WOMEN'S CARING PENALTY AT RETIREMENT IN EUROPE*

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ABSTRACT

Women are the primary caregivers throughout their lives. In an era of population aging, it is crucial to understand the penalties faced by caregivers later in life. This paper identifies the women's care penalty at retirement: using SHARE data on European countries, we show that women who retire to provide informal care experience an earning drop which is about twice the drop for women who retire for other reasons. Our estimated persistent causal impact of caregiving retirement on women's income is robust across different empirical strategies, and it is lower in countries with more formal caregiving services.

JEL: J32, J16, H55.

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

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1 Introduction

Women are the primary caregivers throughout their lives, both during their working years and in retirement (OECD, 2023). Care responsibilities and their unbalanced division between men and women impose a significant wage and employment penalty on women, while men's income remains unaffected. Extensive research across social sciences has primarily focused on the emergence of this penalty at childbirth (see the comprehensive meta-analysis by Cukrowska-Torzewska and Matysiak, 2020), and on its consequences to gender gaps in the labor market (Kleven et al., 2019). These gaps could potentially be mitigated through a more equitable distribution of housework and childcare responsibilities within couples (Fanelli and Profeta, 2021).

Women's caregiving responsibilities extend beyond childbirth. In an era of population aging, it is crucial to understand the penalties faced later in life. Retirement represents a critical event: if women decide to retire to provide care, and this does not equally happen to men, an additional women's care penalty arises later in life. This penalty contributes not only to gender gaps in the labor market but also in pensions (OECD, 2023), thus representing a growing challenge for old-age women in aging population.

This paper identifies the women's care penalty at retirement: using SHARE data, we show that women who retire to provide informal care experience an earning drop which is about twice the drop of women who retire for other reasons. We also document that this negative effect of retirement due to care is persistent: the gap amounts to around 10% of last pre-retirement earnings. We estimate the causal impact of care-giving retirement on women's income using different empirical strategies.

Our study advances previous research on the motherhood penalty, by identifying and measuring the penalty arising later in women's life. The motherhood penalty has been identified in several ways. Analyzing the existing evidence which compares wages of mothers with wages of childless women, Cukrowska-Torzewska and Matysiak, 2020 estimate a motherhood wage gap of around 3.6–3.8 %. Comparing men and women before and after childbirth, Kleven et al., 2023 estimate for the entire world the so-called "child penalty" (Kleven et al., 2019), i.e. the penalty related to women's care responsibilities at childbirth - compared to the men's ones. The origins of the penalty stem from the

well established unbalanced division of care responsibilities between men and women (see, among others, Anxo et al., 2011; Bianchi et al., 2012; Cooke, 2004, 2009; Craig and Mullan, 2011) [3]. More generally, beyond childbirth, informal caregiving has negative consequences on women's labor market outcomes (Raiber et al., 2022), such as reduced working hours, employment and wages (e.g., Grigoryeva, 2017, Lee and Tang, 2015, Luppi and Nazio, 2019). Global studies, including those by Jacobs et al., 2015, Raiber et al., 2022, and Yamada and Shimizutani, 2015, highlight the prevalence of informal caregiving and its negative consequences on employment and income in the US, Europe, and Asia, respectively. [4]

Later in life, women disproportionately bear the transition into retirement due to caregiving responsibilities (Jefferson, 2009), with significant economic and long-term mental health implications (Albertini et al., 2024 and Duan, 2022). A well-studied example is that of grandmothers. Grandmothers who provide care to grandchildren participate less to the labor market, especially in countries where formal childcare is scarce (Backhaus and Barslund, 2021; Bordone et al., 2017; Frimmel et al., 2022; Rupert and Zanella, 2018). While suggesting the existence of a penalty at retirement, none of these existing studies provides a comprehensive measure that fully captures the extent of the women's caring penalty at that stage of life.

