Determinants of participation in Italian pension funds, and behavior of members

Elsa Fornero
University of Turin and CeRP

Hannu Kahra
Turku School of Economics and Business Administration and CeRP

Federica Teppa
CeRP

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Aims of the project

- To build a new data set using the administrative archives kindly provided by the two largest Italian pension funds
- To investigate:
  - ✓ determinants of participation in pension funds
  - ✓ workers' awareness of the alternative options and of their (long term) consequences
  - ✓ workers' activism with respect to retirement decisions
  - ✓ workers' inertia and the role of default options
- To simulate future pensions from both the public and the private systems

Individual life cycle: time/age	*Individual choices*	*Default/ Normative constraints*	*(Likely) changes induced by the new law*
t a_t *(entrance)*	**To participate or not** **<u>If yes</u>,** **• How much to contribute (and, for senior workers, the fraction of TFR)** **• Portfolio choices**	***<u>Status quo</u>*:** **• No participation** **• Maintaining the TFR provision (loss of employer's contribution)**	**Participation through the silent-assent formula**
t+n a_{t+n} *(accumulation period)*	**• Transfer to a different fund** **• Withdrawals** **• Redemption**	**•<u>Voluntary</u>, with restrictions** **•Normative restrictions** **•Due to loss of participation requisites**	**Additional restrictions to transfer (no transfer to open funds and individual accounts)**
T a_T *(Retirement)*	**• Lump sum vs. annuity** **• For the annuity: a new set of decisions on the annuity time profile and on portfolio allocation**	**• At least 1/2 of accumulated capital as an annuity** **•If less than 2/3: fiscal penalization**	

The datasets

- Micro data from Fonchim and Cometa
  - ✓ participants: about 150,000 in Fonchim and 350,000 in Cometa
  - ✓ period: 1998 (99)-2003
  - ✓ participation rates: 60 and 30 per cent respectively
  - ✓ contribution rates:

    firm and worker → 1.2 percent of the salary

    TFR → 100 or 33 percent
- Micro data from Whip (LABOR) - INPS
  - ✓ representative sample of eligible workers for the 2 funds, constructed on a contractual basis
  - ✓ period: 1996-99

Comparing participants and eligible workers

FONCHIM (Chemical sector)				
	Potential members (Whip)		Actual members	
	Averages	n° observations	Averages	n° observations
Gender (1 = male)	0.693	11,396	0.727	878,892
Age	32.66	18,824	39.34	878,892
Firm's geogr. (%)		18,824		878,892
North	63.84	12,017	63.35	556,764
Center	17.03	3,205	30.38	266,988
South	19.14	3,602	6.27	55,140
Job qualification/education (%)		18,824		
Blue collars/low	53.41	10,053		
White collars/middle	34.74	6,540		
Managers/high	1.7	320		
Apprentice	10.15	1,911		
Gross wages (€)	13,821	11,576	26,731	613,117
COMETA (Metal-mechanical sector)				
	Potential members(Whip)		Actual members	
	Averages	n° observations	Averages	n° observations
Gender (1 = male)	0.811	47,996	0.812	1,572,640
Age	35.4	47,996	39.67	1,572,640
Firm's geogr. Area (%)		47,996		1,572,245
North	73.85	35,445	69.42	1,091,465
Center	12.85	6,166	21.40	336,450
South	13.3	6,385	9.18	144,330
Job qualification/education (%)		47,996		1,263,695
Blue collars/low	66.37	31,855	50.12	633,375
White collars/middle	28.44	13,648	42.89	542,025
Managers/high	1.98	950	6.99	88,295
Apprentice	3.21	1,543		
Gross wages (€)	17,705	32,602	17,364	1,339,915

Participants are older, typically male, more qualified (for Cometa only) and work more in Central Italy

Fonchim-Cometa dataset: descriptive statistics

		FONCHIM		COMETA	
		Averages	N° observations	Averages	N° observations
Who	Gender (1 = male)	0.727	878,892	0.812	1,572,640
	Age	39.34	878,892	39.67	1,572,640
	Native geogr. area (%)		868,482		1,561,595
	North	53.44	464,130	48.58	758,660
	Center	30.49	264,774	20.90	326,390
	South	16.05	139,434	30.52	476,545
	Abroad	0.02	144		
	Firm's geogr. area (%)		878,892		1,572,245
	North	63.35	556,764	69.42	1,091,465
	Center	30.38	266,988	21.40	336,450
	South	6.27	55,140	9.18	144,330
	Education				1,263,695
	Low			50.12	633,375
	Middle			42.89	542,025
	High			6.99	88,295
	Marital status				148,600
	Married			26.68	42,615
	Single			71.22	105,830
	Widowed			0.10	155
How much	% contribution from TFR	44.99	862,206	43.71	1,572,640
	TFR contribution (€)	726,88	613,117	546.89	1,340,212
	Worker's contribution (€)	310,48	613,117	319.01	1,341,422
	Firm's contribution (€)	320,78	613,117	208.37	1,339,915
	Voluntary contribution (€)	43,99	613,117		
How	Portfolio choices (%)		878,892		
	Low-risk profile ("Moneta")	3.92	34,458		
	Middle -risk profile ("Stabilità")	94.41	829,734		
	High-risk profile ("Crescita")	1.67	14,700		

Questions

- Is there any pattern in the data (Fonchim-Cometa &Whip)?

