Closing the Gender Gap in Pensions?

Pension Accrual for Unpaid Care Work and Household Behavior during Retirement

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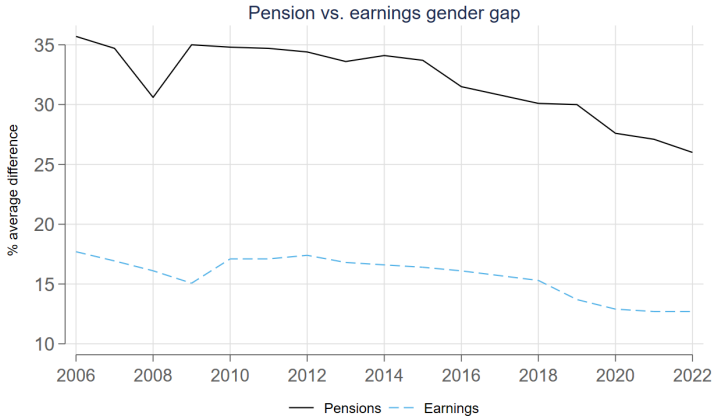
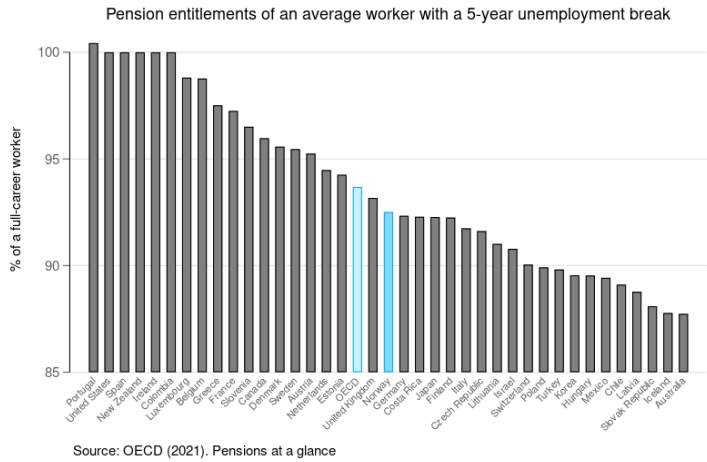
Why should we care about the gender pension gap?



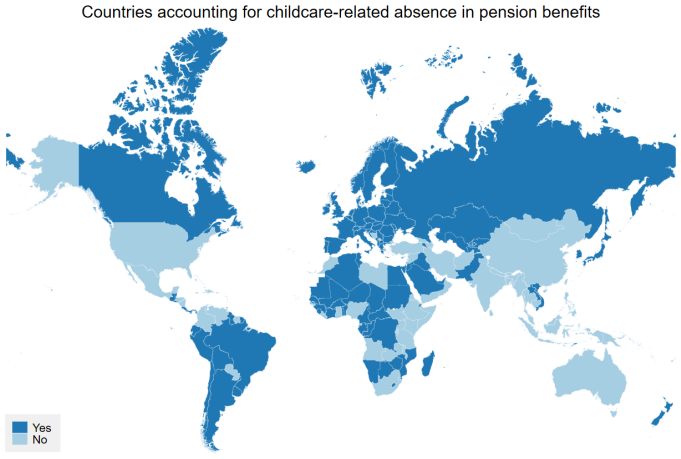
Source: Eurostat (2024). EU Statistics on Income and Living Conditions (EU-SILC), and Structure of Earnings Survey

▸ Is this true for Norway? ▸ But women live longer than men... ▸ But these are different labor markets...

Is childcare a potential driver?



Are governments doing something about it?



Source: World Bank (2024). Women, Business and the Law 2024. Washington, DC: World Bank

How do households react when women are compensated for past childcare on the eve of retirement?

- Quantify the increase in pension benefits (USD 1,791 per beneficiary and year)
- Quantify the direct effect on the gender pension gap (1.5 pp, an 8.9% decrease at a cost of USD 3.11 bn)
- Study the behavioral response in claiming, employment, and earnings + spillovers to the partners and children
- Study how a small increase in pension wealth impacts consumption (preliminary)
- Develop a framework to compare pension credits vs. policies to encourage female labor supply during working age (in progress)

Contribution to the literature

- Childcare-related pension credits: Cordova, Grabka and Sierminska (2022), Bonnet and Rapoport (2020), Halvorsen and Pedersen (2019), Artmann, Fuchs-Schündeln and Giupponi (2024), Thiemann (2015), Biasutto, Truffa and Wong (2025)
  - Provide estimates of the behavioral response along many dimensions
  - Welfare analysis of ex-post correcting gender inequality

- Labor supply responses to pure changes in pension wealth: Becker et al (2023) and Pesner (2024) $\longrightarrow$ combines retirement decisions with post-retirement consumption and health outcomes

- Labor supply and consumption after winning the lottery / unconditional cash transfers: Cesarini et al (2017), Picchio, Suetens and van Ours (2018), Golosov et al (2024), Vivalt et al (2024) $\longrightarrow$ similar windfall gain, very different nature of the shock

Pension rights for care work

Individuals caring for children under six are granted pension rights relative to a set amount if their pension accrual calculated relative to actual earnings would be lower

Timing

- Introduced in 1992
- Reformed in 2010 ▸ What else changed?
- **Retroactively extended** to people who cared for small children between 1967 and 1991

Pension rights for care work (continued)

