SHARE ERIC
SURVEY OF HEALTH, AGEING AND RETIREMENT IN EUROPE

SHARE WORKING PAPER SERIES

Women's Caring Penalty at Retirement in Europe

Francesco Maura and Paola Profeta

Working Paper Series 95
DOI: 10.6103/wp.952024

SHARE-ERIC | Leopoldstr. 139 | 80804 Munich | Germany | share-eric.eu

SHARE BERLIN Institute

This project has received funding from the European Union under grant agreement SOCPL No 101102412 and the European Union's Horizon 2020 research and innovation programme under grant agreements No 870628, No 101015924.

SPONSORED BY THE Federal Ministry of Education and Research

Supported by the NIH National Institute on Aging

About the SHARE Working Paper Series

The SHARE Working Paper Series started in 2011 and collects pre-publication versions of papers or book chapters, technical and methodological reports as well as policy papers based on SHARE data. The working papers are not reviewed by the publisher (SHARE-ERIC), layout and editing are not standardized. The publisher takes no responsibility for the scientific content of the paper. Working Papers can be updated – a version number is indicated on the front page. Previous versions are available upon request.

Acknowledgements

The SHARE data collection has been funded by the European Commission, DG RTD through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N°211909, SHARE-LEAP: GA N°227822, SHARE M4: GA N°261982, DASISH: GA N°283646) and Horizon 2020 (SHARE-DEV3: GA N°676536, SHARE-COHESION: GA N°870628, SERISS: GA N°654221, SSHOC: GA N°823782, SHARE-COVID19: GA N°101015924) and by DG Employment, Social Affairs & Inclusion through VS 2015/0195, VS 2016/0135, VS 2018/0285, VS 2019/0332, and VS 2020/0313. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C, RAG052527A) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

WOMEN'S CARING PENALTY AT RETIREMENT IN EUROPE*

Francesco Maura†, Paola Profeta

Bocconi University

ABSTRACT

We study the effect of (informal) care provision patterns on late-life access to economic resources among women using SHARE data. We find that the earnings drop among women who retired to take care of a relative are about twice the drop of women who retired for other reasons. Moreover, these effects are persistent for at least 7 years after retirement. This result sheds light on part of the unexplained lifetime earnings and the pension gender gap.

JEL: J32, J16, H55.

***K*eywords** informal care, retirement, gender, ageing.

*Acknowledgments: The authors have benefited from the comments of Vincenzo Galasso and Stefano Castaldo. Thanks also to the participants of the Age-It general meeting in Cà Foscari - Venice (2024), SIEP Conference in Cagliari (2024) and SHARE-Getway User Conference in Berlin (2024). We also thank Mohamed Horchani for his valuable research assistance.

This paper was developed within the project funded by Next Generation EU - "Age-It - Ageing well in an ageing society" project (PE0000015), National Recovery and Resilience Plan (NRRP) - PE8 - Mission 4, C2, Intervention 1.3".

This paper uses data from SHARE Waves 1, 2, 4, 5, 6, 7, 8, 9 (DOIs: 10.6103/SHARE.w1.800, 10.6103/SHARE.w2.800, 10.6103/SHARE.w3.800, 10.6103/SHARE.w4.800, 10.6103/SHARE.w5.800, 10.6103/SHARE.w6.800, 10.6103/SHARE.w7.800, 10.6103/SHARE.w8.800, 10.6103/SHARE.w9.800) see Börsch-Supan et al., 2013 for methodological details. The SHARE data collection has been funded by the European Commission, DG RTD through FP5 (QLK6-CT-2001-00360), FP6 (SHARE-I3: RII-CT-2006-062193, COMPARE: CIT5-CT-2005-028857, SHARELIFE: CIT4-CT-2006-028812), FP7 (SHARE-PREP: GA N°211909, SHARE-LEAP: GA N°227822, SHARE M4: GA N°261982, DASISH: GA N°283646) and Horizon 2020 (SHARE-DEV3: GA N°676536, SHARE-COHESION: GA N°870628, SERISS: GA N°654221, SSHOC: GA N°823782, SHARE-COVID19: GA N°101015924) and by DG Employment, Social Affairs & Inclusion through VS 2015/0195, VS 2016/0135, VS 2018/0285, VS 2019/0332, and VS 2020/0313. Additional funding from the German Ministry of Education and Research, the Max Planck Society for the Advancement of Science, the U.S. National Institute on Aging (U01_AG09740-13S2, P01_AG005842, P01_AG08291, P30_AG12815, R21_AG025169, Y1-AG-4553-01, IAG_BSR06-11, OGHA_04-064, HHSN271201300071C, RAG052527A) and from various national funding sources is gratefully acknowledged (see www.share-project.org).

The views and opinions expressed are only those of the authors and do not necessarily reflect those of the European Union or the European Commission. Neither the European Union nor the European Commission can be held responsible for them.

†Corresponding author: Francesco Maura, Age-It Pe8 PNRR & AxA Research Lab on Gender Equality, Bocconi University, via Roentgen 1, 20136 Milan - Italy, e-mail: francesco.maura@unibocconi.it.

1 Introduction

The gender pay gap has long been recognized as a persistent and concerning phenomenon, well documented over the years (see Goldin, 1994). Its implications go beyond immediate earning differentials, extending disparity to retirement benefits. The systematic difference between women's and men's earnings during retirement is known as the "gender pension gap" (OECD, 2023). UN, 2021 and Rochon et al., 2021 highlight how the gender pension gap is 27% of annual pension payments among countries in the Organisation for Economic Co-operation and Development. Over the years, scholars have explored different potential explanations of the gender pension gap, such as lower wages (and lower contribution to pension plans), maternity leave(s) and higher working-career discontinuity, identifying them as the main determinants (see a review in Profeta, 2024).

This paper studies a less investigated potential cause of gender pension disparities: informal caregiving duties. Transition into retirement due to caregiving responsibilities as well as job drop-out is disproportionately borne by women (see Jefferson, 2009). Thus, women face not only lower accumulated retirement wealth but also lower social security benefits, because of the earlier and unplanned transition to retirement. The direct consequence is a higher exposure to poverty in late life that, combined with women's greater longevity, forces them to stretch their (limited) economic resources across an extended lifespan. Using data from SHARE we compare women who retired because of caregiving responsibilities to those who retired for other reasons in Europe. Using an instrumental variable approach to control for endogeneity, we show that the annual earnings drop after retirement of the first group is about twice the drop of the second group and that the difference persists over time.

Women are still the main caregivers in OECD countries (OECD, 2023). Several studies have shown that the unbalanced division of labor within the household and that women are the main ones responsible for care is a fundamental source of gender gaps in the labor market (see, among the others, Fanelli and Profeta, 2021). Recent evidence has also shown that this unbalanced division

of care responsibilities within the couple is quite persistent and it persisted during the pandemic of COVID-19 (Boca et al., 2022; Del Boca et al., 2020). In this context, having a child is a major critical event. The penalty related to women's care responsibilities at childbirth - compared to the men's ones - has been largely studied and its significant impact on gender gaps in the labor market has been recently carefully measured by the influential research on the "child penalty" (Kleven et al., 2019, Kleven et al., 2023). Care responsibilities also emerge in women's decisions related to other events, such as retirement. If women decide to retire to provide care, and this does not equally happen to men, a similar care penalty arises later in life. This paper is the first one to provide evidence of the existence of a woman's penalty related to care at retirement. In ageing societies, understanding the care penalty at retirement is of growing importance. The retirement penalty sums to the child penalty (and other possible events that affect women as caregivers) and enlarges gender gaps over the lifetime. How to design policies to prevent that these events disproportionately affect income of women over their lifetime will be crucial in future policy-making.
The rest of the paper is organized as follows: Section 2 describes the data, Section 3 presents the results and Section 4 concludes.

2 Data

We use data from the Survey of Health, Ageing and Retirement in Europe (henceforth SHARE), a biennial longitudinal survey carried out in 27 European countries and Israel since 2004. SHARE provides comprehensive data on health, economic and demographic characteristics of individuals aged 50 and above. Our analysis incorporates information from SHARE regular Waves 1 to 9, that cover the years from 2004 to 2022.

2.1 Caring in SHARE

We rely on the following two SHARE questions to identify respondents who retired or became homemakers to care for a relative or a friend, depending on the type of caring.

Retirement Because of Care: in SHARE each respondent who reported being retired is being asked the following question:

For which reasons did you retire?

- 1. Became eligible for public pension
- 2. Became eligible for private occupational pension
- 3. Became eligible for a private pension
- 4. Was offered an early retirement option/window with special incentives or bonus
- 5. Made redundant (for example pre-retirement)
- 6. Own ill health
- 7. *Ill health of relative or friend*
- 8. To retire at same time as spouse or partner
- 9. *To spend more time with family*
- 10. To enjoy life

Respondents answer this question under two circumstances: either they are participating in their first SHARE Wave and have already retired, or they have retired in the period between the last and the current SHARE interview. Thus, each respondent will respond to this question at most once across all Waves. If the respondent is still working, he/she does not answer the question.

