Parental Retirement and Fertility Decisions across Family Policy Regimes

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Motivation

- Low fertility rates in Europe → Population ageing → Pension reforms → Unintended negative effect on fertility rates?
- Yes, if **parental retirement** matters for the **timing** of the offspring generation's **fertility decisions**:
  - Postponement of old parents' retirement → Postponement of adult children's fertility decisions
  - Biological limit to reproductive life
  - Effect on timing of fertility → Effect on fertility rates

Q1: Does parental retirement affect the timing of adult children's fertility decisions?

- Mechanism: **intergenerational transfers** of time and money
- Effect is a priori ambiguous:
  - Retired parents have **more free time** $\rightarrow$ higher time transfers $\rightarrow$ lower expected childcare costs $\rightarrow$ higher probability of childbirth
  - Retired parents have **lower income** $\rightarrow$ lower monetary transfers $\rightarrow$ higher expected childcare costs $\rightarrow$ lower probability of childbirth

$\Rightarrow$ Empirical evidence needed to see which effect prevails

Q2: Does this effect vary across countries with different family policy regimes?

- **Family policy regime** = set of family norms and public policies supporting families with children
- Four main regimes: Anglo-Saxon, Continental, Mediterranean, Nordic
- Hypothesis: supportive role of old parents is **more relevant** where family policies are less generous and family ties are stronger → Mediterranean regime

⇒ Empirical evidence needed to test this hypothesis

Preview of Main Findings

1. Parental retirement **positively** affects fertility decisions in **Mediterranean countries**: probability of a grandchild birth increases by 6 pp two years after eligibility for old-age pension

2. No effect in the other regimes

3. Main mechanism: **availability of informal childcare** $\rightarrow$ stronger effect when the old parent is in good health, lives close by, and has few grandchildren already

Literature Gaps & Contributions

- Papers that estimate the **causal** effect of parental retirement on fertility are very **few** and with **mixed evidence** (Battistin et al., 2014; Aparicio-Fenoll and Vidal-Fernandez, 2015; Eibich and Siedler, 2020; Ilciukas, 2022)

- There are **no** papers that **compare** this causal effect across family policy regimes

- This paper also contributes to broader streams of literature:
  - on intergenerational help (e.g. Aassve et al., 2012)
  - on the determinants of fertility decisions (e.g. Doepke et al., 2022)
  - on the unintended consequences of pension reforms (e.g. Boeri et al., 2022; Bratti et al., 2018; Stella, 2017)

Data

Panel data from the Survey of Health, Ageing and Retirement in Europe (SHARE) for the period 2004-2018:

- **11 countries** belonging to 3 family policy regimes:
  - *Continental*: Austria, Belgium, France, Germany, Netherlands, Switzerland
  - *Mediterranean*: Greece, Italy, Spain
  - *Nordic*: Denmark, Sweden
- Balanced panel of **2,040 dynasties**:
  - Dynasty = old parent + all their adult children
  - Observed from 3 years before to 3 years after old parent's eligibility for old-age pension → N = 14,280

Data on eligibility are recovered from Bertoni et al. (2021)

Summary Stats

Empirical Strategy: Fuzzy RDD

Idea: compare dynasties whose old parent is slightly above vs. below the eligibility threshold for old-age pension

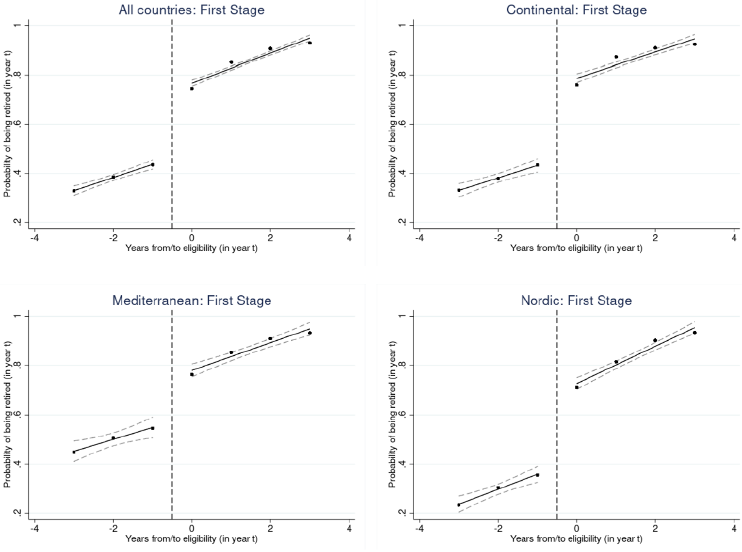
1S: $R_{it} = \alpha + \boldsymbol{\beta} E_{it} + \gamma D_{it} + \delta(E_{it} \times D_{it}) + \phi_i + \psi_t + \epsilon_{it}$

