Copenhagen Business School
HANDELSHØJSKOLEN

Increasing Longevity - Experiences from Denmark

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Structure

4xT

- **T**enet
  - Key features and performance
- **T**ransition
  - Privatization well underway…
- **T**axation*
  - Partial conversion from ETT to TTE
- **T**hreats
  - Challenges and new reforms

The Danish pension system

Three pillars

- **Pillar 1**:
  - PAYG, DB
  - Basic flat-rate benefits
  - Means-tested supplements
- **Pillar 2**:
  - Funded, DC
  - Occupation pension (OP) schemes: employment relationship or collective agreement between social partners
  - Arbejdsmarkedets Tillægspension (ATP): compulsory, all contribute; relatively low contribution rates
- **Pillar 3**:
  - Private, individual saving schemes
  - Flexible and voluntary
  - Banks and insurance companies

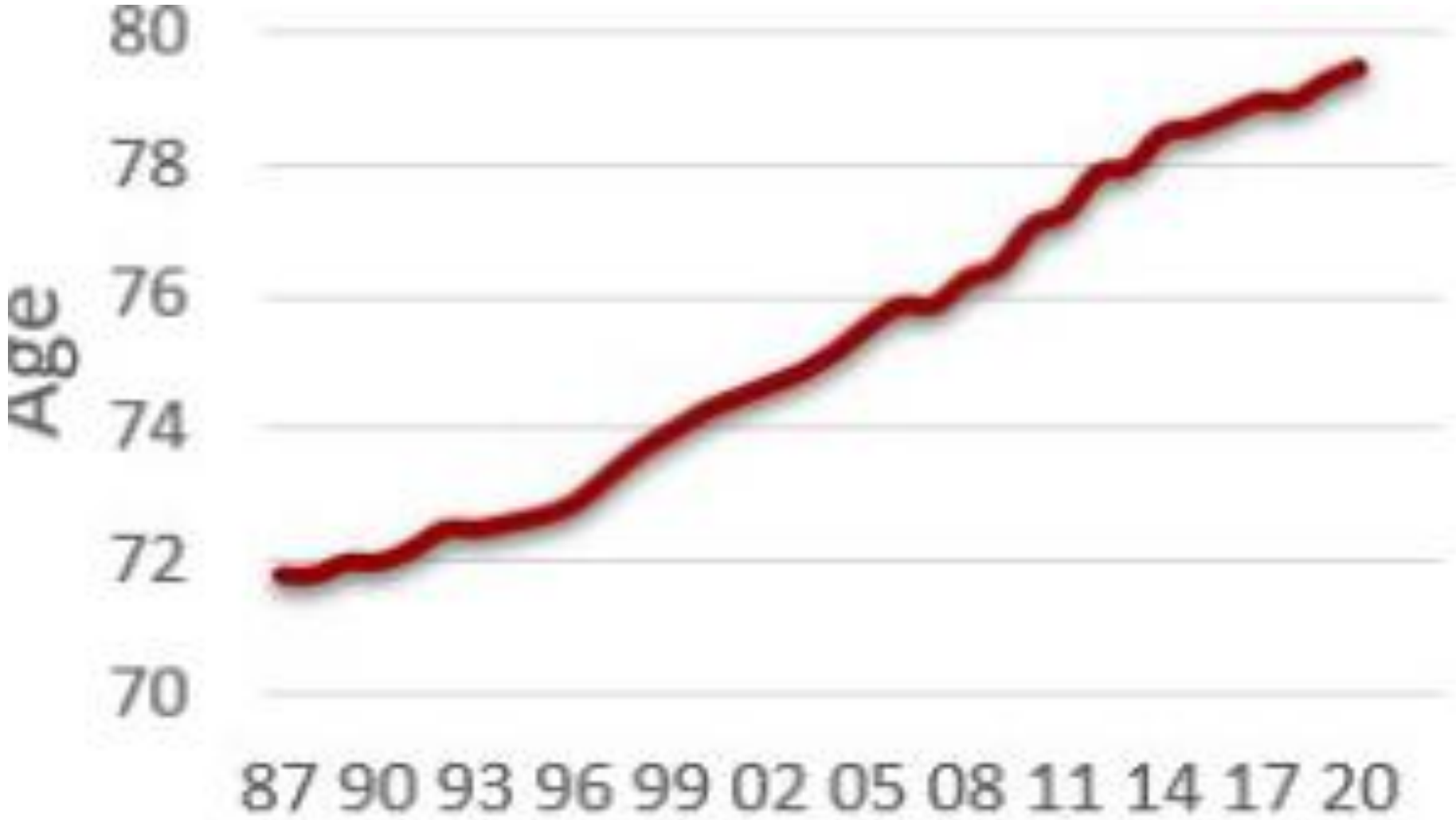
The Danish pension system

Track record

- It effectively prevents old-age poverty (*distributional* objective);
- It offers reasonable *replacement* rates for most pensioners, i.e., a fair balance between pensions and previous income (when working) to allow for *consumption smoothing*; and
- It is financially *sustainable* in the long term…
- So, by many, considered as a *role model* (Mercer)…

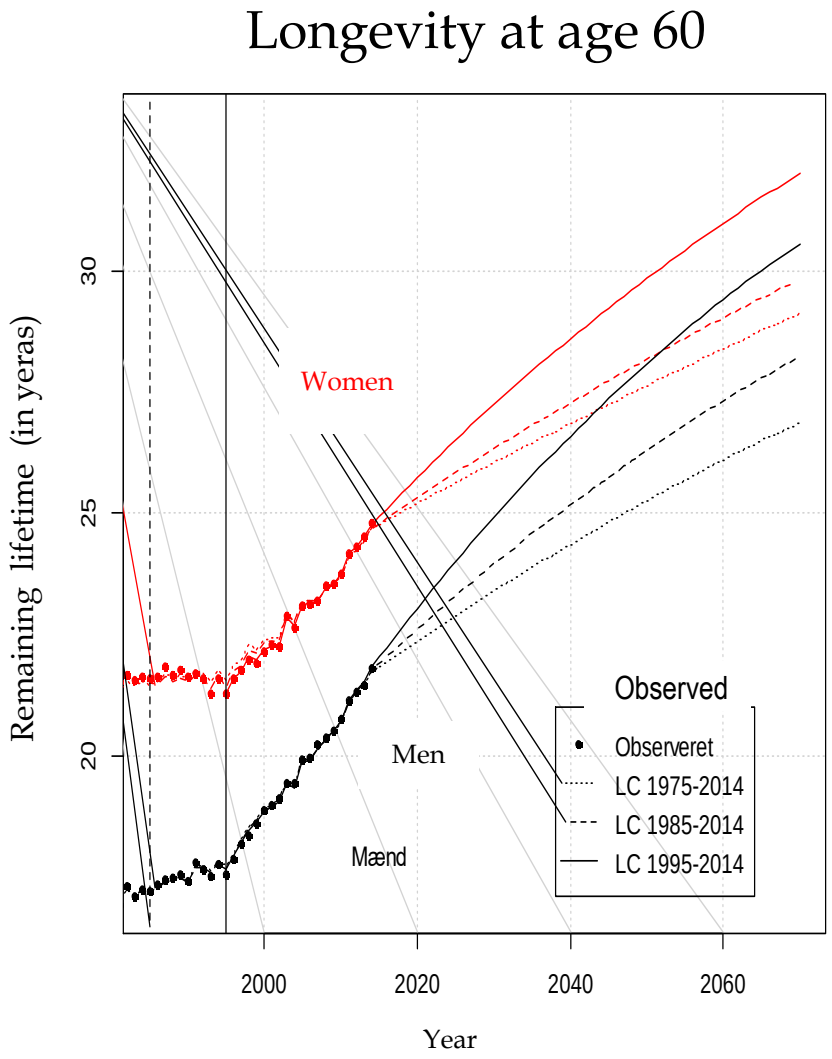
Observed increases in longevity…

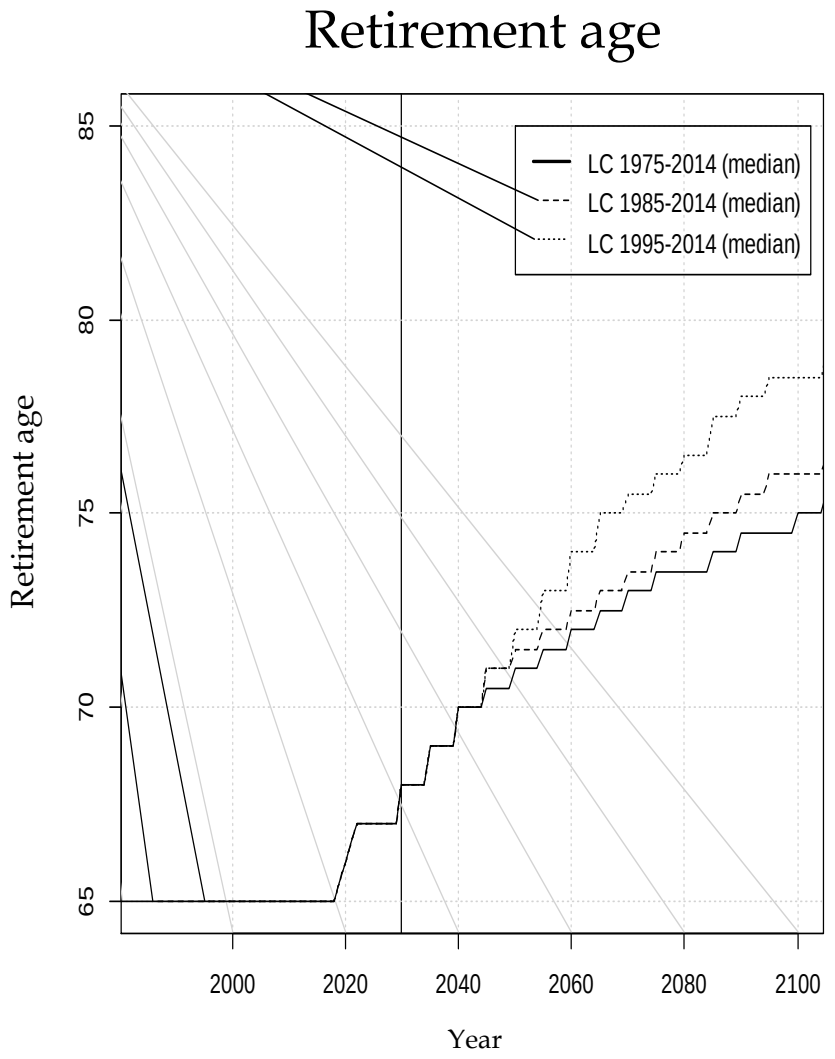
Men, 1987-2020



Life expectancy will increase, using Lee-Carter model

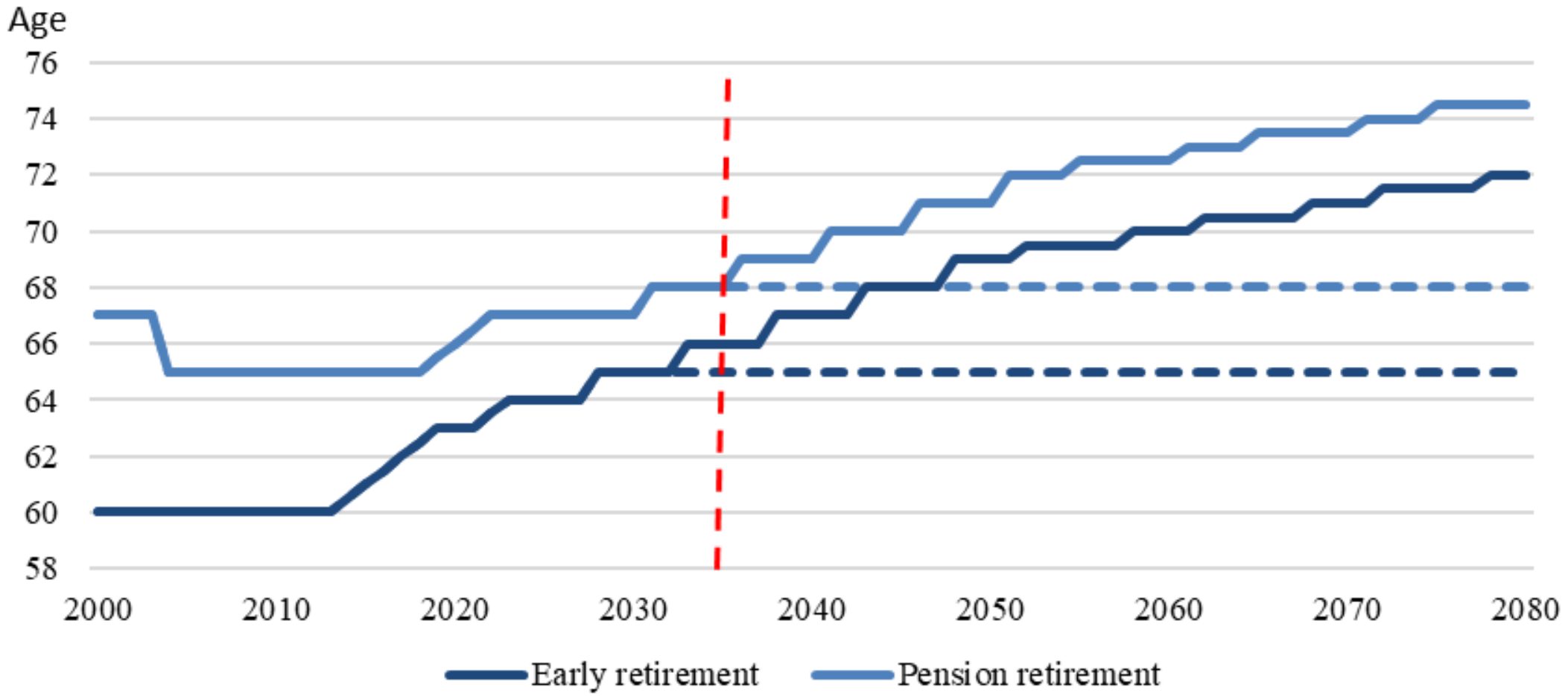
Life expectancy at 60, men and women





Official retirement age under current indexation schemes

Early retirement and pension retirement



Welfare reform (2006) and retirement reform (2011)

Key design characteristics

- ***Discrete*** changes:
  - Increasing the early retirement *age* from 60 to 62 years over the period 2014–17.
  - Shortening the early retirement *period* from five to three years over the years 2018–19 and 2022–23.
  - This implies an *early retirement age* of 64 in 2023.
  - The *official pension age* will increase from 65 to 67 years over the period 2019–22, and it will be 68 in 2030.

Welfare reform (2006) and retirement reform (2011)

Key design characteristics

- Longevity ***indexation*** scheme ("autopilot"):
  - The early retirement age and the official pension age are *indexed* to the development in *life expectancy* at the age of 60.
  - The aim is to *target* the expected pension period to 14.5 years (17.5 including early retirement) in the long run.
  - Currently, these are about 18.5/23.5 years, respectively.

