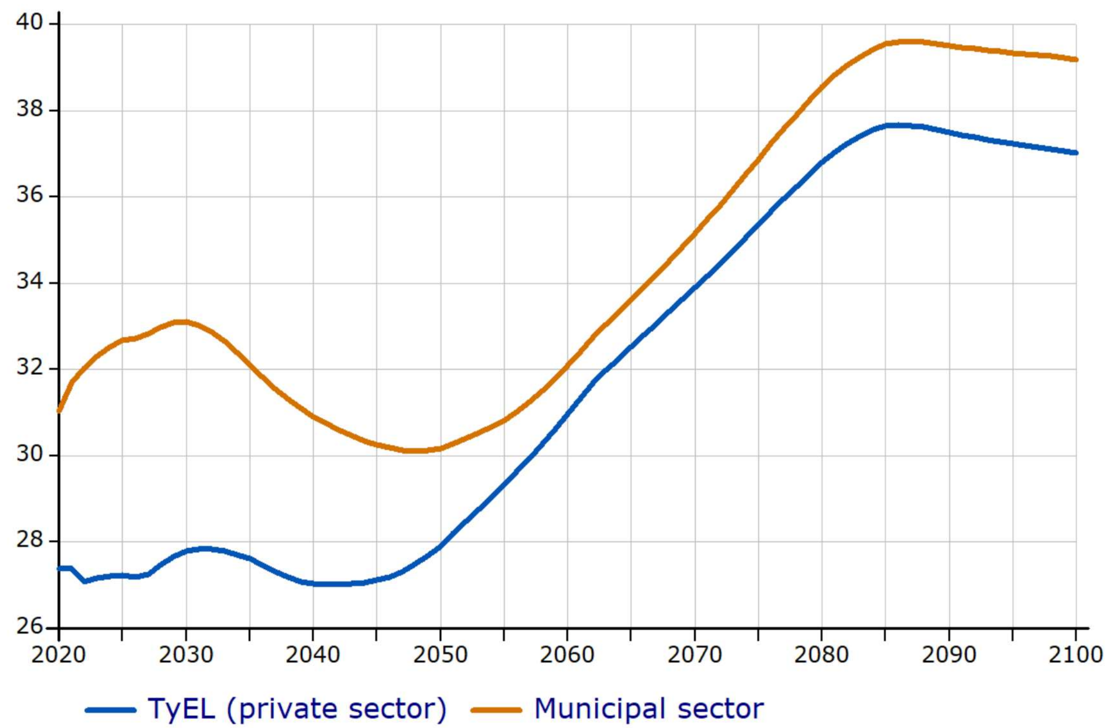
Statutory earnings-related pension scheme

- The private sector scheme TyEL is a decentralized scheme
  - Employer arranges pension insurance
  - Private pension insurance companies and pension funds compete
- The municipal insurer Keva has a monopoly in municipal pension insurance
  - Some municipality-owned employers can choose between TyEL and the municipal scheme

Key figures in 2021

	TyEL	Municipal	All
Insured employees 31.12., 1 000	1 594	568	2 453
Insured wage sum, mEUR	63 924	19 464	96 650
Contributions, mEUR	15 465	5 490	24 071
Paid benefits, mEUR	16 597	5 914	30 474
Funds 31.12., mEUR	161 147	67 717	257 543
Contributions, % of wage sum	24.2	28.2	24.9
Paid benefits, % of wage sum	26.0	30.4	31.5
Funds 31.12., % of wage sum	252.1	347.9	266.5

Projected pension expenditure, % of wage sum



Aims of the consolidation

- Better pooling of risks
- Neutralize effect of worker migration between sectors
  - Planned healthcare reform would have privatized parts of healthcare
- Competitive neutrality in municipal sector pension insurance

Consolidation project

- Two working groups in 2017-2021 under the Ministry of Social Affairs and Health
- **Constraint: cost-neutrality** for financers of the schemes (no transfer of costs between private sector employers and municipal employers)

Consolidation project

- Keva, the municipal monopoly insurer, would turn into a TyEL insurance company
  - Technical provisions and assets calculated as if the portfolio was insured according to TyEL from the beginning
- This transfer would impact the future contribution rate
  - Transferred assets (current funds and future contributions) and liabilities (future benefit payments) might not match
  - Consolidation would probably increase the burden on the ”old TyEL” financers (employers and employees), as the insured population in the municipal scheme was older and had lower mortality
  - How to measure this effect and neutralize it?

