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Human Capital, Inequality and Resilient Regional Labour Markets

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John Maynard Keynes prediction in 1930:

In the summer of 1930, at the start of the Great Depression, John Maynard Keynes gave a speech in Madrid entitled «Economic Possibilities for our Grandchildren». He stated that, over time, humankind was solving its economic problems thanks to the process of capital accumulation.

He predicted that the standard of living in progressive countries would, in one hundred years, be between four and eight times higher than it was in 1930, and that the standard working week would be fifteen hours. An important societal problem foreseen in Keynes' prediction would be how to spend leisure time (Keynes, 1963).

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Current trends on (regional) labour markets (1)

- Economic crisis is over, shortages occur already in many occupations, mismatch education – jobs?
- Aging, Migration, Population decline: **shrinking labour force?**
- Regional and urban-rural disparities: increasing role of cities; place that 'don't matter'; socio-economic risks climate change
- Increasing inequality in personal income and acces to jobs
- Sectoral shifts from agriculture/industry to services
- Increasing knowledge intensity, ICT-revolution, more higher educated, **but also a large pool of low-literate people: question of inclusiveness; more non-standard jobs**
- Polarisation on the labour market due to automation and robotization: **medium level jobs disappear!**

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Current trends on regional labour markets (2)

- Flexibilisation (24/7 instead of 9 to 5), more self-employed, more temporary contracts and flexible and/or part time jobs
- Changes competences → 21st century skills, need for life long learning
- Increasing spatial mobility, especially of higher educated: commuting (self driving cars), internal migration, international migration: **geography of discontent**
- Localization and Globalization; off-shoring/reshoring; Brexit, Catalunya; Trade restrictions, etc.
- Decentralisation of labour market policy to regions
- Quality of institutions and governance

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Knowledge capital and economic growth for countries

FIGURE 2.1 KNOWLEDGE CAPITAL AND ECONOMIC GROWTH RATES ACROSS COUNTRIES

Growth of GDP p.c. 1960-2000

Human capital 1960

Source: OECD, 2015

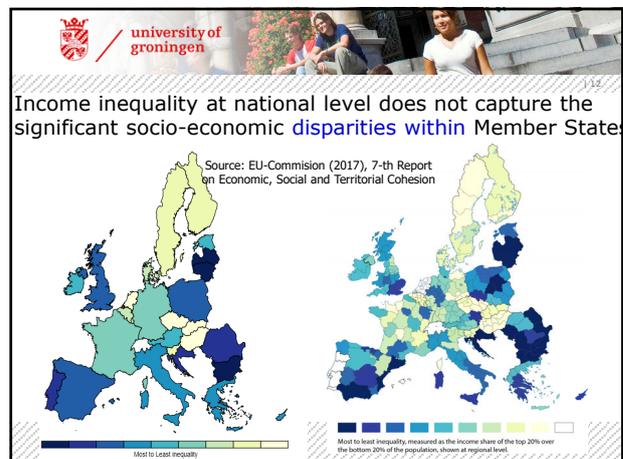
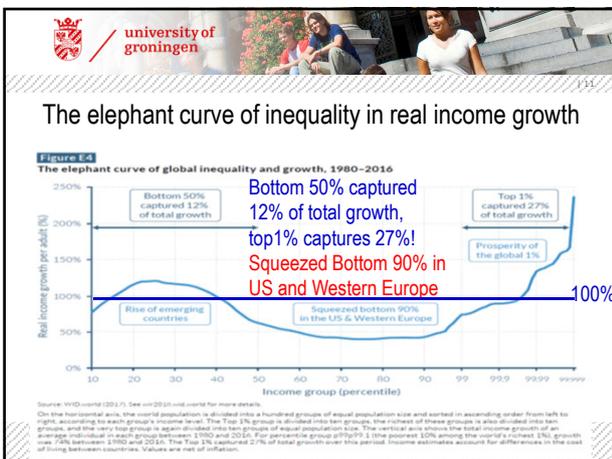
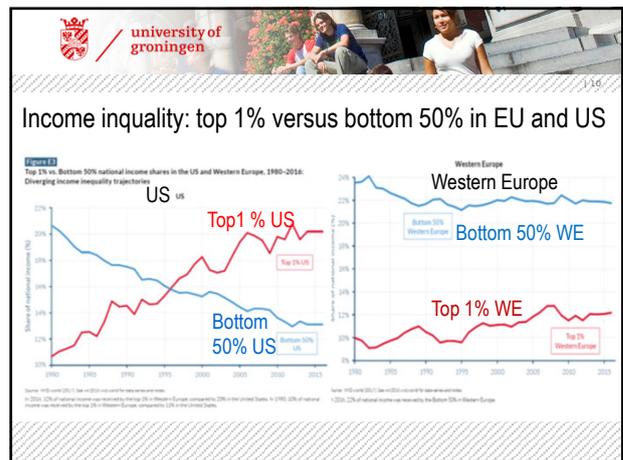
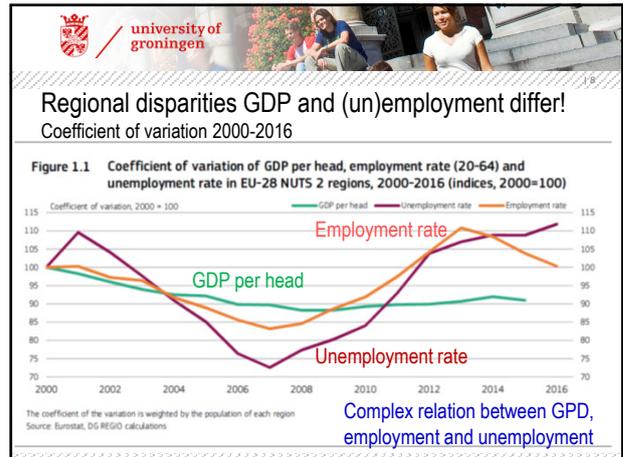
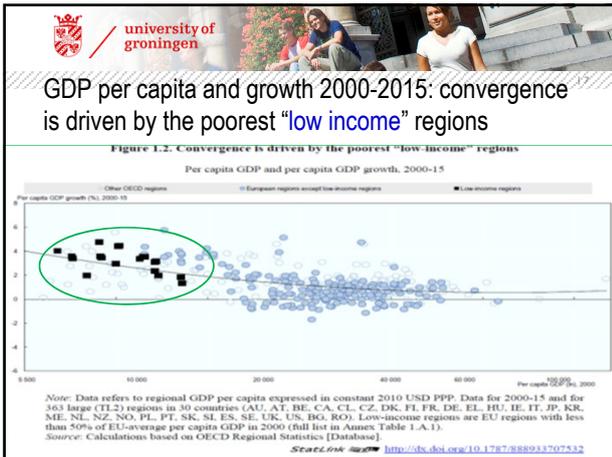
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Regional disparities GDP per capita across OECD 2000-2016

