

# Flexible Pensions and Labor Force Withdrawal

Erik Hernæs (Frischsenteret)

Zhiyang Jia (SSB)

John Piggott (CEPAR/UNSW)

**Trond Christian Vigtel** (Frischsenteret)

Pensjonsforum

10. mai 2019

## Introduksjon

- ▶ Pensjonsreformen i 2011 gjorde det mulig å ta ut alderspensjon fra alder 62, med aktuarisk justering av årlige utbetalinger og uten avkorting mot arbeidsinntekt
- ▶ Kan studere effekten på arbeidstilbud av å gjøre alderspensjon mer fleksibel uten å endre incentiver:
  - ▶ Uttaksatferden til denne gruppen (privat sektor uten AFP) har blitt studert (Brinch et al., 2018)
- ▶ Politikkrelevant (Börsch-Supan et al., 2018; Eurofound, 2016)
  - ▶ Øker velferd, men hva med arbeidstilbudet?

## Hva er forventet nettoeffekt?

- ▶ Tidligere tilgang til alderspensjon kan føre til at:
  - ▶ De som tidligere ønsket å tre ut av arbeidslivet så tidlig som mulig reduserer arbeidstilbudet [-]
  - ▶ Arbeidstilbudet til de som ellers ville stått i fullt arbeid til alder 67 fordeles jevnere utover [-/+]
- ▶ Nettoeffekten på totalt arbeidstilbud avhenger av hvis og hvordan gradvis pensjonering foregår

## Hva kan hindre/fremme gradvis pensjonering?

### ▶ Arbeidsgiversiden:

- ▶ Faste kostnader ved å ha ansatte (Blau & Shvydko, 2011) [-]
- ▶ Produksjonskomplementariteter (Hutchens, 2010; Cahill et al., 2014) [-]
- ▶ Beholde kompetanse (Dalen, 2016; Brown, 2005; Tuominen, 2013) [+]

### ▶ Arbeidstakersiden:

- ▶ Fast nyttekostnad av å jobbe (Fan, 2015; Angrisani et al., 2015; Böckerman & Ilmakunnas, 2017) [-]
- ▶ Stimulerende å stå i jobb (Kantarci & van Soest, 2013) [+]

## Data og utvalg

- ▶ Bruker registerdata på utlån fra SSB og bedriftsinformasjon fra Fellesordningen for AFP
- ▶ Avgrenser til menn i aldersspennet 60-65 fra kohortene 1944-1954 observert over perioden 2009-2014:
  - ▶ Jobbet i foretak uten AFP ved alder 59 (inntekt på minst EUR 10,000)
  - ▶ Ikke mottak av uføretrygd/AAP ved alder 59
  - ▶ Rett til å ta ut den nye alderspensjon ved alder 62 (målt ved alder 59)

## Effektevaluering

- ▶ Hva er effekten av å innføre en mer fleksibel alderspensjon på arbeidstilbud?
- ▶ Sammenligner to grupper før og etter pensjonsreformen i 2011:
  - ▶ Forsøksgruppe: alder 62-65
  - ▶ Kontrollgruppe: alder 60-61
- ▶ Forsøk: fyller 62 år i 2011 eller senere

## Observations, LFP rate and annual earnings, by year and age

Age	2009	2010	2011	2012	2013	2014
60	4,872	4,630	4,288	4,597	4,637	4,688
	0.949	0.941	0.947	0.952	0.948	0.955
	64,651	65,971	69,642	70,506	73,722	74,762
61	4,704	4,872	4,630	4,288	4,597	4,637
	0.888	0.883	0.889	0.907	0.908	0.907
	60,101	59,632	63,867	68,372	67,803	70,077
62	4,753	4,704	4,872	4,630	4,288	4,597
	0.849	0.840	0.842	0.851	0.874	0.861
	55,884	55,571	56,888	61,220	64,682	63,461
63	5,119	4,753	0	4,872	4,630	4,288
	0.765	0.752	.	0.764	0.782	0.787
	49,184	49,182	.	52,379	56,186	57,819
64	4,718	5,119	0	0	4,872	4,630
	0.653	0.684	.	.	0.708	0.724
	40,272	43,638	.	.	48,824	50,976
65	4,854	4,718	0	0	0	4,872
	0.584	0.569	.	.	.	0.640
	35,839	34,132	.	.	.	42,365

Source: Authors' own calculations using data from Statistics Norway.

Note: Each cell shows number of observations (first row), LFP rate (second row) and average earnings in EUR (third row). The sample consists of those working at age 59 (without receiving disability benefits) and not covered by AFP, but meeting the requirements for claiming the new public pension at age 62. We assign zero earnings for those not in the labor force.

