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Bayerisches Staatsinstitut für
Hochschulforschung und Hochschulplanung

International exchange semesters and early career success of recent graduates

Fabian Kratz

Employability of Graduates & Higher Education Management Systems

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Motivation

- Increasing intra-European mobility of students is one of the main objectives of the Bologna process
- Determinants and consequences of international mobility of students and graduates are of fundamental interest

Research question

Is there a difference in wage growth between graduates who spent a semester abroad and graduates who did not?

If there is a difference, how can we explain the steeper wage profiles of students who spent a semester abroad?

Outline

- State of research
- Theory
- Data and Methods
- Results
- Discussion

State of research: Determinants of exchange semesters: Who studies abroad?

Exchange students are a selective group (Lörz/Krawietz 2011):

- Social background
- Language competences
- Marks at school
- Universities

State of research: Consequences of exchanges semesters

- Improvement of foreign language skills
- Improvement of soft skills like intercultural awareness, adaptability, flexibility (Janson/Schomburg/Teichler 2009)
- International networking contacts (country of destination, other countries but also with students of the same nationality) (Janson/Schomburg/Teichler 2009)
- Exchange students also have a higher probability of being internationally mobile during their career (Parey 2008).
- Exchange semesters are associated with a greater probability of beginning a dissertation (Messer/Wolter 2007)
- Exchange semesters are positively associated with entry salaries (Messer/Wolter 2007). But: Selection effect no causal relationship

Theory: Exchange semesters and income development

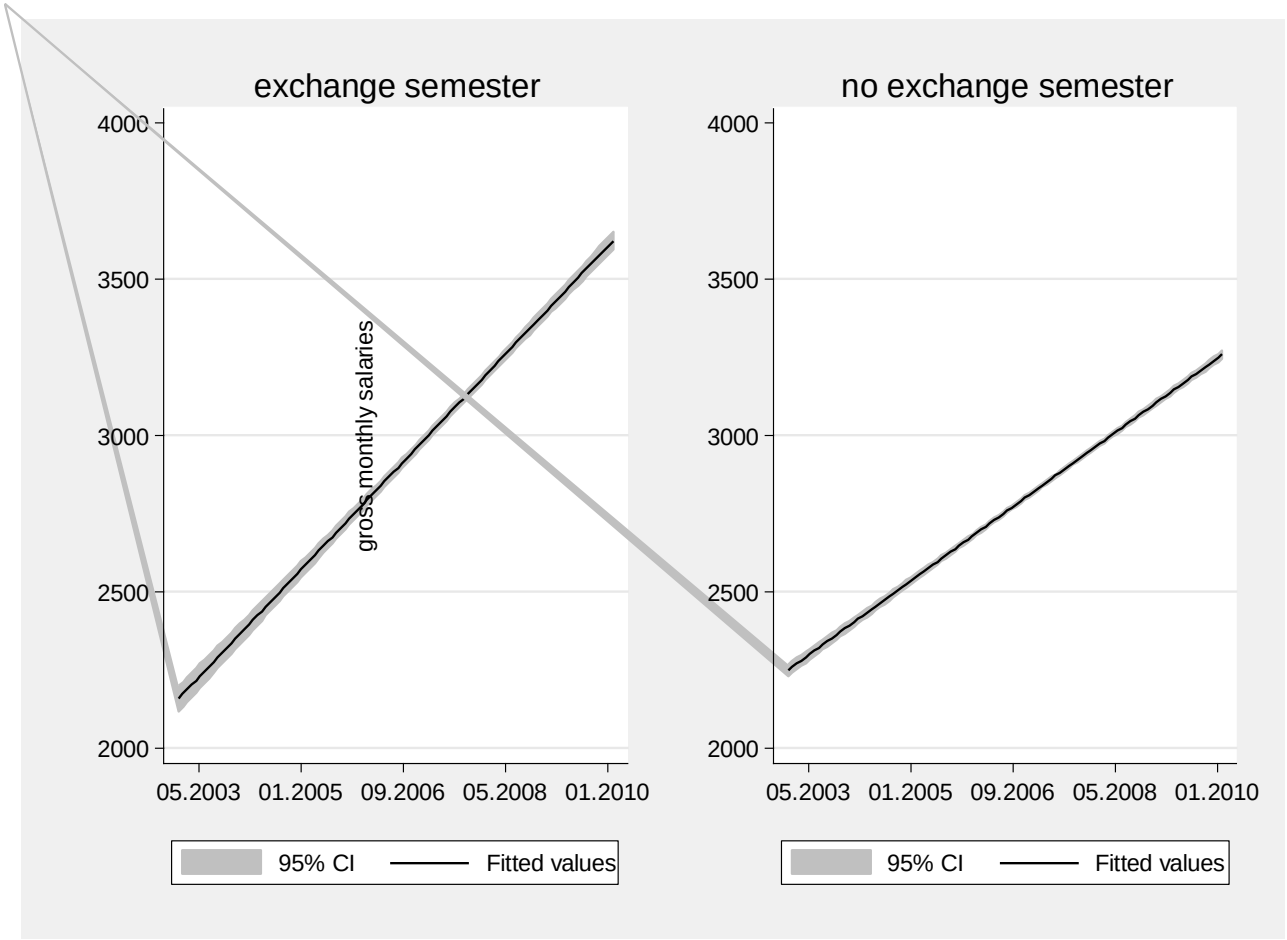
- (International) mobility as a signal for unobservable productivity (Hillmer 2002)

