Firm Clustering

Econ 312
Martin Farnham
Introduction

• Do cities exist just because of economies of scale and gains from trade?
  – Or, once a town forms, is there some advantage to certain firms of locating there, just because it allows them to be physically close to other firms?
  – Are there economic benefits to firms from clustering near each other?
External Economies of Scale (benefits from clustering)

• *Internal* economies of scale (in production) occur when a firm experiences costs that decrease as its own output increases.
  – Benefits, in the form of lower costs, come from *inside* firm.

• *External* economies of scale occur when a firm experiences costs that decrease as the output of *other* firms increases.
  – Benefits, in the form of lower costs, come from *outside* firm.
  – Firms locating in cities are often thought to benefit from such spillovers.
External Economies of Scale

• External economies of scale may occur over large distances
  – Increased production by Boeing (US) may lead to knowledge spillovers to Airbus (Europe)

• Certain types of external economies may be more likely to occur locally
  – Localization economies: Firms of similar type benefit from being physically near each other
  – Urbanization economies: Firms (not necessarily of similar type) benefit from being physically near each other
Localization Economies

• Why would similar producers locate near each other?
  – You’d think they’d want to locate away from each other, so as to lower competition for workers, customers
  – May benefit from sharing suppliers, sharing labour pool, sharing information
Localization Economies--Sharing Suppliers

• Several producers in industry may cluster around supplier if
  – Scale economies in production of the input
  – High transportation costs
    • Need for face-to-face discussion of input design
    • Perishable or difficult to transport inputs

• Vernon dressmaker-buttonmaker example
Examples of Supplier Sharing

• Firms that run frequently changing advertising campaigns locate near advertising agencies
• Hardware producers cluster near input producers
• Big Three automakers cluster in Detroit/Windsor area near auto components suppliers
  – Need frequent design consultation
  – In some cases transport bulky parts
  – Tend to be economies of scale in industrial production
Localization Economies--Sharing Labour Pool

• Several producers in an industry may cluster near a common labour pool if
  – Uncertain about future demand for labour (at firm level)
  – Uncertain about future skills needs (at firm level)

• Clustering reduces costs of hiring/firing workers in environment with high turnover
  – Firms may need to compensate workers for job insecurity (switching costs) with a higher wage
  – Don’t need to compensate as much, if job insecurity is coupled with lots of nearby prospective employers
Localization Economies--Sharing Labour Pool

– With large pool of specialized labour, you know you can always quickly get the person you need for the job
– Relocation costs are kept low, because the worker is already living nearby
– Information about available workers/jobs is readily available thanks to local social networks
Examples of Labour Pool Sharing in Face of Varying Demand

- TV, movie industry (Hollywood, New York)
- Advertising industry (New York, London)
- Software industry (Silicon Valley)
Cost and Benefits of Labour Pool Sharing in Face of Varying Demand

Isolated firm can lower wage during bad times

Clustered firm can’t (other firms keep wage high)
Cost and Benefits of Labour Pool Sharing in Face of Varying Demand

- Benefit of clustering: Lower wage for firm during good times
- Cost: Higher wage for firm during bad times
- Note that when we’re talking about supply and demand for labour, producer surplus is measured as the area between the wage line and the labour demand curve.
  - This is because labour demand curve tells us the marginal value of each unit of labour to the firm
- To think about costs and benefits, want to compare areas in each case
Cost and Benefits of Labour Pool Sharing in Face of Varying Demand

- Producer surplus for isolated firm
  - A: PS in good times
  - B: PS in bad times

- Producer surplus for clustered firm
  - C: PS in good times
  - D: PS in bad times
Cost and Benefits of Labour Pool Sharing in Face of Varying Demand

• Area E: Gains over isolated firm during good times=$1400
• Area F: Losses compared with isolated firm during bad times=$1000
• Spz prob(good times)=.5, then firm prefers to cluster

Gains/losses from clustering.

N

D_{bad} D_{good}

w

80 120 160

E F b

10 20 30
Cost and Benefits of Labour Pool Sharing With Skills-Match Uncertainty

• Firms may not know for sure what type of labour skills they will need in future
  – Areas with large labour pools may have more skill types
  – Better matching if a firm’s skill needs change
    • Better matching causes better productivity, higher profits
Localization Economies--Information Sharing

• Knowledge spillovers occur when people with similar interests exchange ideas informally
  – As opposed to paying for a consultant, a firm picks up useful knowledge from its workers mixing with workers of other firms
  – By clustering, firms trade off the loss of proprietary secrets to others (more likely to occur in clusters) against the gains from proprietary secrets learned from others
  – Especially strong gains from clusters when firms don’t directly compete, but use similar, knowledge-intensive processes
Urbanization Economies

- Localization economies occur if one firm’s costs fall, with a rise in output from other firms in same industry.
- Urbanization economies occur if one firm’s costs fall, with a rise in local output (regardless of industry).
  - Shared input suppliers
  - Shared labour pool
  - Information spillovers
Empirical Evidence on External Economies

• A number of studies have tested for the existence of external economies
  – Find positive elasticity of change in worker productivity with respect to change in industry output
    • Could be reverse causality?
  – Toronto: evidence of external economies in office sector
    • Elasticity of office productivity with respect to number of office firms is positive
  – Plant births in a given industry tend to occur where that industry is clustered (though it could just be some other reason the industry locates there)
Empirical Evidence on External Economies

• Doubling city size is thought to increase worker productivity by 5-10%
• Debate over whether specialization or diversity provides better economic environment
  – Start up firms seem to favor diverse economic environments (may lend flexibility as firm learns best way to produce)
  – As firms age, they tend to relocate to more specialized areas (with similar firms)
  – Jury still out on which is “better”
Cities as Start-up Incubators

• Cities are high-cost places to do business, but provide many local resources that benefit start-ups
  – Innovation, R&D, design stage
• As firm grows, may move out of city to lower cost environments
  – Radio industry in 1920s
  – Computer industry in 1980s
Some Firm Clustering May be in Response to Worker Preferences

• Some people prefer living in cities
  – Offers lots of consumption choice, choice of work, and social opportunity
  – Workers who are in a preferred location (ceteris paribus), can be paid less than they otherwise would be (so firm may save on labour costs by locating in city)
    • Note that higher cost of rent and other urban inconveniences (i.e. relaxing the ceteris paribus assumption) have the opposite effect on the wage

• Michigan “Cool Cities” initiative
Shopping Externalities

• Comparison shopping--the auto row phenomenon
  – Why is it that auto dealers tend to locate right next to each other?
  – Or if you go furniture shopping at IKEA, you see a bunch of other furniture stores right nearby?
  – Fort St. antique shops
Shopping Externalities

• When goods are perfect substitutes, you just get on the phone, find who has the lowest price (net of travel cost to get there), and go there to buy it.

• When goods are imperfect substitutes (cars, antiques, furniture), you need to comparison shop
  – An antique shop owner can get more customers through her shop by locating on Fort St.
  – Trades off greater local competition for comparison shopping externality
Shopping Externalities

- Complementary goods also benefit from clustering
  - Clothing stores and shoe stores
  - Grocery stores and liquor stores
  - Cafes and newspaper stands
- Holiday shopping is a lot easier when a retail cluster exists (one-stop-shopping); if you’re buying a variety of gifts
- Consumers will be willing to pay more for clustered goods, given the savings in transport costs
Costs and Benefits of Clustering

• Costs
  – In moving closer to other firms, a firm may face greater competition.
  – May need to pay higher rents (since competition for scarce land in cities drives rents up)
  – May have ideas, workers, “stolen” due to proximity.

• Benefits
  – Agglomeration economies discussed above.