Coping with supply-chain disruptions

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Supply chain disruptions

- After decades of stability we have widespread supply disruption
  - Production disruptions (COVID, Texas freeze 2021...)
  - Reduced freight capacity (air transport, trucking, border closures)
  - Congestion
A brief history of lead times

- Korean war
- Several port strikes
- End of Bretton Woods
- Wage/price controls

Source: ISM; Last observation: August 2022
Supply chain disruptions

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- Difficult to adjust in short-run (1–2 years)

- In the very short run (6 months), mitigation strategies include
  - Modal substitution (faster transport)
  - Inventory management
  - Diversified supplier base (less useful when the shock is widespread)

- Two mini-case studies
  1. Shipping PPE by air in early 2020 (modal substitution)
  2. Restocking cycle in retail toys in 2022 (inventory management)
Modal substitution: Personal protective equipment

Source: US Census Bureau
Modal substitution

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Modal substitution

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- Bigger benefits to this strategy when:
  - Longer supply chains $\rightarrow$ larger inventories
  - Slower transit modes
Inventory management: Aggregate inventories

Last observation: July 2022

Source: US Census Bureau; Last observation July 2022
Inventory management: Restocking imported toys

Source: US Census Bureau; Based on flexport research
Imports of HS 9503.00.0071 [Toys] intended for use by persons under 3 years of age
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Long-term coping mechanisms

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► Push back against global supply chains is probably misguided
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- Large efficiency gains to producing in most efficient locations
- Firms internalize the risks of disruptions
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▶ At the firm level:
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  ▶ Firms internalize the risks of disruptions
▶ In the aggregate
  ▶ Diversification benefit: maintain consumption during adverse domestic shocks
  ▶ Faster transport modes in crises boost short-run production
  ▶ Higher inventories in global supply chains creates an aggregate buffer
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- Tradeoff benefits against costs in extreme events
- Key challenge: likelihood of future extreme events/policy disruptions