Supply Chain Redesign

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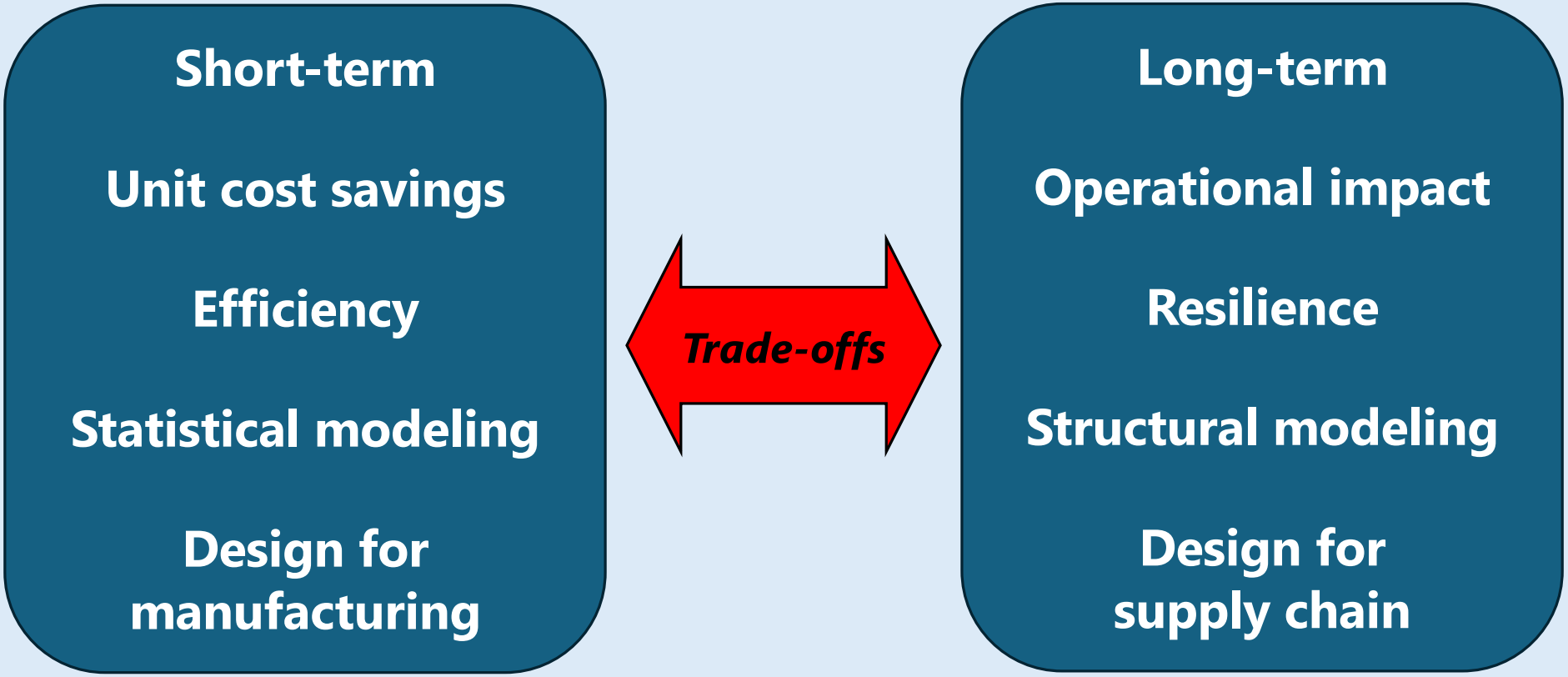
scmBLOX

Is the juice worth the squeeze?

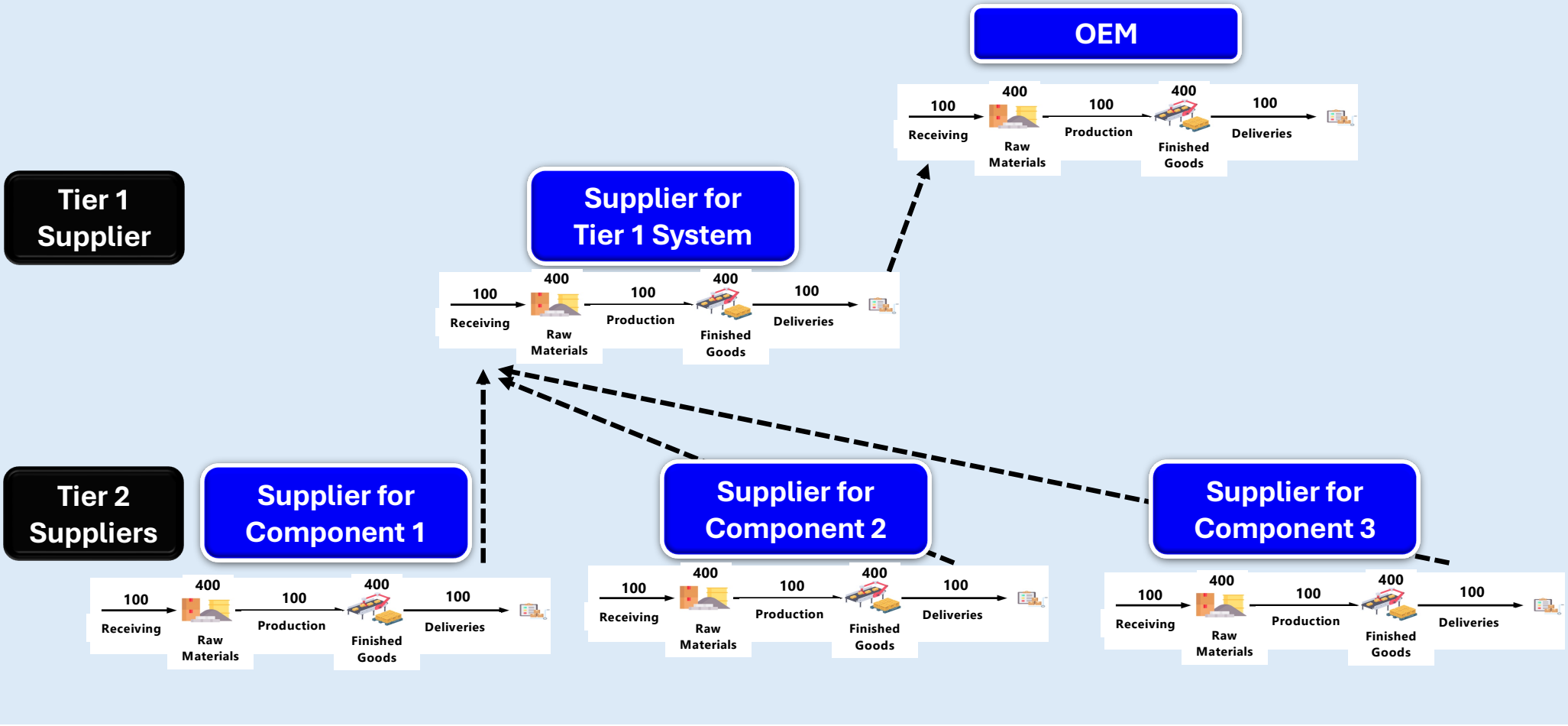
Considerations . . .



