

SUPPLEMENTAL ONLINE MATERIAL

Appendix 1: Data sources and access.

The variables have been made available to the author, with permission, within the LISA framework of Statistics Sweden (Longitudinal Integration Database for Social Insurance and Labour Market Studies). The variables used in this paper are originally derived from the population register, the education register, the employment register, the income dataset and the company register.

Unfortunately, the dataset used here does not contain any occupational information. Also, the occupation flow analysis is accompanied by many empirical hurdles since the individual's occupation status is not sampled every year.

Appendix 2: Description of the different industry aggregates

Name	LO-M	HI-M	OSER	KIBS
Number of employees, 2010	256,800	305,800	243,300	229,500
Employment growth 2010-2014	-7.5%	-3.2%	-3.0%	8.2%
Average educational level	3.5	4	3.7	4.8
Average salary	306,300	357,400	201,900	341,000
Examples	Food Textiles Wood Steel Furniture	Chemicals and pharmaceuticals Metal manufacturing Electronics Machinery Cars Vehicles	Vehicle leasing Recruitment Staffing agencies Security Cleaning Office services Call centres	Legal services Technical consultants Auditing Research PR
Codes SNI2007 (NACE Rev. 2)	10000-18200 22110-24540 31011-33200	19100-21200 25110-30990	77110-82990	69101-75000

Table A1: description of the different industry aggregates. Author's elaboration of data from Statistics Sweden.

Note1: Educational level is min 1 and max 7; where 1 is elementary education shorter than 9 years; 2 is 9 years of elementary school; 3 is upper secondary school for max 2 years; 4 is upper secondary school for 3 years; 5 is post upper secondary school education for less than 3 years; 6 is post upper secondary school education for 3 years or longer (normally a university degree); and 7 is a PhD.

Note 2: Salary is net annual salary in SEK.

Appendix 3: Descriptives of the regional aggregates

The Swedish Agency for Economic and Regional Growth employs a slightly different definition of regions (FA-regions), and these have been adapted to the LA-regions used by Statistics Sweden, see Eriksson and Hane-Weijman (2017). The metropolitan regions generally have much bigger and more varied labour markets than the other types of regions. Countryside regions normally consist of one or more central towns of very limited size, and their surrounding countryside.

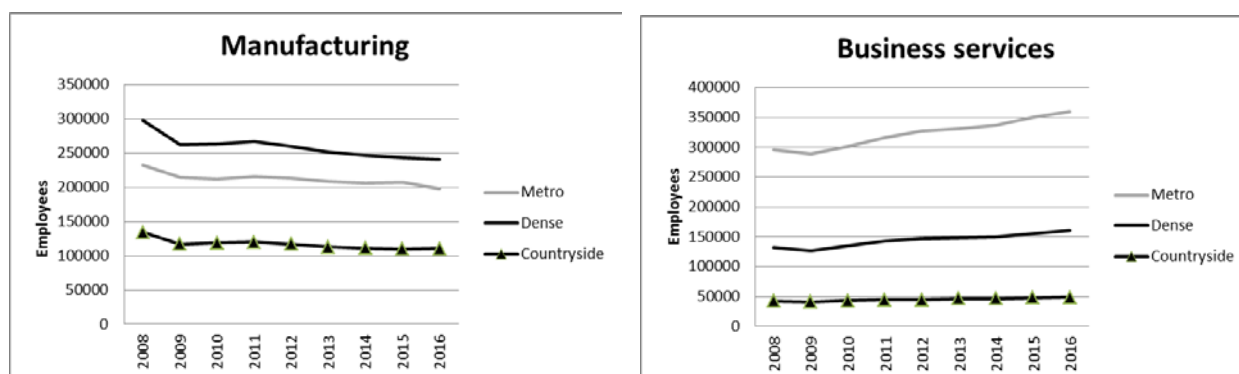
	Metropolitan regions	Dense regions	Countryside regions
Number of regions	3	29	41
Average size of labour market (employees, 2010)	708,700	52,700	14,300
Examples	Stockholm Gothenburg Malmö	Linköping Borås Sundsvall Umeå	Ljungby Filipstad Ludvika Åsele

Table A2: descriptives of the regional aggregates. Author's elaboration of data from Statistics Sweden.

Reference

Eriksson R H, Hane Weijman E (2017). How do regional economies respond to crises? The geography of job creation and destruction in Sweden (1990–2010). *European Urban and Regional Studies* 24(1): 87–103.

Appendix 4: Employees in business services and manufacturing in Sweden



Figures A1(a,b): employment in Sweden in manufacturing and business services, between 2008 and 2016, broken down into three regional categories. Author's elaboration of employment data from Statistics Sweden (www.scb.se). Regional categories from the Swedish Agency for Economic and Regional Growth (2011 p. 19), industries are standard NACE categories.

