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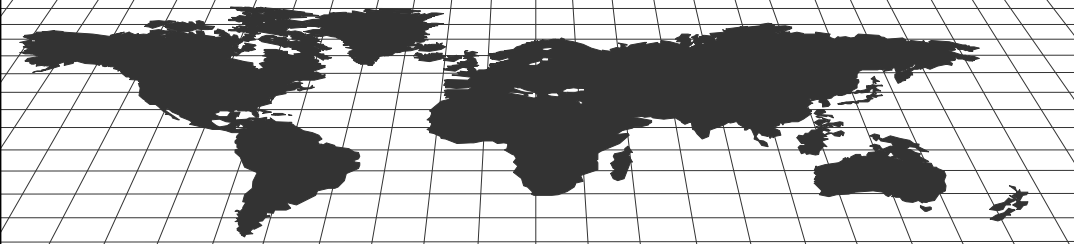
**Technology Impacts of
Globalization for Business
Location & Transportation**

**Transportation Research Board
Annual Meeting
Washington, DC January 1997**

Author - Contact Addresses

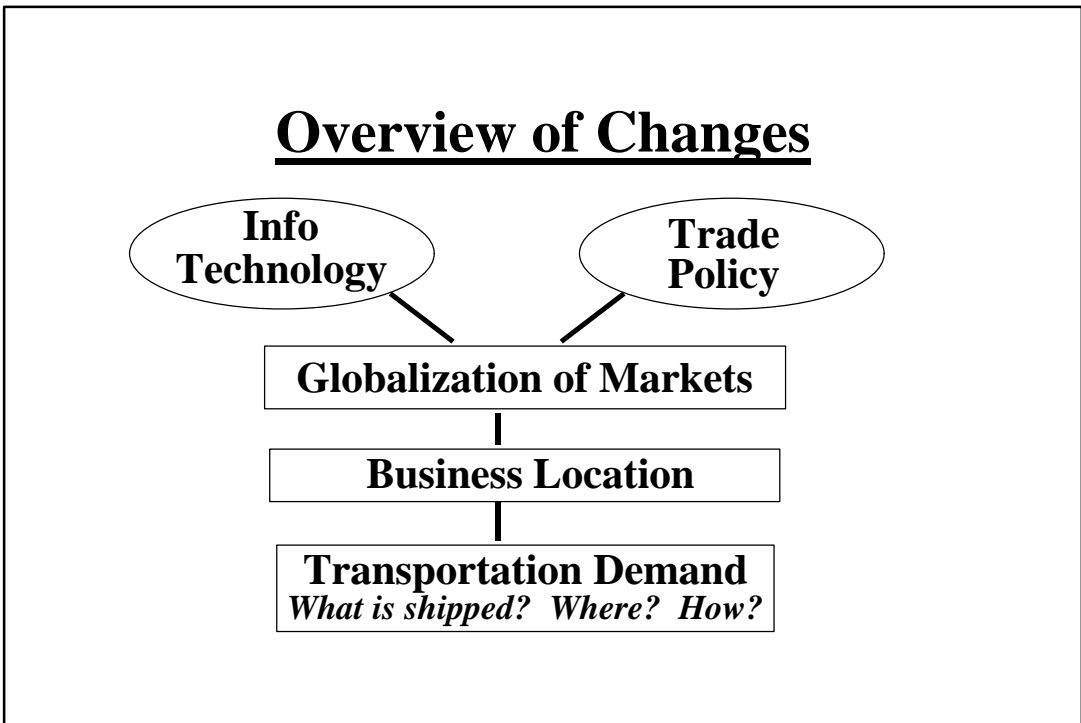
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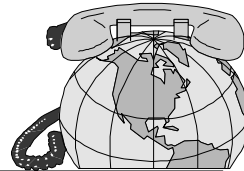
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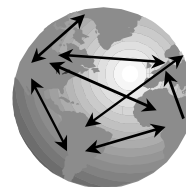
Information Technology

- **Broad Band Voice-Data Transmission**
- **Wide Area Networks**
- **Business Transaction Standards**
- **Integrated Manufacturing & Logistics**



Trade Policy - Global & Regional

- **ISO - International Standards**
- **Deregulation - Telecom, Power, Airlines**
- **NAFTA - North America Trade**
- **GATT - Global Tariffs & Trade**
- **ASEAN - Asian Trade**



Globalization Implications

- **Functional Integration Across Countries**
- **Increased Sourcing of Intermediate Goods**
- **Scale Economies**
- **Multi-Site Flexibility**
- **Cross-Site Cost Advantages**



Business Organization & Location

- **Dispersed Sourcing & Production**
- **Smaller, Decentralized Entrepreneurial Units**
- **Increased Competition for Low Cost**

