Institutional VS regional attractiveness:

What factors are more important to increase the pool of mobile students in tertiary education?

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Motivation

Learning mobility benchmark:

'by 2020 a European Union (EU) average of at least 20% of higher education graduates undertake a period of higher education-related study or training abroad, representing a minimum of 15 European Credit Transfer System (ECTS) credits or lasting a minimum of three months'

(Council conclusions 2011/C 372/08)

Nowadays:

Learning mobility is a core goal of the European Higher Education Area, and part of the renewed approach of the European Commission to achieve a European Education Area by 2025
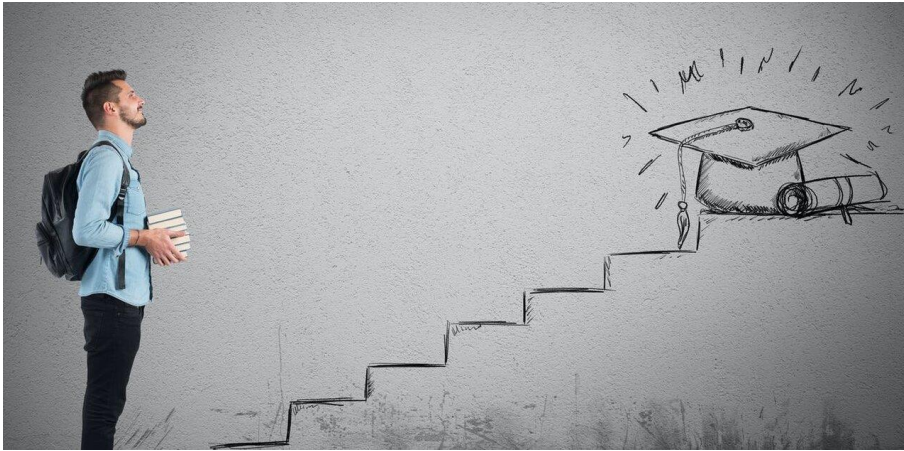
(COM(2020) 625 final)

Learning Mobility II: An estimation of the benchmark

Student mobility in tertiary education: institutional factors and regional attractiveness

Types of mobility

Degree mobility:

'physical crossing of a national border to enrol in a degree programme at tertiary level in the country of destination. The degree programme would require the students' presence for the majority of courses taught'

Credit mobility:

'temporary tertiary education and/or study-related traineeship abroad within the framework of enrolment in a tertiary education programme at a 'home institution' (usually) for the purpose of gaining academic credit (i.e. credit that will be recognised by that home institution)'

Motivation II

- Importance of student mobility for **STUDENTS**
  - HC perspective → investment decision: better education → better job opportunities
    - International students are likely **to stay and work** in the **host country** (Rosenzweig, 2008)
    - Number of months spent increases the probability of **working abroad**
      (Oosterbeek and Webbink, 2011; Parey and Waldinger, 2010)
    - Better position to **find** their **first job**
      (Rodríguez-González et al., 2011)

  - Consumption choice → non-monetary reasons
    - looking for better education systems, quality of life, amenities, pleasure of studying
      (Sá et al., 2004; Agasisti and Dal Bianco, 2007; Beine et al., 2014)

- Importance of student mobility for **UNIVERSITIES**
  - **Competition** for global **talent** → pool of skilled labour force (Abella, 2006; Kuptsch and Pang, 2006; Cattaneo et al., 2018)
  - Anglo-Saxon countries: income from loan-backed **tuition fees**.
  - South-European countries: **alternative** as a scarce **public funding** since 2008 (Cruz-Castro and Sanz-Menendez, 2015)

- Importance of student mobility for **REGIONS/COUNTRIES**
  - **'Academic-gate approach':** foreign talent graduated locally encouraged to stay and work (Abella, 2006)
  - Positive **growth effect** of additional HC at destination (Parey and Waldinger, 2010)

Objectives

- What are the **institutional and regional factors** that attract international mobile students?
    - Push vs pull factors: pull factors determine the choice of a particular destination → attractiveness (Sin et. al, 2021)

- Are there differences between those factors attracting **degree vs credit** mobile students?
    - They have different needs
    - Practical and political support for success requires learning from best practices

- And by different **ISCED levels** (undergraduate, master and PhD students)?

Institutional determinants of intl. mobility

- Institutional factors shape university attractiveness based on the nature and quality of the institutions

  (Baryla and Dotterweich, 2001)

- Focus on **teaching and research** activities

- **Teaching I**: Students look for better university resources and **high-quality HEIs** (McCann and Sheppard, 2001; Sá et al., 2004)

  - Measured through student-teacher ratio(Agasisti and Dal Bianco, 2007)

  - Fewer students per teacher → more time with individual students and concentrate on improving teaching

Hypothesis 1: Higher university **teaching quality** (lower student-teacher ratio) is **positively** associated with a higher share of **international mobile students**.

