

Managing Supply Chain Risk

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From 1st Nov: Deputy Dean Melbourne Business School

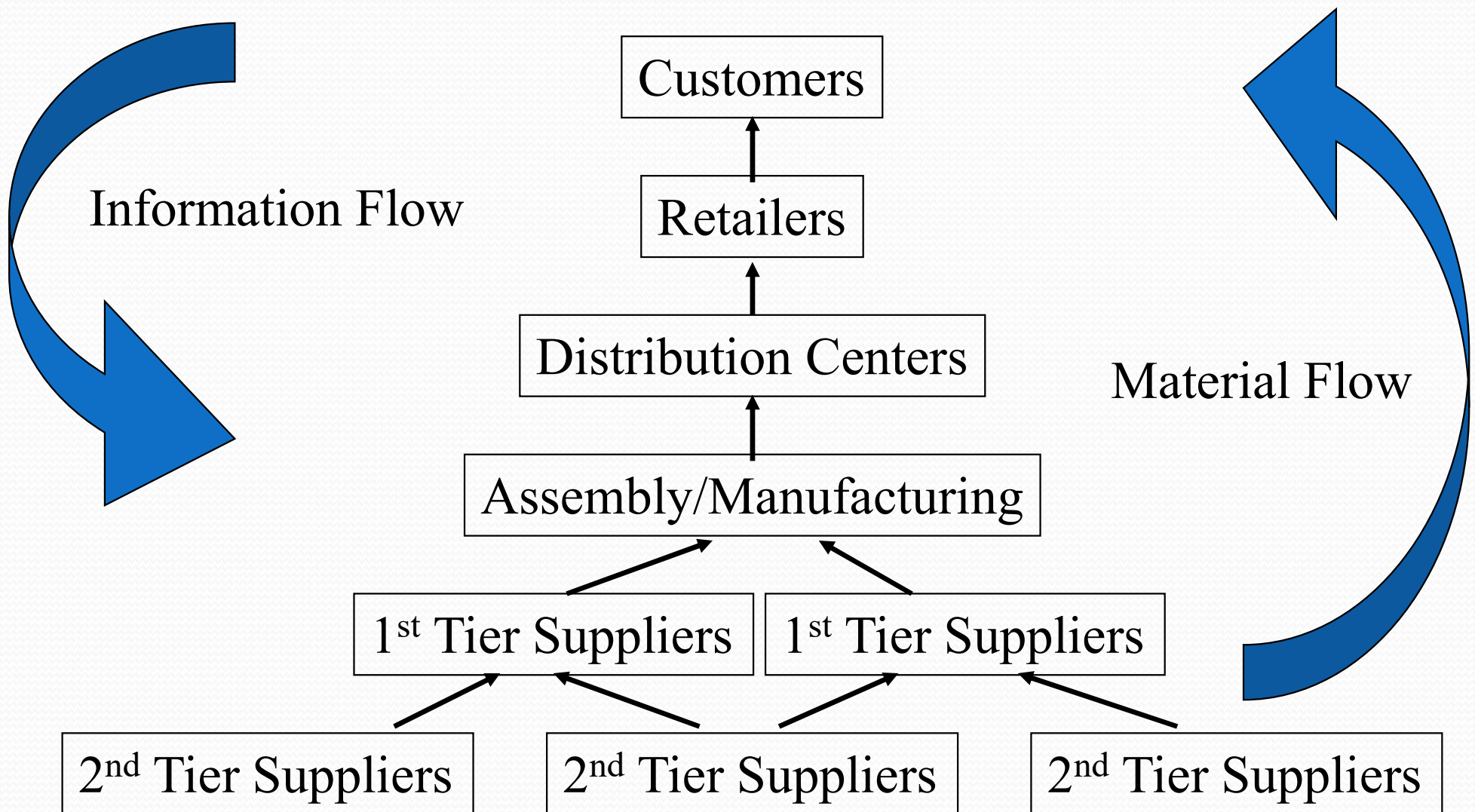
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Outline

- Supply chains and risk
- Covid-related effects
- Supply chain risk management
- The Centre and exec programme

The Basic Supply Chain



Risk

Operational
Risks

Disruptions

“An exposure to serious disturbance”

(Christopher & Peck, 2004)

“The loss a firm incurs is a result of its supply chain
vulnerability to a given supply chain disruption”