Our study also contributes to highlighting informal caregiving as a key determinant of gender gaps in pension outcomes. The relationship between gender gaps in the labor market and gender gaps at pension is well established. Lower wages of women (and lower contribution to pension plans), maternity leave(s) and higher working-career discontinuity for women translate into lower pensions, especially in pension systems where contributions are tightly linked to benefits (see a review in Profeta, 2024). Women also face a higher risk of poverty in late life that - combined with women's greater longevity - forces them to stretch their (limited) economic resources across an extended lifespan. This paper provides a novel approach, by examining the interplay between women's caregiving responsibilities and their income trajectories after retirement.

[3] The COVID-19 pandemic revitalized attention to this issue, highlighting the persistent unbalanced division of housework and childcare (Del Boca et al., 2020, 2022).

[4] The labor market penalty is expected to be higher for women who encounter themselves caring for both their children and their elderly parents (Brenna, 2021).

Our novel measure of the women's care penalty at retirement is based on data from the Survey of Health, Ageing and Retirement in Europe (SHARE). We compare the impact of retirement on the earnings of women who retired to provide informal care and those who retired for other reasons. To identify a causal impact and control for endogeneity, we use an instrumental variable approach. Our measure of the women's caring penalty at retirement show that women's retirement because of informal caregiving duties or earlier and unplanned transitions to retirement in case of unexpected care duties has substantial consequences on their income later in life. We show that the impact of retirement on the annual earnings of women who retire because of care is about twice the drop of the other women. Then, we document a *caregiving retirement gap* around 10% of last pre-retirement earnings, persistent over time.

This paper is the first one to provide evidence of the existence of a woman's penalty related to care at retirement and to quantify it from an income perspective. In ageing societies, understanding the care penalty at retirement is of growing importance. Moreover, the retirement penalty sums to the motherhood penalty - and other possible events that affect women as caregivers - and enlarges gender gaps over the lifetime. How to design policies to prevent these events disproportionately affecting 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 SHARE data, 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

Respondents who reported that they retired are asked the reasons why they did it. We use their answers to identify those who retired to care for a relative or a friend. More specifically, we use the following question in SHARE: "for which reasons did you retire"? The ten possible answers are: Became eligible for public pension; Became eligible for private occupational pension; Became eligible for a private pension; Was offered an early retirement option/window with special incentives or bonus; Made redundant (for example pre-retirement); Own ill health; Ill health of relative or friend; To retire at same time as spouse or partner; To spend more time with family; 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 his/her interviews. If the respondent is still working, he/she does not answer the question.

We distinguish between women who retire for caregiving reasons ('*Ill health of a relative or friend*' and '*To spend more time with family*') and those who retire for other reasons. Among those answering '*To spend more time with family*', we consider care-retired only women who report providing help to people within or outside of the household or to grandchildren. Thus, 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 '*Ill health of a relative or friend*' (73% of them are women) and 3,643 because of '*To spend more time with family*' (69.5% of them are women).

Our variable of interest is retirement, a dummy that takes value 1 if the respondent receives any labour pensions (either public or private) and is not working in a specific Wave, and 0 otherwise.

RETIREMENT?

As 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[5] 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. 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 into 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. In fact, the proportion of retired individuals is higher than 60% around the first year of eligibility, while the proportion of women and men who entered retirement for any other reason is around 40%.