1.1. Regional disparities across the OECD, TL2 regions

Theil inequality index of GDP per capita

— Inequality within countries — Inequality between countries — Total inequality (right axis)



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Classic question about regional growth still in debate

Literature: do "jobs-follow-people or people-follow-jobs?" (Borts and Stein 1964; Steinnes and Fisher 1974) or related "chicken-or-egg" (Muth 1971). Later *The Determinants of County Growth* by Carlinio and Mills (1987) with lagged adjustment framework. The question relates:

- Do people move for economic factors (jobs) or amenities and quality-of-life factors? (e.g. Lowry, 1966; Partridge 2010). **Borrowed size.**
- Is the residential location decision made before or after the job location decision? (e.g., Deding et al. 2009).
- Are employment locations of firms really exogenous to residential locations? Or vice-versa (as assumed in the monocentric city model)?
- Do these patterns differ by level of education / human capital and change over time with footloose 24/7 jobs and soon by the self-driving car?

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Duelling theoretical models and empirical result

- **New Economic Geography** (Krugman, 1991): falling transport cost lead to concentration of people and economic activities
- **Amenity migration** (Graves, mid1970s): people are moving to nice places, warm climates; Storper & Scott (2009): people only move to nice places with suitable employment; Author (2019) are cities overrated?
- **Agglomeration effects**, attractiveness of (big) cities; more jobs, higher productivity; high level facilities like universities, hospitals, etc.; cultural amenities like musea, concerts, (Gleaser et al, 2001 etc., Florida, 2003)

→ Partridge (2010): for the US, Graves is the winner!
 → Hoogstra, Van Dijk & Florax (2017) find based on a meta-analysis of 321 studies that the results are highly divergent, but that more results point towards "jobs following people" than towards "people following jobs".

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Classification of the results: (Results are weighted based on the dataset used)

Significance

| Significance | NI | JP | PJ | DC |
|------------------------|------|------|------|------|
| 0.10 | 29.3 | 23.4 | 13.1 | 34.3 |
| 0.05 | 34.3 | 23.1 | 13.1 | 29.6 |
| 0.01 | 45.2 | 18.4 | 12.1 | 24.3 |
| Weighted sample | | | | |
| 0.10 | 23.2 | 23.3 | 12.7 | 40.8 |
| 0.05 | 29.1 | 22.4 | 13.4 | 35.2 |
| 0.01 | 39.4 | 19.8 | 12.7 | 28.1 |

Source: Hoogstra, Van Dijk and Florax, Spatial Economic Analysis, 2017

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Migration & mobility

- Migration is main determinant of population change
- Higher educated are more mobile and move to bigger cities
- Two out of three people in new EU-countries since 2004 live in a shrinking NUTS 3 region

Source: EU-Commission (2017), 7-th Report on Economic, Social and Territorial Cohesion

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Agglomeration and growth

Trade off between agglomeration benefits vs congestions cost (Broersma and Van Dijk, JEG, 2008)

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Unemployment 2016

- Unemployment is still above pre-crisis level and regional disparities have not started narrowing yet
- In particular **youth unemployment** remains high
- Average EU 28 = 8.5%

