

The Part-Time Skill Gap, Pay Penalty, and Job Content

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Motivation

- Part-time skill-gap (Horrell et al. 1990)
- Part-time pay-penalty (Ermisch & Wright 1993)
- Occupational segregation plays a role (Gallie & Zhou 2011; Manning & Petrongolo 2008)
- Significant gaps remain. Do gaps relate to differences in job content?

Motivation

- Job Content (task-based approach)
 - Multitasking (Lindbeck and Snower, 2000)
 - Task discretion (Gallie et al., 2004)
 - Technology content (Autor et al., 2003; Spitz-Oner, 2006)

Research questions

- To what extent does the job content of part-timers differ from that of full-timers?
- To what extent these differences could explain the skill and pay gaps between part- and full-time workers?

Data

- UK Skills Surveys:
 - Repeated cross-sections 1997, 2001, and 2006
- Employed women (20-65 years old)
- Limited possibilities to deal with selection bias, but detailed data on job content

Data

- Skill demand in current job
 - 'When applying today, what qualifications, if any, would someone need to get the type of job you have now?' The highest qualification given was allocated to one of six categories. 1 "no qualifications" to 6 "degree-level higher education"
- Wage
 - Log hourly wage (gross)
- PT work
 - work less than 30 hours a week

Data

- Job Content

- Multitasking

- count of 32 tasks necessary for the job

- Task discretion

- influence on (1) how hard to work; (2) deciding what tasks to do; (3) deciding how to do the task; (4) deciding the quality standards. 4-points scale

Data

– Technological content

- Computer use
 - In your job, how important is using a computer, 'PC', or other types of computerized equipment? 5-points scale. (0 not at all important, 4 essential)
- Complexity of computer use
 - 5-points scale (0 no use, 4 advanced).

Job content (PT and FT)

VARIABLES	(1) Full-Time	(2) Part-Time
<u>Job Content:</u>		
Multitasking	19.28	15.61
Task discretion	3.268	3.114
Complexity of computer use	1.721	1.109
Computer use	2.832	2.001
<u>Skill requirements:</u>		
Required qualification	2.295	1.484
<u>Wages:</u>		
Log wage	2.091	1.869
Observations	3,853	2,492

Results: The PTSG

VARIABLES	(1) Required qualification	(2) Required qualification	(3) Required qualification	(4) Required qualification
1 if part-time	-0.856*** (0.042)	-0.382*** (0.036)	-0.192*** (0.035)	-0.127*** (0.035)
Multitasking				0.015*** (0.003)
Task discretion				0.105*** (0.024)
Complexity of computer use				0.113*** (0.026)
Computer use				0.048*** (0.017)
Occupational dummies	No	No	Yes	Yes
Controls	No	Yes	Yes	Yes
Observations	5,435	4,982	4,982	4,759
R-squared	0.068	0.505	0.591	0.605

Results: The PTPP

VARIABLES	(1) Log wage	(2) Log wage	(3) Log wage	(4) Log wage
1 if part-time	-0.247*** (0.014)	-0.124*** (0.012)	-0.052*** (0.011)	-0.036*** (0.011)
Multitasking				0.001 (0.000)
Task discretion				0.029*** (0.008)
Complexity of computer use				0.052*** (0.009)
Computer use				0.012** (0.005)
Occupational dummies	No	No	Yes	Yes
Controls	No	Yes	Yes	Yes
Observations	4,993	4,408	4,408	4,214
R-squared	0.061	0.463	0.588	0.598

Switching to part-time and occupational downgrading

PT switch skill downgrading

VARIABLES	(1) Δ Req. qual.	(2) Δ Req. qual.
Remains full-time	Reference	Reference
Switches to full-time	0.178 (0.131)	0.098 (0.119)
Switches to part-time	-0.256* (0.134)	-0.016 (0.125)
Remains part-time	-0.045 (0.126)	0.163 (0.119)
Controls	Yes	Yes
Δ Job Content	No	Yes
Observations	885	855
Adj. R-squared	0.162	0.312