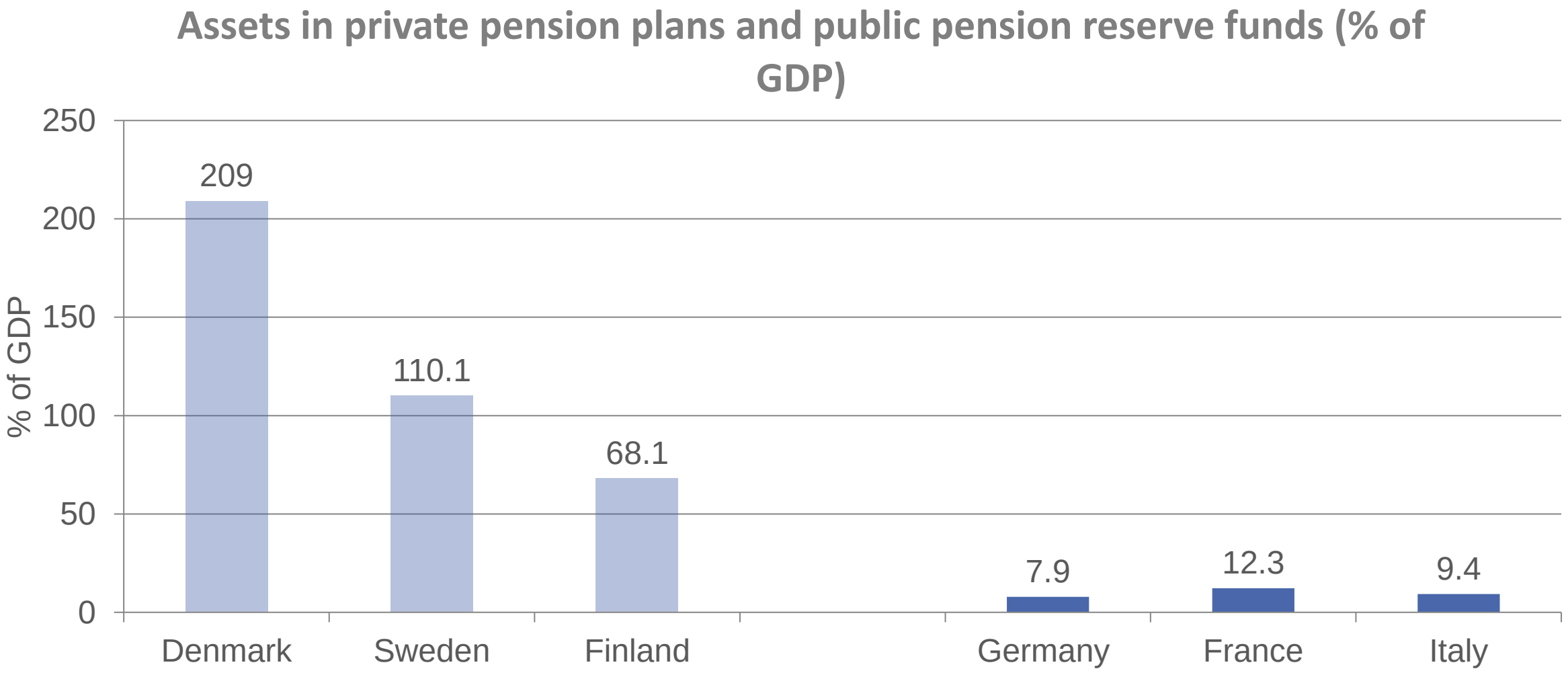
Welfare reform (2006) and retirement reform (2011)

Key design characteristics

- The system is (only) *semi-automatic*: a change has to be approved in parliament every fifth year.
- The changes are *smoothened:* the change in one year can never be below 6 months and above 12 months.
- The changes are *pre-announced* with a lead of 15 years: the first change will be implemented in year 2030 for pension age (year 2027 for early retirement age).
- Specifically, in year 2015 it was agreed that the official retirement age will be increased to 68 years in year 2030.

Accumulated pension savings

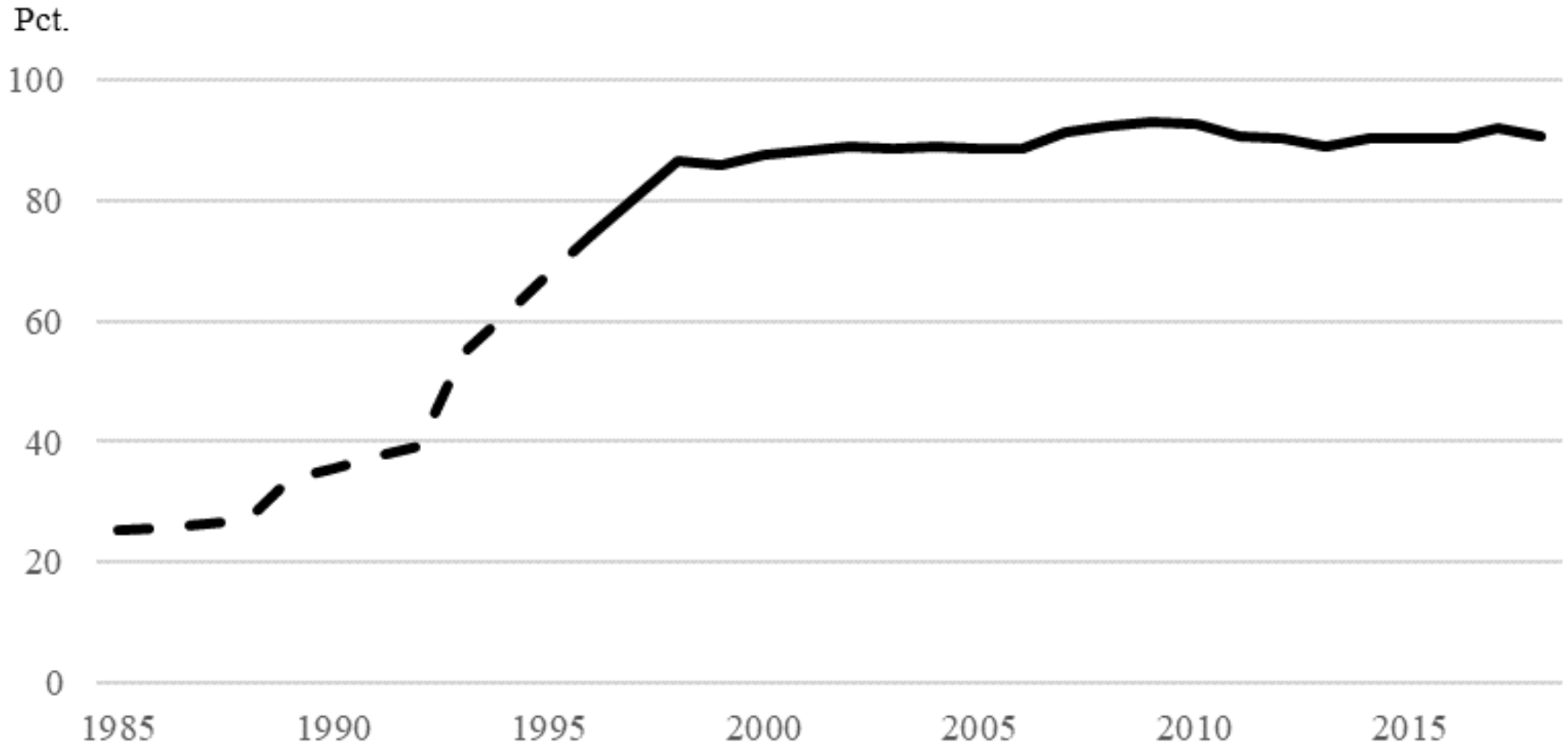
High in the Nordic countries – including Iceland! - and low in major EU countries…



Source: OECD

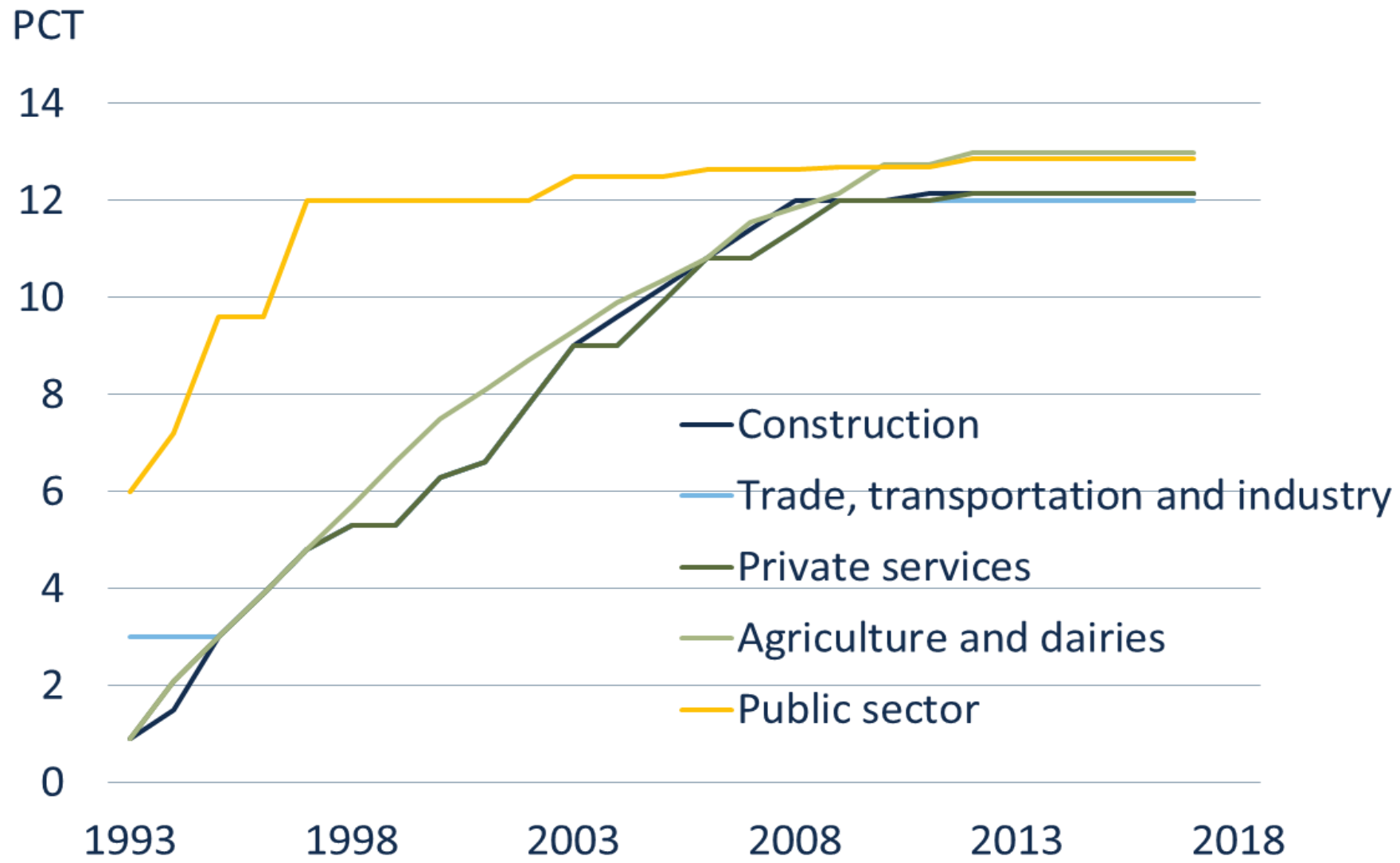
Share of labour force who contribute to OP schemes

1985-2018



OP schemes: development of contribution rates

Blue-collar workers, 1993-2018



Total pension fund assets in Denmark

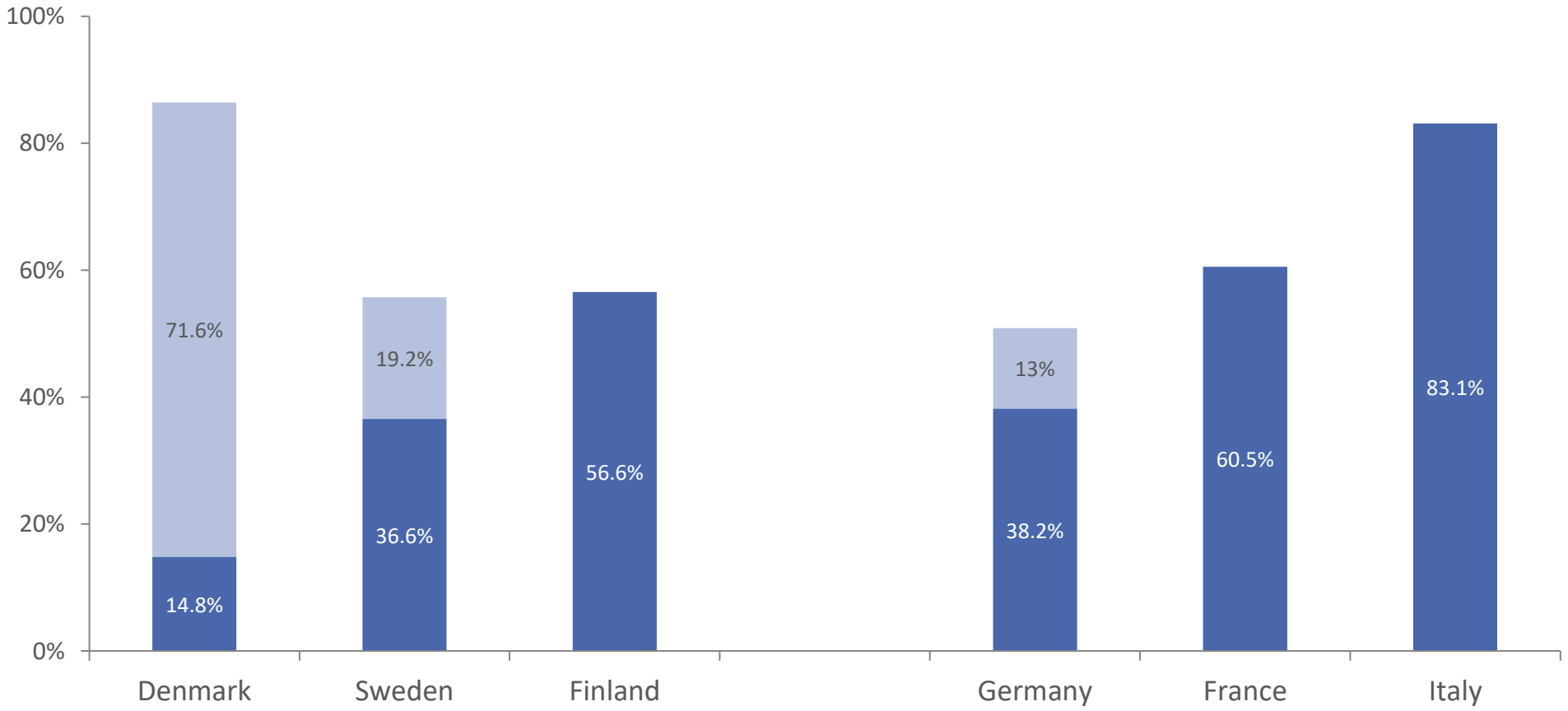
1998-2019

	1998	2003	2008	2013	2019	1998	2019
	---------- *EUR bn.* ----------					---- *Percent* --	
Life insurance companies	68	98	149	234	364.3	42.3	53.3
Multi-employer pension funds	28	40	53	78	114	17.7	16.7
Pension funds, single firms	5	5	6	7	9.1	3.2	1.3
Banks	25	29	41	59	52.8	15.8	7.7
Public pension funds	34	48	104	99	142.9	21.1	21
a. ATP	27	35	90	90	137.7	16.5	20.2
b. SP	1	6	6	-	-	0.5	-
c. LD	7	7	8	9	5.2	4.0	0.8
Total	161	220	353	477	683.1	100	100
Share of GDP	1.02	1.15	1.47	1.86	2.18	1.02	2.18

Note: Excluding public pension funds and banks, approximately 80 % of total assets in pension companies and funds are currently customer controlled and not for profit. The numbers are the size of the total balance sheet of different funds.