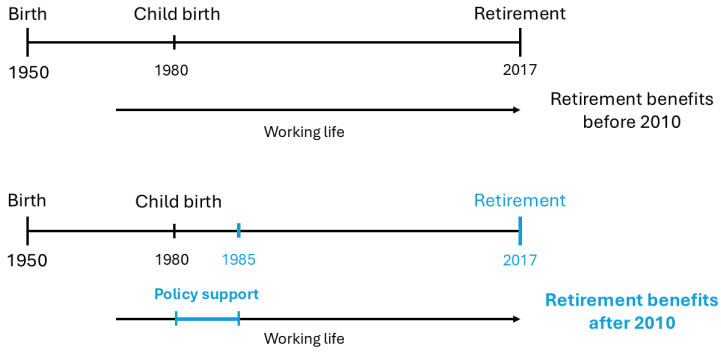
Individuals caring for children under six are granted pension rights relative to a set amount if their pension accrual calculated relative to actual earnings would be lower

Key points

- Only affects **future** income
- Providing care for children = having a child
- Awarded to the lower earner of the couple, if eligible
- For the older cohorts affected, the policy is more similar to a **windfall gain**

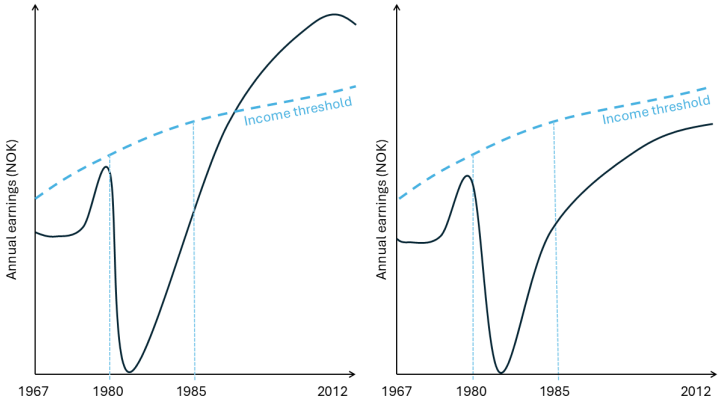
▸ The Norwegian Pension system

Pension accrual in context

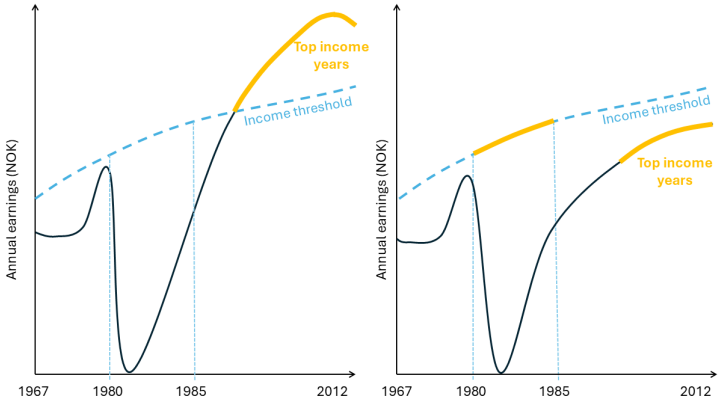


Final pension points are determined by the 20 years with highest contributions $\longrightarrow$ we need the **whole employment history**

Variation: Policy beneficiaries in the same broad sector...



... but with zero vs. positive impact on pension benefits



Data

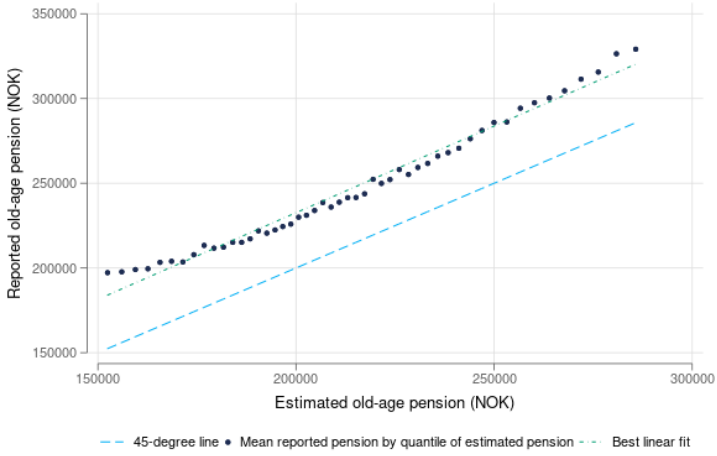
From the population register, employer-employee records, and income declarations, 1967 - 2021:

- Date of birth and death, residence in Norway, fertility and marital status
- Pension-relevant earnings, employment and firm characteristics
- Date and degree of (early) retirement, final old-age and retirement pensions

With the formulas for benefit calculation + the minimum pension rate $\longrightarrow$ difference between estimated pension benefits with and without pension credits

Average 5.02% increase in pension benefits $\longrightarrow$ USD 1,791 per year, a PDV of USD 28,467 $\longrightarrow$ a 1.5pp (8.2%) decrease of the gender pension gap ▸ Graph

Assessing the pension calculations



Identification strategy: first approach

Impact of the policy as an instrument for pension wealth

$$Y_{ic} = \alpha + \beta WP_{ic} + \theta FP_{ic} + \boldsymbol{X}'_{\boldsymbol{ic}}\boldsymbol{\gamma} + \lambda_c + \varepsilon_{ic}$$

- Relevance $\longrightarrow$ the year before being eligible to retire, 5.5% increase from the policy ($>$ 7.1% for 25% of the sample)
- Exclusion $\longrightarrow$ all components affected are in the calculations + isolated from other pension reforms

▸ More

Identification strategy: main approach

Compare policy beneficiaries with zero (control) vs. positive impact (treatment)

$$Y_{ict} = \alpha + \Big(\sum_{t=2006[t\neq 2009]}^{t=2021} \beta_t \cdot D_{it} \Big) + \lambda_c + \delta_t + \boldsymbol{X}_i'\gamma + \varepsilon_{it}$$

