

Agglomeration Externalities

Keywords:

Growth and innovation externalities,

Spillovers,

Agglomeration,

Clusters,

Regional Innovation System,

Knowledge Economy,

Knowledge Production Function

Basic principles – externalities (in cities)

“My purpose is to show that cities are primary economic organs” (Jacobs 1969, p.6).

“Development is a process of continuously improving in a context that makes injecting improvisations feasible. Cities create that context. Nothing else does” (Jacobs 1984, p.155).

“The city is not only the place where growth occurs, but also the engine of growth itself” (Duranton 2000, p.291-292).

“Large cities have been and will continue to be an important source of economic growth” (Quigly 1998, p.137).

“Agglomeration can be considered the territorial counterpart of economic growth” (Fujita and Thisse 2002, p.389).

Agglomeration economies: definition

Dates back to the work of Marshall (1890), Hoover (1948) and Isard (1956).

- Cost-saving benefits or productivity gains external to a firm, from which a firm can benefit by being located at the same place as one or more other firms.
- Uncontrollable for a single firm.
- Immobile or spatially constrained (Localised Knowledge Spillovers)

Agglomeration economies: definition

- Specialisation (or localization) Economies
 - Agglomeration economies stemming from concentration of specialized economic activities, internal to a specific industry
- Diversity (or urbanization) Economies
 - Agglomeration economies stemming from market size and diversity, external to industry

Dynamic externalities

Glaeser et al. (1992) – Growth in cities. JPE.

Henderson et al. (1995) – Industrial development in cities. JPE.

Their research results are highly suggestive for the relevance of urban environments for economic growth processes.

Debate:

- specialisation (Marshallian) economies (MAR: Marshall Arrow Romer)
- urbanisation (Jacobs) economies
- competition (Porter)

Agglomeration hypotheses

Stylised hypothesis on the relationship between agglomeration and innovation, economic growth and new formation

	MAR	Jacobs	Porter
Specialisation	+	-	+
Diversity	-	+	-
Competition	-	+	+

Why, where and when does it matter?

Duranton - Puga (2001) Nursery Cities: Urban Diversity, Process Innovation, and the Life Cycle of Products, *AER*.

- Specialized and diversified cities co-exist
- Larger cities tend to be more diversified
- The distribution of city-sizes and specializations tend to be stable over time
- City growth is related to specialization and diversity
- Relocations are from diversified to specialized areas

Empirics

- **Specialisation** (Marshallian) economies:
index of relative production specialisation or location quotient
- **Diversity** (Jacobs) economies:
inverse of the Herfindahl index applied to employment in all sectors except the one considered
- **Competition** (Porter):
Herfindahl index based on the size distribution of firms

Specialisation Index (ISP)

$i = \text{regions}$

$j = \text{sectors}$

$x = \text{variable considered}$

$$ISP_{ij} = \frac{x_{ij} / \sum_i x_{ij}}{\sum_j x_{ij} / \sum_i \sum_j x_{ij}}$$

addetti tessile in Sardegna / addetti tessile Italia

addetti in Sardegna / addetti Italia

1 % / 2 % = 0.5

è despecializzata

ISP normalised = $(ISP - 1) / (ISP + 1)$

Diversity Index

The inverse of Herfindahl concentration index computed on the shares of workers in all sectors k excluding the one considered

$j = \text{sectors}$ $i = \text{regions}$

$$div_{ij} = \frac{1}{\sum_k \left(add_{ik} / (add_i - add_{ij}) \right)^2}$$

Specialisation externalities (Marshall)

- Specialized labor supply
- Supply of primary and intermediate goods and specific machinery
- Contact with suppliers to better understand their problems and solve them together
- Offer specific services (training, financial, maintenance ...)
- Low transport costs
- Low transaction costs
- Ad hoc infrastructures
- Widespread competence (externalities of intra-sectoral knowledge)

Diversity externalities (Jacobs)

- Concentration of differentiated inputs
- Flexible and diversified labor market
- Large market for final goods
- Contact with consumers to better understand their needs
- Concentration of the most important public interventions
- Services for businesses and families
- Diversified skills (externality of intersectoral knowledge)