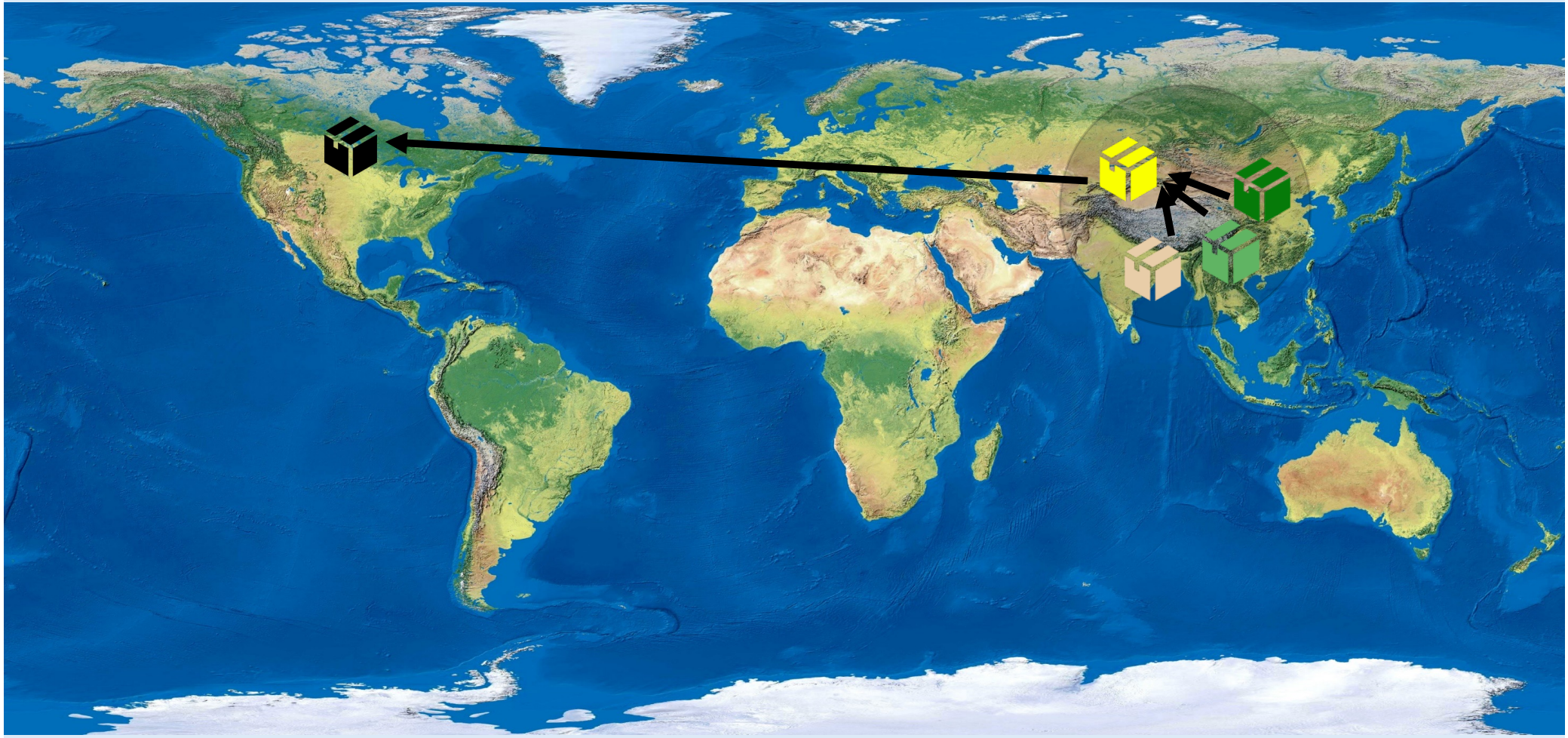
Case Study: SC Redesign

Baseline: Supply Chain Structure

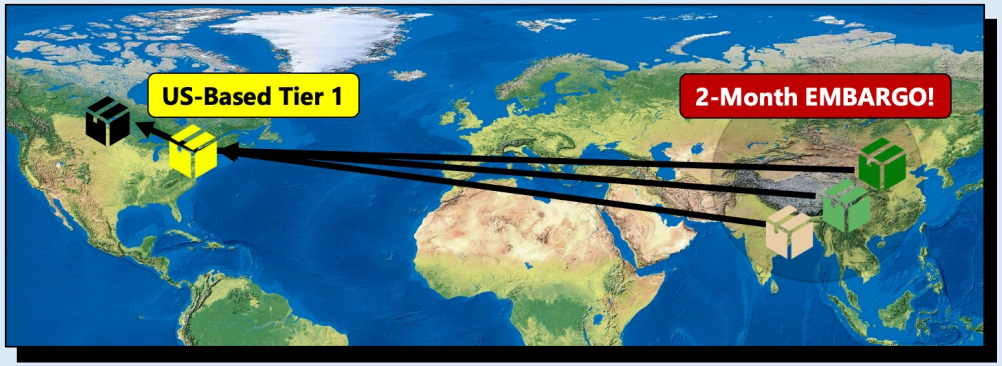
3 Key Components Needed to Make Tier 1 System



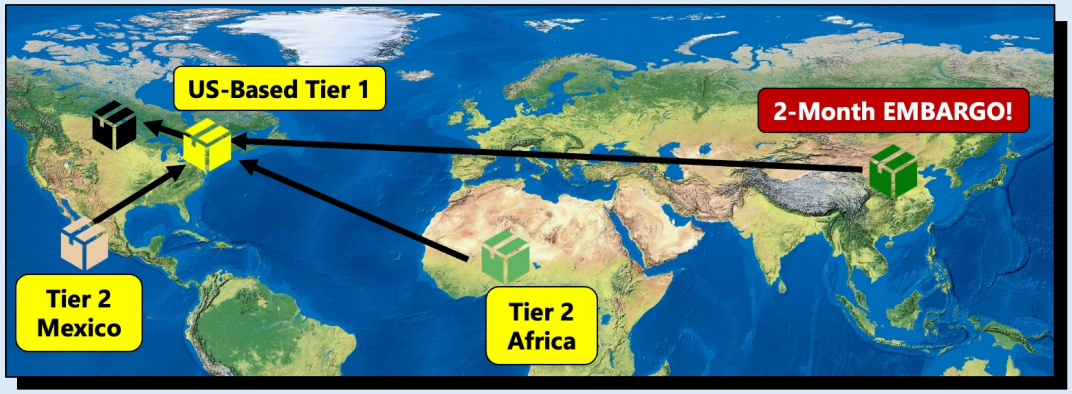
Baseline: US OEM, China Tier 1 and Tier 2



<u>Scenario 1</u>:
China Tier 1 and Tier 2s
2-month China embargo

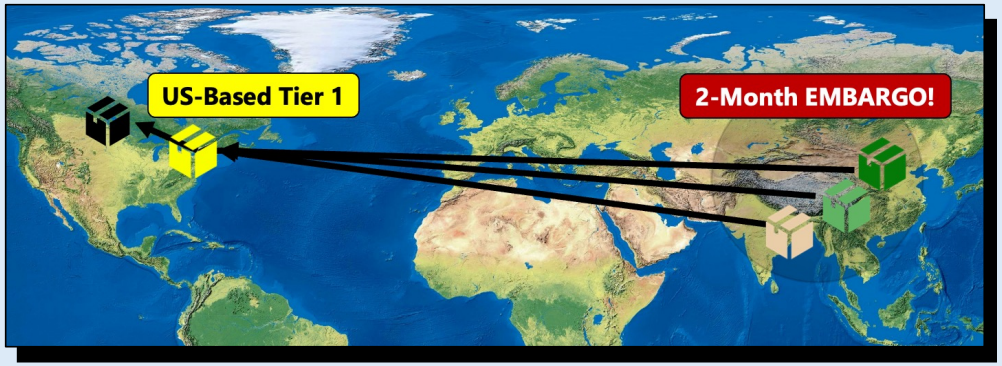


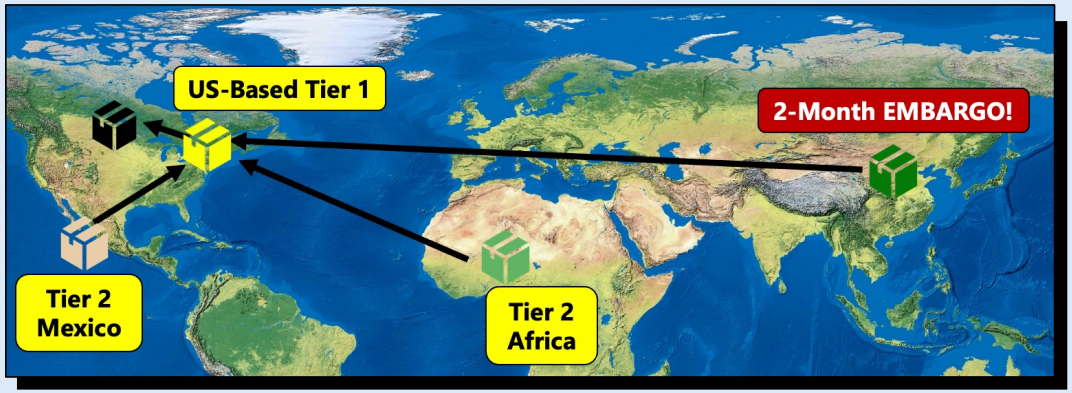
<u>Scenario 2</u>:
US Tier 1 and China Tier 2s
2-month China embargo

