



Commercial Vehicle Review: Of Peaks and Valleys

Steve Tam
ACT RESEARCH Co., LLC

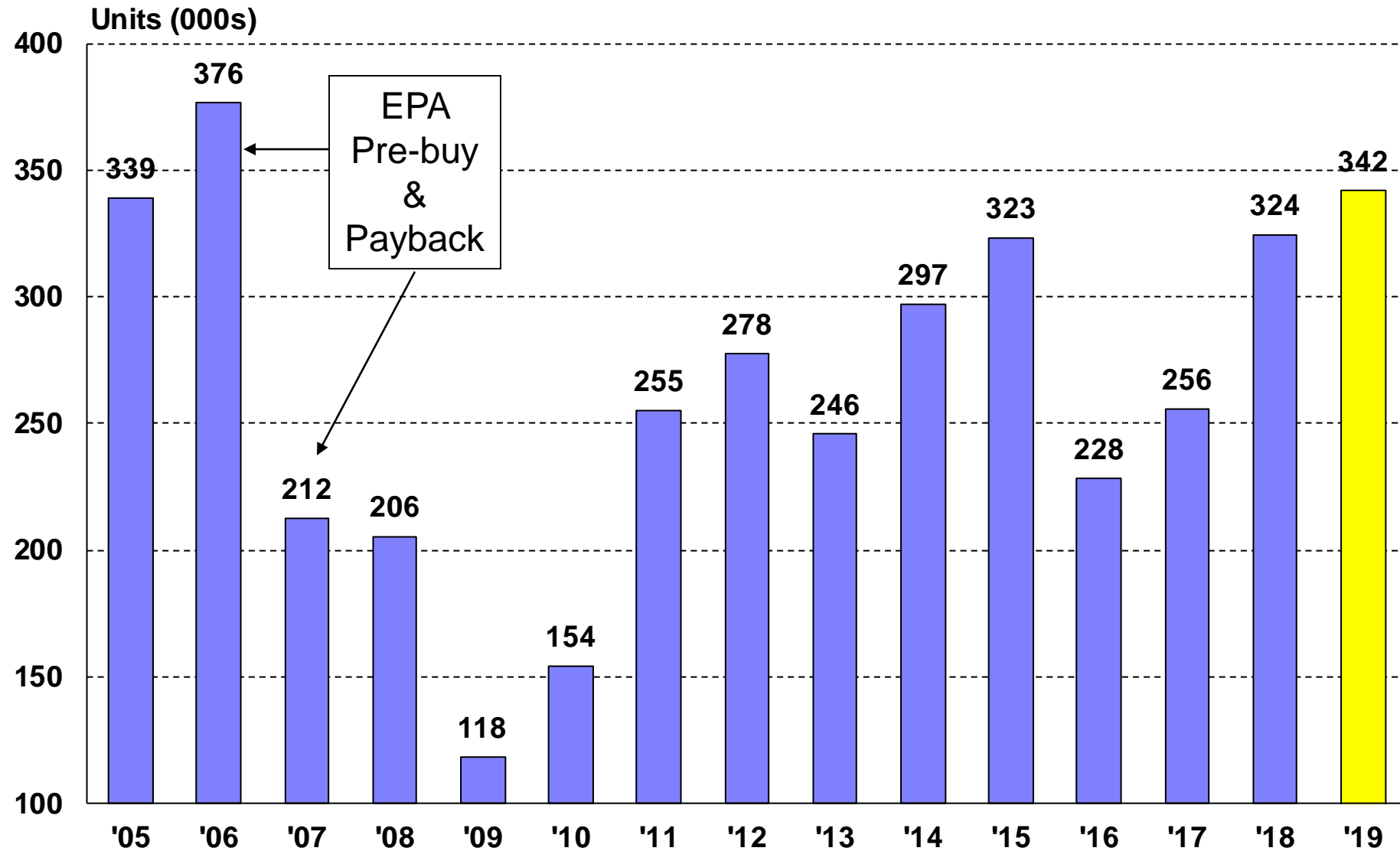
Chicago Federal Reserve Bank
Automotive Outlook Symposium
May 31, 2019

