Introduction to Urban Economics

ECON 166
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Lecture 2

Broad Themes of the Course

- Measurement
- Theory
- Policy

Nature of Urban Areas and Urban Economics

- Population density
- Total population
- Spatial distriubtion
- Growth/decline of urban economy – open economy (trade; imports & exports)
- Scale economies and externalities
- Diversity of demand, mobility, and sorting

Tales of Three Cities definitions of metropolitan areas

- Urban areas as economic unit; "central city" (municipal boundary) is too narrow; based on political, not economic considerations
- US Census Bureau's *Metropolitan Statistical Areas (MSAs)* – based on whole counties that contain a central city with population at least 50,000

Metropolitan Statistical Areas (MSAs)

- MSA – whole counties that contain a central city of at least 50,000 population, including whole counties adjacent to the county containing the central city if there is a significant amount of commuting to the county containing the central city
- MSA oddities:
  - Atlanta
  - San Francisco
  - New York City

Metropolitan Statistical Areas (MSAs)

- Why counties?
  - Boundaries do not change (often);
  - Lots of data for counties.
- Downside: Definition of Metropolitan Statistical Area changes when commute patterns change
- What if county is an MSA and also satisfies commute threshold to be county associated with another MSA? **Combined Statistical Area (CSA)**

Urban Areas terms

http://www.census.gov/population/www/estimates/metroarea.html

- Metropolitan Areas
- Metropolitan Division
- Combined Statistical Areas (CSAs)
- Micrometropolitan Areas
- Core Based Statistical Areas
- "Core Area" (p. 8): central city, inner ring of suburban counties, outer ring of suburban counties

Tales of Three Cities: New York

New York Metropolitan Area				
	Population (thousands)			
	1970	1980	1990	2000
Core Area	8,207	7,283	7,509	8,183
Manhattan	1,533	1,428	1,487	1,539
New York City	7,897	7,077	7,336	8,018
Inner Ring	5,455	5,188	5,114	5,401
Outer Ring	4,095	4,650	4,961	5,457
Total	17,757	17,121	17,584	19,041

Table 1.1, p. 8

Tales of Three Cities: Los Angeles

Los Angeles Metropolitan Area				
	Population (thousands)			
	1970	1980	1990	2000
City of Los Angeles	2,812	2,967	3,485	3,695
Rest of Los Angeles County	4,230	4,540	5,378	5,824
Inner Ring	1,799	2,481	3,080	3,600
Outer Ring	1,139	1,572	2,588	3,255
Total	9,980	11,560	14,531	16,374

Table 1.2, p. 10

Tales of Three Cities: Chicago

Chicago Metropolitan Area				
	Population (thousands)			
	1970	1980	1990	2000
Core Area	3,915	3,527	3,260	3,381
City of Chicago	3,369	3,005	2,784	2,896
Lake County, IN	546	522	476	485
Rest of Cook County	2,125	2,244	2,321	2,483
Inner Ring	871	1,103	1,298	1,555
Outer Ring	869	1,063	1,185	1,568
Total	7,780	7,937	8,064	8,987

Table 1.3, p. 11

Tales of Three Other Cities

- Develop a table similar to Tables 1.1-1.3 for one of the following three cities:
  - San Jose
  - San Francisco
  - Oakland
- Identify the sources of data and describe in sufficient detail the basis for disignating the "inner ring counties" and the "outer ring counties"
- Compare the results for the city you select with the results discussed in the text for NYC, LA, and Chicago

Employment in Metropolitan Los Angeles

Employment in Los Angeles Metropolitan Area, by place of work				
Geographic Area	Employment (1,000s)		Share (%)	
	1970	2000	1970	2000
LA Metropolitan Area				
Total	4,491	9,223	100.0	100.0
Manufacturing	1,018	1,083	22.7	11.7
Retail Trade	714	1,398	15.9	15.2
Services	961	3,279	21.8	35.6
Other	1,778	3,463	39.6	37.5
LA County				
Total	3,391	5,514	100.0	100.0
Manufacturing	825	663	24.3	12.0
Retail Trade	522	788	15.4	14.3
Services	766	2,099	22.6	38.1
Other	1,278	1,964	37.7	35.6
Suburban Counties				
Total	1,100	3,709	100.0	100.0
Manufacturing	193	420	17.5	11.3
Retail Trade	192	610	17.5	16.4
Services	215	1,180	19.5	31.8
Other	500	1,499	45.5	40.4