  → GLM model

- What are the determinants of fund participation?

  → Binary choice model

- How do they allocate their portfolios?

  → Ordered probit model

- What is their future pension benefit likely to be?

  → Micro simulation model

The GLM model

- There is a **response** *y* (frequency) observed independently at fixed values of **stimulus variables** (gender, age, geographic area, income, sample)
- The stimulus variables influence the distribution of *y* through a single linear **predictor function**

  $\eta = \beta_1 Gender + \beta_2 Age + \beta_3 Area + \beta_4 Income + \beta_5 Sample$

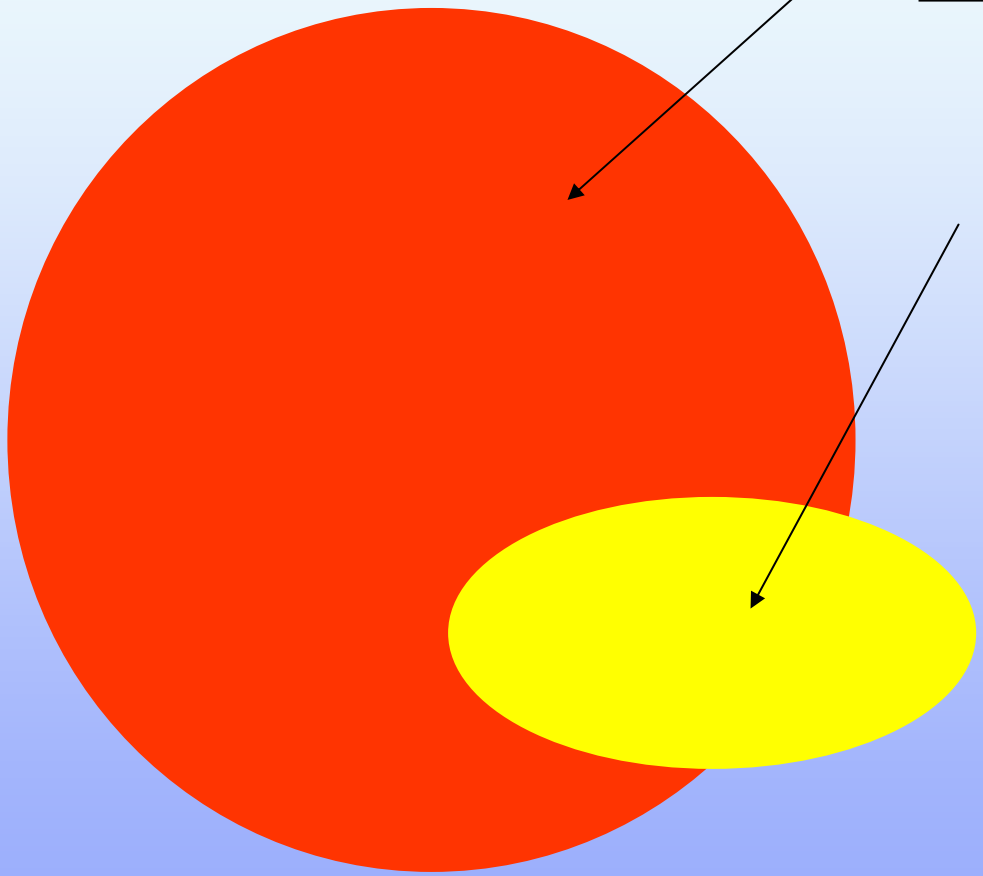
  (it can include joint-effects between the stimulus variables)
- The distribution of *y* has density of a certain form: in this case it is a Poisson distribution

Frequency table

						INPS				
		Females						Males		
		Age < 20	Age 20-29	Age 30-39	Age 40-49	Age 50-59	Age 60-69	Age < 20	Age 20-29	Age 30-39
North	Income Q1	60	474							
	Income Q2									
	Income Q3									
	Income Q4									
Center	Income Q1									
	Income Q2									
	Income Q3									
	Income Q4									
South	Income Q1									
	Income Q2									
	Income Q3									
	Income Q4									

Frequencies

A visualization of the problem



Universe of eligible workers (WHIP sample) with characteristics $X_1, \ldots, X_n$.

Population of fund members (Cometa and Fonchim) with characteristics $Y_1, \ldots, Y_m$.

QUESTION: are the characteristics the same?