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

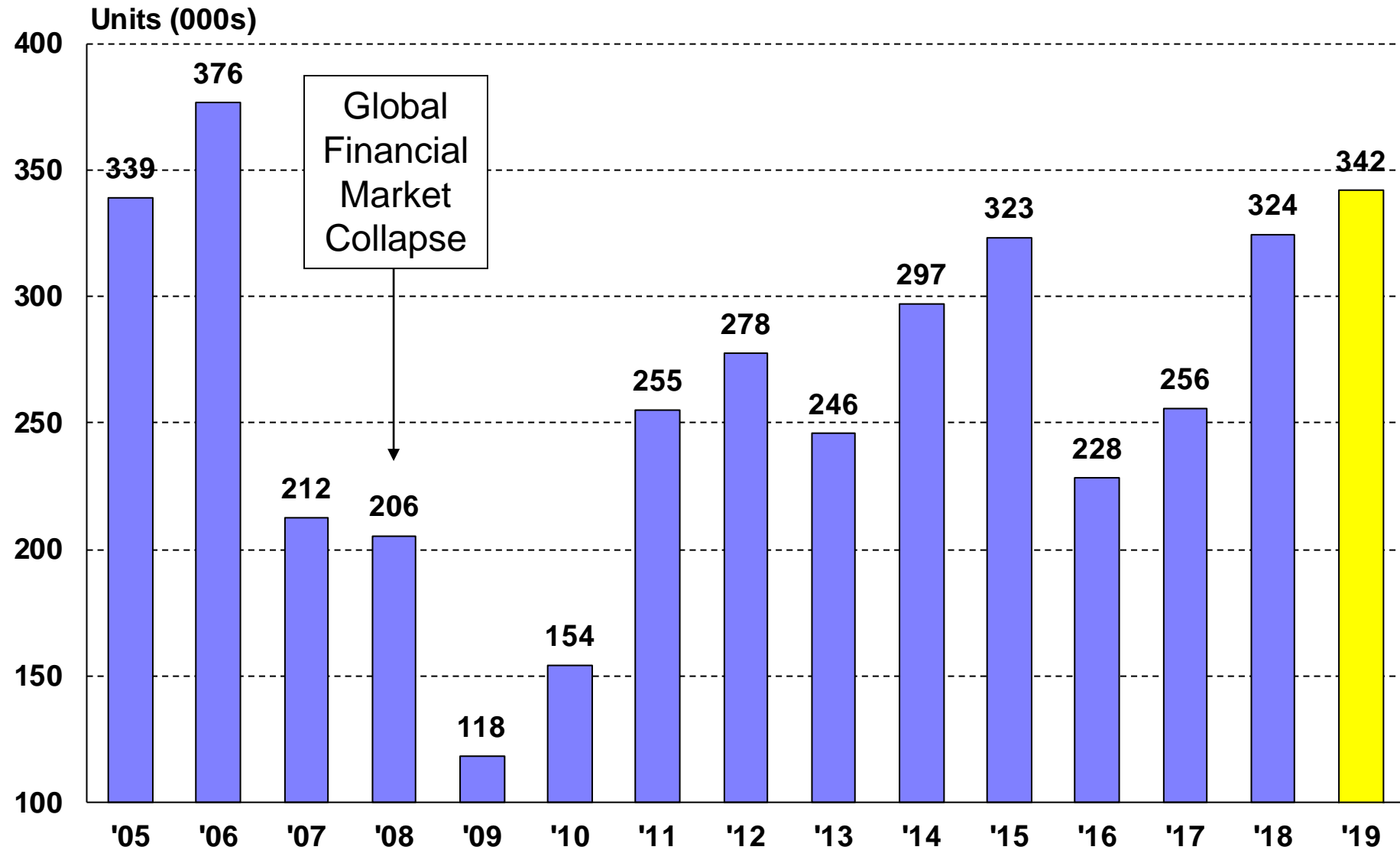
N.A. Class 8 Production

2005 - 2019



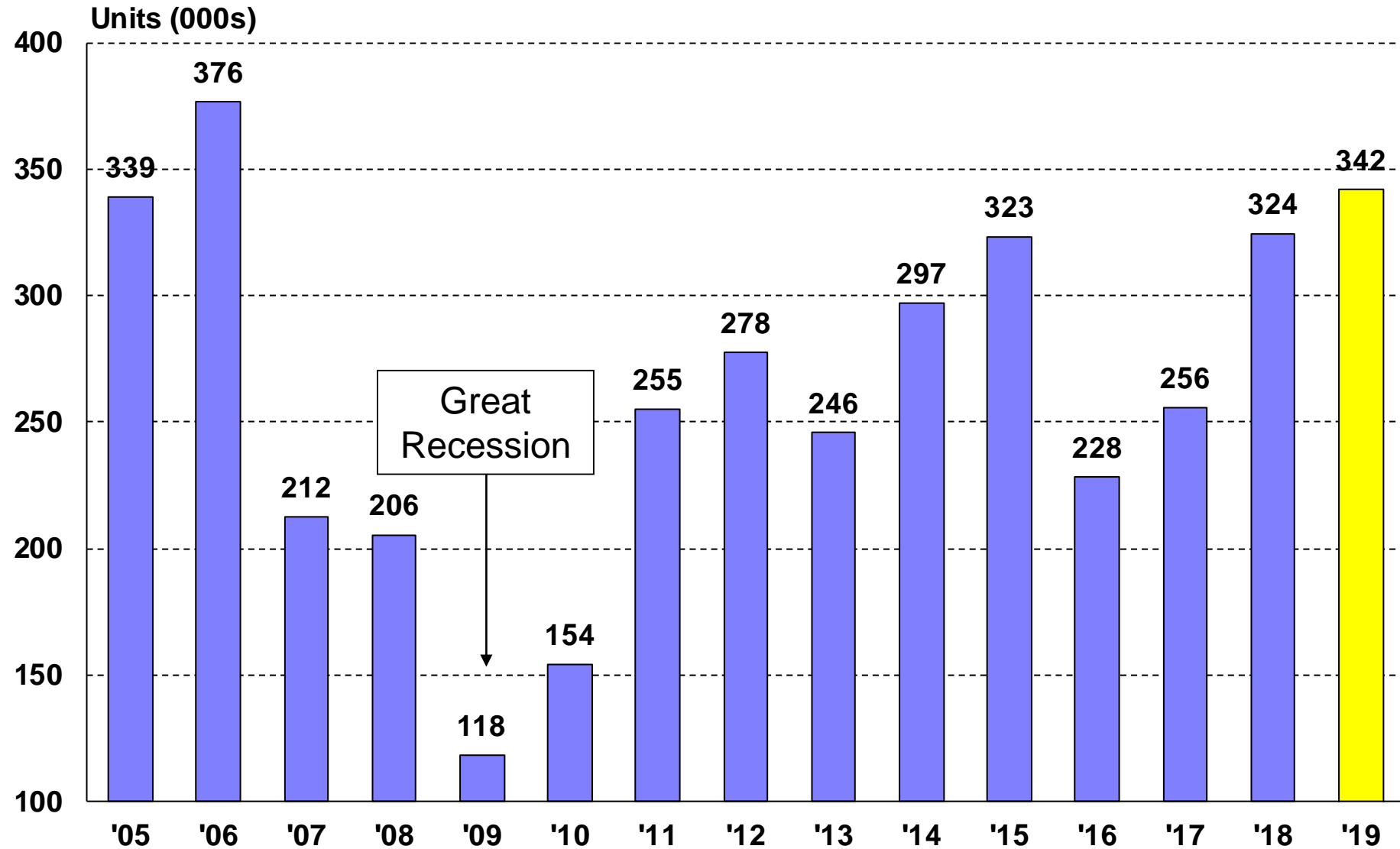
N.A. Class 8 Production

2005 - 2019



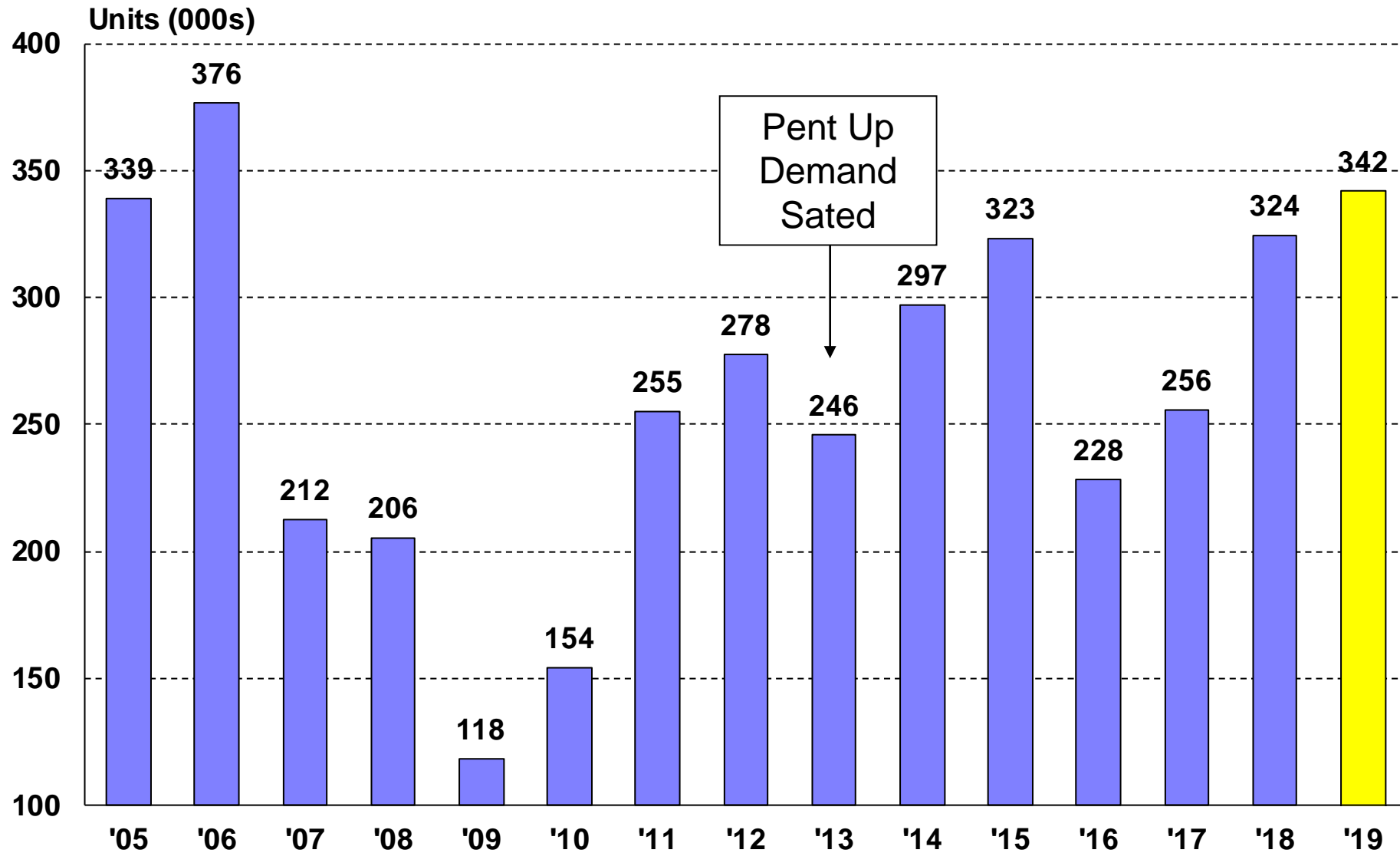
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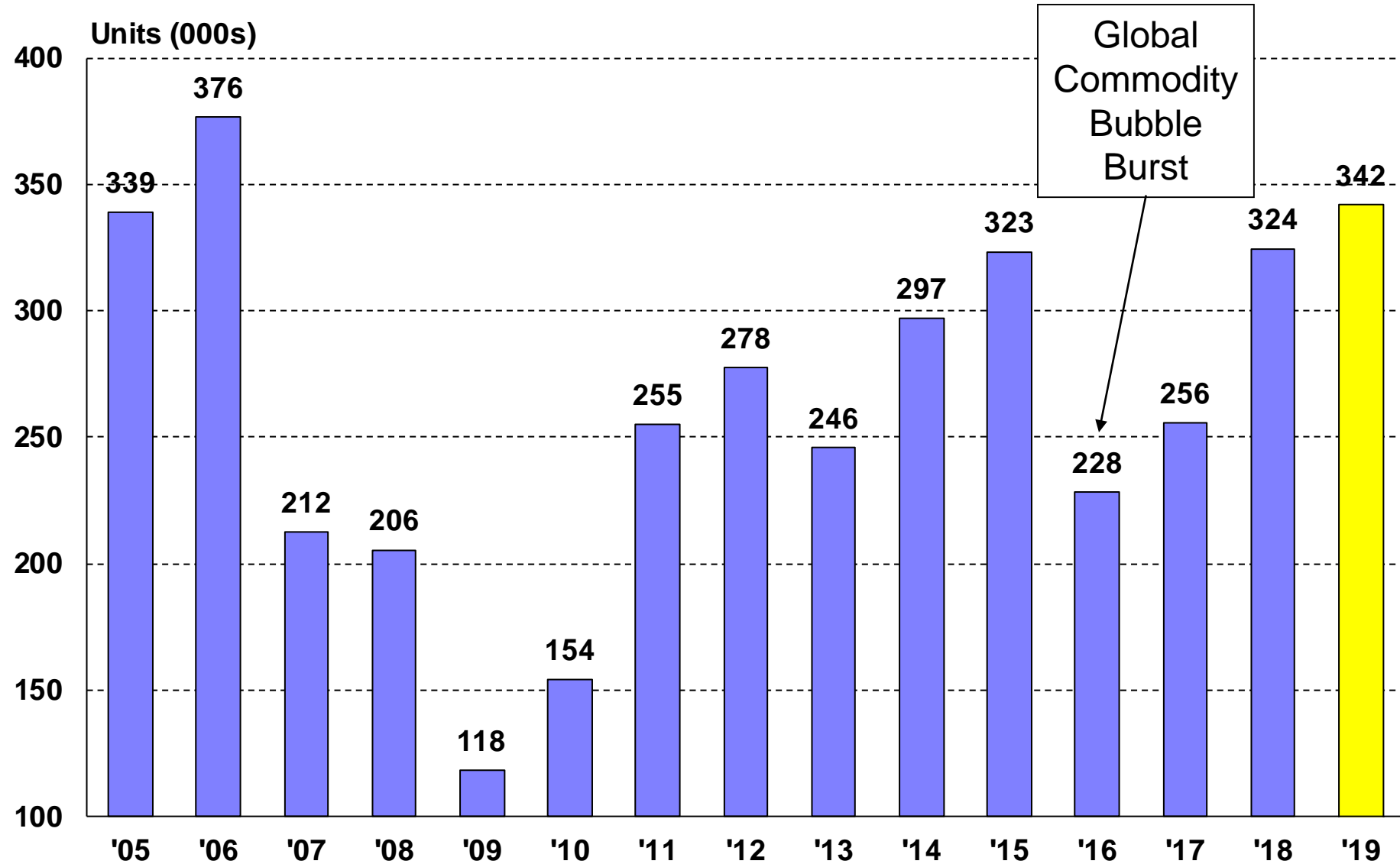
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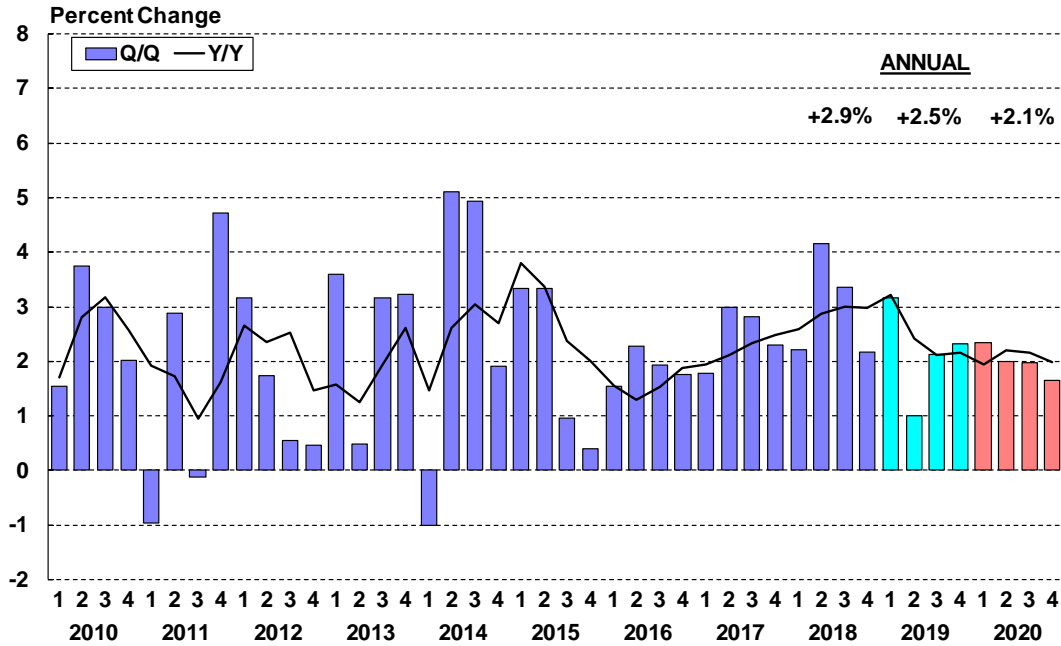
N.A. Class 8 Production

