Commercial Vehicle Review:
Of Peaks and Valleys

Steve Tam
ACT RESEARCH Co., LLC

Chicago Federal Reserve Bank
Automotive Outlook Symposium
May 31, 2019
Presentation Overview

• This is a cyclical business
• What drove the current peak
  – Capacity considerations
  – Stimulants
  – Demand growth
• What will drive the next valley
• Current market/forecast review
• Miscellaneous: MD and Electric
N.A. Class 8 Production

2005 - 2019

Units (000s)

Global Financial Market Collapse

ACT Research Co., LLC, Copyright 2019
N.A. Class 8 Production

2005 - 2019

Units (000s)

Great Recession

ACT Research Co., LLC, Copyright 2019
N.A. Class 8 Production

2005 - 2019

Units (000s)

'05  '06  '07  '08  '09  '10  '11  '12  '13  '14  '15  '16  '17  '18  '19

339  376  212  206  118  154  255  278  297  323  324  256  342

Pent Up Demand Sated

ACT Research Co., LLC, Copyright 2019
Continued Steady 2017 Economic Growth

Real Gross Domestic Product
Q/Q at SAAR
Q1'10 - Q4'20

ACT U.S. Freight Composite
Q/Q at SÄAR, Y/Y
Q1'10 - Q4'20

Source: BEA, ACT Research Co., LLC: Copyright 2019

Source: ACT Research Co., LLC: Copyright 2019
Trump Bump!

Total Class 8 N.A.: Net Orders & Build

January 2010 - April 2019

Units (000s)

Build

Net Orders

10,000

24,000

125

100

Truck orders increased from 10,000 in July 2016 to 24,000 by April 2017

Consumer sentiment goes from 100 in October 2016 to 125 in March 2017

Source: ACT Research Co., LLC; Copyright 2019
OEMs Fan the Flames

• “OEMs are subsidizing small fleets” (Major public TL, May’17)

• “We were offered big fleet pricing” (≈200 truck fleet, July’17)
### More MPG

<table>
<thead>
<tr>
<th>MPG</th>
<th>Mi/Yr. @ 100k</th>
<th>Fuel 5yr (000s)</th>
<th>Diesel @ $3.50</th>
<th>Notes</th>
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### U.S. C8 Tractor Fleet Fuel Economy

2017-Ending  U-15 Population

- **6.0-6.4 mpg**: 42.4%
- **6.5-7.0 mpg**: 15.2%
- **7.0-7.5 mpg**: 35.5%
- **>7.5-8.0 mpg**: 7.0%

More than 50% of fleet <7 mpg
Goodbye “Excess” Capacity
2018 CV Markets: From Hot to White-hot

• Demand-side strength
  – Economy poised for best outcome in over a decade
    • Healthy freight demand
    • *Corporate tax windfall: Putting the “C” in Cycle*
  – Accelerating carrier profits

• Supply-side constraints
  – ELD capacity absorption: No more cheaters!
  – Drivers constraining capacity
  – “Oil by truck” absorbing capacity

• Exogenous variables positive
  – Productivity trends slowing
  – Desirable new vehicle features: AMTs, safety techs
  – Better MPG

*Tax cuts turn what is perhaps the best demand environment in history into a raging inferno*
Forecasting Truck Demand
N.A. Class 8 Production

2005 - 2020

Units (000s)

2005: 339
2006: 376
2007: 212
2008: 206
2009: 118
2010: 154
2011: 255
2012: 278
2013: 246
2014: 297
2015: 323
2016: 228
2017: 256
2018: 324
2019: 342
2020: 245
Our Favorite Leading Indicators

• Yield curve: Flattening spread
  – Inversion: 5 to 8 quarter recession lead
• Purchasing Managers’ Indices: Mfg. proxy
  – Point to on-trend growth NA, subpar ROW
• Commodity prices: Implied machinery demand
  – Rebounding from weakness in Q4, except copper, coal, grain, NG
• Stock market trends: Earnings drive investment
  – Rebounded from weakness in Q4, until trade breakdown
• Confidence surveys: Confidence supports spending
  – Took a hit following government shutdown
  – Coming back slowly
Slower Growth Ahead

U.S. Treasuries, Constant Maturity Rates
January 2010 - April 2019

The yield on 10-year Treasury notes has fallen below that on three-month bills for the first time since 2007. Market players worry about the economy.