Consolidation project

- In the end, it was decided not to merge the schemes
- Reasons
  - The planned healthcare reform failed, which lessened pressure
  - A sufficiently robust method of achieving cost neutrality could not be agreed upon

OUR FRAMEWORK AND FINDINGS

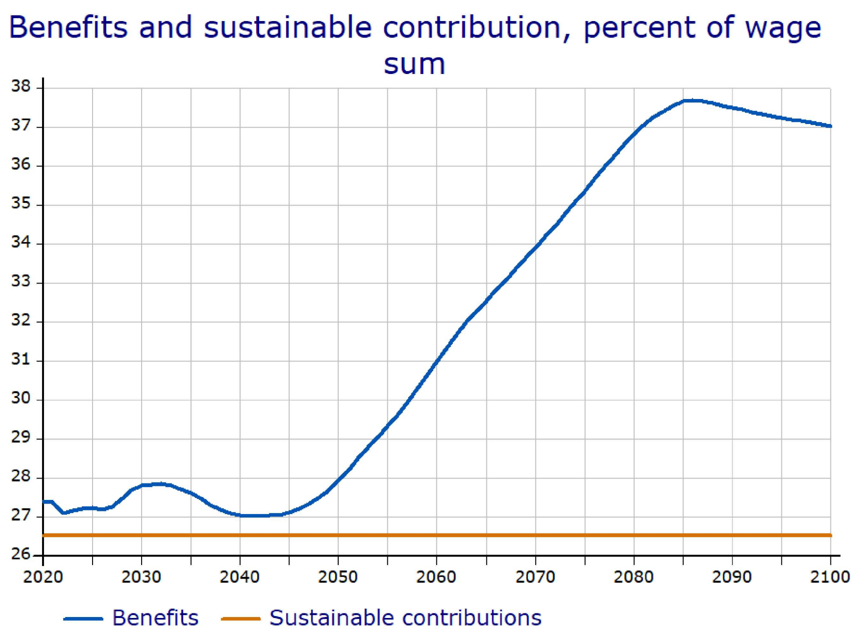
Our framework

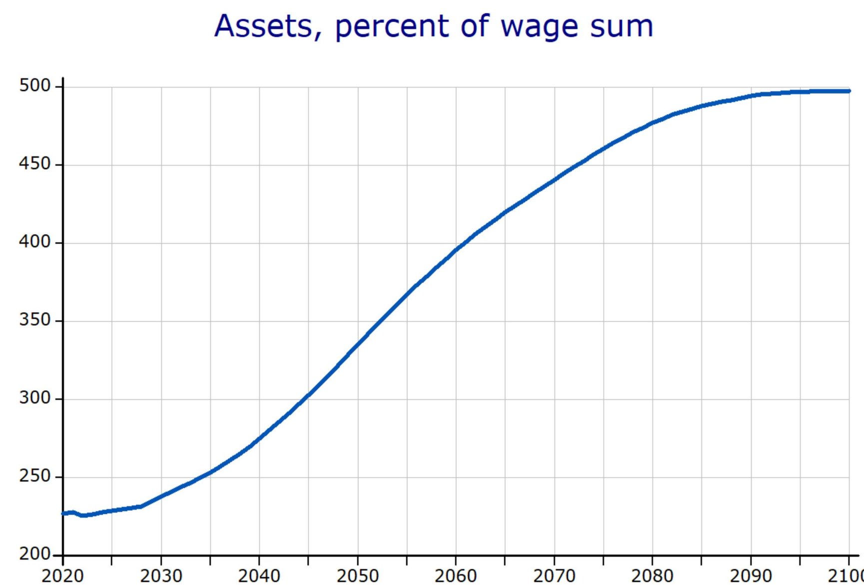
- Notation:
  - $P(t)$: total insured payroll for year t
  - $B(t)$: paid benefits
  - $C(t)$: pension contributions
  - $W(t)$: funds in the beginning of year t
  - $r(t)$: asset return
- Funds evolve according to:
  - $W(t+1) = (1+r)W(t) + (1+r)^{0.5}(C(t)-B(t))$
- Growth of insured payroll, paid benefits and contributions is some constant $g<r$ after some cutoff year

Our framework

- There exists a unique theoretical *sustainable premium* μ such that if $C(t)=\mu P(t)$, the ratio of funds to the insured wage sum $W(t)/P(t)$ stabilizes
- This is an indicator of the financial status of the scheme