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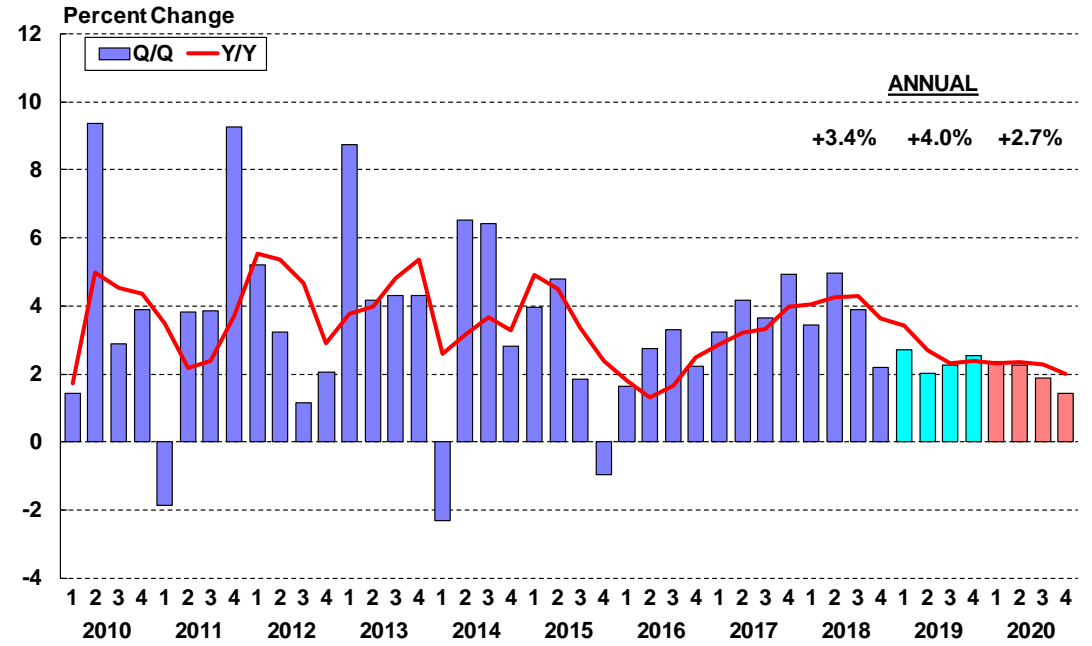
Continued Steady 2017 Economic Growth

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



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

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

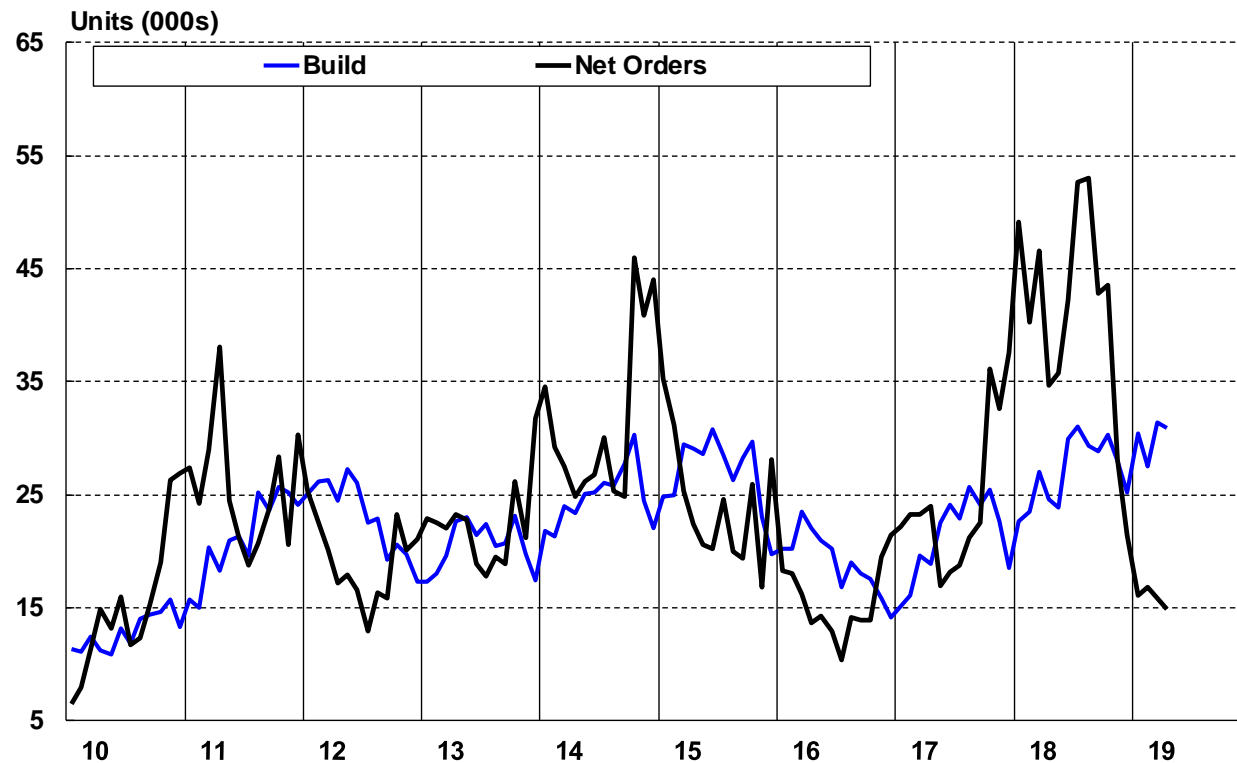


Source: ACT Research Co., LLC: Copyright 2019

Trump Bump!

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

January 2010 - April 2019



Source: ACT Research Co., LLC: Copyright 2019

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

OEMs Fan the Flames

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

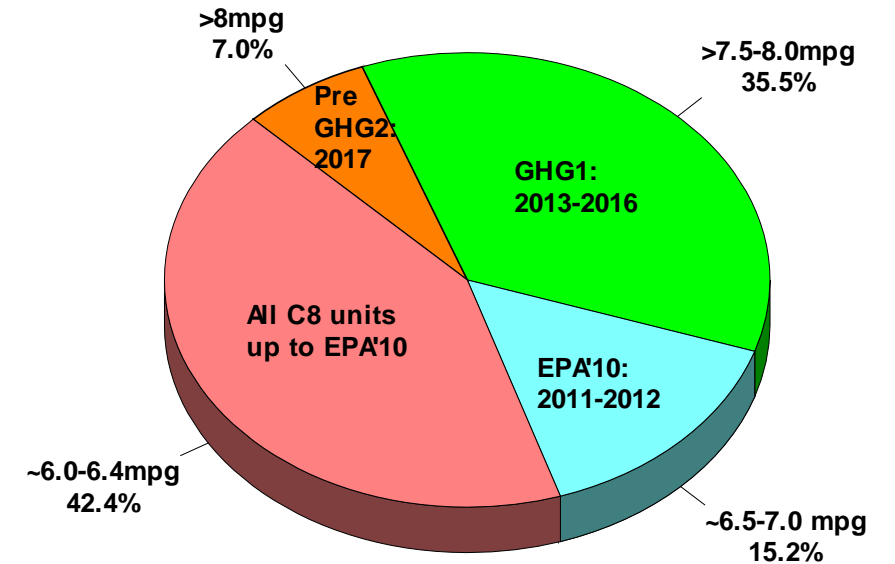


- *“We were offered big fleet pricing”* (\approx 200 truck fleet, July’17)

More MPG

MPG	Mi/Yr. @100k	Fuel 5yr (000s)	Diesel @ \$3.50	Notes
6.3		76.9	\$269k	~EPA'07
7.0		71.4	\$250k	~EPA'10
7.5		66.7	\$233k	Pre GHG1
8.0		62.5	\$219k	GHG1
8.5		58.8	\$206k	Pre GHG2
9.0		55.6	\$194k	Pre GHG2
9.5		52.6	\$184k	GHG2'24
10.0		50.0	\$175k	GHG2'27