Gross replacement rates, %, 2018

High in DK by international comparison, thanks to OP schemes…



The **gross replacement rate** is defined as gross pension entitlement divided by gross pre-retirement earnings. (OECD)

Assumptions for calculation:

- Individual born in 1996
- Enters labour market in 2016

Private pension schemes

Public pension schemes

Source: OECD

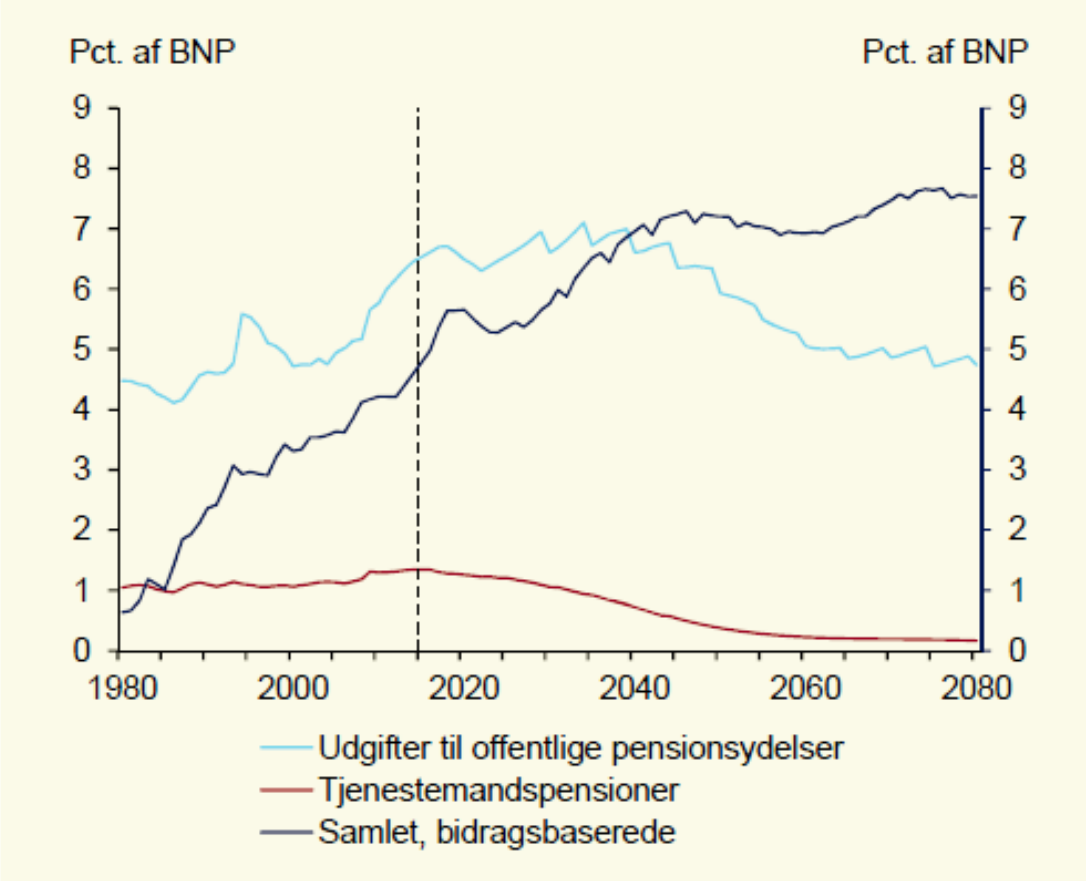
Fiscal sustainability

Pension system plays a key role…

- **Ministry of Finance,** Autumn 2019:
  - Sustainability indicator: +1.0
- **Danish Economic Councils,** Autumn 2019:
  - Sustainability indicator: +1.8

Pension system in transition

Private pensions will take over…



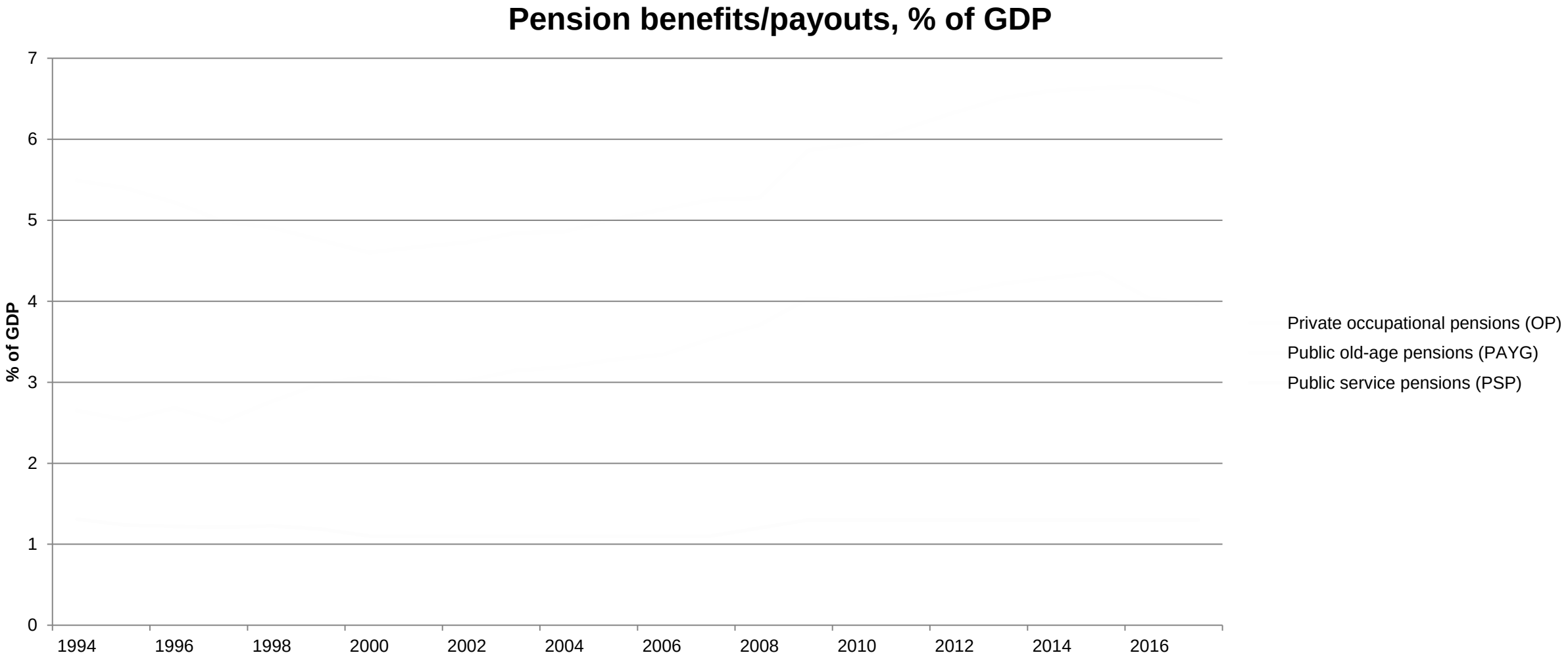
In about two decades from now:

- Pension payouts from occupational pension schemes higher than benefits from public old-age pension, and

Source: Danish Ministry of Finance (2017), Det danske pensionssystem nu og i fremtiden, Center for holdbarhed og strukturpolitik, Copenhagen.

Public and private pensions in *retrospect* (1994-2017)

Building occupational pensions…



Source: Statistics Denmark

Public and private pensions in *retrospect* (1994-2017)

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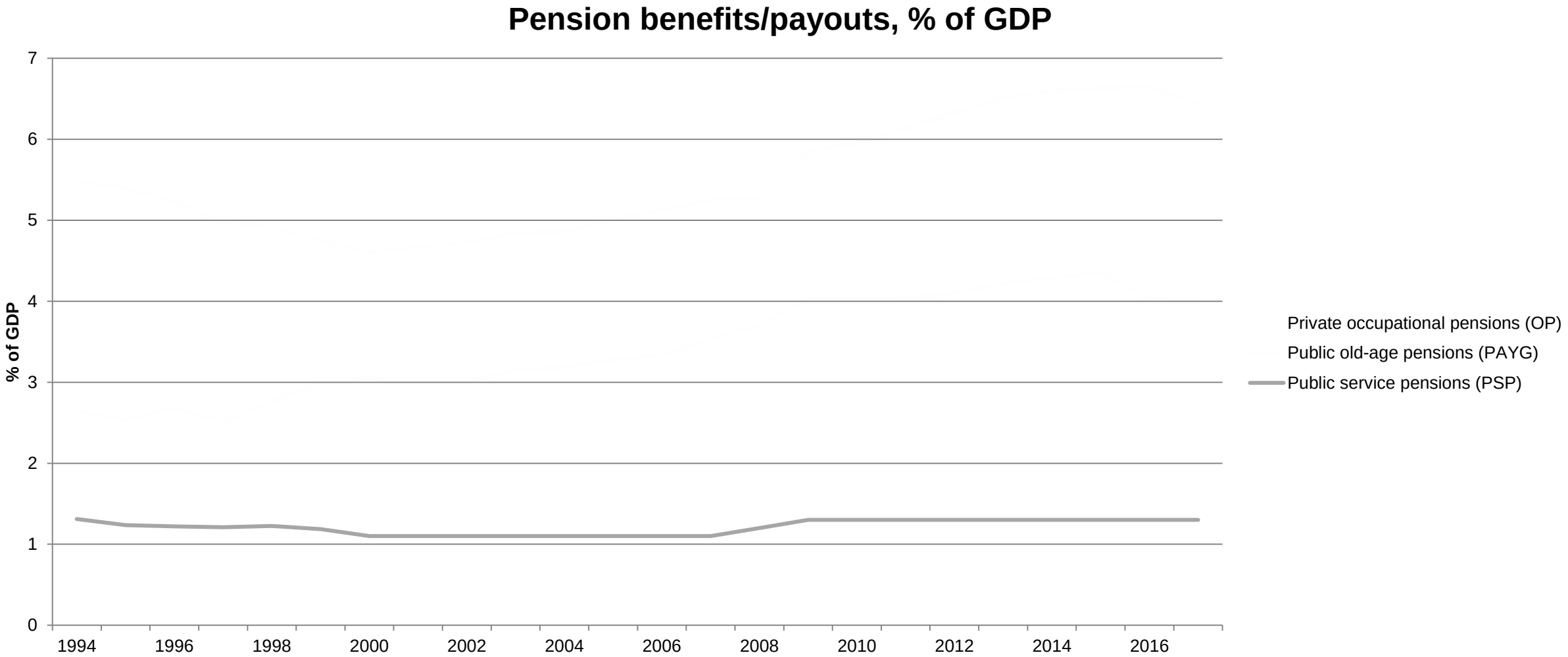

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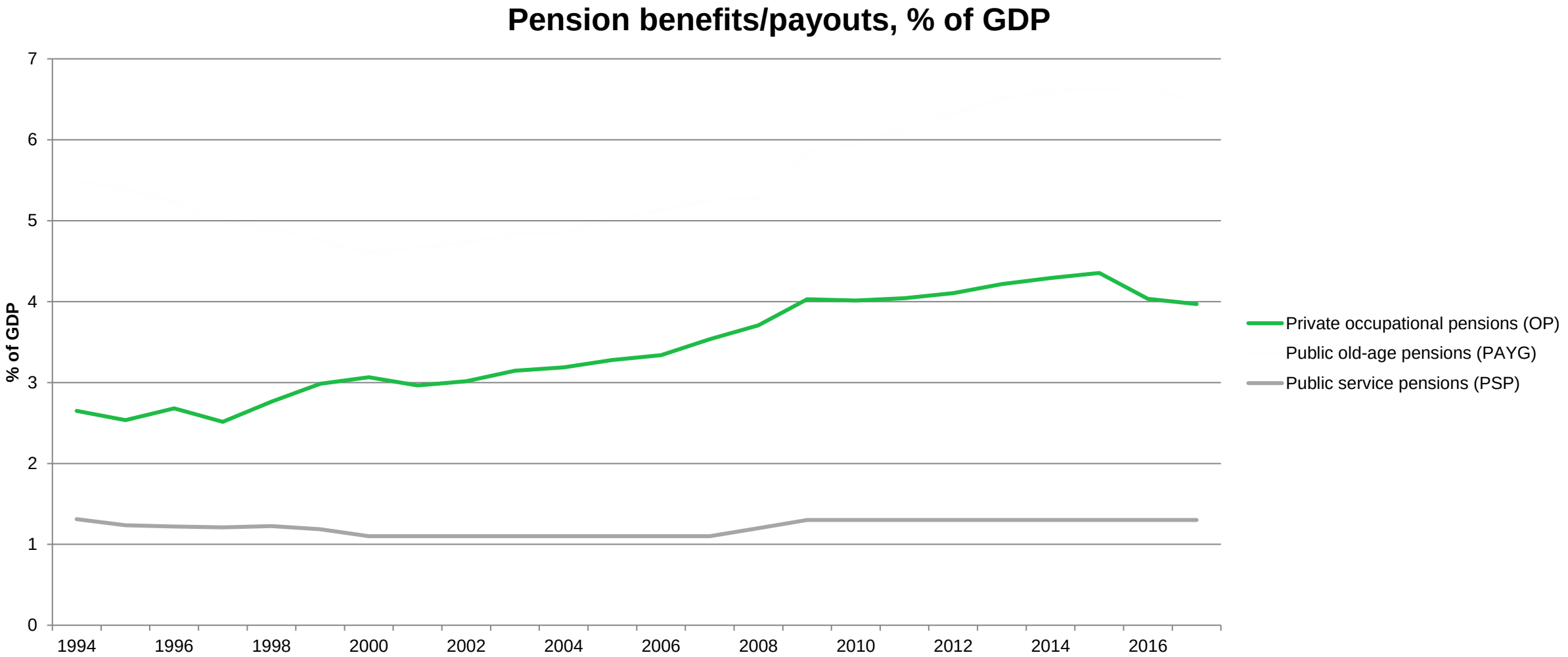

Source: Statistics Denmark

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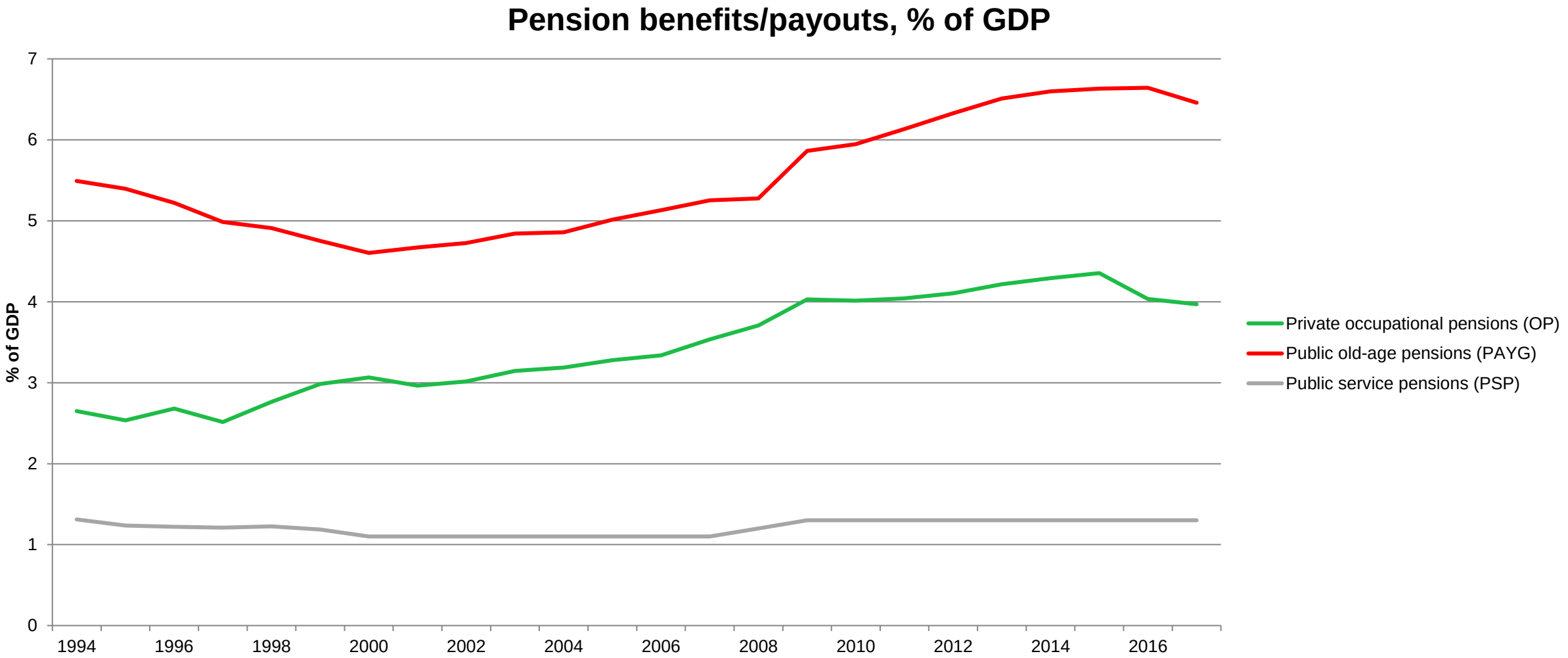