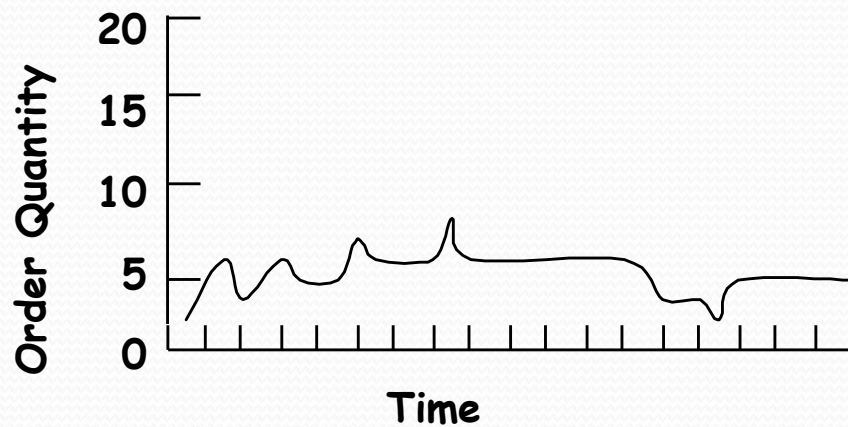
(Wagner & Bode, 2006)

Why does risk matter?

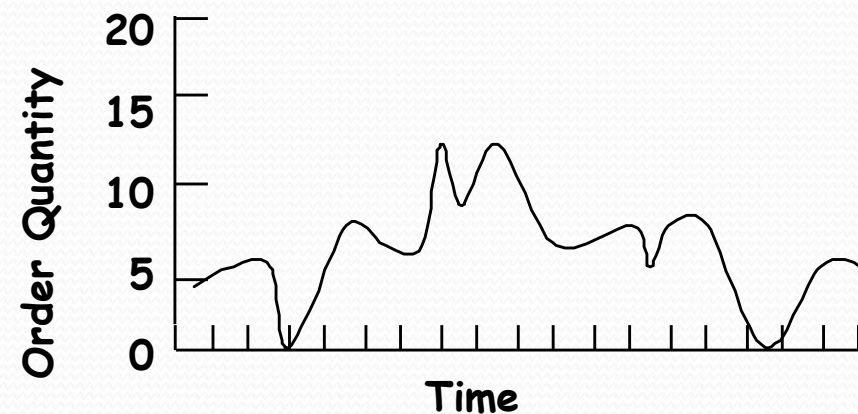
- Shift toward lean production
- Bullwhip effects
- Recent catastrophic events