How do I define the sample? Dealing with the 2011 reform

- 1948 - 1953 cohorts (no change in calculation rules)
- Within occupational pension group (no change in work incentives) $\longrightarrow$ Hernæs et al. (2016)

Back to the illustration

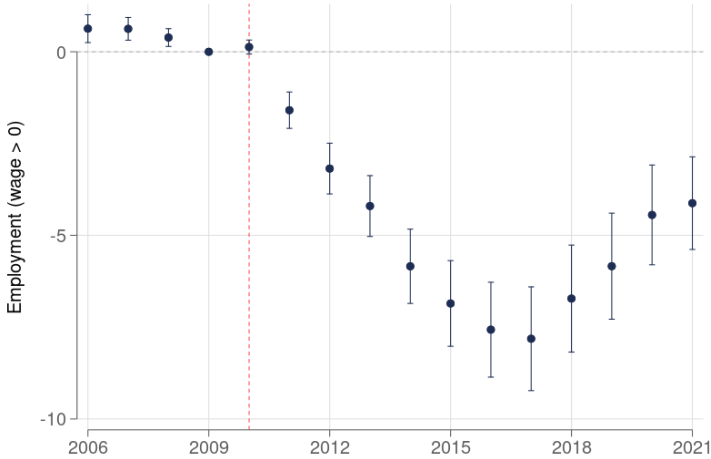
For the average increase, women retire 1.7 months and exit the labor force 2.6 months earlier

	Retiring at 100% (months)			Exiting the labor force (months)		
Increase in pension benefits	-0.194***	-0.192***	-0.347***	-0.136***	-0.134***	-0.545***
(1000 NOK)	(0.003)	(0.003)	(0.016)	(0.005)	(0.005)	(0.028)
Cohort FE	No	Yes	Yes	No	Yes	Yes
Controls	No	No	Yes	No	No	Yes
Observations	136728	136728	123580	102633	102633	92864
Mean (age in years)	66.45	66.45	66.41	63.94	63.94	63.98
First-stage R2	0.069	0.093	0.322	0.053	0.064	0.298
First-stage F-stat	7989.126	8262.352	639.094	6753.493	6811.262	564.324

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

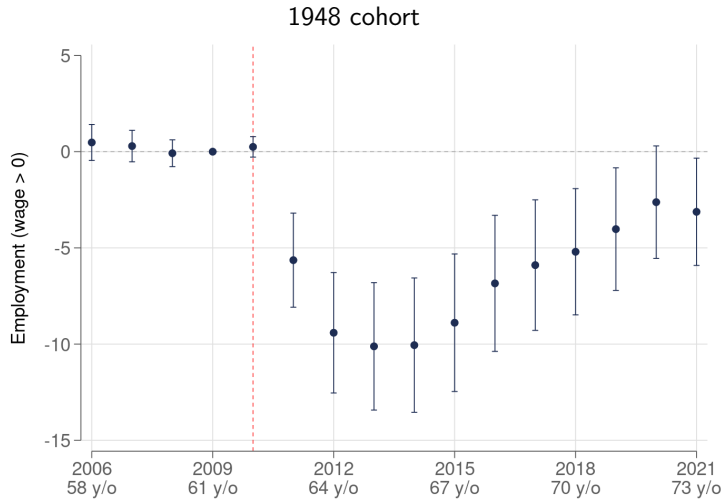
▸ Full table ▸ Heterogeneity

A 5.2 pp (7.5%) decrease in employment



▸ By origin ▸ By partner's employment ▸ By HH income ▸ Full-time employment ▸ Other pathways to retirement

The employment response starts at 63 and is smaller when treated further away from retirement



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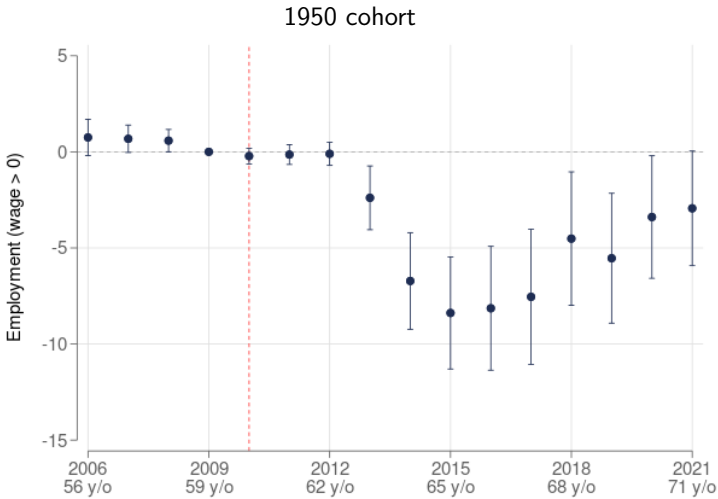