Sustainable premium, TyEL



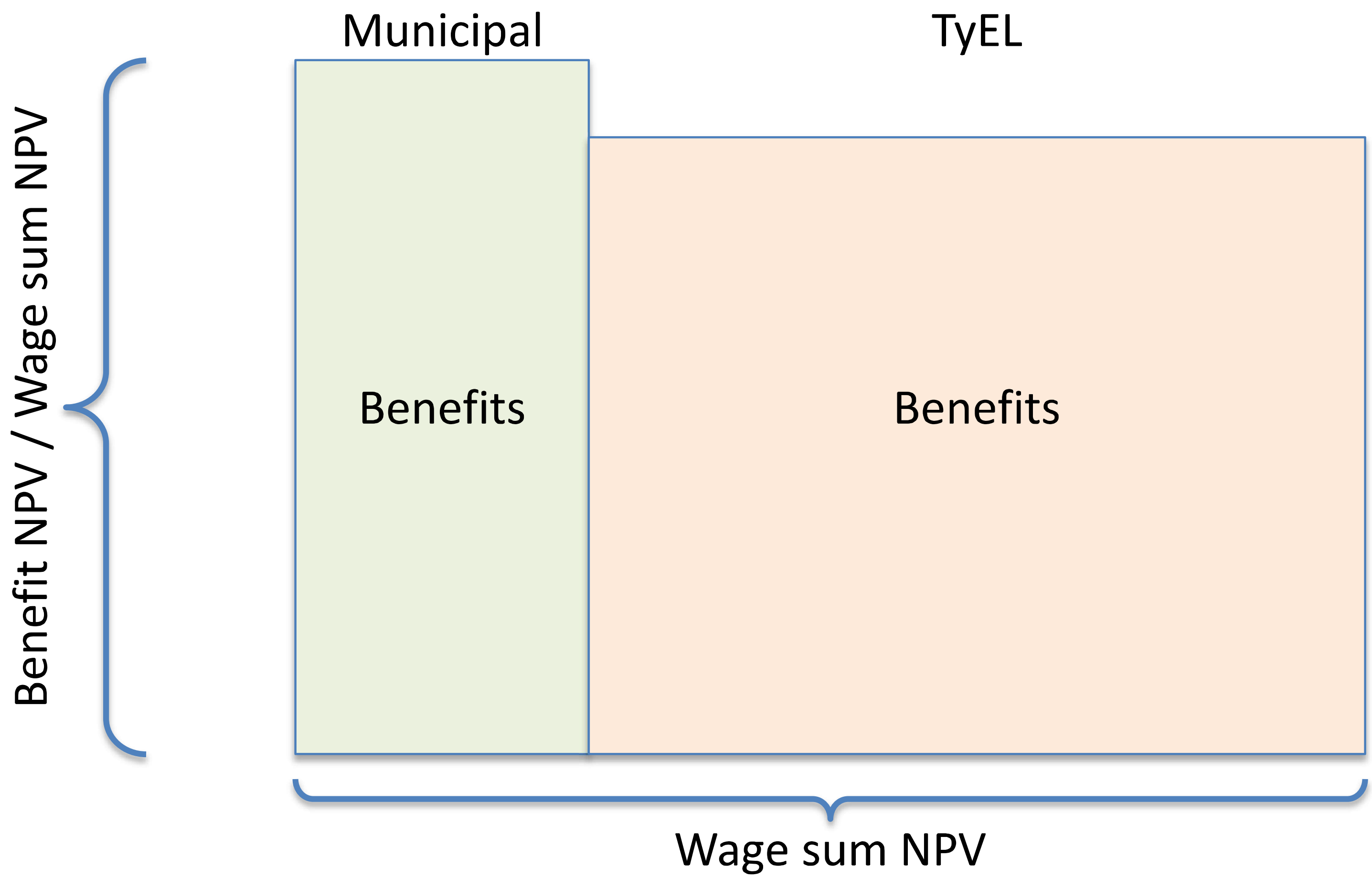


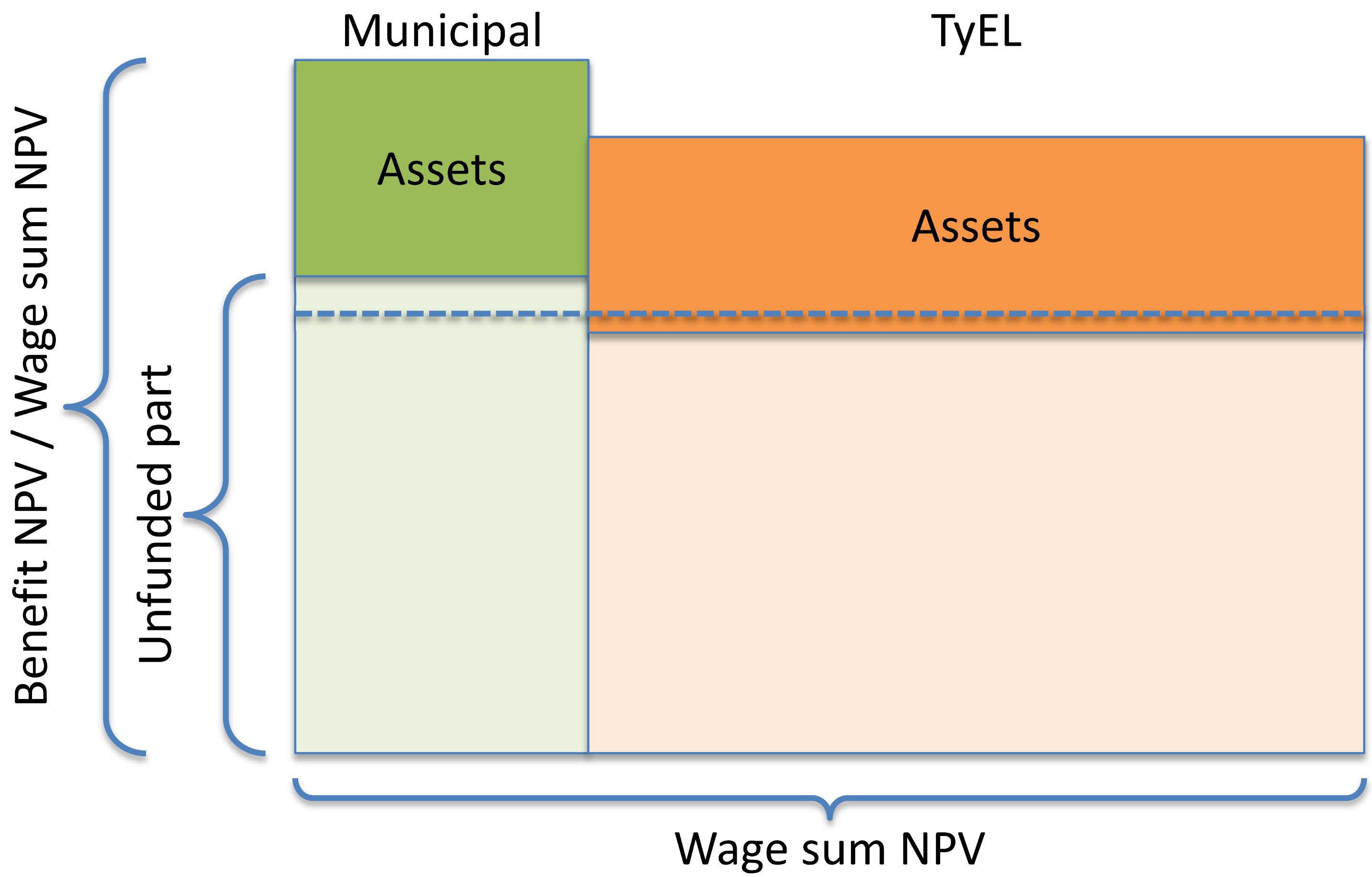
Cost neutral consolidation

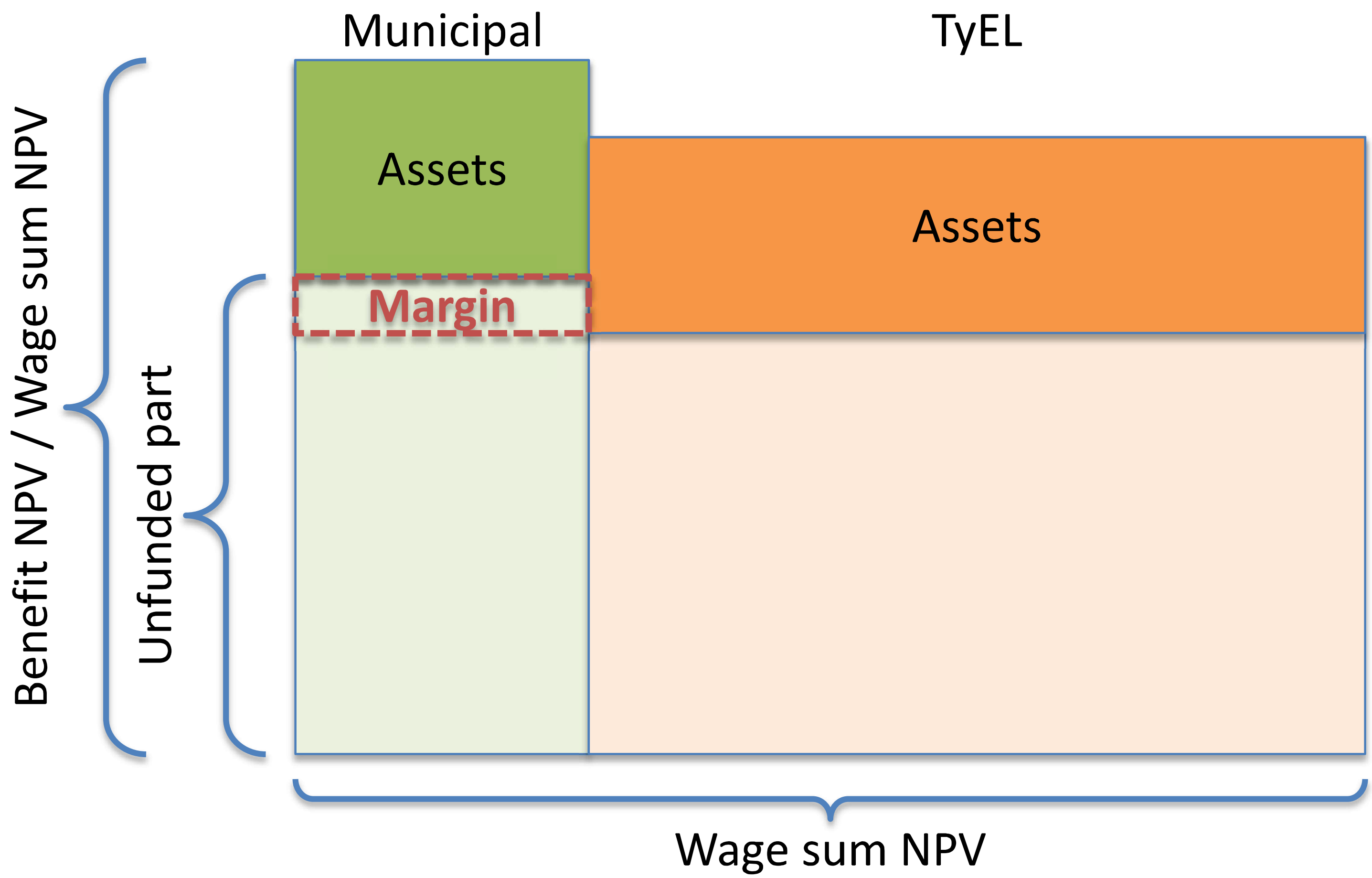
- The consolidation of two schemes is cost neutral if and only if their sustainable premiums are the same
  - This implies that the sustainable premium of the consolidated scheme is also the same as the individual sustainable premiums
  - Hence the burden from financing future benefits does not change for either party as a result of the consolidation

Cost neutral consolidation

- To ensure cost neutrality (in the sense of the expectation) one can use different *neutralisation methods*
- In the Finnish case the two basic methods were
  - The *margin method*, in which the financers of the less funded scheme would pay a neutralisation margin into the scheme before consolidation
  - The *exclusion method*, in which a part of the benefits would be excluded from the consolidation


Municipal
TyEL
Benefit NPV / Wage sum NPV
Benefits
Benefits
Wage sum NPV


Municipal
TyEL
Assets
Assets
Benefit NPV / Wage sum NPV
Unfunded part
Wage sum NPV


Municipal
TyEL
Assets
Assets
Margin
Benefit NPV / Wage sum NPV
Unfunded part
Wage sum NPV

Findings

- Cost neutrality is difficult to achieve robustly
- The exclusion method performed better under sensitivity analyses
  - This is intuitive from a liability matching perspective

Deviance from neutrality under different neutralisation techniques

	Margin technique	Exclusion technique
Baseline, mEUR	0	0
Low return, mEUR	16 777	15 293
High return, mEUR	-5 555	-4 276

THANKS FOR YOUR TIME!