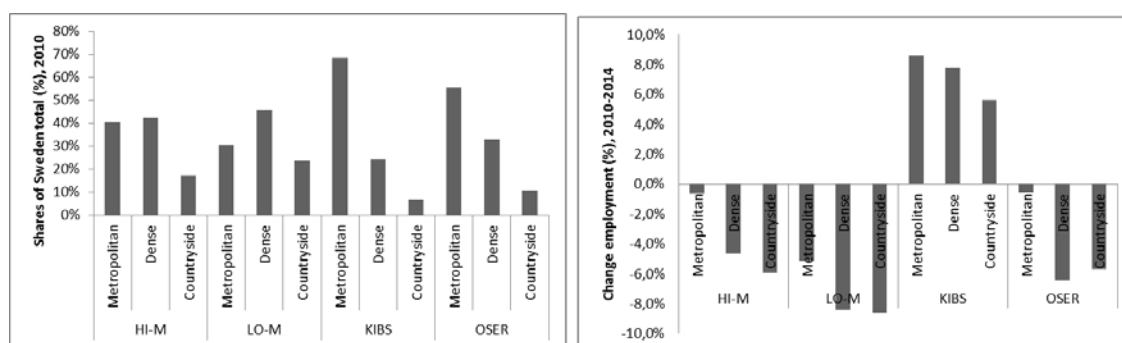


Figure A2(a, left): sector proportions of employees regarding HI-M, LO-M, KIBS and OSER (of Swedish total) in metropolitan, dense and countryside regions, 2010; (b, right): employment changes (percent) regarding HI-M, LO-M, KIBS and OSER in metropolitan, dense and countryside regions, 2010-2014. Author's elaboration of data from Statistics Sweden.

Appendix 5: Calculation of skill-relatedness

We rely on the method devised by Neffke and Henning (2013), and by Otto et al. (2014), but the representation has been made directional. Therefore, skill-relatedness R_{ij} is calculated between the sectors i and j according to Otto et al. 2014:

$$SR_{ij} = \frac{F_{ij}}{\hat{F}_{ij}} \quad (1)$$

where $F_{i,j}$ is the observed flow between sectors (HI-M, LO-M, KIBS, OSER) i and j between 2010 and 2014, and $\hat{F}_{i,j}$ is the expected flow in a random flow scenario calculated as:

$$\hat{F}_{ij} = \frac{F_i F_j}{F} \quad (2)$$

where F is the total labour flow between sectors in an economy, F_i are the total outflows from sector i and F_j are the total inflows into sector j . All in all, this will give us a ratio representing the size of the observed flow between a sector pair in 2010-2014 (e.g. HI-M \rightarrow KIBS), compared to an expected flow subject to random assumptions.

Appendix 6: Logistic regression on the probability of specific industry flow combinations, regarding the different spatial groups, both with and without individual control variables.

A series of logit regressions has been specified where the binary dependent variable takes the value of 1 if the specified flow of the model is performed by an individual (for example LO-M → KIBS in Model 1), and 0 for individuals leaving the sector, but entering another sector of destination. The main independent variables of interest are whether the region of origin of the individual (2010) is countryside (reference), dense or metropolitan. As individual controls, we add the following variables: male/female, age, wage and educational level.

	1	2	3	4	5	6	7	8
	LO-M→KIBS	LO-M→KIBS	LO-M→OSER	LO-M→OSER	HI-M→KIBS	HI-M→KIBS	HI-M→OSER	HI-M→OSER
Dense region	0.180 (0.10)	0.120 (0.10)	0.064 (0.08)	0.095 (0.09)	0.414* (0.19)	0.288 (0.18)	0.053 (0.08)	0.144 (0.09)
Metropolitan region	0.472*** (0.10)	0.322*** (0.10)	0.019 (0.07)	0.107 (0.07)	0.793*** (0.12)	0.372** (0.12)	-0.252*** (0.07)	0.029 (0.08)
Man/female		-0.143*** (0.04)		-0.198*** (0.05)		-0.183* (0.09)		-0.052 (0.06)
Age		0.014*** (0.00)		-0.010*** (0.00)		0.015*** (0.00)		-0.008*** (0.00)
Salary		0.488*** (0.03)		-0.216*** (0.01)		0.517*** (0.04)		-0.236*** (0.01)
Education		0.000*** (0.00)		-0.000*** (0.00)		0.000*** (0.00)		-0.000*** (0.00)
Constant	-2.696*** (0.09)	-5.174*** (0.14)	-2.274*** (0.07)	-0.545*** (0.11)	-2.341*** (0.10)	-4.942*** (0.21)	-2.139*** (0.07)	-0.466*** (0.11)
N	67914	67845	67914	67845	64449	64384	64449	64384
ll	-18937.619	-17845.203	-21500.043	-20981.142	-25825.412	-23877.548	-20709.042	-19938.260

Table A3: logit regression coefficients with specific transition as dependent variable. Independent variables at their 2010 values. Robust standard errors in parentheses (region clusters). Author's elaboration of data from Statistics Sweden. * p<0.05, ** p<0.01, *** p<0.001

Note 1: Male (0), female (1).