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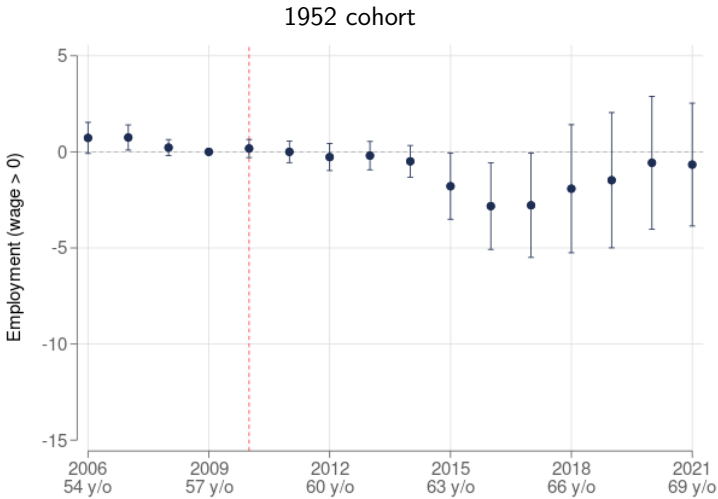
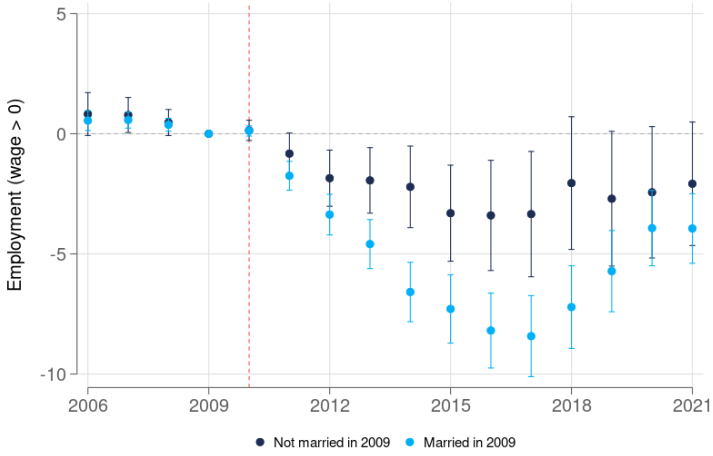


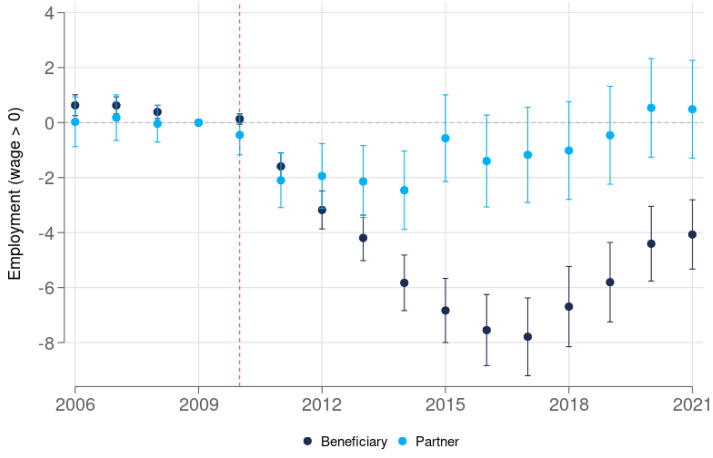
How does the decrease in wages compare to the increase from the policy?

Decrease in wages	2010 - 2021	USD 2,979
Increase in pension benefits	Life expectancy	USD 16,231
	2010 - 2021	USD 7,060
Marginal propensity to earn out of pension wealth		0.42

The employment response is roughly twice as large for married women



A smaller, temporary response from the beneficiaries' partners (1.1 pp, a 1.6% decrease)



But, where does the extra money go?

Measure consumption expenditure using administrative data on income and wealth
$\longrightarrow$ Eika, Mogstad and Vestad (2020)

Disposable income		Wealth	
Labor income (incl. pension)	$\uparrow$	Real estate and other real capital	$\downarrow$
Govt cash transfers	$\downarrow$	Securities	NS
Other positive transfers	NS	Other financial assets	NS
Other negative transfers	$\downarrow$	Liquid assets	$\downarrow$
Taxes	$\downarrow$	Liabilities	$\downarrow$
Capital income	NS	Capital gains	NS
Consumption expenditure	$\uparrow$	Marginal propensity to consume	0.63

▸ With figures

What have we learned? The economic question

Women close to retirement age adjust their claiming behavior even in response to a relatively small wealth shock

- $\downarrow$ claiming age and $\downarrow$ age when leaving the labor force
- $\downarrow$ employment (7.5%) and full-time employment (9.2%)
- $\downarrow$ wages (USD 2,979) and household income (USD 3,369) $\longrightarrow$ MPE of 0.42
- $\downarrow$ in other government transfers (USD 391) and taxes paid (USD 2,379)
- $\downarrow$ partner's employment (1.6%)

But there is a number of dimensions for which it has no significant effect

▸ Marriage stability ▸ Changing residence ▸ Household size

What can we learn? The policy question

Cost from the policy:

- Direct cost of USD 7,060 per beneficiary 2010 - 2021
- USD 5,599 per beneficiary from the retirement response
- USD 2,379 per beneficiary from the decrease in taxes paid

Total: USD 9,335 per beneficiary, without spillovers to the partner

Pure wealth shock $\longrightarrow$ assume beneficiaries value it at exactly its amount

$$MVPF = \frac{7,060}{9,335} = 0.76$$

Next steps?

What is the best way to close the gender pension gap?

- Policies implemented around birth / childcare will determine the gender pension gap to the extent to which they impact mother's labor supply and earnings
- $\downarrow$ they take generations to reach pension benefits
- $\uparrow$ potentially less costly
- Can we develop a framework to compare both?

Why should we close the gender pension gap anyway?

- How is closing the gender pension gap different from increasing household pension wealth?
- What are the assumptions behind redistributing to women via pensions?

Thank you!

