

Is part-time employment beneficial for firm productivity?

Annemarie Nelen Andries De Grip Didier Fouarge

ROA, Maastricht University

Expert meeting European Foundation

Aim of the paper

Investigate the effect of part-time employment on firm productivity.

- Part-time employment might increase labour force participation of women to deal with expected shortages on European labour markets.
- However, before stimulation part-time employment, we should know what the productivity consequences are.

The Netherlands: Champion of part-time employment

- Large labour force participation among women ▶ participation
- Average working hours among women low ▶ work week

→ The Netherlands is the perfect country for analysis on firm consequences of part-time employment.

Preview of results

- Firms with a high part-time employment share are more productive than firms with a large share of full-time employees.
- This is partly due to a more efficient allocation of labor.

- Theoretical predictions are ambiguous w.r.t. the expected effects:
 - ⇒ Human capital theory: lower training participation of part-timers compared to full-timers leads to lower productivity.
 - ⇒ Literature on part-time labour demand: flexibility of part-timers might be beneficial for firm productivity.

- Empirical research is very scarce.
- Restricted to studies that either used a dummy variable to indicate part-time employment or used subjective productivity measures.
 - ⇒ Arvanitis 2005: -
 - ⇒ Protin and Robinson 2002: 0


Contribution

- Analyse heterogeneous labour in terms of working hours.
- Explain the result in the context of allocation efficiencies.

Matched Employer-Employee data set on Dutch pharmacy sector

- Homogeneous workforce
 - ⇒ Pharmacy assistants (70%) all have same educational background
 - ⇒ Capital use the same across firms and workers
- Physical or monetary measure of firm productivity
 - ⇒ Number of prescription lines delivered to customers in one year
- Working hours information on all employees
 - ⇒ Administrative data on working hours of all

Approach

- Our approach is inspired from three papers which model productivity effects of different employment shares:
Hellerstein, Neumark, and Troske 1999; Ilmakunnas and Maliranta 2005; Dearden, Reed, and Van Reenen 2006
- Quality-adjusted labour inputs. We distinguish between:
 - ⇒ Part-time pharmacy assistants (<24 hours per week)
 - ⇒ Full-time pharmacy assistants (≥ 24 hours per week)
 - ⇒ Other employees 

Basic results

<i>Dep. Variable: Productivity per FTE (logs)</i>	(1)	(2)	(3)
Total amount of labor in FTEs (logs)	0.740*** (0.044)	0.703*** (0.047)	0.639*** (0.048)
<i>Firms' employment shares (other employees are reference group)</i>			
Firms' part-time employment share in FTEs	0.946*** (0.182)	0.881*** (0.196)	0.938*** (0.238)
Firms' full-time employment share in FTEs	0.390*** (0.143)	0.412*** (0.144)	0.210 (0.186)
Constant	9.169*** (0.157)	9.387*** (0.233)	9.752*** (0.247)
Worker, pharmacist and firm characteristics	no	yes	yes
External factors	no	yes	no
Adjusted-R-squared	0.556	0.579	0.519
N	236	236	236
Model	OLS	OLS	IV
Wald Tests: PT share = FT share	12.81	6.79	9.53
Prob > F=	0.0004	0.0098	0.0020

Allocation efficiency due to part-time employment

Part-time workers don't have to be more productive than full-time workers in the hours they work, but the use of part-time work increases productivity at firm level.

- PT work might be used to bridge the gap between operating hours and contractual working hours.
- PT work might be used to cushion peak hours.
- PT employees might bridge the lunch break of their full-time colleagues.

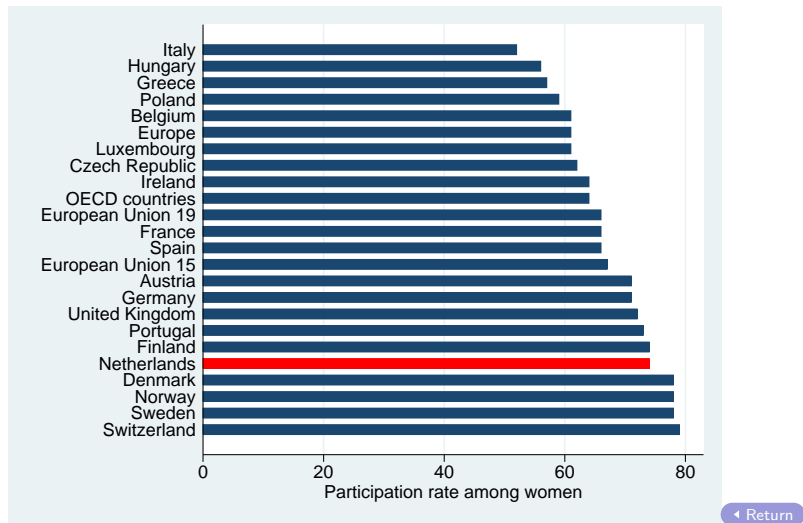
Part-timers are allocated differently than full-timers

- Part-time workers work fewer hours per working day.
- Part-time workers work fewer days per week/month.
 - ▶ Correlation table
- Part-time workers enable their full-time colleagues to take lunch breaks.
 - ▶ Timing of labour demand