**U.S. C8 Tractor Fleet Fuel Economy
2017-Ending U-15 Population**



ACT Research Co., LLC: Copyright 2017

More than 50% of fleet <7mpg

Goodbye “Excess” Capacity



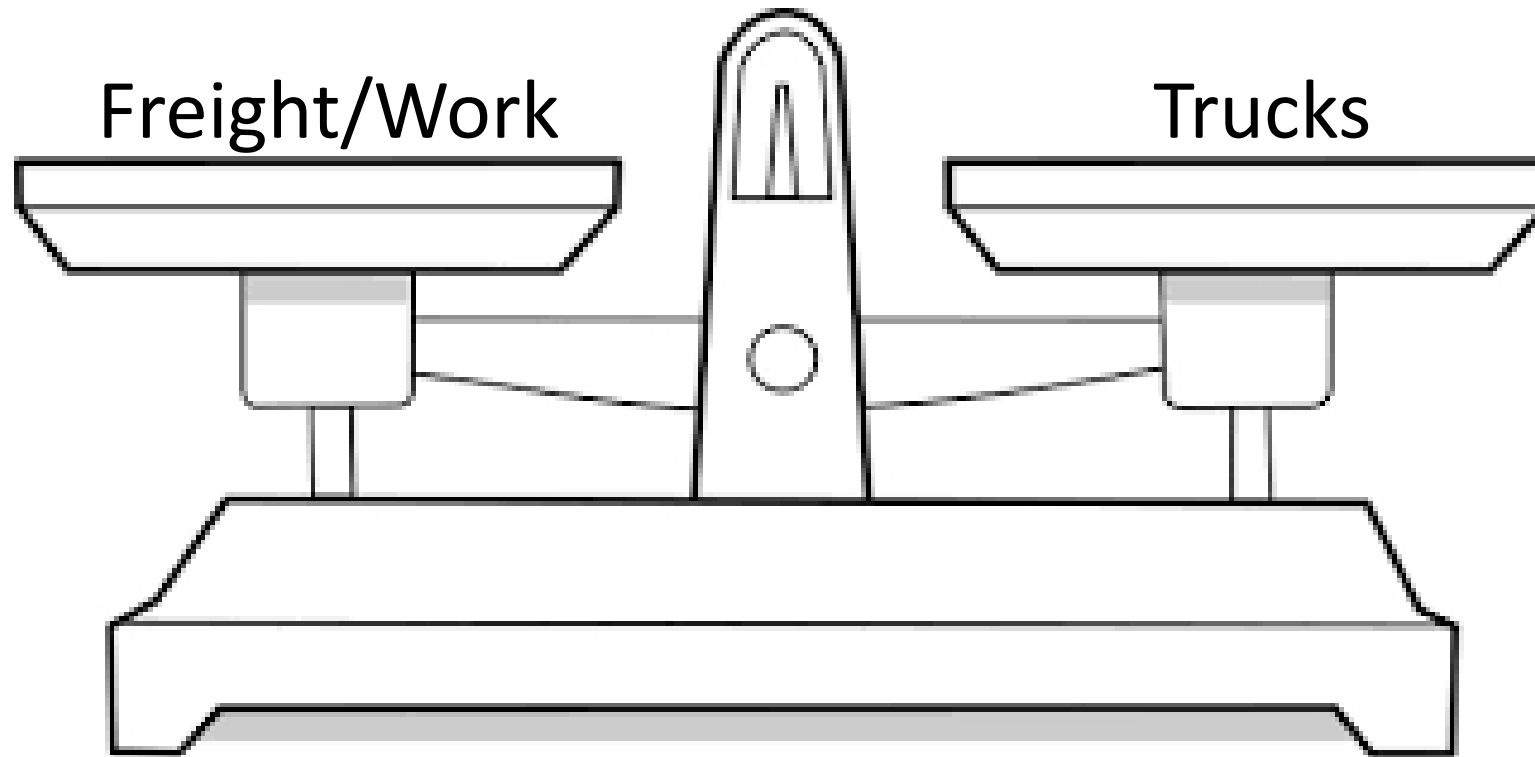
2018 CV Markets: From Hot to White-hot

- 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

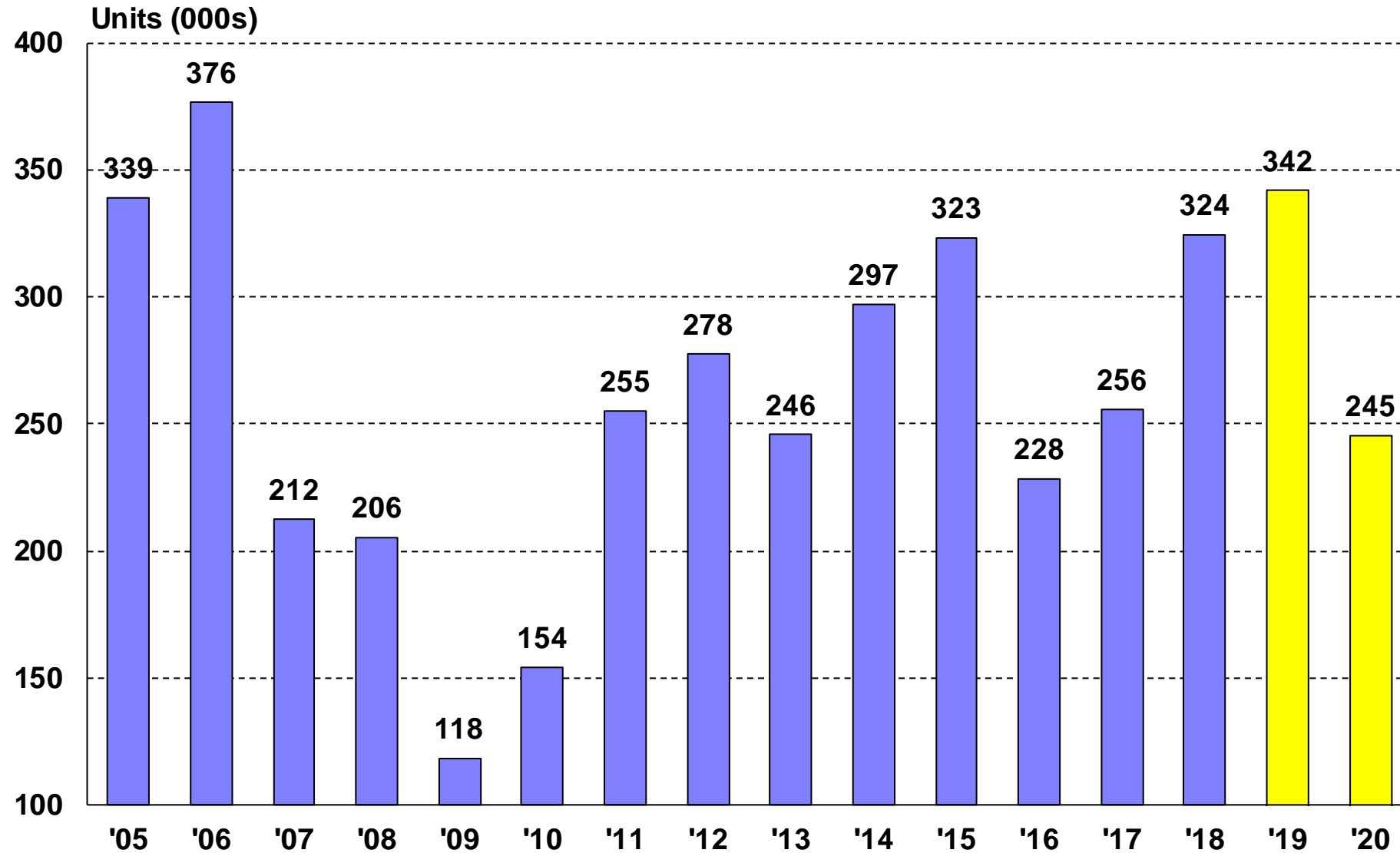


Forecasting Truck Demand



N.A. Class 8 Production

2005 - 2020



Our Favorite Leading Indicators

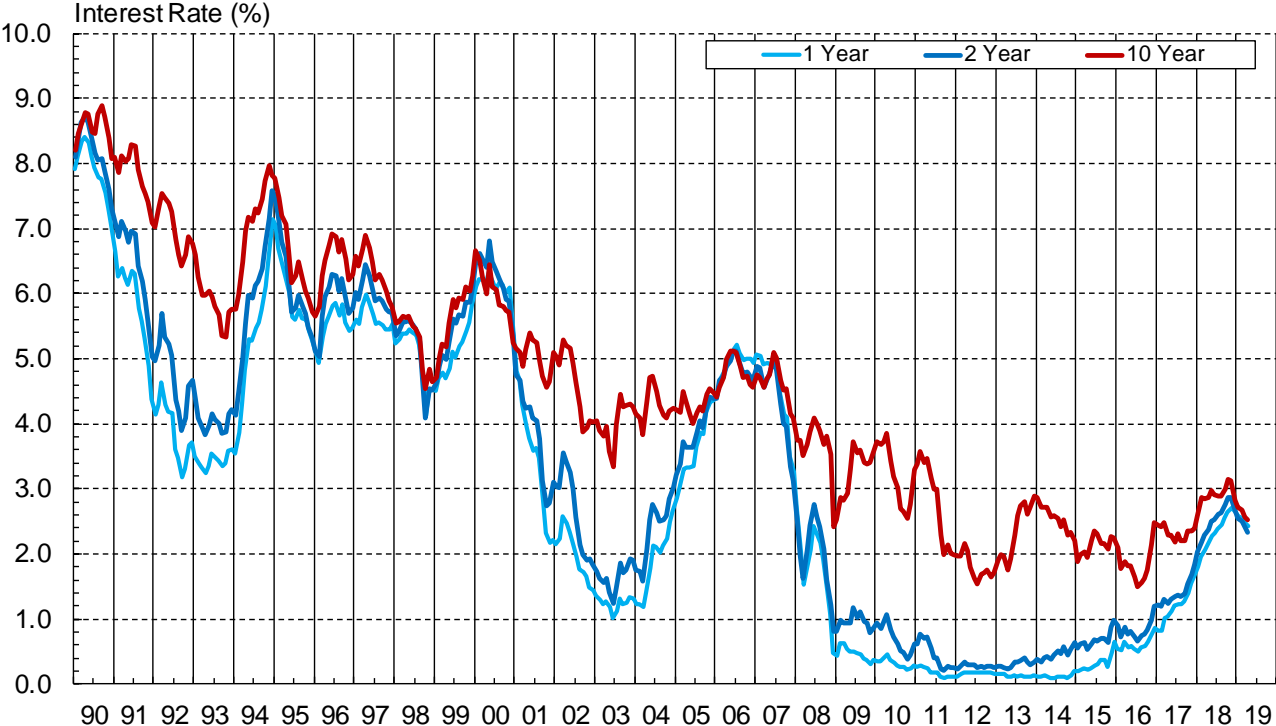
- Yield curve: Flattening spread
 - Inversion: 5 to 8 quarter recession lead
- Purchasing Managers' Indices: Mfg. proxy
 - Point to on-trend growth NA, subpar ROW
- Commodity prices: Implied machinery demand
 - Rebounding from weakness in Q4, except copper, coal, grain, NG
- Stock market trends: Earnings 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

