Low-wage employment versus unemployment: Which one provides better prospects for women?

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Motivation

- In many European countries low-wage employment has become a prominent characteristic of labor markets.
- Workers receiving an hourly wage which is less than two thirds of the median are typically classified as low-wage earners.
- In Germany (1995 — 2010), for example, the share of low-wage earners has been rising from 16.5 to 22.9 percent.
- There are a number of labor market policies that may hinder or force unemployed individuals to accept low-paid work (unemployment benefits, wage subsidies).
- Whether these policies are beneficial for low-paid workers in the long-run depends on future wage prospects of low-paid workers (and their risk of unemployment) compared to the prospects of unemployed.

Motivation cont'd

- The appropriateness of taking-up a low-wage job depends on the existence of genuine state dependence.
- Sources of state dependence:
  - Low human capital accumulation (Phelps, 1972).
  - Negative signalling effects (Lockwood, 1991; McCormick, 1990).
  - 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).
- Low human capital accumulation and negative signalling effects may be more pronounced in part-time employment.

Motivation cont'd

- In Germany, the share of low-paid workers is especially high for women (32.4 %) and for part-time workers (40.1 %).
- Therefore, we analyze yearly labor market transitions of women and pay particular attention to the role of part-time employment.
- We estimate a dynamic multinomial logit model with random effects and distinguish between 6 different labor market states (high pay full-time vs. part-time, low-pay full-time vs. part-time, unemployment, inactivity).
- *Inter alia* we find that having a low-wage job
  - decreases the chances – compared to having a high-wage job – of being high-paid in the future.
  - but is still better than being unemployed or inactive with respect to future prospects.

Related literature

- Uhlendorff (2006):
  - German men (GSOEP)
  - Three labor market states (high wage, low wage, not employed)
  - Low-paid jobs decrease chances to be high-paid in future, but are still better than unemployment
- Knabe, Plum (2013):
  - German men and women (GSOEP)
  - Three labor market states (high wage, low wage, not employed), part-time interacted with lagged dependent variable
  - Taking up a low-paid job is especially appropriate for less-skilled persons, individuals with longer unemployment durations and if a job has a high social status.
- Mosthaf (2013):
  - German men (IEBS)
  - Three labor market states (high wage, low wage, not employed)
  - Taking up a low-paid job is especially appropriate for less-skilled persons.

Data

- German Socio-Economic Panel; period between 1999 and 2006, Western Germany.
- Women, Age: 20-58. We exclude self-employed, trainees, students and women in disability employment.
- Low-wage: less than two thirds of the median gross wage of western German jobs covered by social security (yearly calculations).
- A worker is defined as working part-time if it working hours are less than 30.
- We use the ILO-definition of unemployment to distinguish between unemployment and inactivity.
- Individuals who do not work, have actively looked for a job in the last 4 weeks and are ready to take up a job in the next two weeks are considered as. unemployed
- Individuals who are neither employed nor unemployed are defined as being inactive.

Descriptive statistics

Descriptive transition matrix

	Year t						
	High-pay, $\geq$ 30 hours	High-pay, $<$ 30 hours	Low-pay, $\geq$ 30 hours	Low-pay, $<$ 30 hours	Unemploy-ment	Inac-tivity	Total
Year $t-1$							
High-pay, $\geq$ 30 hours	86.29	5.19	4.12	0.19	0.79	3.43	100
High-pay, $<$ 30 hours	8.36	76.40	1.74	8.54	1.15	3.80	100
Low-pay, $\geq$ 30 hours	31.44	7.32	45.58	6.69	2.90	6.06	100
Low-pay, $<$ 30 hours	1.59	21.65	3.90	61.04	2.74	9.09	100
Unemployment	5.47	11.85	5.47	15.95	37.36	23.92	100
Inactivity	0.88	7.05	0.52	6.33	5.02	80.20	100
Total	34.25	26.11	4.97	11.03	3.13	20.51	100

Econometric specification

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

$$y^*_{ijt} = \mathbf{x}_{it}\boldsymbol{\beta}_j + \mathbf{y}_{it-1}\boldsymbol{\gamma}_j + \alpha_{ij} + \epsilon_{ijt} \tag{1}$$

- $\mathbf{y}_{it-1}$ measures state dependence.
- $\mathbf{x}_{it}$ and α_{ij} control for observed and unobserved heterogeneity and avoid measurement of spurious state dependence.