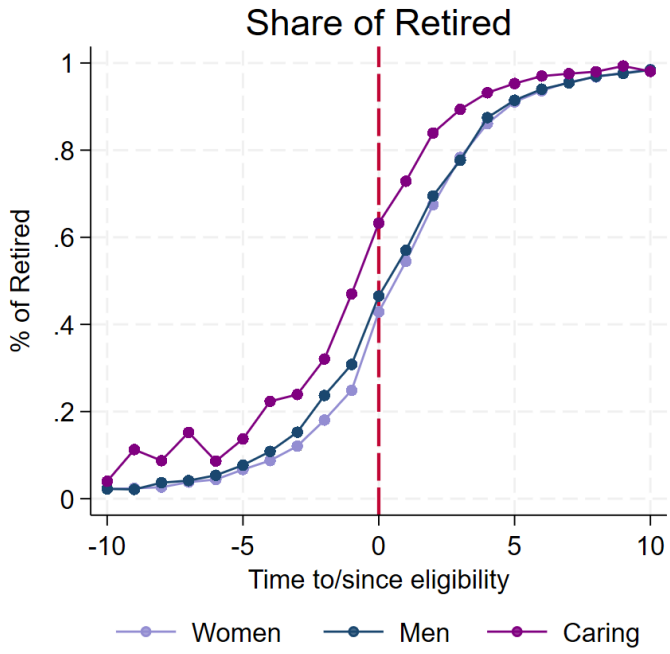
3 Results

We estimate the impact of transition into retirement on individual's labor and pension yearly earnings. Transitioning into retirement invariably leads to a decrease in individual earnings. Our hypothesis is that this decrease is larger for women who opt for retirement due to caregiving responsibilities.

We focus on women, who represent about 70% of the individuals who choose transition into retirement to provide caregiving services. We compare the retirement earnings of women who retired because of caregiving responsibilities and women who transitioned into retirement for other reasons. To properly compare the two groups, we employ a fuzzy regression discontinuity approach

[5]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'. Eligibility requirements are mainly based on age, gender and cohort criteria. We also account for years of contribution as a determinant of the eligibility criteria for SHARE countries that use them.

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



to detect the differences in the impact of retirement (see Battistin et al., 2009 and Castaldo et al., 2024) and an event study approach similar to the one proposed by Kleven et al., 2019 for childbirth.

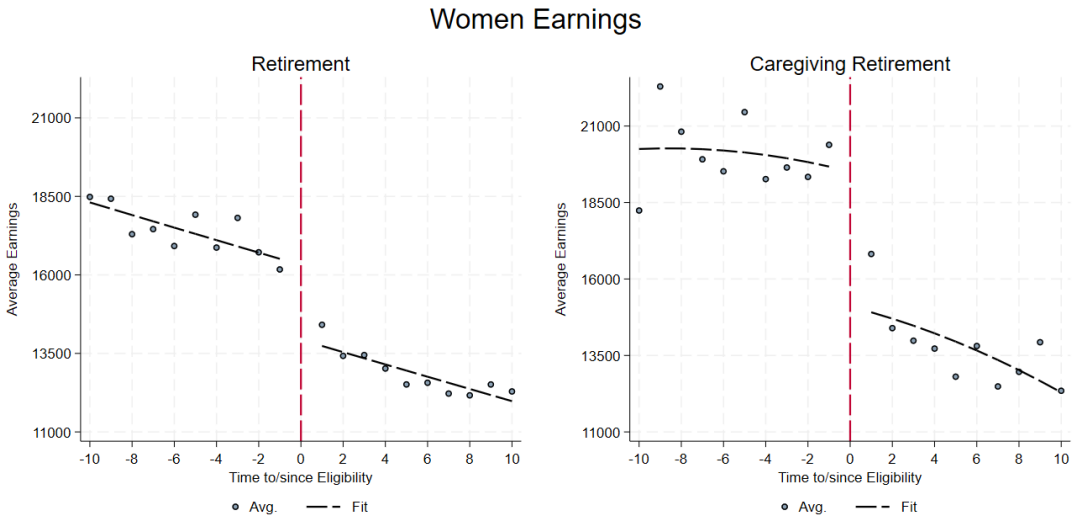
3.1 RDD analysis

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 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 neighborhood 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:

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



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

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

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[6] 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 and *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

[6]We dropped Lithuania (11), Bulgaria (3), Cyprus (9), Finland (7), Latvia (3), Malta (16), Romania (2) and Slovakia (10) from the analysis because of the few observations - in parenthesis - in the sample of care-retired women. Results are substantially unchanged if we include these countries.