Source: Statistics Denmark

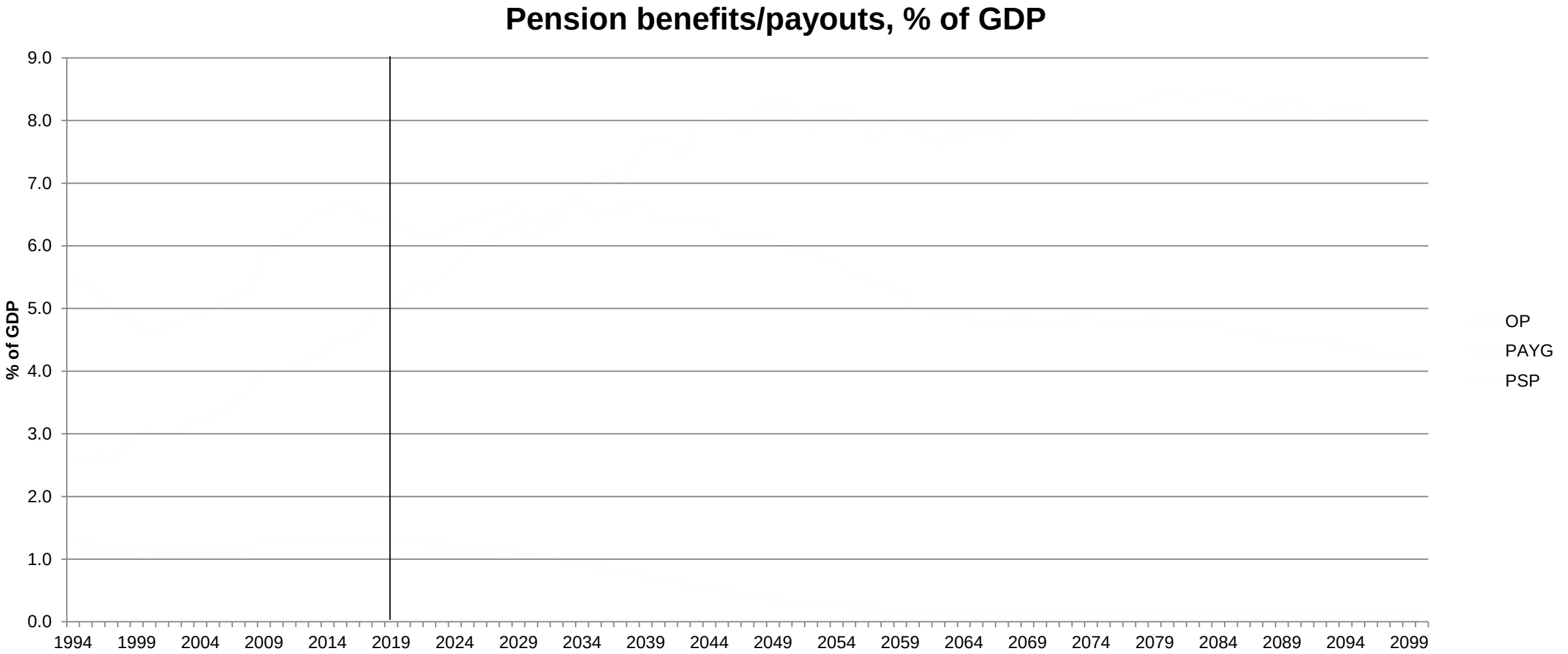
Public and private pensions in *prospect* (2017-2100)

We make projections using DREAM

- Well-established, structural, micro-founded, intertemporal simulation model
- Designed for applications related to pensions, taxation, debt sustainability etc.
- Provides empirically founded orders of magnitude…
- Used by ministries, DEC, lobby organizations etc.

Public and private pensions in *prospect* (2017-2100)

Privatization is well underway…



Source: DREAM and Statistics Denmark

Public and private pensions in *prospect* (2017-2100)

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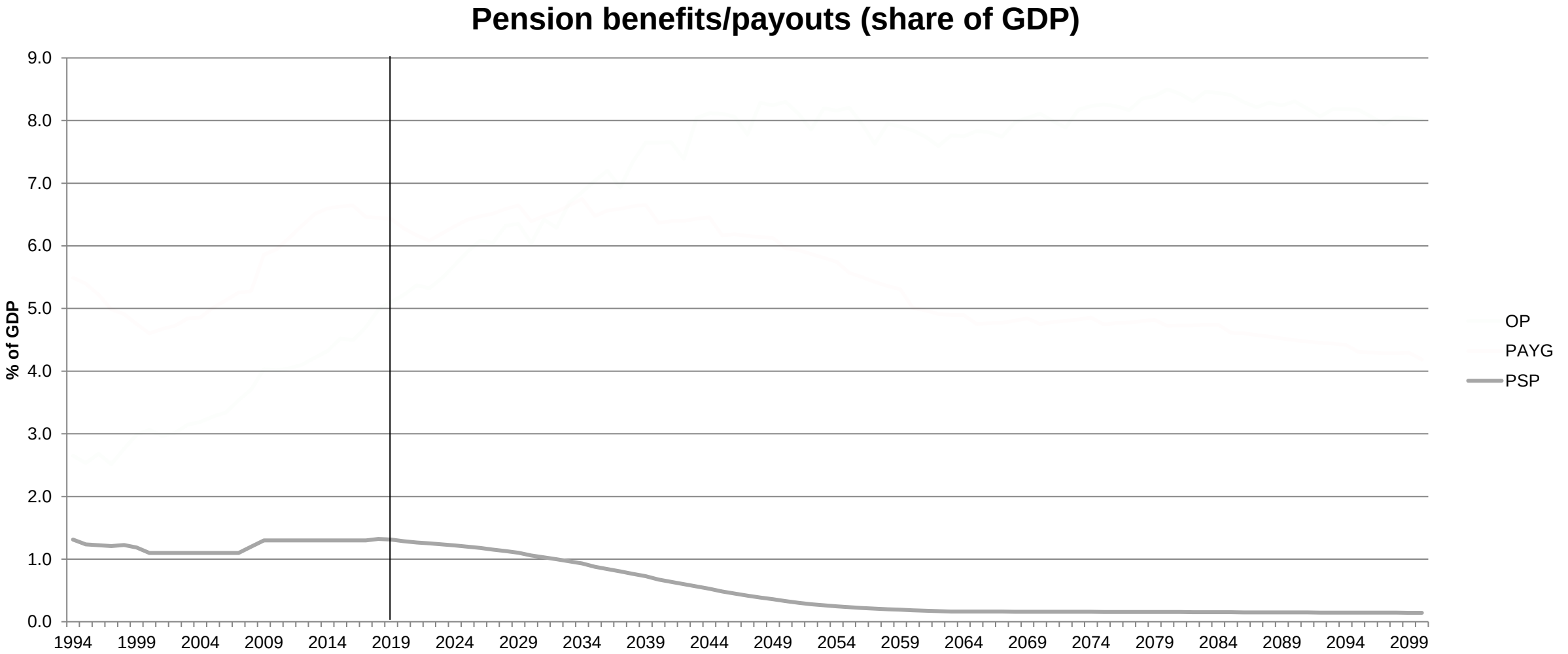

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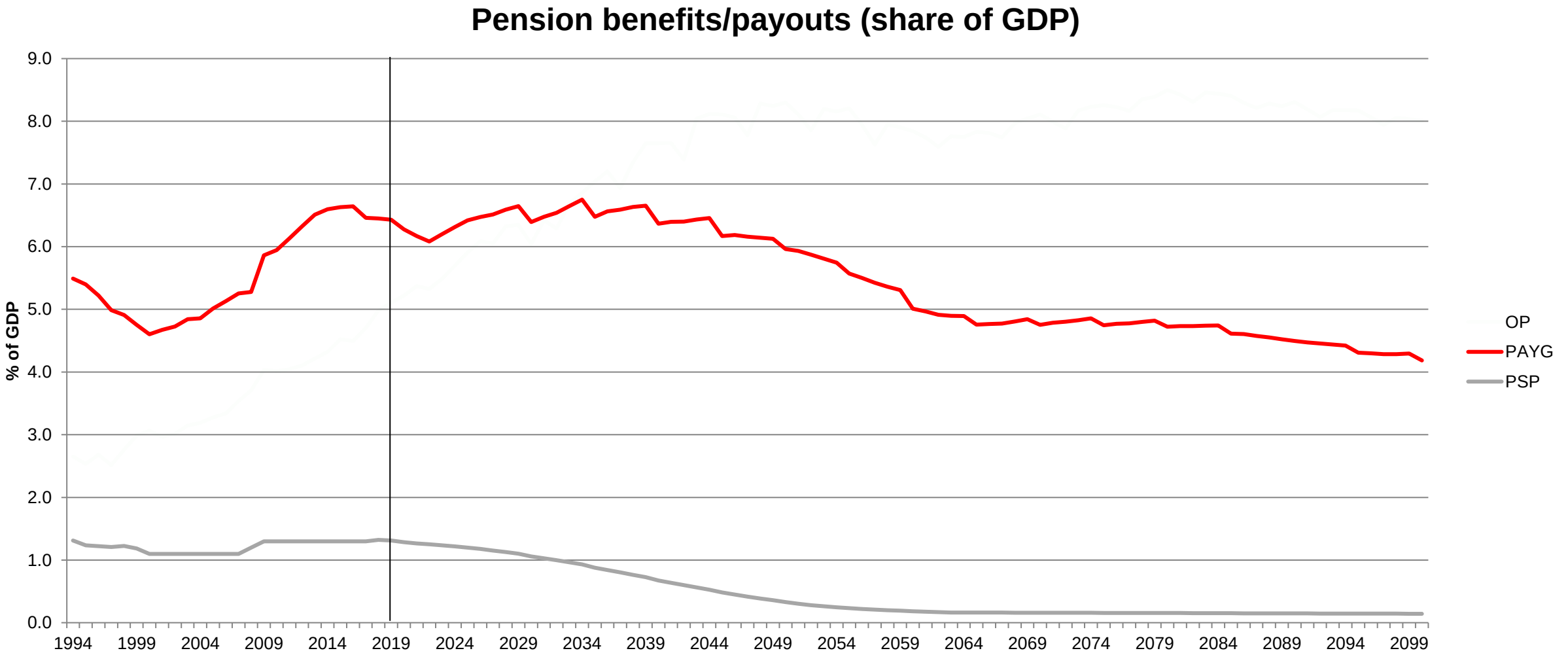

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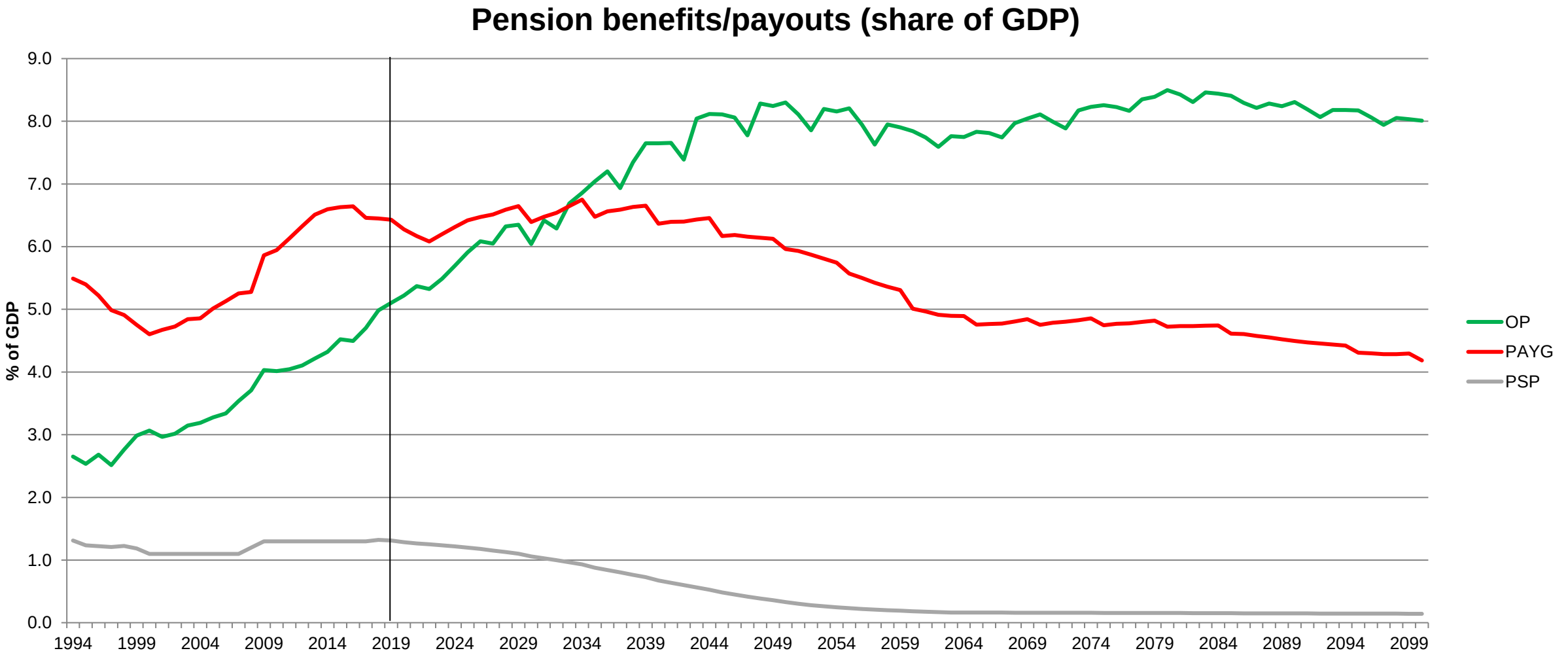


Source: DREAM and Statistics Denmark

Public and private pensions in *prospect* (2017-2130)

Privatization well underway…

- We show that:
  - Public, PAYG schemes constitute a falling share of GDP in future…
  - Private, OP schemes constitute an increasing share of GDP in future…
  - OP schemes will dominate PAYG schemes app. 15 years from now…
  - Public service pensions are being (almost) phased out…

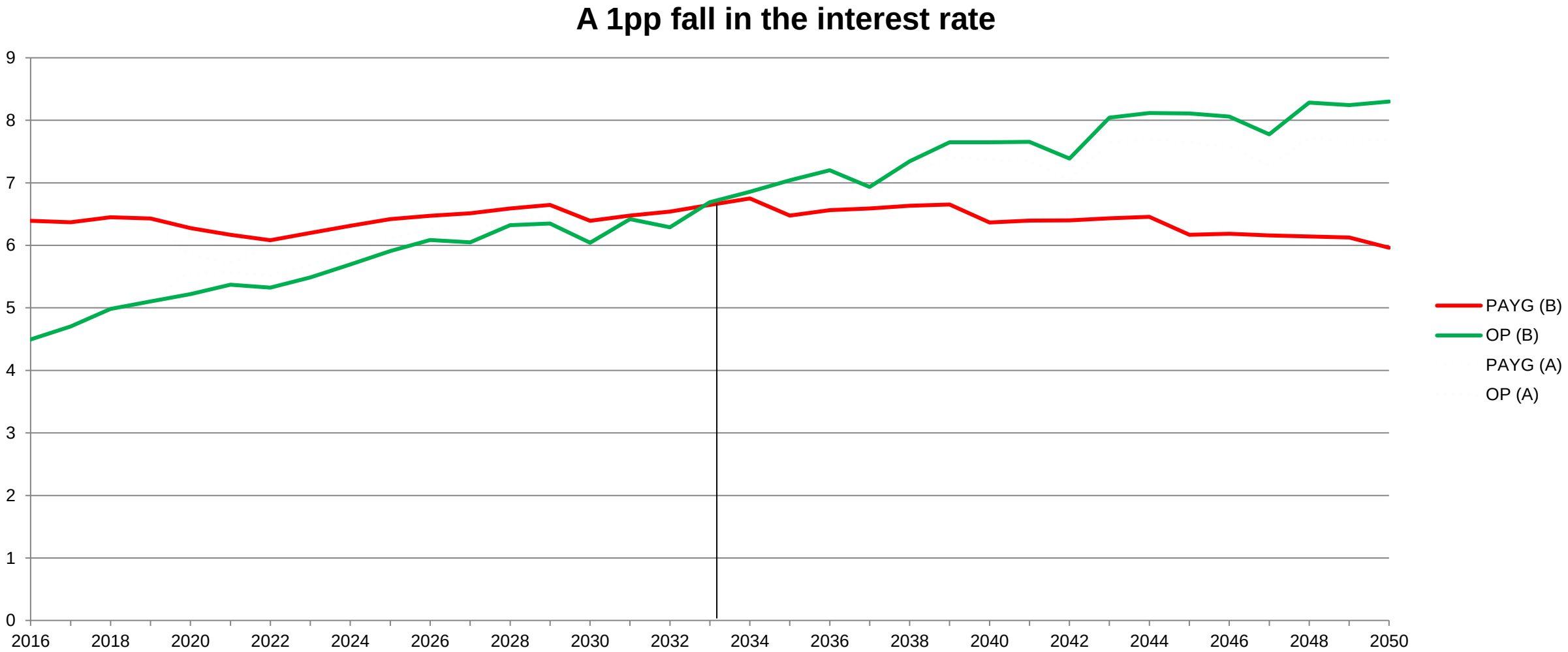
Public and private pensions in *prospect* (2017-2130)

