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Human Capital Externalities: Effects for Low Educated Workers and Low Skilled Jobs

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Presentation University of Southern Denmark at Sønderborg, June 4, 2013

University Main Building

Founded 1614

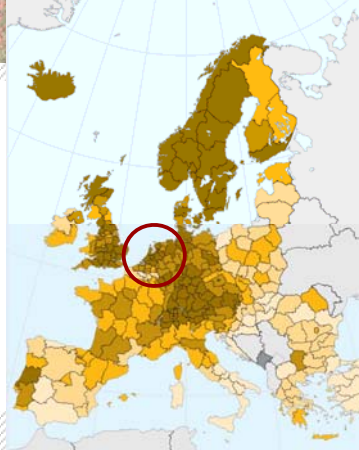


University of
Groningen
10 faculties
25.000 students

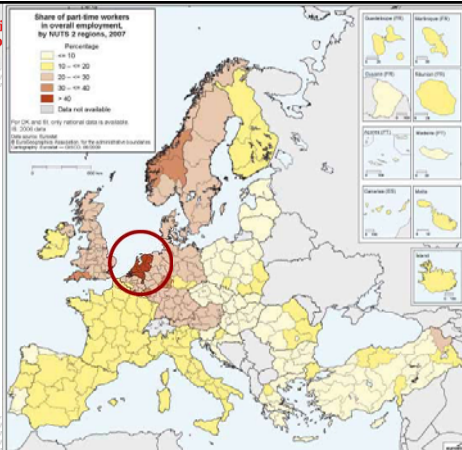
Overview

- › Introduction: some stylized facts about the Dutch labour market
- › Paper: Human Capital Externalities: Effects for Low Educated Workers and Low Skilled Jobs


Employment rate 2010:
dark is better
(jobs per inhabitants 20-64 years)



