

Impact of Spatial Proximity on Manufacturing Total Factor Productivity in Great Britain, 1984-2014

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Overview

Research question:

- Does spatial proximity enhance plant-level total factor productivity in the Great Britain during 1984-2014?

Methodologies:

- Step 1: Production function estimation 1973-2014 (system GMM)
- Step 2: TFP calculation

Findings:

- Marshallian spillovers benefit larger plants (with sufficient absorptive capacity)

Overview (continued)

Literature review:

- Marshallian externalities (Intra-industry): localisation externalities (Marshall, 1890; Arrow, 1962; Romer, 1986)
- Jacobian externalities (Inter-industry): urbanisation externalities (Jacobs, 1970, 1986)

Contributions:

- Construct a distance index for each manufacturing industry (4-digit SIC 1980), that measures the proximity of each plant with every other plant within the same industry;
- Test if each plants TFP is determined by the degree to which it is collocated with other plants in the same industry;
- Location is treated as endogenous: the distance index is instrumented.

1 Study background:

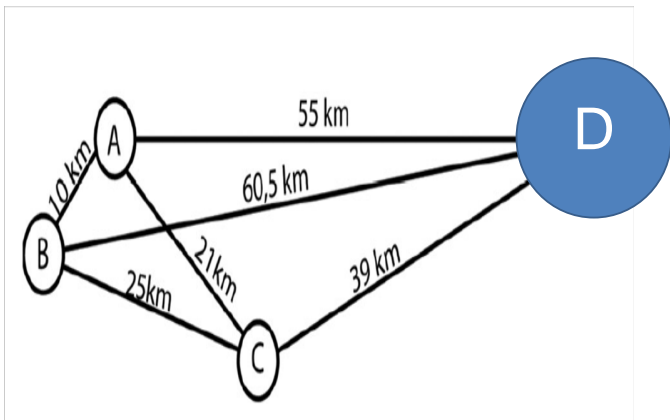
- Placed-base policies in manufacturing in the Great Britain from 1984-2014 (at country level, at regional level)
- Some descriptive statistics to indicate the spatial development of the Manufacturing industries (Inter-industry)

2 Marshallian externalities (intra-industry):

- Distance index: straight-line distance or travel distance is used? (Travel distance by ca: Francois and Nguyen, 2017)
- Do relatively larger plants staying in further distance matter?
- How to directly indicate the impact of collocation index on TFP? (Eq.1)

$$y_{it} = \alpha_i + \alpha_E e_{it} + \alpha_M m_{it} + \alpha_K k_{it} + \alpha_X X_{it} + \alpha_T t + \epsilon_{it} \quad (1)$$

Marshallian Externalities (Figure 1)



Comments (continued)

- 1 Jacobian externalities (inter-industry): diversification.
 - Backward and forward linkaged (Javorcik, 2004; Francois and Nguyen, 2017)
 - Linkages: inter-country input output table 1995-2011 (OECD): UK is coded GBR.
- 2 Absorptive capacity: firm with high RD level (Griffith, 2004), upper level of TFP, or larger plants?
- 3 Policy implications for the Manufacturing in the Great Britain.