## Observations, LFP rate and annual earnings, by year and age

Age	2009	2010	2011	2012	2013	2014
60	4,872	4,630	4,288	4,597	4,637	4,688
	0.949	0.941	0.947	0.952	0.948	0.955
	64,651	65,971	69,642	70,506	73,722	74,762
61	4,704	4,872	4,630	4,288	4,597	4,637
	0.888	0.883	0.889	0.907	0.908	0.907
	60,101	59,632	63,867	68,372	67,803	70,077
62	4,753	4,704	4,872	4,630	4,288	4,597
	0.849	0.840	0.842	0.851	0.874	0.861
	55,884	55,571	56,888	61,220	64,682	63,461
63	5,119	4,753	0	4,872	4,630	4,288
	0.765	0.752	.	0.764	0.782	0.787
	49,184	49,182	.	52,379	56,186	57,819
64	4,718	5,119	0	0	4,872	4,630
	0.653	0.684	.	.	0.708	0.724
	40,272	43,638	.	.	48,824	50,976
65	4,854	4,718	0	0	0	4,872
	0.584	0.569	.	.	.	0.640
	35,839	34,132	.	.	.	42,365

Source: Authors' own calculations using data from Statistics Norway.

Note: Each cell shows number of observations (first row), LFP rate (second row) and average earnings in EUR (third row). The sample consists of those working at age 59 (without receiving disability benefits) and not covered by AFP, but meeting the requirements for claiming the new public pension at age 62. We assign zero earnings for those not in the labor force.



## Observations, LFP rate and annual earnings, by year and age

Age	2009	2010	2011	2012	2013	2014
60	4,872	4,630	4,288	4,597	4,637	4,688
	0.949	0.941	0.947	0.952	0.948	0.955
	64,651	65,971	69,642	70,506	73,722	74,762
61	4,704	4,872	4,630	4,288	4,597	4,637
	0.888	0.883	0.889	0.907	0.908	0.907
	60,101	59,632	63,867	68,372	67,803	70,077
62	4,753	4,704	4,872	4,630	4,288	4,597
	0.849	0.840	0.842	0.851	0.874	0.861
	55,884	55,571	56,888	61,220	64,682	63,461
63	5,119	4,753	0	4,872	4,630	4,288
	0.765	0.752	.	0.764	0.782	0.787
	49,184	49,182	.	52,379	56,186	57,819
64	4,718	5,119	0	0	4,872	4,630
	0.653	0.684	.	.	0.708	0.724
	40,272	43,638	.	.	48,824	50,976
65	4,854	4,718	0	0	0	4,872
	0.584	0.569	.	.	.	0.640
	35,839	34,132	.	.	.	42,365

Source: Authors' own calculations using data from Statistics Norway.

Note: Each cell shows number of observations (first row), LFP rate (second row) and average earnings in EUR (third row). The sample consists of those working at age 59 (without receiving disability benefits) and not covered by AFP, but meeting the requirements for claiming the new public pension at age 62. We assign zero earnings for those not in the labor force.

## Observations, LFP rate and annual earnings, by year and age

Age	2009	2010	2011	2012	2013	2014
60	4,872	4,630	4,288	4,597	4,637	4,688
	0.949	0.941	0.947	0.952	0.948	0.955
	64,651	65,971	69,642	70,506	73,722	74,762
61	4,704	4,872	4,630	4,288	4,597	4,637
	0.888	0.883	0.889	0.907	0.908	0.907
	60,101	59,632	63,867	68,372	67,803	70,077
62	4,753	4,704	4,872	4,630	4,288	4,597
	0.849	0.840	0.842	0.851	0.874	0.861
	55,884	55,571	56,888	61,220	64,682	63,461
63	5,119	4,753	0	4,872	4,630	4,288
	0.765	0.752	.	0.764	0.782	0.787
	49,184	49,182	.	52,379	56,186	57,819
64	4,718	5,119	0	0	4,872	4,630
	0.653	0.684	.	.	0.708	0.724
	40,272	43,638	.	.	48,824	50,976
65	4,854	4,718	0	0	0	4,872
	0.584	0.569	.	.	.	0.640
	35,839	34,132	.	.	.	42,365

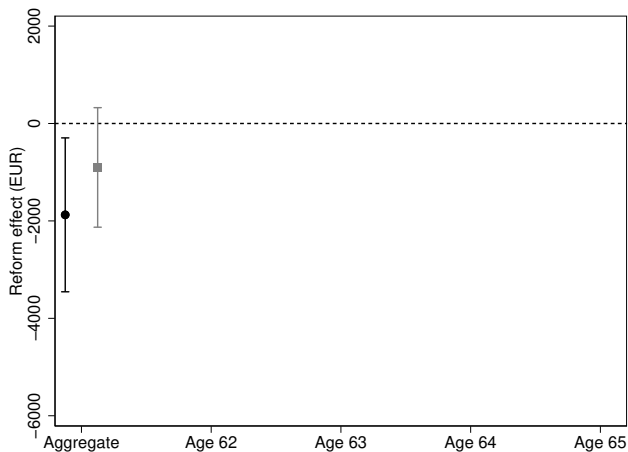
Source: Authors' own calculations using data from Statistics Norway.

Note: Each cell shows number of observations (first row), LFP rate (second row) and average earnings in EUR (third row). The sample consists of those working at age 59 (without receiving disability benefits) and not covered by AFP, but meeting the requirements for claiming the new public pension at age 62. We assign zero earnings for those not in the labor force.

