Graduate Programme
Institute for Employment Research
and University Erlangen-Nuremberg,
School of Business and Economics

Low-wage jobs - stepping stones or just bad signals?

Increasing Labor Market Flexibility - Boon or Bane?

Alexander Mosthaf (IAB and University of Mainz)

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Motivation

- The current economic crisis lends a special interest to the question whether low-wage jobs are stepping stones
- Ljunquist and Sargent (1998) emphasize that high reservation wages of laid-off workers in Europe lead to high unemployment
- Burdett (1979) and Marimon and Zilibotti (1999) point out that waiting for the right job match during unemployment may have positive returns
- We argue that low-wage jobs may be stepping stones for low qualified workers, but may have stronger scarring effects for the high qualified

This study estimates transitions between high-wage employment, low-wage employment and non-employment to determine heterogeneity of state dependence with respect to qualification

Previous studies

Cappellari and Jenkins (2008); Stewart (2007); Buddelmeyer, Lee and Wooden (2009); Uhlendorff (2006); Mosthaf, Schank and Schnabel (2009); Knabe and Plum (2010)

Theory

Sources of state dependence in low-wage employment and non-employment:

- Low human capital accumulation (Phelps, 1972)
- Transaction costs, e. g. search costs that differ between employment states (Hyslop, 1999)
- Changes in preferences, e. g. preferences between consumption and leisure (Hotz, Kydland and Sedlacek, 1988)
- Negative signalling effects (Lockwood, 1991; McCormick, 1990)

Theory

Search model by McCormick (1990)

- High-productive workers are able to move faster from job to job
- It is only profitable for low-productive individuals to take up an interim job
- Employers interpret the job search behavior of workers as signal for future productivity
- Hence, taking up an interim job incurs negative signals

Theory

Search model by Cunningham and Vilasuso (1999)

- Here, employers are reluctant to hire good workers for bad jobs
- Expected tenure of high skilled workers in less skilled positions is short and fixed hiring costs exceed returns of hiring good workers

- High qualified workers with low skilled (paid) jobs are likely to have unfavorable characteristics that are not observable by the employer

We hypothesize that negative signals of low-wage jobs are stronger for high qualified workers

Data

Integrated Employment Biographies Sample (IEBS) of the IAB

- Period between 1995 and 2006, Western Germany
- Men, Age: 30-58
- Yearly transitions between 2000 and 2006, reference date: June 30
- We only consider workers with full-time jobs covered by social security
- Low-wage: less than two thirds of the median gross wage of western German jobs covered by social security (yearly calculations)
- Non-employment:
  - Gap between two spells of employment with at least one day of job search or participation in a labor market program
  - Spell of job search or participation in labor market program
- Random sample of 15 000 individuals who are defined as non-employed, low-paid or high-paid at June 30, 2000

Descriptive statistics

Descriptive transition matrix

	High-pay, t	Low-pay, t	Non-employment, t
High-pay, t-1	95.46	0.67	2.24
Low-pay, t-1 * low qualification	9.05	68.49	17.32
Low-pay, t-1 * lower middle qualification	14.77	63.58	16.87
Low-pay, t-1 * middle qualification	14.86	59.43	16.57
Low-pay, t-1 * high qualification	15.75	61.42	13.39
Low-pay, t-1	13.77	64.19	16.81
Non-employment, t-1 * low qualification	4.94	8.11	83.69
Non-employment, t-1 * lower middle qualification	13.66	8.82	74.15
Non-employment, t-1 * middle qualification	18.39	6.13	69.98
Non-employment, t-1 * high qualification	23.50	3.79	66.40
Non-employment, t-1	13.55	8.13	74.59

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Econometric specification

We estimate the probability of individual i to be in employment state j at period t

$$\prod_{t=s}^{T} f(y_{ijt} | \mathbf{y}_{it-1}, \mathbf{y}_{it-1} * \mathbf{q}_i, \mathbf{q}_i, \mathbf{x}_{it}, \alpha_{ij}) \tag{1}$$

- $\mathbf{y}_{it-1}$ and $\mathbf{y}_{it-1} * \mathbf{q}_i$ measure state dependence and its interaction with qualification