Source: EU-Commission (2017), 7-th Report on Economic, Social and Territorial Cohesion

Employment rate 2016

- Employment rate (jobs per 1000 population 15-64) is much higher in North-West Europe
- Average EU 28 = 71

Source: EU-Commission (2017), 7-th Report on Economic, Social and Territorial Cohesion

Youth - NEET

- Young people **Not in Employment, Education or Training (NEET)** more than 20% in some Southern and Eastern regions
- **Social exclusion** < 5%

Source: EU-Commission (2017), 7-th Report on Economic, Social and Territorial Cohesion

Education

- Population aged 25-64 with tertiary education, 2016
- Large regional disparities in education; **higher educated are more mobile and concentrate in (big) cities with HEI's** < 15%
- Average EU 28 = 31%

Source: EU-Commission (2017), 7-th Report on Economic, Social and Territorial Cohesion

Adult education / training | Early schoolleavers

The individual benefits of investing in human capital

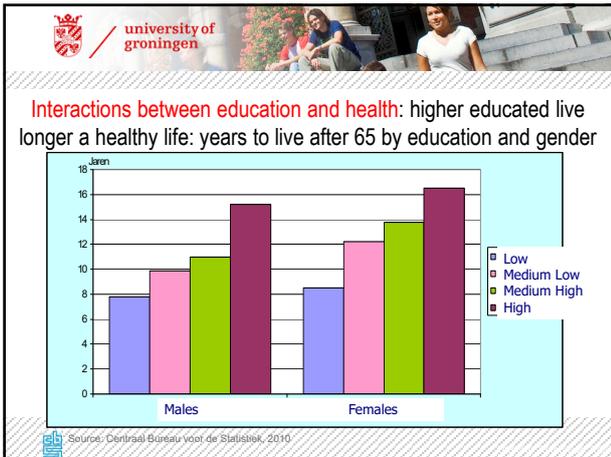
- Human Capital Theory (Sjaastad, 1962) and Job Search Theory (Lippman and McCall, 1976, 1979 and Pissarides, 1976): higher educated have higher wages, lower risks of unemployment; but also better health, higher life expectancy
- Higher educated are more spatially mobile because they have lower (information and psychic) cost and higher returns in terms of future wages. Path-dependency: if they move once, they are more likely to move again: onward moves versus return moves
- In- and outflows of migration are highly correlated: but destination choice has mixed relations with regional differences in wages and unemployment (e.g. Lowry, 1966). Regional differences in cultural and natural amenities and quality of life also play a role (e.g. Graves, 1980)

Earnings and unemployment rates by educational attainment

| Educational Attainment | Unemployment rate in 2014 (%) | Median weekly earnings in 2014 (\$) |
|---------------------------------|-------------------------------|-------------------------------------|
| Doctoral degree | 2.1 | 1,591 |
| Professional degree | 1.9 | 1,639 |
| Master's degree | 2.8 | 1,326 |
| Bachelor's degree | 3.5 | 1,101 |
| Associate's degree | 4.5 | 792 |
| Some college, no degree | 6.0 | 741 |
| High school diploma | 6.0 | 668 |
| Less than a high school diploma | 9.0 | 488 |

All workers: 5% unemployment, \$839 median weekly earnings

Notes: Data are for persons age 25 and over. Earnings are for full-time wage and salary workers. Source: Current Population Survey, U.S. Bureau of Labor Statistics, U.S. Department of Labor

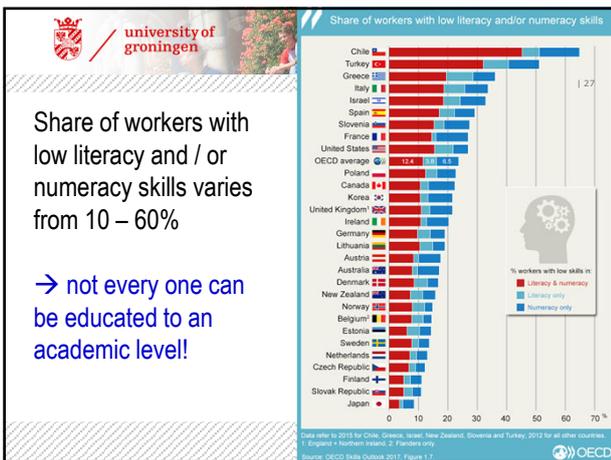


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Rapidly changing skill requirements for the 21st century

21st Century Skills

- ✓ Creativity
- ✓ Critical Thinking
- ✓ Communication
- ✓ Collaboration
- ✓ Commitment



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Mismatch?

