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# Is occupational mobility in Germany hampered by the dual vocational system?

Results of a British-German comparison

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# Motivation

- Occupational mobility in Germany considerably lower than in Anglo-Saxon countries (e.g. Longhi/Brynin 2010)
  - Occupational mobility is considered important for:
    - individual labour market success and career opportunities
    - adjustment of occupational structure to technological change and/or shifts in the demand for goods and services
  - One main suspect for low mobility in Germany: *dual vocational training (apprenticeship system)*, blamed for sorting labour market entrants (too) early into rigidly defined occupations (e.g. Heckman 1996, Hanushek et al. 2011, Schneider / Zimmermann 2010)
- Research question: Does the dual system really impede occupational mobility in Germany (and if so, to what extent?)

# Identification of the influence of dual training

1. Britain (with no dual training system) used as a “benchmark”
2. We exploit the fact that not all jobs and occupations in Germany require dual training. Other categories: academic education, and no formal education
3. Compare mobility rates for these three categories of jobs in Germany
4. Transposition of the occupational categories to the British data (counterfactual), repetition of step 3. for Britain and comparison of results (difference-in-difference analysis).

# Determinants of occupational mobility

- Human capital theory and job search and matching theory as framework for analyzing occupational mobility
  - Bad worker-occupation matches (due to imperfect information or other market frictions or changing task content) and occupation-specific demand shocks as drivers of mobility (Moscarini / Vella 2008)
  - Accumulation of occupational-specific human capital as barrier to mobility
- Mobility declines with age and occupational tenure
- Mobility is largely pro-cyclical

# Effects of institutional framework (1)

- (Vocational) educational system
  - Focus on occupation-specific vs. general skills
  - Degree of standardization of training and importance of certificates (entry barriers to particular occupations)
  - Germany: high level of vocational specificity (currently more than 340 *Ausbildungsberufe* (=apprenticeship occupations) and standardization; workplace-based part of dual training thought to ensure good occupational fit
  - Britain: vocational training largely state-provided (in colleges and vocational schools), focus on general skills. Weak link between educational and employment system

## Effects of institutional framework (2)

- High employment protection should impede mobility, since in most cases, an occupational change involves a firm change
- Higher income protection in case of unemployment should also hamper mobility

# Main hypotheses

- In occupations requiring dual training, *relative* mobility should be lower in Germany than in the same occupations in Britain.
- Overall level of mobility should be lower in Germany than in Britain.
- In Britain, work experience and age should matter more for mobility than in Germany, especially in “apprenticeship occupations”

# Data

- GSOEP and BHPS
- Pooled samples over the years 1993 to 2009
- Workers aged 26 to 64 in either dependent employment or self-employment
- Occupational change with no (or only short) unemployment spells in between (change in ISCO 3-digit code), controlling for spurious mobility
- In both datasets, occupations are double-coded using national classification systems and the ISCO-88



# Major Groups of ISCO-88

- 1 Legislators, Senior Officials, and Managers
- 2 Professionals
- 3 Technicians and Associate Professionals
- 4 Clerks
- 5 Service Workers and Shop and Market Sales Workers
- 6 Skilled Agricultural and Fishery Workers
- 7 Craft and Related Trades Workers
- 8 Plant and Machine Operators and Assemblers
- 9 Elementary Occupations  
(0 Armed Forces)

# ISCO-88: Two and Three Digit Level (example 1)

## 2 Professionals

### 21 Physical, Mathematical and Engineering Professionals

211 Physicists, Chemists and Related Professionals

212 Mathematicians, Statisticians and Related Professionals

213 Computing Professionals

214 Architects, Engineers and Related Professionals

### 22 Life Science and Health Professionals

### 23 Teaching Professionals

### 24 Other Professionals

# ISCO-88: Two and Three Digit Level (example 2)

## 7 Craft and Related Trades Workers

71 Extraction and Building Trades Workers

72 Metal, Machinery and Related Trades Workers

73 Precision, handicraft, craft printing and related trades  
workers

731 Precisions Workers in Metal and Related Materials

732 Potters, Glass-makers and Related Trades Workers

733 Handicraft workers in wood, textile, leather and related  
materials

734 Craft Printing and Related Trades Workers

74 Other Craft and Related Trades Workers

# Definition of apprenticeship occupations (dual system occupations)

- The definition is based on the GSOEP question that asks for the required training for the current job with the following answers:

Low education	Apprenticeship (dual training)	Higher education
No Training	Vocational Training	Technical School
Intro. To Job		Technical College
On-The-Job Training		University
Courses		

A given occupation is defined as “apprenticeship occupation” if at least 2/3 of the respondents indicate that they need dual training for their job.