## Måle arbeidstilbud

- ▶ Bruker årlig inntekt som hovedmål - reflekterer arbeidsinnsats
- ▶ Bruker ukentlige arbeidstimer fra hovedjobb som et supplerende mål på arbeidstilbud

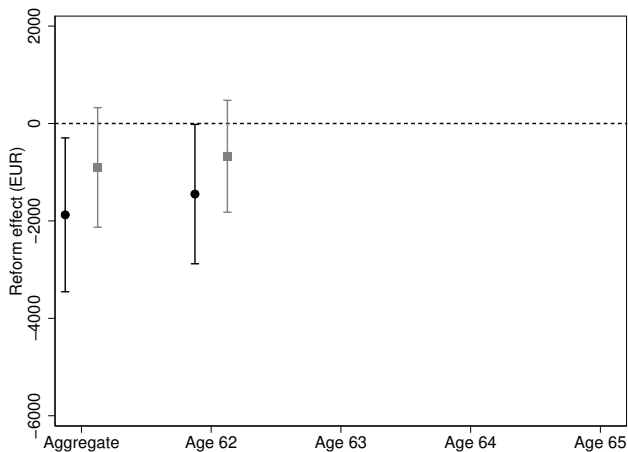
## Gjennomsnittlig effekt på inntekt



Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, aggregate and by age, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

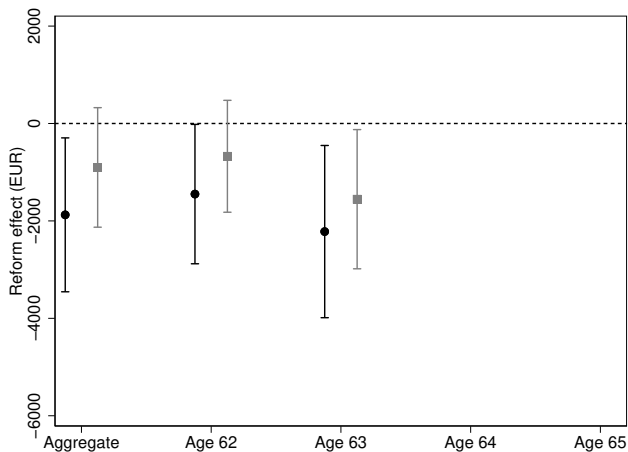
## Gjennomsnittlig effekt på inntekt



Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, aggregate and by age, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

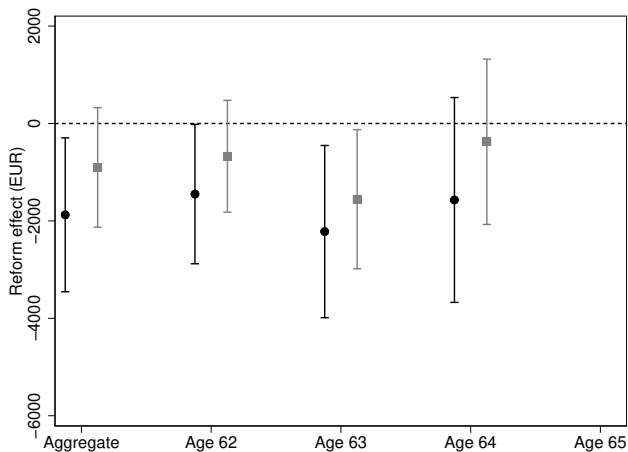
## Gjennomsnittlig effekt på inntekt



Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, aggregate and by age, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

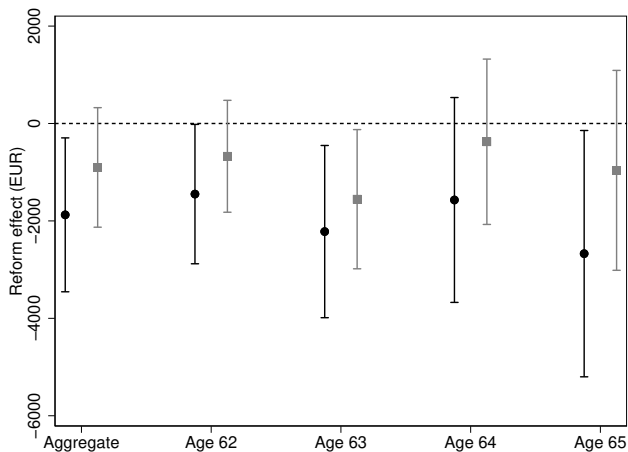
## Gjennomsnittlig effekt på inntekt



Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, aggregate and by age, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

## Gjennomsnittlig effekt på inntekt



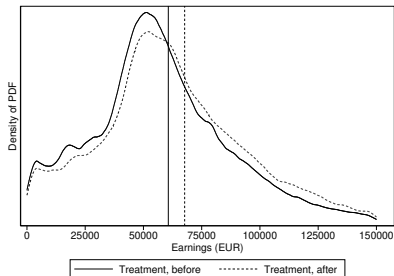
Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, aggregate and by age, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