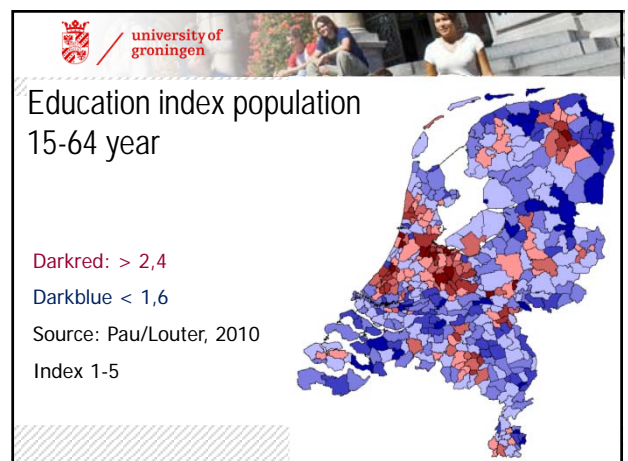
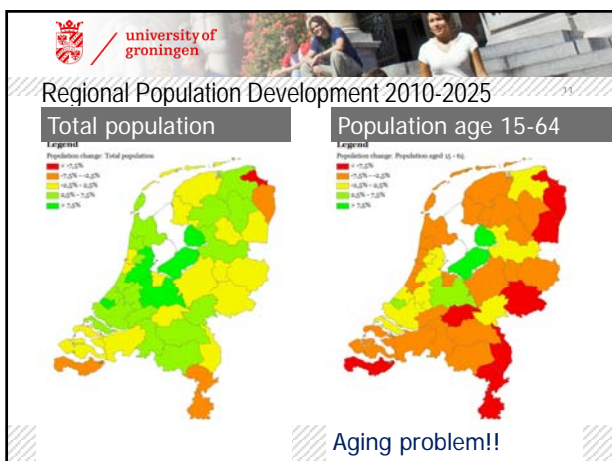
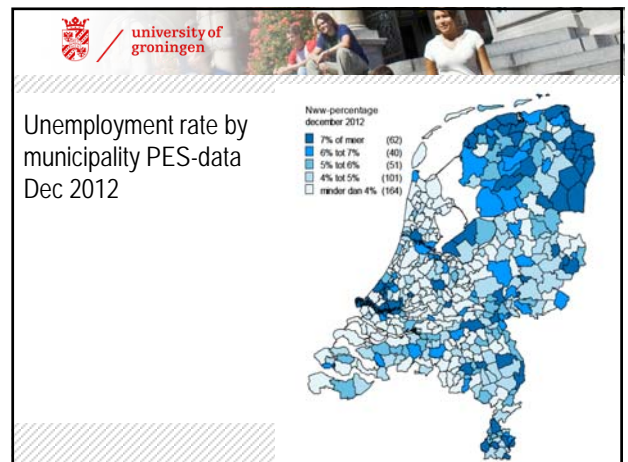
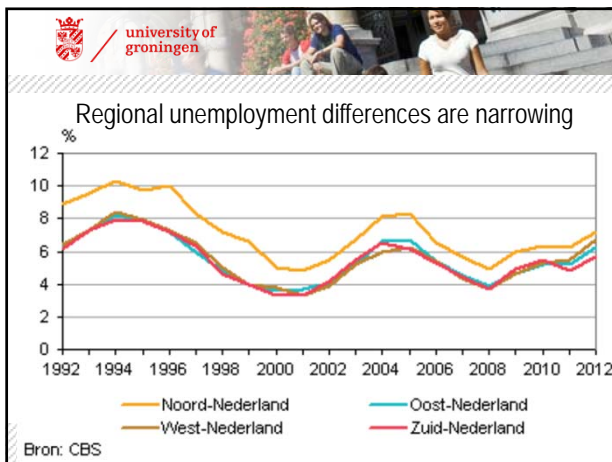
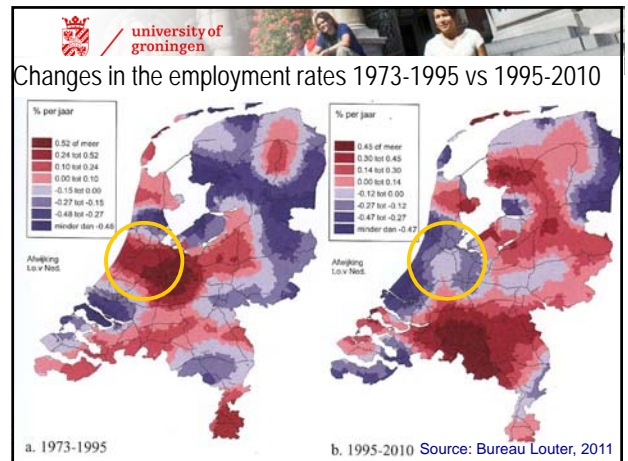
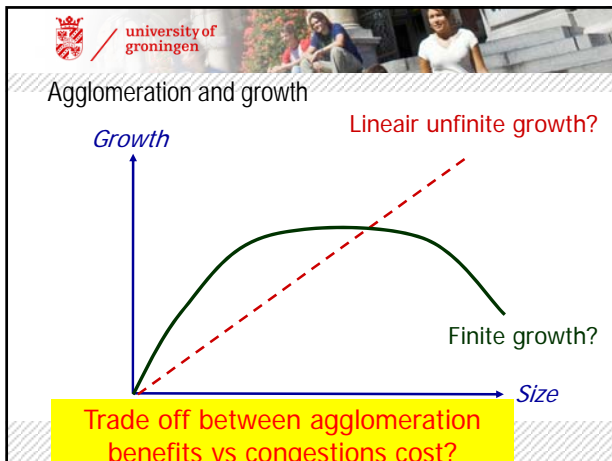
Share of part time workers:
dark is more parttime work

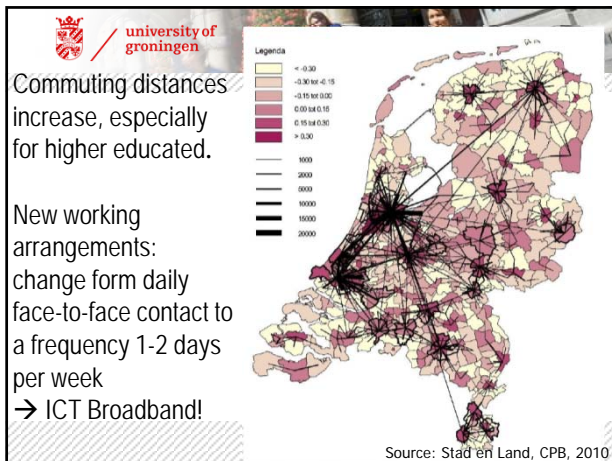


Regional development:
European Economic space



The world is spiky: concentration of people and economic activities. BUT big cities have higher initial GDP, but NOT higher growth rates! (Broersma & Van Dijk, 2008 and OECD, Regional Outlook, 2011)