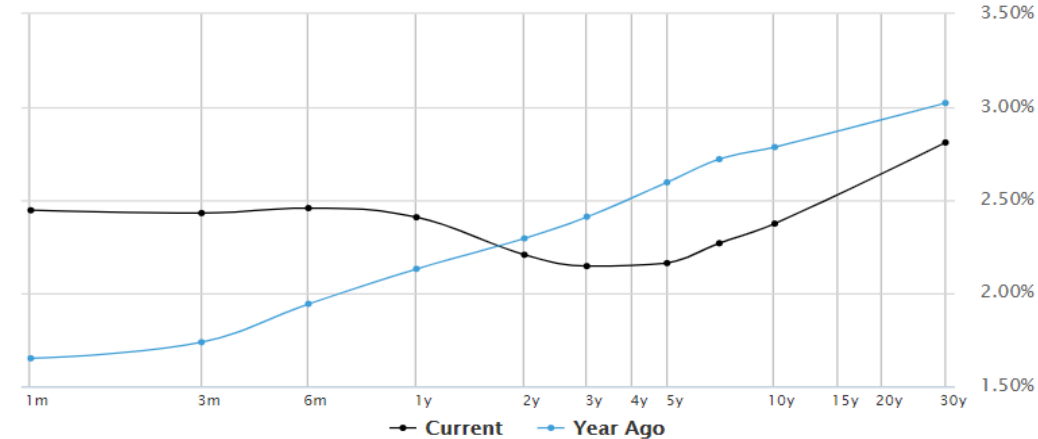
U.S. Treasuries, Constant Maturity Rates

January 2010 - April 2019



Source: Federal Reserve Board, ACT Research Co., LLC: Copyright 2019

Yield Curve US



3/24/2018 Stocks, Bond Yields Fall Amid Anxiety Over World Economy - WSJ

THE WALL STREET JOURNAL.



Markets Shudder as Growth Worries Swell

The yield on 10-year Treasury notes has fallen below that on three-month bills for the first time since 2007, highlighting concerns about the economy. Bond yields turned negative in Germany for the first time since 2016, and U.S. indexes posted significant declines Friday, led by bank stocks.

Yield on 10-year Treasury note slides to lowest since January 2018

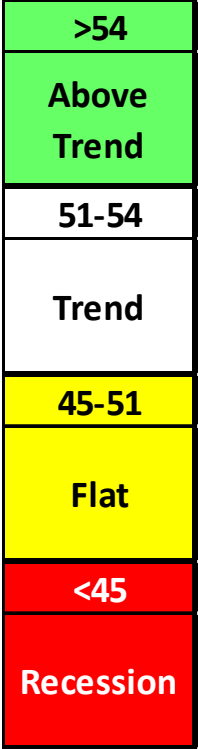
By Akane Otani and Georgi Kantchev
Updated March 22, 2019 10:01 p.m. ET

Recession Checklist

Checklist	Check the box
Central bank begins a series of interest rate increases (1988, 1994, 1999, 2004, 2015)	
Yield curve flat	
Banks raise credit standards	
Overextended sectors pinched by credit squeeze	
Shock hits vulnerable, overextended sectors hard (Gulf War 1990; Tech Meltdown 2001; housing, oil, credit-collapse 2008)	

Manufacturers' Purchasing Managers Indexes

	Apr-18	May-18	Jun-18	Jul-18	Aug-18	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19
Global	53.5	53.1	53.0	52.7	52.6	52.2	52.0	52.0	51.5	50.7	50.6	50.5	50.3
United States	56.5	56.4	55.4	55.3	54.7	55.6	55.7	55.3	53.8	54.9	53.0	52.4	52.6
Canada	55.5	56.2	57.1	56.9	56.8	54.8	53.9	54.9	53.6	53.0	52.6	50.5	49.7
Mexico	51.6	51.0	52.1	52.1	50.7	51.7	50.7	49.7	49.7	50.9	52.6	49.8	50.1
Eurozone	56.2	55.5	54.9	55.1	54.6	53.2	52.0	51.8	51.4	50.5	49.3	47.5	47.9
Germany	58.1	56.9	55.9	56.8	55.9	53.7	52.2	51.8	51.5	49.7	47.6	44.1	44.4
France	53.8	54.4	52.5	53.3	53.5	52.5	51.2	50.8	49.7	51.2	51.5	49.7	50.0
Italy	53.5	52.7	53.3	51.5	50.1	50.0	49.2	48.6	49.2	47.8	47.7	47.4	49.1
Spain	54.4	53.4	53.4	52.9	53.0	51.4	51.8	52.6	51.1	52.4	49.9	50.9	51.8
UK	53.9	54.4	54.4	54.0	53.0	53.8	51.1	53.1	54.2	52.6	52.0	55.1	53.1
Russia	51.3	49.8	49.5	48.1	48.9	50.0	51.3	52.6	51.7	50.9	50.1	52.8	51.8
Japan	53.8	52.8	53.0	52.3	52.5	52.5	52.9	52.2	52.6	50.3	48.9	49.2	49.5
China	51.1	51.1	51.0	50.8	50.6	50.0	50.1	50.2	49.7	48.3	49.9	50.8	50.2
India	51.6	51.2	53.1	52.3	51.7	52.2	53.1	54.0	53.2	53.9	54.3	52.6	51.6
Brazil	52.3	50.7	49.8	50.5	51.1	50.9	51.1	52.7	52.6	52.7	53.4	52.8	51.5