  H: Exchange semesters are associated with higher entry salaries

- Combination of human capital and job search theory (Faggian et al. 2006): Mobility experiences are associated with
  - location specific capital (-), spatially dispersed social capital (+)
  - => relocation costs (-), search costs (-),
  - => spatial range of job offers (+), search duration (+) reservation wages (+) income development (+)

  H: Exchange semesters are associated with steeper earning profiles

First descriptive results: wage growth and exchange semesters



Wage growth and exchange semesters

- There is almost no difference in entry salaries between graduates who spent a semester abroad and graduates who did not
- But students who spent a semester abroad have steeper earning profiles
- There is a qualitatively similar picture for all courses of study (appendix)
- Why is this the case?

Exchange semesters and wage growth: possible explanations

- International job-mobility is associated with wage gains + graduates with exchange semesters exhibit higher propensities to be internationally mobile
- Regional job-mobility is associated with wage gains (see e.g. Lehmer 2009) + graduates with exchange semesters exhibit higher propensities to be regionally mobile
- "…agglomeration improves labor market coordination and facilitates greater learning and human capital formation" (Freedman 2008: 590). + graduates with exchange semesters exhibit higher propensities to be regionally mobile towards agglomeration areas

Hypotheses

- H1: Exchange semesters are positively associated with job search distance (a convenient measure of the propensity to be mobile)
- H2: Exchange semesters are positively associated with international mobility
- H3: Exchange semesters are positively associated with regional mobility (in general)

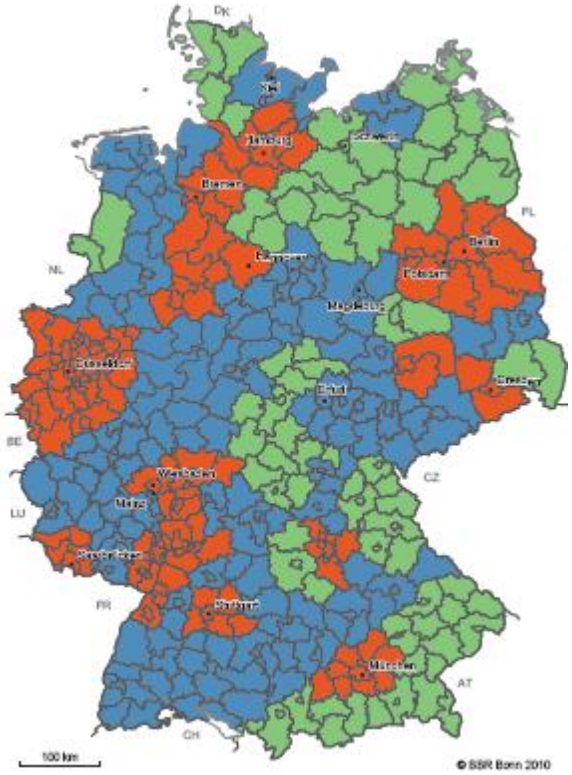
vs.

