

Phasing out: routine tasks and retirement

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December 2017
IBS Jobs conference



Introduction

Motivation

- Ageing problem in Europe
OECD (2006) “Live longer, work longer”
- Ageing occurs in a context of technological change
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Hypothesis

Workers in more routine occupations reduced their labour supply more than workers in other occupations

Insights from theory

The human capital approach \Rightarrow Older workers face worse perspectives

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The human capital approach \Rightarrow Older workers face worse perspectives

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- Lower returns to investment \rightarrow difficult reallocation
(Taylor and Urwin 2001, Lindsay et al. 2013, Lazazzara et al. 2013)
- Older workers concentrated in more routine occupations
 - Might be more likely to end up in unemployment
(Autor et al. 2003, Acemoglu and Autor 2011, Goos et al. 2014)
 - More difficulties to find employment in growing sector
(Baert et al. 2015, Neumark et al. 2015)

Insights from theory: revisiting results

Why do we need more analysis on the topic?

- Occupations as monolithic constructs?
(Caballero and Hammour 1996, Spitz-Oener 2006)
- Automation as improvement in working conditions
 - Physical jobs → Early retirement
(Filer and Petri 1988, Lund and Villadsen 2005)
 - Monotonous jobs → Early retirement
(Dal Bianco et al. 2015)
 - lack of discretion → Early retirement
(Harju et al. 2014)
- Use of individual longitudinal data

Data: O*NET

Task content of occupations

- Occupational Network (O*NET) data from 2008
 - Data collected from US workers, available at occupation level
 - Information on importance and frequency of tasks
- Five tasks (as in e.g. Autor et al. 2003, Acemoglu and Autor 2011)
 - Routine: cognitive and manual
 - Non-routine: cognitive, interpersonal and manual
 - Routine task intensity index $RTI = \sum \text{routine} - \sum \text{non-routine}$
- Applied to EU countries before (e.g. Goos and Manning 2007, Goos et al. 2014, Lewandowski et al. 2016)
 - Independent measure for each country.

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Data: European Panels

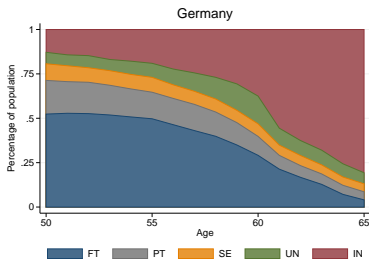
- **German Socioeconomic Panel (GSOEP)**
 - 1984 - today (West Germany)
 - ~ 2000 unique observations for people > 50
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Data: European Panels

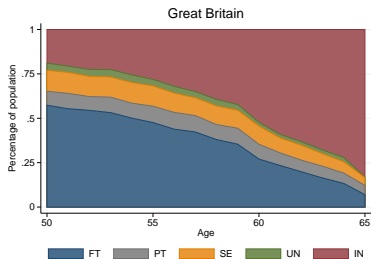
- **German Socioeconomic Panel (GSOEP)**
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- **British Household Panel Survey (BHPS)**
 - 1991 - 2008 → Discontinued
 - ~ 4500 unique observations for people > 50
 - Median: 2 observations per individual

The path to retirement: Extensive margin



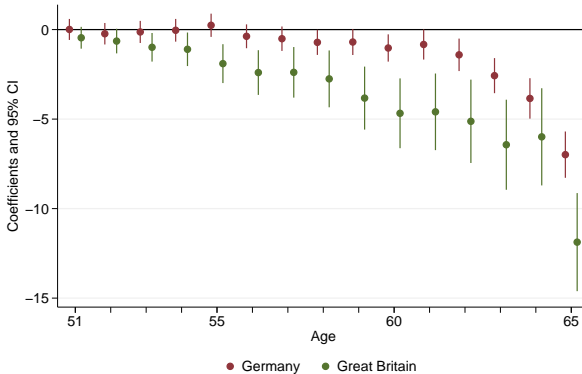
a) Germany



a) Great Britain

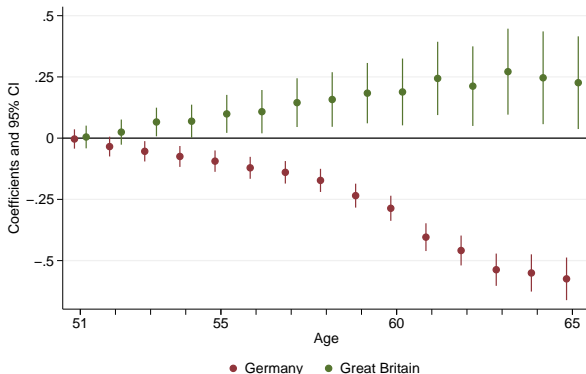
Notes: Frequency of labor market status in each age. FT stands for Full Time employment, PT for Part Time employment, SE for Self Employment, UN for unemployed and IN for inactive.

The path to retirement: Intensive margin



Notes: Age coefficients from a Deaton decomposition of hours worked. Sample includes wage-employed individuals aged 50 to 65 with at least one hour of work.

The path to retirement: Task content of jobs (RTI)



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Sample includes wage-employed individuals age 50 to 65.

Labour supply decision: intensive margin

Specification

$$hours = \alpha + \beta_1 RTI + \beta_2 (Age \geq a) + \beta_3 RTI * (Age \geq a) + X\psi' + \epsilon,$$

where

- hours is the usual number of hours worked.