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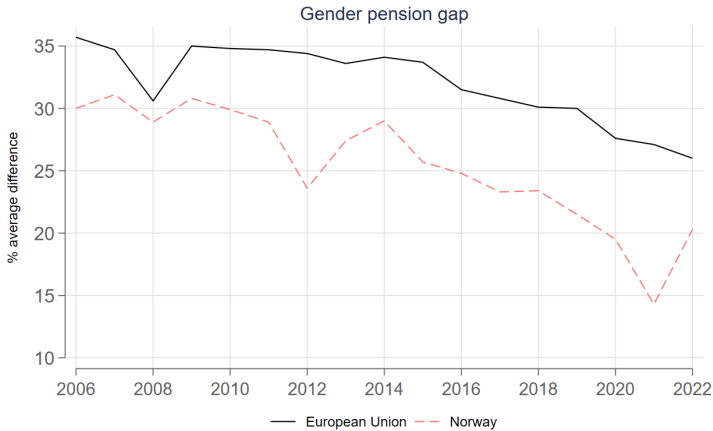
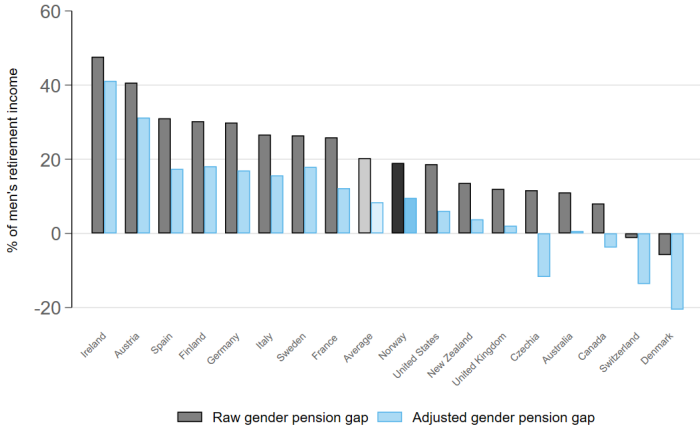
The gender pension gap in Norway: similar trend, also substantially higher than the earnings gap



Source: Eurostat (2024). EU Statistics on Income and Living Conditions (EU-SILC)

Back

The pension gap decreases when accounting for women's longer life expectancy, but doesn't disappear



Source: Author's calculations, using data from OECD Pensions at a Glance (2023) and national statistical agencies (2025)

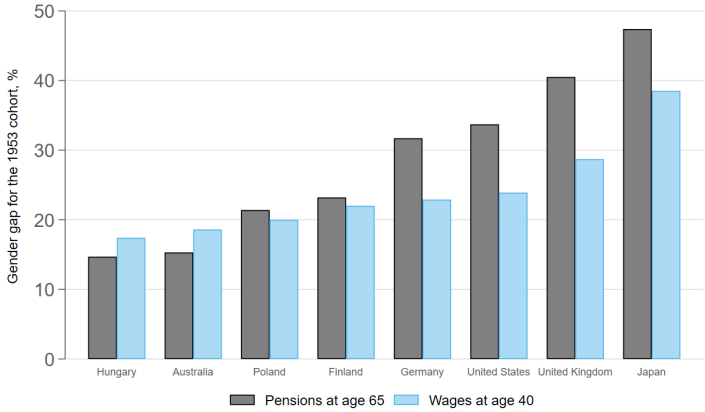
Back

Step-by-step calculations for Norway (2021)

Average income from retirement pension		
NOK 390,900	NOK 316,300	**19.1%**
Life expectancy at age 67		
18.2 years	20.1 years	
Total amount paid out per capita		
NOK 7,114,380	NOK 6,357,630	**11.9%**
Total amount paid out		
NOK 182 billion	NOK 163 billion	**10.2%**

Back

How we design the pension system can increase (decrease) the gender pension gap



Source: OECD(2021). Towards Improved Retirement Savings Outcomes for Women
OECD(2024). Distribution of earnings database

Back

Pension rights for care work: 1992 vs. 2010

	1992	2010
Who?	One of the parents (the lowest earner) Transfer of pension rights is possible	
How?	**Before 1998:** application to NAV **From 1998:** automatically	
How much?	Relative to 4.0G	Relative to 4.5G
For how long?	6 years after birth	5 years after birth

Back

The Norwegian pension system

1. The National Insurance Scheme, reformed in **2011** More
2. Early retirement and other occupational pension schemes More
3. Private pension savings

The policy impacts older cohorts through the second pillar **only** and gradually impacts second **and first** pillars for younger beneficiaries More

Back

First pillar, before 2011

- Basic pension: 1G adjusted to the number of years of membership (full from 40) and marital status
- Supplementary pension:

  (Supplementary pension %) * Current G * Final pension points

  - Supplementary pension %: 45 before 1992, 42 afterwards
  - Final pension points: average pension points of up to 20 years with the highest income
  - In any given year, pension points are: $\frac{earnings-G}{G}$ or $\frac{(6G+\frac{earnings-6G}{3})-G}{G}$

Back

First pillar, after 2011

- For the cohorts born after 1963, 18.1% of pensionable income up to 7.1G is added to the pension portfolio
- The total amount received is the pension portfolio adjusted to the expected life expectancy $\longrightarrow$ index is cohort- and retirement age-specific
- Those with low or no income receive a pension guarantee

There is a transitional arrangement for cohorts born between 1954 and 1962

Back

First pillar, minimum pension policy

Four different rates adjusted annually, namely:

- Single individuals
- Married individuals, whose partner is retired
- Married individuals, whose partner earns below 2G
- Married individuals, whose partner earns above 2G

Awarded in full from 40 years of membership, reduced proportionally otherwise.

Second pillar, early retirement scheme

AFP in the public sector

- For cohorts born before 1963, first-pillar rules + NOK 20400 annual supplement
- For cohorts born from 1963, 4.21% of income up to 7.1G added to the AFP portfolio

AFP in the private sector

- For cohorts born before 1944, same as AFP in the public sector
- For cohorts born from 1944, 0.314% of income up to 7.1G added to the AFP portfolio + NOK 19200 annual supplement + compensation supplement $\longrightarrow$ adjusted by cohort and retirement age

Back

Second pillar, other schemes

Non-AFP schemes:

- Mandatory minimum occupational pension (OTP, from 2006) $\longrightarrow$ The employer must contribute at least 2% of the salary
- In the public sector, gross pension benefits amounts to 66% of the last salary

Upon retirement, there is an adjustment process between the old-age and occupational pension (coordination)