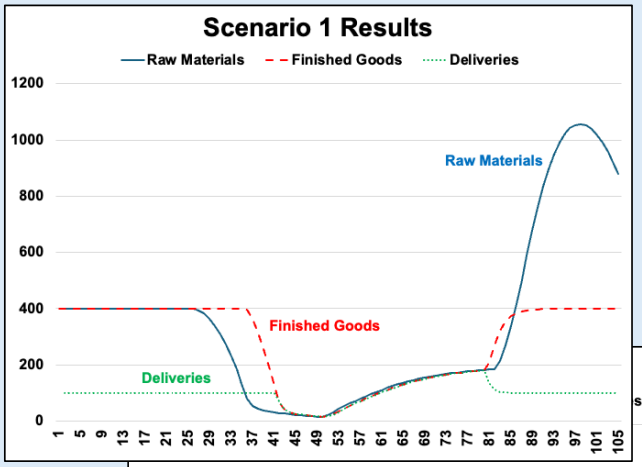


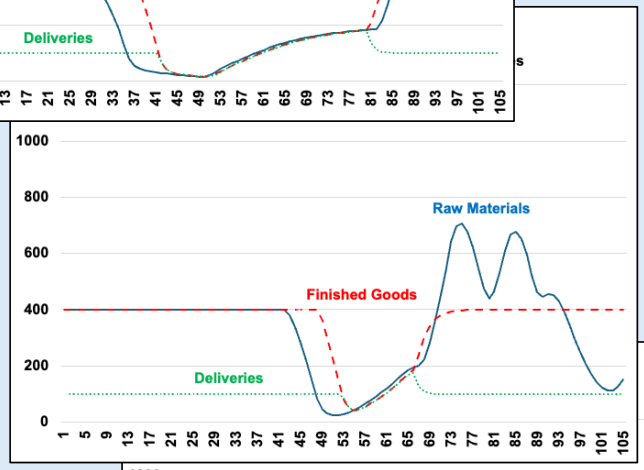
<u>Scenario 3</u>:
US Tier 1 and Tier 2s in CHI, MEX, AFR
2-month China embargo

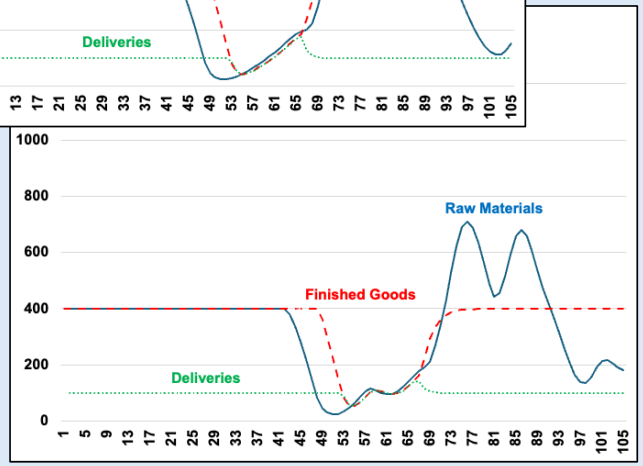

2-Month EMBARGO!


US-Based Tier 1
2-Month EMBARGO!


US-Based Tier 1
2-Month EMBARGO!
Tier 2 Mexico
Tier 2 Africa

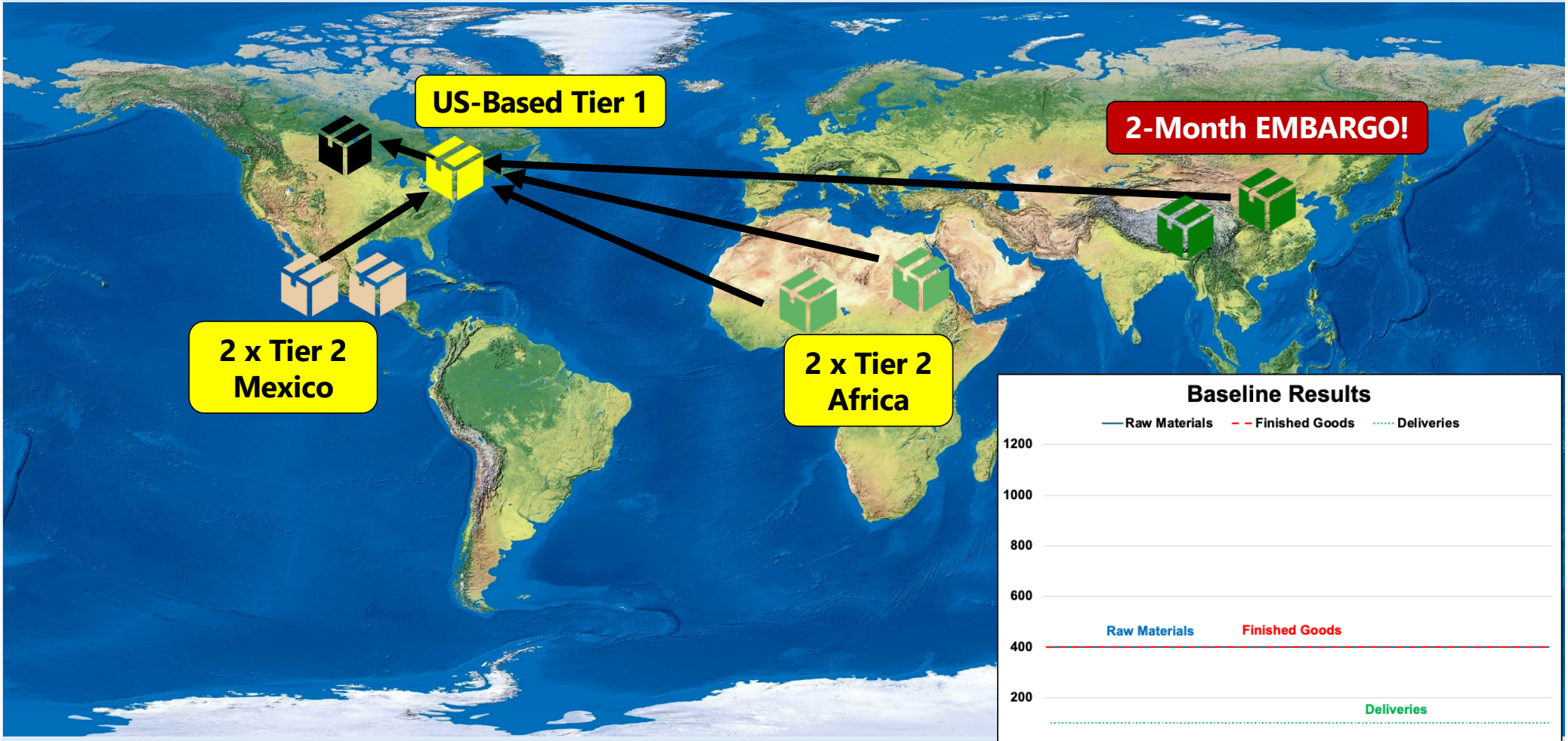

Scenario 1 Results
Raw Materials
Finished Goods
Deliveries
1200
1000
800
600
400
200
0
Raw Materials
Finished Goods
Deliveries


1000
800
600
400
200
0
Raw Materials
Finished Goods
Deliveries


1000
800
600
400
200
0
Raw Materials
Finished Goods
Deliveries

Variable	Baseline	Scenario 1	Scenario 2	Scenario 3
Cash Available	$ 126,000	$ 51,015	$ 113,455	$ 119,625
Recovery Time to 50% Deliveries	-	14 weeks	3 weeks	2 weeks
Recovery Time to 100% Deliveries	-	20 weeks	7 weeks	4 weeks
Highest/Lowest RM Spikes	-	+ 164% - 96%	+75% - 96%	+75% - 96%
Highest/Lowest FG Spikes	-	+ 0% - 96%	+ 0% - 90%	+ 0% - 85%
Highest Orders Backlog Spike	-	+ 1,150%	+ 288%	+ 150%
Longest Lead Time	1 week	12 weeks	4 weeks	2.5 weeks
% On Time Deliveries	100%	61%	84%	85%
MIN Profit Margin	25%	- 558%	- 44%	- 26%