Institutional determinants of intl. mobility II

- **Teaching II**: **Costs** are taken into consideration by students in the decision to move abroad (Mazzarol and Soutar, 2002)
    - Fees, living expenses, travel costs, but also social costs

    - **Fees paid per student**: cost component of education mobility
        - HC approach: higher fees discourage mobility to a destination (Rodríguez-Gonzalez et al., 2011)
        - Fees as signal of quality: high fees reflect high quality and attract more students (Beine et al. 2014)

    - Different for credit and degree mobile students:
        - For degree mobile students: fees are a cost
        - For credit mobile students: fees synonym of quality

Hypothesis 2a: The **higher** the university **teaching fees**, the **lower** intake of **degree mobile students** a university will attract.

Hypothesis 2b: The **higher** the university **teaching fees**, the **higher** intake of **credit mobile students** a university will attract.

Institutional determinants of intl. mobility III

- **Research**:
  - In the competition for talent: **research capacity** is a driver of internationalisation (Lepori et al., 2015)

  - This also applies to PhD students as early career researchers
  - Undergrads and master std. attracted by institutions leaders in cutting-edge research and hands-on faculty experience – 'student learning process' or 'student-centred teaching method' (Souto-Otero and Enders, 2017)

- **Reputation**:
  - **Rankings** influence the decision to study abroad (Johns, 2018).
  - In international rankings the **focus** is **predominantly on research**
  - Rankings as a **signal of the reputation:** positive relation between institutions in the ranking and intl. mobile students. (Rodríguez-González et al., 2011; Beine et al. 2014; Cattaneo et al., 2017)

Hypothesis 3: there is a **positive** relationship between the **research capacity** of the HEIs and the number of inward mobile **students received**, in particular for **PhD students**.

Hypothesis 4: universities with **better reputation** will have **higher** inward **mobility** at all levels of education.

Geographical determinants of intl. mobility

- Geographical characteristics: influence of the political, social, cultural and economic conditions of a territory
  (Beine et al., 2014; Caruso and de Wit, 2015)

- Groups: socio-demographical characteristics, future opportunities and educational provisions

- **Socio-demographical characteristics**:
  - Higher costs of living, cost of rent, … negatively relate with mobility of students (Usher and Cervenan, 2005; Beine et al., 2014)
  - Preference for an 'urban style of life': better local amenities and more opportunities for leisure activities and socialisation
    (Sá et al., 2004; Agasisti and Dal Bianco, 2007)
  - Proxied by level of urbanisation

- Different for credit and mobile students:
  - Degree mobile students spend more time at destination
  - Credit mobile students have support for living expenses

Hypothesis 5a: the **more urbanised** the region is, the **fewer degree mobile** students it will attract, due to cost of living reasons.

Hypothesis 5b: the **more urbanised** the region is, the **more credit mobile** students it will attract, due to preference for an 'urban style of life'

Geographical determinants of intl. mobility II

- **Future opportunities**:
  - Employment opportunities are a pull factor of educational mobility (De Wit, 2008)
  - Positive impact of wage on destination choice (Beine et al., 2014)
  - Particularly for degree mobile students because they are likely to stay (Rosenzweig, 2008)

  Hypothesis 6: the **more employment opportunities** a region offers, the **more** international **students** it will attract, in particular degree-mobile students.

- **Educational provision:**
  - Better higher education systems will attract more students (Sá et al., 2004).
  - Having education policies at the tertiary level that facilitate the mobility of students
  - Total population with tertiary-level education in the home country as a proxy for the educational background (Rodríguez-González et al., 2011; Beine et al., 2014)

  Hypothesis 7: regions with a **higher proportion of higher education graduates** in the population are expected to attract **more mobile students.**

Data sources and variables

- **_Data sources_**
  - ETER: degree and credit mobility (from Erasmus+) and institutional variables
  - Leiden ranking, THE ranking
  - Eurostat for regional variables
  - Match using NUTS2 info about university headquarters. 2011-2016

- **_Dependent variables_**
- Share of degree mobile students $= \dfrac{number\ of\ mobile\ students}{number\ of\ mobile\ students\ +\ number\ of\ resident\ students}$

- Share of Erasmus students → 'stu_Erasmus' variable in ETER

- Countries included: 19 for degree (AT, BE, CY, DE, DK, EE, ES, FI, FR, HR, HU, IE, LT, LU, LV, MT, PT, SE and the UK. For BE only Flanders) and 27 for credit (no RO)

Data sources and variables II

- **_Independent variables - institutions:_**

- Teaching load $= \dfrac{Total\ students\ ISCED5 + Total\ students\ ISCED6}{Academic\ staff\ (HC)}$