2S: $Y_{it+j} = \xi_j + \boldsymbol{\lambda_j} \widehat{R_{it}} + \mu_j D_{it} + \pi_j(\widehat{R_{it} \times D}_{it}) + \omega_i + \tau_{t+j} + \eta_{it+j}$

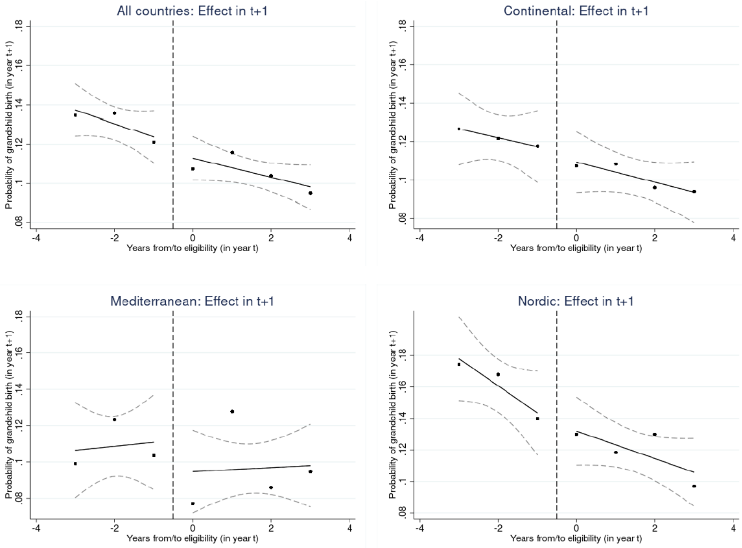
ITT: $Y_{it+j} = \zeta_j + \boldsymbol{\theta_j} E_{it} + \rho_j D_{it} + \sigma_j(E_{it} \times D_{it}) + \chi_i + \kappa_{t+j} + \nu_{it+j}$

- Outcome: $Y_{it+j} = 1$ if a grandchild is born in dynasty i, year $t+j$
- Treatment: $R_{it} = 1$ if old parent of dynasty i is retired in year t
- Instrument: $E_{it} = 1$ if old parent of dynasty i is eligible in year t
- Running variable: $D_{it} =$ age of old parent of dynasty i in year t, centered at the eligibility cutoff

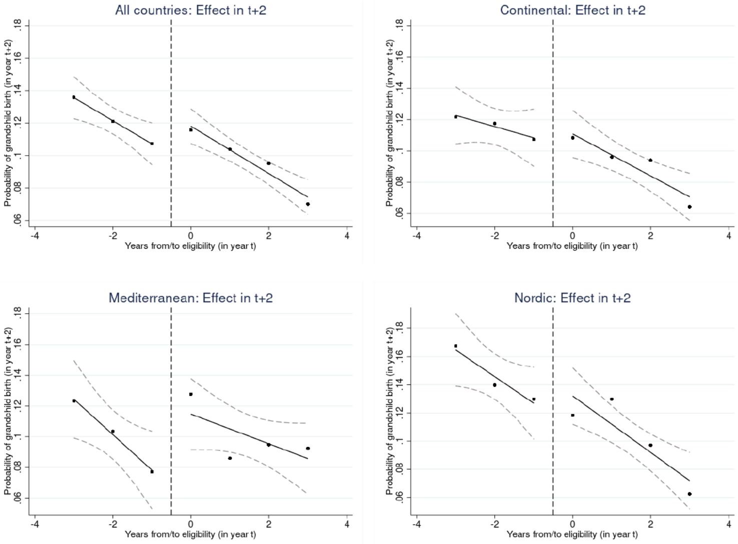
Graphical Evidence: First Stage



Graphical Evidence: ITT in t+1



Graphical Evidence: ITT in t+2



Results: Effect in t+1

Table 2: RDD regressions - Effect in $t+1$

	All countries	Continental	Mediterranean	Nordic
First stage:				
Retired in t (β)	0.277***	0.298***	0.191***	0.307***
	(0.012)	(0.017)	(0.023)	(0.023)
Second stage:				
Grandchild birth in $t+1$ (λ_1)	-0.020	-0.017	-0.120	0.031
	(0.043)	(0.057)	(0.128)	(0.077)
Intention-to-treat:				
Grandchild birth in $t+1$ (θ_1)	-0.005	-0.005	-0.024	0.012
	(0.013)	(0.018)	(0.025)	(0.025)
N. observations	14,280	6,846	3,178	4,256
N. dynasties	2,040	978	454	608