GLM estimation results

	COMETA		FONCHIM	
	p-values	*Sign. levels*	*p-values*	*Sign. levels*
Males	6.21e-06	***	0.0016	**
Age 20-29	< 2e-16	***	1.78e-08	***
Age 30-39	< 2e-16	***	6.24e-11	***
Age 40-49	< 2e-16	***	4.37e-10	***
Age 50-59	2.95e-08	***	8.98e-06	***
Age 60-69	0.097147	***	0.98234	
North	4.70e-08	°	0.00346	**
South	0.232356	***	0.98234	
Income quartile 2	0.097147		0.98234	
Income quartile 3	0.975177	°	0.98234	
Income quartile 4	0.975177		0.98234	
Belonging to INPS	< 2e-16	***	< 2e-16	***
Males – age 20-29	0.004260	**	0.06441	°
Males – age 30-39	0.004443	**	0.03434	*
Males – age 40-49	0.001999	**	0.04513	*
Males – age 50-59			0.06588	°
North – age 20-29	0.003798	**	0.04844	*
North – age 30-39	0.002950	**	0.03465	*
North – age 40-49	0.001660	**	0.05406	°
North – age 50-59	0.006345	**	0.05097	°
South – age 20-29	0.011244	*		
South – age 30-39	0.001078	**		
South – age 40-49	5.25e-05	***		
South – age 50-59	0.003023	**		

Legenda: *** = 0.001; ** = 0.01; * = 0.05; ° = 0.1

- *Gender, age, and sample* are highly significant in explaining frequencies
- *Geographic area of firm* is less important
- *Income* is not significant, not even when interacted with other variables

Determinants of participation (binary choice model)

	FONCHIM		COMETA	
	Coeff.	Sign. level	Coeff.	Sign. level
	(Std. Err.)		*(Std. Err.)*	
Males	.314 *(.129)*	***	-.336 *(.021)*	***
Age 20-29	2.176 *(.124)*	***	3.919 *(.338)*	***
Age 30-39	3.387 *(.124)*	***	4.989 *(.338)*	***
Age 40-49	4.139 *(.125)*	***	5.225 *(.339)*	***
Age 50-59	3.320 *(.130)*	***	5.121 *(.339)*	***
Age 60-69	.357 *(.221)*		4.644 *(.350)*	***
North	-1.046 *(.040)*	***	-1.178 *(.025)*	***
South	.240 *(.051)*	***	-.765 *(.032)*	***
Income quartile 2	1.356 *(.038)*	***	.696 *(.027)*	***
Income quartile 3	-.545 *(.040)*	***	1.065 *(.027)*	***
Income quartile 4	-2.037 *(.043)*	***	1.197 *(.027)*	***

Legenda: *** = 0.001

- *Gender, age, geographic area of firm, and income* are all strongly significant
- Opposite role for gender in Fonchim and in Cometa (where women are more likely to participate)

Asset allocation analysis (Fonchim – 2003)

REGRESSION	I		II		III	
	Slope	p-value	Slope	p-value	Coeff.	p-value
	ALL		FEMALES		MALES	
Age	-.003	0.000				
Age^2	.00002	0.000				
Worker native geogr. area	.002	0.000	.005	0.000	.0007	0.033
Firm's geogr. area	.005	0.000	.004	0.000	.006	0.000
Young – Inc. quant. 1			.030	0.000	.023	0.000
Young – Inc. quant. 2			.014	0.000	.011	0.000
Young – Inc. quant. 3			.018	0.000	.011	0.000
Young – Inc. quant. 4			.034	0.000	.025	0.000
Middleaged – Inc. quant. 1			.016	0.000	.017	0.000
Middleaged – Inc. quant. 2			-.005	0.000	-.003	0.000
Middleaged – Inc. quant. 3			-.015	0.000	-.004	0.000
Old – Inc. quant. 1			.007	0.006	.012	0.000
Old – Inc. quant. 2			-.027	0.000	-.012	0.000
Old – Inc. quant. 3			-.078	0.000	-.049	0.000
Old – Inc. quant. 4			-.061	0.000	-.072	0.000
Fem. – Inc. quant. 1	.008	0.000				
Fem. – Inc. quant. 2	-.010	0.000				
Fem. – Inc. quant. 3	-.020	0.000				
Male – Inc. quant. 1	.021	0.000				
Male – Inc. quant. 2	.006	0.000				
Male – Inc. quant. 3	.001	0.071				
Male – Inc. quant. 4	.004	0.000				
N. observations	868,482		236,736		631,746	
Pseudo R^2	.0574		.0400		.0492	
Log-Likelihood	-136101.6		-42695.1		-94803.8	

Gender and age effects dominate *income* effects

First results

✓ Participants have some distinctive characteristics (not a random sample of the eligible population)

✓As for determinants of participation, gender, age and firm geographic area are all significant; income is not

✓ As for portfolio choices, both age and gender are significant and dominate income effect

⇨ As for future pension benefits, the micro simulation model (M. Borella) has delivered preliminary results (not presented here), which show that with the observed rates of contribution, future private benefits will not add much to the reduced public pensions

Future research

- To investigate possible learning and peer effects, by exploiting the panel component in the dataset
- To assess the respective roles of *inertia* (induced by default options) and *activism* (induced by little confidence or mistrust) in explaining the level of participation

  ⇨ *it requires a change in the default option … and thus the approval of the long awaited reform*