- Student fees $= \dfrac{Student\ fees\ funding}{Total\ students}$

- Research intensity $= \dfrac{number\ of\ graduates\ at\ ISCED\ level\ 8}{number\ of\ graduates\ at\ ISCED\ levels\ 5, 6\ and\ 7}$

- Research excellence: number of a university's publications that, compared with other publications in the same field and in the same year, belong to the top 10% most frequently cited (source: Leiden ranking)

- Reputation: dummy variable with value 1 if a university has been included in the THE ranking in the corresponding year (2011/12 to 2016/17), 0 otherwise.
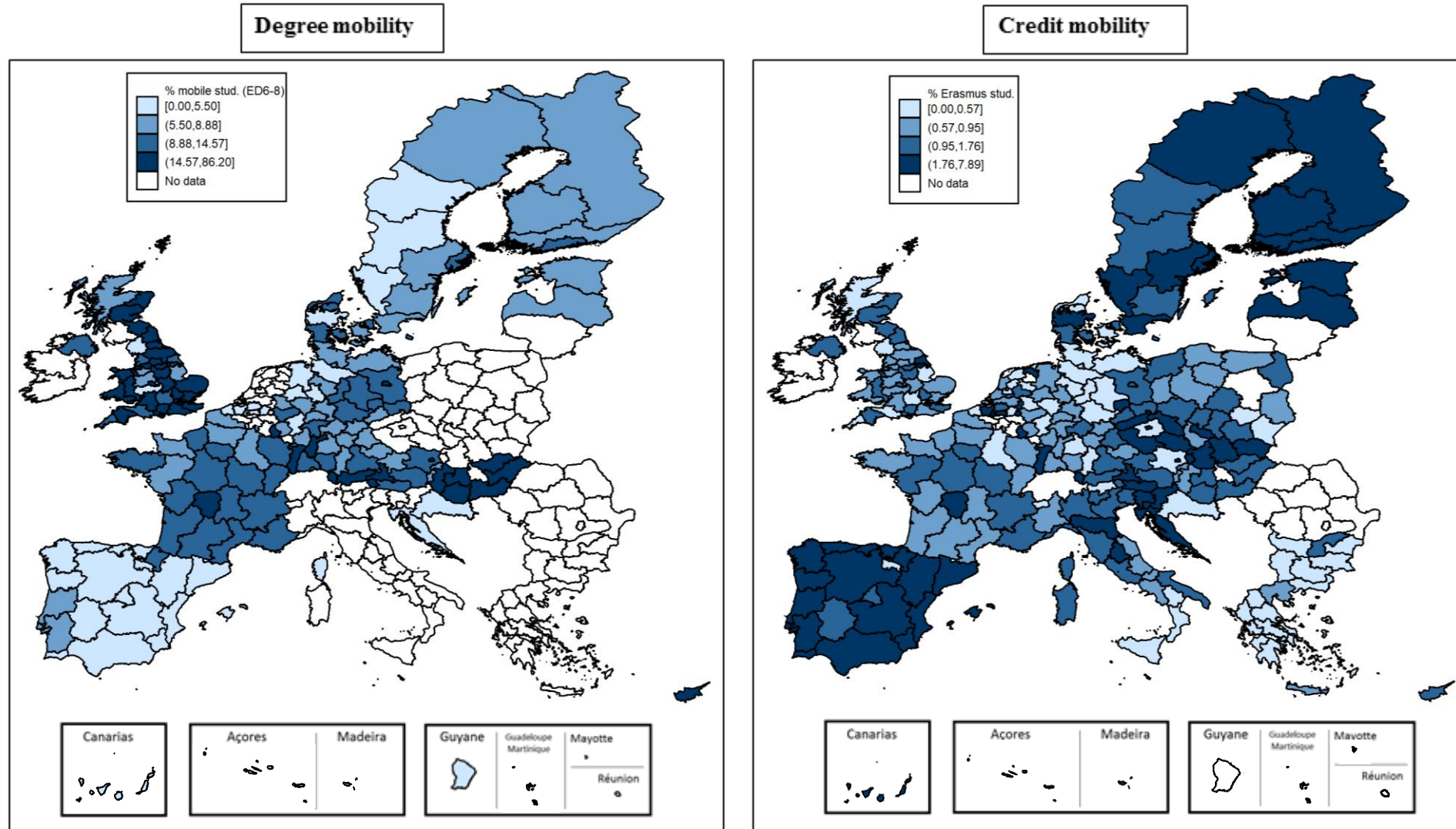
Data sources and variables III

- ***Independent variables - regions:***

- <u>Density:</u> the number of inhabitants per km2

- <u>Employment rate of recent tertiary graduates:</u> employment rate of the population aged 20–34 that has successfully completed tertiary education

- <u>Expected earnings:</u> compensation of employees (millions of euros)

- <u>Percentage of universities in the THE ranking:</u> number of universities classified in the THE ranking over the number of total institutions in a region

- <u>Tertiary educational attainment:</u> share of the population aged 30–34 years that has successfully completed tertiary education

Data sources and variables IV

- ***Other controls***
- Univ. Size, decentralization, public/private, teaching revenues
- Year and country fixed effects

- ***Methodology***
- Data have a two-level hierarchical structure: at level 1, institutional-level variables; level 2 includes regional variables.