The “Bullwhip Effect” in Supply Chains - Illustration

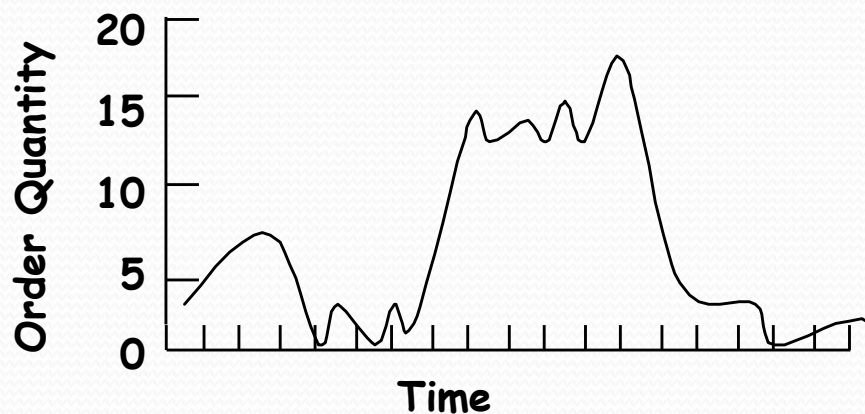
Consumer Sales



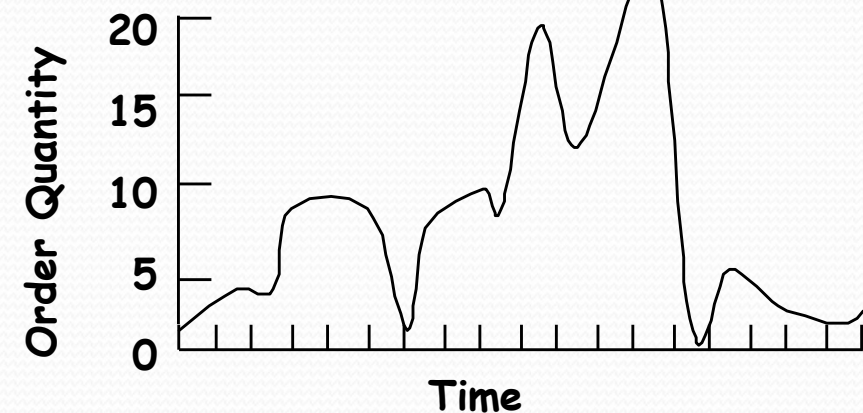
Retailer's Order to Wholesaler



Wholesaler's Orders to Manufacture



Manufacturer's Orders to Supplier



Example: Kiwifruit Supply Chain – Risks

- **Harvest Time**

Cost of staying ships vs. late arrival to market

- **Microbiological Disease**

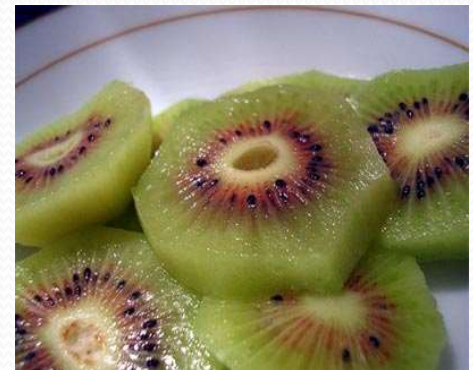
- **China Market Share**

China could take 50% of volume at good price

Riskier market, is it worth it?

- **High reject rate from Japan**

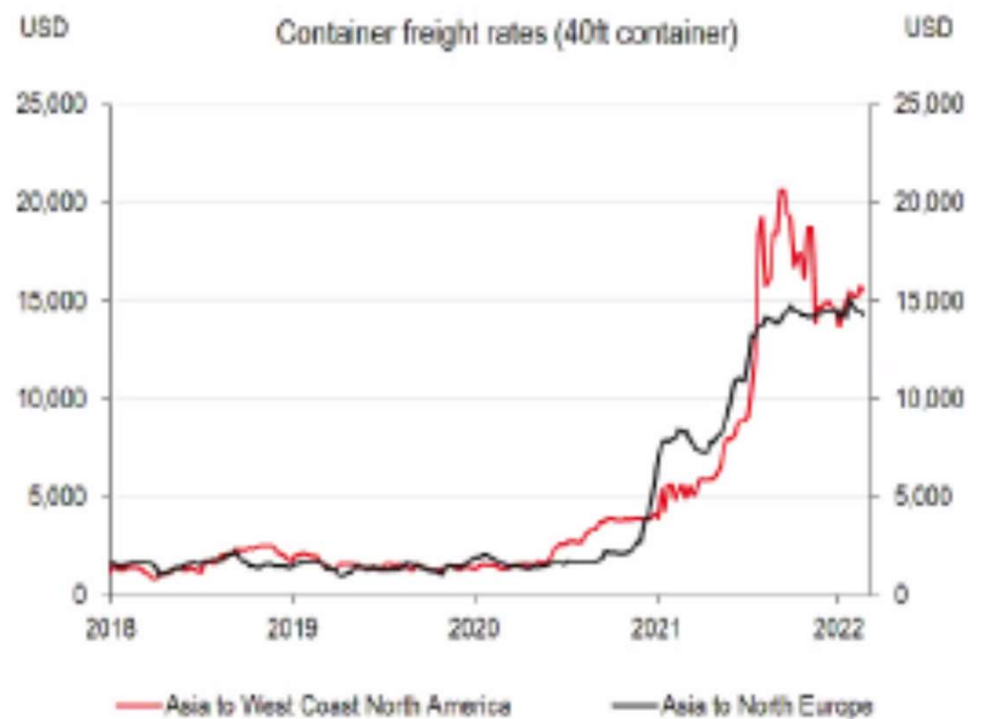
- **Pandemic**



What happened during COVID?