The Dutch Labour Market: summary

- > High participation rate, but low working hours
- > Low unemployment rate
- > Regional differences still exist, but are getting smaller
- > Regions with high unemployment show more often population decline, more aging, lower spatial mobility and have more low educated
- > How to help low educated, older, unmobile workers in disadvantaged regions? Labor market policy often very small effects. Quota for employers?
- > Or: can Human Capital Externalities (HCE) help low educated to earn higher wages? → this paper

Contents

- Context and research questions
- Related literature
- Methodology
- Data
- Empirical results
- Concluding remarks

Research context

- How to improve the economic position of low skilled / low educated?
- What will raise the wage rate of low skilled / low educated?
- Private versus social returns to education
- Social rates of return differentiated to production and consumption externalities
- Production externalities differentiated into firm level externalities, regional (net of firm) level externalities and proximity of low and high skilled

Related literature

- Regional or firm level externalities to education: private vs. social rate of return to education / Rauch (1993) Blundell et al. (1999) Moretti (2004a) Canton (2009)
- Urban level externalities of education: Urban Wage Premium / Moretti (2004b) Heuerman et al (2010)
- Production vs. consumption externalities to education: Learning spill-overs vs. expenditure spill-overs / Lucas (1988) vs. Sassen (2001)
- Proximity of low and high skilled at the firm level: Learning spill-overs (Lucas, 1988)

Methodology (1)

$$\log(w_{i,f,r,t}) = \alpha + X_{i,f,r,t}\beta + Y_{f,r,t}\gamma + Z_{r,t}\delta + \varepsilon_{i,f,r,t}$$

1. $w_{i,f,t}$ is the hourly wage rate of individual i , working in firm f , which is located in region r , at time t .
2. X is a vector of employee characteristics, like:
 - gender
 - working hours
 - human capital (HC) → private rate of return to education
3. Y is a vector of firm characteristics, like:
 - industry
 - size
 - HC → production externalities → social rate of return to education
 - distribution low vs. high skilled → production externalities → soc r.o.r
 - McDonalds type of firm versus Microsoft type of firm

Methodology (2)

$$\log(w_{i,f,r,t}) = \alpha + X_{i,f,r,t}\beta + Y_{f,r,t}\gamma + Z_{r,t}\delta + \varepsilon_{i,f,r,t}$$

- Z is the vector of regional characteristics, like
 - urbanisation
 - HC of persons working in region outside firm → production externality part of social rate of return to education
 - HC of persons living in region → consumption externality part of social rate of return to education
- The residuals are represented by ε , α represents the intercept (including fixed effects), β , γ and δ are effect parameters.

Methodology (3)

- We can distinguish between education of workers and skill level of jobs
- This distribution is defined as the share of workers/jobs in firm f by education/skill level k , where k refers to either low or high educated workers or to low or high skilled jobs.

$$d = (e_{low} - e_{high}), \quad \text{WHERE } e_k = \sum_{i \in f} e_{i,k}/e$$

- * McDonalds type firm specialized in low skilled labour: $d = \text{positive}$
- * Microsoft type firm specialized in high skilled labour: $d = \text{negative}$

Data

- Matched Employer-Employee dataset over 1995-2007. Source: Dutch Ministry of Social Affairs, Working Conditions Survey (WCS)
- Sample of firms in which a stratified sample of employees is drawn, each annual wave approx. 27.000 employees in approx. 2000 firms
- No panel, but a repeated cross-section
- Rich set of background characteristics of individual employees and firms (gender, working hours, wages, work experience, education, occupational skills, industry, firm size, firm location)
- WCS is based on work location (2-digit zip-code). WCS is augmented with data on HC of workers living in these 2-digit zip-codes. Latter yields consumption externalities

