Central Place Theory

THE EXTENSIONS OF LÖSCH

August Lösch

- 1906-1945
- German economist.
- *The Economics of Location.*
- Much of his work in USA (Iowa).
- Extended the work begun by Christaller.

Lösch

- Demonstrated that the hexagon is the most efficient shape.
- Starts at the ‘bottom’ of the system.
- One ‘equivalent customer’
- Or one unit of consumption.
- Build ‘up’ from there.

Equivalent Customers

How to Count Equivalent Customers?

- Inside = 1
- Corner = 2
- Edge = 3
Excess Profits

- Christaller
- 1, 3, 9, 27, 81
- Lösch
- 1, 3, 7, 9, 12, 13, 15, 19, 21, 25, 27

Lösch

- \(K=3\)
- \(K=4\)
- \(K=7\)
- nets

Lösch

- \(K=9\) to \(K=25\) nets rotated.

Lösch

- Locations for settlements must be as advantageous as possible.
- Locations for settlements must fill all of space (establishes the shape of market areas - hexagons).

Lösch

- Excess profits must disappear.
- Market areas must be as small as possible (establishes the size of market areas).
- Consumers at the boundary are indifferent.

City-Rich & City-Poor Sectors
Christaller vs. Lösch

- Both recognized a triangular pattern of settlement and hexagonal market areas.
- Both used the major concepts of central place theory - range, threshold, hierarchy.

Christaller vs. Lösch

- Christaller starts from the ‘top’.
- Lösch starts from the ‘bottom’ of the hierarchy.

Christaller vs. Lösch

- Christaller better explains an urban system developing from a frontier (USA).
- Lösch better explains the development of a service system in an area of dense agricultural settlement (Europe).

Christaller vs. Lösch

- Christaller concerned with retailing/services alone.
- Lösch adds local manufacturing.
- Settlements offer a good, but smaller settlements may make that good.
Christaller vs. Lösch

- Christaller interested in planning.
- Lösch interested in theory.
- Christaller
- $K=3$ in Netherlands.
- $K=4$ in Israel.

Isard’s Modifications

- Regular hexagons are unlikely to occur in reality.
- Larger places increase the surrounding population density.
- Urban economies of scale are important.

Isard’s Modifications

- Two key modifiers.
- Variation in population density.
- Major transportation arteries.
- Both will distort the pattern.

The ‘Mercantile’ Model

- Central Place Theory modified by Vance (1970).
- Argued that Central Place Theory is a special case.
- Ignores the wholesale sector.

The ‘Mercantile’ Model

- Development of an urban system where local self sufficiency never occurs.
- There must be external trade.
- Used the development of US urban system as an example.
The ‘Mercantile’ Model

1. Exogenic Forces
   Introduction Basic Structure

2. Internal Forces
   Starts with Agriculture

3. Central Place (Internal) Model
   with Mercantile Overlay (Europe)

4. Mercantile Model
   Central Place (North America) with Mercantile Overlay (Europe)

Empirical Evidence

- Lots of criticism of Central Place Theory.
- Real landscapes don’t resemble theoretical ones.
- We don’t expect reality to conform completely.
- Models are just tools.
Empirical Evidence

• Theory is useful in the way it answers the following questions.

Question 1

• Does the spatial organization of retailing and services reflect the distribution of purchasing power?

Question 2

• Do central place activities tend to be regularly spaced in areas with similar physical, cultural, and economic environments?

Question 3

• Do consumers try to reduce distances traveled to purchase goods and services?

Question 4

• Do consumers shop at a hierarchy of centers for different types of goods and services?

Questions

• These are questions we want to consider using empirical data.
• Also want to consider them from a personal, common-sense perspective!
Thresholds

- An intuitive approach.
- Assume you are driving a 1980 Volvo.
- Bad fuel pump.
- You have to get it replaced.
- You are in an unknown section of the United States.

Road Sign #1

Podunk, Nebraska
Population 250

Thresholds

- Have a Volvo dealer?
- Gas station?
- Grocery store?
- Tavern?

Road Sign #1

Bigplace, Nebraska
Population 60,000

Utility of Thresholds

- How could we use good information about thresholds?
- Diaper service.
- T = 100,000.
- Success in Eau Claire a certainty?
The End

Retailing & Services
Part 4