Vertical mismatch: level of education is too high (overeducation) or too low for the job

Horizontal mismatch: level of education is OK, but the type of education not

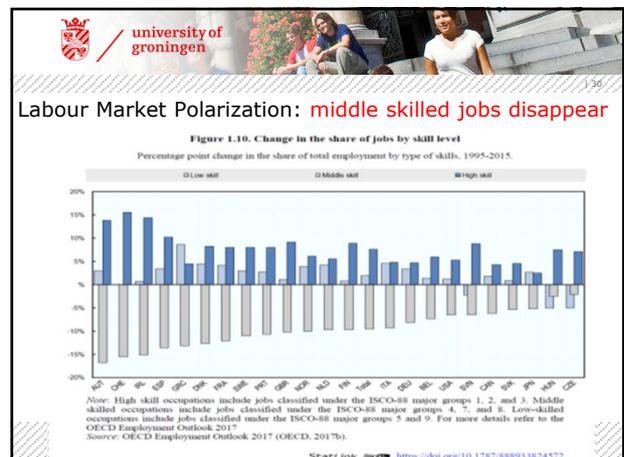
1. Do we talk about education or skills?
2. Do we talk about the short term (first job) or long term (career)?

But is overeducation also bad from the regional perspective?

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Automation and Robotization: How many jobs will be lost?

- Frey and Osborne (2017): 47% of total US Employment
- Deloitte (2014): 20-30 % of total Dutch jobs
- Koster and Talens (2016): 30% of total Dutch jobs
- Arntz et al. (2016): 9% of total jobs in OECD countries



Policy problem:

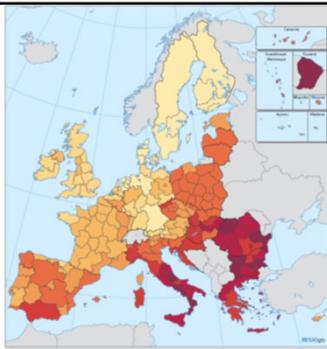
- › Decreasing inequalities between regions in terms of GDP:
 - lowest income regions are catching up.
- › **But:** still increasing inequalities in terms of (un)employment rates, human capital: urban regions do better than most rural areas.
- › Increasing differences in **personal income**. Elephant curve: the top 1% rich people and the poor benefit most. Medium squeezed.
- › **Human capital is rather sticky; high educated are most mobile and move to (big) cities for jobs, but also for amenities. Mostly: jobs follow people.**
- › Medium skilled jobs disappear due to automation/robotization. Low educated, low skilled are in trouble. **Problem of dropouts (NEET) and limitations of (life long) educating.**

Policy options:

- Regional level, place based policies focus on innovation, improving the business climate, location of firms, etc.?
- People oriented policies: investment in education and/or (21st century) skills training?
- **Job creation for low skilled? Direct or indirect as spill-overs from high skilled jobs?**
- **Re-organisation of the work organisation: job carving?**
- Influencing the spatial re-allocation of human capital via job opportunities and living conditions + amenities?
- Detection of promising or risky career patterns?
- Introduction of an (unconditional) Basic Income?

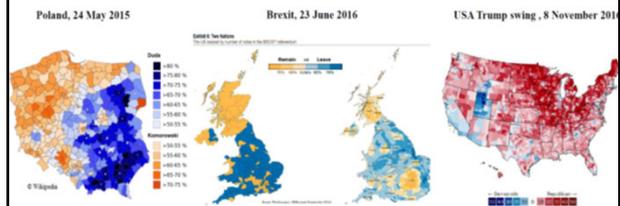
European Quality of Government Index

Quality of Governance is crucial for policy success (Rodriguez-Pose et al, 2018)



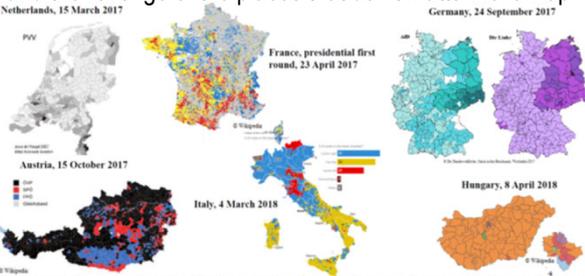
Source: EU-Commission (2017), 7th Report on Economic, Social and Territorial Cohesion

Populism voting behavior: the geography of EU discontent and the revenge of the places that don't matter: the start



THE GEOGRAPHY OF EU DISCONTENT AND THE REVENGE OF THE PLACES THAT DON'T MATTER
Andrés Rodríguez-Pose with Lewis Dijkstra and Hugo Poelman

Populism voting behavior: the geography of EU discontent and the revenge of the places that don't matter: follow up



