DZA | German Centre of Gerontology

Do older workers earn more than they deserve?

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Outline

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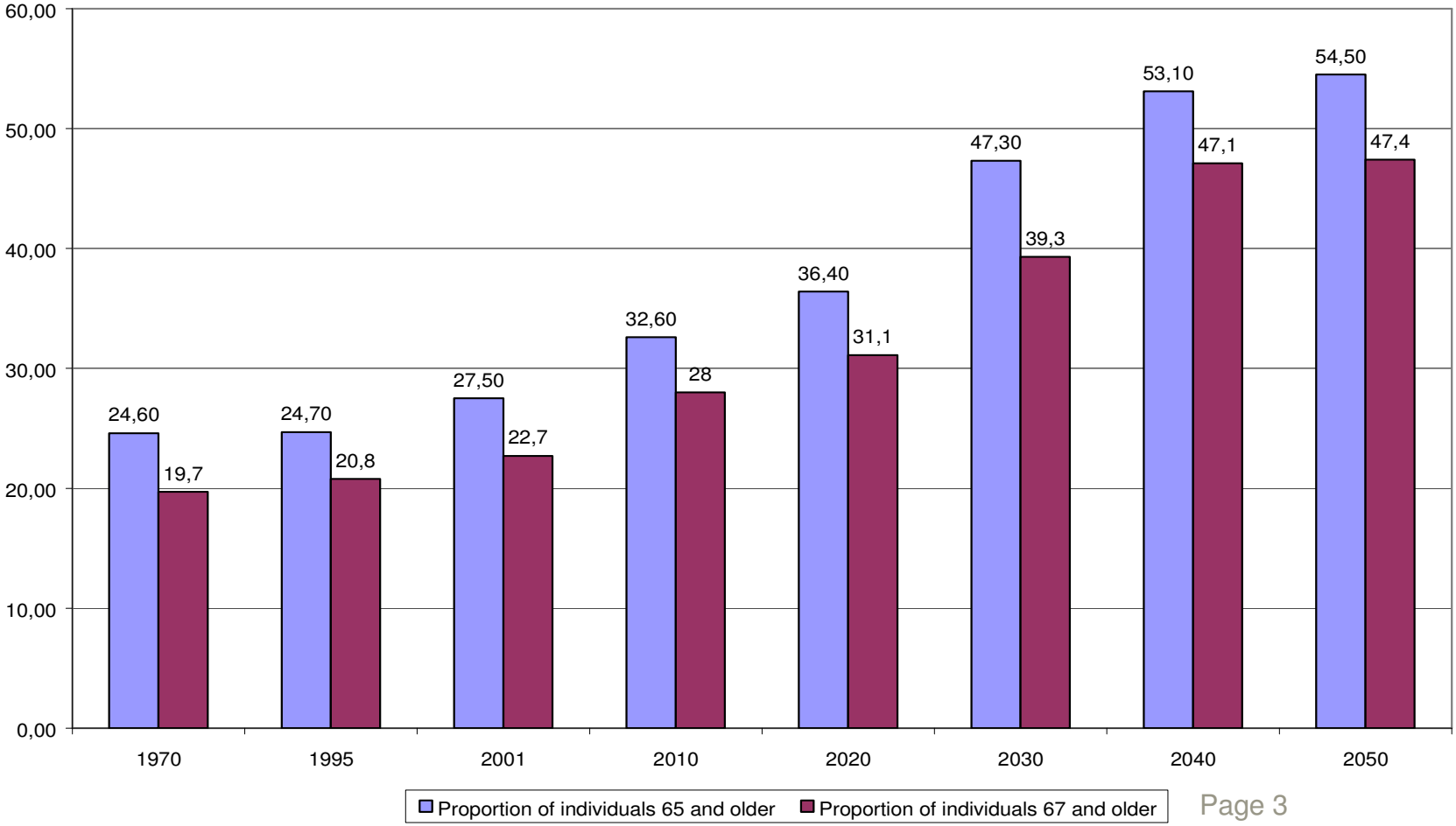
  - Productivity measurement
  - Cognitive abilities as indicator of productivity
- Age-earnings profiles
- Empirical Analysis:
  - Wage regressions
  - Blinder-Oaxaca decomposition
- Conclusions

