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## "Spatial Behaviour and Regional Impact of Higher Educated Graduates"

Colloquium Department of Geography, College of Social Sciences, Seoul National University, October 12, 2010 Seoul, Korea


Prof. dr Jouke van Dijk  
 Professor of Regional Labour Market Analyses  
 Department of Economic Geography  
 Faculty of Spatial Sciences  
 University of Groningen  
 Editor-in-Chief Papers in Regional Science  
[jouke.van.dijk@rug.nl](mailto:jouke.van.dijk@rug.nl) [www.joukevandijk.nl](http://www.joukevandijk.nl)



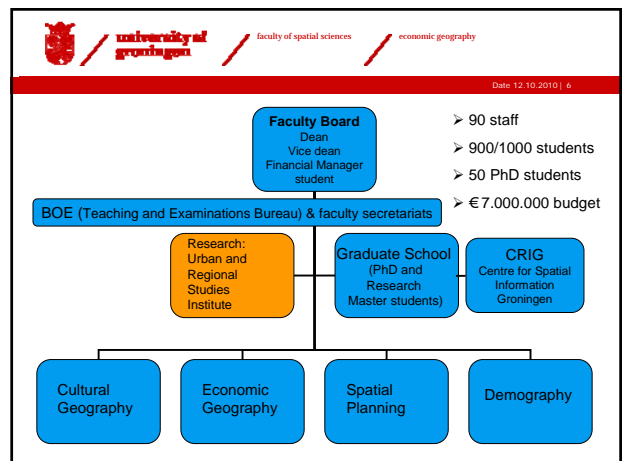

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University Main Building

**Founded 1614**



**University of Groningen**  
 10 faculties  
 25.000 students



## Faculty research theme: Well-being, innovation, spatial transformation

Department of Economic Geography research themes:

- > Firm Demography / Entrepreneurship
- > Real Estate
- > Regional Labour Markets:
  - Migration of graduates
  - Gender career patterns
  - Labour market productivity
  - Labour market policy: effectivity and efficiency
  - Aging population
  - Etc.

## Do the best graduates leave the peripheral areas in The Netherlands?

Viktor Venhorst  
Jouke van Dijk  
Leo van Wissen

Mainly based on PhD research Viktor Venhorst and article to be published in Journal of Social and Economic Geography, December 2010.

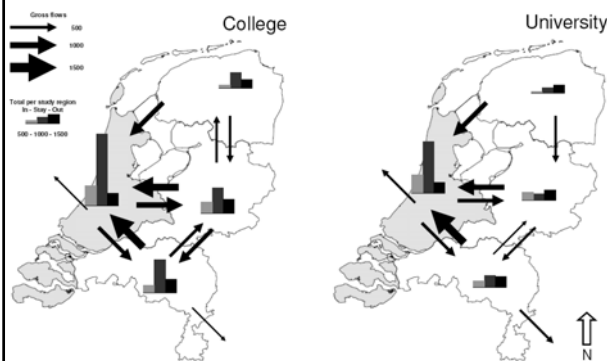
## Theory: effects of higher educated on regional growth

The value of the higher educated: "Positive and recursive relationship between spatial mobility of skilled labour and regional (or urban) economic development & innovation (Faggian et al, (2006))"

- > Florida (2002): creative class
- > Berry & Glaeser (2005): accumulation of the skilled
- > Selective out-migration cities: high income and high-involvement households leave (NL: De Vries et al (2007))

## Background (1)

- > Human capital and
  - ... endogenous growth (Romer etc.)
  - ... spatial mobility
  - ... cities / agglomeration effects (Krugman, Glaeser)
- > Peripheral regions
  - Brain Drain or knowledge export?
- > This study: spatial mobility recent graduates
  - Study to work location
  - Do the graduates with the highest grades leave?



## Background (2)

- > Selectivity and spatial mobility: successful moving ...
  - Human Capital model of migration
    - Information, economic opportunity costs
  - Regions and search effort
  - (Un)measured individual traits
  - Amenities
- > ... or all of the above?