PT switch wage downgrading

VARIABLES	(1) Δ Log wage	(2) Δ Log wage
Remains full-time	Reference	Reference
Switches to full-time	0.0482 (0.039)	0.0310 (0.036)
Switches to part-time	-0.107*** (0.039)	-0.0573 (0.037)
Remains part-time	-0.00602 (0.035)	0.0355 (0.034)
Controls	Yes	Yes
Δ Job Content	No	Yes
Observations	853	823
Adj. R-squared	0.144	0.284

Changes Over-time in job content

- A convergence between PT and FT job content
 - Unemployment decline
 - Part-time employment initiative
 - Declining ICT prices

Changes Over-time in job content

Variable	Multi-tasking	Task discretion	Computer use	Complexity of computer use
Year (1 if 2006)	-0.174	-0.037	0.151***	0.079***
1 if part time	-2.510***	-0.111***	-0.327***	-0.282***
Part-time*year	0.843**	0.0524	0.110*	0.126***
Occupation dummies	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Observations	4,954	4,954	4,954	4,744
Adj. R squared	0.251	0.103	0.507	0.467

Overtime changes in Skill and pay gaps

Variable	Required Qualification	Log wage	Actual Education
Year (1 if 2006)	-0.035	0.190***	0.190***
1 if part time	-0.206***	-0.068***	-0.141***
Part-time*year	-0.008	0.004	0.081
Occupation dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Observations	4,844	4,488	4,954
Adj. R squared	0.585	0.574	0.413

Conclusion

- The PTSG and PTPP are overestimated when not considering job content differences between the two groups.
- When switching to part-time work, a worker faces a situation of decreased job content and therefore she is paid less.
- Job content converges between part- and full-time workers but skills and pay do not

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Within occupational level FT/PT job content, skill, and pay

Skill Level	Status	Multitasking	Task discretion	Computer use	Complex. Computer	Skill demand	Log wage
Skill 1	Full-Time	14.77	2.92	1.17	0.61	0.41	1.72
	Part-Time	10.94	2.88	0.63	0.25	0.23	1.63
Skill 2	Full-Time	17.82	3.12	2.85	1.60	1.68	1.93
	Part-Time	15.75	3.02	2.38	1.23	1.30	1.80
Skill 3	Full-Time	21.01	3.31	2.96	1.87	2.87	2.29
	Part-Time	19.63	3.26	2.35	1.51	2.61	2.24
Skill 4	Full-Time	21.87	3.34	3.47	2.19	3.41	2.55
	Part-Time	20.08	3.27	3.15	1.91	3.41	2.65

The PTSG by occupational skill level

VARIABLES	(1) Req. qual.	(2) Req. qual.	Observations
Level 1 (elementary jobs)	-0.193** (0.076)	-0.141* (0.084)	486
Level 2	-0.222*** (0.049)	-0.115** (0.049)	2,210
Level 3	-0.210** (0.087)	-0.100 (0.089)	873
Level 4 (highest skill jobs)	-0.247*** (0.077)	-0.204*** (0.078)	984
Controls & occ. dummies	Yes	Yes	
Job Content	No	Yes	

The PTPP by occupational skill level

VARIABLES	(1) Log wage	(2) Log wage	Observations
Level 1 (elementary jobs)	-0.064*** (0.019)	-0.057*** (0.021)	465
Level 2	-0.119*** (0.012)	-0.086*** (0.012)	2,062
Level 3	-0.0643** (0.027)	-0.001 (0.025)	808
Level 4 (highest skill jobs)	0.0856** (0.040)	0.117*** (0.041)	878
Controls & occ. dummies	Yes	Yes	
Job Content	No	Yes	

Occupational levels (Elias and McKnight, 2001)

Level 1

- Elementary trades, plant and storage related occupations.
- Elementary administration and service occupations.

Level 2

- Administrative occupations.
- Secretarial and related occupations.
- Caring personal service occupations.
- Leisure and other personal service occupations.
- Sales occupations.
- Customer service occupations.
- Process, plant and machine operatives.
- Transport and mobile machine drivers and operatives.