Econometric specification

- Correlation of observed explanatory variables with random effects is handled by applying the Chamberlain-approach (1984).

$$\alpha_{ij} = \bar{\mathbf{x}}_i \boldsymbol{\lambda}_j + \eta_{ij} \tag{2}$$

Inserting into equation (1) yields:

$$y^*_{ijt} = \mathbf{x}_{it}\beta_j + \mathbf{y}_{it-1}\boldsymbol{\gamma}_{jt} + \bar{\mathbf{x}}_i \boldsymbol{\lambda}_j + \eta_{ij} + \epsilon_{ijt} \tag{3}$$

Econometric specification

- The initial conditions problem arises from correlation of the first labour market state with the random effects.
- Following the Wooldridge-approach, we include $\mathbf{y}_{i1}$ as an explanatory variable.

$$\alpha_{ij} = \bar{\mathbf{x}}_i \boldsymbol{\lambda}_j + \mathbf{y}_{i1} \boldsymbol{\nu}_j + \eta_{ij} \tag{4}$$

Substitution into equation (1) yields:

$$y^*_{ijt} = \mathbf{x}_{it} \boldsymbol{\beta}_j + \mathbf{y}_{it-1} \boldsymbol{\gamma}_{jt} + \mathbf{y}_{i1} \boldsymbol{\nu}_j + \bar{\mathbf{x}}_i \boldsymbol{\lambda}_j + \eta_{ij} + \epsilon_{ijt} \tag{5}$$

Econometric specification

Assuming that ϵ_{ijt} follows a logistic distribution and treating the probability to be inactive as base catecory yields the following likelihood function:

$$L_i = \int_{-\infty}^{\infty} \prod_{t=2}^{T} \prod_{j=2}^{6} \left\{ \frac{exp(\mathbf{x}_{it}\boldsymbol{\beta}_j + \mathbf{y}_{it-1}\boldsymbol{\gamma}_j + \mathbf{y}_{i1}\boldsymbol{\nu}_j + \bar{\mathbf{x}}_i\boldsymbol{\lambda}_j + \eta_{ij})}{1 + \sum_{k=2}^{6} exp(\mathbf{x}_{it}\boldsymbol{\beta}_k + \mathbf{y}_{it-1}\boldsymbol{\gamma}_k + \mathbf{y}_{i1}\boldsymbol{\nu}_k + \bar{\mathbf{x}}_i\boldsymbol{\lambda}_k + \eta_{ik})} \right\}^{d_{ijt}} f(\boldsymbol{\eta}) d(\boldsymbol{\eta}$$

Econometric specification

Unobserved heterogeneity is assumed to follow a discrete distribution.

$$L_i = \sum_{m=1}^{M} p_m \prod_{t=2}^{T} \prod_{j=2}^{6} \left\{ \frac{exp(\mathbf{x}_{it}\beta_j + \mathbf{y}_{it-1}\gamma_j + \mathbf{y}_{i1}\boldsymbol{\nu}_j + \bar{\mathbf{x}}_i\boldsymbol{\lambda}_j + \tau_{mj})}{1 + \sum_{k=2}^{6} exp(\mathbf{x}_{it}\beta_k + \mathbf{y}_{it-1}\gamma_k + \mathbf{y}_{i1}\boldsymbol{\nu}_k + \bar{\mathbf{x}}_i\boldsymbol{\lambda}_k + \nu_{mk})} \right\}^{d_{ijt}}$$

Results

- We present results from a specification with two mass points.
- The specification with three mass points yields an improvement of AIC, but one mass point for the equation low-paid and working part-time is estimated with a large standard error.
- Simulated transition probabilities of both specifications are very similar.
- Coefficients indicate that it has been necessary to control for the initial conditions problem.