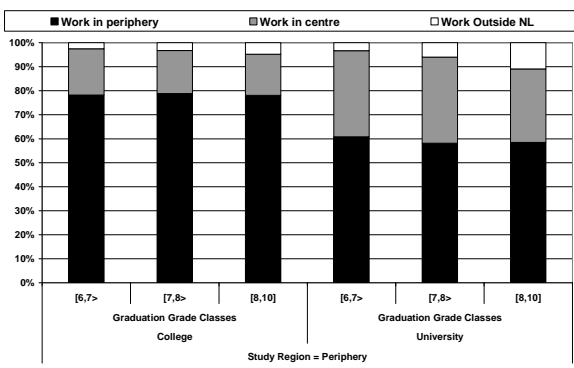
### Background (3)

- > Regional Labour markets:
  - Supply: Human Capital model of migration
  - Demand: Thurow's job competition model (Labour Queue) in a spatial sense
- > Graduates and opportunity rich regions
  - Field of study \* Ability ↔ Industries
  - Industries and degree of agglomeration
- > Human Capital or Labour Queue?

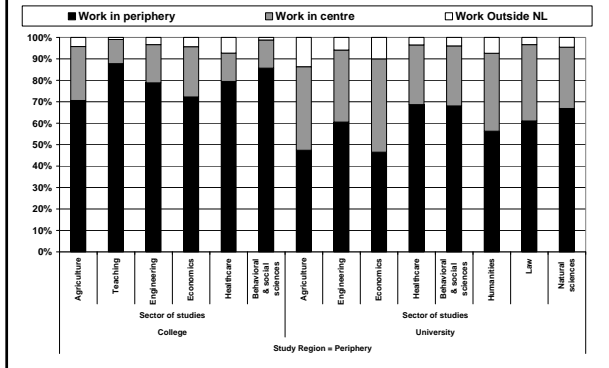
### Data

- > ROA-SIS Survey among recent graduates
  - Approx 18 months after graduation
  - Transition study to labour market
- > Higher education: Vocational College and University
- > Sample:
  - 2003 – 2008, 20 – 30 years old
- > Some first descriptives: location choice for work of grads from periphery by Grade and Discipline

Migration from peripheral study regions by GRADE



Migration from peripheral study region by DISCIPLINE




### Multivariate analysis

- > Three-way multinomial logit work for location choice of peripheral graduates:
  - Work in Centre, Work Outside NL
  - Reference: Work in Periphery
- > Independent variables:
  - Individual characteristics (gender, age, nationality)
  - Study: field, ability
  - Interaction effects
  - Region, time, observation window controlled for
- > A negative coefficient means more likely to stay in the periphery!


#### Multinomial Logit: College graduates, periphery

	Work in Centre		Work Outside NL	
	B	Sig.	B	Sig.
Reference category: work in periphery				
Intercept	-0.47		0.74	
Gender: Female (0) Male (1)	-0.12	***	0.00	
Mean centered Age	0.05	***	0.07	***
Graduation grade [8,10]	0.04		0.28	*
Respondent born in other Euro country	0.18	**	1.87	***
Respondent born outside Euro	0.04		0.85	***
Interaction Born Europe*Grade >=8	-0.14		0.38	***
Interaction Born Outside Euro*Grade >=8	-0.01		-0.41	
Sector of studies is Agriculture	0.45	***	0.81	***
Sector of studies is Teaching	-0.03		0.22	*
Sector of studies is Engineering	0.29	***	0.66	***
Sector of studies is Economics	0.42	***	0.77	***
Sector of studies is Healthcare	0.11	***	0.93	***
Interaction Agri*Grade >=8	0.07		-0.21	
Interaction Teach*Grade >=8	-0.12		-0.57	**
Interaction Engin*Grade >=8	0.02		-0.18	
Interaction Econ*Grade >=8	0.10	*	0.01	
Interaction Health*Grade >=8	-0.13		-0.50	***
Mean centered Reg Econ Growth	1.34		1.03	
Mean centered Reg Unem Rate HE	3.86	**	-12.61	**
Mean centered number of higher and scientific jobs	0.63	***	-1.45	***
Control for observation window			Yes	
Time Fixed effects			Yes	
ChiSquare (DF=52)	2488.265			
Prob>ChiSq	0.00			
-LogLikelihood	17090.16			
RSquare (U)	0.07			
N	30241			