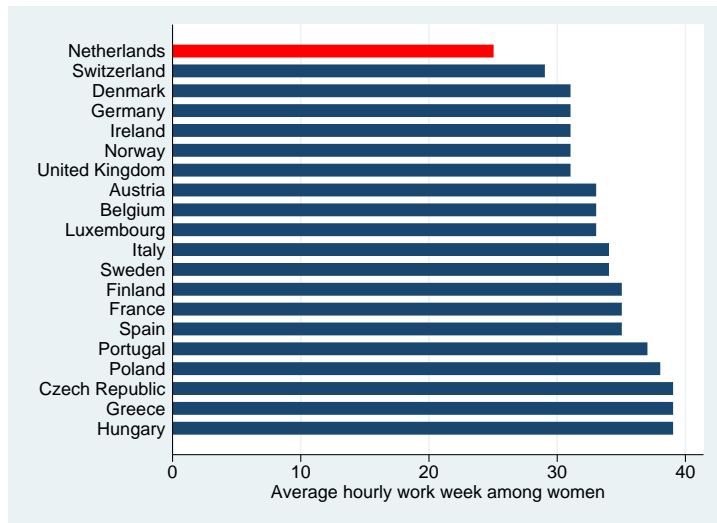
Conclusions

- Firms with a high share of part-time employment are more productive than firms with a high share of full-time employees.
- We argue that this finding is due to allocation efficiencies made possible by the use of part-time employment.
 - ⇒ Operating hours exceed contractual working hours in sector.
 - ⇒ Part-time workers are allocated differently than full-timers.

Participation rates



Hourly work week

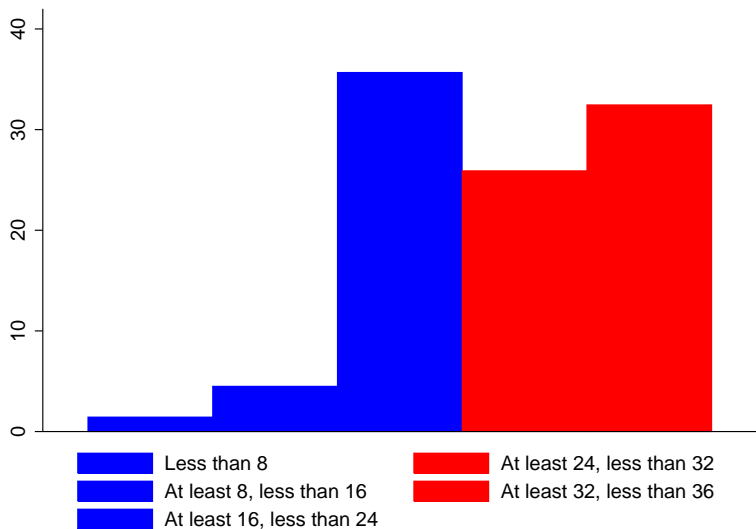


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Sample statistics

	Mean	SD	Min	Max
Dependent variable				
Number of prescription lines	11.21	0.38	8.89	11.98
Explanatory variables				
Firms' part-time employment share in FTEs *	0.19	0.11	0	0.51
Firms' full-time employment share in FTEs *	0.50	0.14	0.08	1.00
Control variables				
Firms' total number of FTEs (log)	2.22	0.40	0.73	3.09
Assistants' average age in years	38.03	4.36	22.50	50
Assistants' average firm tenure in years	8.31	3.10	0.81	17.93
Pharmacist tenure in years	15.84	8.47	0	39
Independent pharmacy (yes/no)	0.42	0.50	0	1
Number of opening hours per week	49.87	12.25	6	168
Excess labor (yes/no)	0.13	0.33	0	1
Absentee ratio	0.04	0.04	0	0.30
Newly founded firm	0.04	0.19	0	1
Percentage of elderly within postal code area	0.22	0.07	0	0.60
Number of competitors within a 5-km radius	9.61	12.25	0	77

Distribution of Working Hours



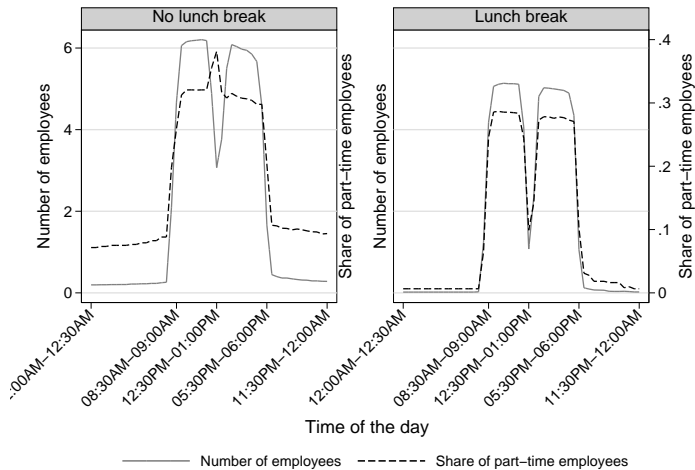
Correlation table

	Contractual working hours	Part-time worker
Number of hours per working day	0.2180 (0.000)	-0.3679 (0.000)
Number of days worked in week 1	0.7293 (0.000)	-0.6605 (0.000)
Number of days worked in January	0.8294 (0.000)	-0.5832 (0.000)

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Note: Based on the data of 8,257 core employees.

Timing of labour demand – Monday



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