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 RDD and IV estimates (i.e., without controlling and cutting the sample around time to/since eligibility).

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 Dep. var: Retirement	2^{nd} Stage Dep. var: Earnings	1^{st} Stage Dep. var: Retirement	2^{nd} Stage 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.

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. The 2^{nd} stage coefficients show that retirement has a negative and significant effect on individual annual earnings in both groups, as expected, but the magnitude is 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 all the variables with the group-selector dummy for care retirement) to test whether the coefficients of *Retired* of the two groups are statistically different. The test rejects the null hypothesis that the coefficients are identical for both RDD and IV in Table 1 and Table A.3 (p-value = 0.00 and 0.00 in RDD regressions[7] and p-value = 0.00 in IV estimates. χ^2 = 41.1, 37,494.6 and 583.7 respectively).

3.2 Event time analysis

This Section follows 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. We denote the retirement year by t = 0, and we index all the years before and after relative to that 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. 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 dummy. 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]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.

Once we have the regression results, we estimate the care penalty as the ratio between the difference $\hat{\alpha}_j^{r=1} - \hat{\alpha}_j^{r=0}$ (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 $\hat{E}_{iwt}^r$). Thus:

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

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

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

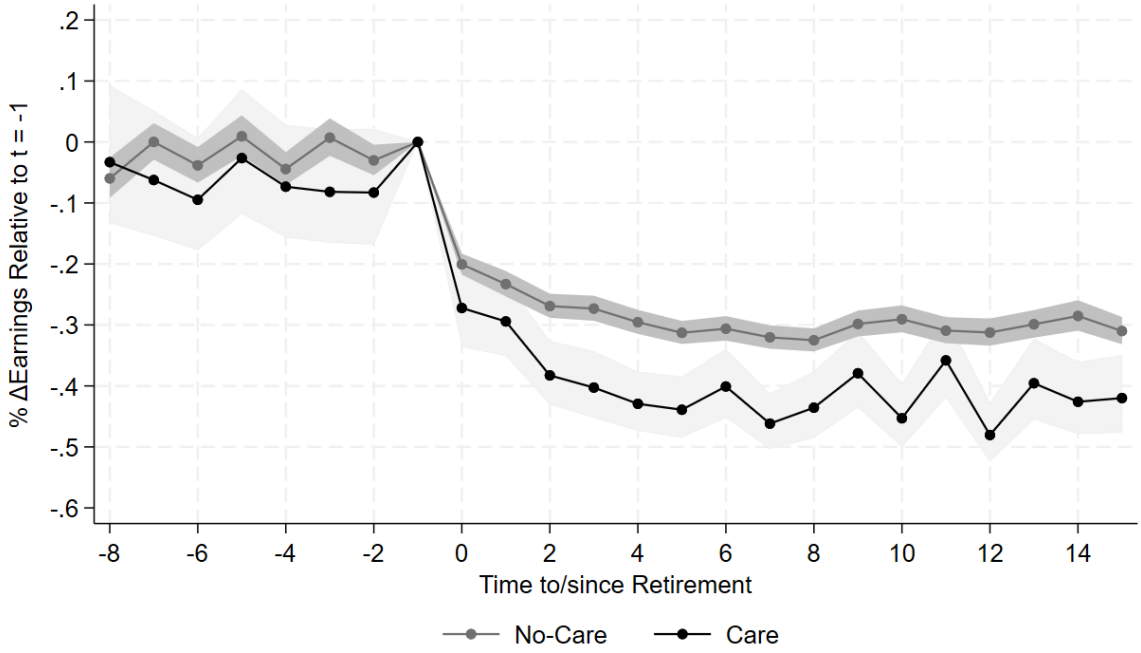


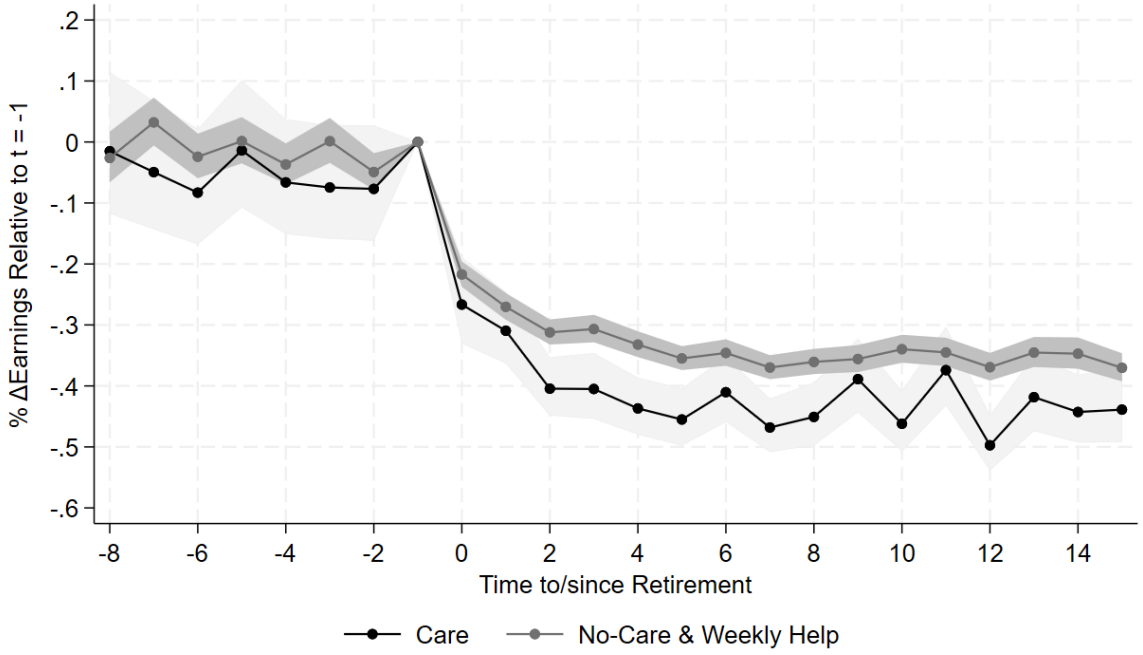
Figure 3.3 shows that the percentage earnings drop of women who declared to retire because of care is larger in magnitude than those who retired in different circumstances. This difference in percentage points accounts for 40 to 45% of last pre-retirement earnings among the caring group, while among other women is stable at around 30%. Therefore, the caregiving retirement penalty is between 10 to 15 % point of last 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) as a proxy for formal care provision[8].

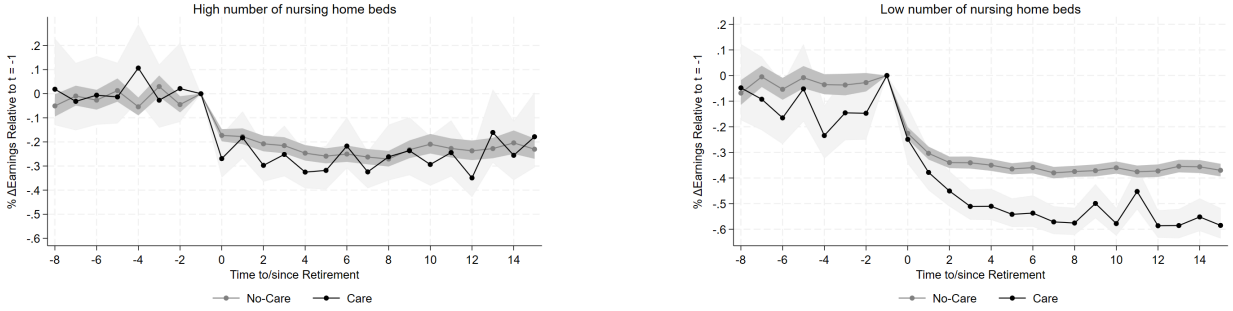
[8]We also studied heterogeneity by gender norms, % GDP expenditure in formal childcare provision and female employment rate. Even if the trends are similar to the Section 3, we do not find any statistical difference by Country groups.