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Initial conditions problem:

$$f(y_{ijs-1} | \mathbf{y}_{i1} \ldots \mathbf{y}_{is-2}, \mathbf{q}_i, \mathbf{x}_{i1} \ldots \mathbf{x}_{is-1}, \alpha_{ij}) \tag{3}$$

- First observed employment state y_{ijs-1} depends on prior labor market history and on α_{ij}
- Correlation of $\mathbf{y}_{is-1}$ and α_{ij} violates the random effects assumption

Econometric specification

We estimate the probability of y_{ijt} conditional on variables representing the individuals prior labor market history and on the first observed employment state

$$\prod_{t=s}^{T} f(\mathbf{y}_{ijt}|\mathbf{y}_{it-1}, \mathbf{y}_{it-1} * \mathbf{q}_i, \mathbf{z}_i, \mathbf{y}_{is-1}, \mathbf{h}_i, \eta_{ij}) \tag{4}$$

- $\mathbf{h}_i$ controls for prior labor market history and serves as proxy for unobserved characteristics
- $\mathbf{y}_{is-1}$ catches up correlation of α_{ij} and $\mathbf{y}_{is-1}$
- η_{ij} is now uncorrelated with the variables on the right side (Mundlak 1978, Chamberlain 1984, Wooldridge, 2005)

Econometric specification

Dynamic multinomial logit model with random effects

$$L_i = \int_{-\infty}^{\infty} \prod_{t=s}^{T} \prod_{j=2}^{3} \left\{ \frac{exp(\mathbf{y}_{ij-1}\gamma_j + \mathbf{y}_{it-1} * \mathbf{q}_i\tau_j + \mathbf{z}_{it}\omega_j + \mathbf{a}_{it-1}\varphi_j + \eta_{ij})}{1 + \sum_{k=2}^{3} exp(\mathbf{y}_{ij-1}\gamma_j + \mathbf{y}_{it-1} * \mathbf{q}_i\tau_j + \mathbf{z}_{it}\omega_j + \mathbf{a}_{it-1}\varphi_j + \eta_{ij})} \right\}^{d_{ijt}} f(\eta)d(\eta) \quad (5)$$

- Coefficients of multinomial logit models cannot be interpreted with respect to economic significance
- Interpretation of partial effects in nonlinear models is not straightforward (Ai, Norton 2003; Greene 2010)
- We simulate transition matrices for each group of qualification

Results: Coefficients

	Low-pay	Non-employment
High-pay, t-1 (reference group)	-	-
	-	-
Low-pay, t-1 (dummy)	3.664***	2.483***
	(0.322)	(0.311)
Low-pay, t-1 * lower middle qualification	-0.567*	-0.904***
	(0.334)	(0.330)
Low-pay, t-1 * middle qualification	-0.661	-0.722
	(0.541)	(0.541)
Low-pay, t-1 * high qualification	1.010*	-0.286
	(0.612)	(0.608)
Non-employment, t-1 (dummy)	3.269***	4.405***
	(0.306)	(0.244)
Non-employment, t-1 * lower middle qualification	-0.798**	-1.533***
	(0.324)	(0.252)
Non-employment, t-1 * middle qualification	-1.430***	-1.811***
	(0.501)	(0.334)
Non-employment, t-1 * high qualification	-0.418	-1.626***
	(0.512)	(0.306)

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Results: Interpretation

Pattern:

- State dependence in low-pay with respect to the probability to get high-paid is largest for high qualified workers
- Difference is most pronounced between high qualification and lower middle qualification
- State dependence in low-pay concerning the risk of non-employment declines with better qualification
- State dependence in non-employment declines with better qualification

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Possible Explanations:

- Low human capital accumulation (Phelps, 1972)
- Transaction costs, e. g. search costs that differ between employment states (Hyslop, 1999)
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Results: Simulated transition matrices