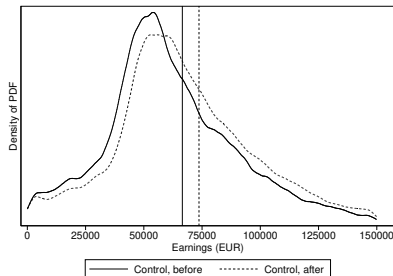


## Effekter utover gjennomsnittet

- ▶ Ingen effekt på gjennomsnittet, men kan være at effekten varierer over inntektsfordelingen:
  - ▶ De i nedre del av inntektsfordelingen bruker den nye alderspensjonen til å slutte helt i jobb
  - ▶ De i øvre del av inntektsfordelingen bruker den nye alderspensjonen til gradvis pensjonering



Treatment group, conditional



Control group, conditional

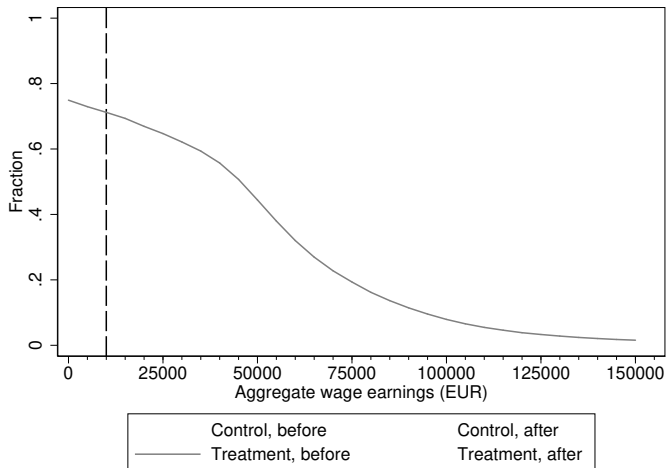
Source: Authors' own calculations using data from Statistics Norway.

Note: Shifts in the empirical PDFs of the earnings distribution (conditional on positive earnings), separately for the treatment and control group. The vertical lines show the mean of the earnings distributions before (solid) and after (dashed) the reform.

## Den komplementære kumulative inntektsfordelingen (CCDF)

- ▶ For å se på effekter over hele inntektsfordelingen, bruker vi den komplementære kumulative inntektsfordelingen (CCDF):
  - ▶ Sannsynligheten for å ha inntekt over et gitt nivå

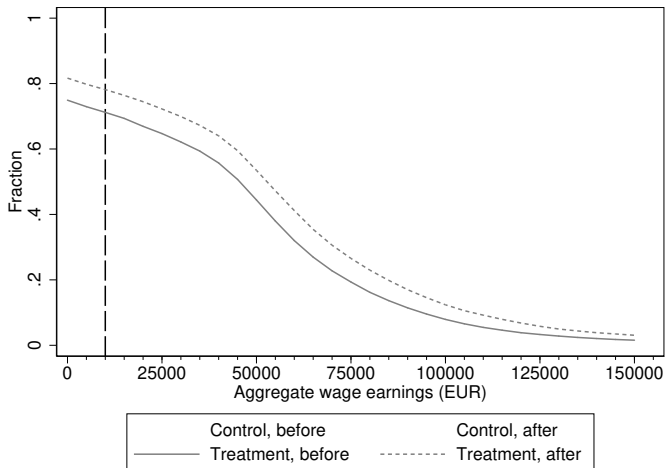
## Den komplementære kumulative inntektsfordelingen (CCDF)



Source: Authors' own calculations using data from Statistics Norway.

Note: Plot of the Complementary Conditional Distribution Function (CCDF) of aggregate earnings (expressed in EUR) over ages 60-65. The vertical dashed line indicates EUR 10,000.

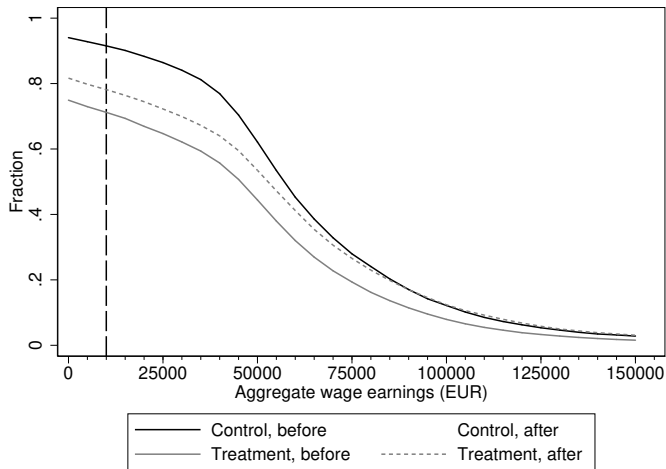
## Den komplementære kumulative inntektsfordelingen (CCDF)



Source: Authors' own calculations using data from Statistics Norway.

Note: Plot of the Complementary Conditional Distribution Function (CCDF) of aggregate earnings (expressed in EUR) over ages 60-65. The vertical dashed line indicates EUR 10,000.