Results

	High-pay, $\geq$ 30 hours	High-pay, $<$ 30 hours	Low-pay, $\geq$ 30 hours	Low-pay, $<$ 30 hours	Unemployment,
High-pay, $\geq$ 30 hours, t-1 (dummy)	11.222***	6.123***	5.532***	0.750*	3.024***
	(0.792)	(0.666)	(0.561)	(0.413)	(0.622)
High-pay, $<$ 30 hours, t-1 (dummy)	8.926***	8.072***	4.607***	3.825***	3.246***
	(0.729)	(0.662)	(0.558)	(0.248)	(0.605)
Low-pay, $\geq$ 30 hours, t-1 (dummy)	9.353***	5.512***	6.393***	3.045***	3.118***
	(0.781)	(0.685)	(0.570)	(0.334)	(0.632)
Low-pay, $<$ 30 hours, t-1 (dummy)	5.397***	5.421***	4.366***	4.476***	2.768***
	(0.609)	(0.558)	(0.523)	(0.235)	(0.473)
Unemployment, t-1 (dummy)	4.900***	3.714***	3.090***	2.171***	3.561***
	(0.595)	(0.528)	(0.556)	(0.256)	(0.541)
Inactivity, t-1 (reference)	—	—	—	—	—
	—	—	—	—	—
No Apprenticeship (reference)	—	—	—	—	—
	—	—	—	—	—
Apprenticeship (dummy)	0.911***	0.873***	0.186	0.450***	0.521***
	(0.175)	(0.157)	(0.172)	(0.138)	(0.187)
University (dummy)	1.508***	0.858***	-0.393	-0.215	-0.068
	(0.232)	(0.216)	(0.276)	(0.216)	(0.303)
Age	0.132	0.304*	-0.036	0.042	0.497**
	(0.162)	(0.155)	(0.172)	(0.151)	(0.214)
Age squared	-0.296	-0.395**	-0.077	-0.128	-0.578**
	(0.186)	(0.177)	(0.198)	(0.173)	(0.243)
Immigrant (dummy)	0.044	-0.357**	0.267	0.050	0.051
	(0.171)	(0.163)	(0.176)	(0.146)	(0.194)
Handicap (dummy)	-2.318***	-1.892***	-2.409***	-1.579***	-0.808
	(0.498)	(0.441)	(0.523)	(0.430)	(0.545)
No Partner (dummy)	0.495	0.103	0.301	-0.388	0.874*
	(0.401)	(0.389)	(0.433)	(0.381)	(0.470)