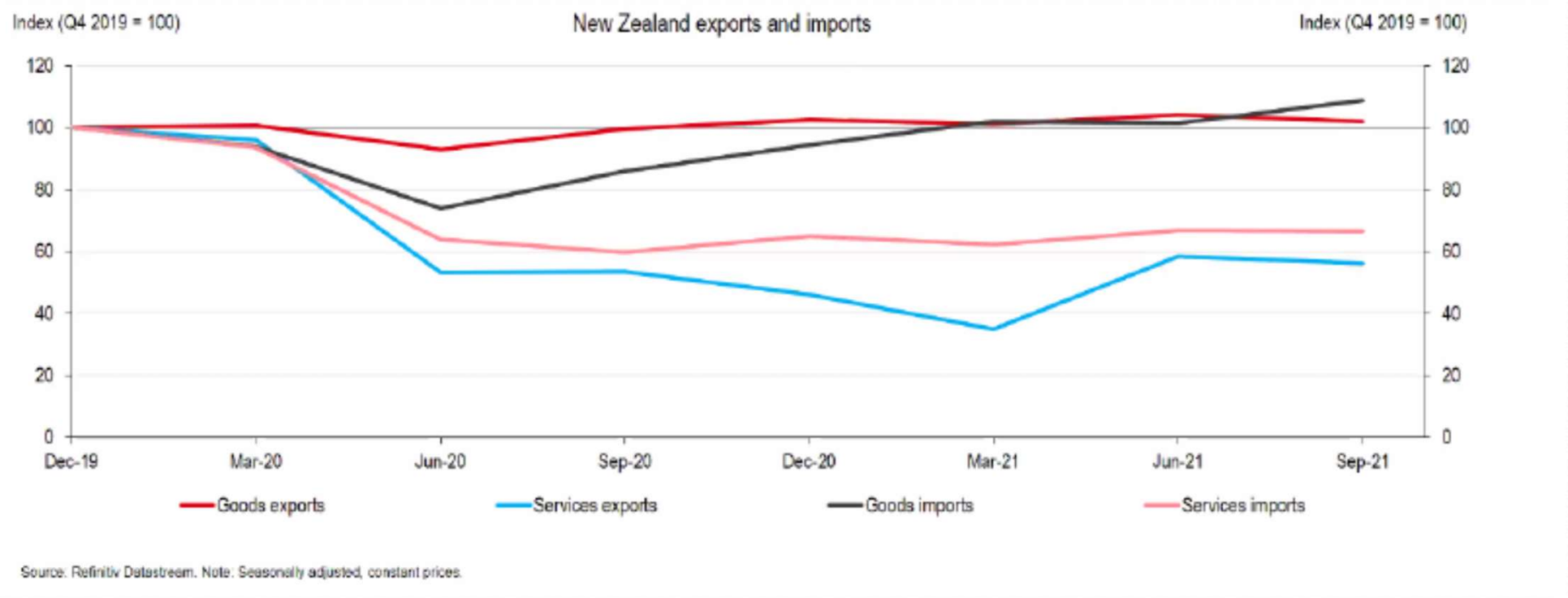


Source: CPB



Source: Refinitiv Datastream

And in NZ?



Demand Risks

- Decreases
 - Nationally during lockdown
 - Travel dependent services – tourism and education
 - Internationally for nice-to-haves (e.g., lobster)
- Increases
 - Stockpiling
 - Perception of safety?
 - Online ordering
 - Supply shocks elsewhere
- Other changes
 - Home versus workplace consumption

Supply Risks

- Suppliers not working
- Transport disruptions
- Social distancing leading to decreased capacity in production
- Closed plants, missing workforce
- Reduced air capacity due to fewer flights
- Port congestion

What Next?

- Continued economic downturn in many places
- Supply chains will refill and readjust but will take a while
- Travel won't be truly back to normal for a while
- Some of the move to online will become permanent
- Perhaps a role for government
 - <https://www.transport.govt.nz/area-of-interest/freight-and-logistics/new-zealand-freight-and-supply-chain-strategy/>
 - What if our borders closed?

Key Supply Chain Risks Going Forward

- Pandemics
- War and global instability
 - Terrorist attacks on infrastructure
- Hubbing through Australia
- Continued slide in NZ productivity
- Climate change
 - Attitudes to freight
- Cyber-risks
- Random one-offs – e.g., EverGiven