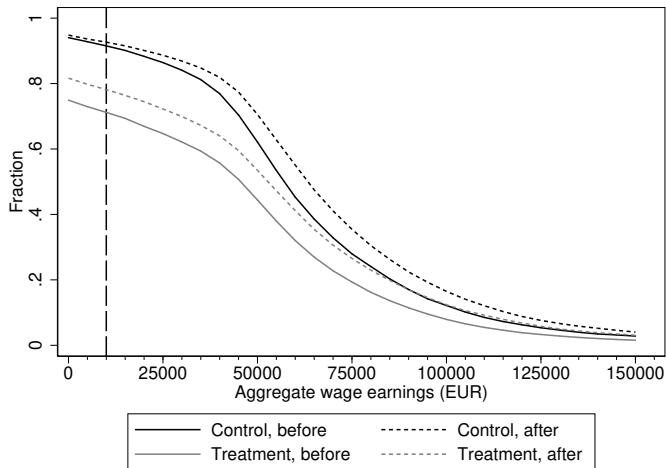
## Den komplementære kumulative inntektsfordelingen (CCDF)



Source: Authors' own calculations using data from Statistics Norway.

Note: Plot of the Complementary Conditional Distribution Function (CCDF) of aggregate earnings (expressed in EUR) over ages 60-65. The vertical dashed line indicates EUR 10,000.

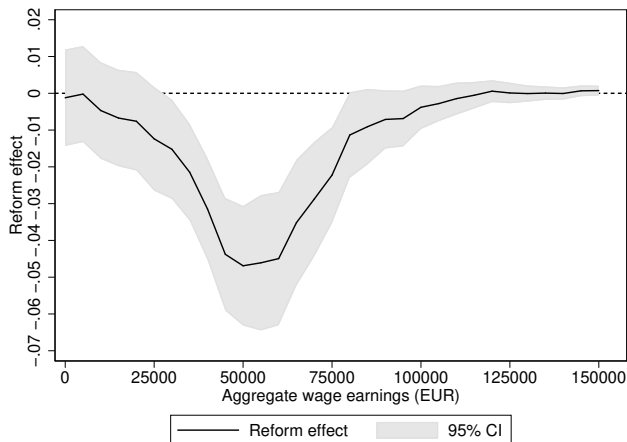
## Den komplementære kumulative inntektsfordelingen (CCDF)



Source: Authors' own calculations using data from Statistics Norway.

Note: Plot of the Complementary Conditional Distribution Function (CCDF) of aggregate earnings (expressed in EUR) over ages 60-65. The vertical dashed line indicates EUR 10,000.

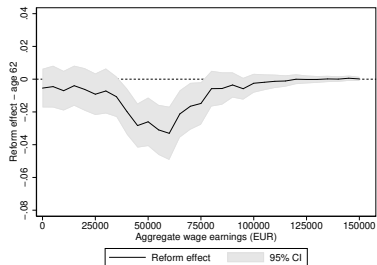
## Effekt over inntektsfordelingen, aggregert



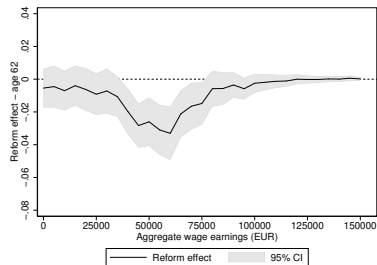
Source: Authors' own calculations using data from Statistics Norway.

Note: Simulation results from estimation of an age-aggregated version, showing the difference in the CCDF for the treatment group and the control group. The gray-shaded area shows the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level). Aggregate earnings are expressed in EUR.

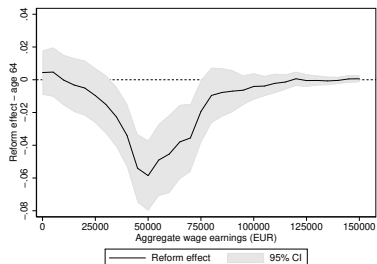
# Effekt over inntektsfordelingen, etter alder



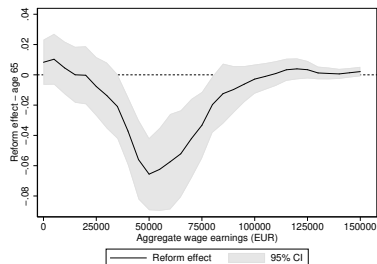
Reform effect, age 62



Reform effect, age 63



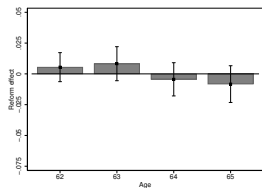
Reform effect, age 64



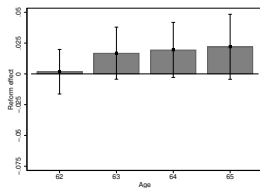
Reform effect, age 65



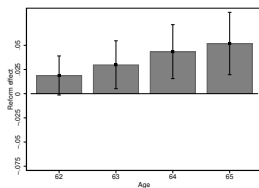
# Effekt over inntektsfordelingen, etter alder og segment