Table 1.4, p. 13

Tale of Three Other Cities

- Replicate Table 1.4 for one of the following:
  - San Jose
  - San Francisco
  - Oakland

Making Local Population Projections

- Association of Bay Area Governments (ABAG) http://www.abag.ca.gov/
- California Department of Education (CDE) http://www.cde.ca.gov/
- Demographic Research Unit, California Department of Finance http://www.dof.ca.gov/Research/Research.asp (click on links under "Demographic Research)
- American Factfinder (U.S. Census) http://factfinder.census.gov/home/saff/main.html?_lang=en

Schools of Thought

- Mainstream (Neo-classical) Economics
- Conservative Economics
- Marxian Economics

Location Decisions, Agglomeration Economies, and the Origins of Cities

- Lessons in Basic Location Theory for a Firm
- Other Factors in the Location Decision
- Agglomeration Economies
- Static Theory of External Economies and Diseconomies
- Economic Origins of Urban Areas in the U.S.

Lessons in Basic Location Theory for a Firm

- Choose location that is the most profitable for
  - Assembling output from inputs
  - Distributing output to customers
- Simple models
  - One input, customers all located in one place
  - Input suppressed, customers in various locations

One Input, One Market Model*

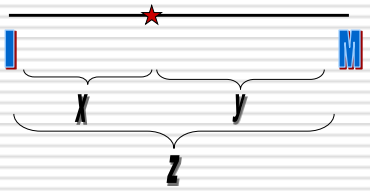
based on discussion in text and Appendix to Chapter 3

- Inputs are located at "I"
- Market is located at "M"
- Transportation cost per mile of moving 1.2 tons of raw lumber one mile): *a*
- Transportation cost per mile of moving 1.0 tons of firewood one mile): *b*

*** Assumes a 20% weight-losing process.**

One Input, One Market Model

based on discussion in text and Appendix to Chapter 3



One Input, One Market Model

continued – based on Appendix to Chapter 3

- p = price of output at the market, point "M"
- a = cost per mile of transporting 1.2 tons of raw lumber
- b = cost per mile of transporting 1 ton of firewood
- w = ware rate per unit of labor
- L = amount of labor needed for one ton of firewood
- R = price of raw lumber at the forest, point "I"
- x = distance raw lumber is transported
- y = distance firewood is transported
- $z = x + y$ = distance from "I" to "M"
- Q = output of the firm
- g = weight gain/loss factor (not included in Appendix model)

Teaser Question: which of these variables are "endogenous" and which are "exogenous"?

One Input, One Market Model

continued

- Profit = TR – TC
  $=pQ-1.2RQ-wLQ-Q(1.2ax+by)$
- TR = pQ
- TC consists of
  - $1.2RQ$ = Cost of raw lumber
  - wLQ = cost of labor
  - $Q(1.2ax+by)$ = transportation cost

One Input, One Market Model
continued

- Profit Maximizing output Q^* determined by:
  MR = MC
- MR = $p + Q(\Delta p/\Delta Q)$
- MC = $1.2R + wL + 1.2ax + by$

One Input, One Market Model
continued

- Profit Maximizing location corresponds to that location that minimizes transportation costs per unit of output
- Transportation cost per unit of output
  = $1.2ax + by = 1.2ax + b(z\text{-}x)$
  = $(1.2a - b)x + bz$
- Graph the equation above
  - **Where is profit-maximizing location?**
  - **What determines the profit-maximizing location?**
  - **What can cause profit maximizing location to change?**

More about Profit Maximization
related to Figure A3.2, p. 52

p. 52 "The analysis is complicated slightly by the fact that output depends on price, which depends on marginal cost. And marginal cost (MC) depends on location…The point is that, in order to maximize profits, the firm must minimize marginal costs."

More about Profit Maximization

related to Figure A3.2, p. 52

- Profit maximization when price depends on quantity (market-powerful firm)
- Profit maximization when price is given (independent of quantity) – perfectly competitive firm

End of Lecture 2