We use the answers to the above questions to select and distinguish between those who retire for caregiving reasons ('*Ill health of a relative or friend*' and '*To spend more time with family*') and those who retire or leave their job for other reasons. Note that for those who select '*To spend more time with family*', we include only those reporting to help people within or outside the household or grandchildren in the care-retirement sample. We use these two answers - combined with the "provide help" information - to construct a variable that indicates whether the individual retired because of caregiving responsibilities or not. This dummy becomes our group selection variable. Out of the entire sample, 1,364 individuals reported retiring because of '*ll health of a relative or friend*' (73% of them are women) and 3,643 because of '*To spend more time with family*' (69% of them are women)[3].

[3]Relatively to the reasons of becoming homemaker, 2,768 respondents declared to become homemakers because of (informal) care duties, and only 1% are males.

The variable of interest in this study is retirement, as we want to understand whether the impact of transitioning into retirement on individual earnings is different between those who retire because of care and those who retire for other reasons. We use a dummy that takes value 1 if the respondent receives any labour pensions (either public or private) and is not working, and 0 otherwise.
As clearly explained in Battistin et al., 2009, the decision to transition to retirement is an endogenous choice. Thus, we use age- and gender-specific pension eligibility requirements as instruments to properly identify the causal effect of retirement on earnings. Following the work of Castaldo et al., 2024, we construct a variable that identifies the period (in years) between the moment of the interview and the year of individual eligibility for retirement[4]. In most of the SHARE countries, workers can choose between early retirement and old age retirement: in the first case, they become eligible earlier but the pension replacement rate is generally lower (i.e., they receive a lower pension), in the second case they have to wait more years (in most countries, people become eligible to old age pension about 5 years after early pension) and will receive a higher pension. In this study, we consider the first year of eligibility as the minimum between early and old-age pension eligibility; thus, our measure of eligibility generally coincides with early retirement eligibility.

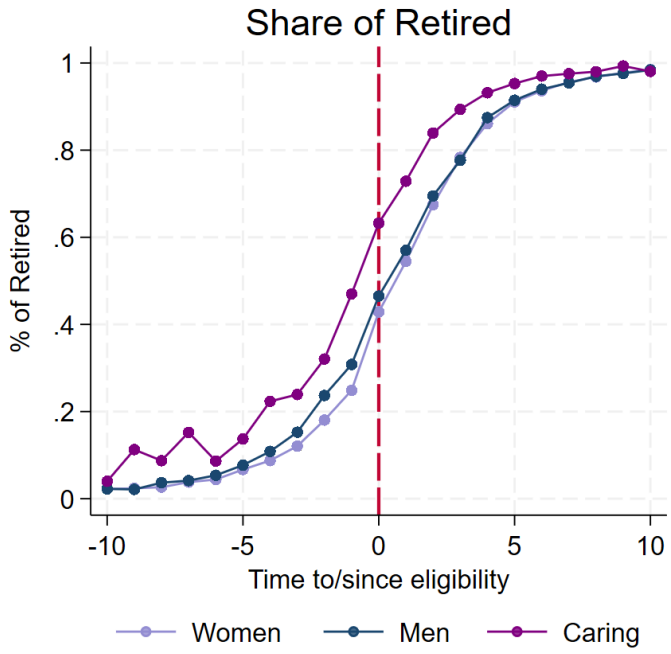
Figure 2.1 shows the proportion of retired individuals by subgroups (women, men and caregivers) and years to/since eligibility. It appears that those who transited to retirement because of caregiving responsibilities are more likely to retire as soon as they become eligible, or in some cases even before becoming officially eligible. Indeed, the proportion of retired individuals is higher than 60% around the first year of eligibility, while the proportion of women and men who transited into retirement for any other reason is around 40%.

3 Results

The dependent variable is the individual's labor and pension yearly earnings. The treatment is retirement: transitioning to retirement invariably leads to a decrease in individual earnings. We

[4]For some SHARE countries, such as Italy, we also include years of contribution as a determinant of the eligibility criteria. To compute the eligibility to early and old-age pensions we follow Coile and Gruber, 2000, Gruber and Wise, 2001, Wise, 2012, and combine information from the Mutual Information System on Social Protection (MISSOC) database and Social Security Administration (SSA) data on 'Social Security Programs throughout the World'.

Figure 2.1: time to/since eligibility to retirement and proportion of retired individuals, by subgroups: Males, Females and Caregiving retired/homemaker individuals.



want to test whether this effect is more pronounced among those women who opt for retirement due to caregiving responsibilities.

We focus only on women, as they represent 70% of the individuals who choose to transition into retirement to provide caregiving services, according to our definition. We then compare the retirement earnings of women who retired because of caregiving responsibilities and women who transitioned into retirement for general reasons. To properly compare the two groups, we employ a fuzzy regression discontinuity approach to detect the differences in the impact of retirement (see Battistin et al., 2009) and an event study approach similar to the one proposed by Kleven et al., 2019.

3.1 RDD analysis

Figure 3.2 shows the average yearly earnings of women by year(s) to/since eligibility and type of retirement across SHARE countries.

Figure 3.2: RDD plot. Women's average yearly earnings by type of retirement and year to/since pension eligibility.

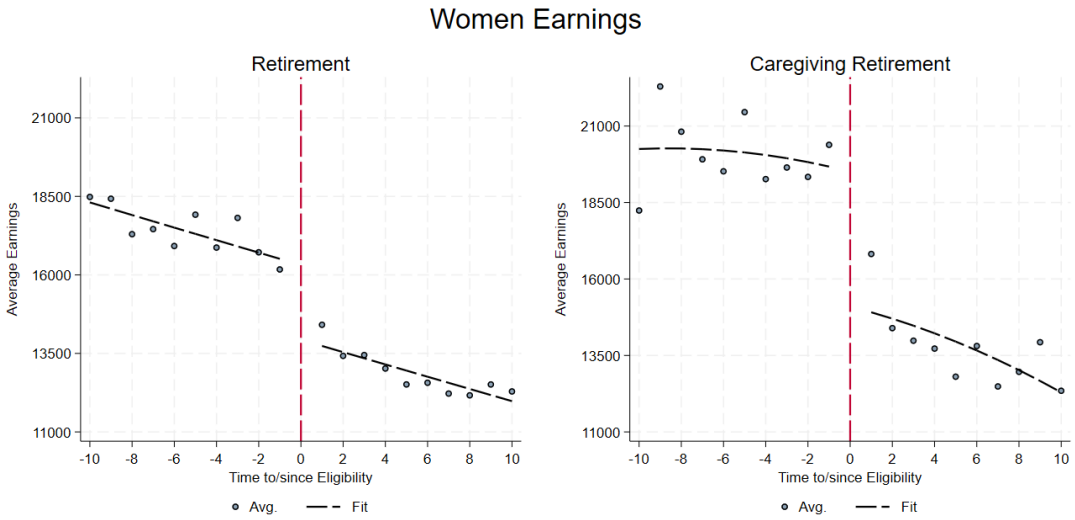


Figure 3.2 shows a clear discontinuity in earnings pre-post eligibility for both groups, but a larger jump among those who retired because of caregiving duties.

As explained in Section 2, retirement is an endogenous choice. To address its endogeneity and properly identify its causal effects, we use pension eligibility as an instrument (see Battistin et al., 2009 and Castaldo et al., 2024) in the neighbourhood of the eligibility cut-off. We estimate the following two-step IV equations separately for women who retired because of caregiving responsibilities and women who retired in other circumstances:

$$Retirement_{itw} = \gamma_0 + \gamma_1 \; Eligibility_{itw} + \Gamma' X + \epsilon_{itw} \tag{1}$$

$$Earnings_{itw} = \beta_0 + \beta_1 \; Retirement_{itw} + \Delta' X + \omega_{itw} \tag{2}$$

Where $Earnings_{itw}$ and $Retirement_{itw}$ are individual labour and pension earnings and the retirement status, respectively, of agent *i*, at event time *t* (time to/since eligibility) in wave *w*. The *X* includes demographic controls such as a second-order polynomial in age, education level dummies, marital status dummies, cohort dummies (to account for possible differences in retirement laws at the time of retirement), a dummy for labour earnings lower than 300€ per month (only for

the non-retired), SHARE waves dummies, country dummies[5] and time to/since eligibility as a continuous variable. *Retirement* is a dummy variable that identifies whether the individual is retired or not in a certain year and wave. At the same time, *Eligibility* is a dummy variable that identifies whether, in the same year and wave, the individual is eligible for retirement according to his/her country's laws. Note that once the individual becomes eligible for retirement – either early or statutory – it also remains eligible in the following waves and years.

We run two RDD regressions distinguishing women by retirement type. We select women below 80 years of age and born after 1930, either retired or employed/self-employed, with yearly total earnings below 200k € and a cutoff of ± 10 years around the first year of eligibility.

Table 1 shows the results of the fuzzy RDD estimation and IV estimates (i.e., without controlling and cutting the sample around time to/since eligibility).