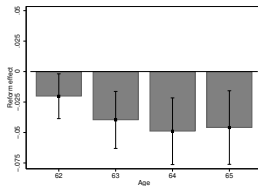
Non-participation (EUR 0)



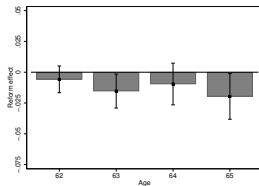
EUR 0-30,000



EUR 30,000-50,000



EUR 50,000-80,000

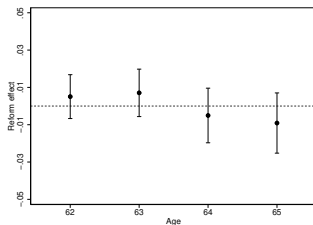


> EUR 80,000

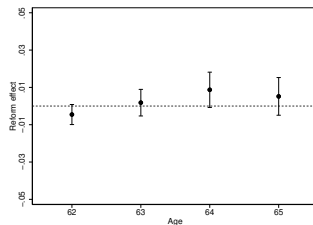
▶ CCDF, placebo

▶ CCDF, tidstrender

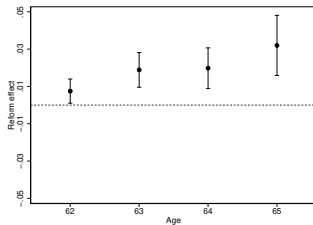
# Effekt på arbeidstimer, etter alder



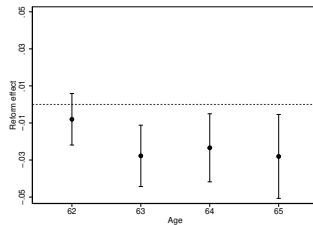
Reform effect, not working



Reform effect, short part-time



Reform effect, long part-time



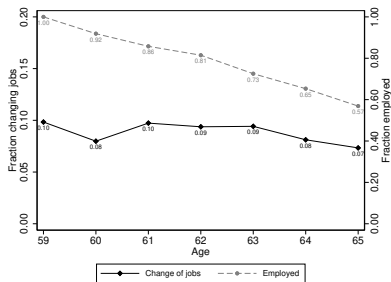
Reform effect, full-time/over-time

## Aggregerte effekter

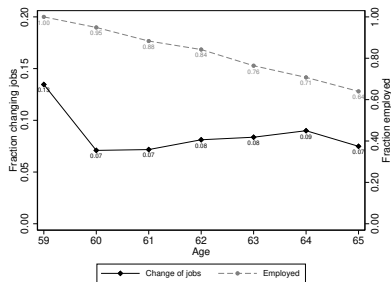
- ▶ Den aggregerte effekten over aldere 62-65:
  - ▶ Effekt på inntekt: -18.7 prosent
  - ▶ Effekt på arbeidstid: +7.8 prosentpoeng i lang deltid og -8.7 prosentpoeng i fulltid/overtid

# Jobbmobilitet

- ▶ Er det noe systematikk i at eldre bytter jobb på slutten av arbeidslivet som en del av pensjoneringsprosessen?
  - ▶ Nei, det er i all hovedsak utfasing (“phased retirement”), og ikke nedtrapping (“partial retirement”)



Cohort 1945



Cohort 1949

Source: Authors' own calculations using data from Statistics Norway.

Note: Percent of pre-reform birth cohort 1945 and post-reform cohort 1949 that are employed (gray line, right-hand axis) and changing jobs (black line, left-hand axis), by age.

## Oppsummering

- ▶ Hva er effekten på arbeidstilbud ved å innføre en mer fleksibel alderspensjon?
  - ▶ Mer gradvis pensjonering?
- ▶ De aggregerte effekten på arbeidstilbud over aldrene 62-65 ved å innføre mer fleksibilitet i alderspensjon:
  - ▶ Ingen effekt på sysselsettingsraten
  - ▶ Arbeidsinntekt ble redusert med 18,7 prosent
  - ▶ Økning i deltid på 7,8 prosentpoeng og en reduksjon i fulltid/overtid på 8,7 prosentpoeng
- ▶ Peker i retning av mer gradvis pensjonering
- ▶ Restriksjoner på arbeidsgiversiden tilsier at dette utgjør en nedre grense av den rene arbeidstilbudseffekten (Midtsundstad, 2018)