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- X represents a set of controls
(age and its square, gender, marital status, education level, years of experience, industry and occupations)

Intensive margin

$$\text{hours} = \alpha + \beta_1 RTI + \beta_2 (\text{Age} \geq a) + \beta_3 RTI * (\text{Age} \geq a) + X\psi + \epsilon$$

	Germany			Great Britain		
	(a = 50)	(a = 55)	(a = 60)	(a = 50)	(a = 55)	(a = 60)
RTI	-0.47**	-0.43**	-0.41**	-1.09***	-1.10***	-1.07***
(Age ≥ a)	0.54***	0.04	-2.24***	0.53**	-1.52***	-2.34***
RTI *(Age ≥ a)	0.26	0.16	0.23	0.17	0.42*	-0.11
R ²	0.78	0.78	0.78	0.75	0.75	0.75
N	90,411	90,411	90,411	52,920	52,920	52,920

Notes: Standard errors clustered at the occupation level, ISCO 88 three digits, showed in parenthesis. *, **, *** denote significance at the 10%, 5% and 1% level.

Intensive margin: control for selection

$$\text{hours} = \alpha + \beta_1 RTI + \beta_2 (\text{Age} \geq a) + \beta_3 RTI * (\text{Age} \geq a) + X\psi + \epsilon$$

	Germany			Great Britain		
	(a = 50)	(a = 55)	(a = 60)	(a = 50)	(a = 55)	(a = 60)
RTI	-0.50***	-0.43***	-0.37***	-1.30***	-1.29***	-1.24***
(Age > a)	2.10***	-0.25	-4.54***	1.09***	-1.60***	-3.49***
RTI *(Age > a)	0.37***	0.30**	-0.49**	0.13	0.14	-0.29
N	128,753	128,753	128,753	88,519	88,519	88,519

*Notes: The selection equation does not include variables related to current position (industry and occupation) and includes an interaction between marital status and gender, and household size as exclusion restrictions. Robust standard errors in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% level.*

Labour supply decision: extensive margin

Specification

$$Pr(\text{retire}_t) = \alpha + \beta_1 RTI + X\psi' + \epsilon,$$

where

- $Retire_t = 1$ if work in t-1 and unemployed since t

Labour supply decision: extensive margin

Specification

$$Pr(\text{retire}_t) = \alpha + \beta_1 RTI + X\psi' + \epsilon,$$

where

- $\text{Retire}_t = 1$ if work in t-1 and unemployed since t
- β_1 Coefficient of interest $\rightarrow H_0 : \beta_1 > 0$

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$$Pr(\text{retire}_t) = \alpha + \beta_1 RTI + X\psi' + \epsilon,$$

where

- $\text{Retire}_t = 1$ if work in t-1 and unemployed since t
- β_1 Coefficient of interest $\rightarrow H_0 : \beta_1 > 0$
- X represents a set of controls
(age and its square, gender \times marital status, education level, household size, years of experience, productivity parameter)

Extensive margin

$$Pr(\text{Retire}|\text{age}) = \alpha + \beta_1 RTI + X\psi + \epsilon$$

	Fixed effects			Panel Logit	
	Age 50-54	Age 55-59	Age 60-65	RTI changes	RTI const.
Germany	0.001 (0.002)	0.001 (0.004)	0.009 (0.008)	0.020 (0.013)	0.026* (0.013)
Great Britain	0.002 (0.002)	0.002 (0.004)	0.010 (0.009)	0.041** (0.021)	0.029 (0.020)

Notes: Estimations in columns 1 to 4 obtained with linear probability models and fixed effects, whereas columns 5 and 6 presents results with Random effect models. Individual level cluster standard errors presented in parentheses. *, **, *** indicate significance at the 10%, 5% and 1% level.

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Implications

→ Theory: how to characterize occupational change?

→ Policy: are ALMP necessary / sufficient to keep workers active?

Thank you for your attention

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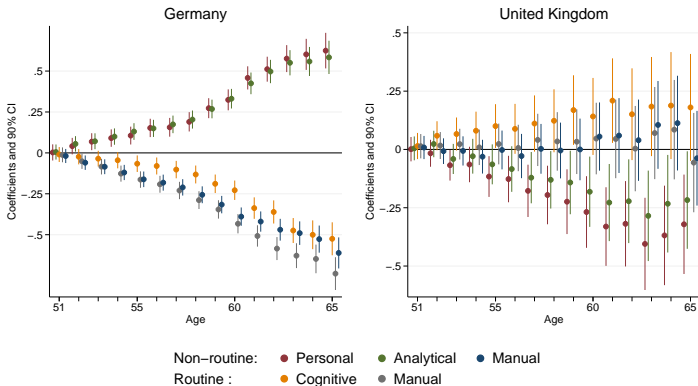
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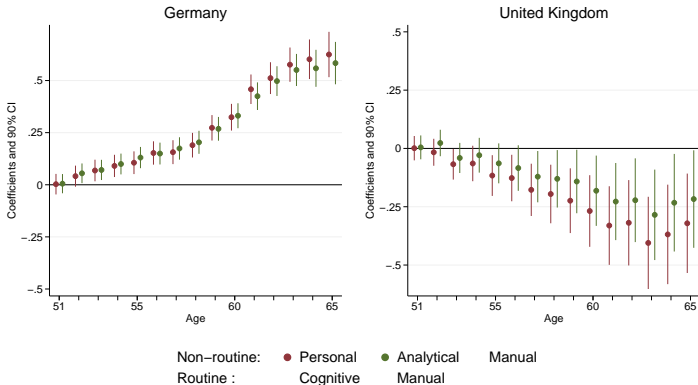
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