The Wall Street Journal,
Markets Shudder as Growth Worries Swell
Yield on 10-year Treasury note slides to lowest since January 2018
By Akane Elam and Georgi Katchanov
Updated March 22, 2019 10:01 p.m. ET
# Recession Checklist

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<th>Checklist</th>
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<td>Central bank begins a series of interest rate increases</td>
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<tr>
<td>Yield curve flat</td>
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<td>Banks raise credit standards</td>
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<td>Overextended sectors pinched by credit squeeze</td>
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<tr>
<td>Shock hits vulnerable, overextended sectors hard</td>
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<td>(Gulf War 1990; Tech Meltdown 2001; housing, oil, credit-collapse 2008)</td>
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### Manufacturers’ Purchasing Managers Indexes

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Source: Markit Economics
Equities Tell Divergent Stories
Freight IS Contracting

ATA SA TL Loads Index
January 2010 - March 2019

Cass Shipments Index
January 2009 - April 2019 (01'1990=100)

Source: American Trucking Associations, ACT Research Co., LLC. Copyright 2019

Source: Cass Information Systems, ACT Research Co., LLC. Copyright 2019
Freight Rates are Softening

DAT Trendlines Spot & Contract Rates:
Dry Vans (ex FSC)
January 2010 - April 2019

Y/Y % Chg.

Contract Y/Y % Change
Spot Y/Y % Change

Dry Van Rate Pressure Analysis:
Contract less SA Spot rate relative to target rate spread
January 2010 - April 2019

Contract Rate Pressure (Cents)

Rate Pressure Analysis w/5 month lead (6mma)

Actual Contract Rate Y/Y Chg. (6mma)

Source: DAT Solutions, ACT Research Co., LLC: Copyright 2019
Unprecedented Gap

DAT Trendlines: Aggregate Revenue per Mile Rate
January 2009 - April 2019 (2000=100)

Source: DAT Solutions, ACT Research Co., LLC: Copyright 2019
Carriers Buy Trucks to Make Money
(and not pay so much in taxes)

TL Carrier Database: Net Income Margin
Q1’10 - Q1’19

Margins:
-208bps q/q
+34bps y/y

Peak profitability tends to lag freight activity
No Longer a Brake on Capacity

BLS +2.9% y/y in 2018

Anecdotes suggest that private fleets and OOs added capacity as well in 2018

Private fleets and OOs not counted as truckers in BLS statistics
Capacity on the Rise

U.S. Class 8 Population: Total Tractors/Artics & Trucks/Rigids

Since January 2017
- Total +140k/5%
- Active +185k/9%
- Late-Model + 175k/15%

Source: ACT Research Co., LLC; Copyright 2019
U.S. Tractor Market Will Lead Retreat

Total Class 8: U.S. Net Orders
January 2010 - April 2019

US C8 NO
April-Ending (SAARS)
Past 12 270k
Past 6 140k
Past 3 143k
April 142k

Source: ACT Research Co., LLC: Copyright 2019
BL/BU at 8 Months in March

Total Class 8: N.A. Backlog & BL/BU Ratio

January 2010 - April 2019

Source: ACT Research Co., LLC: Copyright 2019
MD Update

• 2019-20 reaching a plateau at high, stable levels
• Business as usual - key markets solid
  – Consumer package goods
  – Consumer services
  – Package delivery, P&D, and on-line retail
  – Construction
  – Relocation
• Backlog and inventory levels in line with demand
• Steady 9+ year growth track in contrast to more volatile Class 8
Demand Stable

**Total Classes 5-7: N.A. Net Orders**

January 2010 - April 2019

**Total Classes 5-7: N.A. Backlog & BL/BU Ratio**

January 2010 - April 2019

Source: ACT Research Co., LLC: Copyright 2019
Update on Commercial EV

• Without incentives, long payback period
  • Significant upfront premium
    – Robust first round incentives in CA

• Other hurdles
  • Range, Weight, battery durability (cycles), temperature extremes

• EV sweet-spots
  – Short-haul, return-to-base, stop & start, low-speed
    • Public Transit; Yard Spotters; Urban delivery/last mile; Distribution

• Lower maintenance, cheaper to operate
• Charging infrastructure & power grid considerations

At $200/kWh packed, a 200 mile range Class 8 battery pack: 
((2kw mi x 200)*1.3) =$104k

Problem is, CV batteries more like $350-$400/kWh packed
NA Outlook

<table>
<thead>
<tr>
<th>Units (000s)</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
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<td>Memo: Tractors BU</td>
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<td>US Trailers (only)</td>
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<td>331</td>
<td>276</td>
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Pulling the Threads Together

• Economy:
  • **Current conditions decent, consumers are healthy**
  • Too many known-unknowns in the short to mid-term to drive investment
    – Flat yield curve, Mexican border, USMCA, China trade, Brexit, Euro auto tariffs, the Prez

• Freight & Capacity
  • Volume indicators down
  • Widening rate spread suggests growing supply-demand imbalance, rates falling

• Exogenous
  • Driver situation has eased: Back to “small-s” shortage
  • FE, new techs provide strong TCO considerations
  • Used good now, but a lot of trades coming into a diminished freight market

• Current Conditions
  • Carrier profits coming down – still benefitting from tailwinds
  • Strong backlogs will keep things good - *until truckers change their minds*
  • When those minds change, inventories become problematic - fast
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