## Referanser I

- Angrisani, M., Kapteyn, A., & Meijer, E. (2015). *Nonmonetary Characteristics and Employment Transitions at Older Ages*. (Working Paper WP2015-326, Michigan Retirement Research Center, University of Michigan)
- Böckerman, P., & Ilmakunnas, P. (2017). *Do Good Working Conditions Make You Work Longer? Evidence on Retirement Decisions Using Linked Survey and Register Data*. (IZA Discussion Paper No. 10964, Institute for the Study of Labor)
- Blau, D., & Shvydko, T. (2011). Labor Market Rigidities and the Employment of Older Workers. *Industrial and Labor Relations Review*, 64(3), 464-484.
- Brinch, C. N., Fredriksen, D., & Vestad, O. L. (2018). Life Expectancy and Claiming Behavior in a Flexible Pension System. *Scandinavian Journal of Economics*, 120(4), 979-1010.
- Brown, K. (2005). *Attitudes of Individuals 50 and Older Toward Phased Retirement*. (AARP Knowledge Management)
- Börsch-Supan, A. H., Bucher-Koenen, T., Kutlu-Koc, V., & Goll, N. (2018). Dangerous Flexibility - Retirement Reforms Reconsidered. *Economic Policy, April*, 315-355.
- Cahill, K. E., Giandrea, M. D., & Quinn, J. F. (2014). *The Impact of Hours Flexibility on Career Employment, Bridge Jobs, and the Timing of Retirement*. (BLS Working Paper 472, U.S. Bureau of Labor Statistics)
- Dalen, E. (2016). *Norsk Seniorpolitisk Barometer: Ledere [The Norwegian Senior Policy Barometer Survey: Managers]*. (Ipsos MMI)
- Eurofound. (2016). *Extending Working Lives Through Flexible Retirement Schemes: Partial Retirement*. (Publications Office of the European Union, Luxembourg)
- Fan, X. (2015). *Retiring Cold Turkey*. (CEPAR Working Paper 2015/20)
- Hutchens, R. (2010). Worker Characteristics, Job Characteristics, and Opportunities for Phased Retirement. *Labour Economics*, 17(6), 1010-1021.

## Referanser II

- Kantarci, T., & van Soest, A. (2013). *Stated Preference Analysis of Full and Partial Retirement in the United States*. (CESR-Schaeffer Working Paper Series, Paper No. 2013-011)
- Midtsundstad, T. (2018). Seniorers mulighet for gradvis nedtrapping fra arbeidslivet. *Søkelys på arbeidslivet*, 4, 313-329.
- Tuominen, E. (2013). *Flexible Retirement Age in Finland*. (Working Paper 03/2013, Finnish Centre for Pensions)

## Sampling i 1949-kohorten

	All	Males	Females
(1) Birth cohort 1949 at age 59	52,495	27,240	25,255
(2) Working at age 59 and no disability benefits	39,578	22,091	17,487
(3) Not covered by early retirement (AFP) scheme	7,982	5,422	2,560
(4) Eligible for new old-age pension from age 62 after reform	5,943	5,012	931

Source: Authors' own calculations using data from Statistics Norway.

Note: Number of observations in 1949 birth cohort by sample restriction. Working is defined as earnings above EUR 10,000, while disability benefits consists of both temporary and permanent disability benefits.



## Deskriptiv statistikk

	Control		Treatment	
	Before	After	Before	After
Labor force participation	0.92	0.93	0.71	0.78
Annual earnings				
Average	62,568	69,870	45,458	55,278
75th percentile	78,796	86,543	67,235	77,014
Median	56,963	63,276	45,600	52,763
25th percentile	41,667	46,926	0	18,688
Covariates, average values				
Years of education	12.8	12.9	12.7	12.8
Annual earnings ages 30-59	56,605	59,785	53,953	57,497
Net liquid wealth at age 59	37,245	29,978	59,064	58,236
Number of observations	19,078	36,362	38,738	46,551

Source: Authors' own calculations using data from Statistics Norway.

Note: Descriptive statistics for the treatment and control group, before and after the reform. Labor force participation is defined as labor earnings above EUR 10,000. Annual earnings and net liquid wealth are expressed in EUR.

## Andelen inntekt fra hovedjobb

	At age						
	59	60	61	62	63	64	65
Cohort 1945	96.6	97.0	96.9	96.4	96.7	96.6	95.8
Cohort 1949	96.4	97.1	97.0	95.9	95.3	95.5	95.5

Source: Authors' own calculations using data from Statistics Norway.

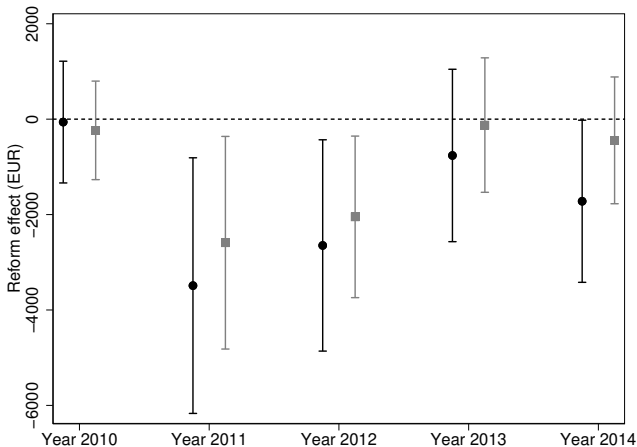
Note: Fraction of total annual earnings derived from the main job by age, for birth cohorts 1945 and 1949.