Source: Markit Economics

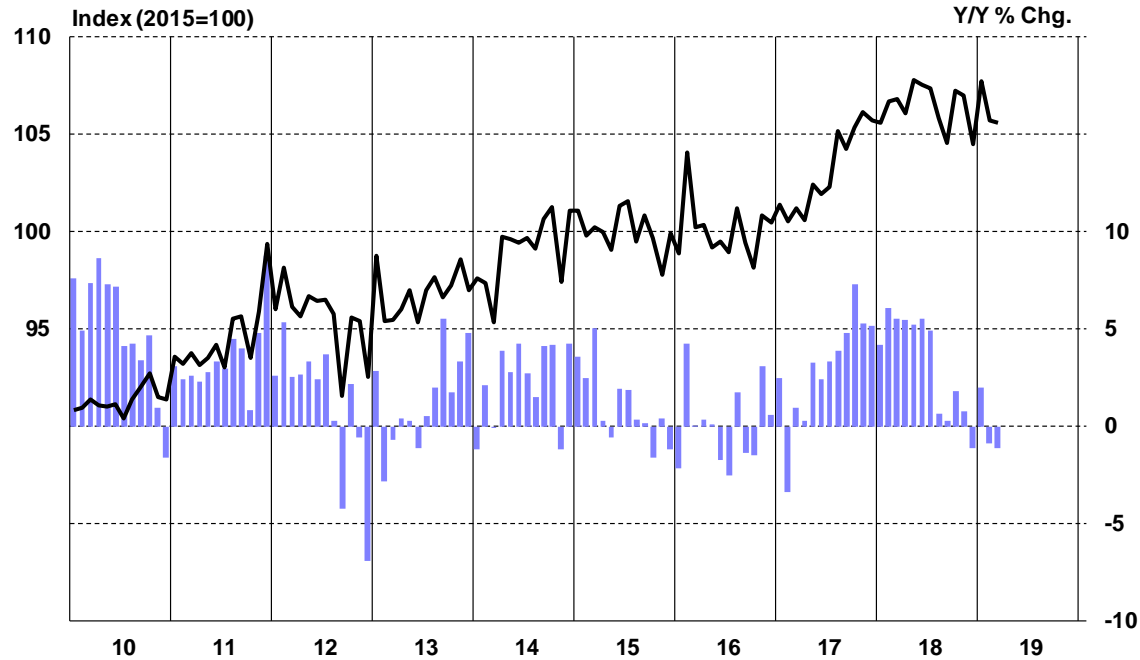
Equities Tell Divergent Stories



Freight IS Contracting

ATA SA TL Loads Index

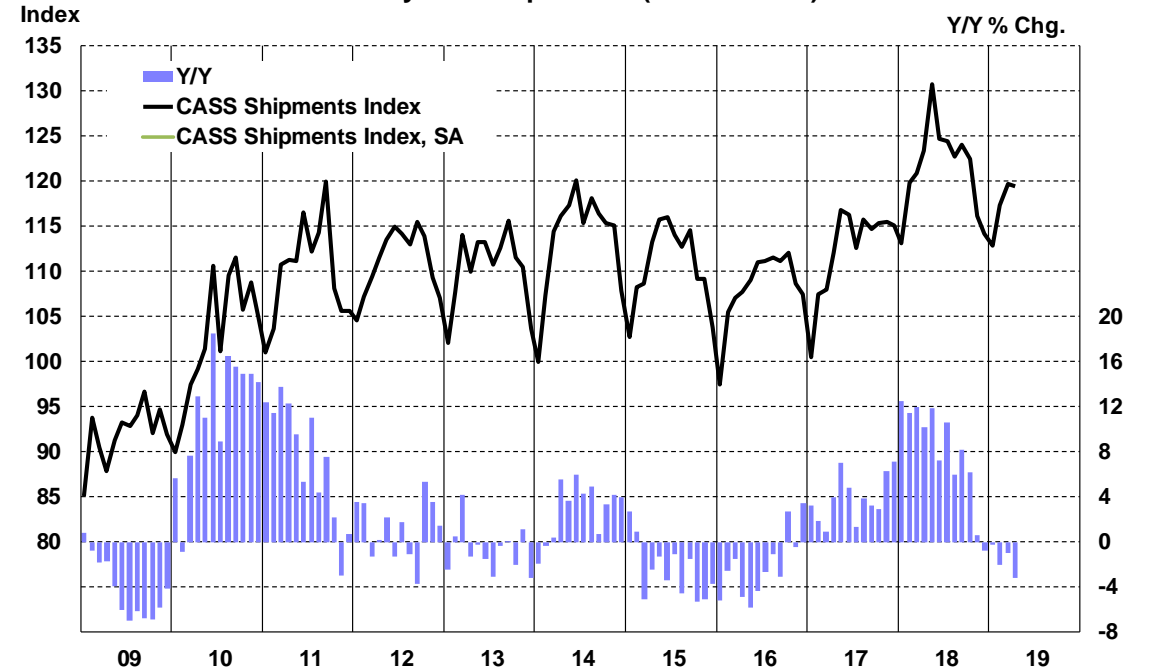
January 2010 - March 2019



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

Cass Shipments Index

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

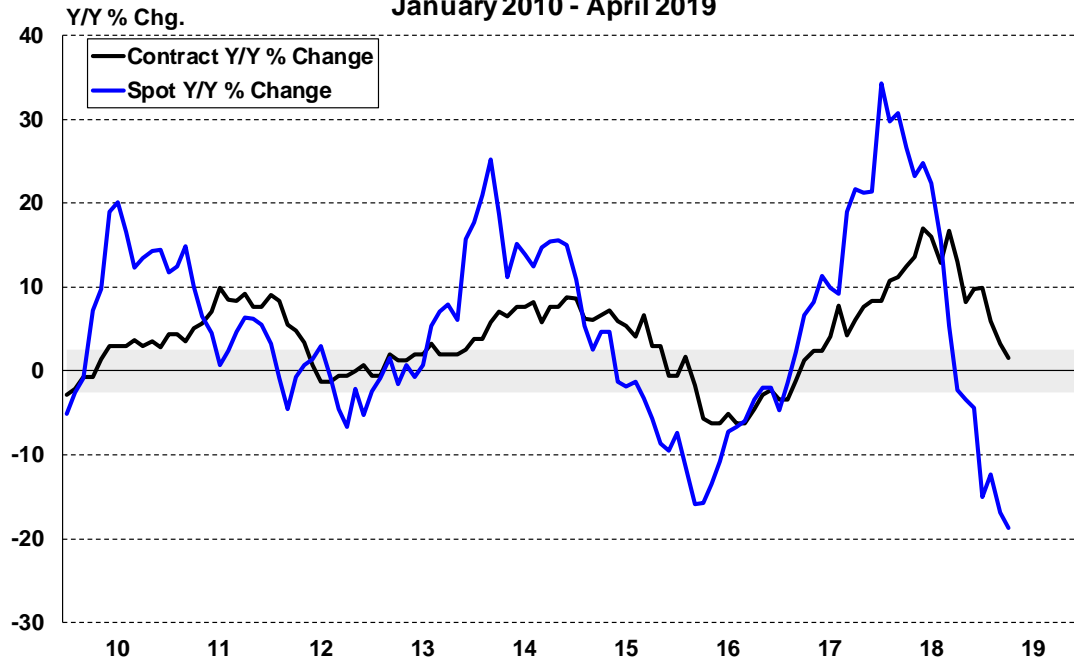


Source: Cass Information Systems, ACT Research Co., LLC: Copyright 2019

Freight Rates are Softening

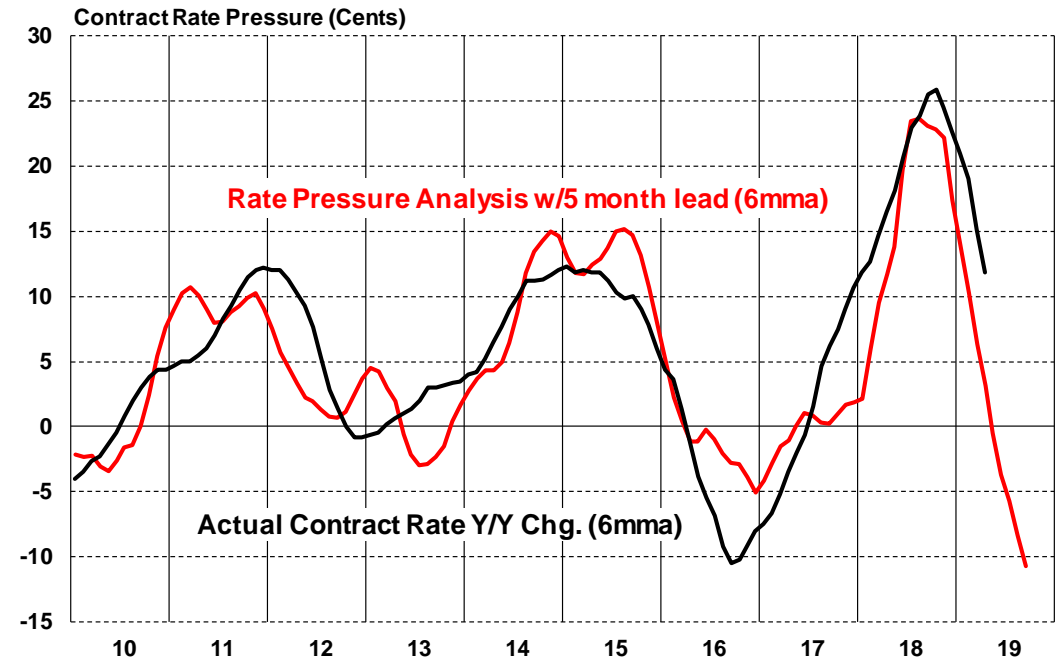
**DAT Trendlines Spot & Contract Rates:
Dry Vans (ex FSC)**

January 2010 - April 2019



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

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

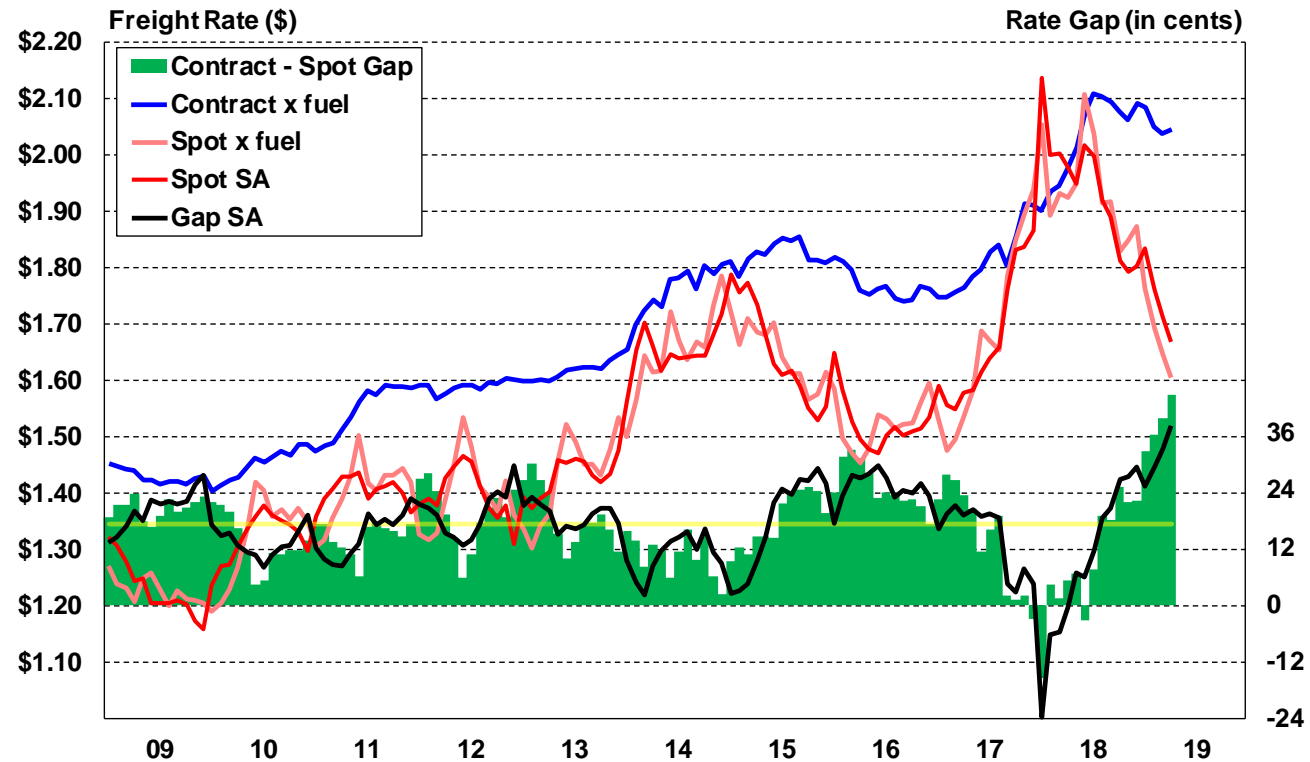


Source: DAT Solutions, ACT Research Co., LLC: Copyright 2019

Unprecedented Gap

DAT Trendlines: Aggregate Revenue per Mile Rate

January 2009 - April 2019 (2000=100)