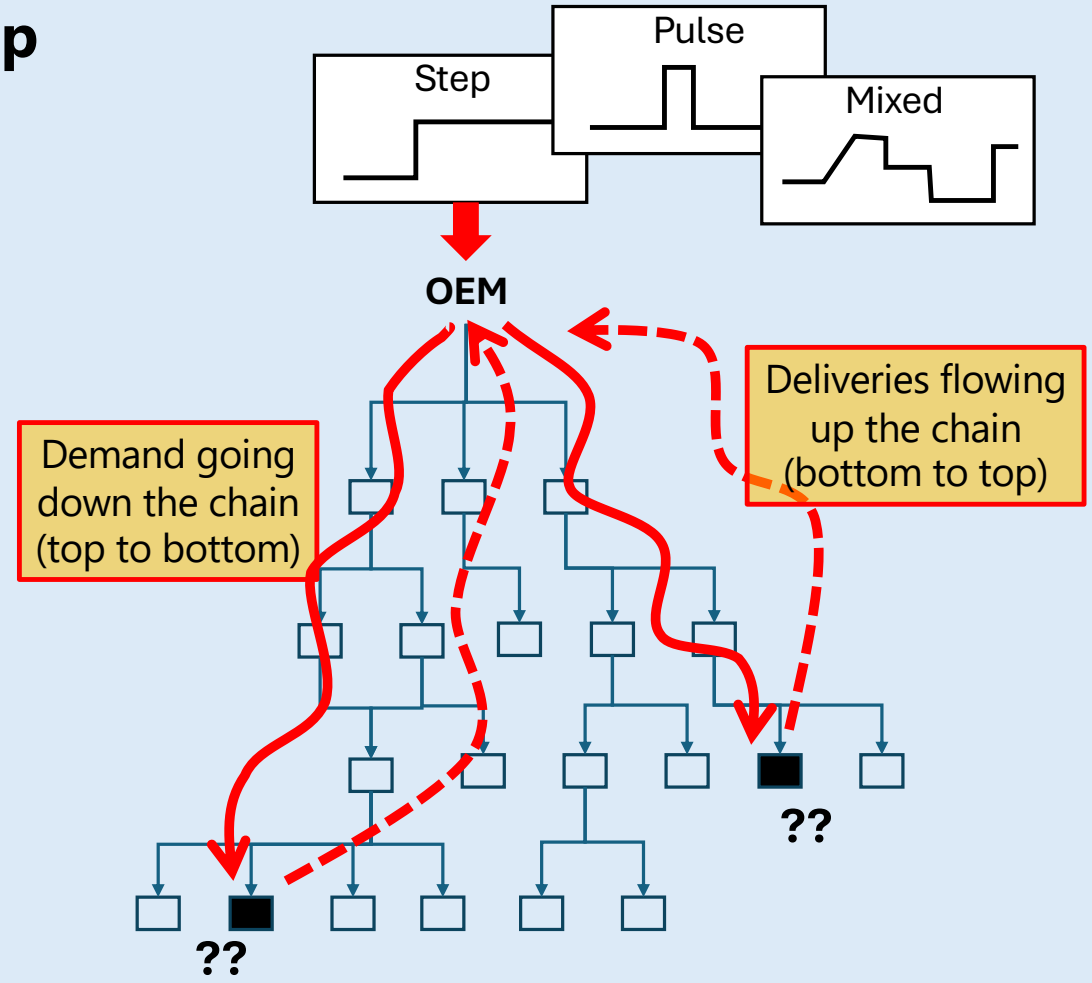
Scenario 4: Best Solution Is Redundant Suppliers



Case Study: SC Stress-Test

Stress-Testing a Supply Chain from Top-to-Bottom-to-Top

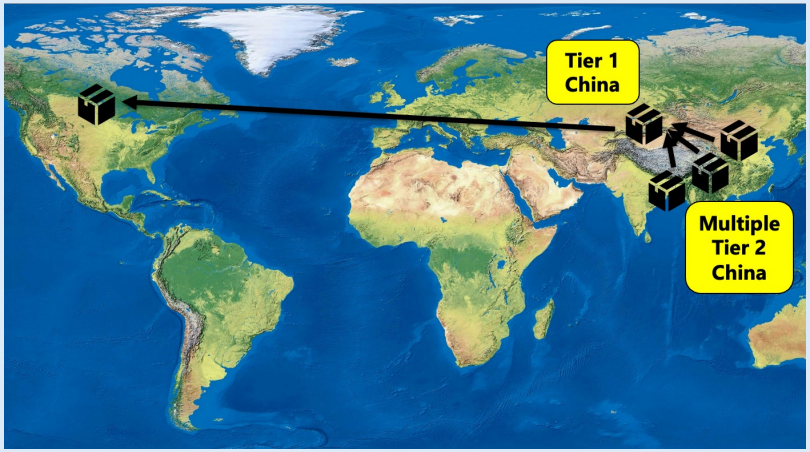
- **Check any entity in the supply chain for its *vulnerability*.**
- **Apply *disruptions* at various entities to see how the rest of the supply chain responds and recovers.**
- **Stress-test the full supply chain to determine *weak points*.**
- **Alter the structure of the supply chain to see options for improving *resiliency* and *response times*.**



Current Approaches Are Static Solutions that Do Not Consider Operational Impacts and Dynamics

Current Network A:

US-Based OEM
Tier 1 and Tier 2 in China

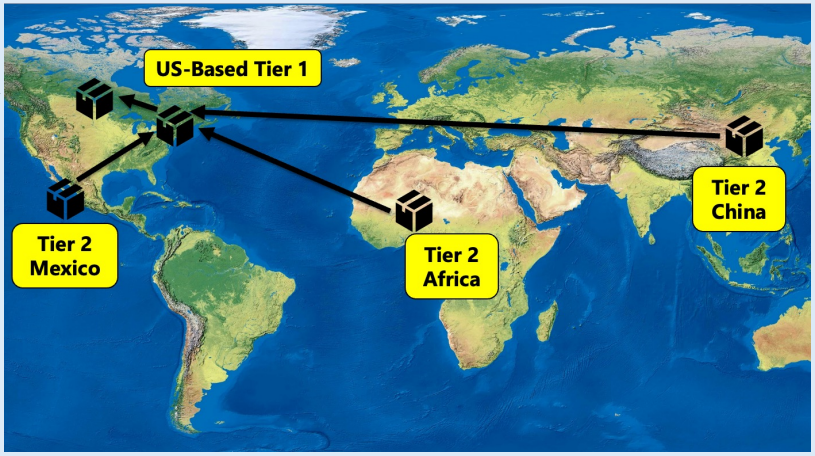


Transition?

1. Operational impacts?
2. *Short-term losses?*
3. Bullwhips?
4. *Standing up suppliers?*

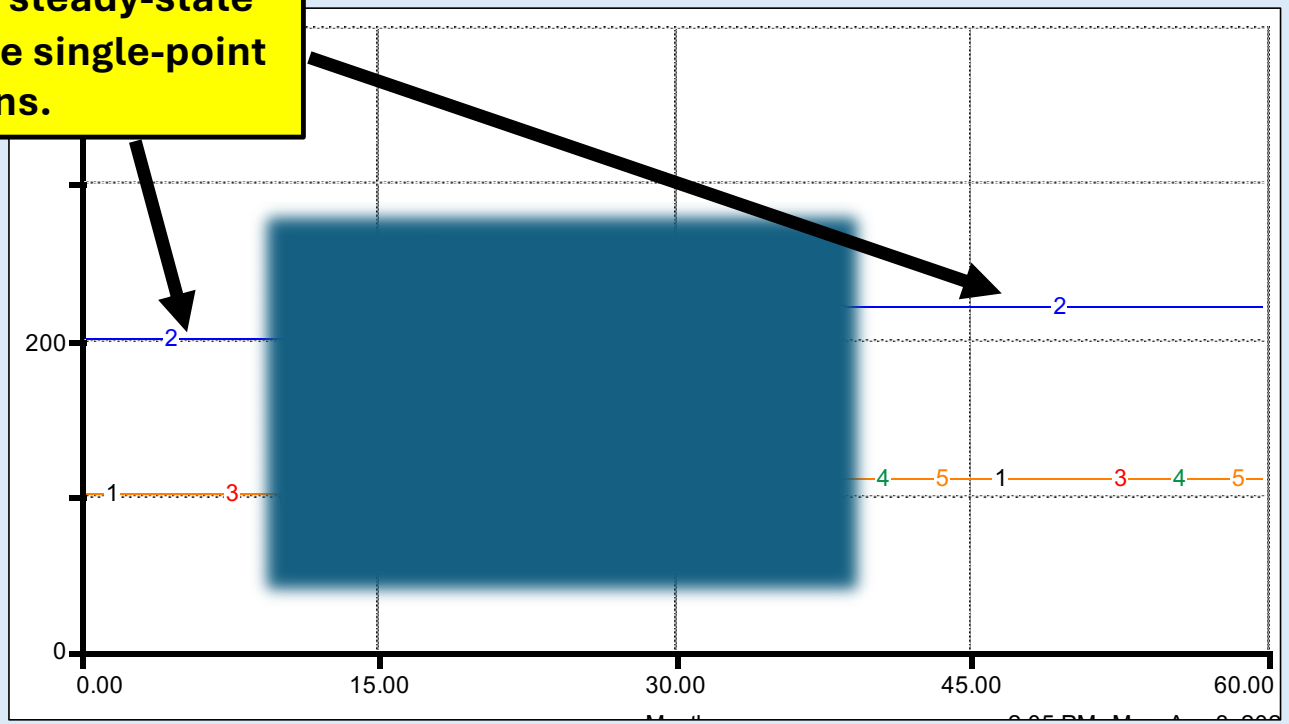
Desired Network B:

US-Based OEM and Tier 1
Tier 2 in Mexico, Africa, China



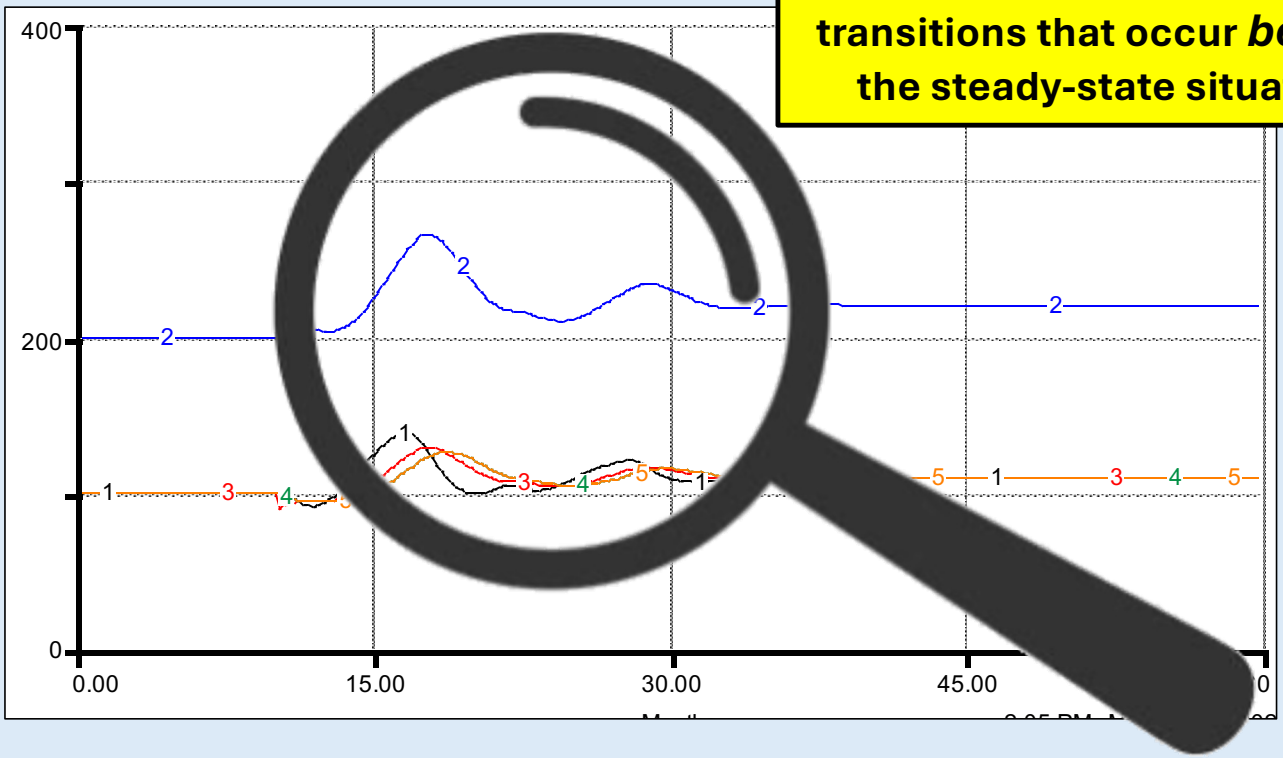
Network Design/Optimization Tools
Only Show the BEFORE and AFTER States

Network optimization techniques only look at these steady-state situations. They are single-point solutions.



Network Design/Optimization Tools Only Show the BEFORE and AFTER States

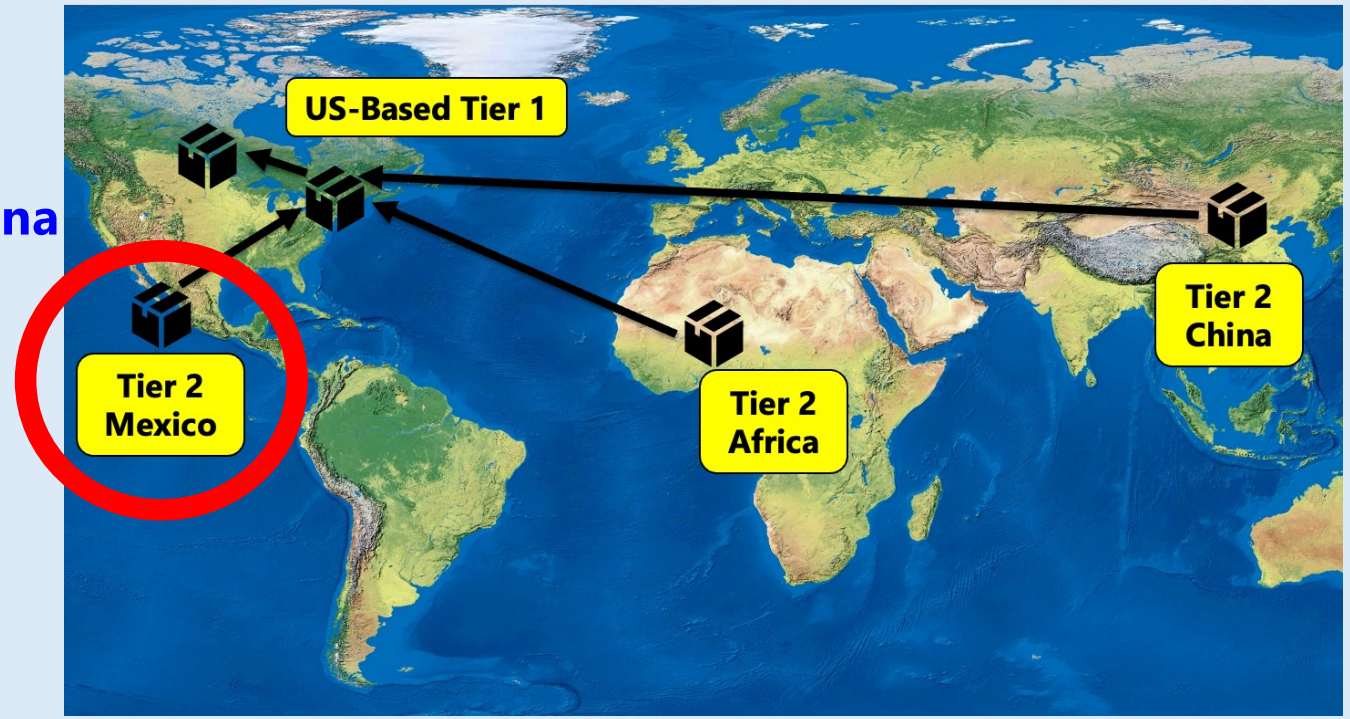
Structural models can look at the dynamic adjustments and transitions that occur *between* the steady-state situations.