Table 1 shows that the F-test of the first stage confirms that eligibility is a good and strong instrument for retirement for both groups of women. It significantly drops in the second group because of the fewer observations. Moreover, this group's members are more likely to retire even before their eligibility - see Figure 2.1 - thus, eligibility is a less precise predictor of retirement among these subjects, but still consistent. The 2nd stage show that retirement has a negative and significant effect on individual annual earnings in both groups, as expected, but the magnitude is more than two times larger among women who retired because of caring responsibilities. The IV estimates show comparable results.

3.1.1 Testing coefficient difference

We estimate a joint model (same model of Equation 1 and 2) interacting the endogenous variable and the controls with the group-selector dummy for care retirement. Thus, the joint model uses care and non-care retired women together.

We test whether the coefficients of *Retired* of the two groups are statistically different. The test rejects the null hypothesis that the two coefficients of the retirement variable are identical for both

[5]We dropped Lithuania (11), Bulgaria (3), Cyprus (9), Finland (7), Latvia (3), Malta (16), Romania (2) and Slovakia (10) from the analysis because they have very few observations, in parenthesis, in the selected sample of women who retired because of caregiving. Results are substantially unchanged if we include also those countries.

Table 1: RDD and IV estimates. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees.

	Females: General Retirement		Females: Caregiving Retirement	
	1^{st} Stage	2^{nd} Stage	1^{st} Stage	2^{nd} Stage
	Dep. var: Retirement	Dep. var: Earnings	Dep. var: Retirement	Dep. var: Earnings
		RDD		
Eligibility	0.331***		0.348***	
	(0.006)		(0.028)	
Retirement		-4,212.6***		-8,861.6***
		(553.7)		(2,042.0)
Controls	yes	yes	yes	yes
F – Test	3,053.6		153.6	
Observations	75,154	75,154	3,397	3,397
Clusters		36,013		1,272
		Instrumental Variable		
Eligibility	0.406***		0.393***	
	(0.005)		(0.024)	
Retirement		-5,137.7***		-9,913.4***
		(354.0)		(1,534.6)
Controls	yes	yes	yes	yes
F – Test	7,441.1		260.8	
Observations	123,340	123,340	5,725	5,725
Clusters		49,788		1,722

Note: we cluster standaRDD errors at the individual level, so one cluster for each respondent.
Earnings are measured in 2015 €, equivalized to Germany purchasing power.
Controls include Age, Age^2, first order polynomial in time to/since eligibility, grouped cohort (intervals of 5 years up to 1980), marital status dummies, education dummies, low labour earnings dummy (below 300 €per month), null pension earnings after retirement dummy, SHARE waves and country dummies. Full parameter estimates in Table A.1 and Table A.2. The Fuzzy RDD regressions control also for time to/since eligibility[a].

[a]Table A.3 in the appendix controls for a second order polynomial in time to/since eligibility. See Appendix A.3 for bandwidth robustness choice.

RDD and IV in Table 1 and Table A.3 (p-value = 0.00 and 0.00 in RDD regressions[6] and p-value = 0.00 in IV estimates. χ^2 = 41.1, 37,494.6 and 583.7 respectively).

3.2 Event time analysis

We now follow the approach proposed in Kleven et al., 2019, where they use an event study based on percentage changes of parent's earnings around the birth of the first child to quantify the gender pay gap before and after it (in percentage terms). We use a similar specification to compare the percentage change of earnings pre- and post-retirement. For each retired person in the data, we denote the retirement year by t = 0, and we index all the years before and after relative to that

[6]The RDD regressions considered differ in the order of the running variable polynomial included, time to/since eligibility. In the first case we are considering a first-order polynomial, in the second case a second-order polynomial, see Table A.3.

year. We consider a repeated cross-section sample of persons within -8 and +15 years before and after retirement, to capture also the long-run caregiving retirement penalty. As for the RDD, we select women below 80 years of age and born after 1930, either retired or employed/self-employed, with yearly total labor and pension earnings below 200k €. Denoting E^r_{iwt} the earnings (dependent variable) of agent *i*, retired because of reason *r*, in Wave w at event time t, we run two separate regressions for women who stopped working because of caregiving reasons or other reasons.

$$E^r_{iwt} = \sum_{j \neq 0} \alpha^r_j \mathbf{I}[j = t] + \Delta' X + \omega^r_{iw} \tag{3}$$

We include the full set of event-time dummies (first term of the right-hand side in Equation 3) omitting time t = -1. Thus, the event-time dummies coefficients represent the effect on earnings of time *t* to/since retirement relative to the last pre-retirement earnings (t = -1). The *X* controls include a second-order age polynomial, level of education, marital status, a dummy for low labour earnings $t \leq 0$ (less than 300€ per month), grouped cohort dummies (intervals of 5 years up to 1980), SHARE wave and country dummies[7].

Once we have the regression results, we estimate the care penalty as the ratio between the difference $\hat{\alpha}^{r=1}_j - \hat{\alpha}^{r=0}_j$ (i.e.: the difference between the estimated event-dummy coefficients among the two groups) and earnings predicted omitting the effect of time-event dummies (denoted as $\hat{E}^r_{iwt}$). Thus:

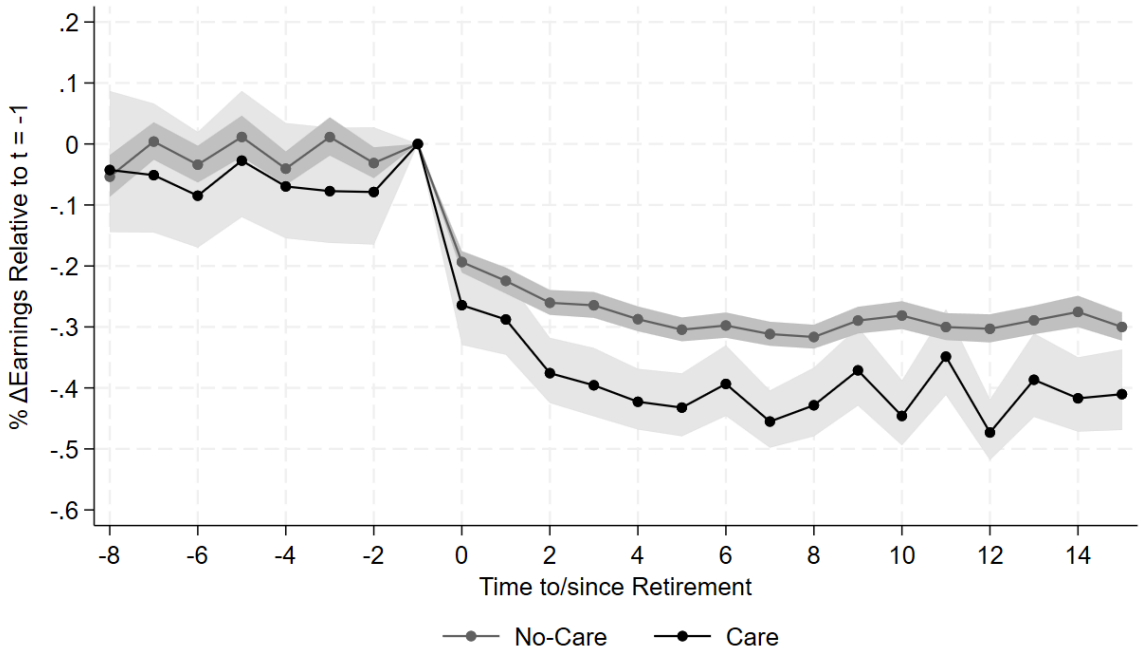
$$P_t = \frac{\hat{\alpha}^{r=1}_j - \hat{\alpha}^{r=0}_j}{\mathbf{E}[\hat{E}^r_{iwt}|t}] \tag{4}$$

In Figure 3.3 we compare the percentage impact of each estimated event-time dummy $\hat{\alpha}^r_j$ on the corresponding predicted earnings, omitting the time-event effect $\hat{E}^r_{iwt}$.

Figure 3.3 shows that the percentage earnings drop of women who declared to retire because of care is larger in magnitude than those who retired in different circumstances. This difference in percentage points accounts for 40 to 45% of last pre-retirement earnings among the caring group,

[7]The age polynomial is included to control for underlying life-cycle trends, and the full set of Wave dummies to control nonparametrically for time trends (business cycles and so on). Cohort and country dummies help to control for different retirement laws at the time of retirement

Figure 3.3: Women earnings retirement drops as a % of last pre-retirement earnings. 90% confidence intervals.