- Multilevel model

Descriptive statistics

Share of degree and credit (2016) mobile students on the total student population by region

Degree mobility

% mobile stud. (ED6-8)
[0.00,5.50]
(5.50,8.88]
(8.88,14.57]
(14.57,86.20]
No data

Credit mobility

% Erasmus stud.
[0.00,0.57]
(0.57,0.95]
(0.95,1.76]
(1.76,7.89]
No data

Notes: Data from 2013 used for DK, from 2011 for HU and LU (degree mobility). Data from 2011 for LU (credit mobility)

Descriptive statistics

Share of degree (2014) and credit (2013) mobile students on the total student population by region

Notes: Data from 2013 used for DK, from 2011 for HU and LU (degree mobility). Data from 2011 for LU (credit mobility)
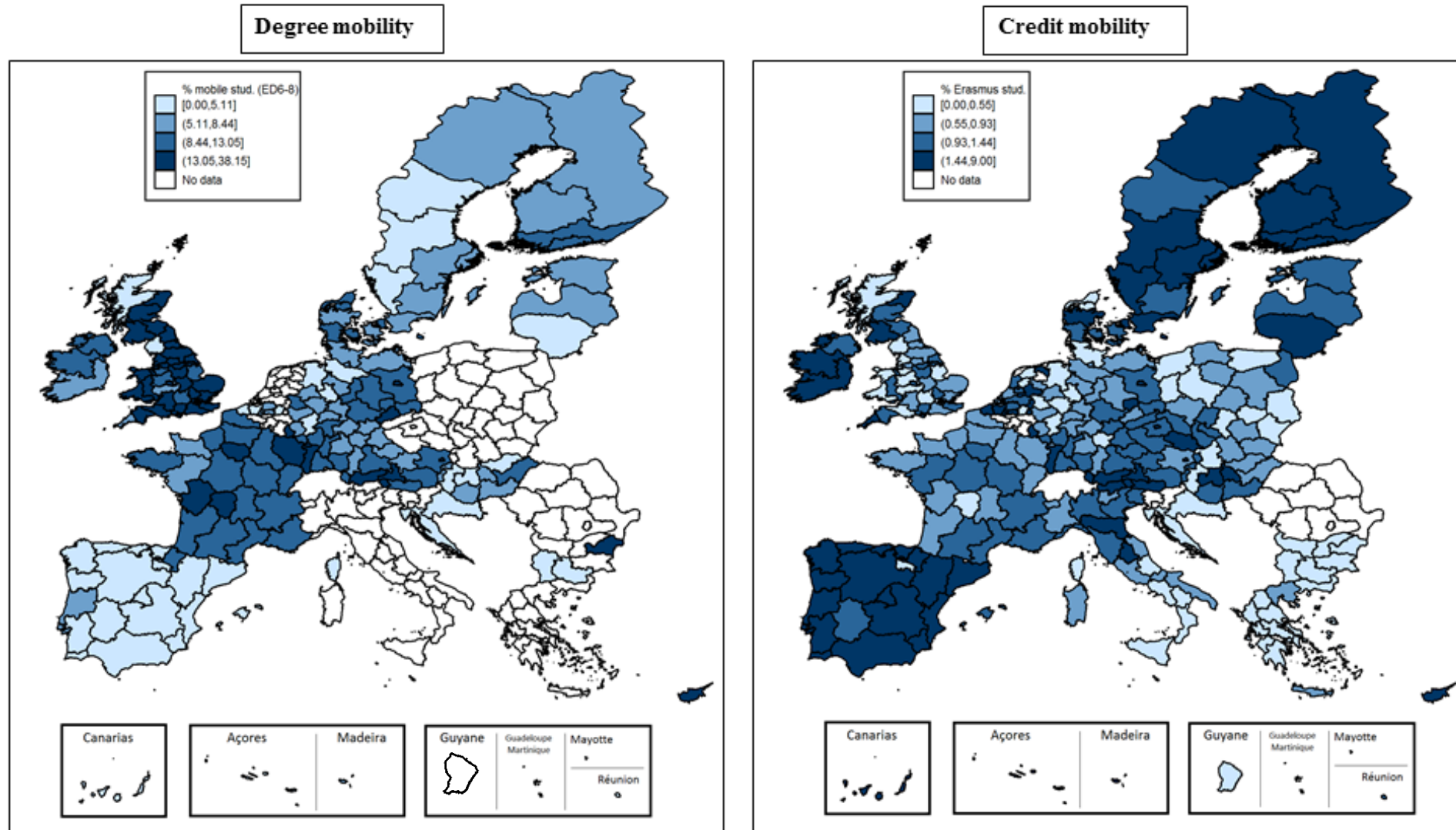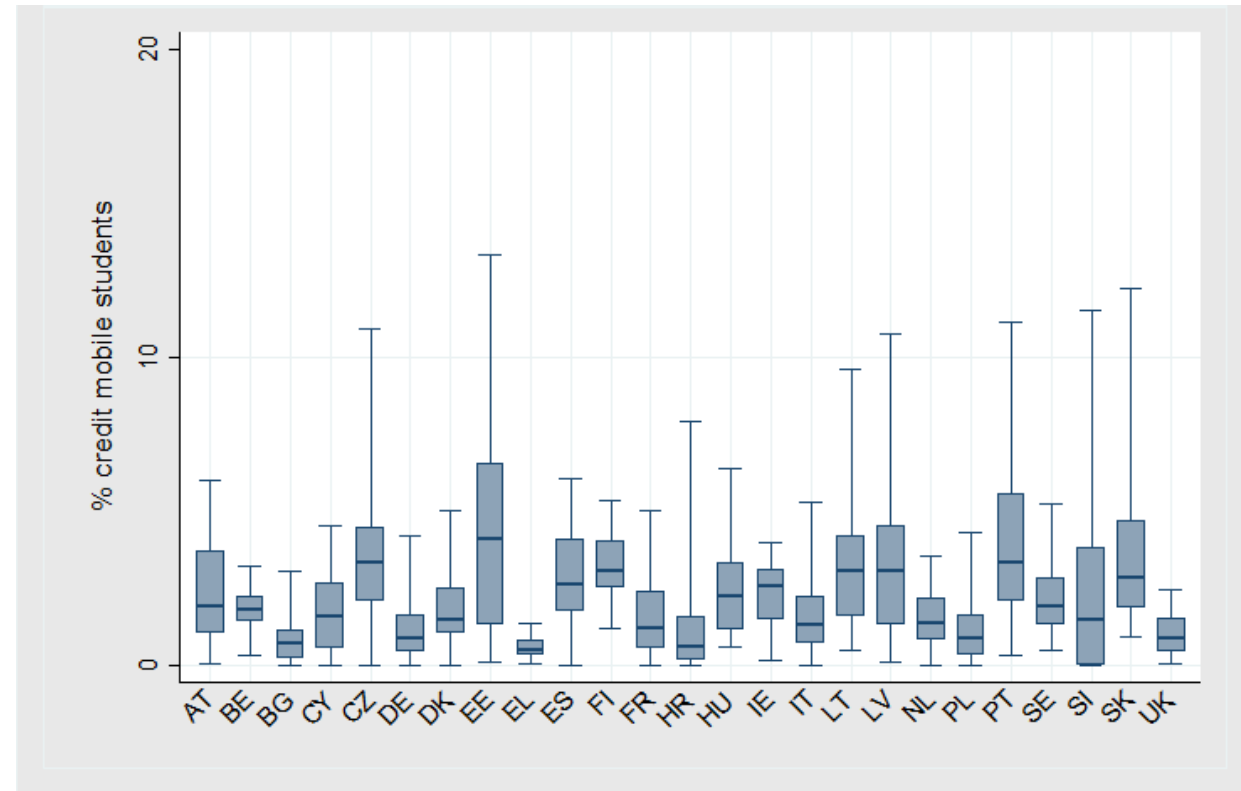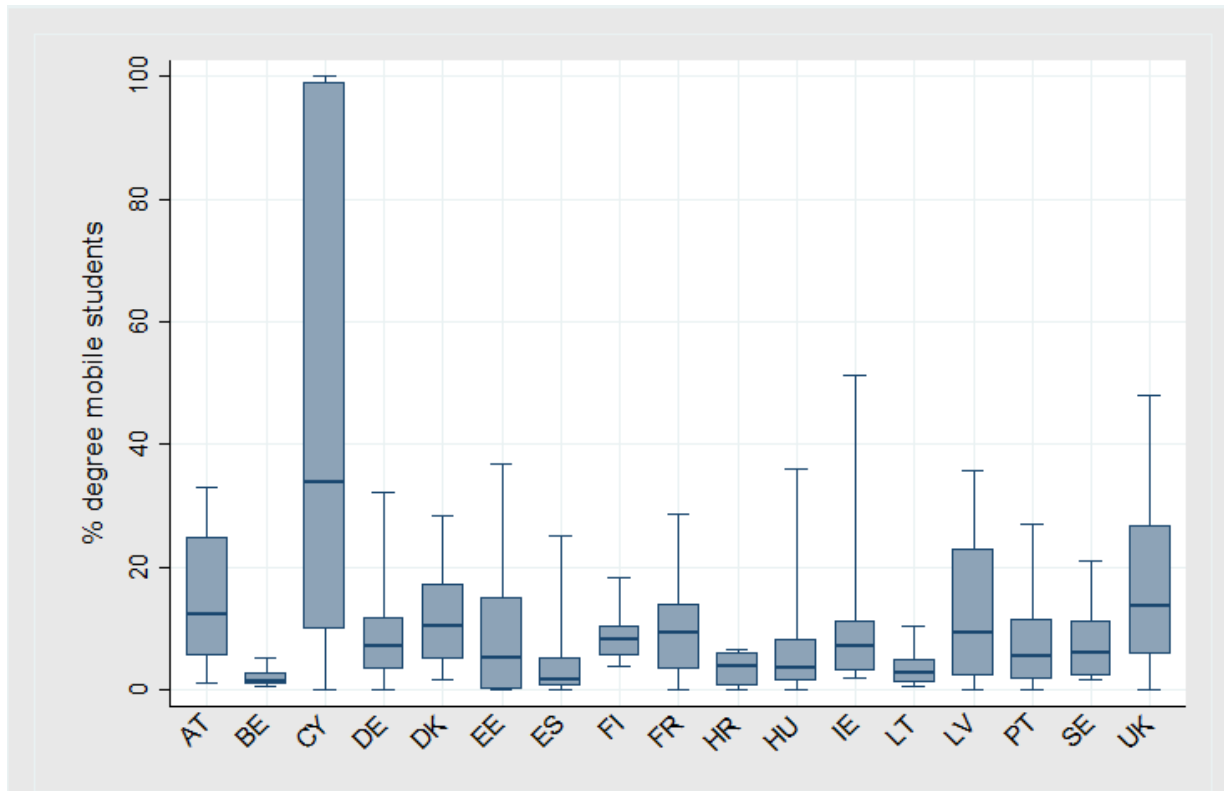
Descriptive statistics II