Stress Test Example

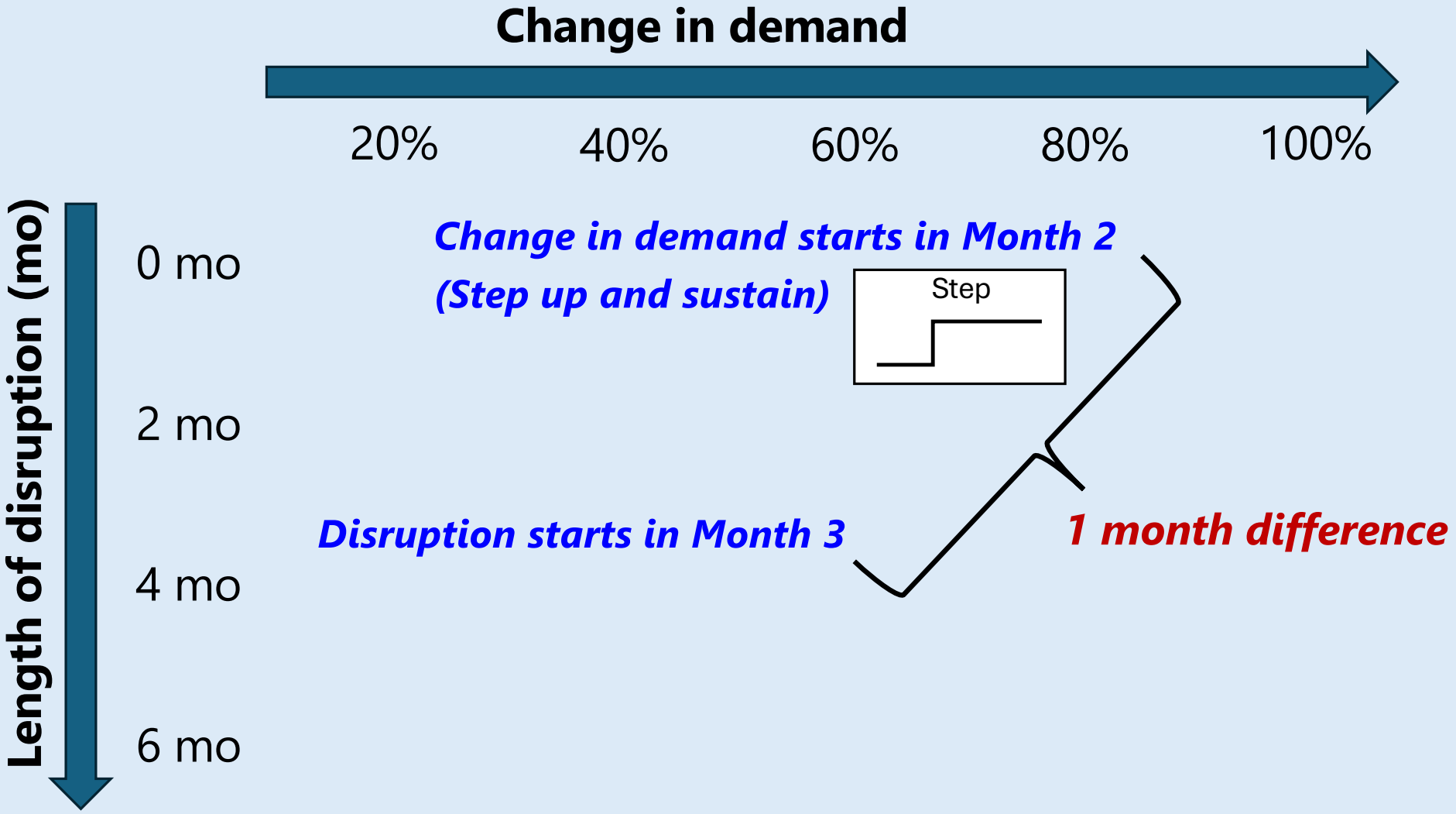
Desired Network B:

US-Based OEM and Tier 1
Tier 2 in Mexico, Africa, China



Stress-test Mexico
Tier 2 supplier:

- **Change in demand**
- **Length of disruption**


Change in demand
20%
40%
60%
80%
100%
Length of disruption (mo)
0 mo
2 mo
4 mo
6 mo
Change in demand starts in Month 2
(Step up and sustain)
Step
Disruption starts in Month 3
1 month difference

Change in demand

20% 40% 60% 80% 100%

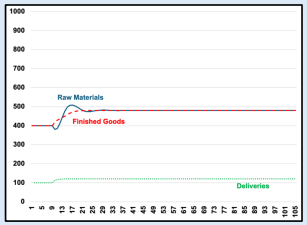
Length of disruption (mo)