THE GEOGRAPHY OF EU DISCONTENT AND THE REVENGE OF THE PLACES THAT DON'T MATTER
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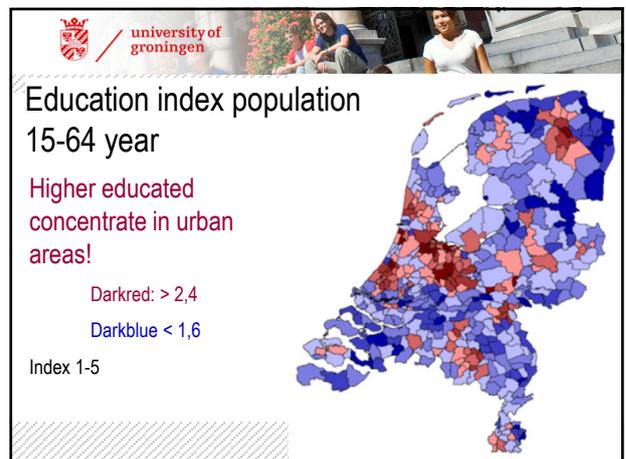
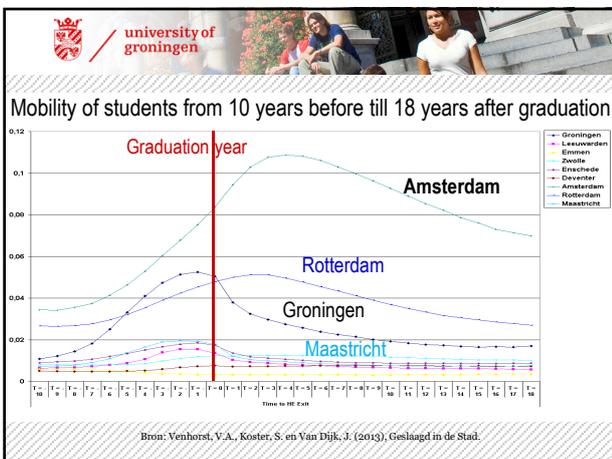
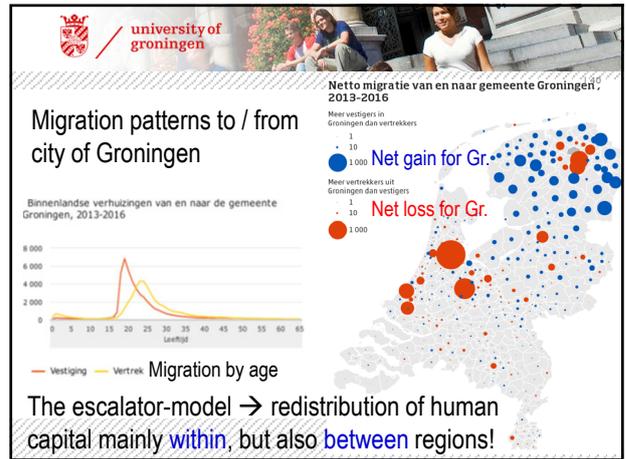
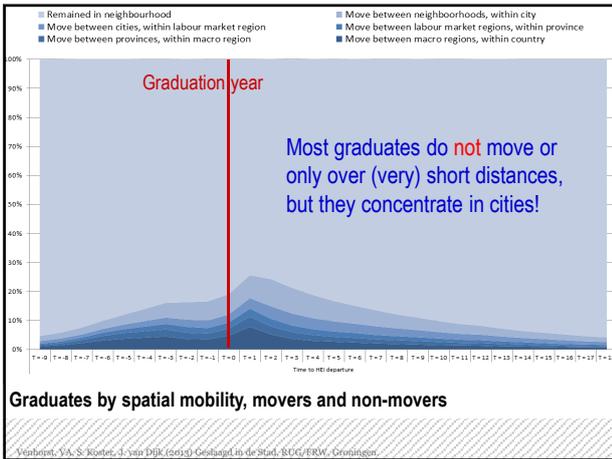
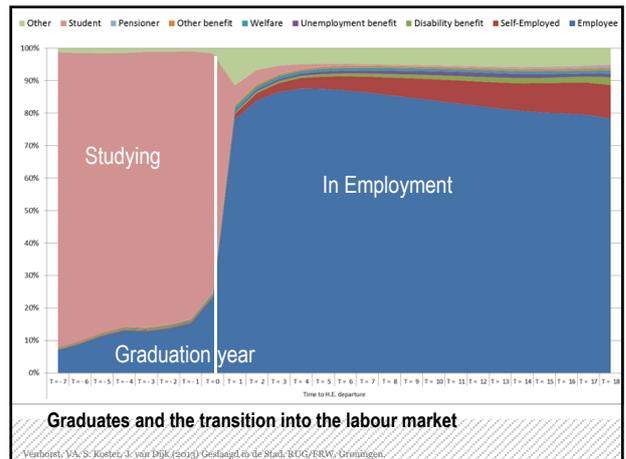
Exploring three policy options: (Dutch case studies)

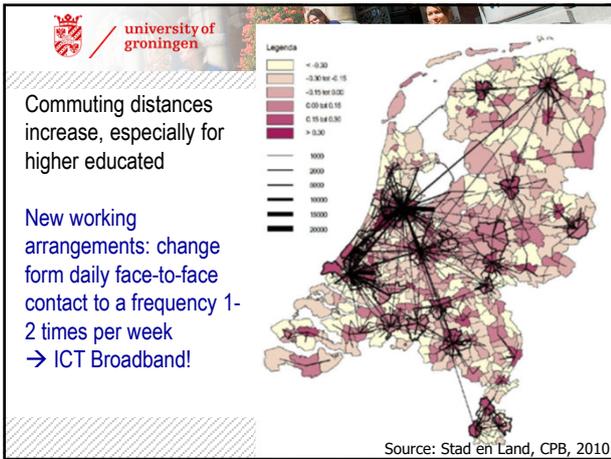
1. Influencing the location of the stock of human capital, migration of higher educated
2. Maximizing production and consumption spill-over effects of high educated on low educated / low skilled
3. Career intervention: identifying successful and risky career patterns in relation to the regional labour market characteristics



Analysing Graduate Migration Behaviour in the Netherlands using longitudinal (max. 25 years) register micro data (Viktor Venhorst et al)

Venhorst, V.A., S. Koster, J. van Dijk (2013), Geslaagd in de Stad, RUG/FRW, Groningen.