Note2: Educational level is min 1 and max 7; where 1 is elementary education less than 9 years; 2 is 9 years of elementary school; 3 is upper secondary school for max 2 years; 4 is upper secondary school for 3 years; 5 is post upper secondary school education for less than 3 years; 6 is post upper secondary school education for 3 years or longer (normally a university degree); and 7 is a PhD.

Note 3: Salary is net annual salary in SEK.

	9	10	11	12	13	14	16	16
	KIBS→LO-M	KIBS→LO-M	KIBS→HI-M	KIBS→HI-M	OSER→HI-M	OSER→HI-M	OSER→LO-M	OSER→LO-M
Dense region	-0.070 (0.15)	-0.044 (0.15)	-0.071 (0.27)	-0.093 (0.26)	0.163 (0.21)	0.142 (0.21)	-0.220 (0.15)	-0.227 (0.15)
Metropolitan region	-0.432 (0.40)	-0.424 (0.38)	-0.318 (0.36)	-0.483 (0.36)	-0.554* (0.26)	-0.599* (0.25)	-0.859** (0.28)	-0.844** (0.27)
Man/female		-0.146 (0.12)		-0.771*** (0.10)		-0.826*** (0.07)		-0.655*** (0.04)
Age		0.007 (0.00)		0.006 (0.00)		-0.002 (0.00)		-0.011*** (0.00)
Salary		-0.103*** (0.02)		0.315*** (0.04)		0.007 (0.02)		-0.169*** (0.02)
Education		0.000* (0.00)		0.000*** (0.00)		0.000*** (0.00)		0.000*** (0.00)
Constant	-2.653*** (0.13)	-2.410*** (0.30)	-2.210*** (0.24)	-2.972*** (0.36)	-2.349*** (0.17)	-1.264*** (0.26)	-2.527*** (0.14)	-0.645** (0.20)
N	83954	83820	83954	83820	115052	114902	115052	114902
ll	-16469.337	-16265.712	-23366.691	-22295.695	-29229.392	-28518.906	-21148.837	-20711.176

Table A4: logit regression coefficients with specific transition as dependent variable. Independent variables at their 2010 values.. Robust standard errors in parentheses (region clusters). Author's elaboration of data from Statistics Sweden. * p<0.05, ** p<0.01, *** p<0.001

Note 1: Male (0), female (1).

Note2: Educational level is min 1 and max 7; where 1 is elementary education for less than 9 years; 2 is 9 years of elementary school; 3 is upper secondary school for max 2 years; 4 is upper secondary school for 3 years; 5 is post upper secondary school education for less than 3 years; 6 is post upper secondary school education for 3 years or longer (normally a university degree); and 7 is a PhD.

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Appendix 6: Descriptives of logit regressions, Table 4

Those moving into services in metropolitan regions from other regions

Variable	Obs	Mean	Std.Dev	Min	Max
Male/female	2,973	0.3	.4	0	1
Age	2,973	33.2	12.9	18	65
Education	2,973	4.4	1.3	0	7
Salary	2,973	2692	4153	2	126438

Those moving into services but staying in hierarchy regions lower than metropolitan regions

Variable	Obs	Mean	Std.Dev	Min	Max
Male/female	12,816	0.3	.4	0	1
Age	12,816	37	13	18	65
Education	12,816	3.9	1.3	0	7
Salary	12,816	2621	2155	1	62590

Those moving into manufacturing in metropolitan regions from other regions

Variable	Obs	Mean	Std.Dev	Min	Max
Male/female	1,037	0.3	.5	0	1
Age	1,037	31.4	10.6	18	64
Education	1,037	4.4	1.3	0	7
Salary	1,037	2110	2392	1	31384

Those moving into manufacturing but staying in hierarchy regions lower than metropolitan regions

Variable	Obs	Mean	Std.Dev	Min	Max
Male/female	10,958	0.3	.4	0	1
Age	10,958	33.7	11.6	18	65
Education	10,958	4.0	1.3	0	7
Salary	10,958	2121	1639	1	20212

Tables A5-A8: descriptives of individuals making different geographical moves, auxiliary to Table (4).

Variables at their 2010 values. Author's elaboration of data from Statistics Sweden.

Note 1: Male (1), female (0).

Note2: Educational level is min 1 and max 7; where 1 is elementary education for less than 9 years; 2 is 9 years of elementary school; 3 is upper secondary school for max 2 years; 4 is upper secondary school for 3 years; 5 is post upper secondary school education for less than 3 years; 6 is post upper secondary school education for 3 years or longer (normally a university degree); and 7 is a PhD.

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