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.

Note 1: 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.

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

$$SR_{ij} = \frac{F_{ij}}{\hat{F}_{ij}}$$

(1)

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

$$\hat{F}_{ij} = \frac{F_i F_j}{F}$$

(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.

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).
Note 2: 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.

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).
Note 2: 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.

Note 3: Salary is net annual salary in SEK.
### Appendix 6: Descriptives of logit regressions, Table 4

These 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).
Note 2: 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.

Note 3: Salary is net annual salary in SEK.