Brain drain / brain gain: conclusions

- The region loses, the city wins and in the end Amsterdam most
- Mobility high around the graduation date. Limited policy intervention window. Many stay put when they have a family.
- Periphery doesn't lose automatically the best students, except for economists and lawyers. **Is this a problem? Brain drain or clean export product?** Migration is paying-off (not only in terms of higher wages / better jobs), but not for all (self-selection)
- Job opportunities (also for **partners!**) are more important for keeping graduates than residential amenities, but preferences change over time with family formation.

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

Jouke van Dijk (joint work with Lourens Broersma and Arjen Edzes)

Published in Regional Studies, 2016

Research questions: which externalities are important?

- Production externalities:** do knowledge spillovers from high to low educated exist?
 - Does this take place at the **regional** level or at the **firm** level?
 - Do the effects differ for low educated workers and low skilled workers?
 - Do the effects differ between firms with many high skilled workers versus many low skilled workers?
- Consumption externalities:** do spillovers exist via consumption?
- Data: Matched Employer-Employee for The Netherlands; 12 annual waves approx. 27.000 employees in approx. 2.000 firms

Results: Human Capital Externalities: all employees

| Dependent variable | | Log of hourly wage rate | | | | |
|--|---|-------------------------|------------|------------|------------|------------|
| Model | | 1 | 2 | 3 | 4 | 5 |
| Level of education | Education level of individual | 0.078** | 0.077** | 0.078** | 0.078** | 0.077** |
| | Average Education level in region | 0.003** | | | 0.003** | |
| | Average Education level of workers in firm | | 0.009** | | | 0.009** |
| | Average Education regional workers excl. firm | | -8.7E-04 | | | -0.001 |
| Average Educat. region inhabitants 15-64 | | | | 0.016** | 0.015** | 0.014** |
| Properties workers | Experience | 0.044** | 0.044** | 0.044** | 0.044** | 0.044** |
| | Experience squared | -7.1E-04** | -7.1E-04** | -7.0E-04** | -7.0E-04** | -7.1E-04** |
| | Female | -0.068** | -0.068** | -0.068** | -0.068** | -0.068** |
| | Part-time | 0.195** | 0.193** | 0.195** | 0.195** | 0.193** |
| Properties region | Population density | 2.1E-05** | 2.1E-05** | 1.9E-05** | 1.8E-05** | 1.9E-05** |
| | Regional unemployment | -0.512** | -0.523** | -0.521** | -0.516** | -0.526** |
| Number of variables | | 38 | 39 | 38 | 39 | 40 |
| Number of observations | | 368,541 | 368,439 | 368,541 | 368,541 | 368,439 |
| Goodness of fit LR test vs OLS | | 65,490 | 64,514 | 65,038 | 65,032 | 64,057 |

All specifications include also the following control variables: industry dummies, firm size dummies, year fixed effect dummies. ** significant at the 1% level

Conclusion for the analysis on all employees

- Human capital (HC) stock is years of education
- Private net rate of return to education: **7.8%**
- Social net rate of return to education: **2.3%** of which:
 - **production externalities** of education at the **firm**: 0.9%
 - **production externalities** of education in the **region**: **0.0%**
 - **consumption externalities** of education in the **region**: 1.4%

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Same analysis for **low educated, low skilled jobs**

- Private net rate of return to education for low educated / low skilled jobs substantially lower: **3.5% instead of 7.8%** for all employees
- For **low educated** the Social net rate of return is: **3.7%**
 - production externalities at the firm: 2.5% (0.9% for all)
 - production externalities in the region: 0.0% (0.0% for all)
 - consumption externalities in the region: 1.2% (1.4% for all)
 - Negative effect of distribution of education within Microsoft type firm of -4.0% (but higher main effect!)
- For **low skilled jobs** the Social net rate of return is: **1.6%**
 - production externalities at the firm: 0.0%
 - production externalities in the region: -0.3%
 - consumption externalities in the region: 1.9%
 - But large positive effect of distribution of education within Microsoft type firm of 7.7%!