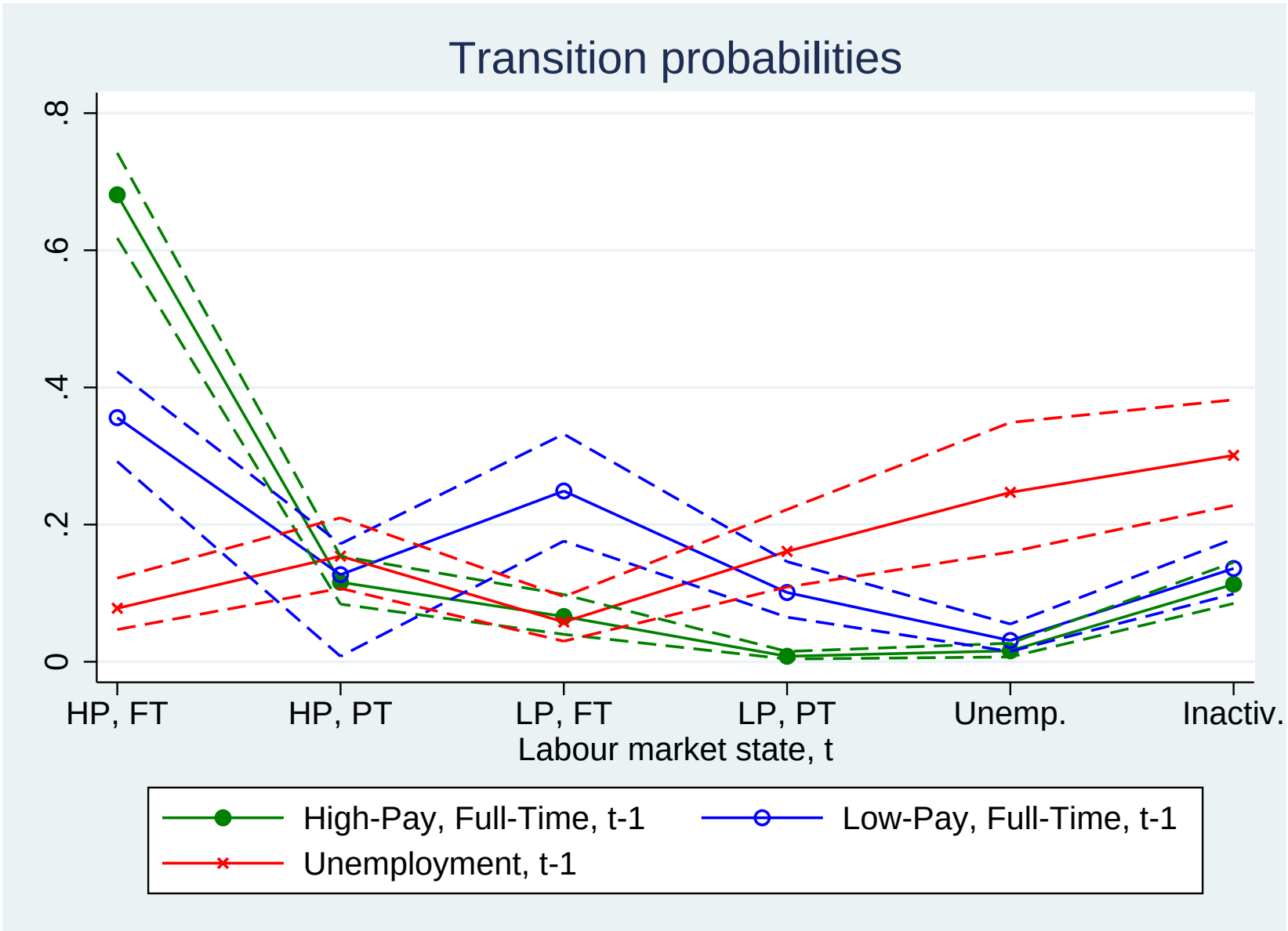
Results

	High-pay, $\geq$ 30 hours	High-pay, $<$ 30 hours	Low-pay, $\geq$ 30 hours	Low-pay, $<$ 30 hours	Unemployment,
Wage of the partner	-0.003	0.051	-0.050	0.041	0.011
	(0.047)	(0.044)	(0.063)	(0.046)	(0.076)
Number of children (age: 0-3)	-4.667***	-3.153***	-3.660***	-2.901***	-3.788***
	(0.304)	(0.271)	(0.385)	(0.286)	(0.429)
Number of children (age: 4-6)	-0.558*	0.189	-0.238	-0.077	0.190
	(0.296)	(0.244)	(0.363)	(0.224)	(0.325)
Number of children (age: 7-10)	-0.877***	-0.270	-0.274	-0.310	-0.356
	(0.259)	(0.219)	(0.291)	(0.202)	(0.295)
Number of children (age: 11-17)	-0.119	0.252	0.372*	0.174	0.206
	(0.205)	(0.183)	(0.223)	(0.169)	(0.239)
Local unemployment rate	0.055	0.112	0.105	0.110	0.043
	(0.103)	(0.096)	(0.118)	(0.095)	(0.124)
Initial st.: high-pay, $\geq$ 30 h. (dummy)	3.022***	1.693***	1.900***	0.199	1.382***
	(0.293)	(0.233)	(0.318)	(0.216)	(0.279)
Initial st.: high-pay, $<$ 30 h. (dummy)	2.120***	2.290***	2.158***	1.100***	1.295***
	(0.281)	(0.216)	(0.309)	(0.183)	(0.268)
Initial st.: low-pay, $\geq$ 30 h. (dummy)	2.260***	1.722***	3.043***	0.944***	1.960***
	(0.342)	(0.296)	(0.346)	(0.264)	(0.335)
Initial st.: low-pay, $<$ 30 h. (dummy)	0.622*	1.325***	1.472***	1.336***	0.971***
	(0.326)	(0.230)	(0.314)	(0.175)	(0.269)
Initial st.: unemployment (dummy)	1.410***	1.221***	1.554***	0.720**	1.886***
	(0.485)	(0.369)	(0.447)	(0.293)	(0.332)
Initial st.: Inactivity (reference)	—	—	—	—	—
	—	—	—	—	—