# Descriptive statistics of samples drawn from BHPS + GSOEP

	Germany	U.K.			Germany	U.K.
male	0.57	0.53		Higher education occ.	0.13	0.10
age	43	43		Apprenticeship occ.	0.51	0.39
married	0.65	0.69		Low education occ.	0.08	0.09
ISCED 0-2	0.12	0.18		Other occupations	0.28	0.42
ISCED 3-4	0.56	0.41				
ISCED 5-6	0.31	0.41				
N	110,067	79,897				

Weighted mean values, BHPS waves 1993-2008, GSOEP waves 1994-2009

# Yearly mobility rates (occupational changers)

Share of occupation changers...	Germany	UK
<b>... on all working persons</b>	<b>3.46</b>	<b>9.81</b>
... out of <b>apprenticeship occupations</b>	3.1	9.0
... into <b>apprenticeship occupations</b>	2.8	8.9
... out of <b>higher education occupations</b>	2.7	7.4
... into <b>higher education occupations</b>	2.6	7.5
... out of <b>low education occupations</b>	3.9	11.4
... into <b>low education occupations</b>	4.1	10.0

Occupations classified according to education required in Germany

# Estimation: Random-effects probit regressions

- Probability to change occupation as dependent variable (AME for comparability)
- Independent variables:
  - Dummies for: **Gender, married, ISCED middle and high, years**
  - Proxy for experience using **age** and **age squared**
  - Dummies for apprenticeship occupations and higher education occupations (low education occ. as reference category)
  - Interactions between occupational categories and age

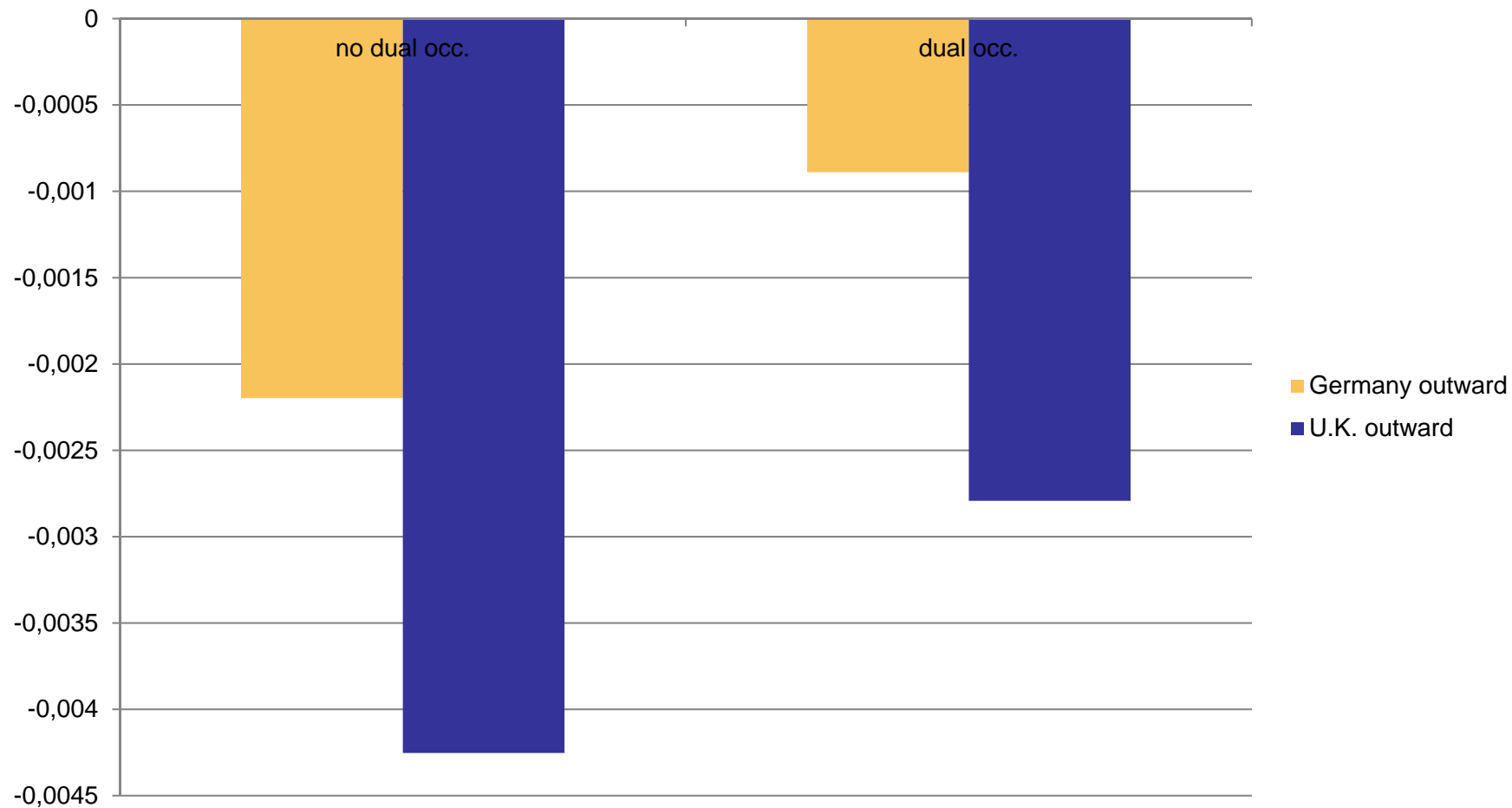
# Probability to move – average marginal effects (AME)

	Germany	Britain
<b>Apprenticeship occupation</b>		
AME	-0.019 (0.004)	-0.012 (0.007)
AME perc.	-54.9%	-12.2%
<b>Higher education occupation</b>		
AME	-0.017 (0.002)	0.029 (0.006)
AME perc.	-49.1%	-29.6%
<b>Age</b>		
AME	-0.001 (0.00007)	-0.004 (0.00002)
AME perc.	-2.9%	-4.1%
	Wald Chi squared (34) 1087.56	1355.32

Standard errors in parentheses. Other explanatory variables, not displayed here: sex, age, marital status, ISCED groups, time dummies (years).