Data

Level 3

- Managers and proprietors in agriculture and services.
- Science and technology associate professionals.
- Health and social welfare associate professionals.
- Protective service occupations.
- Culture, media and sports occupations.
- Business and public service associate professionals.
- Skilled agricultural trades.
- Skilled metal and electrical trades.
- Skilled construction and building trades.

Level 4

- Corporate managers.
- Science and technology professionals.
- Health professionals.
- Teaching and research professionals.
- Business and public service professionals.

The PTSG: ordered probit estimation

VARIABLES	(1) Required Qualification	(2) Required Qualification	(3) Required Qualification	(4) Required Qualification
1 if part-time	-0.590*** (0.0309)	-0.379*** (0.0376)	-0.220*** (0.0401)	-0.148*** (0.0418)
Multitasking				0.0204*** (0.00335)
Task discretion				0.127*** (0.0300)
Complexity of computer use				0.105*** (0.0291)
Computer use				0.0579*** (0.0205)
Observations	5,435	4,756	4,756	4,554

Switching to part-time and skill downgrading

VARIABLES	(1) Δ Req. qual.	(2) Δ Req. qual.
Remains full-time	Reference	Reference
Switches to full-time	0.178 (0.131)	0.098 (0.119)
Switches to part-time	-0.256*	-0.016
Remains part-time	(0.134) -0.045 (0.126)	(0.125) 0.163 (0.119)
Δ multitasking		0.052*** (0.007)
Δ task discretion		0.196*** (0.066)
Δ complexity of computer use		0.259*** (0.066)
Δ computer use		0.013 (0.040)
Observations	885	855
R-squared	0.210	0.357

Switching to part-time and pay downgrading

VARIABLES	(1) Δ Log wage	(2) Δ Log wage
Remains full-time	Reference	Reference
Switches to full-time	0.0482 (0.039)	0.0310 (0.036)
Switches to part-time	-0.107*** (0.039)	-0.057 (0.037)
Remains part-time	-0.00602 (0.035)	0.0355 (0.034)
Δ multitasking		0.005** (0.002)
Δ task discretion		0.090*** (0.0195)
Δ Complexity of computer use		0.122*** (0.0195)
Δ computer use		-0.001 (0.0120)
Observations	853	823
R-squared	0.196	0.333

The list of the job tasks in the UK Skills Survey

Reading and writing

- READFORM: reading written information, e.g. forms, notices or signs
- READSHORT: reading short documents e.g. letters or memos
- READLONG: reading long documents e.g. long reports, manuals, etc
- WRITFORM: writing material such as forms, notices or signs
- WRITESHORT: writing short documents, e.g. letters or memos.
- WRITLONG: writing long documents with correct spelling/grammar.

Math

- MATHS1: adding, subtracting, multiplying or dividing numbers
- MATHS2: calculations using decimals, percentages or fractions?
- MATHS3: more advanced mathematical or statistical procedures.

The list of the job tasks in the UK Skills Survey

External communication

- PRODUCT: knowledge of particular products or services
- SELLING: selling a product or service.
- CLIENT: counselling, advising or caring for customers or clients.
- PEOPLE: dealing with people.

Influencing others

- INSTRUCT: instructing, training or teaching people
- PERSUADE: persuading or influencing others.
- SPEECH: making speeches or presentations.
- PLANOTH: planning the activities of others.
- LISTEN: listening carefully to colleagues.

The list of the job tasks in the UK Skills Survey

Self-planning

- OWNACT: planning your own activities.
- OWNTIME: organizing your own time.
- AHEAD: thinking ahead.

Problem solving

- FAULT: spotting problems or faults
- CAUSE: working out the cause of problems or faults
- PROBSOLVE: thinking of solutions to problems
- ANALYSE: analyzing complex problems in depth

The list of the job tasks in the UK Skills Survey

Physical tasks

- STRENGTH: physical strength e.g., carry, push or pull heavy objects
- STAMINA: work for long periods on physical activities
- HANDS: skill or accuracy in using your hands or fingers
- TOOLS: use or operate tools, equipment or machinery

Checking

- MISTAKE: noticing when there is a mistake
- CHECK: checking things to ensure that there are no errors
- DETAIL: paying close attention to detail