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Participation in training and its effect on the decision to retire early

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Research question

What is the effect of on-the-job training on early retirement decision of older workers?

- Cross country evidence (ECHIP)
- Endogeneity
- Our contribution: no empirical literature on effect of training on retirement



Outline

1. Motivation
2. Theoretical background
3. Data
4. Descriptive results
5. Model and results
6. Conclusion

Motivation

- General agreement: the labour market participation of older workers should increase
- Focus of policy reforms: sharpening financial incentives to early retirement (Blöndal & Scarpetta, 1999)

Motivation

European guidelines:

→ Increase labour participation of older workers:

Participation rates of workers aged 55-64 in 2006:

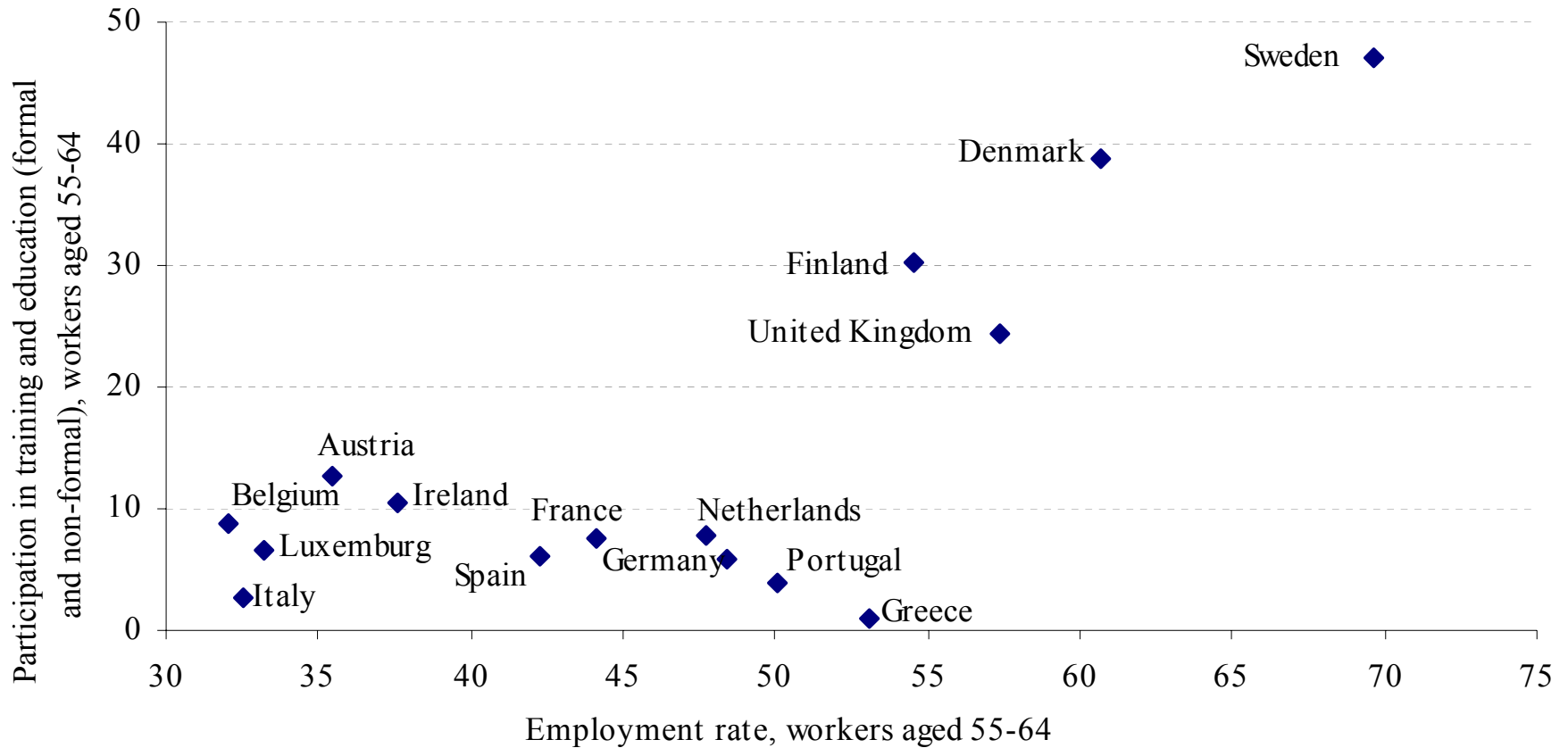
EU 43.6 / NL 47.7 / DE 48.8 / DK 60.7 / SE 69.6