Results

	High-pay, $\geq$ 30 hours	High-pay, $<$ 30 hours	Low-pay, $\geq$ 30 hours	Low-pay, $<$ 30 hours	Unemployment,
Individual averages ($\bar{X}_i$):					
Age	0.157	0.089	0.275	0.209	0.050
	(0.181)	(0.173)	(0.195)	(0.168)	(0.231)
Age squared	-0.101	-0.086	-0.294	-0.216	-0.096
	(0.213)	(0.202)	(0.230)	(0.197)	(0.268)
Handicap (dummy)	0.950	0.505	1.827***	0.307	0.102
	(0.603)	(0.553)	(0.617)	(0.530)	(0.678)
No partner	0.572	0.248	0.417	0.263	0.139
	(0.455)	(0.445)	(0.490)	(0.436)	(0.540)
Income of the partner	-0.086	-0.034	-0.055	-0.055	-0.150*
	(0.054)	(0.051)	(0.072)	(0.055)	(0.089)
Number of children (age: 0-3)	-0.691*	-0.299	-1.354**	0.080	-0.510
	(0.402)	(0.363)	(0.536)	(0.350)	(0.537)
Number of children (age: 4-6)	1.268**	0.726*	-0.130	0.238	0.373
	(0.518)	(0.433)	(0.675)	(0.392)	(0.583)
Number of children (age: 7-10)	-0.185	-0.214	-0.353	0.051	0.052
	(0.398)	(0.333)	(0.441)	(0.296)	(0.428)
Number of children (age: 11-17)	0.074	-0.254	-0.427	-0.259	-0.338
	(0.240)	(0.216)	(0.264)	(0.200)	(0.278)
Local unemployment rate	-0.062	-0.110	-0.084	-0.111	-0.027
	(0.106)	(0.099)	(0.122)	(0.098)	(0.129)
Constant	2.021***	3.922***	1.520**	3.753***	3.967***
	(0.710)	(0.657)	(0.772)	(0.641)	(0.713)
Mass point 1 (reference)	—	—	—	—	—
	—	—	—	—	—
Mass point 2	-12.993***	-11.169***	-8.296***	-7.177***	-9.680***
	(0.879)	(0.816)	(0.957)	(0.670)	(1.02)
Probability of mass point 1	0.422				
Observations	15057				
Log Likelihood	-1.1e+04				