Supply Chain Risk Management

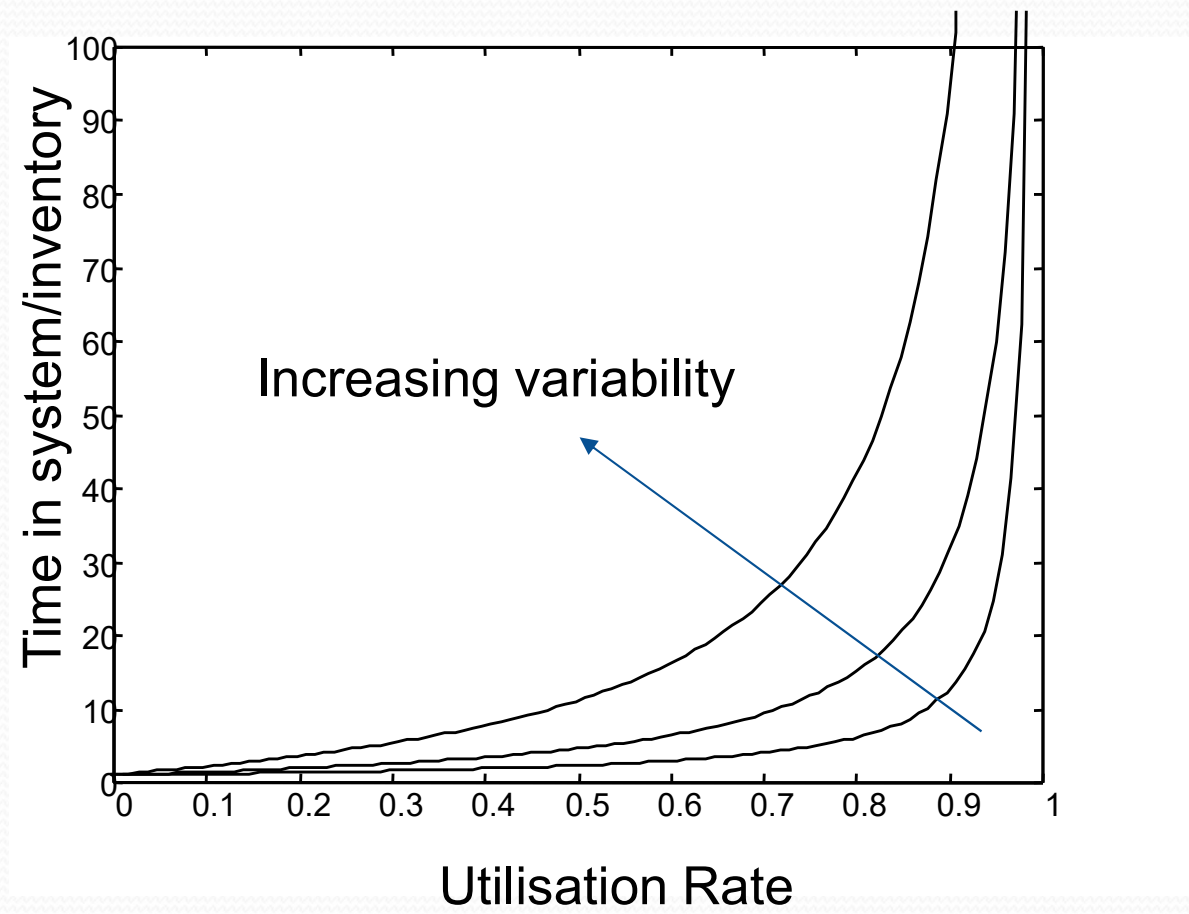
Mitigation (pre-disruption)

- ✓ Multiple-Sourcing: Diversification & Regionalization
- ✓ Inventory

Contingency (post-disruption)

