Supply-Chain Management (SCM) and Industrial Restructuring

• What is a supply chain?
• What are objectives of SCM?
SUPPLY-CHAIN MANAGEMENT

- SCM has been restructuring industries’ physical networks and coordination mechanism
  - automobile industry: information sharing
  - wholesaling industry: advanced Information Technology (IT)
  - computer-manufacturing industry: make to order
LITERATURE REVIEW

Modern Logistics and Industrial Location Choice

• *Neoclassic theories on industrial location choice*
  • *Dipasquale and Wheaton (1996)*
• *Application of logistic models to location choice*
  • *McCann (1998)*
• *Dispersion economies along supply chains*
  • *Pereira (1996)*
  • *Chen (2002)*
  • *Polenske (2003)*
Empirical Analysis

Assumptions

• supply-chain configuration fundamentally determines demand for industrial space at macro level

• inventory requirement determines demand for industrial space at micro level

• at the regional level and from a sector perspective, the industrial real estate stock adjusts to its desired level gradually $\Rightarrow$ The relationship between location-choice/inventory-holding and demand for industrial space holds over the time.
EMPIRICAL ANALYSIS

Consolidation vs. Dispersion

Firms in manufacturing industries, in general, have dispersed their production and distribution locations.

Sector Analysis

- Manufacturing (Dispersed)
- Electronics/Computers (D)
- Transport Equipment (D)
- Miscellaneous (D)
- Food (Consolidated)
- Other five sectors (unclear)
EMPIRICAL ANALYSIS

Summary of Empirical Analysis

1. Distribution sector has a more significant impact on location choice and property market than manufacturing sector.

2. As a whole, both manufacturing and distribution industries have dispersed to relatively small markets.

3. All manufacturing/distribution/retailing sectors, except metals, improved their inventory management.

4. In a supply chain, one player’s gains in inventory reductions are not necessarily at the cost of its suppliers or customers.

5. Space demand generally follows inventory requirements.

6. Traditional partial stock-adjustment model does not work.
CHINA CASE STUDY

Background

• China has become global manufacturing center
  
  • SCM has been playing an increasingly important role in industrial location choice and regional economic development
  
  • logistics in China are considerably inefficient: spending on logistics accounted for 1/5 of GDP in 2000 (1/10 in the U.S.)
  
  • no systematic data on inventories and industrial property market ⇔ reply on case studies ⇔ focus on two sectors—traditional steel-making sector and relatively modern electric-appliances sector
CHINA CASE STUDY

• Steelmaking Sector
  • supply chain: raw materials—steelmaking—manufacturing

• Steel firms in Liaoning: two distribution channels
  • large steel firms prefer direct shipping (cost-effective)
  • small steel firms use intermediate distributors (flexible)
  • consolidation

• Bao Steel: strategic global supply chains
  • integrated supply chains with suppliers and customers
  • information technology-based
  • centralize management and decentralize services
CHINA CASE STUDY

• Electric-Appliances Sector
  • products: customer goods
    • intensive market competition $\Rightarrow$ actively implemented modern logistics
  • case study of Haier Group
    • providing high-quality service is equally or even more important than reducing total costs
    • successful SCM reform: (i) implementation of advanced information technologies, and (ii) proximity to end customers
    • location choice: dispersion of manufacturing/services
    • demand for industrial space: CDC/total demand reduced
CHINA CASE STUDY

Summary of Case Studies

• SCM has been a core component in firms’ business models

• different supply-chain requirements in different sectors
  • electric-appliances sector: actual impacts similar to findings in the U.S. ⇒ improve service levels and reduce costs
  • steelmaking sector: consolidation ⇒ increase negotiation power and reduce costs

• Modern logistics’ increasingly significant impacts
  • generally consistent with the U.S. empirical findings
  • particularly true for modern firms, e.g., Haier Group
CONCLUSIONS

Hypothesis Testing

- theoretical analysis does not provide clear conclusion
- location choice hypothesis: incorrect $\Rightarrow$ dispersion
- space demand hypothesis: correct $\Rightarrow$ reduction

Major Findings

- distribution functions dominate location choice
- firms reap economies of dispersion by proximity to customers
- space demand follows improvement in inventory management
- manufacturing firms in China are catching up in SCM
SUPPLY-CHAIN MANAGEMENT