- H4: Exchange semesters are only positively associated with regional mobility towards agglomeration areas
- H5: International mobility is positively associated with income gains
- H6: Regional mobility (in general) is positively associated with income gains
- H7: Regional mobility towards agglomeration areas is positively associated with income gains

Data

- Bavarian Graduate Panel (BAP): 1. and 2. survey of the graduate cohort 2004 (one and a half year and six years after graduation)
  - a representative data base for a wide array of fields of study
  - Graduates were asked to answer questions about up to 5 job episodes since graduation
  - One question was the zip-code for every job spell if the job was in Germany and a code for every nation if the job was abroad
- => Possibility to combine the data with the German INKAR-Data: typology of German regions

INKAR-region-typology



Regionsgrundtyp 1: Agglomerationsräume
Oberzentrum über 300.000 Einwohner oder
Dichte um 300 Einwohner/km²

Regionsgrundtyp 2: Verstädterte Räume
Dichte größer als 150 Einwohner/km² oder
Oberzentrum über 100.000 Einwohner bei einer Mindestdichte von 100 Einwohner/km²

Regionsgrundtyp 3: Ländliche Räume
Dichte über 150 Einwohner/km² und ohne Oberzentrum über 100.000 Einwohner; mit Oberzentrum über 100.000 Einwohner und Dichte unter 100 Einwohner/km²

The BAP-INKAR-Data (spell and panel-data)

id	spell	start	end	wage	same_employer	workplace_kreiskennz.	workplace_reg_type
3210	1	2004m11	2004m12	800	.t	6440000	1_Agglomerationsräume
3210	2	2005m1	2005m8	1600	Yes	9561000	3_Ländliche Räume
3210	3	2005m9	2008m4	2400	No	9561000	3_Ländliche Räume
3210	4	2008m5	2009m12	2700	No	9161000	2_Verstädterte Räume
3210	5	2010m1	2010m2	3300	Yes	9161000	2_Verstädterte Räume

id	time	wage	same_employer	workplace_kreiskennz.	workplace_reg_type
3210	2004m11	800	.t	6440000	1_Agglomerationsräume
3210	2004m12	800	.t	6440000	1_Agglomerationsräume
3210	2005m1	1600	Yes	9561000	3_Ländliche Räume
3210	2005m2	1600	Yes	9561000	3_Ländliche Räume
3210	2005m3	1600	Yes	9561000	3_Ländliche Räume
3210	2005m4	1600	Yes	9561000	3_Ländliche Räume
3210	2005m5	1600	Yes	9561000	3_Ländliche Räume
3210	2005m6	1600	Yes	9561000	3_Ländliche Räume
3210	2005m7	1600	Yes	9561000	3_Ländliche Räume
3210	2005m8	1600	Yes	9561000	3_Ländliche Räume
3210	2005m9	2400	No	9561000	3_Ländliche Räume
3210	2005m10	2400	No	9561000	3_Ländliche Räume
3210	2005m11	2400	No	9561000	3_Ländliche Räume
3210	2005m12	2400	No	9561000	3_Ländliche Räume

Descriptive results: exchange semesters and job search process

	International Experience					
	No exchange semester		**Exchange semester**		**Total**	
	Absolute	%	Absolute	%	Absolute	%
Job search						
Regional	708	53.3%	108	27.8%	816	47.5%
National	403	30.3%	152	39.2%	555	32.3%
International	218	16.4%	128	33.0%	346	20.2%
Total	**1329**	**100.0%**	**388**	**100.0%**	**1717**	**100.0%**