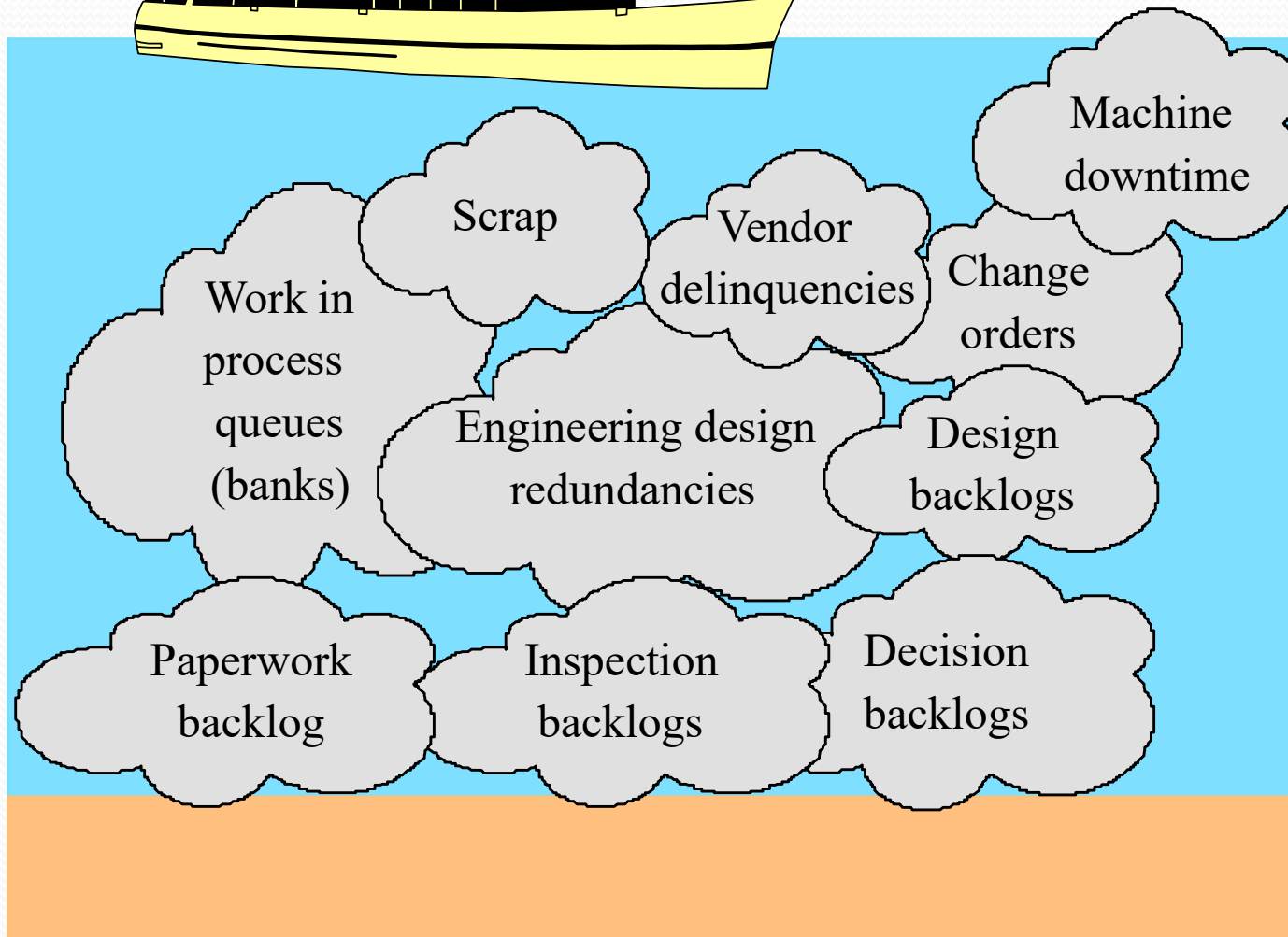
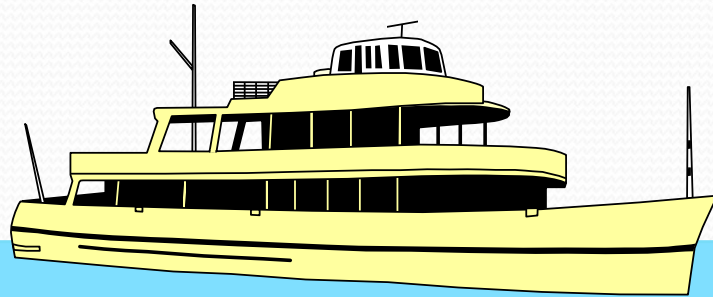
- ✓ Contingency Rerouting
 - E.g. Back-up Market
- ✓ Revenue Management
 - E.g. Demand Switching
- ✓ Backup Source, Dual Sourcing with Vol. Flexibility