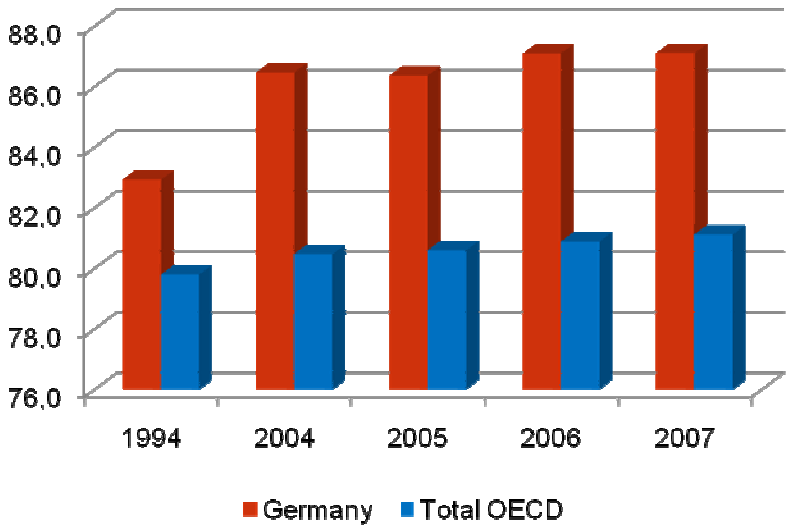
Motivation

Ratio older individuals / working population

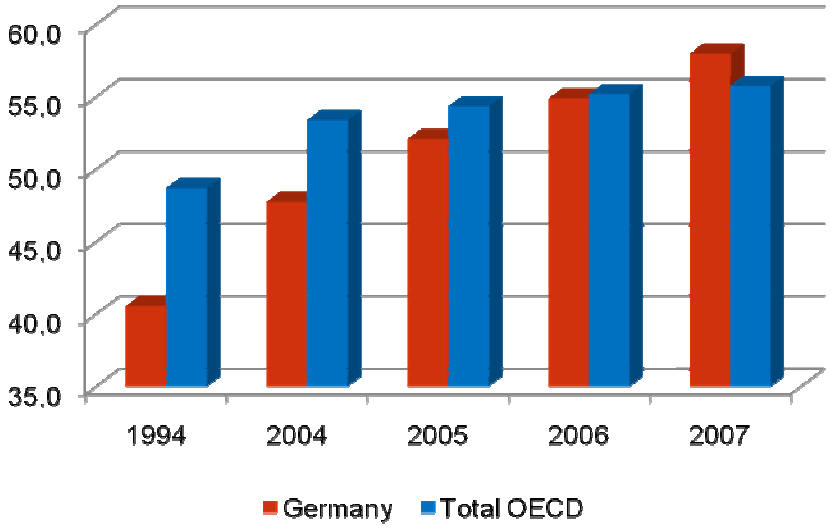


Motivation

Labor force participation rates. Age 25-54. Source: OECD



Labor force participation rates. Age 55-64. Source: OECD



Motivation

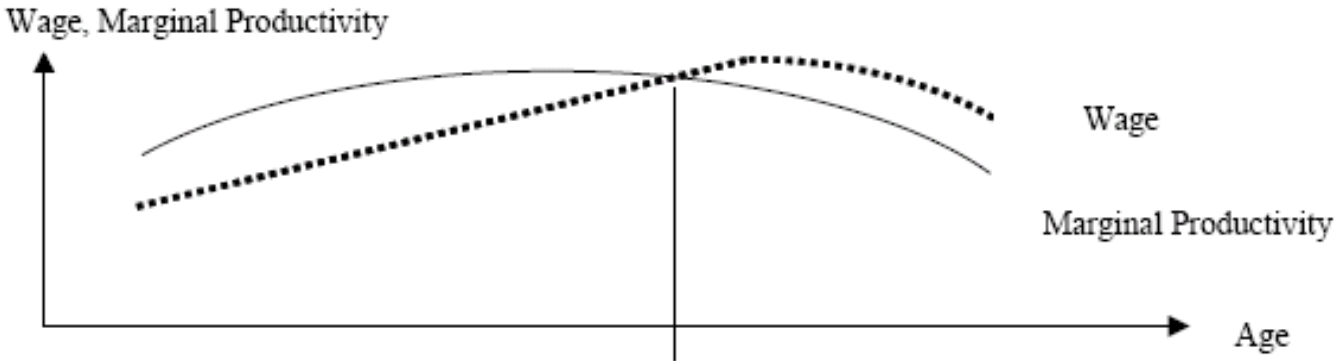
– **Causes of the low employment rates of older persons**:

- SUPPLY SIDE: alternative income possibilities play an important role
- DEMAND SIDE: the demand for older workers is relatively low as firms are skeptical about hiring them.