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible/retired, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

Results: Effect in t+2

Table 3: RDD regressions - Effect in $t+2$

	All countries	Continental	Mediterranean	Nordic
First stage:				
Retired in t (β)	0.277***	0.298***	0.191***	0.307***
	(0.012)	(0.017)	(0.023)	(0.023)
Second stage:				
Grandchild birth in $t+2$ (λ_2)	0.087**	0.039	0.288**	0.087
	(0.042)	(0.056)	(0.124)	(0.073)
Intention-to-treat:				
Grandchild birth in $t+2$ (θ_2)	0.025**	0.011	0.056**	0.027
	(0.012)	(0.018)	(0.023)	(0.023)
N. observations	14,280	6,846	3,178	4,256
N. dynasties	2,040	978	454	608

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible/retired, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

Robustness checks

Results are still consistent when:

1. modifying the **specification** of the model equations (bandwidth, degree of the polynomial, interaction terms, fixed effects) Check #1
2. estimating a **cross-sectional RDD** without restricting the sample to a balanced panel Check #2
3. estimating a dynamic **event-study** equation Check #3

Falsification exercise: no effect on placebo outcomes (Check #4) or when considering placebo subsamples (Check #5)

Mechanism: Availability of Informal Childcare

What drives the positive effect in Mediterranean countries?

- **Heterogeneity** analysis: effect is large and significant only when the old parent

  1. is in good health (hand grip)
  2. lives close to at least one adult child (less than 1 km)
  3. has at most one grandchild already born

  i.e. when she is **potentially more available** for taking care of new grandchildren after retirement (**time effect**) Heterogeneity

- No evidence supporting alternative explanations: generosity of the pension system (severance payment, similar estimates for Italy vs. Spain); age structure of the dynasties (Age groups)

Conclusions

- Parental retirement affects the **timing** of fertility decisions **only in Mediterranean countries** (ITT of 6 pp in $t + 2$)
- Consistent with the hypothesis that parental support matters more in countries with less generous family policies and stronger family ties
- Underlying mechanism: increase in the availability of informal childcare within the family (time effect)
- **Potential implication**: increases in retirement age may negatively affect fertility rates by delaying adult couples' fertility decisions

Thank you for your attention!

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Summary Statistics

Table 1: Summary statistics - Characteristics of the old parents

	N	Mean	SD	Min	Max
Age	14,280	64.02	2.81	54	70
Eligible for old-age pension	14,280	0.57	0.49	0	1
Retired	14,280	0.65	0.48	0	1
Female	14,280	0.44	0.50	0	1
Married	14,246	0.73	0.44	0	1
Years of education	11,717	11.79	4.27	0	25
Number of children	14,280	2.38	1.12	1	11
Grandchild birth rate	14,280	0.12	0.33	0	1

Notes: SHARE data, own calculations.

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Robustness check: Model specification

Table A3: RDD robustness checks - Effect in $t+2$ in Mediterranean countries

	2-year bandwidth	Linear polynomial, no inter.	Quadratic polynomial	Quadratic polynomial, no inter.	No FE
First stage:					
Retired in t (β)	0.189***	0.165***	0.196***	0.177***	0.181***
	(0.023)	(0.022)	(0.030)	(0.022)	(0.022)
Second stage:					
Grandchild birth in $t+2$ (λ_2)	0.295*	0.261**	0.290	0.303**	0.315**
	(0.175)	(0.130)	(0.292)	(0.128)	(0.123)
Intention-to-treat:					
Grandchild birth in $t+2$ (θ_2)	0.055*	0.043**	0.071	0.053**	0.060***
	(0.032)	(0.021)	(0.060)	(0.022)	(0.022)
Dynasty and year FE	yes	yes	yes	yes	no
N. observations	2,270	3,178	3,178	3,178	3,178
N. dynasties	454	454	454	454	454

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions use a uniform kernel. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Robustness check: Cross-sectional RDD

Table A5: Cross-sectional RDD regressions - Effect in $t+2$

	All countries	Continental	Mediterranean	Nordic
First stage:				
Retired in t (β)	0.227***	0.227***	0.153***	0.287***
	(0.008)	(0.011)	(0.016)	(0.015)
Second stage:				
Grandchild birth in $t+1$ (λ_2)	0.054**	0.042	0.162*	0.029
	(0.027)	(0.036)	(0.084)	(0.046)
Intention-to-treat:				
Grandchild birth in $t+1$ (θ_2)	0.014**	0.011	0.029**	0.007
	(0.007)	(0.009)	(0.013)	(0.014)
N. observations	35,969	19,226	7,080	9,663