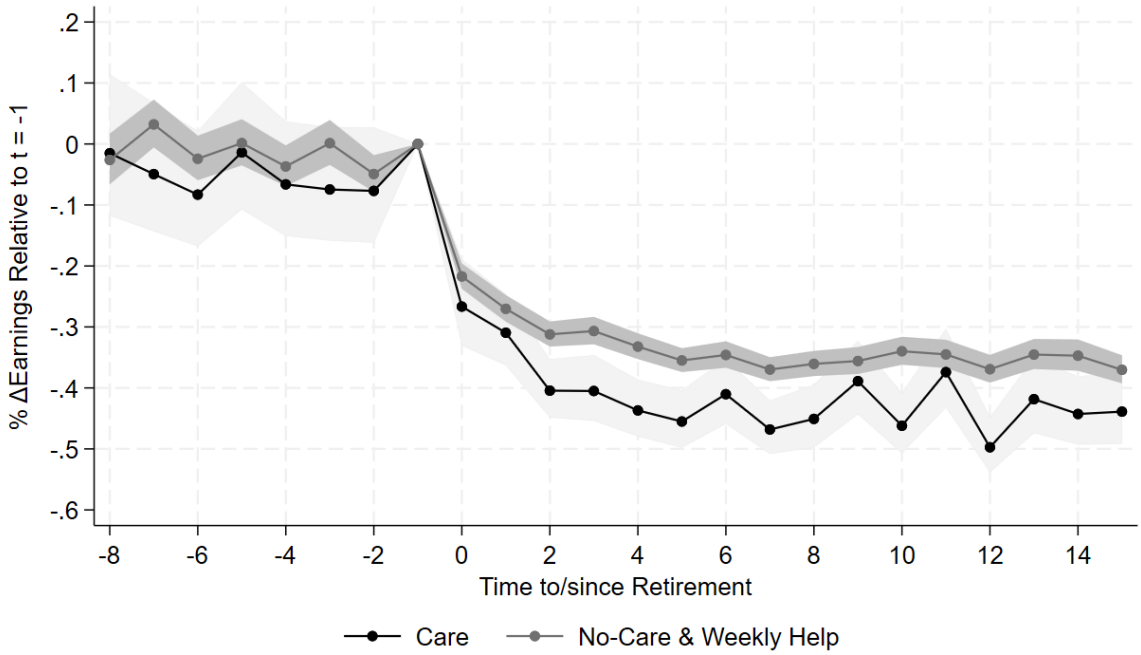


while among other women is stable at around 30%. Therefore, the caregiving retirement penalty is between 10 to 15 % point of pre-retirement earnings. This penalty seems persistent over time.

In Figure 3.4 we use SHARE information about help given by women to other people living within or outside the family to construct two subgroups. We then compare the earnings of women who retired for caregiving responsibilities with those who retire for generic reasons but have to take care (daily or weekly) of another person. This last group represents women who could have chosen to retire to provide care but did not.

Figure 3.4 shows results in line with Figure 3.3, but a lower penalty of around 5% of last pre-retirement earnings. The reduction of the penalty is mainly driven by non-care retired who give help, who experience a drop in earnings of around 35% points. Thus, comparing the trends of earnings to a group of individuals closer in characteristics to those who retire for caregiving responsibilities the results are unchanged, even if attenuated.

Figure 3.4: Women earnings retirement drops as a % of last pre-retirement earnings, comparing caregiving retirees and those who provide daily/weekly care to relatives or friends. 90% confidence intervals.



3.3 Heterogeneity and Policy Implication

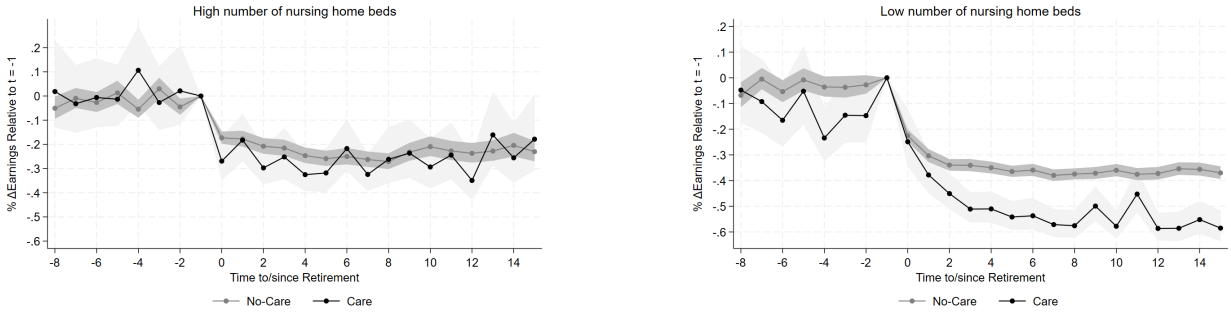
This Section evaluates the results of Section 3.2 by country characteristics. Specifically, we reproduce Figure 3.3 comparing SHARE Countries with high and low numbers of nursing home beds (per 100,000 inhabitants) and high and low %GDP expenditure in child care facilities.

Nursing Home Beds

We classify SHARE countries based on the average number of nursing home beds per 100,000 inhabitants between 2004 and 2019 (see Appendix Subsection A.4.1 for more details and descriptive statistics). We show that Finland, Sweden, Netherlands, Germany, Luxembourg, Belgium, Switzerland, Malta and Slovenia are in the top tercile of the distribution, thus, they became *high* nursing home beds countries. All others are *low* nursing home countries.

Figure 3.5 replicates Figure 3.3 by high- and low-nursing home beds countries.

Figure 3.5: Event time study by average number of nursing home beds by Country.



(a) *High* n. of beds

(b) *Low* n. of beds

**High* n. of beds are those countries in the top tercile of the distribution, *low* n. of beds are those countries in the two bottom terciles of the distribution.

Comparing Figures 3.5a and 3.5b, the caregiving retirement penalty seems to disappear among high-nursing home beds countries, while is more pronounced and persistent among low-nursing home beds countries. Thus, it looks like in the second group care-retired women are substituting for formal caregiving services.

4 Conclusion

The paper studies the retirement care penalty for European women. We first document that retiring due to caregiving responsibilities is a female-dominated phenomenon in Europe.

The RDD and IV results show the impact of retirement on individual labour and pension earnings is almost twice among women who retired for caregiving responsibilities. We then follow the event study approach proposed by (Kleven et al., 2019), showing that the % drop in earnings after retirement is significantly larger among care retired women, and persistent over time. Thus, those women are strongly penalized in terms of future - pension - earnings, with direct consequences on the probability of experiencing poverty and financial difficulties in later life.

Section 3.3 shows a potential channel to reduce this inequality: providing adequate formal caregiving services for the community. Indeed, among countries that provide care services in line with population needs the care retirement penalty disappears.

References

Battistin, E., Brugiavini, A., Rettore, E., & Weber, G. (2009). The retirement consumption puzzle: Evidence from a regression discontinuity approach. *American Economic Review*, *99*(5), 2209–2226.

Boca, D. D., Oggero, N., Profeta, P., & Rossi, M. C. (2022). The impact of covid-19 on the gender division of housework and childcare: Evidence from two waves of the pandemic in italy. *IZA Journal of Labor Economics*, *11*(1), –. https://doi.org/doi:10.2478/izajole-2022-0003

Börsch-Supan, A., Brandt, M., Hunkler, C., Kneip, T., Korbmacher, J., Malter, F., Schaan, B., Stuck, S., & Zuber, S. (2013). Data resource profile: The survey of health, ageing and retirement in europe (share). *International journal of epidemiology*, *42*(4), 992–1001.

Castaldo, S., Celidoni, M., Maura, F., Weber, G., & Zambon, N. (2024). Saving and spending regrets at retirement. *Netspar International Pension Workshop*. https://www.netspar.nl/publicatie/saving-regrets-at-retirement/

Coile, C., & Gruber, J. (2000). Social security and retirement.

Del Boca, D., Oggero, N., Profeta, P., & Rossi, M. (2020). Women's and men's work, housework and childcare, before and during covid-19. *Review of Economics of the Household*, *18*(4), 1001–1017.

Fanelli, E., & Profeta, P. (2021). Fathers' involvement in the family, fertility, and maternal employment: Evidence from central and eastern europe. *Demography*, *58*(5), pp. 1931–1954. Retrieved August 28, 2024, from https://www.jstor.org/stable/48687197

Goldin, C. (1994). Understanding the gender gap: An economic history of american women. *Equal employment opportunity: labor market discrimination and public policy*, 17–26.

Gruber, J., & Wise, D. A. (2001). An international perspective on policies for an aging society.

Jefferson, T. (2009). Women and retirement pensions: A research review. *Feminist Economics*, *15*(4), 115–145.

Kleven, H., Landais, C., & Leite-Mariante, G. (2023). *The child penalty atlas* (tech. rep.). National Bureau of Economic Research.

Kleven, H., Landais, C., & Søgaard, J. E. (2019). Children and gender inequality: Evidence from denmark. *American Economic Journal: Applied Economics*, *11*(4), 181–209.

OECD. (2023). *Joining forces for gender equality*. https://doi.org/https://doi.org/https://doi.org/10.1787/67d48024-en

Profeta, P. (2024). Population ageing and gender gaps: Labor market, family relationships, and public policy 1. In *The routledge handbook of the economics of ageing* (pp. 437–452). Routledge.

Rochon, P. A., Kalia, S., & Higgs, P. (2021). Gendered ageism: Addressing discrimination based on age and sex. *The Lancet*, *398*(10301), 648–649.