Descriptive results: exchange semesters and agglomeration

	International experience					
	No exchange semester		Exchange semester			
	Absolute	%	Absolute	%	Absolute	%
mobility type (job entry)						
stayer	505	30.5%	112	23.9%	617	29.0%
from aglom. to aglom.	233	14.1%	52	11.1%	285	13.4%
from rural/urban. to rural/urban.	404	24.4%	72	15.4%	476	22.4%
from aglom. to rural/urban.	127	7.7%	26	5.5%	153	7.2%
from rural/urban. to aglom.	316	19.1%	166	35.4%	482	22.7%
international	70	4.2%	41	8.7%	111	5.2%
Total	**1655**	**100.0%**	**469**	**100.0%**	**2124**	**100.0%**

Descriptive results: exchange semesters and agglomeration

	International Experience					
	No exchange semester		Exchange semester		Total	
	Absolute	%	Absolute	%	Absolute	%
Number of moves into agglomeration areas after job entry						
0	1452	85.0%	386	80.4%	1838	84.0%
1	221	12.9%	84	17.5%	305	13.9%
2	34	2.0%	10	2.1%	44	2.0%
3	1	0.1%	0	0.0%	1	0.0%
Total	**1708**	**100.0%**	**480**	**100.0%**	**2188**	**100.0%**

Descriptive results: exchange semesters and agglomeration

	International Experience					
	No exchange semester		**Exchange semester**		**Total**	
	Absolute	%	Absolute	%	Absolute	%
Number of moves into rural or urbanized regions after job entry						
0	1450	84.9%	420	87.5%	1870	85.5%
1	217	12.7%	54	11.3%	271	12.4%
2	36	2.1%	6	1.3%	42	1.9%
3	4	0.2%	0	0.0%	4	0.2%
4	1	0.1%	0	0.0%	1	0.0%
Total	**1708**	**100.0%**	**480**	**100.0%**	**2188**	**100.0%**

Descriptive results: exchange semesters and international mobility

	International Experience					
	No exchange semester		Exchange semester		Total	
	Absolute	%	Absolute	%	Absolute	%
Number of jobs abroad						
0	1566	91.7%	396	82.5%	1962	89.7%
1	103	6.0%	55	11.5%	158	7.2%
2	28	1.6%	21	4.4%	49	2.2%
3	9	0.5%	6	1.3%	15	0.7%
4	2	0.1%	2	0.4%	4	0.2%
Total	**1708**	**100.0%**	**480**	**100.0%**	**2188**	**100.0%**

Methods

- A panel fixed effects-regression is used to estimate the log gross monthly salaries as a function of different job-mobility and control variables
- Fixed effects-regressions control for all time-constant characteristics (see e.g. Allison 2009)
  - observed characteristics (e.g. courses of study, grades)
  - Unobserved characteristics (e.g. motivation, ability or job commitment)
- Time varying information is included in the model to control for time varying characteristics (employer change, birth of first child etc.)

Fixed effects regression

	(1) All	(2) Women	(3) Men
Finished dissertation	0.177***	0.198***	0.168***
At least one child	-0.0308***	-0.101***	0.00377
Employer change	0.172***	0.171***	0.173***
Job change (same employer)	0.165***	0.155***	0.176***
International mobility	-0.0120*	-0.0238**	-0.00517
Mobility towards rural/urban. areas	-0.00230	-0.0165**	0.00993*
Mobility towards agglom. areas	0.0411***	0.0388***	0.0459***
Employed part time	-0.520***	-0.529***	-0.500***
Experience	0.00185***	0.00325***	0.000746***
Experience2	-0.00000705***	-0.0000270***	0.00000873***
Constant	7.782***	7.666***	7.882***
(Within-) R^2	0.537	0.484	0.602
Persons	1404	679	725
Person months	87789	40635	47154
Rho	0.764	0.736	0.754

fixed effects regression, dep. var. log wage
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Summary