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Overall conclusions effect of Human Capital Externalities

- An additional year of schooling increases the wage rate of average employees with 7.8% and for low educated / low skilled with 3.5% → improve position low skilled by increase in individual education
- Social returns HCE's are about 2.3% for all employees, for low educated 3.7% but for low skilled only 1.6%.
- At the regional level consumption spill overs are significant and more or less equal for all employees and low educated, but higher for low skilled.
- Production/learning spill overs are not significant at the regional level, these take place at the firm level. These effects are larger for low educated workers and differ between firms with mainly high educated (Microsoft type firms) or low educated workers (McDonalds type of firms)

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Analyzing career paths by means of **sequence analysis**

Publication: Middeldorp, Marten, Arjen J.E. Edzes and Jouke van Dijk (2016). 'Smooth Transition? Upper-Secondary General versus Vocational Education and the Transition from School to Work'. *European Sociological Review*. Accepted for publication October 18, 2018.

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Types of Active Labour Market Policies

| | | Investment in human capital | | |
|-----------------------------------|--------|---|--|---|
| | | None | Weak | Strong |
| Pro-market employment orientation | Weak | (Passive benefits) Basic income? | Occupation Job creation schemes in the public sector Training programmes unrelated to employment | (Basic education) |
| | Strong | Incentive reinforcement Tax credits, in work benefits Time limits on benefit receipt Benefit reductions Benefits conditionality | Employment assistance Placement services Job subsidies Counselling Job search programmes | Upskilling Job-related vocational training |

Source: Bot **Success of Active Labour Market Policies is very limited!**

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24-08-2016 | 53

Table 2. Division of instruments by client typology

| | Distance to regular jobs: | | | | | |
|-------------|------------------------------------|----------------------------------|--------------------------------------|---|--------------------------------------|----------------------------------|
| | NO | | | YES | | |
| | | | | Bridgeable | Non-bridgeable | |
| Problems | No jobs | No motivation | No match | Skills shortage / wrong skills Need for re-integration | Able to work but low productivity | Not bridgeable |
| Instruments | Employment creation Job Carving | Control Incentives and sanctions | Information Counselling Mediation | Training Education | Wage subsidy Workplace adjustment | Sheltered employment Benefits |

Need for identification of successful career interventions! Basic income?

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Research questions

"How can we identify typical career patterns and relate this to personal and regional characteristics?"

Approach

- Longitudinal data and **sequence analysis** to create and analyse career sequences from the onset of unemployment and for school-leavers
- Estimation of the effect of local labour market opportunities and personal characteristics on the probability of following particular pathways

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Identifying career trajectories: detailed monthly data

- Standard job
- Flexible job
- Unemployed/inactive

- How similar are the sequences of individuals?
 - Calculate metric distances between each pair of sequences
 - Result: distance matrix for each pair of sequences

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Career trajectories: school to work transitions

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Career trajectories: Spatial Mobility of Higher Education Graduates and Jobs

Migration patterns: early, late and repeated moves

Commuting patterns: local, long distance
Combination with early and late migration

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Career trajectories after becoming unemployed

Standard (N=20079): Stable job (42%)

Stable Flex (N=7314): Stable flex job (15%)

Intermittent (N=20383): Unstable job (43%)

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Next step: explain the career trajectories

- Regional differences in career patterns: job security (stable permanent jobs) and resilient regional labour markets
- Explanation career patterns: multinomial logistic regression
- Key question:** are differences in career patterns caused by differences in the composition of the population / labour force or by regional characteristics?
- Regional characteristics:** job access, unemployment, GDP growth
- Personal:** education, experience, last wage: controls: sex, age, migrant, household, child, last working time

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Regional variation in career outcomes of school leavers

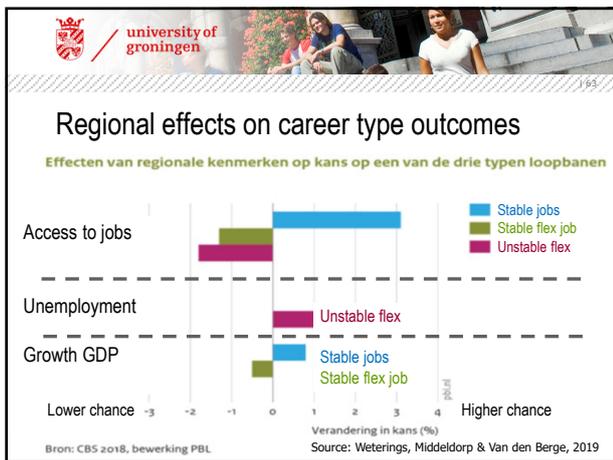
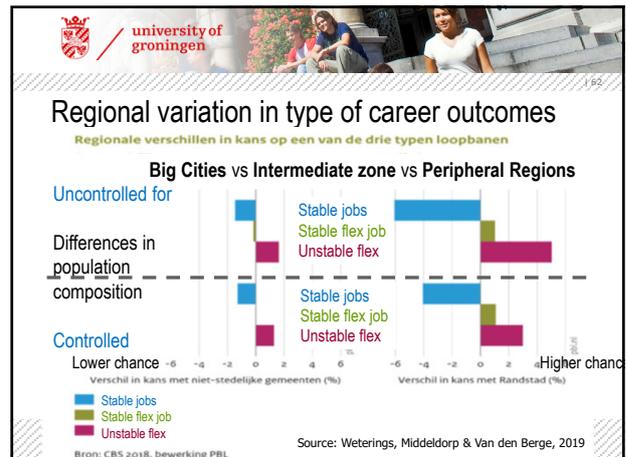
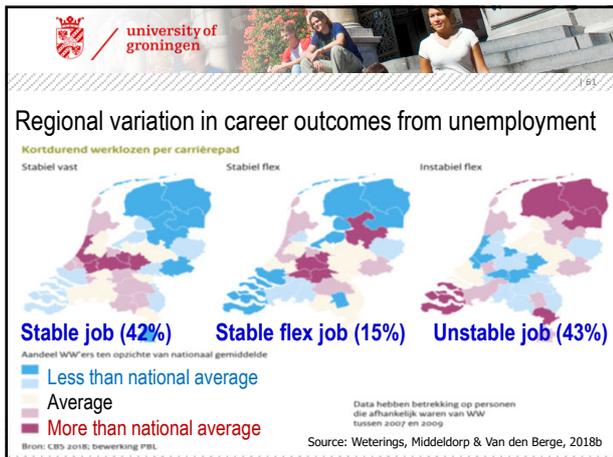
Figuur 2
Schoolverlaters per carrièrepad