UN, W. (2021). Decade of healthy ageing (2021–2030). *Accessed 25th Oct*. https://www.%20who.%20int/initiatives/decade-of-healthy-ageing

Wise, D. A. (2012). *Social security programs and retirement around the world: Historical trends in mortality and health, employment, and disability insurance participation and reforms*. University of Chicago Press.

A Appendix

A.1 Extensive Table 1

Table A.1: Full **First** Stage estimates (RDD and IV) from Table 1. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees.

	Caregiving Retirement		General Retirement	
	RDD	IV	RDD	IV
	(1)	(2)	(3)	(4)
Eligibility Status	0.348***	0.393***	0.331***	0.406***
	(0.028)	(0.024)	(0.006)	(0.005)
Time to/since eligibility	0.014***		0.034***	
	(0.005)		(0.001)	
Low Labour Income	-0.301***	-0.335***	-0.215***	-0.230***
	(0.028)	(0.031)	(0.004)	(0.004)
Pens. Income = 0	0.291***	0.207***	0.365***	0.277***
	(0.027)	(0.021)	(0.007)	(0.005)
Education: None		- reference category -		
Primary	0.109	0.059	0.106***	0.095***
	(0.081)	(0.037)	(0.013)	(0.010)
Low Secondary	0.071	0.037	0.120***	0.112***
	(0.084)	(0.038)	(0.013)	(0.010)
Up Secondary	0.095	0.054	0.117***	0.111***
	(0.082)	(0.037)	(0.013)	(0.010)
Post Secondary	0.155*	0.090**	0.111***	0.101***
	(0.086)	(0.042)	(0.014)	(0.011)
Tertiary	0.097	0.048	0.111***	0.091***
	(0.084)	(0.039)	(0.013)	(0.010)
Being Married	-0.003	-0.003	0.027***	0.033***
	(0.014)	(0.009)	(0.003)	(0.002)
Age	0.110***	0.143***	-0.058***	0.031***
	(0.024)	(0.013)	(0.004)	(0.002)
Age^2	-0.001***	-0.001***	0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Cohort: < 1935		- reference category -		
1935-1939 1935-1939	-0.008	0.008	0.157***	0.067***

	(0.033)	(0.019)	(0.021)	(0.007)
1940-1944	0.001	-0.007	0.206***	0.096***
	(0.049)	(0.030)	(0.021)	(0.008)
1945-1949	0.002	-0.032	0.255***	0.122***
	(0.066)	(0.043)	(0.022)	(0.010)
1950-1954	-0.054	-0.096	0.213***	0.051***
	(0.087)	(0.059)	(0.024)	(0.013)
1955-1959	-0.094	-0.117	0.162***	-0.039***
	(0.105)	(0.071)	(0.027)	(0.015)
1960-1975	0.011	0.007	0.144***	-0.054***
	(0.133)	(0.098)	(0.030)	(0.018)
Wave 1		- reference category -		
Wave 2	0.005	-0.008	0.016***	0.028***
	(0.020)	(0.015)	(0.005)	(0.004)
Wave 4	-0.024	-0.030	-0.015*	0.017***
	(0.036)	(0.024)	(0.008)	(0.006)
Wave 5	-0.026	-0.037	-0.005	0.020***
	(0.043)	(0.029)	(0.008)	(0.006)
Wave 6	-0.026	-0.020	-0.007	0.014*
	(0.051)	(0.035)	(0.010)	(0.007)
Wave 7	0.023	0.009	-0.002	0.013
	(0.062)	(0.041)	(0.012)	(0.009)
Wave 8	0.028	0.028	0.002	0.018*
	(0.071)	(0.048)	(0.013)	(0.009)
Wave 9	0.142*	0.100*	-0.010	0.009
	(0.079)	(0.053)	(0.014)	(0.010)
Germany		- reference category -		
Austria	0.107*	0.069***	0.043***	0.095***
	(0.057)	(0.023)	(0.009)	(0.006)
Sweden	-0.149***	-0.108***	-0.096***	-0.039***
	(0.025)	(0.021)	(0.006)	(0.005)
Netherlands	-0.088**	-0.086***	-0.049***	-0.097***
	(0.039)	(0.031)	(0.009)	(0.007)
Spain	-0.005	-0.029	-0.069***	-0.077***
	(0.045)	(0.043)	(0.009)	(0.009)
Italy	0.081**	0.043**	-0.141***	0.008

	(0.040)	(0.019)	(0.011)	(0.006)
France	0.093***	0.070***	0.059***	0.075***
	(0.028)	(0.021)	(0.007)	(0.005)
Denmark	-0.033	-0.032*	-0.019***	-0.007
	(0.022)	(0.018)	(0.007)	(0.005)
Greece	0.215***	0.151***	-0.041***	-0.046***
	(0.044)	(0.036)	(0.012)	(0.010)
Switzerland	-0.087**	-0.069**	-0.078***	-0.064***
	(0.037)	(0.030)	(0.007)	(0.006)
Belgium	0.055*	0.052***	-0.007	0.030***
	(0.029)	(0.019)	(0.007)	(0.005)
Israel	-0.160***	-0.119***	-0.164***	-0.130***
	(0.039)	(0.032)	(0.011)	(0.010)
Czech Republic	0.068*	0.072***	-0.067***	0.080***
	(0.036)	(0.016)	(0.010)	(0.004)
Poland	0.176**	0.139***	0.126***	0.160***
	(0.070)	(0.051)	(0.007)	(0.005)
Luxembourg	0.056	0.034	-0.023	-0.054***
	(0.053)	(0.048)	(0.017)	(0.017)
Hungary	0.044	0.058**	0.076***	0.121***
	(0.047)	(0.025)	(0.009)	(0.006)
Portugal	-0.016	0.019	-0.191***	-0.027***
	(0.084)	(0.040)	(0.017)	(0.010)
Slovenia	0.066	0.038	0.006	0.099***
	(0.063)	(0.034)	(0.010)	(0.005)
Estonia	-0.092	-0.001	-0.132***	0.011**
	(0.058)	(0.023)	(0.009)	(0.005)
Croatia	0.008	-0.002	-0.184***	0.020**
	(0.063)	(0.033)	(0.015)	(0.008)
Constant	-3.507***	-4.702***	1.832***	-1.423***
	(0.852)	(0.471)	(0.151)	(0.068)
F-test	153.6	260.8	3,053.6	7,441.1
Observations	3,397	5,725	75,154	123,340

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.2: Full **Second** Stage estimates (RDD and IV) from Tabel 1. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees.

	Caregiving Retirement		General Retirement	
	RDD	IV	RDD	IV
	(1)	(2)	(3)	(4)
Retired	-8861.6***	-9913.6***	-4212.6***	-5137.7***
	(2042.00)	(1534.57)	(553.86)	(354.01)
Time to/since eligibility	-218.6		-136.2***	
	(181.94)		(51.98)	
Low Labour Income	-19113.8***	-19314.6***	-15311.6***	-15686.4***
	(968.40)	(913.75)	(166.39)	(141.57)
Pens. Income = 0	-6166.7***	-6942.4***	-8198.3***	-8291.3***
	(1347.23)	(964.09)	(324.81)	(206.88)
Education: none	- reference category -			
Primary	5041.2***	3353.1***	1447.8***	1295.0***
	(1232.02)	(836.15)	(271.02)	(200.63)
Low Secondary	7301.3***	6134.2***	2248.6***	2294.9***
	(1143.30)	(874.33)	(275.77)	(213.10)
Up Secondary	7379.1***	6686.1***	4082.1***	3823.1***
	(1008.61)	(814.00)	(257.91)	(202.85)
Post Secondary	8872.5***	7351.7***	5698.1***	5250.7***
	(1565.06)	(1101.46)	(333.89)	(257.16)
Tertiary	11737.5***	10513.7***	8789.5***	8410.3***
	(1078.09)	(872.22)	(274.01)	(216.72)
Being Couple	-2463.8***	-3013.8***	-2474.2***	-2380.8***
	(519.91)	(441.57)	(122.70)	(91.68)
Age	3263.7***	1629.3***	1240.3***	432.8***
	(778.13)	(563.52)	(168.05)	(82.84)
Age^2	-22.1***	-10.3***	-9.4***	-3.7***
	(5.83)	(3.92)	(1.34)	(0.60)
Cohort: < 1935	- reference category -			
1935-1939	-1898.8	1525.5	354.0	114.8
	(3771.30)	(1128.03)	(795.20)	(254.93)
1940-1944	206.2	2356.0	1504.2*	277.0
	(3840.56)	(1494.19)	(817.76)	(297.49)
1945-1949	1539.4	3860.4*	1977.5**	461.6