- ▶ Estimerer følgende lineære modell:

$$y_{i,a} = \alpha + X_{i,a}\beta + \sum_{a=61}^{65} \gamma_a D_a + \sum_{t=2010}^{2014} \lambda_t D_t + \eta \Delta_{i,a} + \varepsilon_{i,a}$$

- ▶  $y_{i,a}$  er årlig arbeidsinntekt før skatt for individ  $i$  ved alder  $a$
- ▶  $X_{i,a}$  er pre-determinerte kontrollvariable for individ  $i$ :
  - ▶ Utdanningslengde
  - ▶ Utdanningslengde<sup>2</sup>
  - ▶ Log gjennomsnittlig årlig inntekt før skatt summert over aldere 30 til 59
  - ▶ Nettoformue ved alder 59
- ▶  $\Delta_{i,a}$  er treatment-dummy, og er lik 1 hvis individ  $i$  er i treatment-gruppen etter reformen og null ellers
- ▶  $D_a$  er dummy for alder (med alder 60 som referansealder), mens  $D_t$  er dummy for kalenderår (med 2009 som referanseår)

## Gjennomsnittlig effekt på inntekt, etter år



Source: Authors' own calculations using data from Statistics Norway.

Note: OLS estimates, by year, without covariates (black lines) and with covariates (gray lines). The bars show the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level).

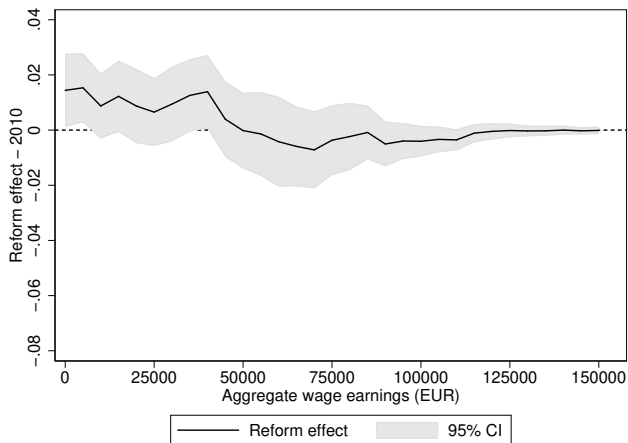
## Inntekt, logit

- ▶ Estimerer følgende logit:

$$P(y_{i,a} > y_k) = F \left( \alpha + X_{i,a}\beta + \sum_{a=61}^{65} \gamma_a D_a + \sum_{t=2010}^{2014} \lambda_t D_t + \sum_{a=62}^{65} \eta_a D_a \Delta_{i,a} \right)$$

- ▶ Dette gjøres separat for  $k = 0, 5000, 10000, \dots, 150000$
- ▶ Kontrollvariablene ( $X_{i,a}$ ) er de samme som før
- ▶ Kontrollerer for kalenderårseffekter ( $D_a$ ) og alderseffekter ( $D_t$ )

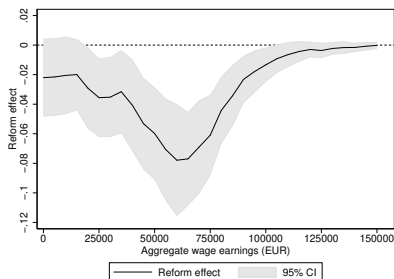
## Effekt over inntektsfordelingen, 2010



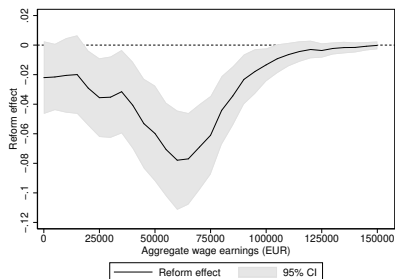
Source: Authors' own calculations using data from Statistics Norway.

Note: Simulation results from a year-by-year version, showing the difference in the CCDF for the treatment group and the control group in 2010. The gray-shaded area shows the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level). Aggregate earnings are expressed in EUR.

## Effekt over inntektsfordelingen, lineære tidstrender



Pre-reform time trend



Time trend

Source: Authors' own calculations using data from Statistics Norway.

Note: Simulation results from estimation with linear time trends estimated on pre-reform data and extrapolated and linear time trends estimated on sample data, showing the difference in the CCDF for the treatment group and the control group. The gray-shaded area shows the 95 percent confidence intervals (based on 200 non-parametric bootstraps for each estimation, clustered on individual level). Aggregate earnings are expressed in EUR.

## Arbeidstimer, multinomisk logit

- ▶ Estimerer følgende multinomiske logit for hvert alternativ  $j \in \{\text{ikke i arbeid, kort deltid, lang deltid, fulltid/overtid}\}$ :

$$P(y_{i,a} = j) = \frac{\exp(\eta_{i,j})}{\sum_{j=1}^4 \exp(\eta_{i,j})}$$

$$\text{hvor } \eta_{i,j} = \alpha + X_{i,a}\beta + \sum_{a=61}^{65} \gamma_a D_a + \sum_{t=2010}^{2014} \lambda_t D_t + \sum_{a=62}^{65} \delta_a D_a \Delta_{i,a}$$