

The Effect of Annuities on Longevity

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 - ▶ Could this have an effect on retirees' life expectancy?

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- ▶ Annuitants are less prone to disability.

Roadmap

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- Institutional setting and data
- IV strategy
- Main results on longevity
- Results on post-retirement disability
- Conclusions

Institutional Setting and Data

Chilean Pension System

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 - ▶ 66% annuitants.

Phased Withdrawal

RETIRO PROGRAMADO

El monto de la pensión en la modalidad de Retiro Programado se recalcula anualmente, pudiendo subir o bajar. A continuación se muestra la pensión para el primer año y luego una proyección de su pensión mensual en AFP HABITAT. Esta última utiliza la rentabilidad proyectada que informa la Superintendencia de Pensiones.

1st-year
monthly
payment

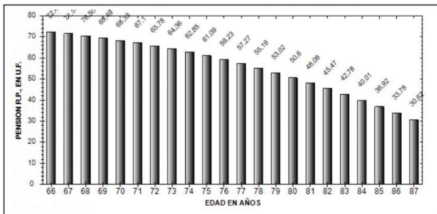
MONTO DE PENSIÓN MENSUAL DURANTE EL PRIMER AÑO

	AFP PLANVITAL	AFP HABITAT	AFP MODELO	AFP UNO	AFP CAPITAL	AFP CUPRUM	AFP PROVIDA
Pensión mensual (UF) (a)	74.01	73.31	73.12	73.12	73.08	73.08	73.08
Pensión mensual (\$) (b)	2.077.117	2.057.471	2.052.138	2.052.138	2.051.016	2.051.016	2.051.016
Diferencia anual de pensión \$(b)	0	-235.752	-299.748	-299.748	-313.212	-313.212	-313.212

(a) Las diferencias en monto de pensión entre las AFP se deben a las distintas comisiones de administración que éstas cobran mensualmente (AFP PLANVITAL 0,00%, AFP HABITAT 0,95%, AFP MODELO 1,20%, AFP UNO 1,20%, AFP CAPITAL 1,25%, AFP CUPRUM 1,25%, AFP PROVIDA 1,25%).

(b) La Diferencia anual de pensión representa cuánto dejaría de recibir el primer año si opta por la AFP señalada, respecto de la AFP que paga la pensión más alta.

PROYECCIÓN DE LA PENSIÓN MENSUAL EN AFP HABITAT, EN UF



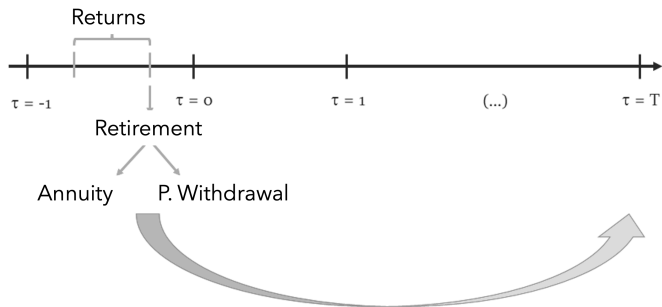
Simulation
of future
payments

Pensión mensual promedio: 55,75 UF	Comisión mensual promedio cobrada por su AFP: 0.54 UF
Pensión mensual promedio: \$ 1.564.643	Comisión mensual promedio cobrada por su AFP: \$ 15.155

PW payments are front-loaded: initially high, but decreasing over time.

IV Strategy

Identification Strategy



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Prior returns \longrightarrow Annuity choice \longrightarrow Longevity

Empirical Strategy: IV LPM Hazard

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- 1st Stage:

$$Annuity_{i,t} = \lambda Returns_{i,t-6-t-1} + \Psi' X_{i,t} + \Omega_{i,t} + v_{i,t}$$

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- 2nd Stage:

$$Dead_{i,t+j} = \beta \widehat{Annuity}_{i,t} + \Gamma' X_{i,t} + \Omega_{i,t} + \nu_{i,t+j}$$

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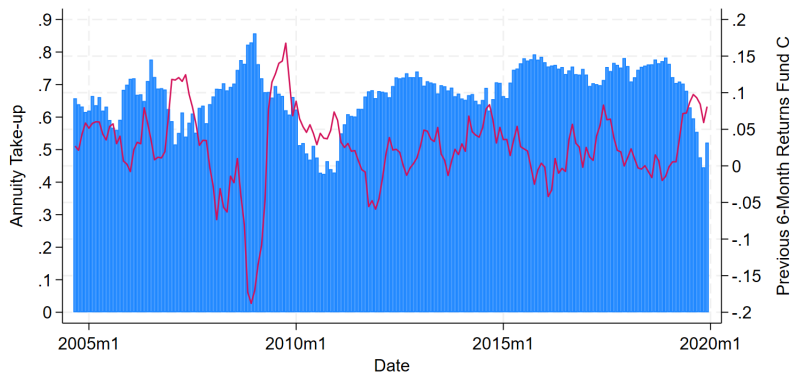
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X_{it} =(last salary, pension balance, years in system, retirement type, and gender interacted with birth-year and retirement-year fixed effects), s.e. clustered at birth-year level