- There is no association between an exchange semester and regional mobility towards rural or urbanized regions
- Graduates who spent an exchange semester abroad exhibit a higher likelihood of:
  - Having a first job abroad and being internationally mobile during the career
  - Moving towards agglomeration areas when entering the labor market and during the career
- Graduates who spent a semester abroad have steeper income developments
- The steeper income developments can be explained mainly through higher
  - Probabilities of writing and finishing a dissertation
  - Probabilities of moving to agglomeration areas

Discussion:

- Price-levels in agglomeration areas are generally higher than in rural or urbanized regions (Need to adjust for regional price levels)
- Difficult question: Does international mobility pay? (Problems: internationally mobile graduates are hard to “catch”, different international price levels)
- Causality: The question: Would graduates with no exchange semester abroad have steeper income developments if they spent an exchange semester abroad can not be answered finally

Thank you for your attention!

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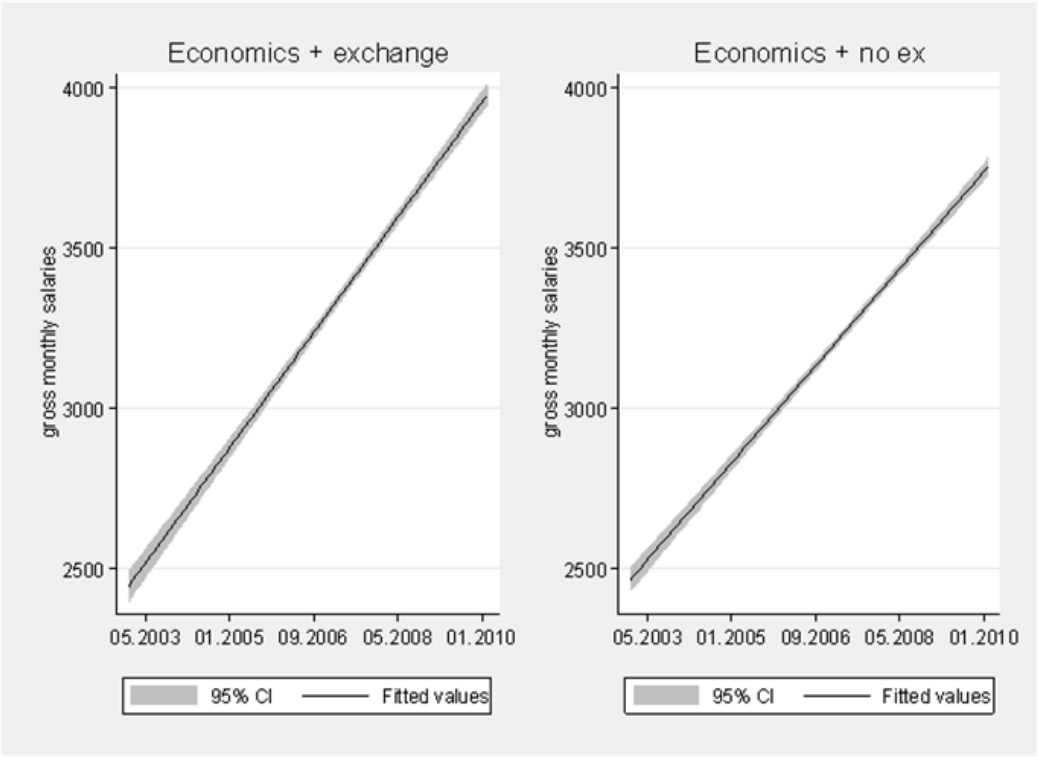
Descriptive results: exchange semesters and income development



