

GEOGRAPHICAL ECONOMICS

"B"

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week 13

Agglomeration and spillovers

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1 Agglomeration and cities

1.1 Basis & key terms

Basics

- BGM Ch 7
- Duranton, G., and D. Puga (2004), "Micro-foundations of urban agglomeration economies", in J. V. Henderson and J.-F. Thisse (eds.), *The Handbook of Regional and Urban Economics vol. IV Cities and Geography*, Amsterdam: North-Holland, 2063–118.
- Detroit

Agglomeration externalities - Marshall (a recap)

- Second nature explanation – externalities reinforcing each other
 1. IRS on firm level
 2. Specialization in the labor market, new ideas, human capital
 3. Specialized services
 4. Infrastructure
- Hoover (1936)
 1. Localization: externality for the firm, but not for the sector (2), (3)
 2. Urbanization: externality for the sector (2), (3), (4)
- Rosenthal and Strange (2004)

Interesting facts

- Regions/countries > cities
- Cities: above 100.000 inhabitants, but industrial belts belong here, too
- The point: dense economic activity ...
- Interesting facts
- USA:

- 2% of all the territory is built in or has a road/side-walk on it
- Almost all the new constructions are located in the 1-km-neighborhood of the territory already built in
- Canada: Toronto, Montreal, Vancouver, Ottawa, Calgary, Edmonton (the country's cities with a population over 1 million) to sum up:
 - 45% of national population
 - 0.37% of Canadian territories

Agglomeration externalities- micro foundation

- Marshall (1890) – urban agglomeration **source**:
 1. *labor market pooling*
 2. *relations between firms (between intermediate good producers and final good producers) – (input sharing)*
 3. *knowledge spillover*
- Duranton-Puga (2004): mechanism of agglomeration
 1. *sharing*
 2. *matching*
 3. *learning*

1. Sharing: (a) Non-divisible goods



1. Sharing: (a) Non-divisible goods

- Large and non-shareable goods:
 - too big/complex for producing lots of small ones
 - close access is needed (consider Parks)
- E.g. conference hall, Pécs, football stadium (Camp Nou, Barcelona)
- Industrial facilities, infrastructure
- Questions regarding equilibrium
 - Construction is a fixed cost, the use is constant marginal cost. But one has to commute
 - Trade-off: sharing the large FC vs congestion/traffic jam caused by commuting
 - City = equilibrium

1. Sharing: (b) love of variety

- love of variety – home market effect – increasing inhabitants/number of firms, more than proportional growth in utility
- central market as a non-shareable good

1. Sharing: (c) Specialization

- Up to this point: more workers = more varieties in products – extensive margin
- But: (Adam Smith) more workers = better specialization
 - better quality of work in a given place (learning by doing)
 - no need for changing job (FC decreases)
 - more mechanical work – possibility for innovation

1. Sharing: (d) Risk-sharing

- Firms are facing shocks
 - Reaction: labor recruitment/layoff/change
- Agglomeration: wide scale of workers at the same place
 - An option for the firm to recruit new employees cheaply, when hit by a shock
- If there is unemployment, then it is the interest of workers to locate in agglomeration, because chances for finding a job are better
- Labor pooling

2. Matching

- Economic actors are searching for proper partners
- Mortensen-Pissarides matching model (demand-supply, searching, searching costs, labor is essential)
 - Mortensen, Dale T. and Christopher A. Pissarides. 1999. New developments in models of search in the labor market. In Orley Ashenfelter and David Card (eds.) Handbook of Labor Economics, volume 3. Amsterdam: Elsevier, 2567–2627.
- Agglomeration reduces these costs
 - Aggregate matching function – the success of matching depends on the number of searchers and suppliers
- Firms can select from a wider scale of workers, workers also get more offers
- More effective matching (better quality) and lower costs (greater probability)

3. Learning

- In modern economies learning (getting knowledge, research, getting new information) is 20% of all resources
- Personal relationships are important
- Cities – lots of people together – stimulates getting knowledge
- Marshall – cities – innovation
 - Marshall (1890, iv.x.3): ‘Good work is rightly appreciated, inventions and improvements in machinery, in process and the general organisation of the business have their merits promptly discussed: if one man starts a new idea, it is taken up by others and combined with suggestions of their own; and thus becomes the source of further new ideas.’

3. Learning: (a) Knowledge generation.

- Generating new knowledge (prototype, process)
 - Venture project
 - A set of solutions, one is better than the other
 - The entrepreneur tries out the solutions, then chooses the proper and starts production
 - learning from local experience
- If moving is costly, agglomeration helps finding the best method
- Diversification is an advantage here – diverse experience
- Diversified city = cradle for new firms

3. Learning: (b) spillover

- Proximity improves the spread of knowledge/information
- Knowledge spillover
- Microfoundations – the equilibrium model of knowledge spillover is not clear
- Empirical results are strong

3. Learning: (b) spillover.

- Two types of knowledge spillover externalities
- Marshall-Arrow-Romer (MAR) externalities: *Localization*.
 - connection to growth theory,
 - in a certain sector knowledge is spreading,
 - specialization.
 - Mostly in high-tech sectors
- Jacobs externalities: *Urbanization*
 - Diversity,
 - complementarity,
 - not within a certain sector.
 - Most sectors