Main Results

Prior Returns and Annuities (Instrument Relevance)



■ Annuity Take-up
— Previous 6-Month Returns Fund C

Correlation(Annuity Take-up, Previous 6-Month Returns Fund C)=-0.51

Annuities and Mortality

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	5-Year Horizon				10-Year Horizon			
	OLS	RF	1st Stage	2nd Stage	OLS	RF	1st Stage	2nd Stage
	Dead	Dead	Annuity	Dead	Dead	Dead	Annuity	Dead
Annuity	-0.69*** (0.081) 0.000			-2.55*** (0.862) 0.004	-0.87*** (0.085) 0.000			-3.62** (1.630) 0.029
Returns (t-6 - t-1)		1.41*** (0.498) 0.006	-0.55*** (0.066) 0.000			1.67** (0.738) 0.027	-0.46*** (0.055) 0.000	
Observations	2,746,058	2,746,058	2,746,058	2,746,058	4,460,606	4,460,606	4,460,606	4,460,606
R-squared	0.050	0.049	0.175		0.068	0.067	0.142	
Kleibergen-Paap F-stat			69.88				69.89	

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Rejection of weak instrument.

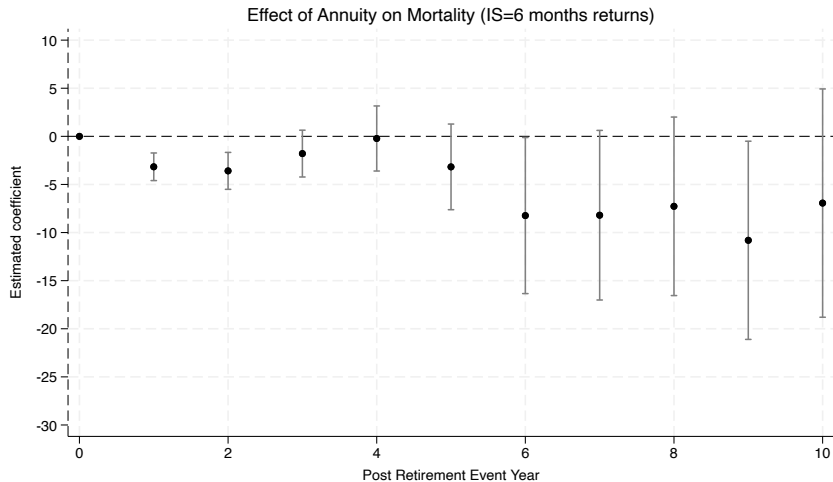
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Col. 4 Second Stage IV Annuities decrease mortality rate by 2.55 percentage points.



Returns at different horizons (Reduced form)

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Returns (t-24 through t-1)		0.45 (0.598) 0.455								
Returns (t-12 through t-1)			2.02*** (0.617) 0.002							
Returns (t-6 through t-1)				1.67** (0.738) 0.027						
Returns (t-3 through t-1)					1.10 (1.054) 0.298					
Returns (t+1 through t+3)						1.67 (1.192) 0.165				
Returns (t+1 through t+6)							1.32 (1.027) 0.201			
Returns (t+1 through t+12)								0.61 (0.655) 0.353		
Returns (t+1 through t+24)									-0.21 (0.561) 0.704	
Returns (t+1 through t+36)										0.22 (0.949) 0.817
Observations	4,460,606	4,460,606	4,460,606	4,460,606	4,460,606	4,460,606	4,460,606	4,460,606	4,338,585	4,214,570

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Cols. 6-10 Placebo: Returns **after** retirement are **not** correlated with future mortality.

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Results on Post-Retirement Disability

Data on Post-Retirement Disability

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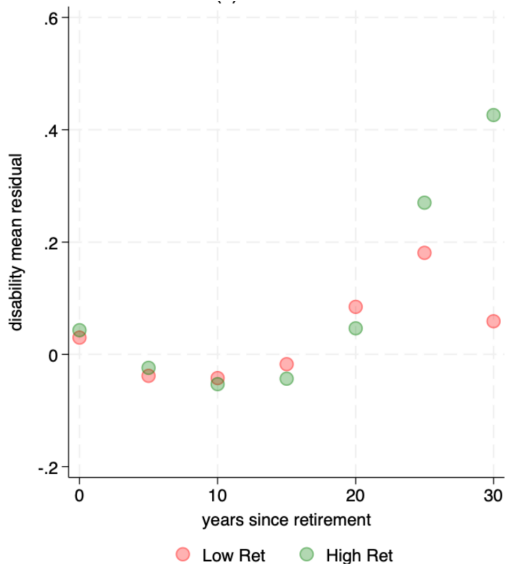
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Disability and Pre-Retirement Returns (Reduced Form)



To Conclude...

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