Robustness check: interest rate and longevity

- Two *idiosyncratic* shocks:
  - Lower interest rate
  - Increased longevity
- *Composite* shock:
  - Lower interest rate AND increased longevity

Public and private pensions in *prospect* (2017-2050)

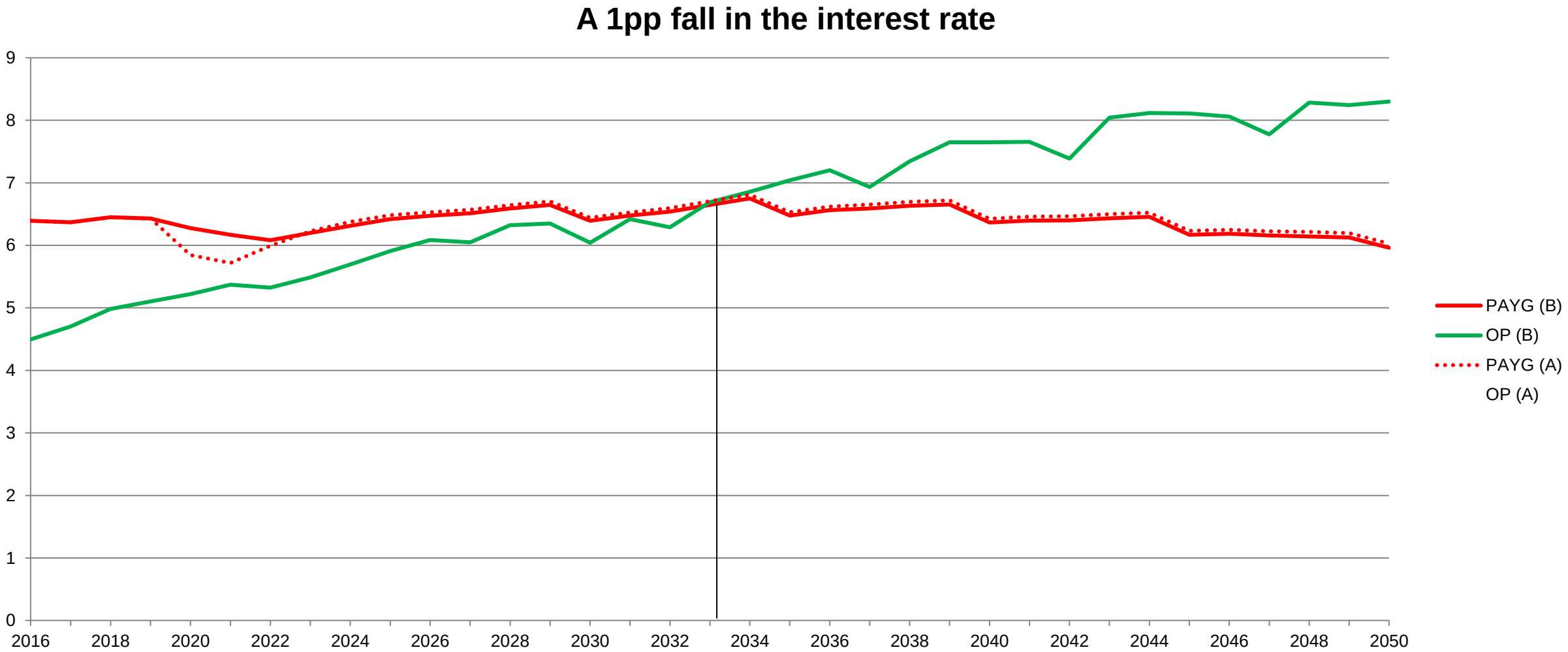
Effects of a permanently lower interest rate



Source: DREAM

Public and private pensions in *prospect* (2017-2050)

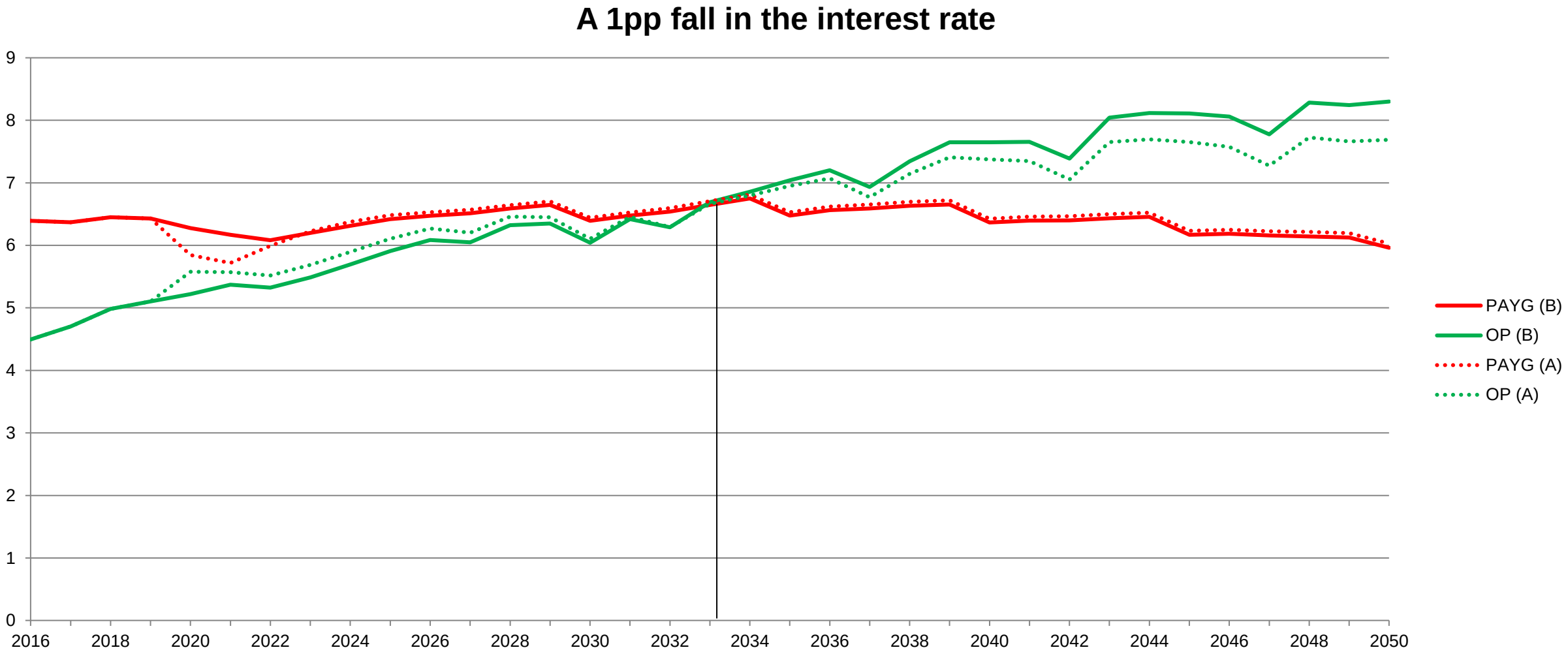
Effects of a permanently lower interest rate



Source: DREAM

Public and private pensions in *prospect* (2017-2050)

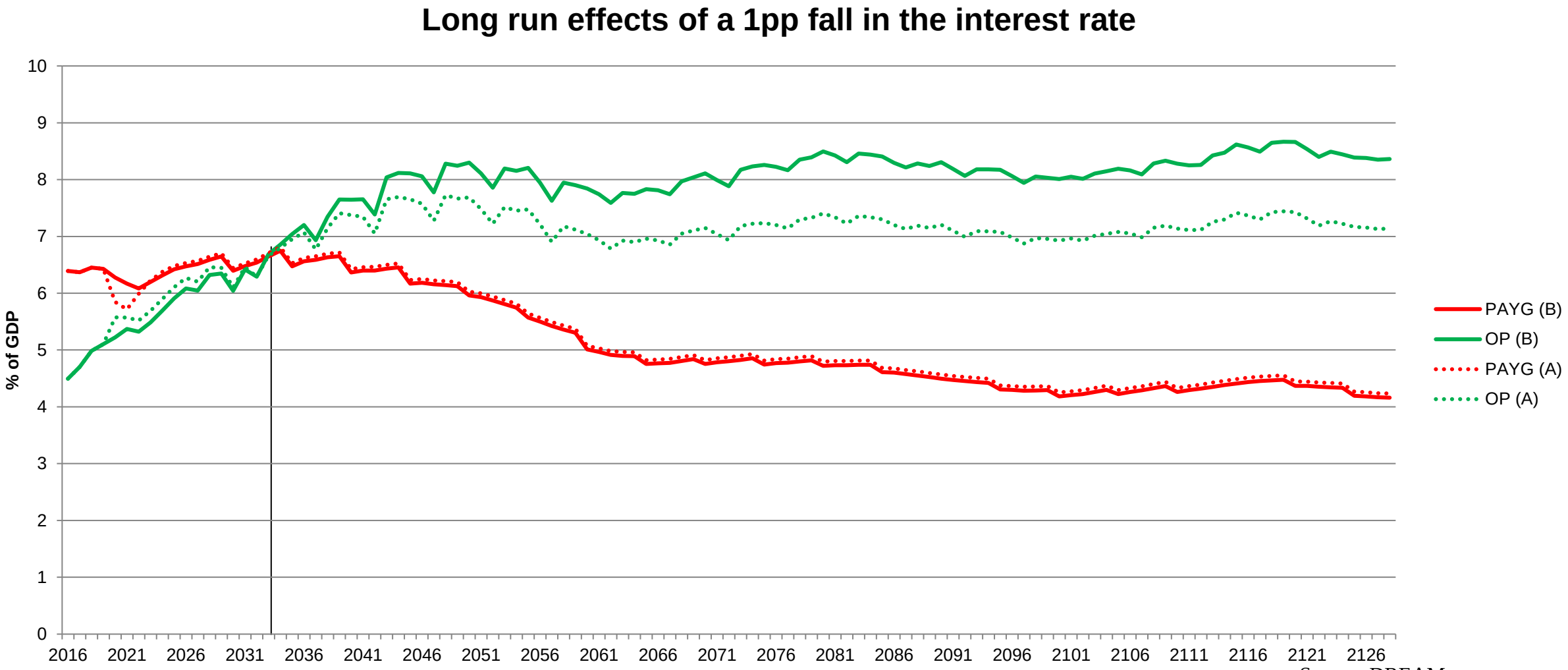
Effects of a permanently lower interest rate



Source: DREAM

Public and private pensions in *prospect* (2017-2130)

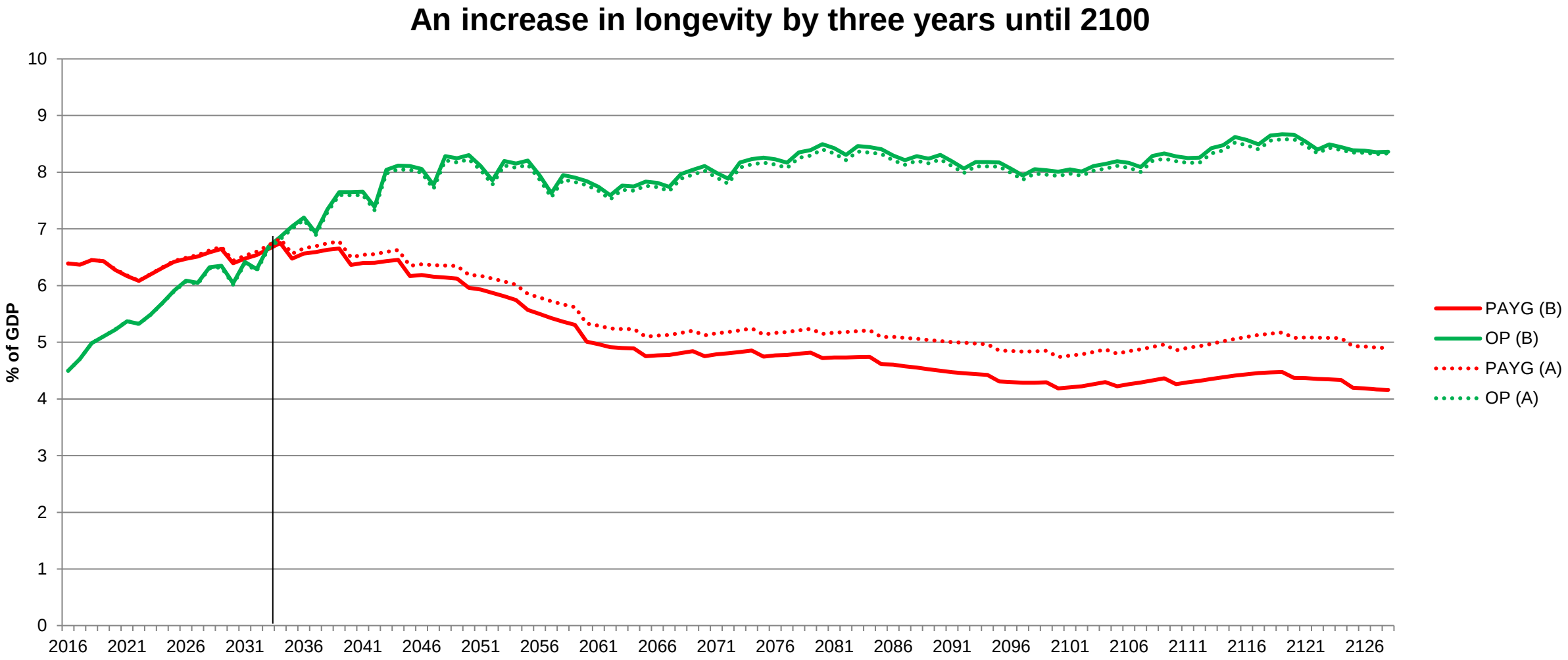
Long run effects of a permanently lower interest rate



Source: DREAM

Public and private pensions in *prospect* (2017-2130)