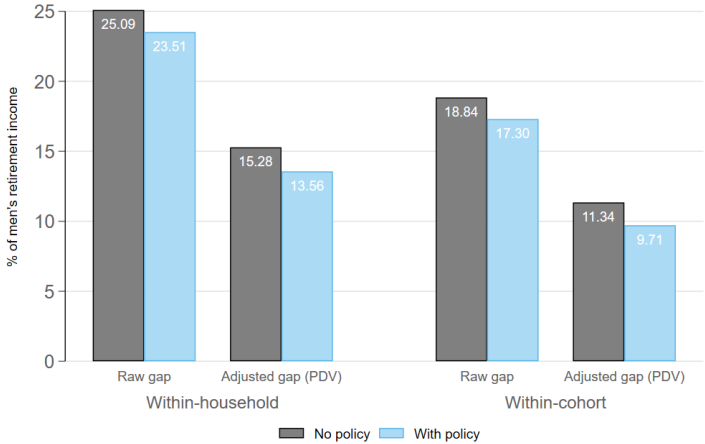
Back

Where do pension rights for care work enter the calculations?

	Children born before 1992	**Children born from 1992**
Beneficiary born 1948 - 1953	Occupational pension (AFP)	Retirement pension according to the pre- or post-2011 rules
Beneficiary born 1954 - 1963	Occupational pension fully and retirement pension gradually	
Beneficiary born from 1963	Occupational and retirement pensions fully	

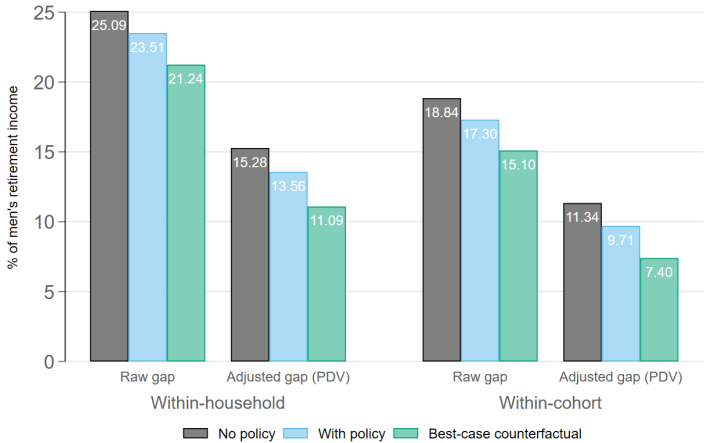
Back

Childcare-related pension credits narrow the gender pension gap by 1.5pp



▸ What if the older cohorts were treated as the younger ones? ▸ Back

Taking the 1963 version of the policy and applying it to the 1948 - 1953 cohorts



Back

Sample balance

Country of birth	-0.000103***	Number of children in 2009	0.000025***
	(0.000000)		(0.000000)
Partner's employment in 2009	0.000005***	Household income in 2009	-0.506658***
	(0.000000)		(0.059483)
Hours worked in 2009	-0.000033***	Partner's age in 2009	-0.005159***
	(0.000000)		(0.000024)
Education level in 2009	0.000085***	Marital status in 2009	-0.000041***
	(0.000002)		(0.000000)
N		123,580	

Standard errors in parentheses
* ($p < 0.05$), ** ($p < 0.01$), *** ($p < 0.001$)

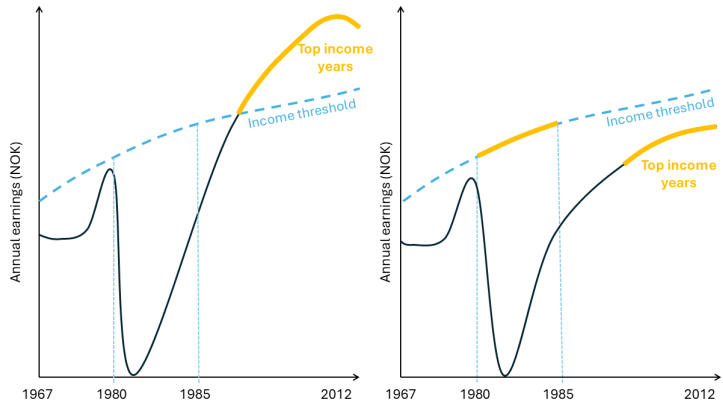
Back

Sample balance (continued)

	Beneficiaries with zero impact	Beneficiaries with non-zero impact	Difference
Share born in Norway (%)	90.60	93.02	-2.41***
	[29.18]	[25.49]	(0.39)
Share married (%)	65.29	74.85	-9.55***
	[47.61]	[43.39]	(0.65)
Number of children	2.05	2.31	-0.26***
	[0.74]	[0.83]	(0.01)
Share working (%)	98.64	98.59	0.05
	[11.58]	[11.77]	(0.17)
Average annual earnings (NOK)	483,172.98	310,820.81	172,352.16***
	[193,311.27]	[115,590.23]	(2,337.96)
Age gap with partner (years)	-2.21	-2.18	-0.03
	[3.89]	[3.60]	(0.06)
Share whose partner is retired (%)	11.01	11.45	-0.45
	[31.30]	[31.85]	(0.51)
N	11,174	8,751	19,925

Back

Identifying variation



Back

In Norway, claiming while working is possible: can we disentangle the two?