Results


Transition probabilities
0
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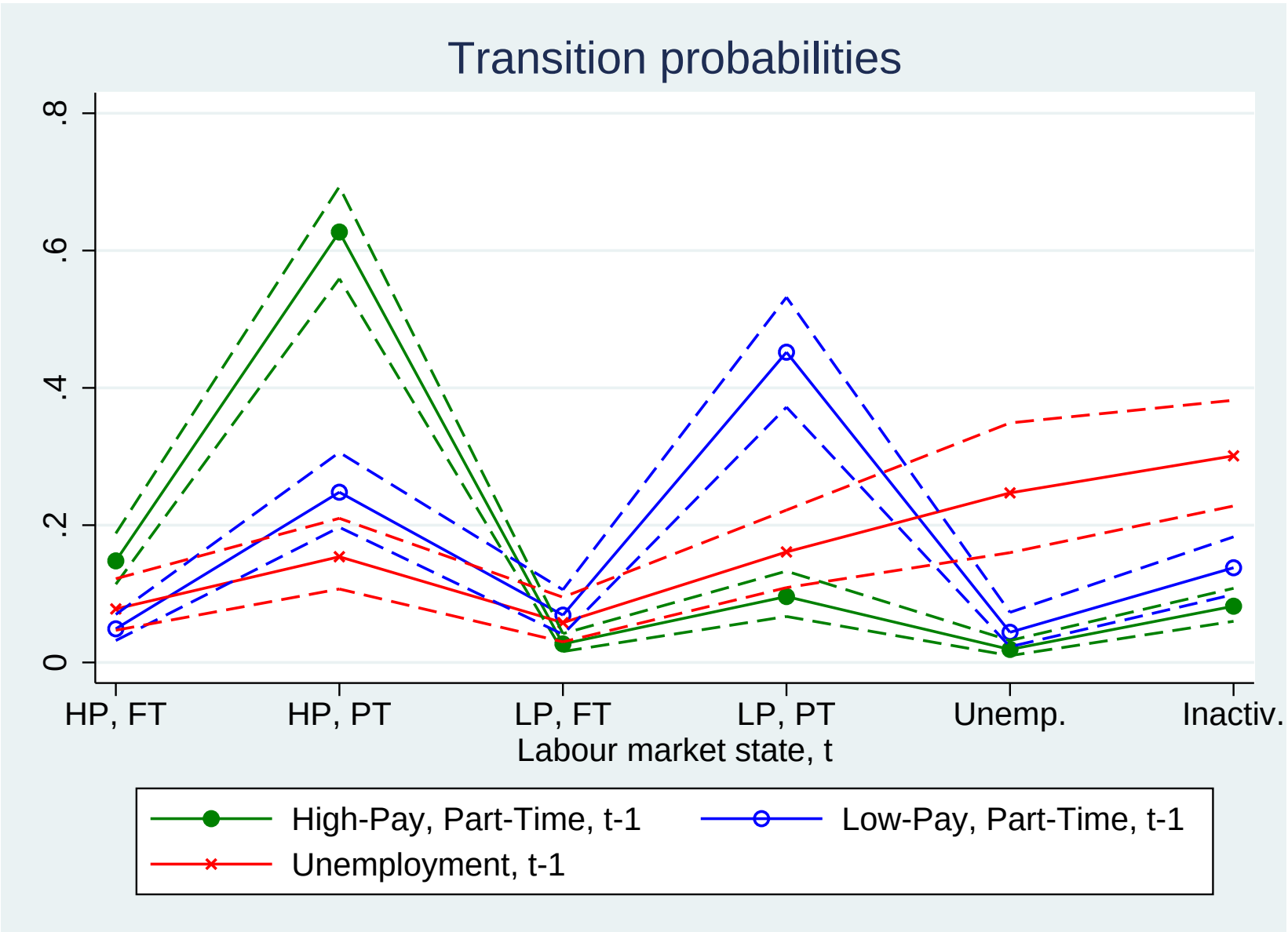
HP, FT
HP, PT
LP, FT
LP, PT
Unemp.
Inactiv.
Labour market state, t
High-Pay, Full-Time, t-1
Low-Pay, Full-Time, t-1
Unemployment, t-1