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 Section A.4.1). We show that Finland, Sweden, Netherlands, Germany, Luxembourg, Belgium, Switzerland, Malta and Slovenia are in the top tercile of the distribution, thus, we consider them as *high* nursing home beds countries. All others become *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 disappears among high nursing-home beds countries. At the same time, it becomes more pronounced in countries with low nursing-home beds. Thus, the results suggest that in the second group of countries care-retired women substitute the lack of 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, and then study the impact of retirement on women's individual income.

We adopt an RDD and IV empirical strategy that shows a negative impact of retirement on care-

retired women's earnings that almost double the effect among women who retired for general reasons. We then employ an event study approach indicating that the drop in earnings after retirement is 10% larger among care retired women and persistent over time. Thus, we conclude that care-retired women are strongly penalized in terms of pension earnings, with direct consequences on the probability of experiencing poverty and financial difficulties in later life.

Last, Section 3.3 highlights how providing adequate formal caregiving services for the community may reduce these inequalities, showing that the care retirement penalty disappears among Countries with a high availability of formal care services.

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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	2^{nd} Stage	1^{st} Stage	2^{nd} Stage
	Dep. var: Retirement	Dep. var: Earnings	Dep. var: Retirement	Dep. var: Earnings
		RDD		
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*).

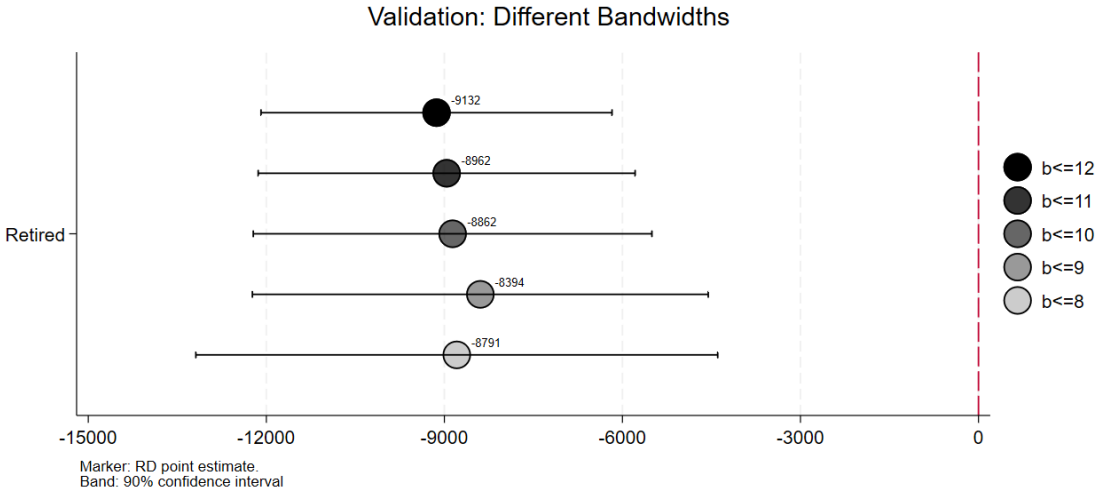
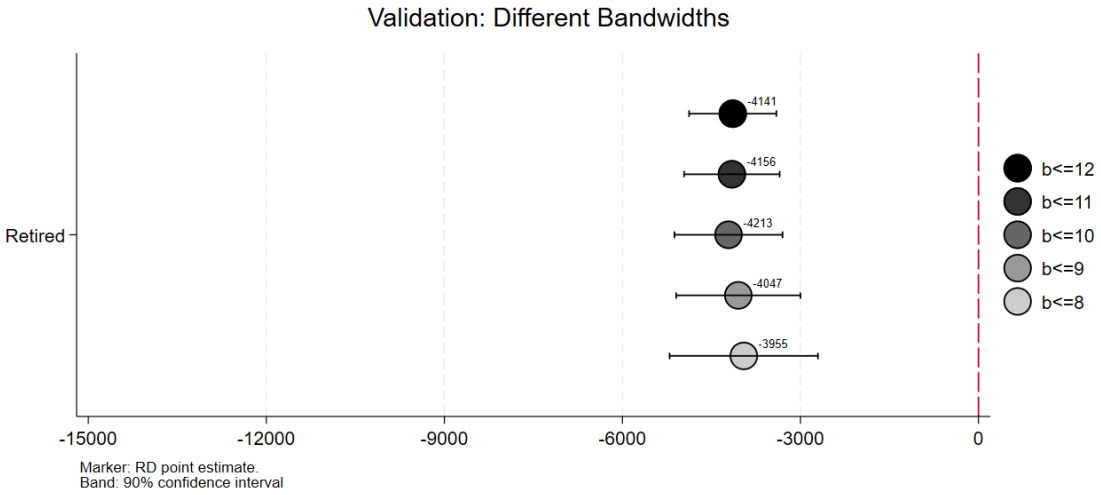


