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The Economy of Cities
Comparative Advantage and Trade

Land in North Dakota comparatively better for wheat than for oranges

Land in Florida comparatively better for oranges than for wheat

North Dakotans grow wheat, Floridians grow oranges, trade with each other
Economies of Scale in Transportation

- Suppose cost per ton per mile decrease with tons shipped
- Railroad versus the horse drawn cart
- River barge versus truck
Trading Cities

- Minneapolis and New Orleans become trading cities
- Transportation, but also finance, insurance
- Comparative advantage and economies of scale in transportation
Concentrate or Disperse?

- Two sites
- N people to allocate to those two sites
- Sites are source of some kind of production

\[ Q_i = F_i(N_i) \]
Diminishing Marginal Product

\[ Q_i = F_i(N_i) \]

\[ Q_i = F_i'(N_i) \]
Dividing Workforce Equally

\[ Q_1 = F_1'(N_1) \quad Q_2 = F_2'(N_2) \]
More Labor in 2

Loss in 1

Gain in 2

N_1

N_2
Diminishing Marginal Product

- An equal distribution is best
- Deviation from equal decreases total product
- Market would yield even distribution
Increasing Marginal Product

- Factor specialization (labor)
- Indivisible inputs (machines)
Increasing Marginal Product

\[ Q_i = F_i'(N_i) \]
An Even Distribution

\[ Q_1 = F'_1(N_1) \]

\[ Q_2 = F'_2(N_2) \]
More Labor in 2

Loss in 1

Gain in 2
Increasing Marginal Product

- An unequal distribution is best
- Deviation from equal increases total product
- Market would yield uneven distribution
- Increasing Marginal Product and Economies of Scale (what’s the difference?)
Henry Ford
and son
Edsel Ford
Diego Rivera and wife Frida Kahlo at River Rouge Complex in 1932
Ford Edsel
Back to Economics

With increasing marginal product, it pays to concentrate workforce.

Because of commuting costs, workers live close.

Population density is higher
Conclusion

Comparative advantage and economies of scale in transportation can produce trading cities

Economies of scale (increasing marginal product) can produce factory cities

Inventiveness and innovation determines growth and continued development
Next Time

- Localization economies

- Junfu Zhang, “High-Tech Start-Ups and Industry Dynamics in Silicon Valley”