→ Invest in training of adult workers:

Participation in training/education of workers aged 55-64 in 2006:

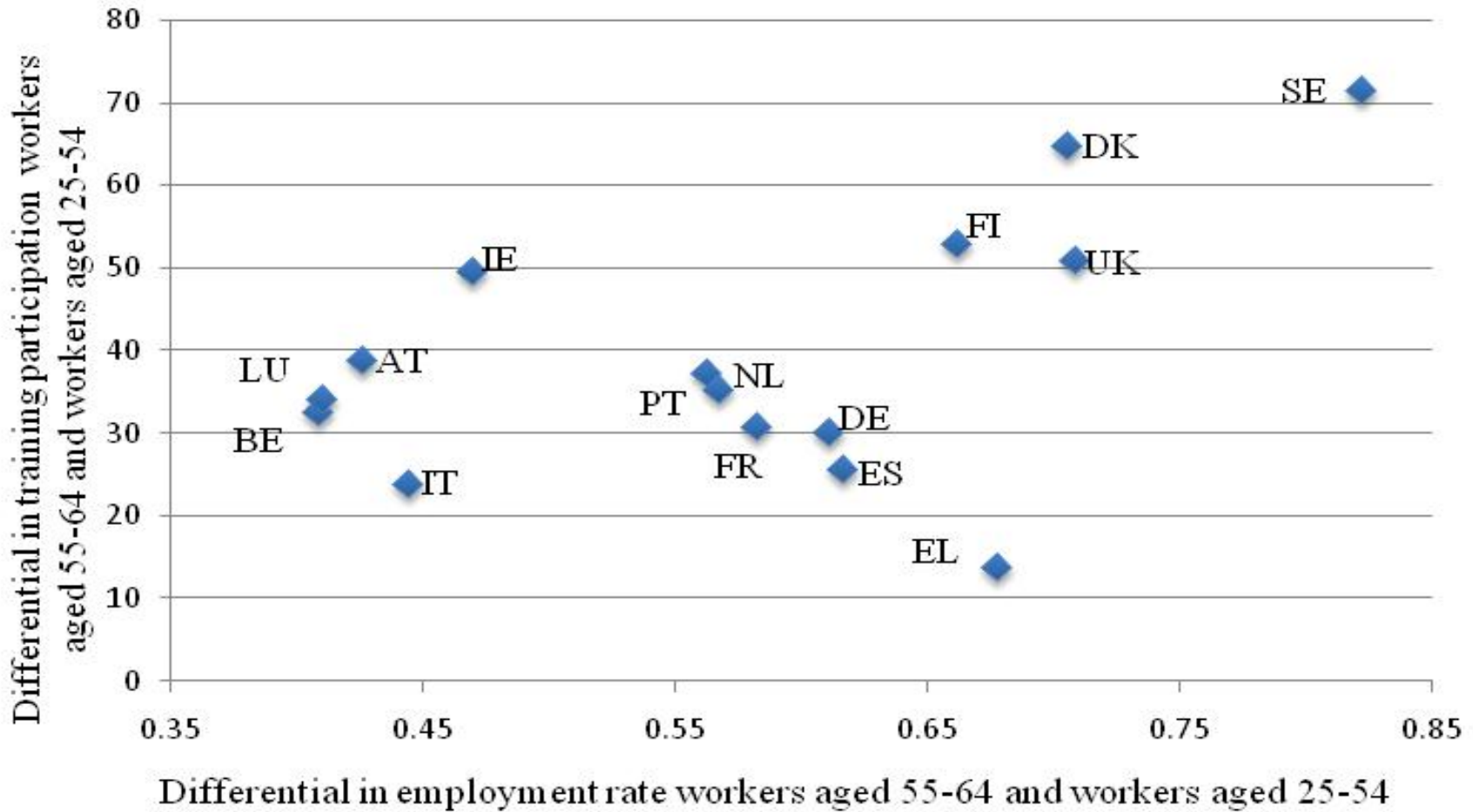
EU 9.4 / NL 7.7 / DE 5.9 / DK 38.7 / SE 47.1

Descriptive evidence (1)



Source: Eurostat (2007)

Descriptive evidence (2)



Source: Eurostat (2007)

Theoretical background

Becker (1964):

- general training raises productivity outside the firm → employers shift costs to employees;
- specific training raises productivity within the firm, but risk of disruption → employer and employee share costs.