	(4003.59)	(1977.61)	(874.20)	(376.96)
1950-1954	2284.0	4940.5**	2100.6**	666.0
	(4287.88)	(2466.32)	(922.62)	(454.80)
1955-1959	3959.3	6646.7**	1574.5	109.1
	(4732.80)	(3042.28)	(994.47)	(542.92)
1960-1975	2545.2	5157.6	1380.9	-154.9
	(5307.71)	(3856.97)	(1095.42)	(665.82)
Wave 1	- reference category -			
Wave 2	-5391.9***	-5364.3***	-5501.0***	-4826.1***
	(880.52)	(692.10)	(273.73)	(224.69)
Wave 4	-5551.8***	-5033.5***	-4631.3***	-3775.5***
	(1215.19)	(943.84)	(345.54)	(268.14)
Wave 5	-5532.9***	-5700.2***	-4918.2***	-4175.5***
	(1442.81)	(1178.77)	(362.72)	(282.88)
Wave 6	-6398.6***	-6108.2***	-4552.1***	-3784.5***
	(1645.49)	(1366.04)	(402.09)	(312.68)
Wave 7	-6138.9***	-5847.4***	-4542.9***	-3413.4***
	(1944.29)	(1574.80)	(479.83)	(367.32)
Wave 8	-7184.6***	-7286.3***	-4348.7***	-3508.1***
	(2266.73)	(1843.83)	(491.61)	(382.71)
Wave 9	-6642.4***	-7463.2***	-4670.0***	-3993.8***
	(2511.10)	(2090.16)	(525.31)	(410.26)
Germany	- reference category -			
Austria	3174.7*	2765.4**	466.8	473.9**
	(1689.55)	(1247.83)	(322.03)	(222.82)
Sweden	2088.9**	1821.5**	1969.4***	1476.8***
	(1039.80)	(821.42)	(253.67)	(197.55)
Netherlands	-972.4	-83.4	2313.2***	2213.3***
	(1369.44)	(1108.13)	(385.53)	(303.72)
Spain	3713.4**	2917.7**	-749.6***	-895.7***
	(1670.99)	(1252.43)	(278.03)	(226.91)
Italy	1080.7	1468.9	1007.5***	415.5**
	(1373.13)	(976.59)	(335.62)	(197.72)
France	5365.8***	5186.6***	2736.9***	2811.1***
	(1153.09)	(948.11)	(277.96)	(224.97)
Denmark	1537.0*	1610.3**	1438.8***	1488.8***

	(896.36)	(762.18)	(255.43)	(212.15)
Greece	-758.6	-891.2	-3168.1***	-3235.2***
	(1479.68)	(1059.66)	(257.23)	(204.11)
Switzerland	4929.8***	5270.6***	6630.1***	6142.5***
	(1281.02)	(1070.79)	(373.15)	(316.36)
Belgium	5369.9***	5900.6***	5389.8***	5664.0***
	(1332.29)	(1320.19)	(393.31)	(328.94)
Israel	321.4	361.8	-1921.9***	-1958.9***
	(1491.17)	(1306.36)	(345.60)	(273.02)
Czech Republic	-1723.0	-2936.9***	-3117.0***	-3874.1***
	(1400.21)	(761.46)	(340.64)	(167.80)
Poland	-3569.1**	-3853.9***	-4561.7***	-4555.3***
	(1609.55)	(1177.85)	(253.02)	(183.50)
Luxembourg	6847.5**	11849.1***	7158.7***	7546.5***
	(3124.33)	(4478.59)	(719.26)	(672.05)
Hungary	-5622.0***	-4742.7***	-5469.7***	-5492.8***
	(1546.78)	(1006.94)	(291.48)	(201.18)
Portugal	8694.9**	2495.3	-1361.3***	-2037.1***
	(4424.41)	(2312.52)	(404.23)	(264.98)
Slovenia	3772.4	3976.0*	-990.8***	-1202.5***
	(3075.90)	(2320.69)	(354.65)	(221.15)
Estonia	-4129.4***	-5458.2***	-6048.5***	-6401.9***
	(1343.01)	(745.42)	(291.02)	(165.15)
Croatia	-3001.4	-4405.2***	-4196.3***	-5310.6***
	(2657.83)	(1433.22)	(418.53)	(184.75)
Constant	-99594.6***	-44527.8**	-22908.8***	6415.7**
	(27437.55)	(20061.27)	(5769.47)	(2929.28)
Observations	3,397	5,725	75,154	123,340

Note:$^{*}p < 0.1;^{**}p < 0.05;^{***}p < 0.01$

A.2 RDD using Second Order Polynomial in Time to/since Eligibility

Table A.3: RD and IV estimates. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees. Equivalent to Table 1, including second-order polynomial in time to/since eligibility.

	Females: General Retirement		Females: Caregiving Retirement	
	1^{st} Stage Dep. var: Retirement	2^{nd} Stage Dep. var: Earnings	1^{st} Stage Dep. var: Retirement	2^{nd} Stage Dep. var: Earnings
		Fuzzy RD		
Eligibility	0.338***		0.332***	
	(0.006)		(0.029)	
Retirement		-4,066.4***		-8036.2***
		(539.8)		(2,064.0)
Controls	yes	yes	yes	yes
F – Test	3,254.9		129.4	
Observations	75,154	75,154	3,397	3,397
Clusters		36,013		1,272
		Instrumental Variable		
Eligibility	0.406***		0.393***	
	(0.005)		(0.024)	
Retirement		-5137.7***		-9,913.6***
		((354.0)		(1,534.6)
Controls	yes	yes	yes	yes
F – Test	7,411.1		260.8	
Observations	123,340	123,340	5,725	5,725
Clusters		49,788		1,722

Note: we cluster standard errors at the individual level, so one cluster for each respondent.
Earnings are measured in 2015 €, equivalized to Germany purchasing power.
Controls include Age, Age^2, second order polynomial in time to/since eligibility, grouped cohort (intervals of 5 years up to 1980), marital status dummies, education dummies, low labour earnings dummy (below 300 €per month), 0 pension earnings after retirement dummy, SHARE wave and country dummies.
The Fuzzy RD regressions control also for a second order polynomial in time to/since eligibility.

Table A.4: Full **First** Stage estimates (RD and IV) from Tabel A.3. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees. Note that Columns (2) and (4) are identical to Columns (2) and (4) from table A.1 and are reported for easiness of comparability.

	Caregiving Retirement		General Retirement	
	RDD	IV	RDD	IV
	(1)	(2)	(3)	(4)
Eligibility	0.332***	0.393***	0.338***	0.406***
	(0.029)	(0.024)	(0.006)	(0.005)
Time to/since eligibility	0.019***		0.030***	
	(0.005)		(0.001)	
Time to/since eligibility^2	-0.008***		0.010***	
	(0.003)		(0.000)	
Low Lab. Income	-0.307***	-0.335***	-0.210***	-0.230***
	(0.029)	(0.031)	(0.004)	(0.004)

Pens. Income = 0	0.287***	0.207***	0.368***	0.277***
	(0.027)	(0.021)	(0.007)	(0.005)
Education: None		- reference category -		
Primary	0.111	0.059	0.103***	0.095***
	(0.080)	(0.037)	(0.013)	(0.010)
Low Secondary	0.071	0.037	0.119***	0.112***
	(0.083)	(0.038)	(0.013)	(0.010)
Up Secondary	0.094	0.054	0.116***	0.111***
	(0.081)	(0.037)	(0.013)	(0.010)
Post Secondary	0.155*	0.090**	0.109***	0.101***
	(0.085)	(0.042)	(0.014)	(0.011)
Tertiary	0.098	0.048	0.107***	0.091***
	(0.083)	(0.039)	(0.013)	(0.010)
Being Married	-0.003	-0.003	0.027***	0.033***
	(0.014)	(0.009)	(0.003)	(0.002)
Age	0.048	0.143***	0.011**	0.031***
	(0.032)	(0.013)	(0.005)	(0.002)
Age^2	-0.000	-0.001***	-0.000**	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Cohort: < 1935		- reference category -		
1935-1939	-0.013	0.008	0.155***	0.067***
	(0.032)	(0.019)	(0.021)	(0.007)
1940-1944	-0.006	-0.007	0.206***	0.096***
	(0.048)	(0.030)	(0.021)	(0.008)
1945-1949	-0.003	-0.032	0.255***	0.122***
	(0.066)	(0.043)	(0.022)	(0.010)
1950-1954	-0.058	-0.096	0.217***	0.051***
	(0.087)	(0.059)	(0.024)	(0.013)
1955-1959	-0.097	-0.117	0.168***	-0.039***
	(0.104)	(0.071)	(0.026)	(0.015)
1960-1964	0.008	0.007	0.147***	-0.054***
	(0.134)	(0.098)	(0.029)	(0.018)
Wave 1		- reference category -		
Wave 2	0.008	-0.008	0.015***	0.028***
	(0.020)	(0.015)	(0.005)	(0.004)
Wave 4	-0.023	-0.030	-0.015**	0.017***