Lower middle qualification

	High-pay, t		Low-pay, t		Non-empl., t	
High-pay, t-1	0.447	(0.344-0.557)	0.076	(0.041-0.127)	0.477	(0.371-0.575)
Low-pay, t-1	0.211	(0.140-0.300)	0.275	(0.180-0.386)	0.514	(0.403-0.620)
Non-empl., t-1	0.138	(0.086-0.210)	0.095	(0.054-0.157)	0.768	(0.675-0.836)

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State dependence: low-pay – high-pay: 23.6 % - points

Results: Simulated transition matrices

High qualification

	High-pay, t		Low-pay, t		Non-empl., t	
High-pay, t-1	0.637	(0.535-0.726)	0.020	(0.008-0.048)	0.343	(0.255-0.440)
Low-pay, t-1	0.290	(0.175-0.431)	0.238	(0.123-0.391)	0.472	(0.308-0.628)
Non-empl., t-1	0.277	(0.205-0.355)	0.050	(0.026-0.090)	0.674	(0.589-0.748)

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State dependence: low-pay – high-pay: 34.7 % - points

Conclusions

- Risk of non-employment is lower when being low-paid instead of not being employed for all groups of qualification
- Low-wage jobs are stepping stones for workers with low qualification and with lower middle qualification
- For individuals with high qualification, chances of getting high-paid are the same when being low-paid or not employed
- State dependence in low-pay concerning the probability of high-pay is strongest for the high-qualified
- We conclude that low-wage jobs incur negative signals for high qualified workers

Conclusions

- Policy makers could reduce employment protection in order to lower employers costs of screening workers
- Further research should investigate the distinct sources of state dependence and determine their impacts on transition probabilities

Descriptive statistics

Variable means by labor market states (pooled sample)

	High-pay	Low-pay	Non-employment
Low qualification (dummy)	0.09	0.18	0.15
Lower middle qualification (dummy)	0.68	0.74	0.71
Middle qualification (dummy)	0.06	0.05	0.06
High qualification (dummy)	0.17	0.04	0.08
Age: 30-34 (dummy)	0.08	0.10	0.09
Age: 35-39 (dummy)	0.25	0.28	0.25
Age: 40-44 (dummy)	0.26	0.23	0.23
Age: 45-49 (dummy)	0.21	0.19	0.21
Age: 50-54 (dummy)	0.15	0.15	0.15
Age: 55-59 (dummy)	0.05	0.06	0.07
Nationality: German (dummy)	0.93	0.81	0.84
Nationality: Turkish (dummy)	0.02	0.05	0.06
Nationality: other (dummy)	0.04	0.13	0.10
Local unemployment rate	8.23	8.94	9.24

Descriptive statistics

	High-pay	Low-pay	Non-employment
# of low-pay episodes with dur. > 0 / <= 180 days	0.07	0.61	0.53
# of low-pay episodes with dur. > 180 / <= 365 days	0.03	0.31	0.19
# of low-pay episodes with dur. > 365 / <= 545 days	0.01	0.11	0.06
# of low-pay episodes with dur. > 545 / <= 730 days	0.01	0.10	0.03
# of low-pay episodes with dur. > 730	0.02	0.31	0.06
# of non-empl. episodes with dur. > 0 / <= 180 days	0.34	0.94	0.87
# of non-empl. episodes with dur. > 180 / <= 365 days	0.09	0.29	0.30
# of non-empl. episodes with dur. > 365 / <= 545 days	0.02	0.13	0.13
# of non-empl. episodes with dur. > 545 / <= 730 days	0.01	0.07	0.10
# of non-empl. episodes with dur. > 730	0.03	0.11	0.19
Cumulated duration of low-pay: 1998 - 2000	18.58	304.48	82.98
Cumulated duration of non-empl.: 1998 - 2000	34.44	161.56	228.05
# of observations	71962.00	3367.00	7862.00
# of individuals	15140.00	2926.00	4539.00

Partial effects / transition matrices

- Interpretation of partial effect of interaction term is not straightforward (Ai, Norton 2003; Greene 2010)
- It mixes up genuine and spurious state dependence (see paper)

- We simulate transition matrices for different groups of qualification
- Values of random effects are assigned to individuals using empirical Bayes methods
- Variables apart from lagged labor market state and qualification are fixed at the true sample values

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