Heckman (2000): economic returns to training of older workers are low:

- HC depreciation / lower returns (Neumann & Weiss 1995)
- skills obsolescence (de Grip & van Loo, 2002): employability issue for older workers.
- learning abilities decrease with age (Casey & Bruche 1981)

Theoretical background

- shorter pay-back period (Becker 1964, Blinder 1982)
- early retirement schemes → pay-back period fixed and decreasing with age (Echevarría, 2003)
- generosity & flexibility of early retirement scheme shorten the pay-back period (Schils, 2005)

Prediction from theory:

If older workers participate in training, it will increase their value on the labour market, and they will retire later.

Data

European Community Household Panel (ECHP):

15 EU countries; exclude Luxembourg (missing data) and Sweden (repeated cross-sections)

8 waves (1994-2001); 40-50,000 salaried workers per wave

Sample: salaried workers, aged 50-64

Data

Early labour market exit:

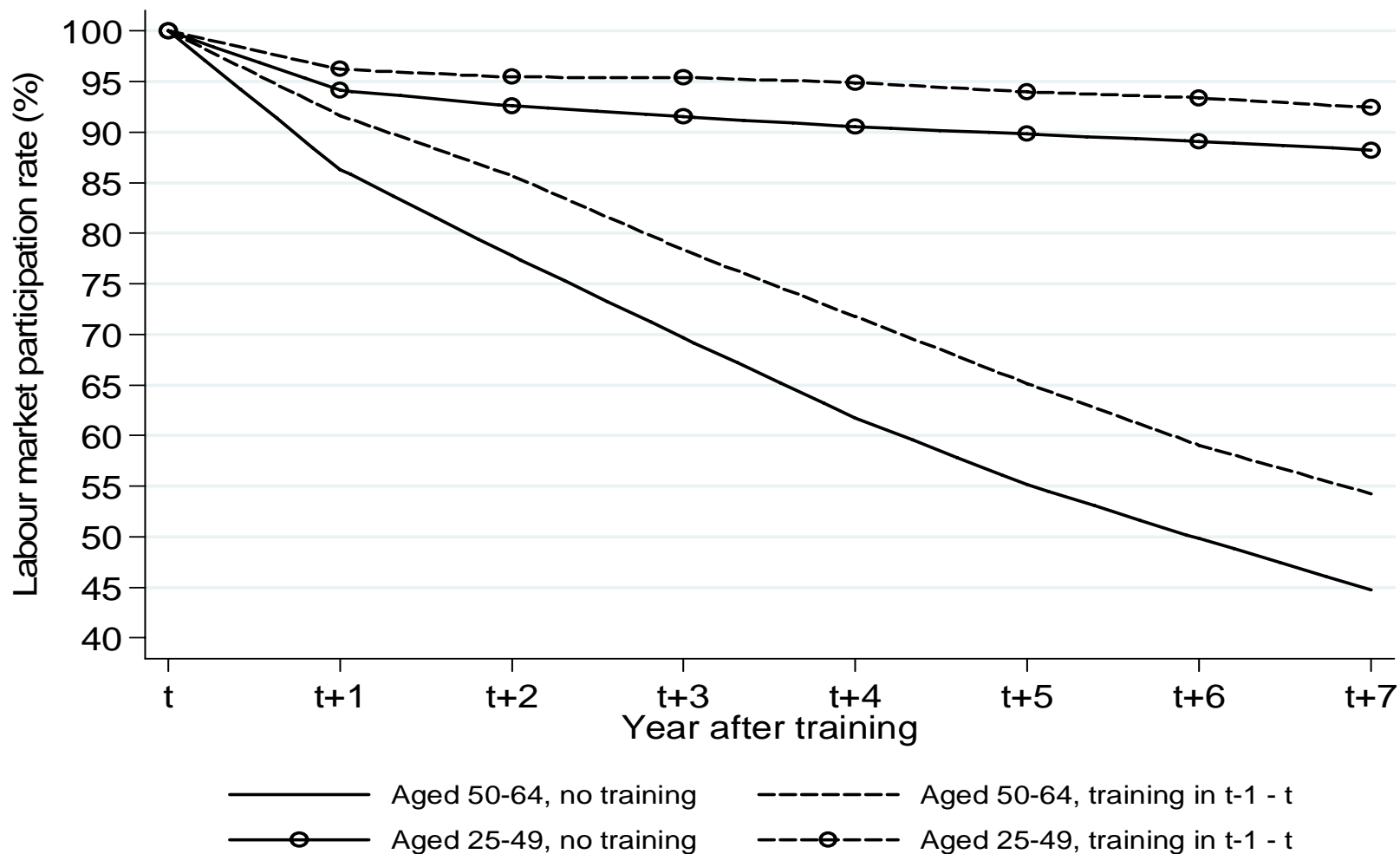
In paid employment in year t , out of employment in year $t+3$.