	(0.036)	(0.024)	(0.008)	(0.006)
Wave 5	-0.026	-0.037	-0.008	0.020***
	(0.043)	(0.029)	(0.008)	(0.006)
Wave 6	-0.027	-0.020	-0.012	0.014*
	(0.051)	(0.035)	(0.010)	(0.007)
Wave 7	0.021	0.009	-0.006	0.013
	(0.062)	(0.041)	(0.012)	(0.009)
Wave 8	0.024	0.028	-0.004	0.018*
	(0.071)	(0.048)	(0.013)	(0.009)
Wave 9	0.139*	0.100*	-0.017	0.009
	(0.080)	(0.053)	(0.014)	(0.010)
Germany	- reference category -			
Austria	0.106*	0.069***	0.053***	0.095***
	(0.056)	(0.023)	(0.009)	(0.006)
Sweden	-0.152***	-0.108***	-0.089***	-0.039***
	(0.025)	(0.021)	(0.006)	(0.005)
Netherlands	-0.088**	-0.086***	-0.046***	-0.097***
	(0.039)	(0.031)	(0.009)	(0.007)
Spain	-0.001	-0.029	-0.069***	-0.077***
	(0.046)	(0.043)	(0.009)	(0.009)
Italy	0.084**	0.043**	-0.123***	0.008
	(0.040)	(0.019)	(0.011)	(0.006)
France	0.094***	0.070***	0.065***	0.075***
	(0.028)	(0.021)	(0.007)	(0.005)
Denmark	-0.033	-0.032*	-0.019***	-0.007
	(0.022)	(0.018)	(0.007)	(0.005)
Greece	0.212***	0.151***	-0.038***	-0.046***
	(0.044)	(0.036)	(0.012)	(0.010)
Switzerland	-0.086**	-0.069**	-0.074***	-0.064***
	(0.037)	(0.030)	(0.007)	(0.006)
Belgium	0.054*	0.052***	-0.001	0.030***
	(0.029)	(0.019)	(0.007)	(0.005)
Israel	-0.162***	-0.119***	-0.159***	-0.130***
	(0.039)	(0.032)	(0.011)	(0.010)
Czech Republic	0.061*	0.072***	-0.049***	0.080***
	(0.036)	(0.016)	(0.010)	(0.004)

Poland	0.174**	0.139***	0.136***	0.160***
	(0.069)	(0.051)	(0.007)	(0.005)
Luxembourg	0.056	0.034	-0.017	-0.054***
	(0.052)	(0.048)	(0.017)	(0.017)
Hungary	0.044	0.058**	0.083***	0.121***
	(0.046)	(0.025)	(0.009)	(0.006)
Portugal	-0.012	0.019	-0.169***	-0.027***
	(0.085)	(0.040)	(0.017)	(0.010)
Slovenia	0.064	0.038	0.024**	0.099***
	(0.067)	(0.034)	(0.010)	(0.005)
Estonia	-0.090	-0.001	-0.117***	0.011**
	(0.059)	(0.023)	(0.009)	(0.005)
Croatia	0.009	-0.002	-0.162***	0.020**
	(0.065)	(0.033)	(0.015)	(0.008)
Constant	-1.505	-4.702***	-0.411**	-1.423***
	(1.090)	(0.471)	(0.181)	(0.068)
F-test	129.4	260.8	3,254.6	7,411.1
Observations	3,397	5,725	75,154	123,340

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.5: Full **Second** Stage estimates (RD and IV) from Tabel A.3. Causal effect of retirement on earnings among women non-caregiver retirees and caregiver retirees. Note that Columns (2) and (4) are identical to Columns (2) and (4) from table A.2 and are reported for comparability.

	Caregiving Retirement		Retirement	
	RDD	IV	RDD	IV
	(1)	(2)	(3)	(4)
Retired	-8036.195***	-9913.613***	-4066.388***	-5137.702***
	(2063.98)	(1534.57)	(539.80)	(354.01)
Time to/since eligibility	-312.583		-172.293***	
	(191.66)		(51.42)	
Time to/since eligibility^2	144.023*		67.022***	
	(83.09)		(19.79)	
Low Lab. Earning	-18774.138***	-19314.606***	-15247.835***	-15686.362***
	(988.22)	(913.75)	(162.26)	(141.57)
Pens. Income = 0	-6335.988***	-6942.353***	-8227.516***	-8291.250***

	(1346.13)	(964.09)	(323.14)	(206.88)
Education: None		- reference category -		
Primary	4914.429***	3353.096***	1411.047***	1294.955***
	(1220.05)	(836.15)	(269.71)	(200.63)
Low Secondary	7245.234***	6134.223***	2222.716***	2294.940***
	(1131.47)	(874.33)	(274.72)	(213.10)
Up Secondary	7313.501***	6686.092***	4054.269***	3823.065***
	(997.23)	(814.00)	(257.00)	(202.85)
Post Secondary	8751.621***	7351.724***	5664.894***	5250.665***
	(1559.71)	(1101.46)	(333.26)	(257.16)
Tertiary	11639.779***	10513.710***	8748.541***	8410.298***
	(1068.54)	(872.22)	(273.27)	(216.72)
Being Married	-2450.307***	-3013.784***	-2477.522***	-2380.755***
	(519.22)	(441.57)	(122.70)	(91.68)
Age	4274.202***	1629.253***	1731.505***	432.797***
	(1015.29)	(563.52)	(216.91)	(82.84)
Age^2	-30.038***	-10.305***	-13.243***	-3.732***
	(7.72)	(3.92)	(1.69)	(0.60)
Cohort: <1935		- reference category -		
1935-1939	-1814.357	1525.502	315.254	114.773
	(3775.23)	(1128.03)	(794.45)	(254.93)
1940-1944	317.321	2356.004	1473.521*	276.963
	(3844.92)	(1494.19)	(817.06)	(297.49)
1945-1949	1626.238	3860.352*	1939.806**	461.577
	(4005.20)	(1977.61)	(873.51)	(376.96)
1950-1954	2398.898	4940.454**	2098.721**	665.992
	(4288.80)	(2466.32)	(922.67)	(454.80)
1955-1959	4083.944	6646.725**	1592.350	109.079
	(4732.80)	(3042.28)	(994.85)	(542.92)
1960-1964	2594.496	5157.645	1383.567	-154.925
	(5300.27)	(3856.97)	(1095.46)	(665.82)
Wave 1		- reference category -		
Wave 2	-5458.817***	-5364.266***	-5511.047***	-4826.110***
	(881.12)	(692.10)	(273.69)	(224.69)
Wave 4	-5549.893***	-5033.502***	-4630.485***	-3775.451***
	(1214.35)	(943.84)	(345.46)	(268.14)

Wave 5	-5510.649***	-5700.162***	-4943.041***	-4175.484***
	(1442.86)	(1178.77)	(362.85)	(282.88)
Wave 6	-6344.080***	-6108.158***	-4586.186***	-3784.549***
	(1645.94)	(1366.04)	(402.38)	(312.68)
Wave 7	-6117.832***	-5847.402***	-4572.466***	-3413.350***
	(1939.92)	(1574.80)	(479.82)	(367.32)
Wave 8	-7141.854***	-7286.267***	-4392.407***	-3508.065***
	(2266.69)	(1843.83)	(491.96)	(382.71)
Wave 9	-6704.059***	-7463.222***	-4720.904***	-3993.801***
	(2508.63)	(2090.16)	(525.93)	(410.26)
Germany		- reference category -		
Austria	3109.959*	2765.418**	534.687*	473.932**
	(1677.35)	(1247.83)	(323.81)	(222.82)
Sweden	2261.467**	1821.476**	2033.237***	1476.755***
	(1047.58)	(821.42)	(253.13)	(197.55)
Netherlands	-896.446	-83.391	2341.096***	2213.255***
	(1365.04)	(1108.13)	(384.96)	(303.72)
Spain	3658.470**	2917.704**	-738.145***	-895.655***
	(1663.45)	(1252.43)	(277.43)	(226.91)
Italy	967.331	1468.903	1152.524***	415.510**
	(1376.73)	(976.59)	(336.90)	(197.72)
France	5264.331***	5186.647***	2768.984***	2811.061***
	(1149.41)	(948.11)	(278.75)	(224.97)
Denmark	1554.284*	1610.280**	1437.092***	1488.800***
	(899.24)	(762.18)	(255.20)	(212.15)
Greece	-895.676	-891.176	-3135.799***	-3235.203***
	(1473.39)	(1059.66)	(256.99)	(204.11)
Switzerland	4979.685***	5270.600***	6665.999***	6142.539***
	(1284.81)	(1070.79)	(372.57)	(316.36)
Belgium	5337.573***	5900.581***	5436.263***	5663.991***
	(1327.76)	(1320.19)	(394.34)	(328.94)
Israel	491.296	361.778	-1865.066***	-1958.948***
	(1497.85)	(1306.36)	(344.34)	(273.02)
Czech Republic	-1659.807	-2936.854***	-2977.609***	-3874.106***
	(1400.07)	(761.46)	(343.63)	(167.80)
Poland	-3675.721**	-3853.925***	-4511.977***	-4555.252***

	(1631.64)	(1177.85)	(255.45)	(183.50)
Luxembourg	6813.463**	11849.135***	7206.269***	7546.545***
	(3139.28)	(4478.59)	(718.45)	(672.05)
Hungary	-5659.879***	-4742.728***	-5430.004***	-5492.820***
	(1541.94)	(1006.94)	(292.62)	(201.18)
Portugal	8636.542*	2495.300	-1179.523***	-2037.050***
	(4505.30)	(2312.52)	(405.57)	(264.98)
Slovenia	3764.316	3975.998*	-866.374**	-1202.479***
	(3054.17)	(2320.69)	(357.21)	(221.15)
Estonia	-4099.848***	-5458.192***	-5922.061***	-6401.900***
	(1349.40)	(745.42)	(291.40)	(165.15)
Croatia	-3028.919	-4405.186***	-4014.970***	-5310.615***
	(2620.06)	(1433.22)	(421.22)	(184.75)
Constant	-132548.600***	-44527.797**	-38843.789***	6415.698**
	(34762.02)	(20061.27)	(7334.85)	(2929.28)
Observations	3,397	5,725	75,154	123,340

Note:*p<0.1; **p<0.05; ***p<0.01

A.3 Robustness to RD bandwidth

This subsection test the sensibility of the RD results to the bandwidth of the selection. In Table 1 we cut the sample around 15 years to/since eligibility to retirement. Here we provide estimates for 12, 11, 10, 9 and 8 years cut around eligibility.