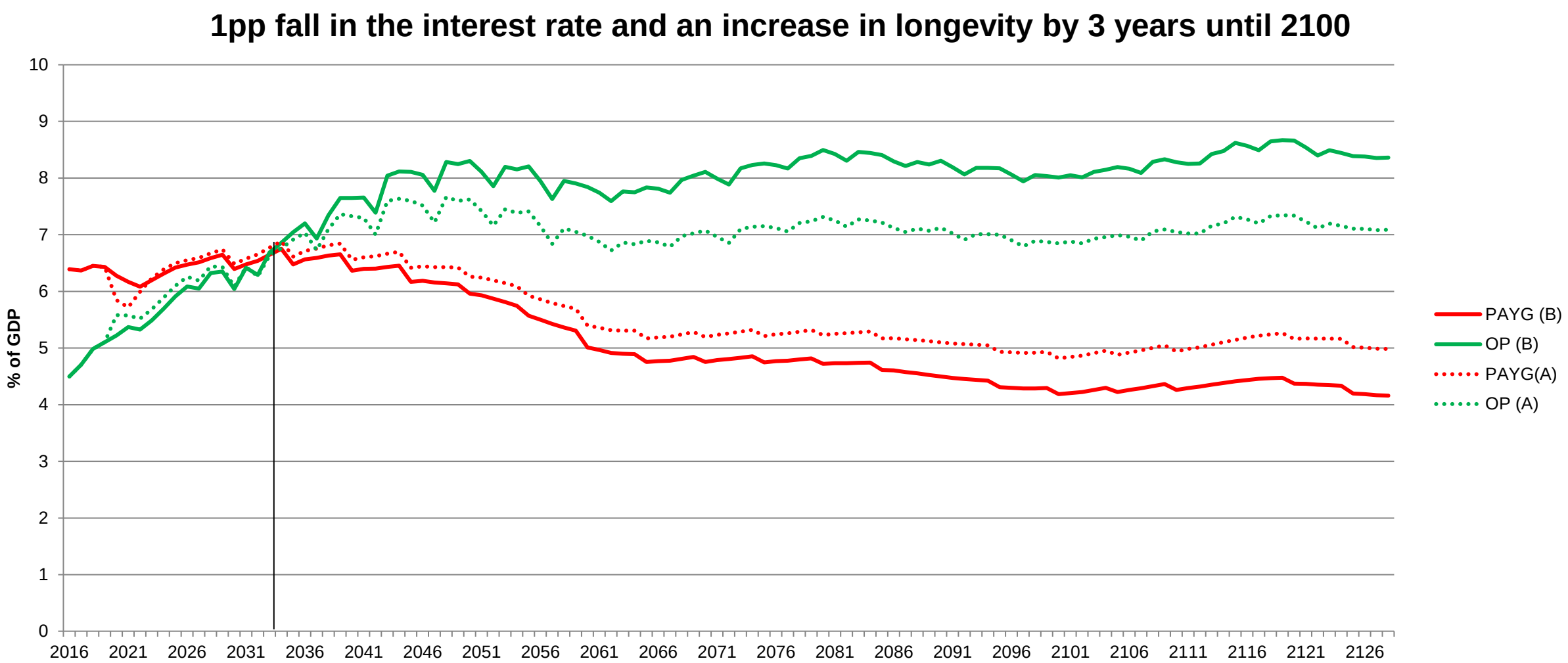
Effects of an increase in life expectancy



Source: DREAM

Public and private pensions in *prospect* (2017-2130)

Lower interest rate and higher life expectancy…



Source: DREAM

Public and private pensions in *prospect* (2017-2130)

Narrowing the gap…

- A lower interest rate and higher life expectancy: “the new normal”?
- Households in the lower end of the income distribution who end up with lower private pensions as a result of a lower interest rate receive more from the public system.
- A lower interest rate implies a capitalization effect on the existing assets, thus providing scope for higher pension payouts in the short-to-medium term.
- However, as time passes, a lower interest must be reflected in lower payouts. This is a standard “macro story” – but the *actual* payout profile may differ from that…
- A higher life expectancy will (a) lower pension payouts (at the individual level for members with annuities) from pension funds and (b) increase aggregate public pension benefits.
- Therefore, “the new normal” serves to dampen the tendency toward “privatization” of the Danish pension system, by narrowing the gap between the pillar 1 and pillar 2.

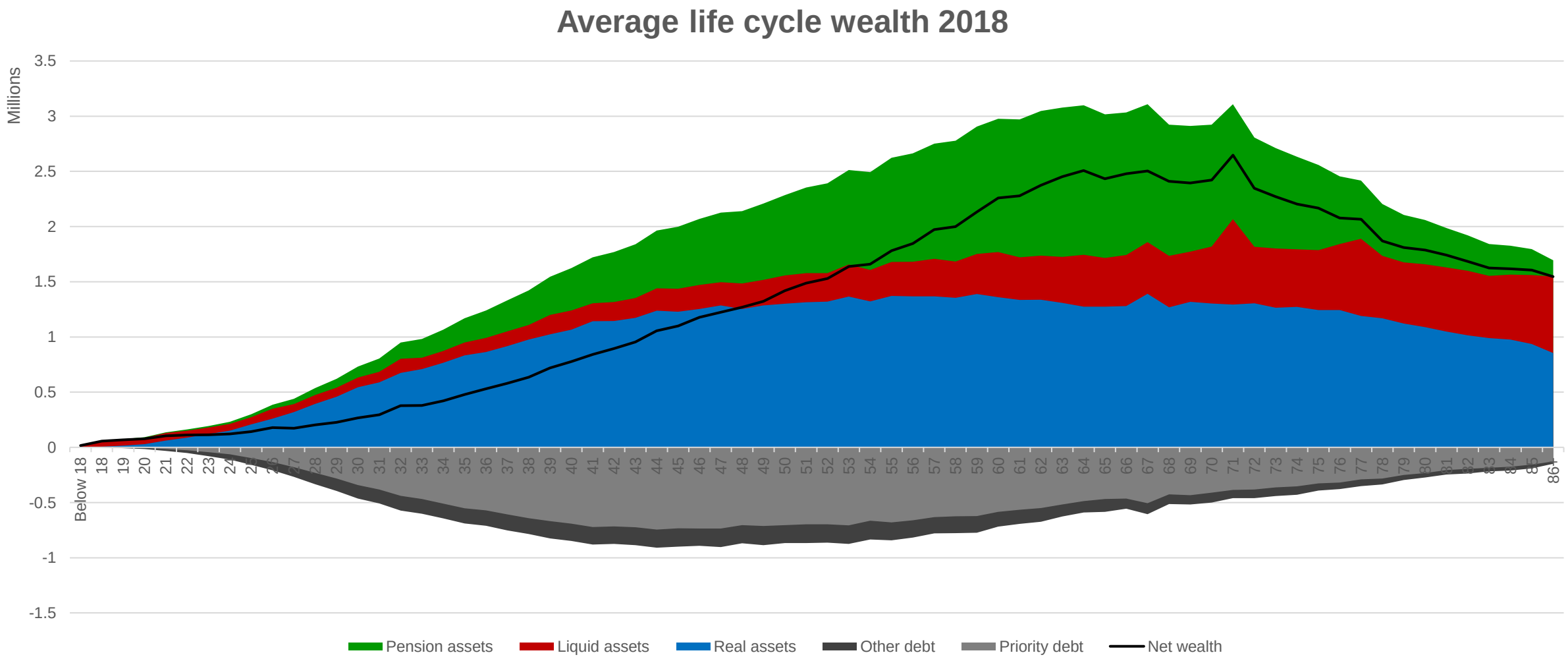
Key feature of the Danish pension system: Implicit insurance effect

Mainly a protection of retirees with low benefits/payouts…

- Changes in private pensions due to a lower return on pension savings are *shared* with public pensions.
- Households ending up with lower private pensions receive more from the public system.
- However, since means testing applies to relatively low incomes/pensions, there is an *asymmetry* in the insurance mechanism.
- In the case of a *higher* private pension, means testing *ceases at some point*, implying that further increases in private pensions benefit the individual (low effective tax).
- The *implicit insurance* created via means testing and taxation is thus mainly an insurance against *downside risks*.

Home equity as a potential pension device…

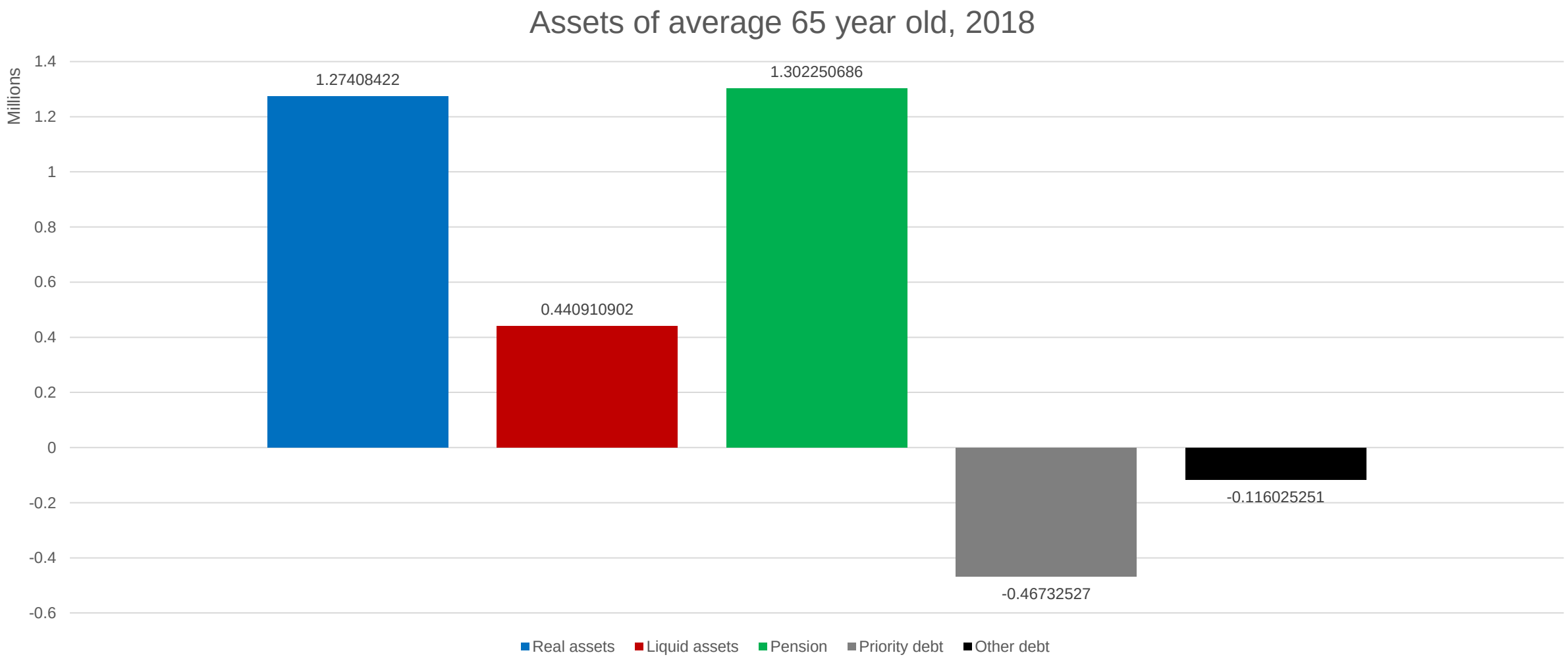
Households accumulate net housing wealth over the life cycle – and retain it in old-age…



Source: Statistics Denmark

Home equity as a potential pension device…

A closer look at the data…



Source: Statistics Denmark

Home equity as a potential pension device…

Releasing home equity – with restrictions…

- **Multiple ways of releasing home equity:**
  - Reverse mortgage
  - Sell house – and buy smaller house
  - Sell house – and rent
  - Sell the equity of the house…

- **Restrictions on an equity release:**
  - Rules and regulations
  - Policies implemented by mortgage institutions
  - Etc.

Home equity as a potential pension device…

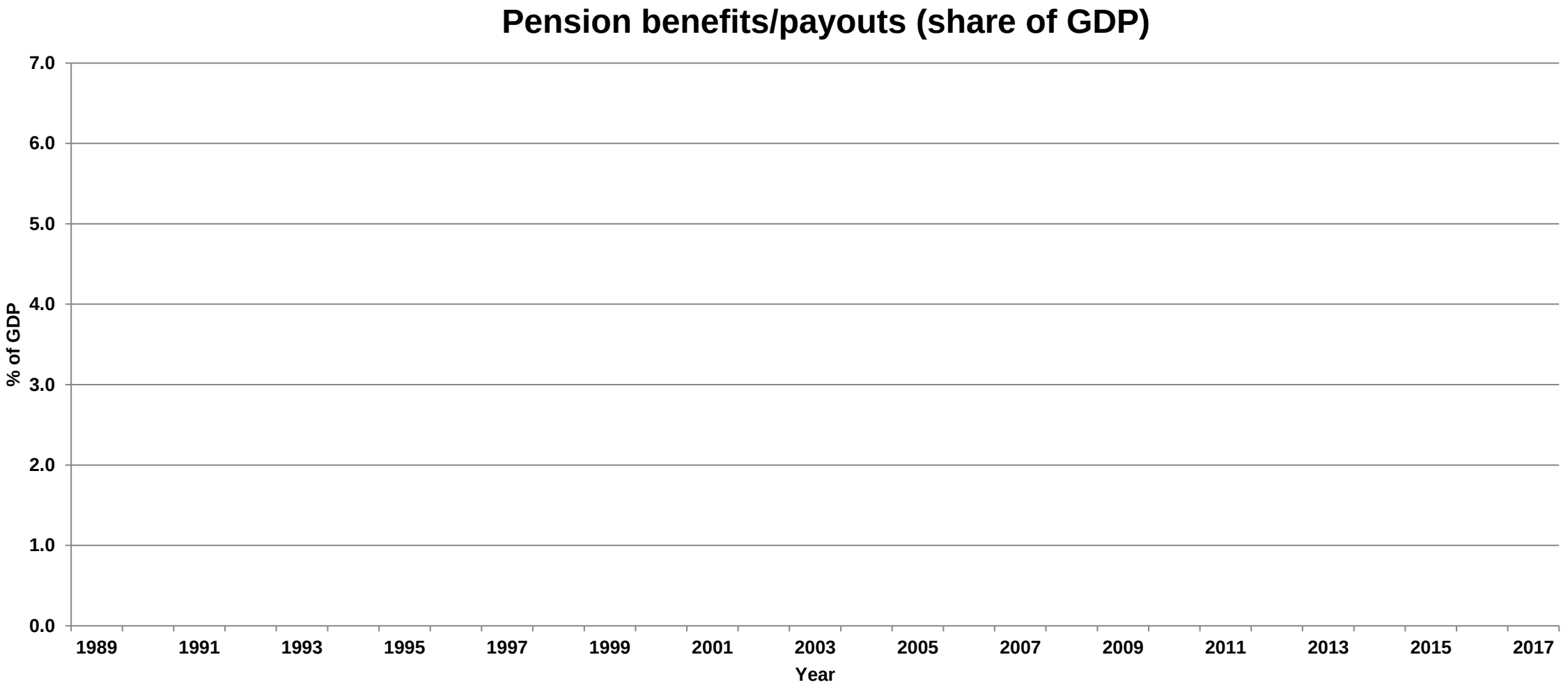
A 2017 snapshot

- DKK 733.965 then transformed into an annuity.
- It’s running over the expected remaining lifetime, i.e. a period of app. 20 years…
- Assuming a long-term interest rate of 0%, the annual payout amounts to DKK 733.965 /20 ~ DKK 36.698

Source: Statistics Denmark

Home equity as a potential pension device…

A historical perspective (1989-2017)