Institutional distribution (5th/95th) of the share of degree (2016) and credit (2016) mobile students

Notes: Data from 2013 used for DK, from 2011 for HU and from 2014 for FR. LU and MT not included.

Determinants of student mobility (ISCED 5-8)

	Degree mobility		Credit mobility	
	Coefficient	Standard error	Coefficient	Standard error
Institutional-level variables				
Teaching activities				
Teaching load (ln)	**-4.562*****	(0.307)	**-0.007*****	(0.000)
Student fees (ln)	**1.340*****	(0.133)	**0.001*****	(0.000)
Research activities				
Research intensity (ln)	-4.589	(3.813)	0.000	(0.005)
Research excellence (ln)	**0.503*****	(0.111)	0.000	(0.000)
Reputation (HEI in THE ranking)	1.234	(0.664)	-0.000	(0.001)
Regional-level variables				
Urbanisation				
Density (ln)	**1.355*****	(0.399)	-0.000	(0.001)
Employment opportunities				
Employment rate of recent tertiary graduates	-0.014	(0.043)	0.000	(0.000)
Expected earnings (ln)	−1.029	(0.760)	-0.001	(0.001)
Education system				
Percentage of universities in THE ranking	0.012	(0.024)	0.000	(0.000)
Tertiary educational attainment	0.046	(0.042)	**0.000*****	(0.000)
Constant	**30.977*****	(8.363)	**0.024****	(0.009)
No obs.	2,843		4,035	
No of NUTS2 regions	114		154	
No of HEIs	714		911	
chi^2	1147.691		851.484	
p	0.000		0.000	