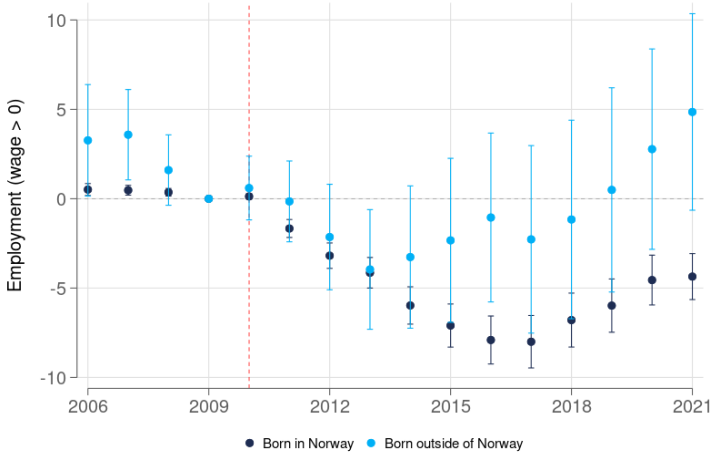
	Claiming for the first time (months)			Retiring at 100% (months)			Leaving the labor force (months)		
Increase in pension benefits	-0.194***	-0.193***	-0.317***	-0.194***	-0.192***	-0.347***	-0.136***	-0.134***	-0.545***
(1000 NOK)	(0.003)	(0.003)	(0.016)	(0.003)	(0.003)	(0.016)	(0.005)	(0.005)	(0.028)
Cohort FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	136728	136728	123580	136728	136728	123580	102633	102633	92864
Mean (age in years)	66.28	66.28	66.23	66.45	66.45	66.41	63.94	63.94	63.98
First-stage R2	0.069	0.093	0.322	0.069	0.093	0.322	0.053	0.064	0.298
First-stage F-stat	7989.126	8262.352	639.094	7989.126	8262.352	639.094	6753.493	6811.262	564.324

Back

The effect is stronger among lower-income households and unmarried beneficiaries

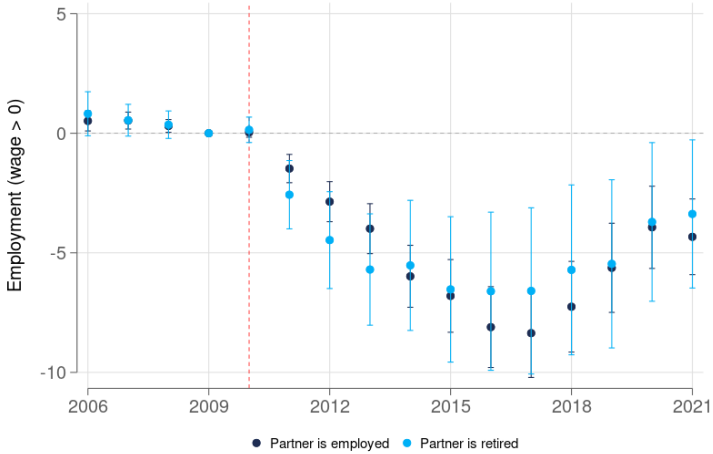
Back

Heterogeneity by country of birth



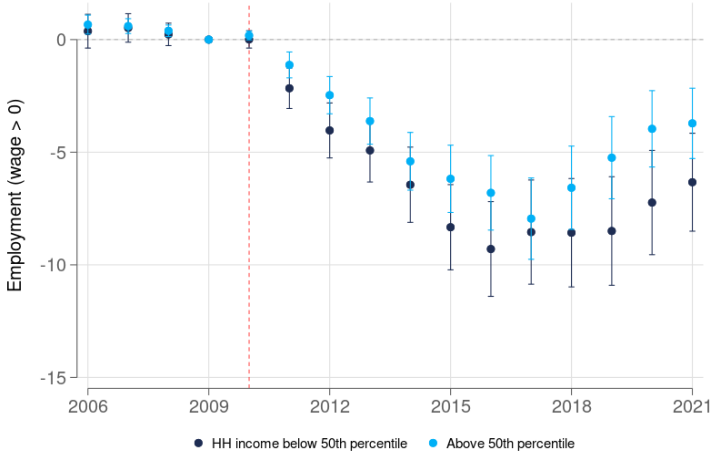
Back

Heterogeneity by partner's labor force participation



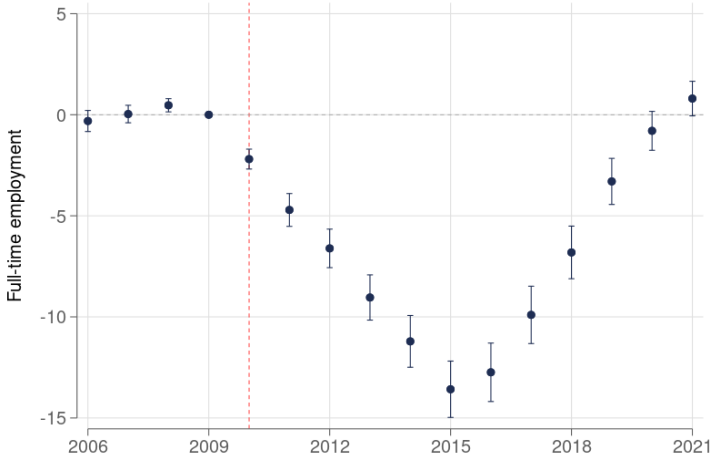
Back

Heterogeneity by household income



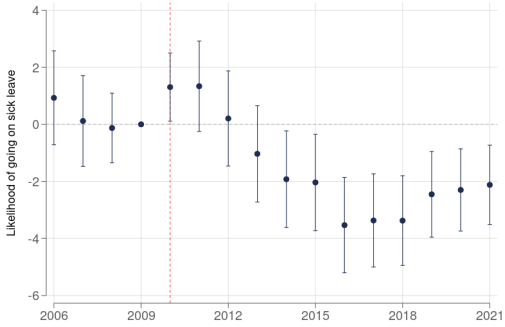
Back

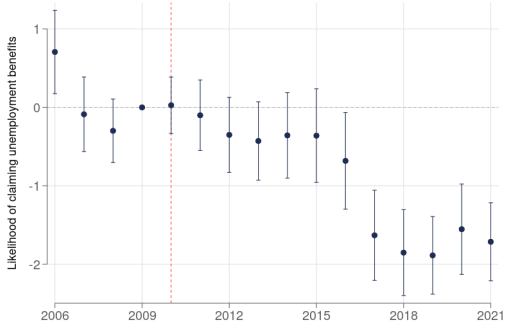
A 7.6 pp (9.2%) decrease in full-time employment



