

Even More Location Theory

ECON 166
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Lecture 7

Agglomeration Economies - Localization Economies

- External to firm, related to size of local industry
- Depends on definition of "industry" (see discussion of NAICS Codes below)
- Specific to particular industries
- Economies of scale in the provision of inputs (labor, capital, services)
- "Knowledge spillovers"

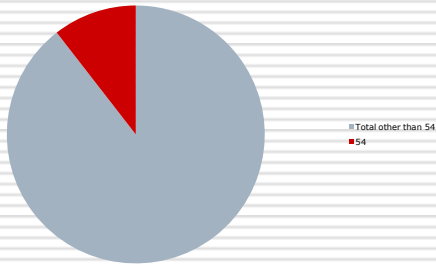
NAICS Codes

- NAICS codes are the **North American Industry Classification System** (NAICS) codes – the official numerical designation for classifying firms into industry groups. This system is the successor to the **Standard Industry Classification** (SIC) codes that had been used until 1997. Under either classification system, "industry" could be defined very broadly – at the "2-digit" level – or more narrowly – at the "6-digit level."
- **NAICS** is the current system of industry classification used by the US Department of Commerce (<http://www.census.gov/eos/www/naics/>); it replaced the SIC in 1997. Concordances are available which show the relationships among the code numbers (<http://www.census.gov/eos/www/naics/concordances/concordances.html>).

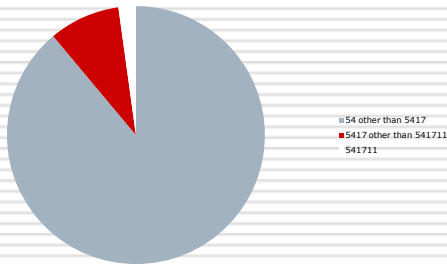
Biotechnology Example

For example, most broadly – at the 2-digit level, biotechnology is contained within NAICS code **54** – “Professional, Scientific, and Technical Services” – a classification that includes legal and accounting services. More narrowly, at the 4-digit level, biotechnology is contained within NAICS code **5417** – “Scientific, Research, and Development Services.” The most refined industry classification available for biotechnology is the 6-digit NAICS code **541711** – “Biotechnology Research and Development.”

NAICS Code 54



NAICS Codes 5417 and 541711



What are examples of localization economies of scale?

- Hollywood
- New York City fashion industry
- New York City magazine industry
- Detroit automobile industry
- Silicon Valley microprocessor design and manufacturing
- Other examples??? (Discussion)

Urbanization Economies of Scale

- Shopping economies
 - Diversity of goods and services
- Provision of inputs not specific to an industry
 - Diversity of goods and services
 - Urban infrastructure
 - Transportation facilities
 - WiFi network?
 - Cultural and recreational amenities

Empirical Evidence

- Henderson (1986)
- Rosenthal & Strange (2001)
- Henderson (2003)

Static Theory of External Economies and Diseconomies

- Distinction between private costs/benefits and social costs/benefits

 - Examples:
 - Pollution
 - congestion
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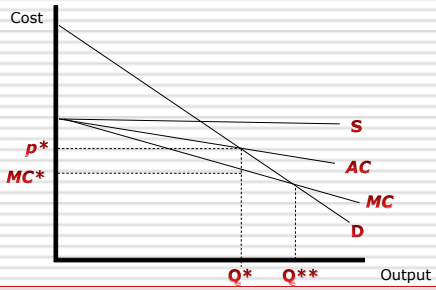
Localization Economies

- $TC = n(tc)$, where n is the number of firms and tc is the total cost of each firm
 - $tc = q(ac)$, where q is the output of each firm and ac is the average cost of each firm
 - $AC = TC/n = tc(n)/nq = tc/q = ac$
 - $\Delta TC = \Delta nq(ac) + \Delta ac(nq) + \Delta qn(ac)$
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Localization Economies **continued**

- $MC = (\Delta TC/\Delta n)/q$
= $q(ac)/q + (\Delta ac/\Delta n)(nq)/q$
= $AC + n(\Delta ac/\Delta n)$
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Localization Economies Figure 3.7



End of Lecture 7