Determinants of degree mobility by ISCED
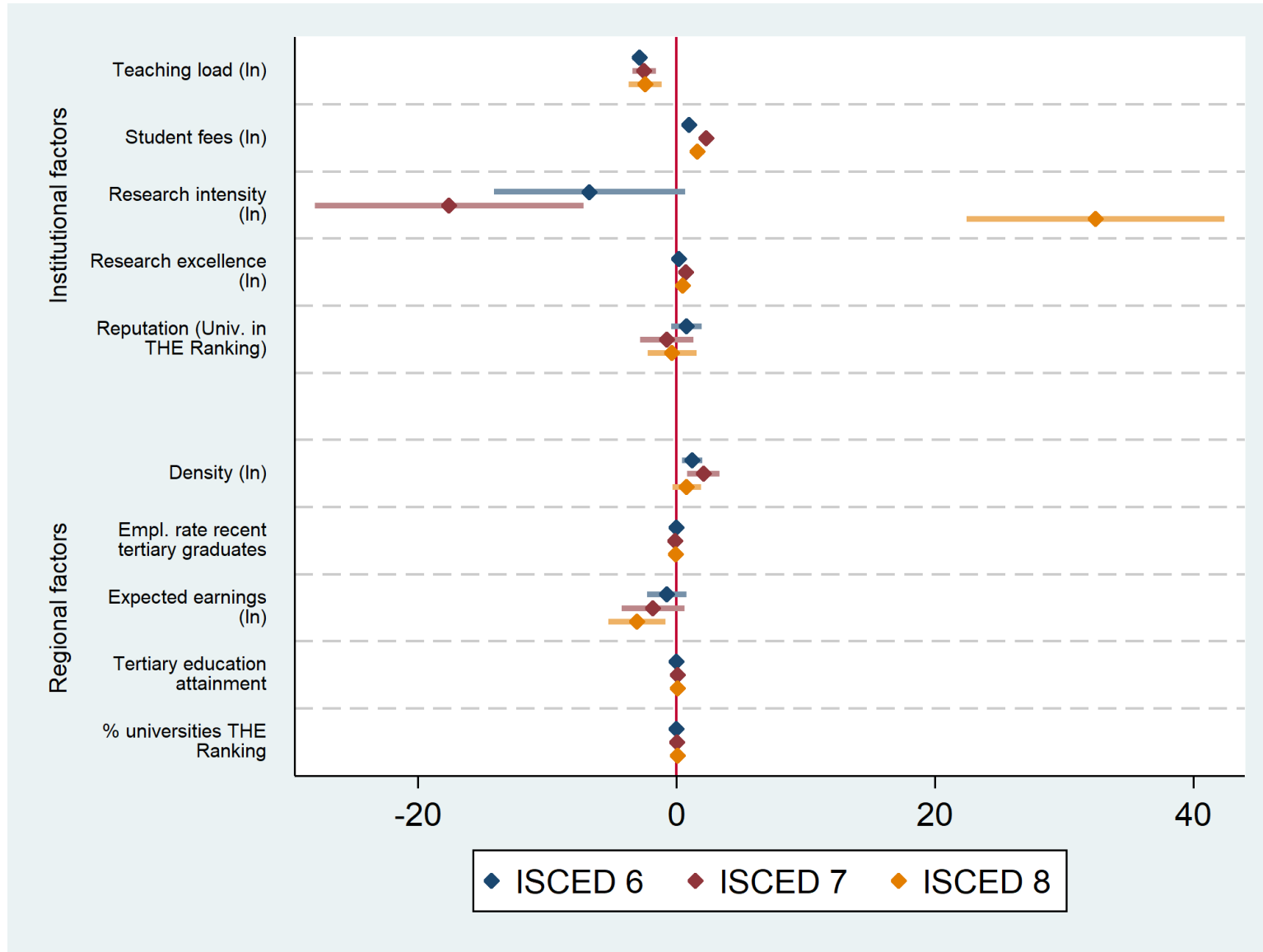
Determinants of degree mobility by ISCED
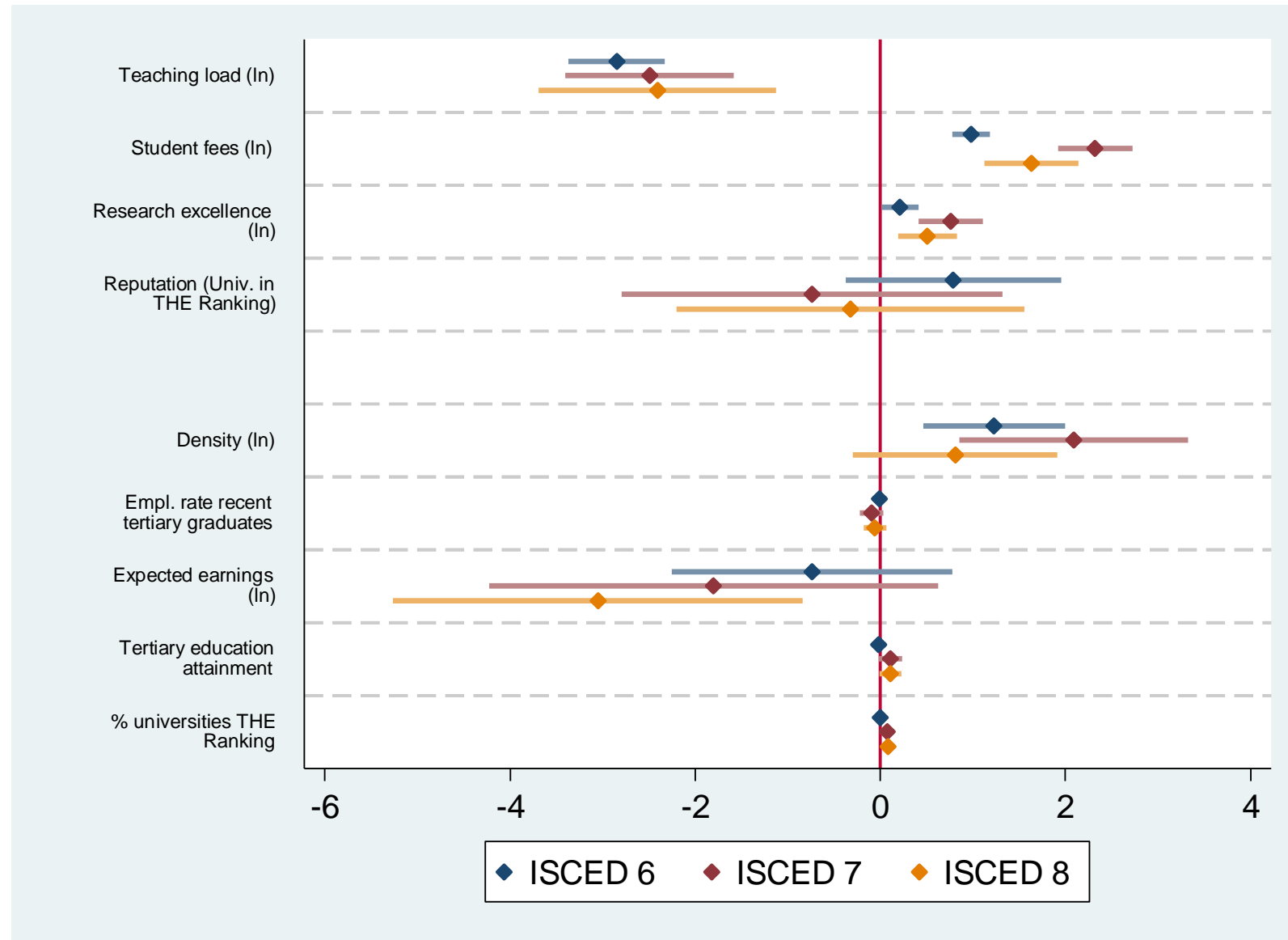
Robustness checks