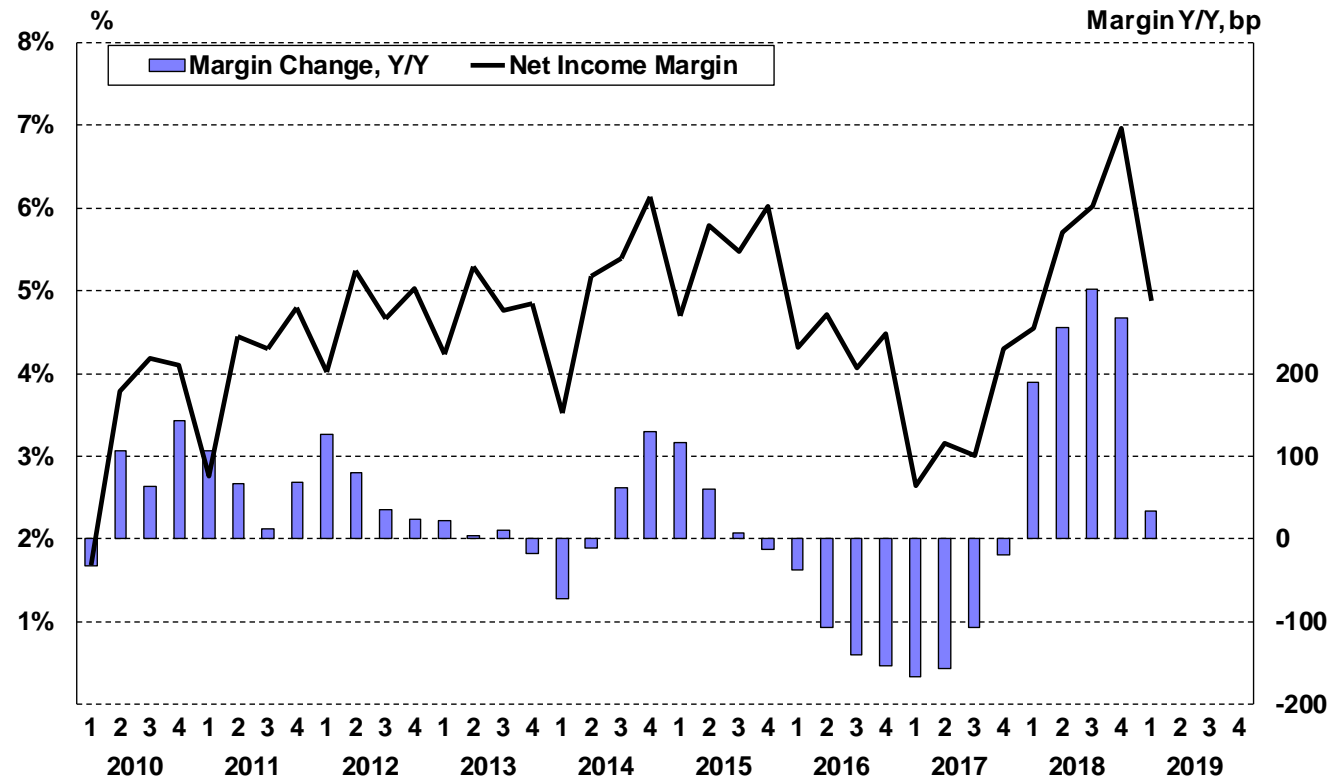
Source: DAT Solutions, ACT Research Co., LLC: Copyright 2019

Carriers Buy Trucks to Make Money

(and not pay so much in taxes)

TL Carrier Database: Net Income Margin

Q1'10 - Q1'19



Source: ACT Research Co., LLC: Copyright 2019

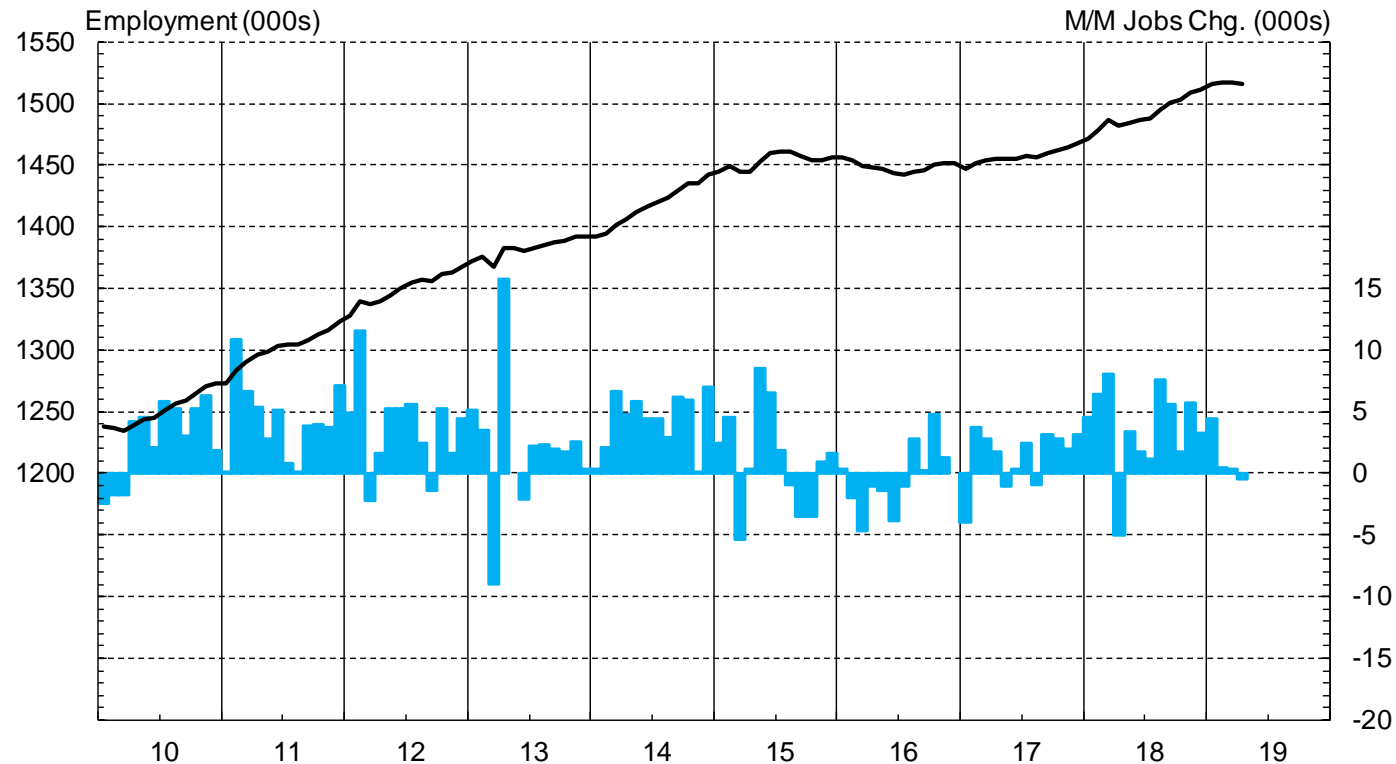
Margins:
-208bps q/q
+34bps y/y

Peak profitability tends to lag freight activity

No Longer a Brake on Capacity

Truck Transportation Employment

January 2010 - April 2019 (SA)