Back

Lower take-up of alternative retirement pathways

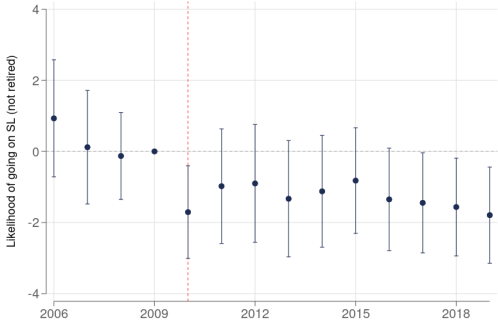


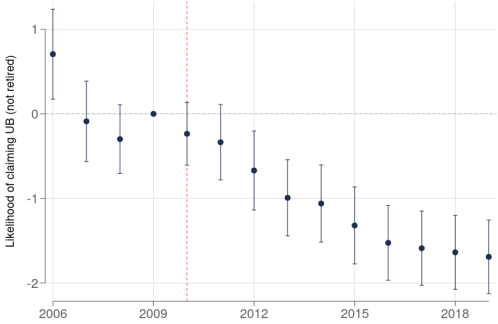


▸ Explaining the effect through retirement

▸ Back

Take-up of benefits conditional on not being retired





Back

But, where does the extra money go?

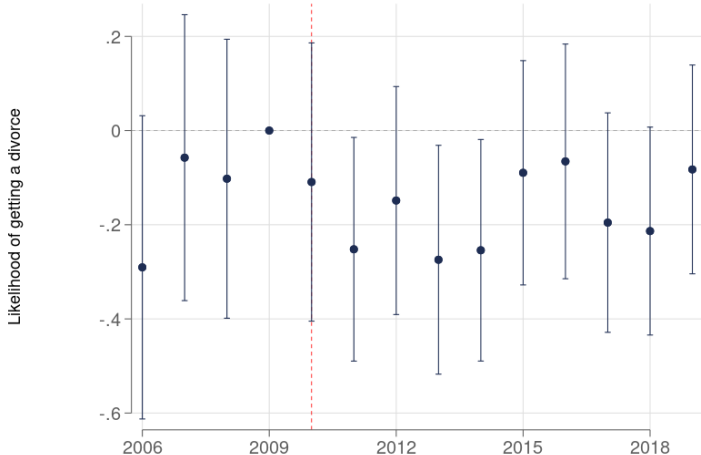
Measure consumption expenditure using administrative data on income and wealth
$\longrightarrow$ Eika, Mogstad and Vestad (2020)

Disposable income	
Labor income	1,851**
	(603)
Govt cash transfers	-7,269***
	(176)
Other positive transfers	3,179
	(4,132)
Other negative transfers	-10*
	(5)
Taxes	-2,905***
	(124)
Capital income	177
	(167)

Wealth	
Real estate and other real capital	-1,813***
	(109)
Securities	-2,301
	(2,278)
Other financial assets	-350
	(314)
Liquid assets	-7,745***
	(1,636)
Liabilities	-3,172***
	(921)
Capital gains	67
	(143)

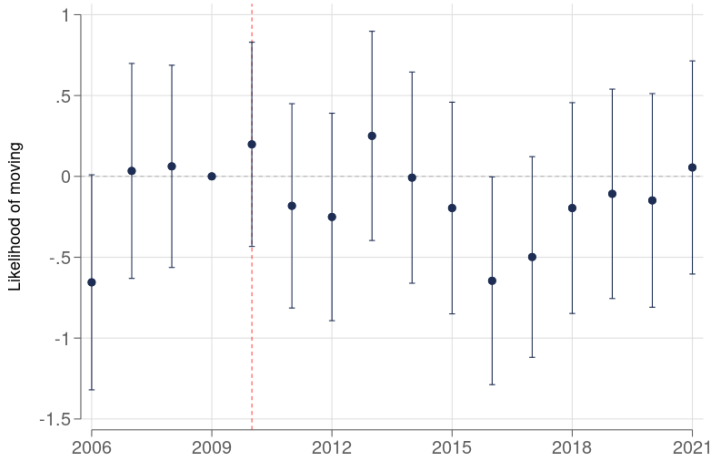
Back

Marriage stability



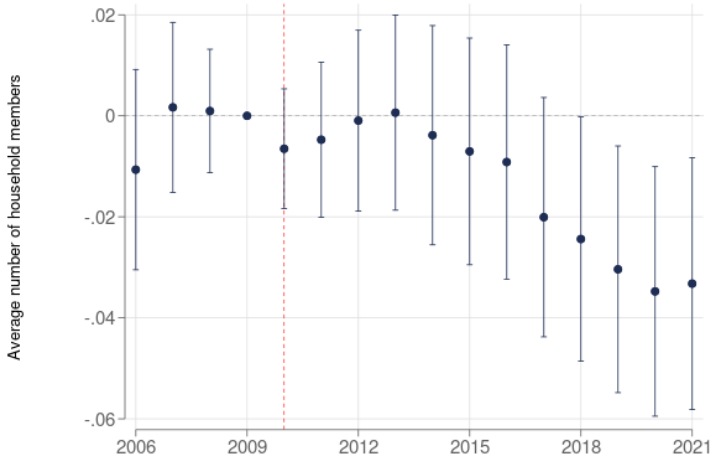
Back

Changing residence



Back

Household size



Back