- Factor analyses

	Degree mobility		Credit mobility	
	b	se	b	se
Teaching	**4.867*****	(0.393)	**0.006*****	(0.000)
Research	**1.003***	(0.423)	**0.003*****	(0.001)
Reputation (Univ. in THE Ranking)	-0.603	(0.807)	-0.001	(0.001)
Density (ln)	**1.760*****	(0.474)	0.000	(0.001)
Empl. rate recent tertiary graduates	-0.004	(0.077)	**0.000***	(0.000)
Expected earnings (ln)	**-1.940***	(0.819)	-0.001	(0.001)
Tertiary education attainment	0.029	(0.058)	**0.000*****	(0.000)
% universities THE Ranking	0.009	(0.032)	0.000	(0.000)
Constant	40.553***	(9.965)	0.029***	(0.008)
N	2104		4035	
chi2	694.585		600.962	
p	0.000		0.000	

Robustness checks II

- Alternative variables

- **'Research excellence':** total absolute number of publications and the percentage of total publications that, compared with other publications in the same field and in the same year, belong to the top 10% most frequently cited.

- **Size:** proxied by total staff in FTE

- **Reputation and %univ. in the region included in the ranking:** based on Shanghai ranking

- **Socio-demographic characteristics:** GDP per capita was also tested as an alternative proxy for the socio-economic characteristics of a region

- **Tertiary education attainment:** Two alternative variables were used here: (a) education background, measured as the percentage of the population aged 25–64 with tertiary studies; and (b) the share of employees with tertiary education

Preliminary conclusions

- **Degree mobility** is **more common than credit mobility** across and within countries.

  - More than five million degree mobile students (13.6%) versus almost one million Erasmus students (1.02%) between 2011 and 2016.

  - Most attractive countries: UK and AT (degree) and IE, ES (for credit).

  - For degree mobility, the higher the level of education, the greater the share of mobile students while for credit mobility, the lower the level of education, the greater the share of mobile students.

- **Institutional characteristics** tend to be **associated** with **student mobility** more than regional characteristics.

  - **Quality of teaching** activities is **positively correlated** with both degree and credit mobility

  - **Research activities** of universities are significantly **associated** only with **degree mobility**, in particular, of **postgraduates**

- Among **regional characteristics,** the level of **urbanisation** shapes **degree students' mobility**; while higher tertiary **education attainment** attracts **more credit mobile students.**

Policy implications

- Attraction of international students by **increasing the quality of higher education systems.**

- Regional governments contribution through policies **promoting quality** in the activities of their universities

- Regions could aim to **lower some costs for mobile students**, such as housing expenses, through subsidies. This is important in the case of **credit mobility**, where the cost of living of the destination locations is not a regional factor of attractiveness.

- Regional education **policies oriented towards the accomplishment of tertiary education** and targeted to **young people** could generate an adequate study environment attracting short-term mobile students.

- This encourages **more support for student mobility programmes** and/**or extension of current** schemes.

Thank you!