Wage rigidity in Germany (large rate of unionization; delayed payment contracts)

Motivation

Productivity and variations over the life cycle



(Skirbekk 2003)

Objective of the paper: to use cognitive abilities as indicator of productivity in order to see whether productivity potential decreases with age and how wages adapt to this profile.

Age-productivity profiles

– Productivity measurement:
  - Supervisors' ratings on employees' productivity
  - Production records
  - Studies based on employer-employee datasets

– Cognitive abilities as indicator of productivity:
  - Cognitive abilities together with physical abilities, education and job experience determine individual's productivity potential.

  - In modern societies, where physical strength has lost much of its importance, cognitive skills result a good indicator of productivity (Skirbekk 2008).

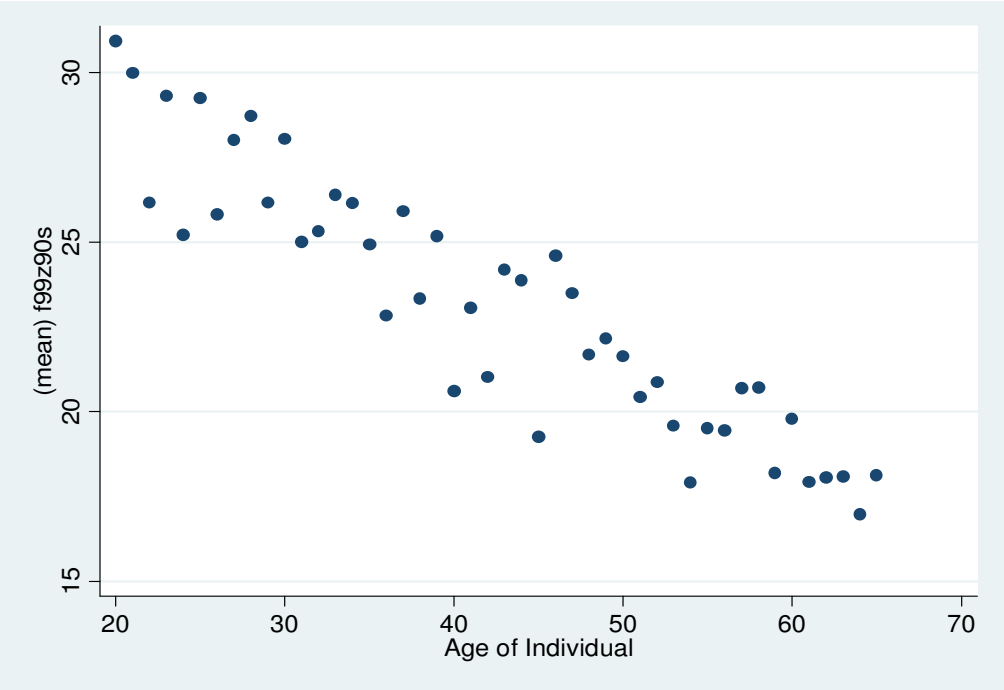
Age-productivity profiles

– Cognitive abilities as indicator of productivity:

- Cognitive abilities decline from some stage in adulthood.
- However, not all abilities follow the same decline pattern.
  – **fluid abilities** (learning, perceptual speed and reasoning abilities) decline considerably over life cycle
  – **crystallized abilities** (vocabulary size and semantic meaning) remain stable