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions include a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible/retired, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Robustness check: Event Study

Table B1: Event Study regressions - Effect 1 and 2 years after the event

Family Policy Regime:	All countries	Continental	Mediterranean	Nordic
Effect 1 year after event ($\beta_1 - \beta_0$)	-0.011	-0.007	-0.023	-0.004
	(0.010)	(0.015)	(0.022)	(0.020)
Effect 2 years after event ($\beta_2 - \beta_1$)	0.010	0.005	0.045*	-0.006
	(0.011)	(0.015)	(0.024)	(0.021)
Dynasty and year FE	yes	yes	yes	yes
N. observations	14,280	6,846	3,178	4,256
N. dynasties	2,040	978	454	608

Notes: Standard errors are clustered at the dynasty level and shown in parentheses.
*** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Falsification test: Placebo outcomes

Table A6: ITT effect on placebo outcomes

	All countries	Continental	Mediterranean	Nordic
N. of adult children	0.009	0.015	-0.001	0.008
	(0.008)	(0.011)	(0.007)	(0.018)
	[14,280]	[6,846]	[3,178]	[4,256]
Married	0.001	-0.000	-0.001	0.004
	(0.002)	(0.003)	(0.002)	(0.005)
	[14,280]	[6,846]	[3,178]	[4,256]
Years of education	0.003	0.006	-0.001	0.000
	(0.002)	(0.004)	(0.001)	(0.000)
	[11,717]	[5,712]	[2,429]	[3,576]
Right-handed	0.000	-0.001	-0.009	0.008
	(0.004)	(0.006)	(0.008)	(0.005)
	[14,280]	[6,846]	[3,178]	[4,256]

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. The number of observations is shown in brackets. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Falsification test: Placebo subsamples

Table A7: ITT effect in $t+2$ for placebo subsamples

	All countries	Continental	Mediterranean	Nordic
Zero adult children	-0.000	0.004	-0.001	-0.012
	(0.009)	(0.016)	(0.008)	(0.012)
	[2,000]	[1,073]	[541]	[386]
Never worked	0.020	0.030	0.016	n.a.
	(0.050)	(0.091)	(0.059)	
	[711]	[228]	[476]	

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. The number of observations is shown in brackets. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. In the Nordic regime, only 1 old parent has never worked in her life. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Heterogeneity by individual characteristics

Table 4: Heterogeneity of the ITT effect in $t+2$ in Mediterranean countries

	Baseline	Grip strength		One child closer 1km		N. of grandch.	
		$\geq$ median	$<$ median	Yes	No	0/1	2+
Intention-to-treat:							
Grandchild birth in $t+2$ (θ_2)	0.056**	0.076***	0.016	0.073***	-0.013	0.070***	0.025
	(0.023)	(0.028)	(0.039)	(0.026)	(0.050)	(0.027)	(0.044)
N. observations	3,178	1,673	1,470	2,506	672	2,163	1,015
N. dynasties	454	239	210	358	96	309	145

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. Grip strength, the presence of an adult child living closer than 1 km and the number of grandchildren already born are all measured in the year in which the old parent becomes eligible.*** $p<0.01$ ** $p<0.05$ * $p<0.1$

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Heterogeneity by mean age of adult children

Table A9: ITT effect in $t+2$ by age groups

	All countries	Continental	Mediterranean	Nordic
A. Mean age 32-35				
Intention-to-treat:				
Grandchild birth in $t+2$ (θ_2)	0.018	0.004	0.050	0.040
	(0.027)	(0.039)	(0.043)	(0.064)
N. observations	3,738	1,701	1,169	868
N. dynasties	534	243	167	124
B. Mean age 36-39				
Intention-to-treat:				
Grandchild birth in $t+2$ (θ_2)	0.030	-0.006	0.106**	0.034
	(0.022)	(0.029)	(0.049)	(0.041)
N. observations	4,382	2,044	826	1,512
N. dynasties	626	292	118	216

Notes: Standard errors are clustered at the dynasty level and shown in parentheses. All regressions include dynasty and year fixed effects, a linear polynomial of the running variable and an interaction between this polynomial and the dummy for being eligible/retired, and they use a uniform kernel and a 3-year bandwidth on both sides of the cutoff. The sample includes only dynasties in which the mean age of adult children at the time of parental eligibility is between 32 and 35 in Panel A and between 36 and 39 in Panel B. *** $p<0.01$ ** $p<0.05$ * $p<0.1$

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