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Reference category: work in periphery	Work in Centre		Work Outside	
	B	Sig.	B	Sig.
Intercept	0.26		1.02	
Gender: Female (0) Male (1)	-0.05 **		0.19 ***	
Mean centered Age	0.05 ***		0.02	
Graduation grade [8,10]	-0.05		0.24 *	
Respondent born in other Euro country	-0.14		1.85 ***	
Respondent born outside Euro	0.16 *		1.24 ***	
Interaction Born Europe*Grade >=8	-0.22		-0.29 **	
Interaction Born Outside Euro*Grade >=8	-0.27		-0.41 **	
Sector of studies is Agriculture	0.52 ***		0.96 ***	
Sector of studies is Engineering	0.14 ***		0.56 ***	
Sector of studies is Economics	0.41 ***		0.48 ***	
Sector of studies is Healthcare	-0.04		-0.09	
Sector of studies is Humanities	0.19 ***		0.57 ***	
Sector of studies is Law	0.16 ***		0.04	
Sector of studies is Natural Sciences	0.08		-0.08	
Interaction Agri*Grade >=8	-0.12		-0.09	
Interaction Engin*Grade >=8	-0.06		-0.12	
Interaction Econ*Grade >=8	0.15 *		0.28 *	
Interaction Health*Grade >=8	0.05		-0.10	
Interaction Human*Grade >=8	0.03		-0.36 *	
Interaction Law*Grade >=8	0.18 *		0.24	
Interaction Nat Scie*Grade >=8	-0.26 **		0.28	
Mean centered Reg Econ Growth	-0.57		-4.93 ***	
Mean centered Reg Unem Rate HE	-13.51 ***		2.92	
Mean centered number of higher and scientific jobs	-3.03 ***		-3.16 ***	
Control for observation window			Yes	
Time Fixed effects			Yes	
ChiSquare (DF = 60)	2758.07			
Prob>ChiSq	0.00			
-LogLikelihood	15039.6			
RSquare (U)	0.09			
N	17507			


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Mean centered Age	0.05 ***		0.02	
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Interaction Nat Scie*Grade >=8	-0.26 **		0.28	


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Mean centered Reg Unem Rate HE	-13.51 ***		2.92	
Mean centered number of higher and scientific job:	-3.03 ***		-3.16 ***	
Control for observation window		Yes		
Time Fixed effects		Yes		
ChiSquare (DF = 60)	2758.07			
Prob>ChiSq	0.00			
-LogLikelihood	15039.6			
RSquare (U)	0.0917			
N	17607			



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**College Graduates - Work Location**

Grade	Born in Netherlands			Born in other European country		
	Periphery	Centre	Outside NL	Periphery	Centre	Outside NL
<b>Behavioural Sciences (ref.)</b>						
>=8	87%	13%	1%	52%	8%	40%
<8	88%	12%	1%	72%	14%	14%
<b>Agriculture</b>						
>=8	69%	29%	2%	25%	11%	64%
<8	73%	25%	2%	40%	19%	41%
<b>Teaching</b>						
>=8	90%	10%	0%	67%	8%	25%
<8	88%	12%	1%	67%	12%	21%
<b>Engineering</b>						
>=8	77%	22%	2%	30%	9%	61%
<8	79%	20%	1%	47%	17%	36%
<b>Economics</b>						
>=8	69%	29%	3%	20%	9%	72%
<8	75%	24%	2%	42%	19%	39%
<b>Health</b>						
>=8	86%	12%	2%	34%	5%	61%
<8	83%	14%	3%	39%	10%	51%


**University Graduates - Work Location**

Grade	Born in Netherlands			Born in other European country		
	Periphery	Centre	Outside NL	Periphery	Centre	Outside NL
<b>Behavioural Sciences (ref.)</b>						
>=8	73%	24%	3%	46%	7%	47%
<8	72%	26%	2%	42%	12%	47%
<b>Agriculture</b>						
>=8	51%	36%	13%	14%	5%	81%
<8	45%	46%	9%	11%	8%	81%
<b>Engineering</b>						
>=8	67%	26%	7%	28%	5%	67%
<8	64%	31%	6%	21%	8%	72%
<b>Economics</b>						
>=8	46%	45%	9%	16%	8%	76%
<8	53%	43%	4%	22%	14%	64%
<b>Health</b>						
>=8	73%	24%	2%	54%	9%	38%
<8	74%	25%	2%	46%	12%	43%
<b>Humanities</b>						
>=8	64%	32%	4%	36%	9%	55%
<8	62%	33%	5%	20%	8%	72%
<b>Law</b>						
>=8	58%	37%	5%	33%	10%	57%
<8	66%	33%	2%	39%	15%	47%
<b>Natural Sciences</b>						
>=8	77%	17%	5%	38%	4%	58%
<8	69%	29%	2%	44%	14%	42%


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### Conclusions

- > University grads more mobile than college grads
  - Substantial differences between fields of study
- > Moving outside NL strongly related to nationality
- > HC or Labour Queue?
  - Clear quantitative brain drain, but ...
  - ... best grads do not necessarily leave the periphery
- > Policy: "jobs – follow – people" & the quest for talent


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