Age-productivity profiles

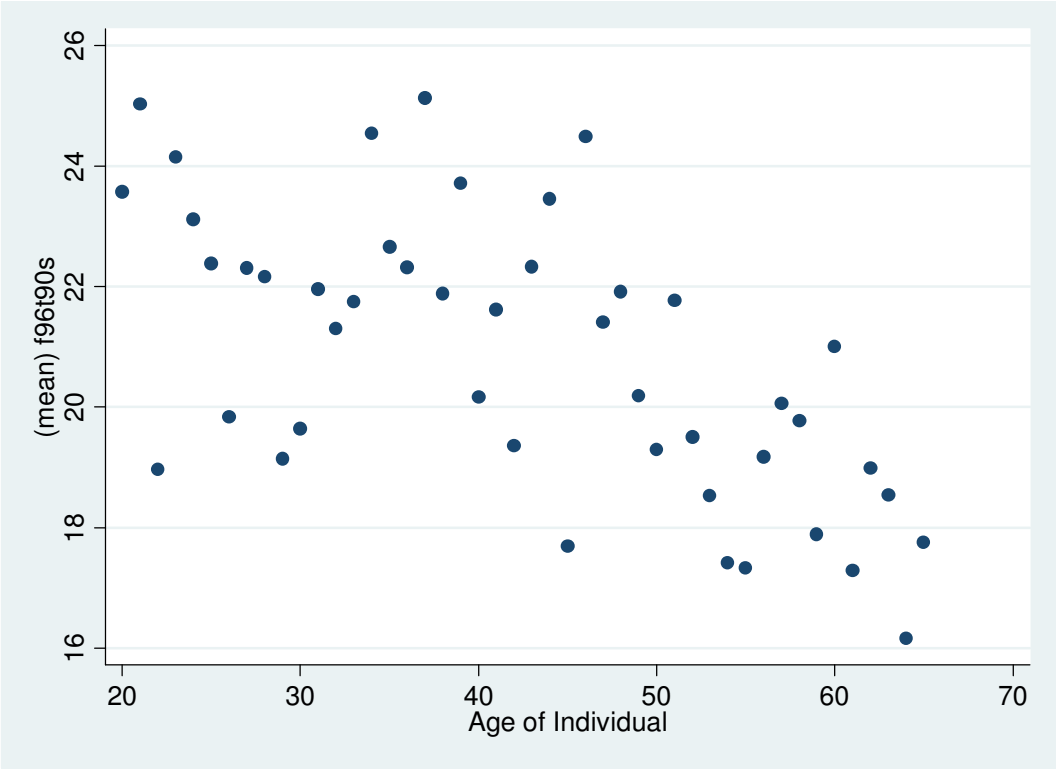
– Cognitive abilities in the SOEP (German Socio-Economic Panel):
  – Two short cognitive tests for 5,500 persons (year 2006)
    1. Symbol-Digit-Test (SDT)



Age-productivity profiles

– Cognitive abilities in the SOEP (German Socio-Economic Panel):

2. Animal Naming Task



Age-earnings profiles

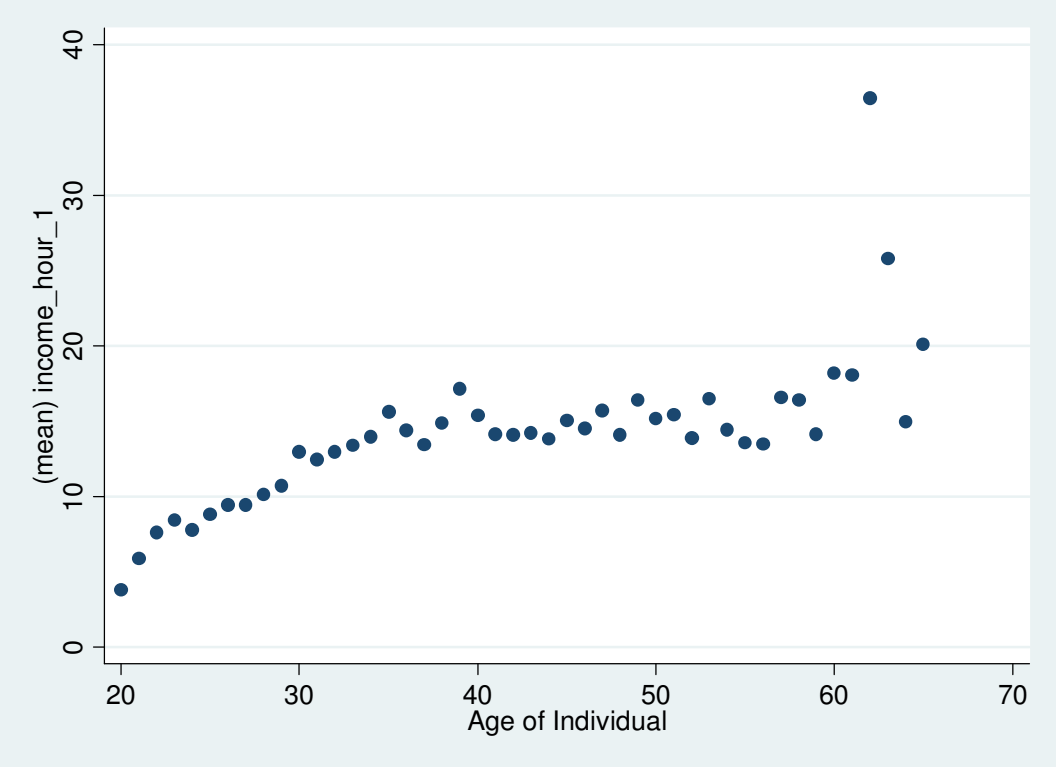
– The empirical and theoretical literature mainly focused on the relationship between experience and earnings.