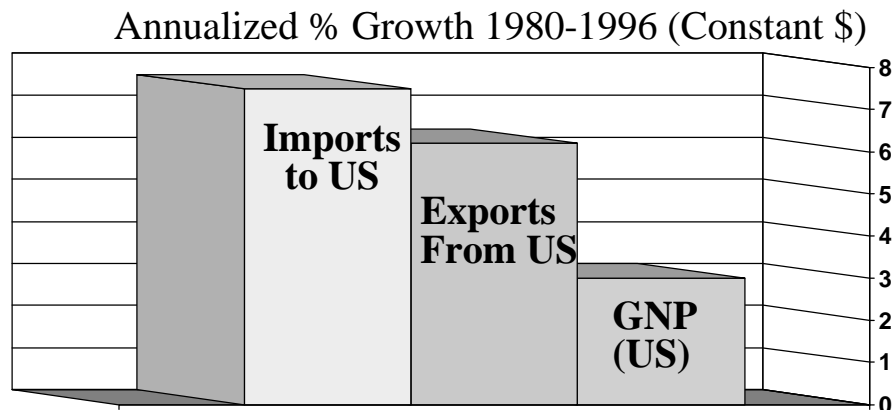


- **International, Multidisciplinary Teams**
- **Fluid, Multi-Site Organizations**
- **Flexible Manufacturing**

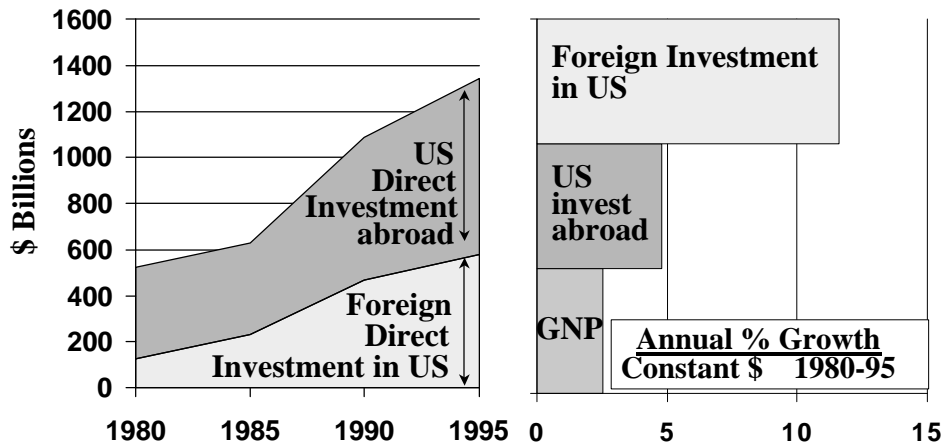
Transportation Demand

- Flexible Multi-Site Production
 - Fixed Regional Distribution & Service
 - Local Sales
- ↓
- Trade in Intermediate Goods
 - Multi-modal Logistics
 - Shift in Value/Schedule Considerations for Modal Decisions