Variability and capacity interact

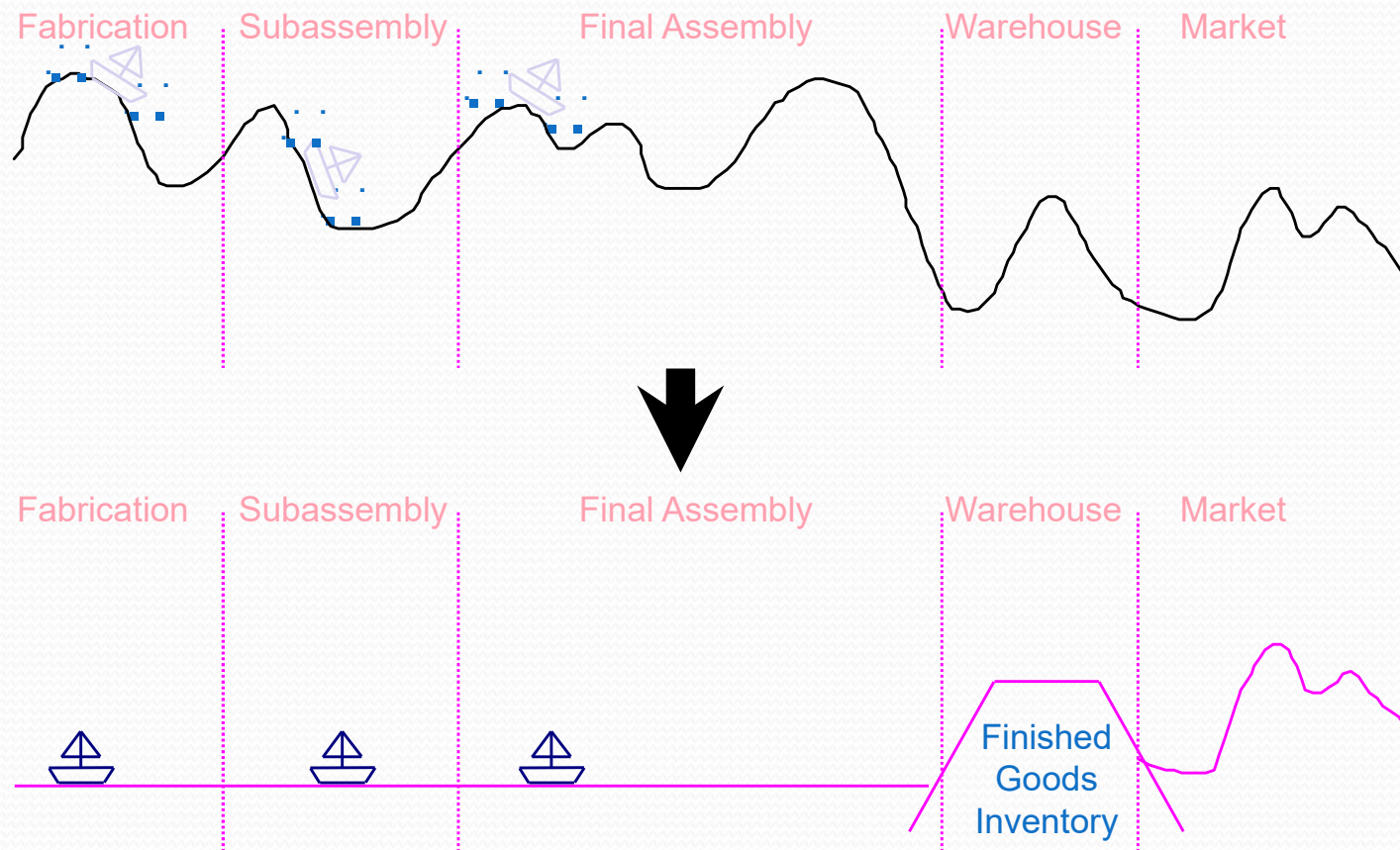


Lean Production:

Reduce Inventory



Finished Goods Inventory Helps Smooth Production Activities



Just-in-time vs. Just-in-case

- Just-in-time = lean
 - Lower cost, higher productivity
- Just-in-case = safety buffers (time, inventory, capacity)
 - Higher cost, more robust

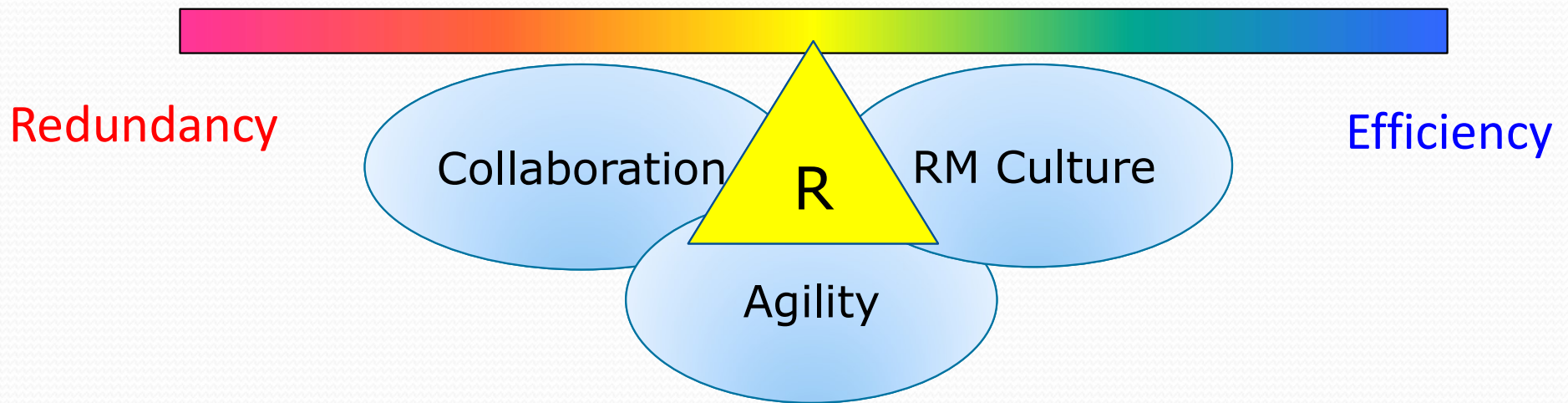
Resilient Supply Chain

- **Resilience**

Ability to return to the original state or move to a new, more desirable state after being disturbed