Table A.7: RDD estimates of Retirement on Earnings for different choice of bandwidth. Column (3) corresponds to Table 1 RDD coefficient (*General Retirement* column).

	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*).



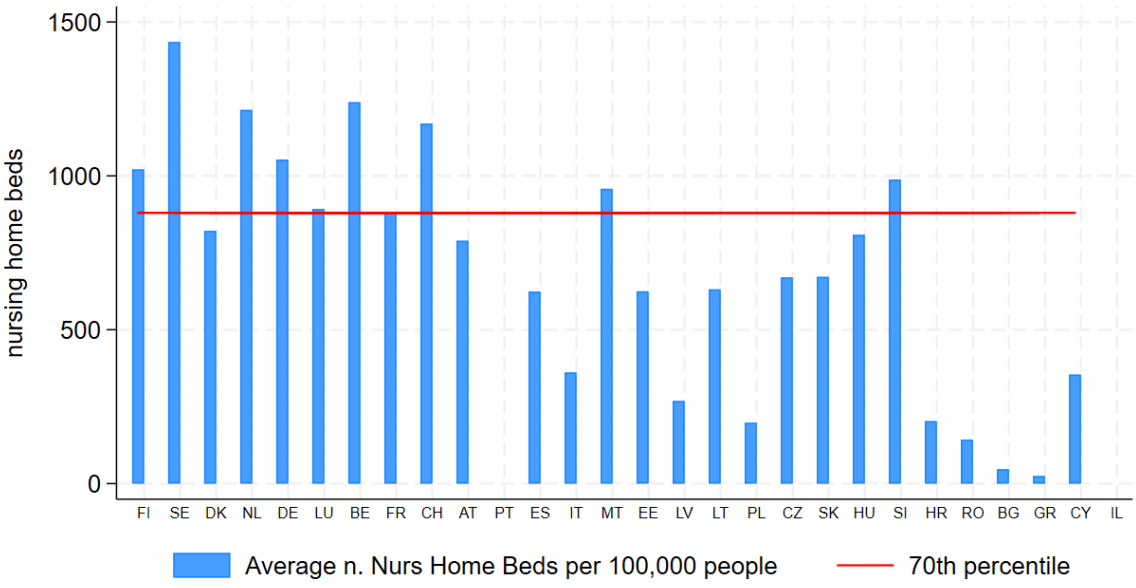
A.4 Event Study - additional material

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

We use data from Eurostat[9] 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.

[9]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.