Source: MONA and Statistics Denmark

Home equity as a potential pension device…

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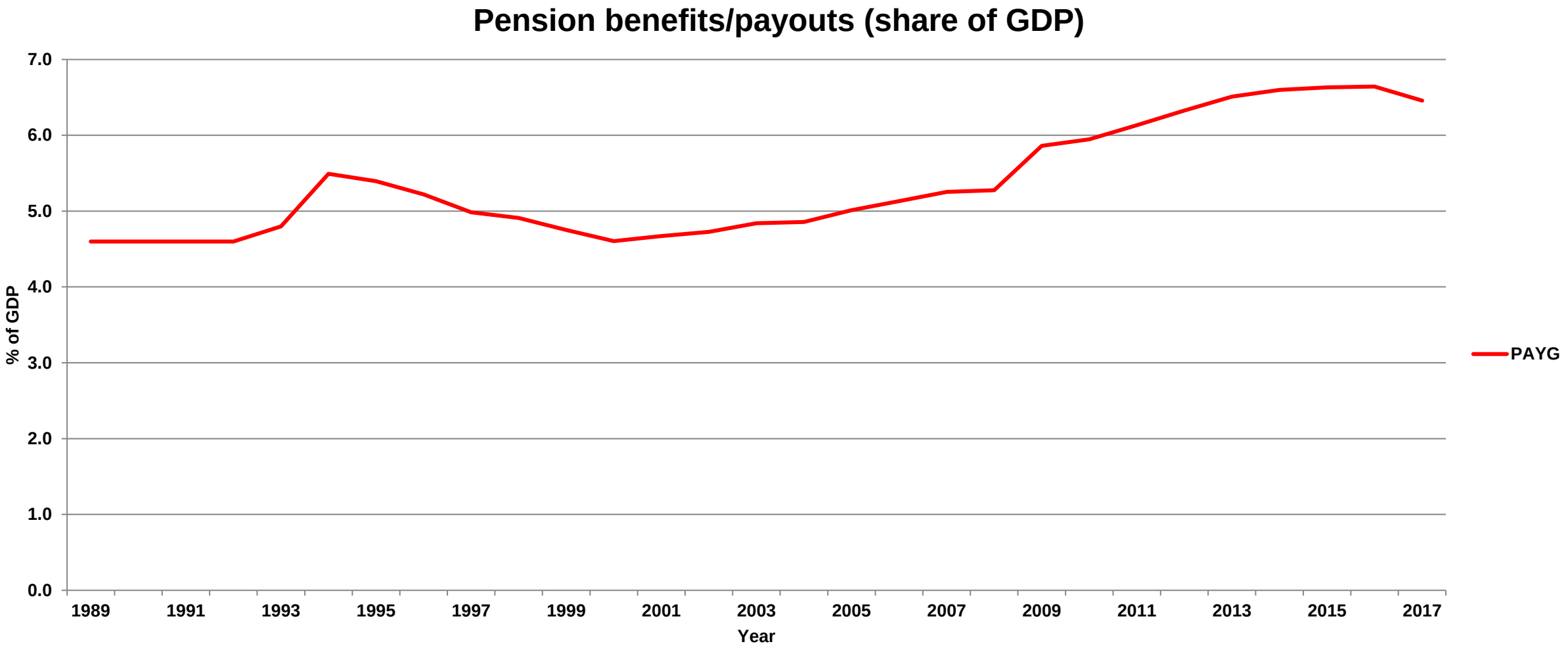

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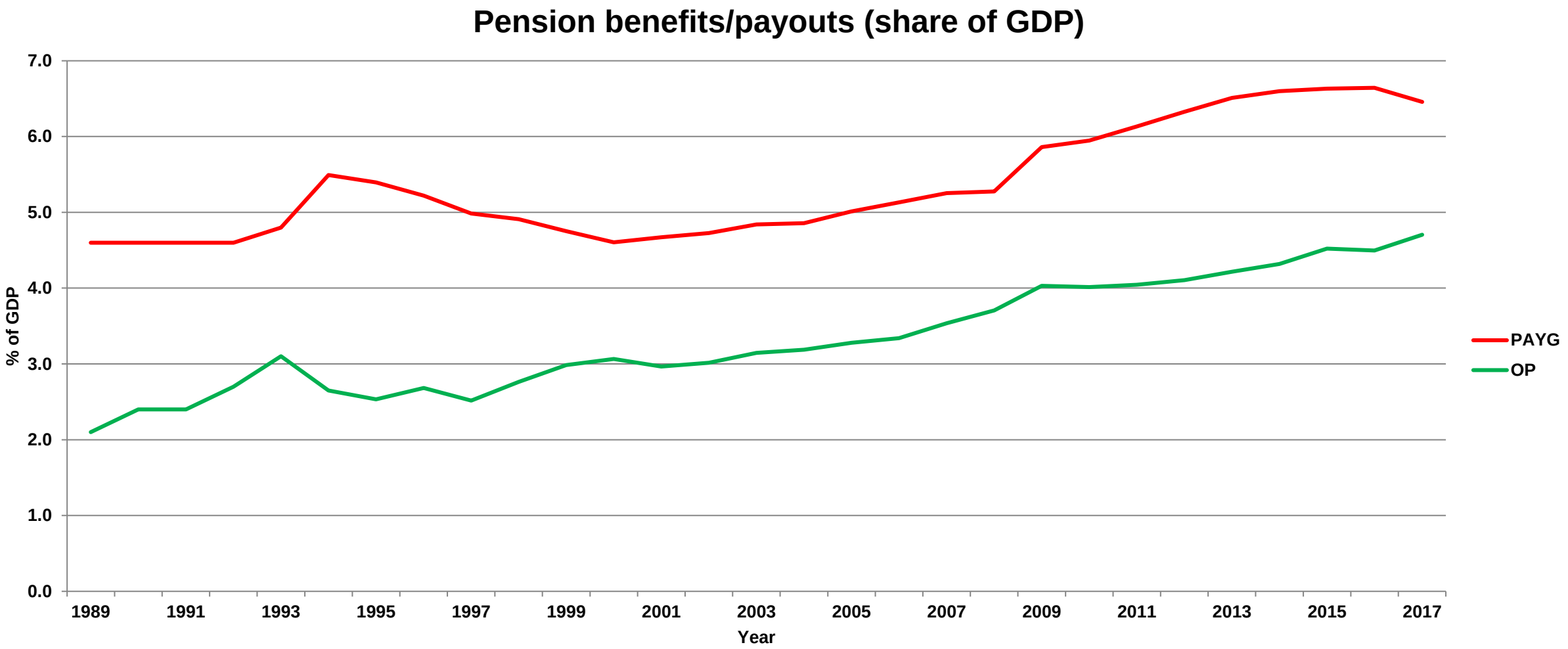

Source: MONA and Statistics Denmark

Home equity as a potential pension device…

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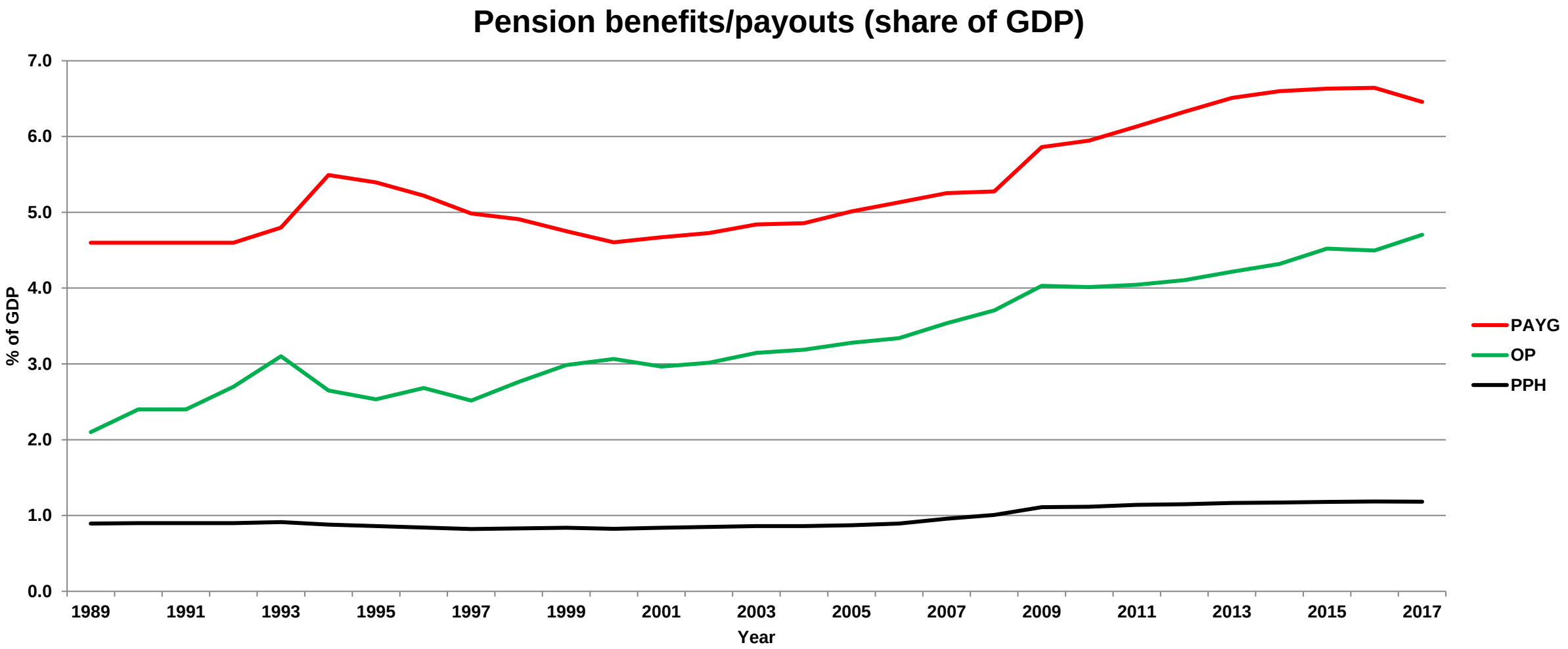
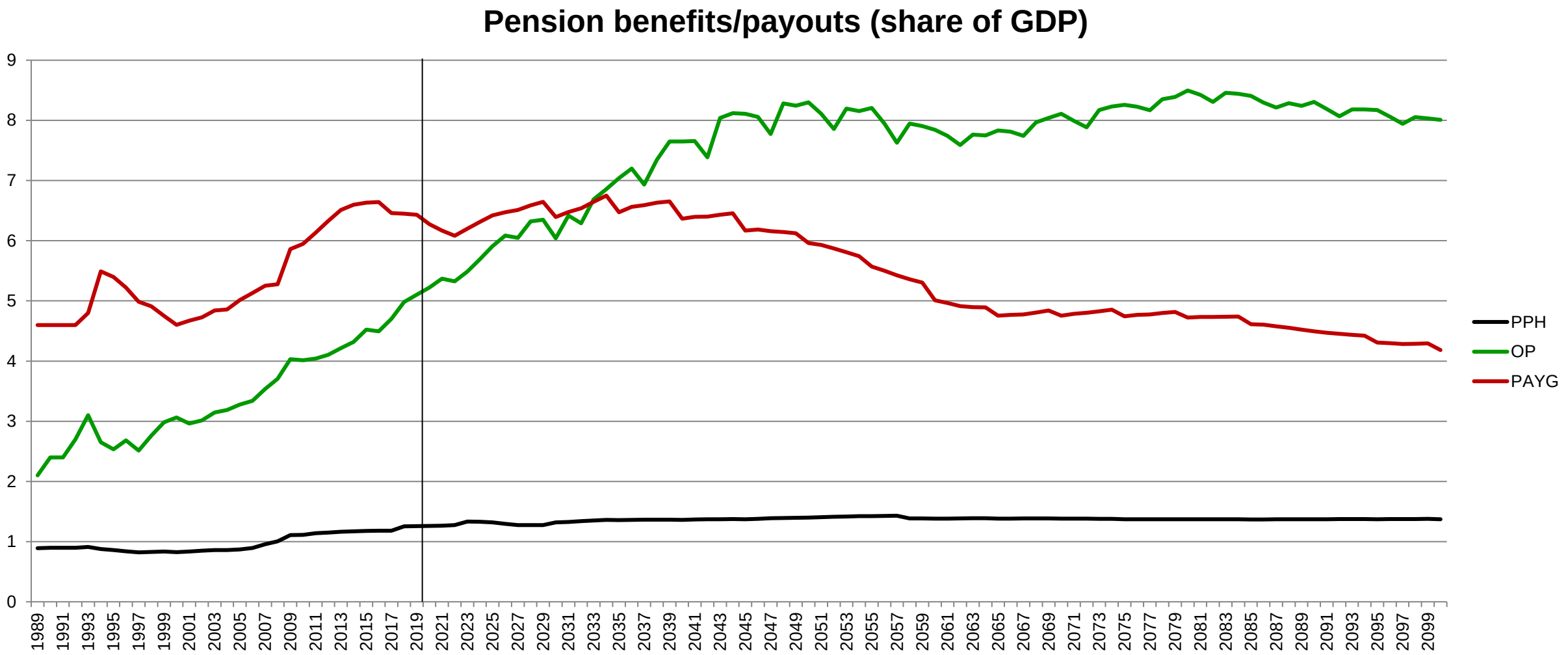


Source: MONA and Statistics Denmark

Home equity as a potential pension device…

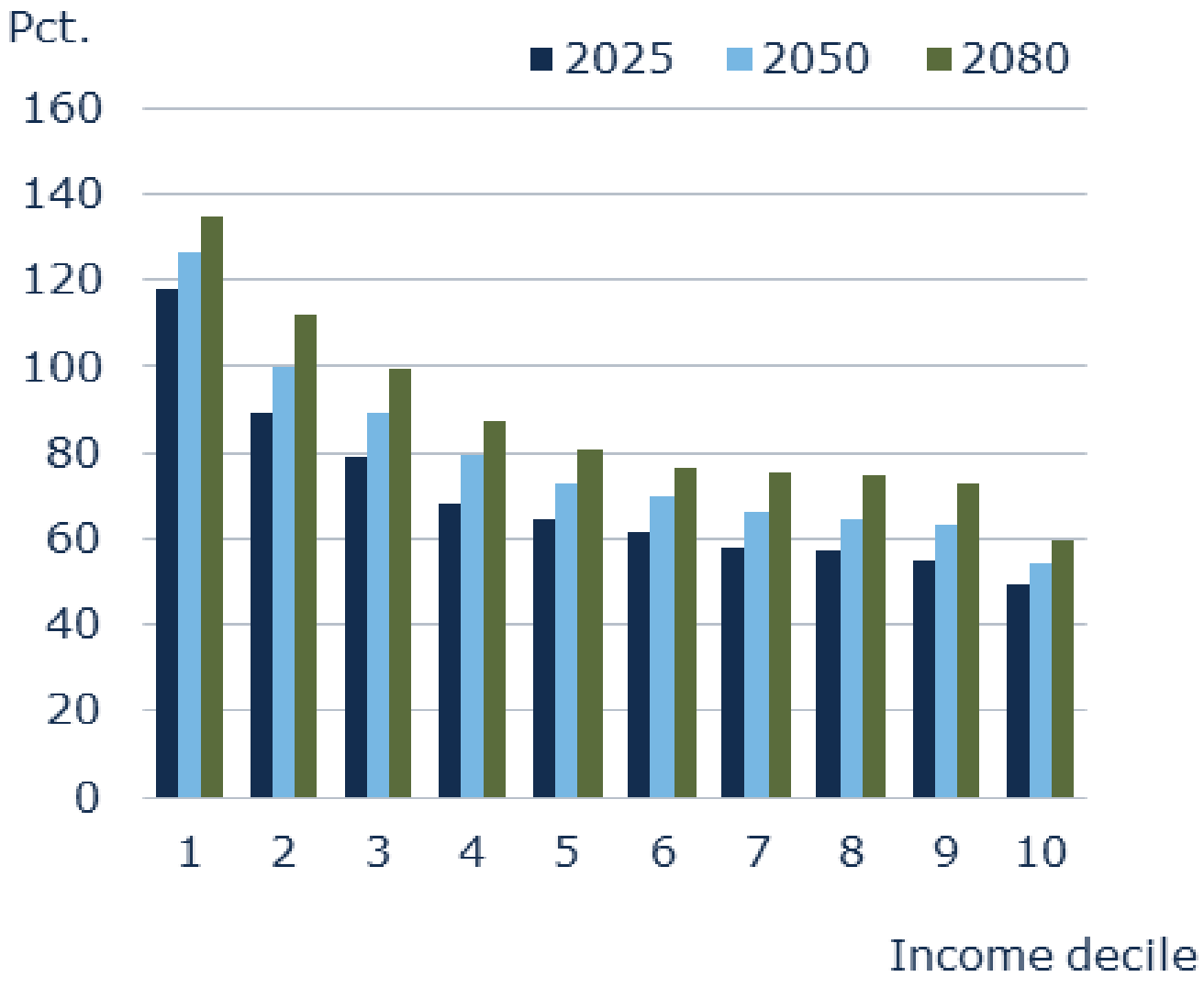
A new three-pillar system…



Source: Statistics Denmark, MONA and DREAM

Home equity as a potential pension device…

Contributions from housing equity could flatten the distribution profile of (net) replacement rates…



Home equity as a potential pension device

Key takeaways

- Not as powerful as the public PAYG schemes or the private OP schemes…
- Yet, a strong candidate to fill pillar 3 of the Danish pension system…
- Issues related to inequality: only available to house-owners…
- However, could serve to flatten the profile of replacement rates across the income distribution…