- **Resilient supply chain**

Able to reconfigure (adapt) the structure to survive and grow (in face of disruption)



Robust Supply Chain

- **Robustness**

Strength of the system or its elements to **withstand** disruptions without suffering degradation or loss of function

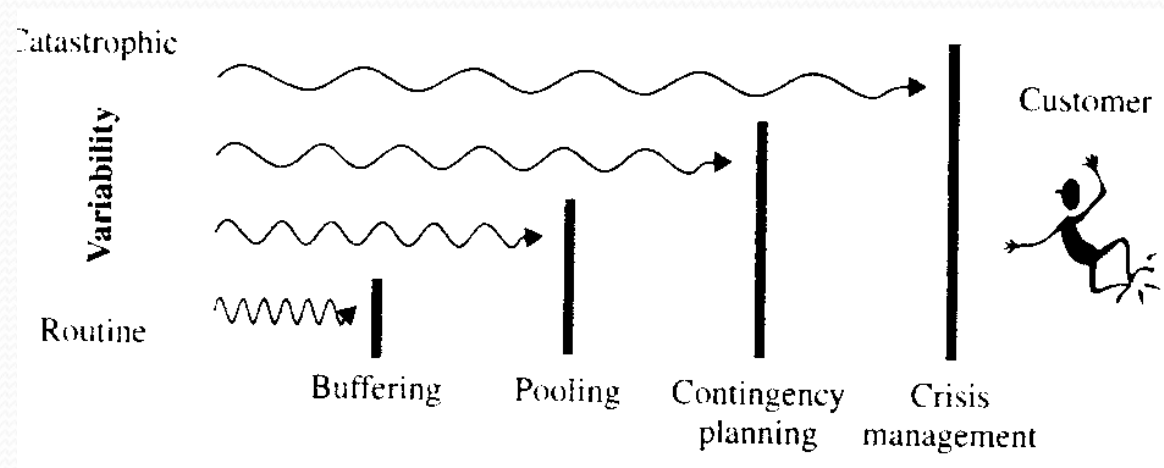
- **Robust Supply Chain**

Strong enough to **not be affected** and **maintain** its original structure in face of disruption

- **Robust supply chain strategies**

Buffer or suffer

Layers of Protection Against Supply Chain Risk



- **Buffering:** Maintaining excess resources (inventory, capacity, time) to cover for fluctuations in supply or demand
- **Pooling:** Sharing buffers to cover multiple sources of variability (e.g., demand from different markets)
- **Contingency planning:** Establishing a preset course of action and “virtual buffers” for an anticipated scenario
- **Crisis management:** Generating responses to events for which buffers (individual or pooled) and contingency plans are inadequate

Summary

- Hopefully, the increased emphasis on supply chain resilience and robustness (versus cost) will continue
- Encourage all companies to have a comprehensive risk register for their supply chains
- But fundamentally there will always be a trade-off between cost and preparedness

The Centre for Supply Chain Management

- **Produce world-class *supply-chain research*** that is relevant to the New Zealand environment and the economic challenges confronting the nation
- ***Disseminate both the Centre's research*** and supply chain best practices through print, electronic media, seminars, and education
- **Bring together a *critical mass*** of New Zealand companies involved in various roles in supply chains to facilitate engagement and debate on matters of common interest
- www.cscm.auckland.ac.nz



The Centre for Supply Chain Management Research Themes

- Supply chain collaboration
- Supply chain risk management
- Sustainable supply chain management
- Supply chain networks and infrastructure

The Strategic Supply Chain Executive Programme

- The Centre is taking an active role in developing mid-career supply chain professionals to become the next generation of strategic supply chain leaders
- Ten-day programme set across four modules, held over five months. Next launch 2023
- Who Should Attend:
 - Currently be in a mid-to-senior supply chain or related role for at least five years (e.g. procurement, inventory, planning, logistics or related disciplines)
 - Have been identified as having potential to progress to a senior leadership role within the next five years
- For further information contact Felicity Lawrence
f.lawrence@auckland.ac.nz
- Or go to: <https://www.exec.auckland.ac.nz/c-suite/strategic-supply-chain-management/>