- Theory of specific human capital (Becker,1962)
- Delayed payment contracts (Lazear,1979; Hutchens,1986)
- Insurance motives for delayed payment (Freeman,1977; Harris and Holmstrom,1982)
- Solution for adverse selection (Guasch and Weiss, 1980, 1982)
- Better labour market matches (Altonji and Shakotko,1987)

(*) The effect that tenure has on wages can be also country specific

Age-earnings-profiles

Hourly earnings profile (SOEP)



Empirical Analysis

– Wage regressions:

$$\ln W_i^O = X_i^O \beta^O + \varepsilon_i^O$$

$$\ln W_i^Y = X_i^Y \beta^Y + \varepsilon_i^Y$$

Explanatory variables: gender, West/East, education, unemployment experience, full-time work experience, squared full-time work experience, tenure, squared tenure, tenure dummy (indicating at least one year of tenure), firm size, cognitive abilities.

Empirical Analysis

– Wage regressions:

	(20-35)	(36-50)	(51-65)
Men		+	
West-Germany	+	+	+
Education	+	+	+
Unemployment experience		-	-
Fullt-time work experience	+	+	
Tenure	+	+	
At least one year of tenure			+
Firm size	+	+	+
Cognitive abilities (fluid)	+		
Cognitive abilities (crystallized)	-		

Empirical Analysis

– Are wage differentials between younger and older individuals ‘justified’?
  - Methodology by **Oaxaca** (1973) and **Blinder** (1973).
    Any **wage differential** can be decomposed into **two parts**:
    1. The first explained by **differences in human capital endowments** of both groups,
    2. The second reflects **differences in prices**, that is the remuneration of these endowments.

$$\left\{\underbrace{\overline{\ln\ W}^{Y} - \overline{\ln\ W}^{O}}_{wagegap}\right\} = \underbrace{\hat{\beta}^{Y}\left(\overline{X}^{Y} - \overline{X}^{O}\right)}_{endowment\ effect} + \underbrace{\overline{X}^{O}\left(\hat{\beta}^{Y} - \hat{\beta}^{O}\right)}_{remuneration\ effect}$$

Empirical Analysis

- Age categories: 1.(20-35), 2.(36-50), 3.(51-65)

- AGE CATEGORY 3 VS. AGE CATEGORIES 1 AND 2

	Coeff.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Difference	**-.1510719**	**.0299254**	**-5.05**	**0.000**	**-.2097246**	**-.0924192**
Decomposition						
Explained	-.3972424	.0362083	-10.97	0.000	-.4682094	-.3262753
Unexplained	.2461705	.0339341	7.25	0.000	.1796609	.3126801

Empirical Analysis

- Age categories: 1.(20-35), 2.(36-50), 3.(51-65)

- AGE CATEGORY 3 VS. AGE CATEGORY 1

	Coeff.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
Difference	**-.4016836**	**.0395018**	**-10.17**	**0.000**	**-.4791057**	**-.3242615**
Decomposition						
Explained	-1.017679	.1221247	-8.33	0.000	-1.257039	-.7783185
Unexplained	.6159949	.1113829	5.53	0.000	.3976885	.8343014

Summary and Conclusions

- Motivation: given the aging of the population, it is important to analyse factors affecting labour market articipation of older workers.

- Are older workers ‚too expensive'?

- Results indicate: older workers earn more, BUT these earning differences are justified by their better endowments.