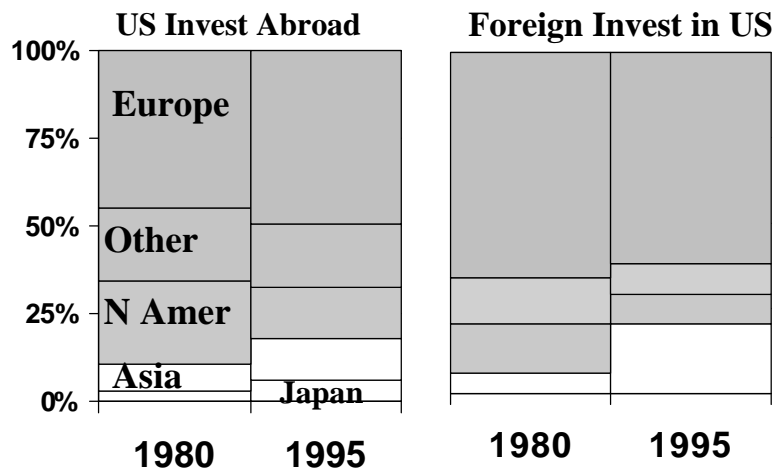
Growth of International Trade



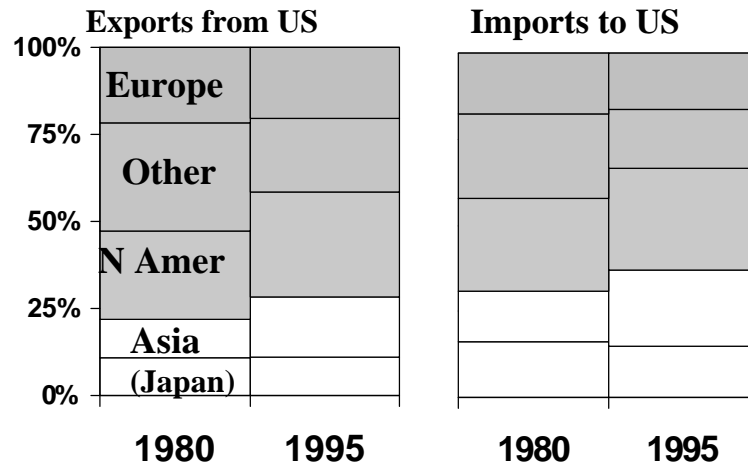
Growth of International Investment



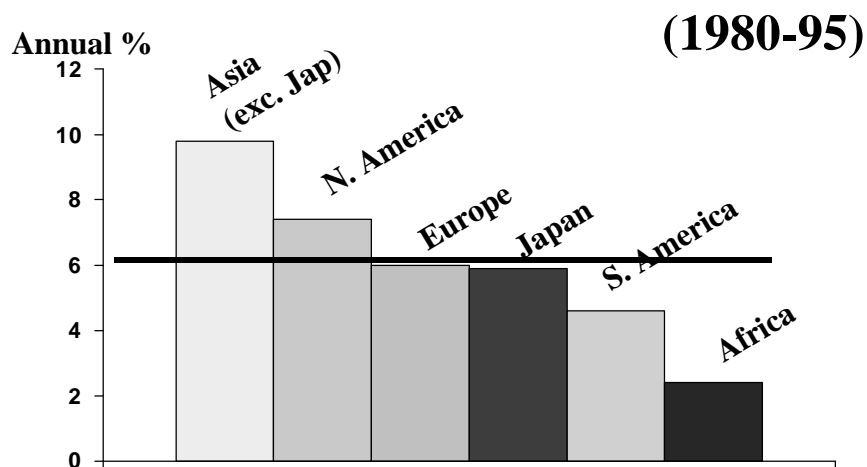
Investment Focus: Europe & Asia



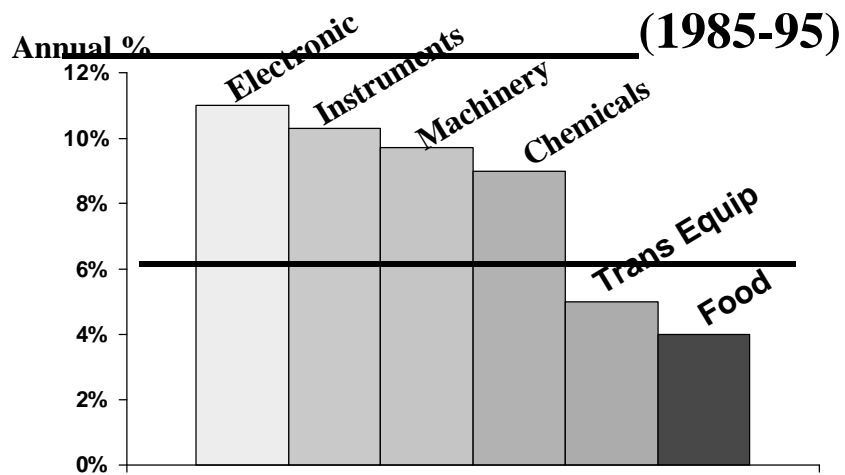
Trade Focus: N. America & Asia



Trade Growth-- Firms Expanding



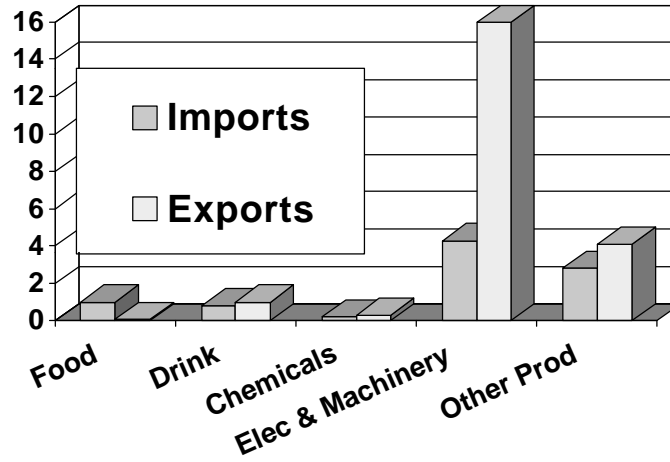
Trade Growth -- Firms Expanding



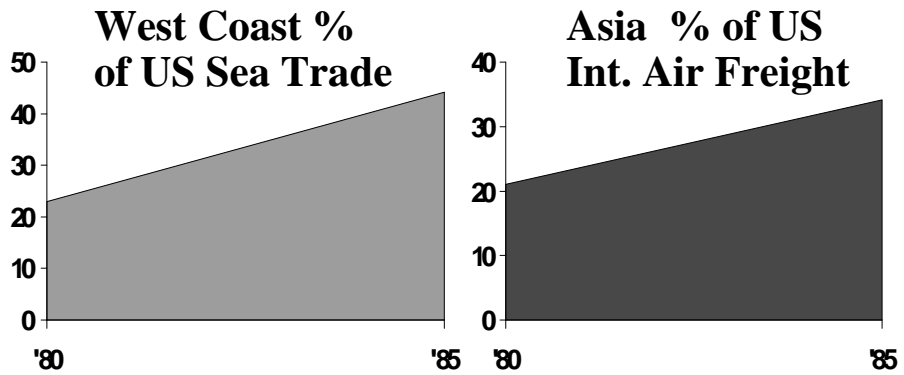
Trade in Intermediate Goods

- **Assemblies:**
 - Computer Chips & Related Parts
 - Electronic Equipment & Instruments
 - Transportation Equipment & Machinery
 - Pharmaceuticals & Chemical Products