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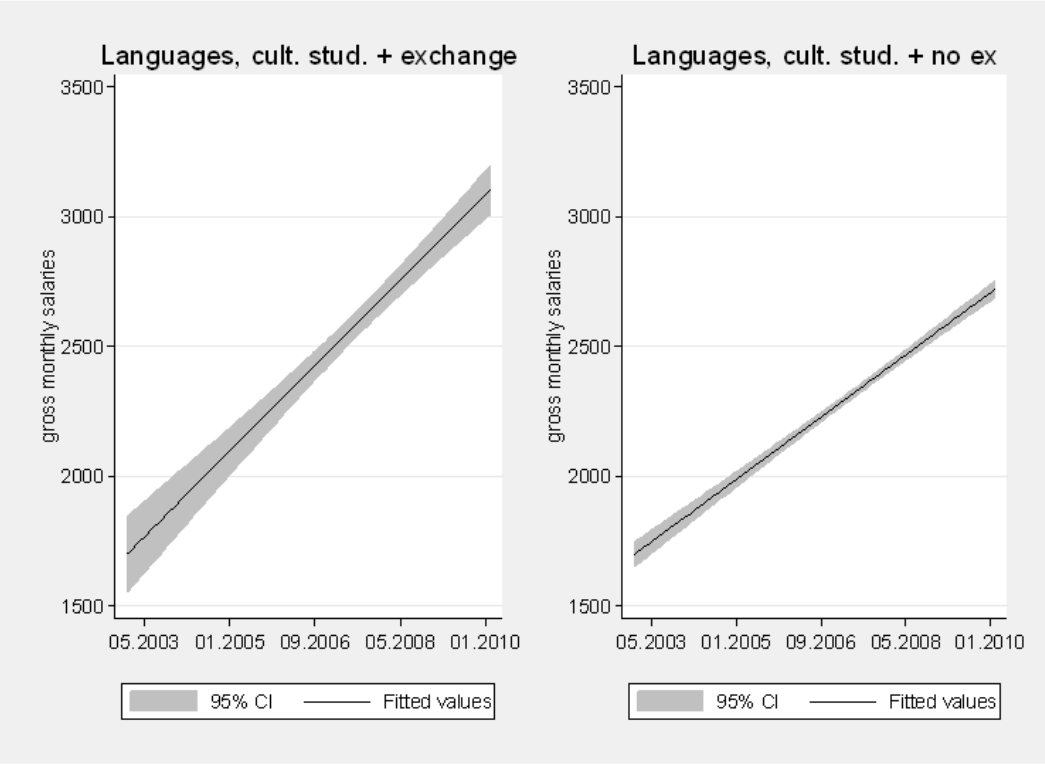

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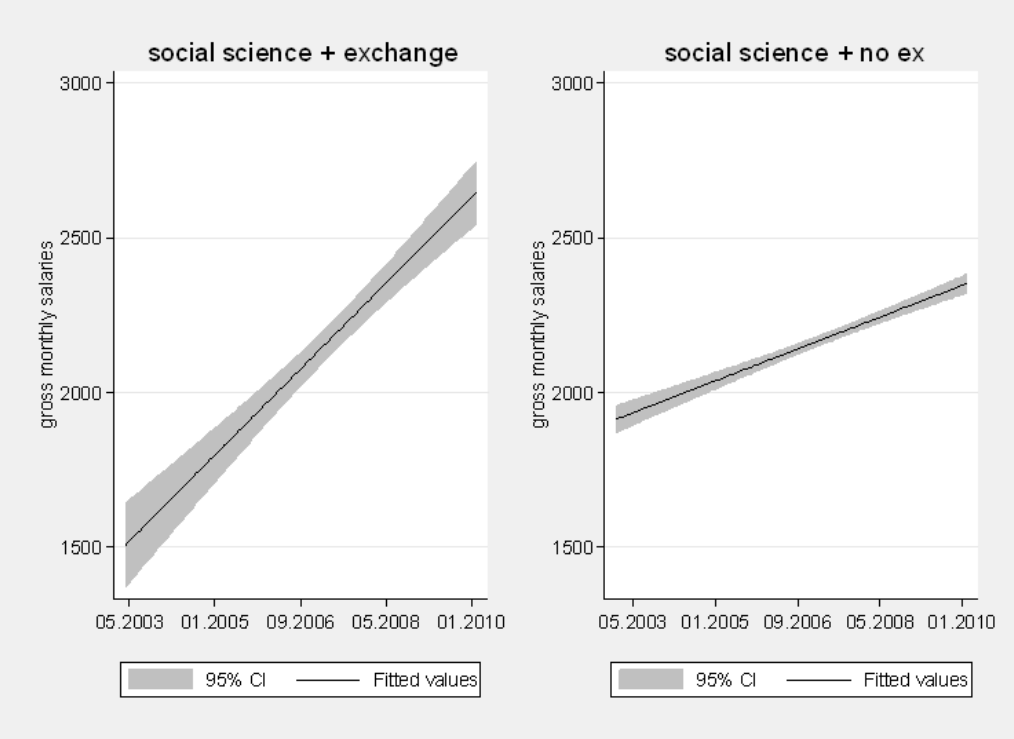

