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



Source: ISM; Last observation: August 2022

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 - ▶ Production disruptions (COVID, Texas freeze 2021...)
 - ► Reduced freight capacity (air transport, trucking, border closures)
 - Congestion
- 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

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Modal substitution

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- ► Bigger benefits to this strategy when:
 - \blacktriangleright Longer supply chains \rightarrow larger inventories
 - ► Slower transit modes

Inventory management: Aggregate inventories



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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- ► Tradeoff benefits against costs in extreme events
- ► Key challenge: likelihood of future extreme events/policy disruptions