Table A.6: RDD estimates of Retirement on Earnings for different choice of bandwidth. Column (3) corresponds to Table 1 RDD coefficient (*Care Retirement* column).

	bandwidth				
	12	11	10	9	8
	(1)	(2)	(3)	(4)	(5)
Retired	-9,132.4***	-8,961.7***	-8,861.6***	-8,394.4***	-8,790.9***
	1,797.8	1,930.7	2,042.0	2,335.0	2,672.9
N.Observations	3,899	3,648	3,397	3,119	2,835
N.Clusters	1,388	1,328	1,272	1,217	1,141

Figure A.1: RDD coefficients of Retirement on Earnings per different bandwidth (*Care Retirement*).

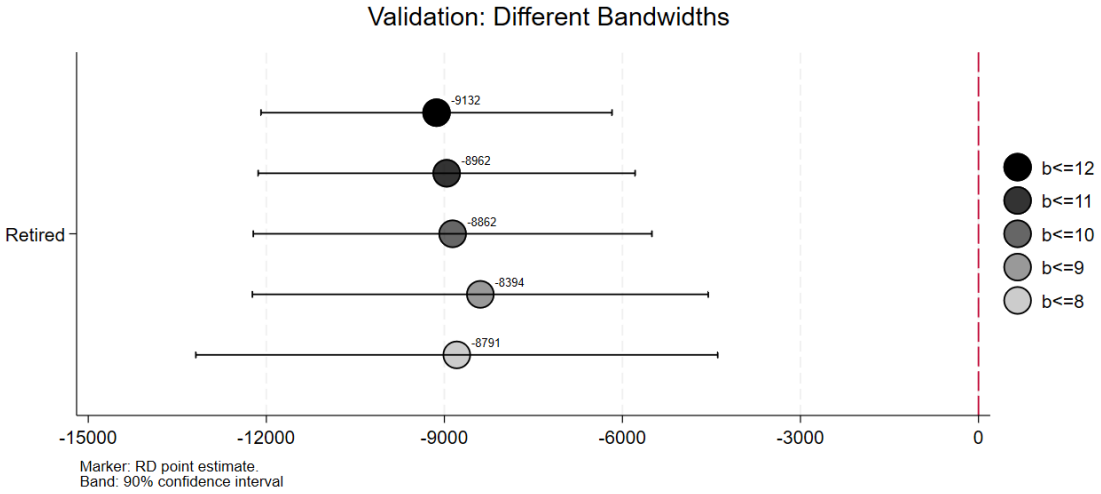
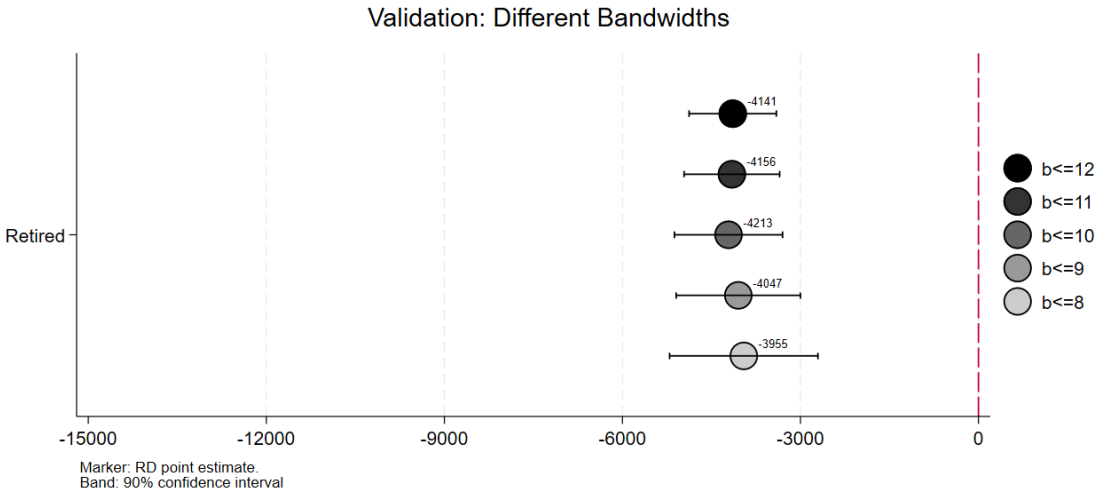


Table A.7: RDD estimates of Retirement on Earnings for different choice of bandwidth. Column (3) corresponds to Table 1 RDD coefficient (*General Retirement* column).

	bandwidth				
	12	11	10	9	8
	(1)	(2)	(3)	(4)	(5)
Retired	-4140.9***	-4155.5***	-4212.6***	-4046.8***	-3954.9***
	447.1	489.6	553.9	636.5	759.9
N.Observations	86,136	80,868	75,154	68,731	61,925
N.Clusters	39,589	37,879	36,013	33,822	31,492

Figure A.2: RDD coefficients of Retirement on Earnings per different bandwidth (*General Retirement*).



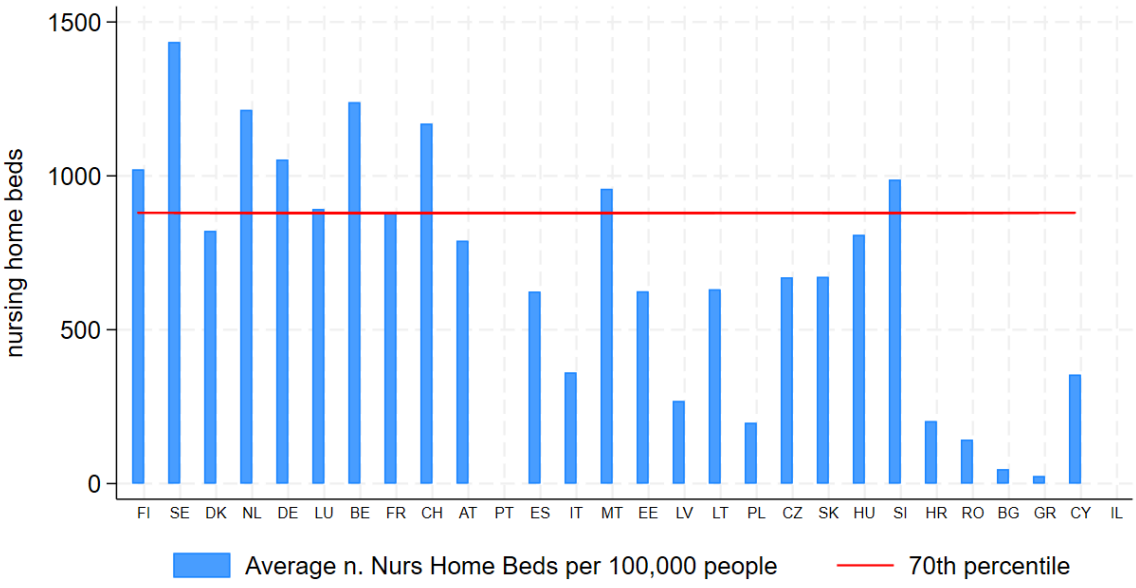
A.4 Event Study - additional material

A.4.1 Case Study: bed in nursing home per 100,000 inhabitants

We use data from Eurostat[8] to compute the average number of beds in nursing homes per Country between 2004 and 2019 (due to data availability, we cannot extend the period). We then classify SHARE countries by low and high numbers of nursing home beds based on the distribution's terciles: those countries in the first two terciles are categorized as "low-number", while those in the first terciles are categorized as "high-number" of beds. This distinction by terciles allows for keeping a balanced sample in terms of the number of observations, especially among the caregiving retirees. Figure A.3 shows the averages by country compared to the top tercile threshold.

[8]https://ec.europa.eu/eurostat/databrowser/view/hlth_rs_bdltc__custom_13766201/default/table?lang=en

Figure A.3: Average nursing home beds per 100,000 inhabitants by country between 2004 and 2019.



Missing data for Portugal and Israel.
Source: Author elaboration using Eurostat data.