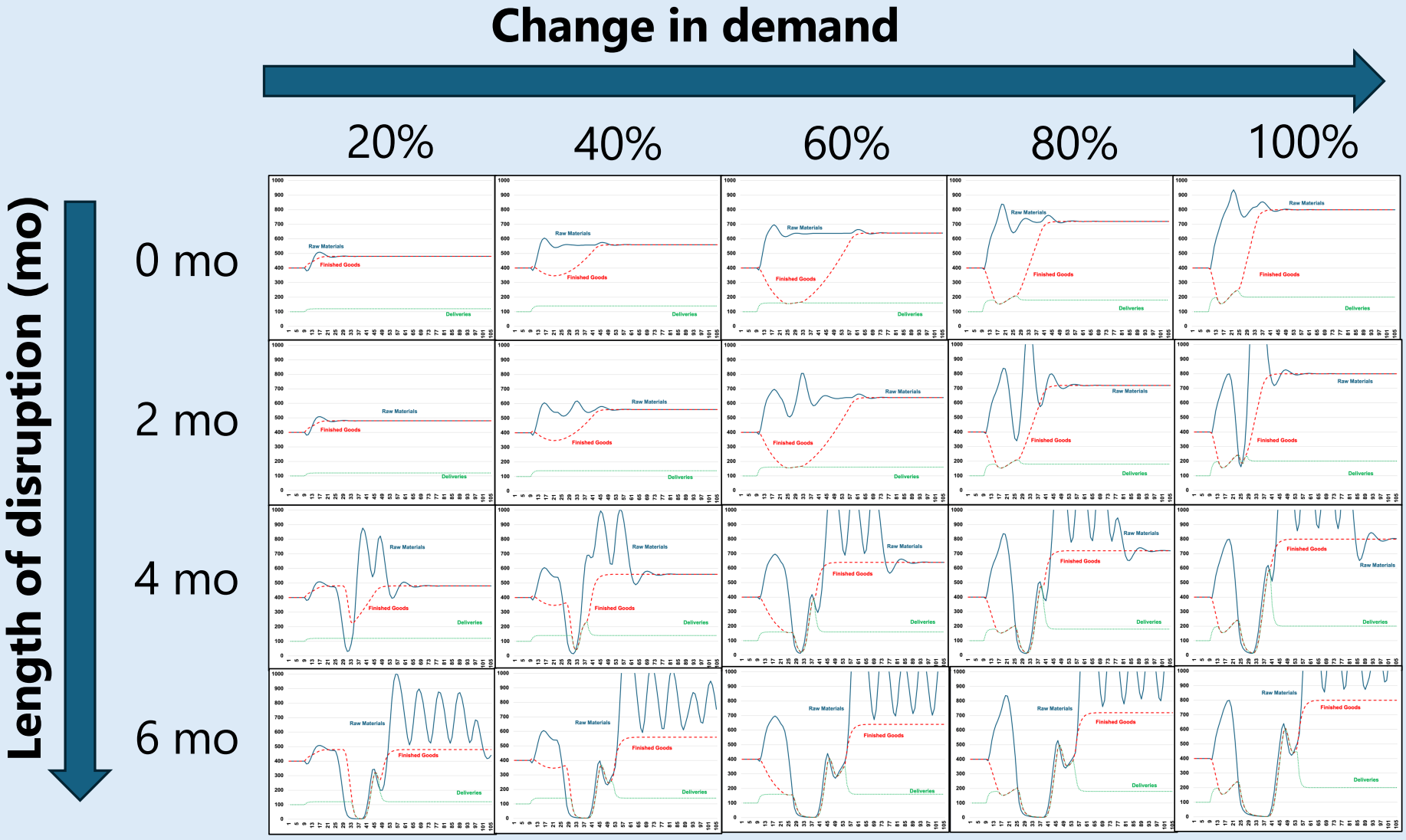
0 mo

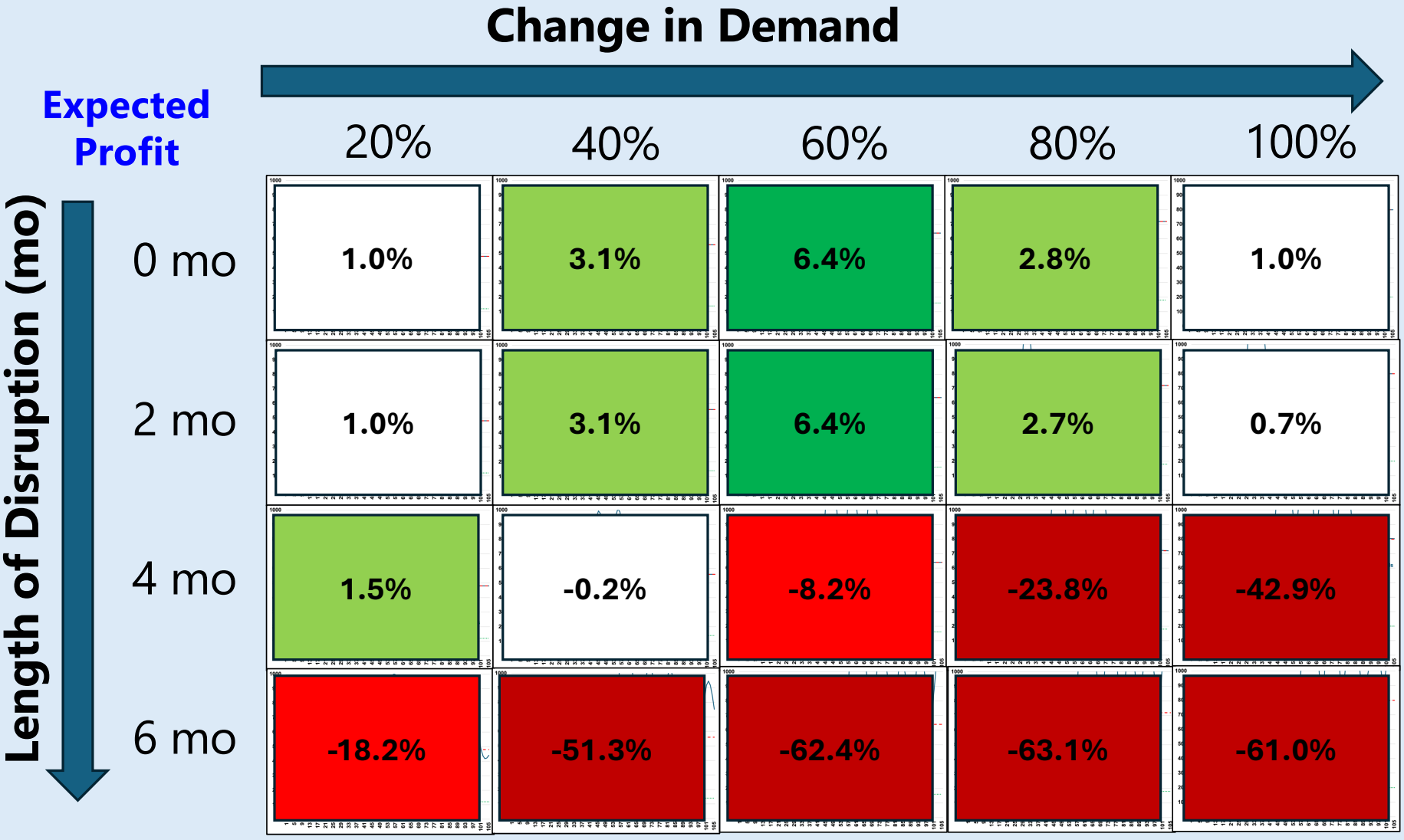
2 mo

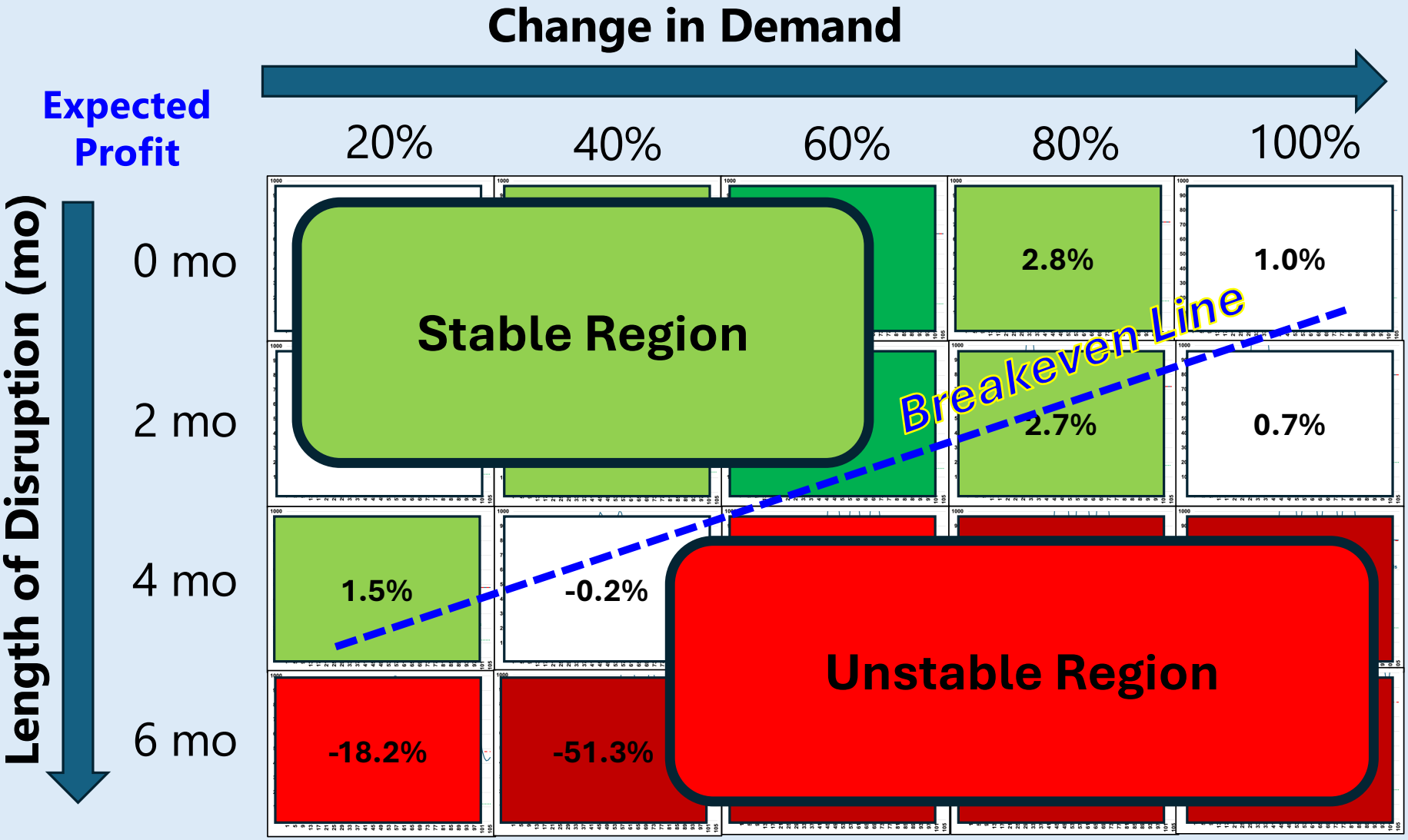
4 mo

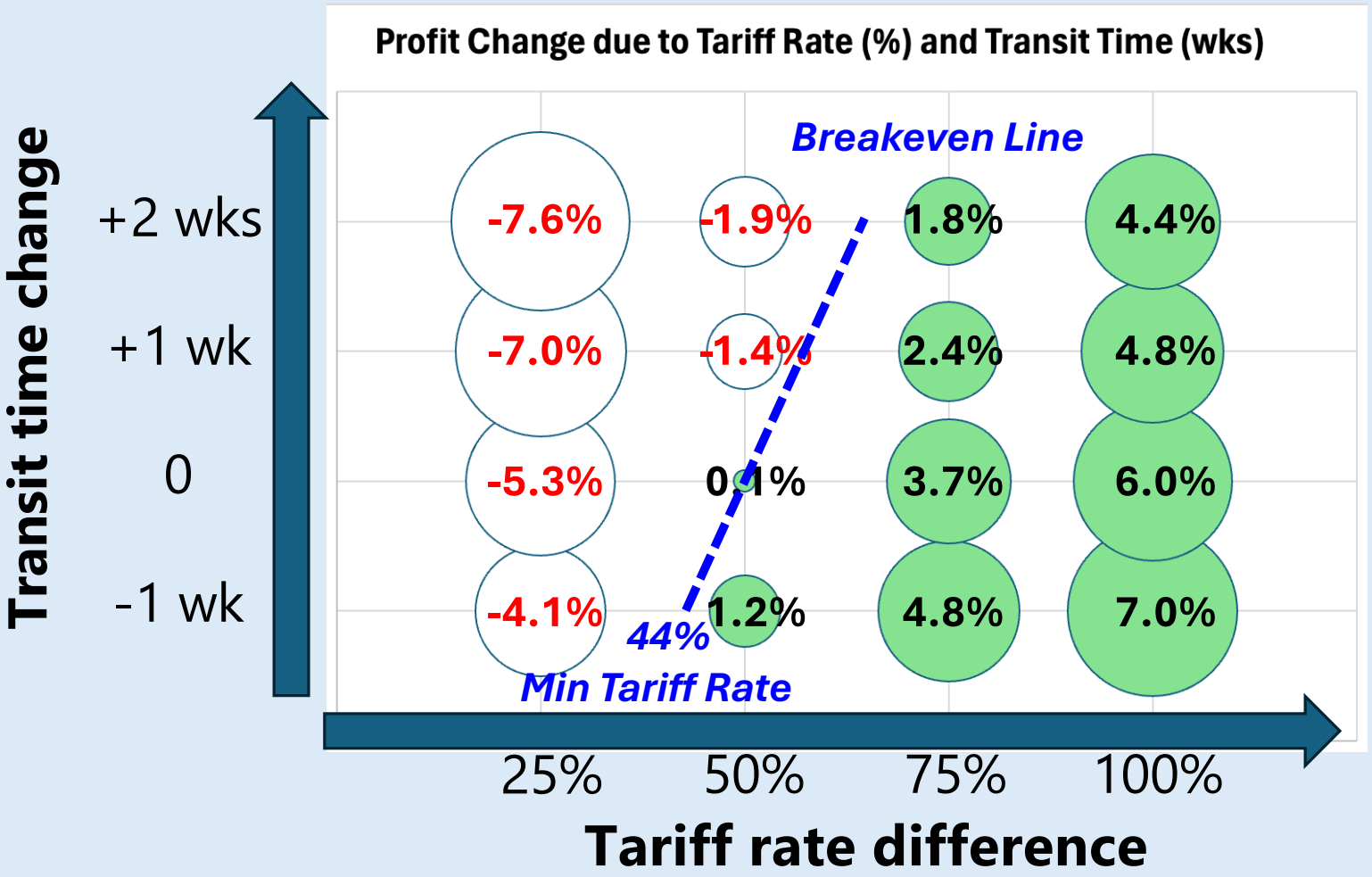
6 mo

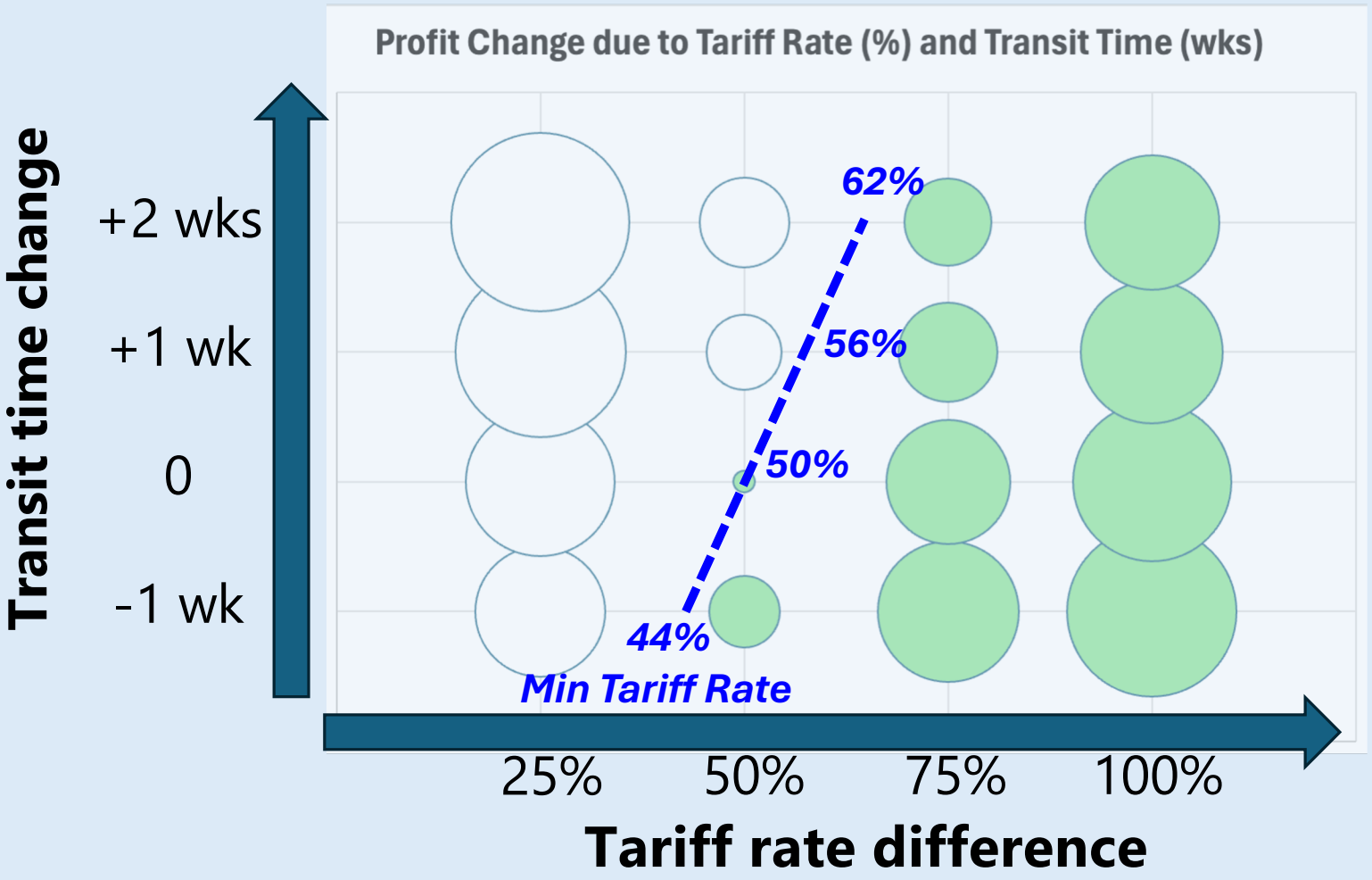



Change in demand
20%
40%
60%
80%
100%
Length of disruption (mo)
0 mo
2 mo
4 mo
6 mo
Raw Materials
Finished Goods
Deliveries


Change in Demand
Expected Profit
20%
40%
60%
80%
100%
Length of Disruption (mo)
0 mo
2 mo
4 mo
6 mo
1.0%
3.1%
6.4%
2.8%
1.0%
1.0%
3.1%
6.4%
2.7%
0.7%
1.5%
-0.2%
-8.2%
-23.8%
-42.9%
-18.2%
-51.3%
-62.4%
-63.1%
-61.0%


Change in Demand
Expected Profit
20%
40%
60%
80%
100%
Length of Disruption (mo)
0 mo
2 mo
4 mo
6 mo
Stable Region
Unstable Region
Breakeven Line
2.8%
1.0%
2.7%
0.7%
1.5%
-0.2%
-18.2%
-51.3%


Profit Change due to Tariff Rate (%) and Transit Time (wks)
Transit time change
+2 wks
+1 wk
0
-1 wk
Breakeven Line
-7.6%
-1.9%
1.8%
4.4%
-7.0%
-1.4%
2.4%
4.8%
-5.3%
0.1%
3.7%
6.0%
-4.1%
1.2%
4.8%
7.0%
44%
Min Tariff Rate
25%
50%
75%
100%
Tariff rate difference


Profit Change due to Tariff Rate (%) and Transit Time (wks)
Transit time change
+2 wks
+1 wk
0
-1 wk
62%
56%
50%
44%
Min Tariff Rate
25%
50%
75%
100%
Tariff rate difference

Is the juice worth the squeeze?