Emerge and Recover

Predicting the Response of the US Trucking Market to the COVID-19 Pandemic

Center for Supply Chain Research®, Penn State University
Agenda

- Introduction
- Guest experts
- Q&A / Open forum
## The State of Uncertainty

**Common Path, Yet Various Shapes of Recovery**

![Graph](Image adapted from McKinsey (2020))

### Disease progression path: Key influence on three common phases of public health responses

- **Containment.** Strict physical distancing, bans on gatherings, non-essential business closure
- **Partial recovery.** Reducing some restrictions to restore a moderate level of economic activity
- **Full recovery.** Vaccine discovered, approved and widely administered—economic activity fully restored

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Magnitude</th>
<th>Growth</th>
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<tbody>
<tr>
<td></td>
<td>Handful of new cases per day</td>
<td>Percentage growth may be high, but absolute number of cases remains within the capacity of public-health systems</td>
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<td></td>
<td>Significant number of new cases per day</td>
<td>Exponential-to-fast linear growth in the number of new cases</td>
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<td>Significant number of new cases per day</td>
<td>Decline in the number of new cases over time (with potential day-to-day variation)</td>
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<td>Handful of new cases per day, with no significant spikes</td>
<td>Cases flat or trending down over time</td>
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The State of Uncertainty
Common Path, Yet Various Shapes of Recovery (continued)

As of 16 April 2020

<table>
<thead>
<tr>
<th>Country</th>
<th>School closure</th>
<th>Restricted assembly</th>
<th>Non-essential business closure</th>
<th>International travel restrictions</th>
<th>Domestic travel restrictions²</th>
<th>Non-essential local mvmt. restrictions</th>
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The United States, most of Europe, and an increasing number of locations around the world are currently in the “Containment” Phase.

.extensions / New interventions post 31 Mar  Relaxation measures  Continuing interventions

Source: BCG (2020)
The State of Uncertainty
Common Path, Yet Various Shapes of Recovery (continued)

Shapes of recovery depends on five key questions:

1. What will be the length of containment?
2. To what depth does the economy drop during containment?
3. What will be the length of partial recovery?
4. What level of recovery does the economy achieve under more relaxed restrictions?
5. Where does the economy return relative to the pre-COVID crisis?

Source: Adapted from BCG (2020)
Examples of various shapes of recovery

<table>
<thead>
<tr>
<th>“V” Shaped</th>
<th>“U” Shaped</th>
<th>“W” Shaped</th>
<th>“Square-Root” Shaped</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Recovery</td>
<td>Time to Recovery</td>
<td>Time to Recovery</td>
<td>Time to Recovery</td>
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Percent Change from Peak

0 %
Our Guest Experts

C. John Langley Jr.
Clinical Professor of Supply Chain Management
Penn State University

Dale McClung
Sr. Director of Integrated Logistics Design Analytics
CLX Logistics
CLX Logistics Fast Facts

Established in 1997
Steve Hamilton – Founder/Chairman, PSU Grad
David Vieira – CEO
NA Headquarters: Blue Bell, PA
EMEA Headquarters: Eindhoven, NL
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ACC Affiliate Membership
Specialization in Chemical Vertical
Board of Advisors:
   Dr. John Coyle – PSU Professor Emeritus
   Joe Nicosia – PSU Grad

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Truck Freight Market as Economic Barometer

- Trucks hauled 11.49 billion tons of freight in 2018
- Represents 71.4 percent of tonnage carried by all modes of freight transportation, including manufactured and retail goods
- Industry revenues were $796.7 billion, or 80% of total revenue earned by all transport modes
- 928,000 truck drivers employed in the United States

Source: ATA (2020)
Truck Freight Market as Economic Barometer
What’s Happening? — Spot Load Availability

Dry Van Spot Load Availability
Index, 100 = 2004 average

Refrigerated Spot Load Availability
Index, 100 = 2004 average

Flatbed Spot Load Availability
Index, 100 = 2004 average

Specialized Spot Load Availability
Index, 100 = 2004 average

Source: FTR (2020), as of the week ended April 17 (week 15)
# Freight Activity: Example Metrics

- Revenues
- Loads
- Tonnage
- Capacity
- Utilization
- Jobs
- Jobless claims
- Route miles
- Load turndowns

# Factors Impacting Freight Recovery

- COVID-19 outbreak experience
- Manufacturing
- Aggregate economic activity
- Unemployment rates
- Seasonality
- “Virtual” alternatives
- New approaches to strategic sourcing
- Future changes to consumer and business buying behavior
- Restructuring of industries, businesses, and supply chains
Emerging and Recover
Bullwhip and Reverse Bullwhip Effects

Bullwhip Effect (Traditional)
- Small changes in demand cause significant supply chain volatility.
- Demand variability increases as we move upstream.

Reverse Bullwhip Effect
- Large changes in demand are NOT met with significant changes in supply.
- Demand variability increases as one moves downstream.
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Balancing Supply and Demand

Problem of Supply-Demand Misalignment

1. True end-customer demand.
2. Production cannot meet initial projected demand, resulting in real shortages.
3. Channel partners over-order in an attempt to meet demand and stock their shelves.
4. As supply catches up with demand, orders are canceled or returned.
5. Financial and production planning are not aligned with real demand; therefore, production continues.
6. As demand declines, all parties attempt to drain inventory to prevent write-down.
Quick business recovery in the Houston area created a surge in truck demand which sparked a disruption in US truck rates across the country.

Source: CLX outbound bulk tank truck shipments in the Houston and Louisiana areas
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Hurricane Harvey Disruption: US Truckload Dry Van Tender Performance


Shippers who didn’t have volume in areas where truck demand surged lost their preferred carrier capacity …and paid higher rates!
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Minimizing Unexpected Transportation Spend

Today’s excess truck capacity is temporary. Demand for truck capacity will surge in areas where the economy begins to recover causing volatility in rates. It could last longer than you think.

Action Guide
1. Review business continuity plans to prepare for tightening truck capacity in the coming months.
2. Benchmark your current truck spend.
3. Partner with critical carriers to secure truck capacity on critical lanes. Revised rates or volume commitments may be necessary.
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Developing Capabilities to Facilitate Recovery

Examples of shipper and provider capabilities that if available will facilitate recovery in the freight markets:

- Accommodating COVID-19 precautions
- Improvements in advance shipment planning
- Use of digital technologies
- Use of automation
- Ability to innovate and transform supply chains
Q&A / Open forum
STEVE TRACEY
Professor of Practice, SC&IS
Executive Director

- Center for Supply Chain Research®, Penn State University, and
- Penn State Executive Programs, Penn State University

Your Executive Director

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