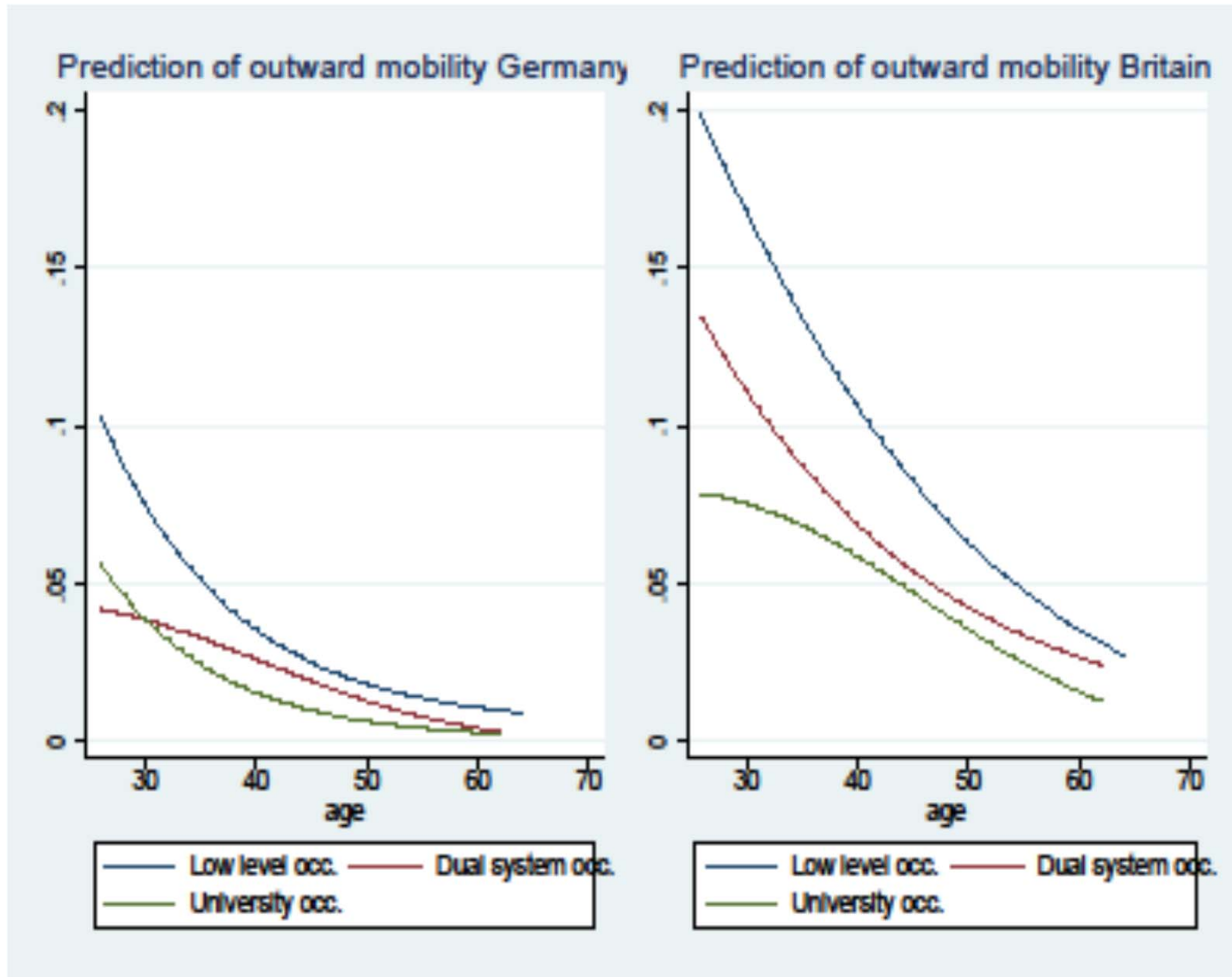
# Average marginal effect of age by kind of occupation



# Prediction of occupational change

- Average of the predictions over all years
- Predictions for outward mobility in Germany and the U.K.

# Germany and UK – outward mobility: prediction



- Higher change rates in Britain at the beginning, particularly in “dual system occupations”

# Results

- Workers in apprenticeship occupations are least mobile in Germany, but not in Britain → dual system contributes to low mobility in Germany
- But, given the low mobility also in other occupational categories, only a small part of the overall low mobility can be attributed to the dual system
- Relevance of certificates also in higher education jobs and influence of other institutions
- Influence of age and work experience as expected (lower in Germany than in Britain)

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