Taxation of pensions

Partial conversion from an ETT to a TTE principle of taxation

- The motivation for front-loading the taxation of pension savings could be a wish to more easily satisfy:
  - Fiscal compact in the euro area;
  - Danish budget law;
  - Any other fiscal rule.
- Or: to simply treat pension savings like other forms of savings in the Danish tax system…

From ETT to TTE

”Aldersopsparing”

- In 2013/2018 a new pension scheme, so-called “aldersopsparing” (“saving for pension”), was introduced - which is basically a *TTE* scheme.
- From 2018 the tax regime regarding pension savings is gradually transforming from a pure *ETT* regime to a “mixed” regime of taxation…

From ETT to TTE

”Aldersopsparing”

- When fully matured, it is expected that roughly 25-35 per cent of blue collar workers gross pension wealth will be subject to TTE.
- While the “*toxic combined taxation*” has more or less been solved, this has (partly) been done at the expense of a *partial conversion* from ETT to TTE.
- This raises fiscal challenges in the medium-to-long term…

From ETT to TTE

Fiscal implications

DKK bn.	2018	2038		2058	
			Diff to 2018		*Diff to 2018*
Old age pension expenditures (pre-means testing)	117,5	122,7		106,2	
Old age service provision (including health)	108,6	154,6		168,8	
Total	226,1	277,3	*51,2*	275,1	*49*
OP and Private Pension benefits (taxable)	72,2	121,3		145,7	
OP and Private Pension benefits (untaxed)	11	14,8		15,5	
Income tax revenue of pension benefits	27,9	43,3		52,2	
Effect on VAT and other indirect benefits	8,9	14,9		17,4	
Phasing out of pension supplement	6,9	9,8		11,1	
Total	43,7	68	*24,3*	80,7	*37*
Counterfactual experiment without switching to a mixed ETT and TTE:					
Additional phasing-out of pension supplement		3,6		5,6	
Additional tax revenue of pension benefits		11,1		12,8	
Total		79,1	*35,4*	93,5	*49,8*

Partial conversion from ETT to TTE

The numbers in a nutshell: Mind the gap

- For comparison with base year:
  - 2038 (ageing is peaking)
  - 2058 (OP matured, ageing manageable)
- Expenditures:
  - 2038 vs. 2018: + 51 2058 vs. 2018: +49
- Revenues (net):
  - 2038 vs. 2018: + 24 2058 vs. 2018: +37
- ”Deficit” (B): ”Mixed”
  - 2038 vs. 2018: 27 2058 vs. 2018: 12
- ”Deficit” (A): ETT
  - 2038 vs. 2018: 16 2058 vs. 2018: 0

Partial conversion from ETT to TTE

Key takeaways

- So, with a ETT principle, there would have been balance in 2058…
- Frontloading does not necessarily compromise sustainability.
- BUT: would the additional frontloaded revenues be saved?
- Typically, the conduct of fiscal policy is associated with a defit bias…

Threats

Due diligence…

- Political *consensus* and a *collaborative approach* to working with *key stakeholders* are key to success.
- This is unlike, say, the UK, which is more of an individualistic society compared to the *inclusive cultures* of Nordic countries.
- However, it is important to regularly check if the underlying incentives and rules of the pension schemes are compatible with the desired goals…

Threats

Specific challenges related to increases in longevity

- What if there is a (large) group of citizens whose health and work abilities do not follow the general increase in life expectancy? Wouldn't it be wrong to disregard such inequality when adjusting the retirement age?
- How do pension funds respond to increases in longevity if they offer guaranteed (with-profit) products?

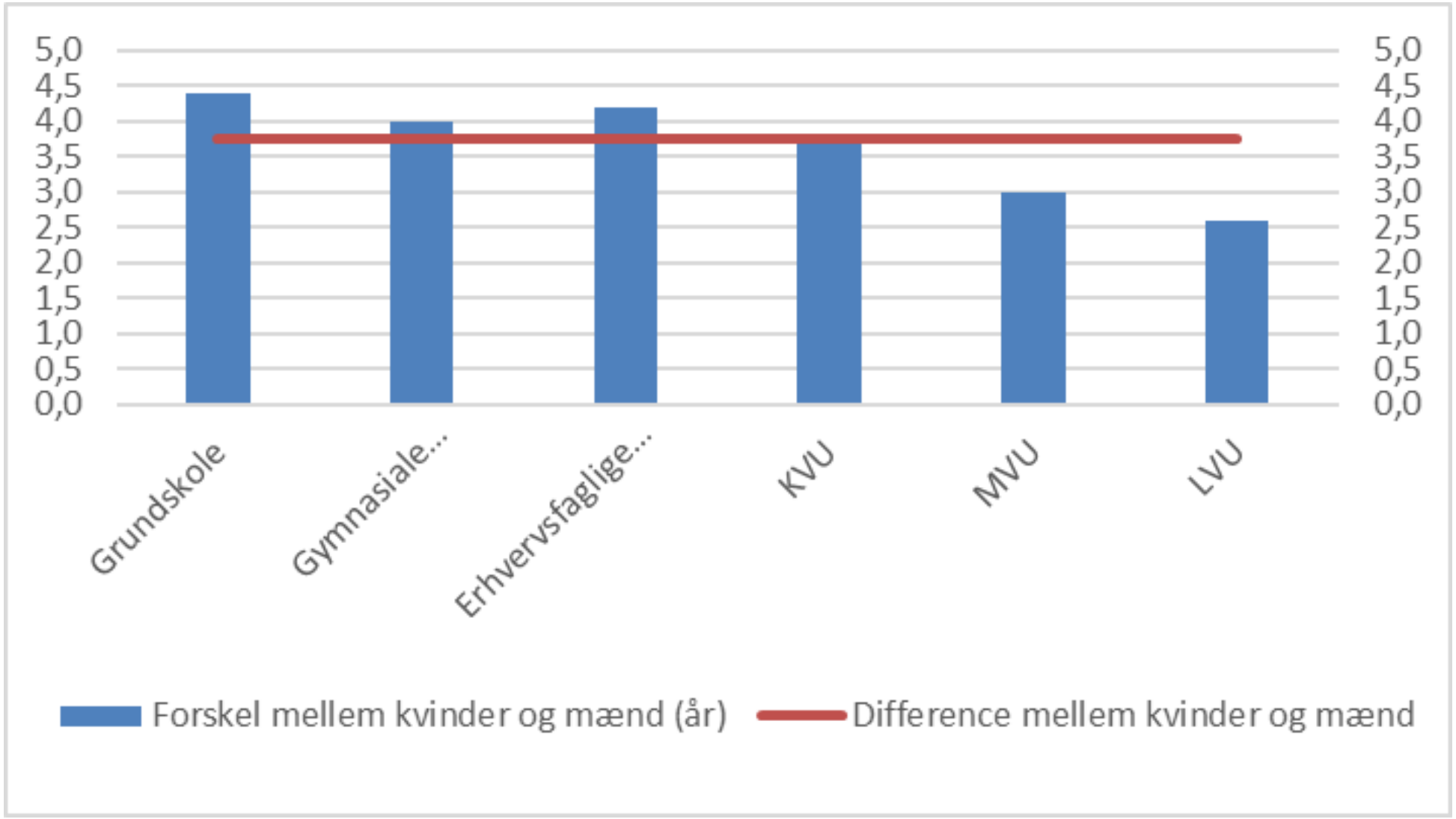
Longevity varies across educational/socioeconomic groups:

A case for differentiated retirement age?

- Well documented that:
  - there is considerable inequality in longevity…
  - It's long been known that women live longer than men.
  - We also know that highly skilled people have a longer life span than lower skilled: For those with a shorter education, there's typically a higher degree of attrition, which leads to a shorter lifetime.
- Some numbers:
  - In Denmark, a 30-year-old unskilled man can expect to reach 76.1 years, while a 30-year-old man with a long higher education can expect to reach 83.7 years.
  - For women, the numbers are 80.5 and 86.3 years.
  - This is a difference of 7.6 years for men and 5.8 years for women.

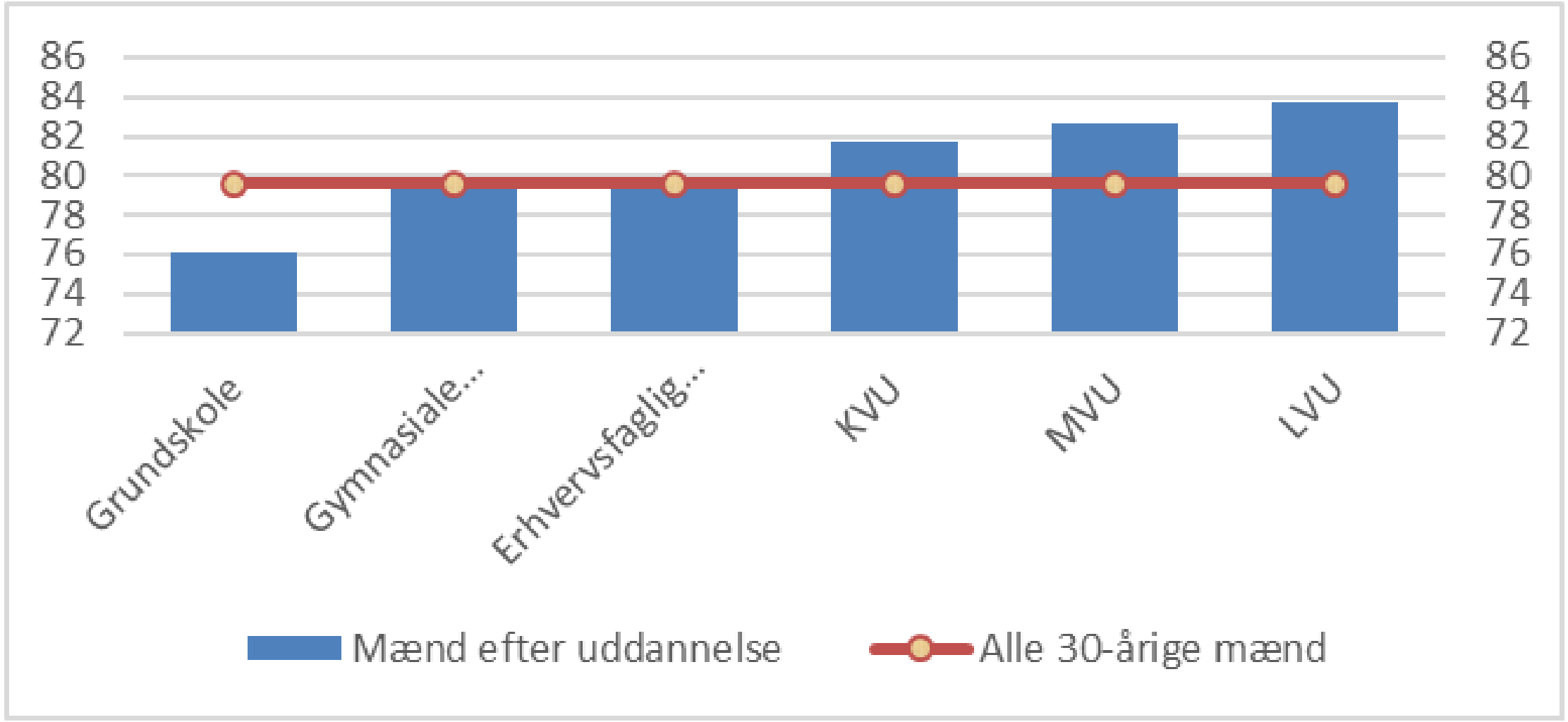
Differences in longevity between 30 year old men and women

Variation across type of education, 2014-2018



Longevity for 30 year old men, different educational groups

2014-18



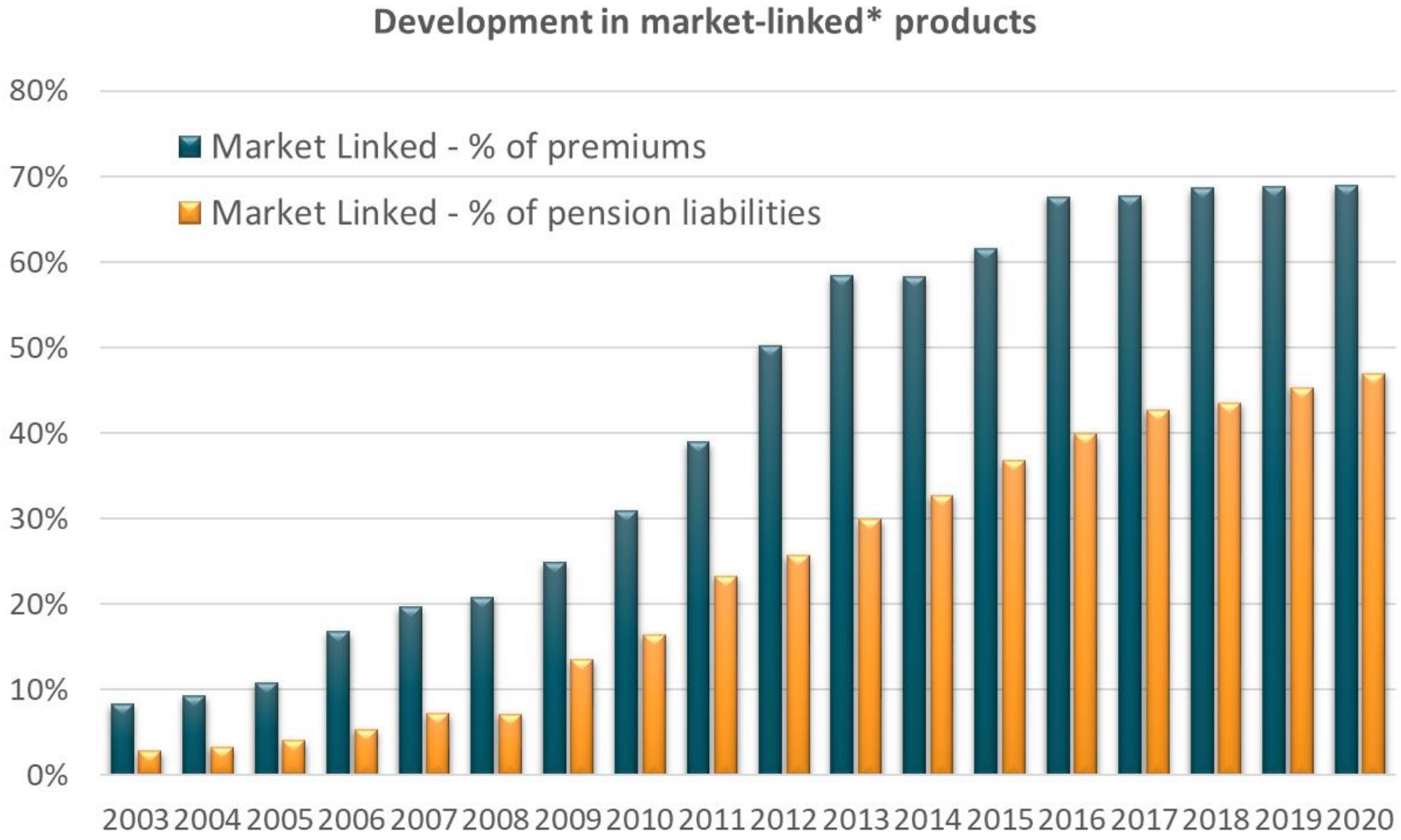
Longevity varies across skill types:

A case for differentiated retirement age?

- No indication that this gap in lifespans will narrow in the foreseeable future- on the contrary.
- This means that if we all have the same old-age pension age, then highly skilled people get a longer retirement period than lower skilled people.
- This has given rise to the idea of allowing an earlier withdrawal from the labour market for the lower skilled and work worn.
- Two important principles for such a model:
  - First, an early withdrawal scheme should be designed so that it doesn't undermine the welfare agreement. The welfare agreement is crucial for the sustainability of the Danish economy.
  - Second, public pensions should be based on an actuarial principle, so that the total pension benefit received throughout retirement is not significantly affected by the timing of retirement.

Lower interest rates and increased longevity: big challenge to pension funds

Shift toward unguaranteed products in Denmark



Threats

Further challenges

- Trade union density is falling…
- “Zeitgeist” against collective, mandatory arrangements…
- Need for better communication, especially about the shift away from guaranteed products…
- Need for more flexibility, especially for younger generations…