Results: Human Capital Externalities: all employees

Dependent variable	Model	Log of hourly wage rate				
		1	2	3	4	5
Level of education	Education level of individual	0.081**	0.077**	0.081**	0.081**	0.077**
	Average Education level in region	0.008**			0.002**	
	Average Education workers in firm		0.011**			0.011**
	Average Education regional workers excl. firm		0.002			-0.003
	Average Education regional inhabitants 15-64			0.029**	0.027**	0.027**
Properties workers	Experience	0.047**	0.047**	0.047**	0.047**	0.047**
	Experience squared	-7.5E-04**	-7.5E-04**	-7.5E-04**	-7.5E-04**	-7.5E-04**
	Female	-0.063**	-0.065**	-0.064**	-0.064**	-0.066**
	Part-time	0.247**	0.242**	0.247**	0.246**	0.242**
Properties region	Population density	1.9E-05**	1.9E-05**	1.7E-05**	1.7E-05**	1.7E-05**
	Regional unemployment	-0.821**	-0.810**	-0.722**	-0.723**	-0.712**
	Number of variables	38	39	38	39	40
	Number of observations	368,541	368,439	368,541	368,541	368,439
	R ²	0.760	0.761	0.761	0.761	0.762

All specifications include also the following control variables: industry dummies, firm size dummies, year fixed effect dummies.

Conclusion

- Human capital (HC) stock is years of education
- Private net rate of return to education: 8%
- Social net rate of return to education: 3.8% of which:
 - production externalities at the firm: 1.1%
 - production externalities in the region: 0.0%
 - consumption externalities in the region: 2.7%

Results: Human Capital Externalities: low educated / skilled

Variables	Dependent variable: log of hourly wage rate				
	employees with low education	employees with low education	employees on low skilled jobs	employees on low skilled jobs	
Level of education	Education of individual	0.033**	0.033**	0.032**	0.035**
	Average education workers in firm	0.020**	0.020**	0.016**	0.003**
	Average education regional workers excl. in firm	-0.001	-0.001	1.9E-04	-2.8E-04
	Average education regional inhabitants aged 15-64	0.019**	0.019**	0.025**	0.023**
Properties workers	Experience	0.049**	0.049**	0.048**	0.048**
	Experience squared	-7.8E-04**	-7.8E-04**	-8.1E-04**	-8.1E-04**
	Female	-0.064**	-0.064**	-0.028**	-0.028**
	Part-time	0.234**	0.234**	0.204**	0.198**
Properties region	Population density	1.3E-05**	1.3E-05**	1.4E-05**	1.3E-05**
	Regional unemployment	-0.430**	-0.430**	-0.491**	-0.447**
Distribution education at firm-level	low and high educated workers		0.001		
	low vs. high plus scientifically skilled jobs				-0.077**
	Number of variables	40	41	40	41
	Number of observations	188,532	188,532	131,773	131,773
	R ²	0.766	0.766	0.765	0.766

All specifications include also the following control variables: industry dummies, firm size dummies, year fixed effect dummies.



Conclusion

- Private net rate of return to education for low educated / low skilled jobs substantially lower: 3.2 - 3.5%
- For **low educated** the Social net rate of return is: 4.0%
 - production externalities at the firm: 2.0%
 - production externalities in the region: 0.1%
 - consumption externalities in the region: 1.9%
 - **No effect** of distribution of education within firm 0.0%
- For **low skilled jobs** the Social net rate of return is: 4.1%
 - production externalities at the firm: 1.6%
 - production externalities in the region: 0.0%
 - consumption externalities in the region: 2.5%
 - **But large effect of distribution of education within Microsoft type firm of 7.7%!**



Overall conclusions effect of Human Capital Externalities

- › An additional year of schooling increases the wage rate of average employees with 8% and for low educated / low skilled with 3% → improve position low skilled by increase in individual education
- › HCE's are about 4% and the same for all employees and low educated.
- › At the regional level consumption spillovers are significant and larger for all employees than for low educated.
- › Production/learning spillovers are not significant at the regional level, these take place at the firm level. These effects are larger for low educated workers
- › Those with low skilled jobs in firms with many high skilled jobs realize a substantial higher wage: → proximity to many high skilled improves position of workers on low skilled jobs



Thank you for your attention