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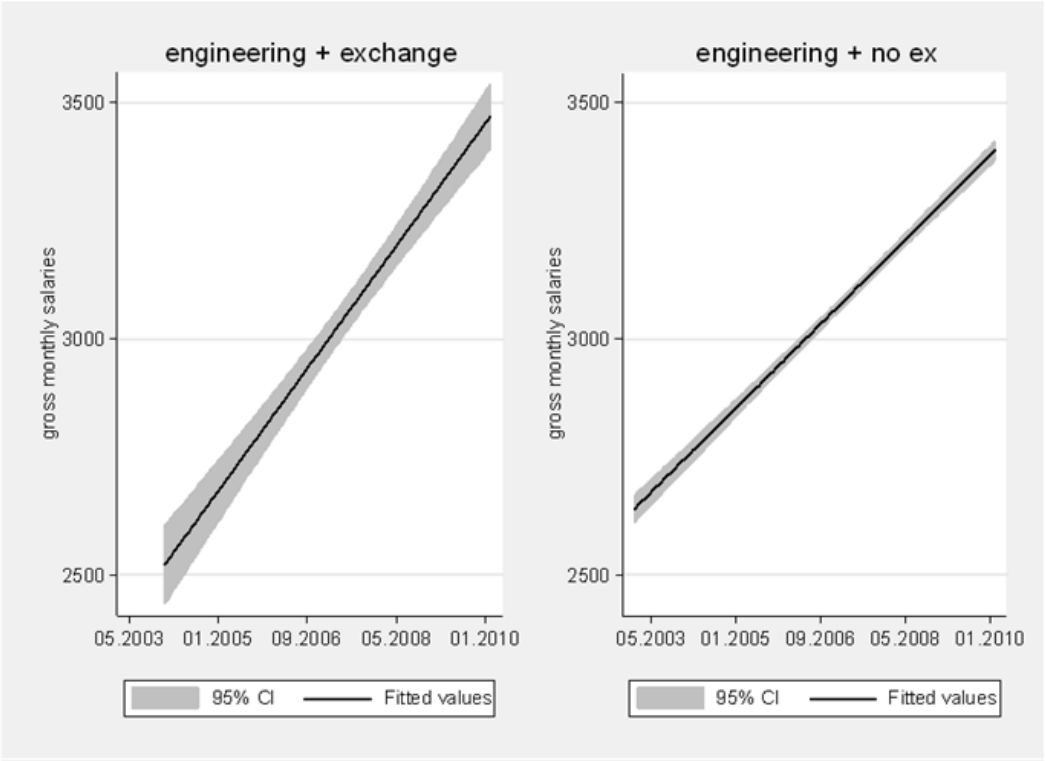

Descriptive results: exchange semesters and income development