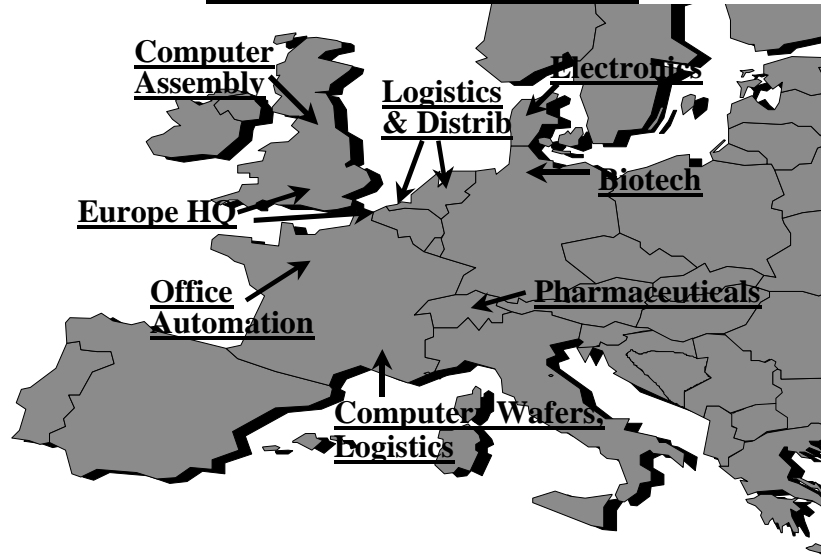
Air Shipment: Electronics Growth



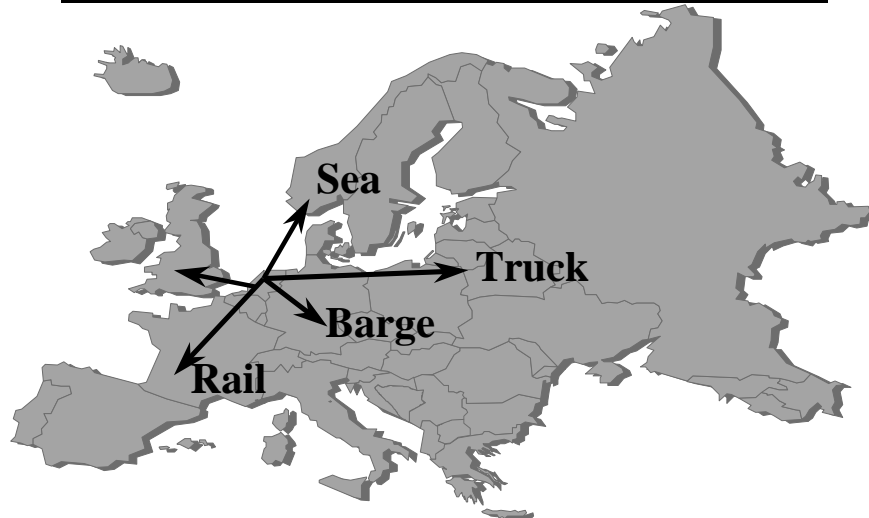
Implications of Asia Trade



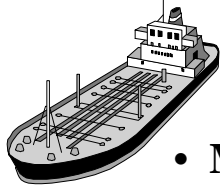
Regional Centers



Multi-Modal Container Growth



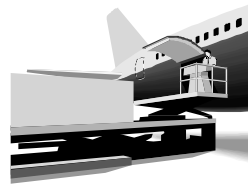
New Requirements



- **Larger Ships**
Concentrating in Fewer Ports

- **Multi-modal Containers**
Truck/Rail Land Bridge Corridors

- **Lightweight, High Value Assemblies**
Airport Shipping Centers



Conclusions

Globalization of Business Functions

Changing Activity Locations

Changing Freight & Shipping Patterns

Changing Mode & Port Needs



**Transportation Investment
& Econ Development**