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

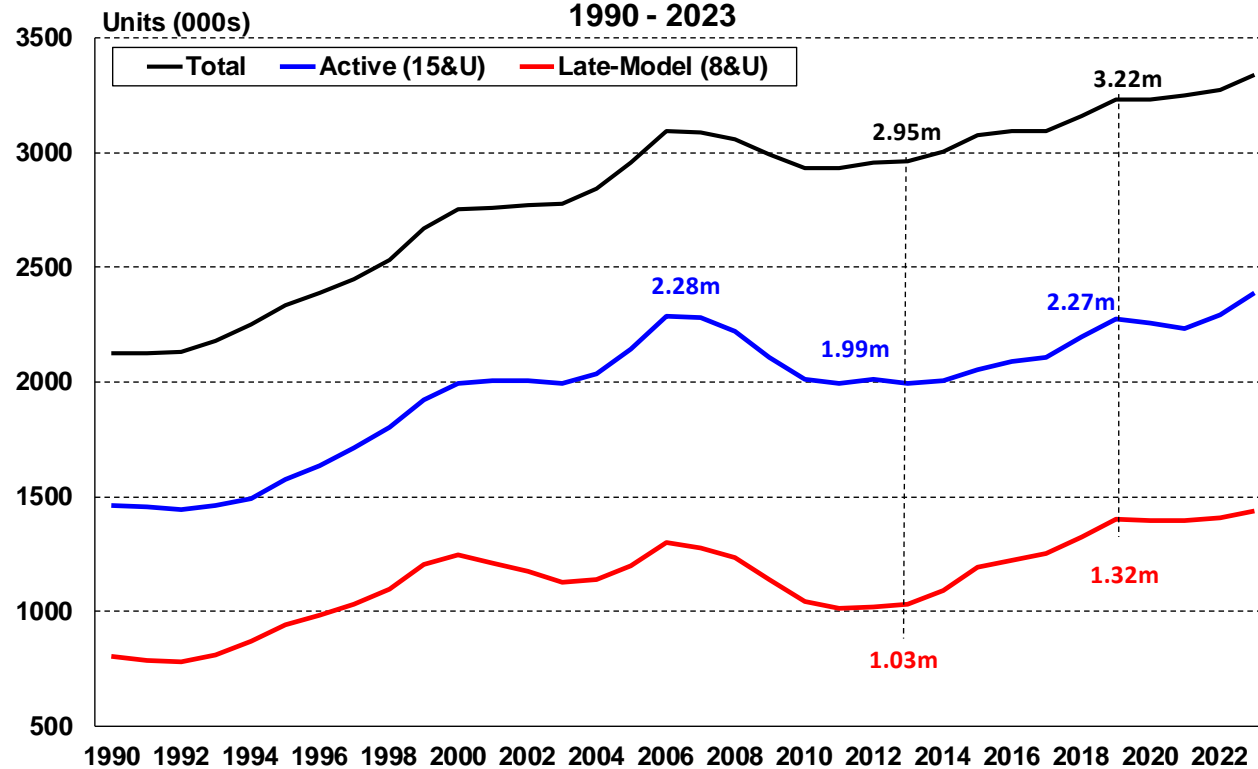
BLS +2.9% y/y in 2018

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



Source: ACT Research Co., LLC: Copyright 2019

Since January 2017

Total +140k/5%

Active +185k/9%

Late-Model + 175k/15%

U.S. Tractor Market Will Lead Retreat

Total Class 8: U.S. Net Orders

January 2010 - April 2019



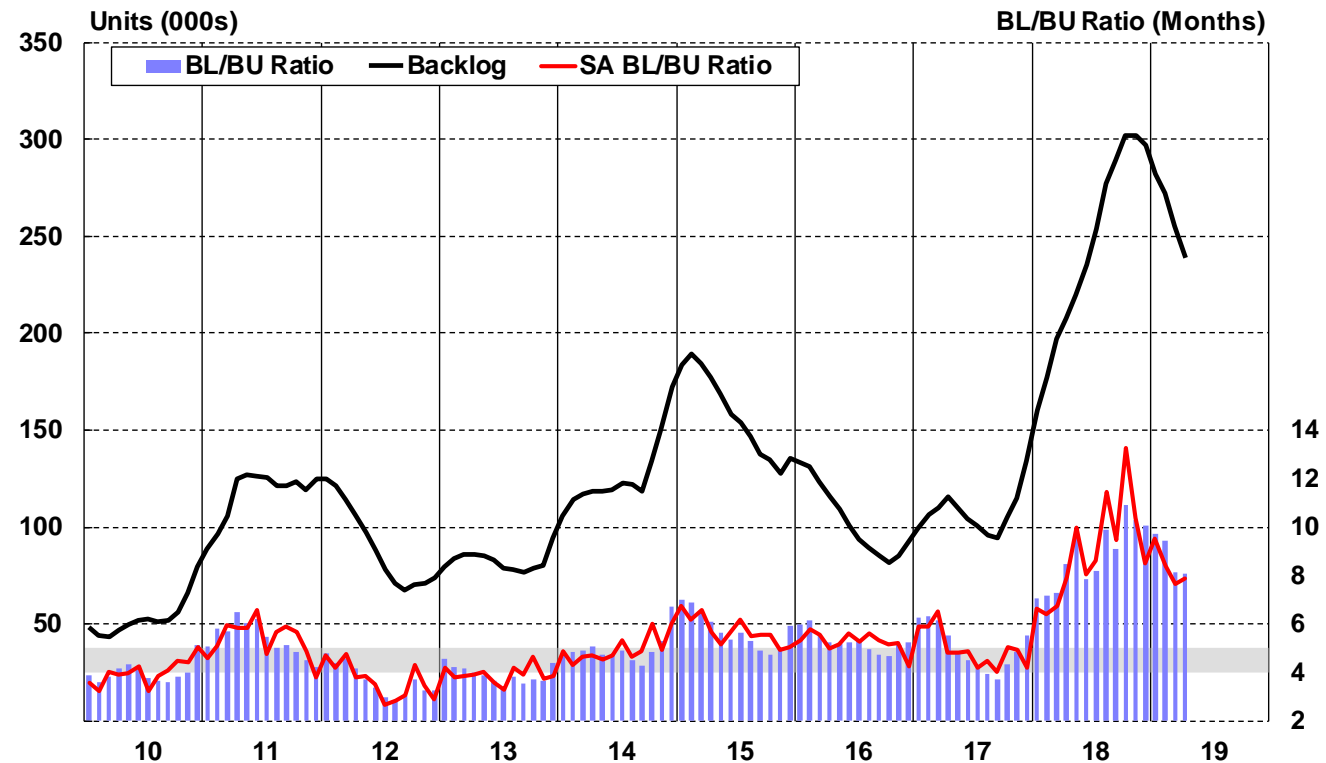
US C8 NO
April-Ending
(SAARS)
Past 12 270k
Past 6 140k
Past 3 143k
April 142k

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

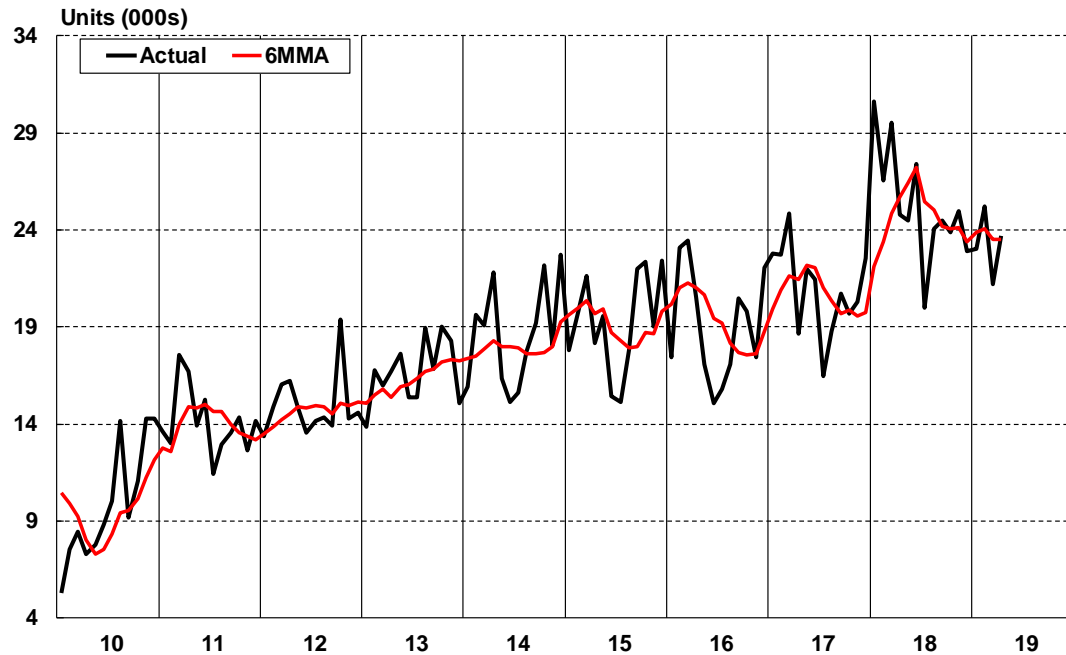
MD Update

- 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

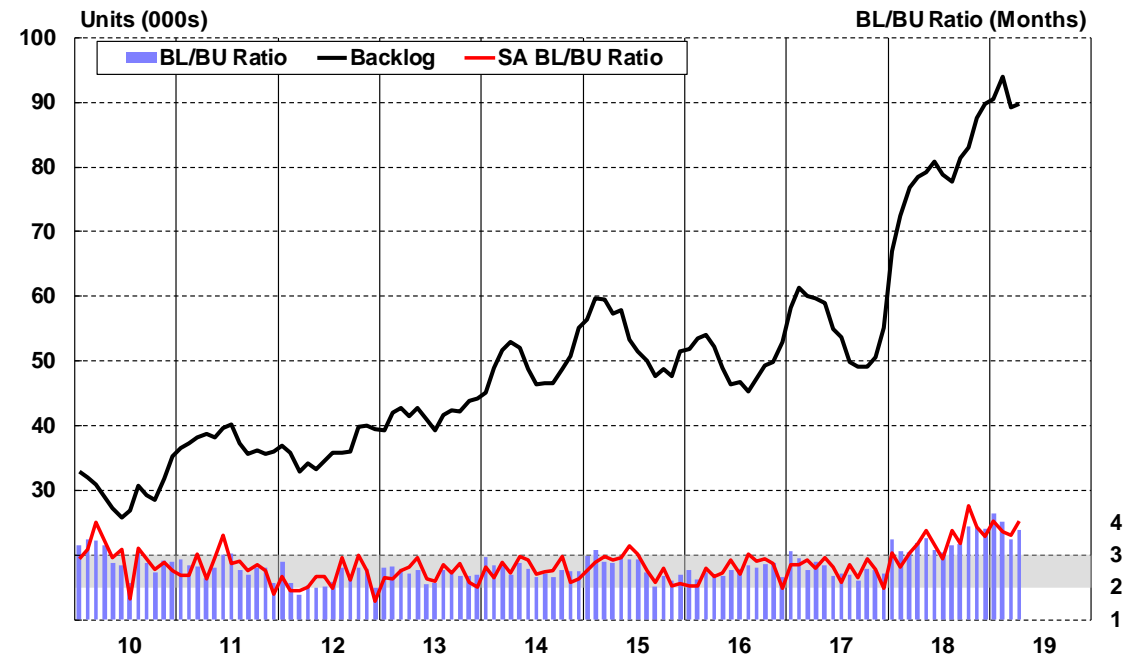
January 2010 - April 2019



Source: ACT Research Co., LLC: Copyright 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:
 $((2\text{kw mi} \times 200) * 1.3) = \104k

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

NA Outlook

Units (000s)	2017	2018	2019	2020	2021
US GDP (%)	2.2	2.9	2.5	2.0	1.6
Freight Comp.	3.4	4.0	2.7	2.2	2.9
NA Class 8 BU	256	325	342	245	263
Memo: Tractors BU	177	238	254	168	180
Memo: Vocational BU	79	87	88	77	83
US Class 8 RS	197	256	269	198	212
NA Classes 5-7 BU	249	273	268	271	265
Memo: Trucks	184	208	202	202	198
Memo: Buses	43	43	43	45	44
US Trailers (only)	291	323	331	276	261

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**



ACT Research Company, LLC

4440 Middle Road
Columbus, IN 47203

Phone: (812) 379-2085

Fax: (812) 378-5997

e-mail: trucks@actresearch.net

www.actresearch.net