Stable job (54%) Stable flex job (19%) Unstable job (27%)

Aandeel schoolverlaters ten opzichte van nationaal gemiddelde

- Average
- More than national average

Data hebben betrekking op schoolverlaters tussen 2005 en 2009
Source: Weterings, Middeldorp & Van den Berge, 2018a
Bron: CBS 2010; bewerking PBL



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- ### Conclusions Sequence Analysis:
- It is possible to identify a limited number of distinctive career patterns
 - For the outcome of stable secure jobs both personal and regional characteristics are of importance, but **personal characteristics dominate**, but also substantial regional differences.
 - More flex and unstable jobs in peripheral areas and big cities, more stable secure jobs in intermediate regions
 - Regional differences can be distinguished into differences in the composition with regard to personal characteristics like education etc and aggregate regional factors. Composition effect is small, especially for big cities
 - Number of accessible jobs is the most important regional factor**; more jobs is dominant over type of job; unemployment and growth of GDP, have a small effect

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John Maynard Keynes prediction in 1930

In the summer of 1930, at the start of the Great Depression, John Maynard Keynes gave a speech in Madrid entitled «Economic Possibilities for our Grandchildren». He stated that, over time, humankind was solving its economic problems thanks to the process of capital accumulation. **He predicted that the standard of living in progressive countries would, in one hundred years, be between four and eight times higher than it was in 1930, and that the standard working week would be fifteen hours.** An important societal problem foreseen in Keynes' prediction would be how to spend leisure time (Keynes, 1963).

→ **We still have a problem of unemployment and social exclusion**

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- ### Conclusions and Policy Implications for Individuals:
- Human capital is a crucial success factor in economic performance for individuals, firms and regions and also in social and health issues. Education is not the same as (21st century) skills. **Policy options are limited by low spatial mobility of human capital and restrictions in learning capacity. Changing the work organization (job carving) is an alternative option, but requires action of the firm.** Basic income?
 - Low skilled can benefit from spill-overs of high skilled. **Policy options are limited by lack of insights in the type of spill-over mechanism via consumption at the regional and productivity/learning at the firm level.**
 - Career patterns vary with personal and regional circumstances (access to jobs!) and are path dependent. **Policy options are limited by lack of insight in successful paths and successful interventions. Analysis of register data + sequence analysis might help + Quality of Governance**

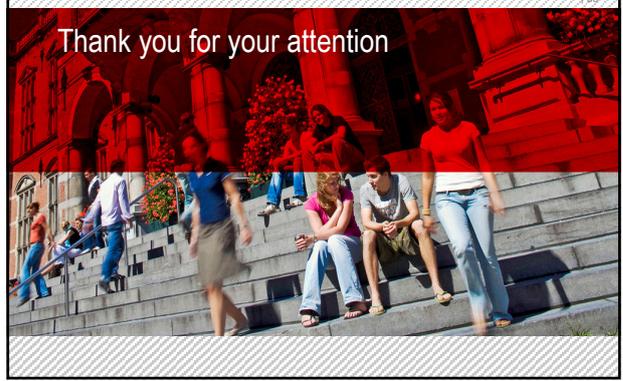


Conclusions and Policy Implications for regions:

- Higher educated graduates are the most spatially mobile group in the labour market, especially in the years before and after graduation. **But:** also most of them stay in the home region. It leads to a redistribution of human capital within regions, but also between regions; impacts on inequality is unclear: complex processes
- **If they leave:** brain drain or clean export product? Higher education institutes (HEI's), like universities are boosters of the regional economy, even if graduates leave the region after study
- **If they stay:** underutilization of human capital investment beneficial for the region and low educated due to positive production and consumption externalities, entrepreneurship, quality of governance
- **Policy implication:** stimulate job creation and investment in (life long) education. This is **always** beneficial both for individuals and regions in terms of economic performance, but also in terms of well-being.



Thank you for your attention



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