Results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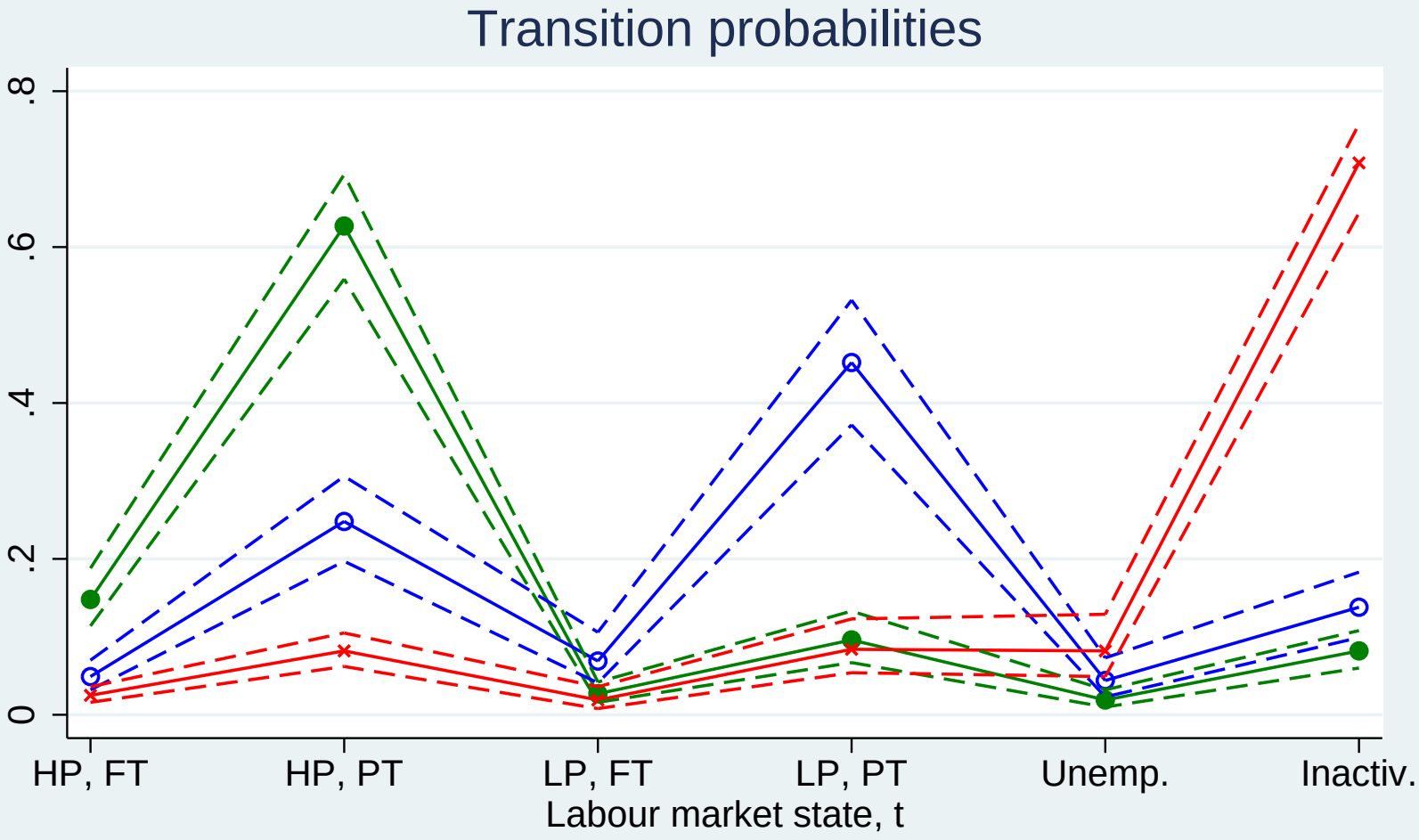
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High-Pay, Part-Time, t-1
Low-Pay, Part-Time, t-1
Inactivity, t-1

Conclusions

- There is state dependence in low-wage employment. Low-wage jobs decrease chances of being high-paid in future.
- This effect is slightly more pronounced for women working part-time.
- There is evidence for a *low-pay-no-pay cycle*, when low-paid women work part-time.
- However, unemployment and inactivity still go along with lower chances of getting high wages and with a higher risk of unemployment.

Econometric specification

Parametric bootstrap:

- We draw parameters thousend times from the distribution of the estimated coefficients and predict probabilities to be in labor market state j.
- Predictions are then everaged over observations and draws (which yields average transition probabilities).
- For calculating confidence intervals, we rank predictions according to their size.
- The lower bound of the confidence interval is obtained by using the 25th smallest average prediction.
- The upper bound of the confidence interval is obtained by using the 976th largest average prediction.