→ before the official retirement age.

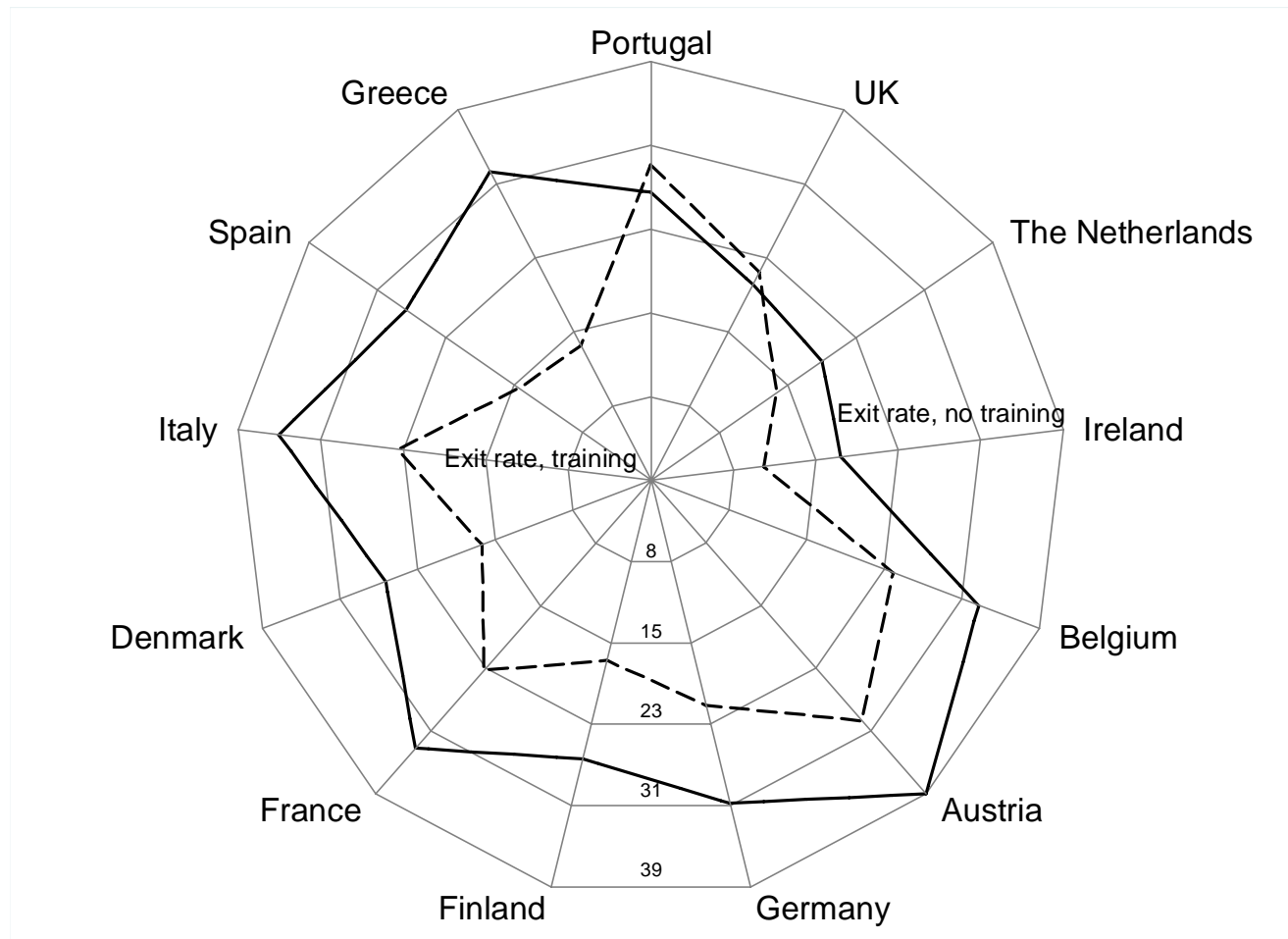
Training:

Participation in formal training (between $t-1$ and t):
“Have you at any time since January (in the previous year) been in vocational education or training, including any part-time or short courses ?” (23%)

Descriptive results



Descriptive results



Model (1)

- Model pr(early exit)
- Conditional on having followed formal training (z)

$$y_{it}^* = \beta X_{it} + \gamma z_{it-1,t} + \varepsilon_{it}$$

$$y_{it} = I(y_{it}^* > 0)$$

- Training = endogeneous \rightarrow need instrument q

$$z_{it-1,t}^* = \alpha X_{it} + \delta q_{it} + \mu_{it} = \pi W_{it} + v_{it}$$

$$z_{it-1,t} = I(z_{it-1,t}^* > 0)$$

Model (2)

- Instrument:
dummy indicating whether or not employer provides (free or subsidized) training opportunities
- This information is missing for UK
-
- Correlation with actual training participation is significant but it is not too high: 0.40
- F-stat in IV model > 10

Model (3)

Control function approach

(Heckman, 1978, 1979, Vella & Verbeek, 1999):

$$y_{it}^* = \beta X_{it} + \gamma z_{it-1,t} + \varepsilon_{it}$$

$$y_{it} = I(y_{it}^* > 0)$$

$$z_{it-1,t}^* = \alpha X_{it} + \delta q_{it} + \kappa IM_{it} + \mu_{it} = \pi W_{it} + v_{it}$$

$$z_{it-1,t} = I(z_{it-1,t}^* > 0)$$

$$\begin{pmatrix} \varepsilon_{it} \\ v_{it} \end{pmatrix} \sim NID(0; \Sigma)$$

$$E(v_{it} | W_{it} z_{it-1,t}) = \lambda(W_{it} \pi) = (1 - z_{it-1,t}) \frac{-\phi(W_{it} \pi)}{\Phi(-W_{it} \pi)} + z_{it} \frac{\phi(-W_{it} \pi)}{1 - \Phi(-W_{it} \pi)}$$

$$y_{it} = \beta^* X_{it} + \gamma^* z_{it-1,t} + \upsilon \lambda(W_{it} \pi) + \varepsilon_{it}^*$$

Training and early retirement

Key results (Table 3, paper)

- Significant effect of training (marginal effect -9.7%)
- No differences across educational levels

Exit between t and t+3: selected coefficients

	Model 1	Model 2	Model 3
	Coeff	Coeff	Coeff
Train	-0.348**	-0.310*	-0.195*
Education (ref: average)			
Low educated	0.062	0.054	0.035
High educated	-0.210**	-0.203**	-0.287**
Train * low educated		0.115	
Train * high educated		-0.035	
Flexibility			0.117**
Generosity			0.336**

Conclusions

- Little empirical evidence on effect of training on labour market participation of older workers.
- Theory predicts that older workers are less likely to participate in training.
- Theory also predicts that older workers who do follow training raise their human capital and that it will contribute to make them work longer.
- Possible self-selection into training based on expected returns.
- We show that formal training can contribute to keeping older workers in employment.



Participation in training

Model (van de Ven and van Praag, 1981):

Heckman selection model with both the substantive equation (= training participation) and selection equation (= employment participation) having a binary dependent variable.

Training equation includes age, gender, education, hours, contract, industry, job level, tenure, country and year dummies

Employment equation excludes job characteristics, and includes health, unemployment spell, household characteristics

Participation in training

Key results (Table 1, paper):

1. Significant effect of age on training probability
... but difference (marg eff -1.6%) is smaller than suggested in descriptives;
2. Complementarity between initial HC and training
... but this is less so for older workers;
3. General level of training participation highest in DK/FI and lowest in EL/PT/NL/DE
4. Generous ER system lowers $pr(\text{train})$ for older workers;
5. Flexible ER system increases $pr(\text{train})$ for older workers.