



Trucking Economics: The Big Picture

Kenny Vieth
ACT RESEARCH Co., LLC

NAFC & ITLC Conference
October 3, 2016

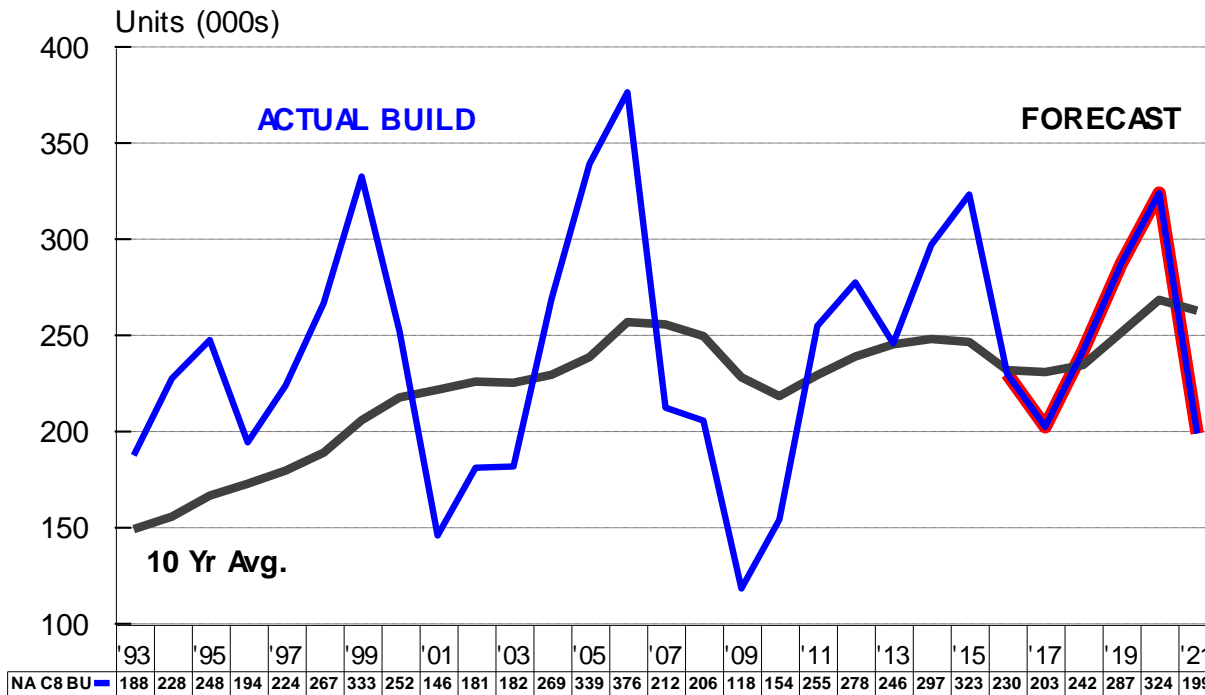
Overview

- Macro Conditions
- Market Conditions
 - Freight
 - Carrier Profitability
 - Productivity
 - Regulation
- Forecasts
- Q&A

Deeply Cyclical

NA Class 8 Build

1993 - 2021F



ACT Research Co., LLC: Copyright 2016

Peak to trough builds:

'88-'01: -40% (r)

'95-'96: -22%

'99-'01: -56% (r)

'06-'09: -75% (R)

Current trough
forecast:

'15-'17: -37%

Potential exists for
'20-'21 boom-bust
prebuy cycle*

*std. economic caveats

Crosscurrents

Good

- Consumer confidence
- Healthy job creation
- Household big ticket buys (autos plateauing)
- Oil prices (users)
- Decent RDPI
- Low inflation & interest rates
- Wealth at/near record level
- Mexico

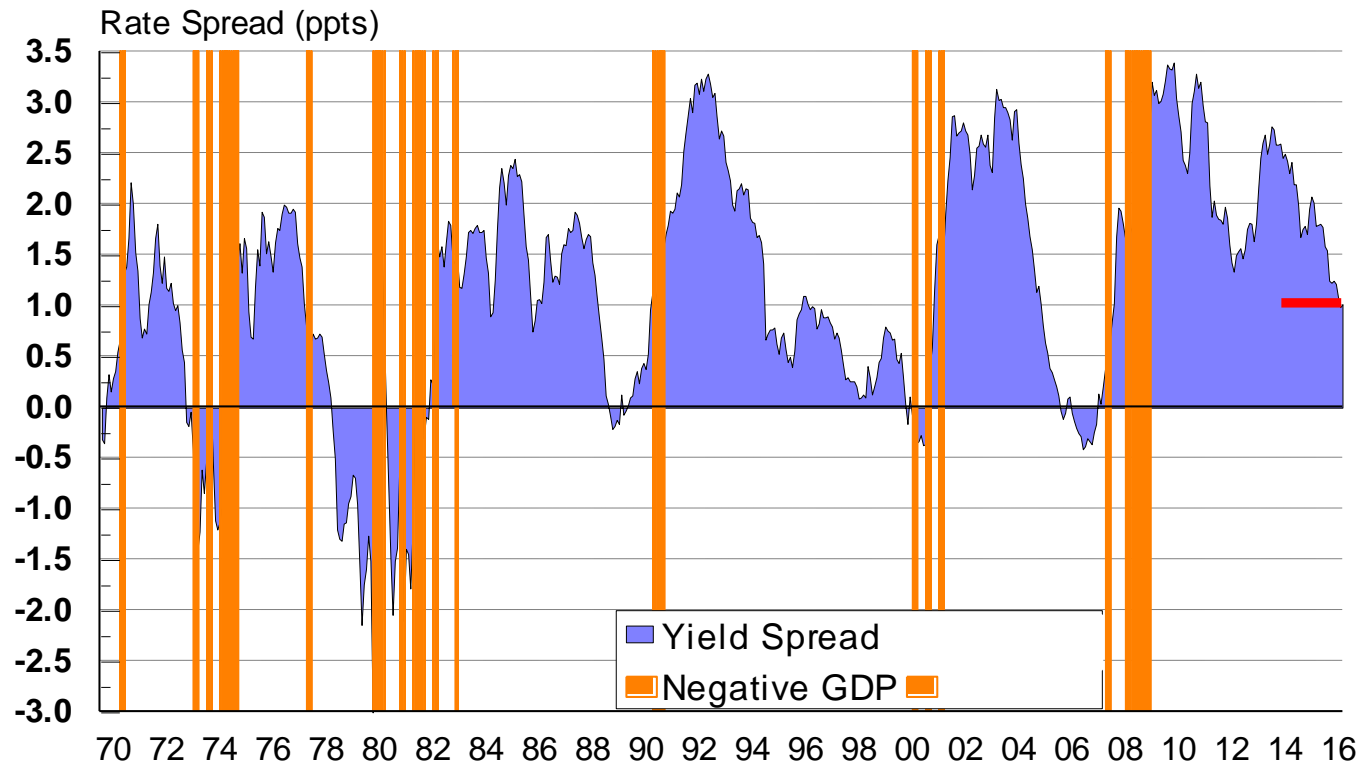
Not-so-good

- Rest-of-world economies
 - Turkey, Brexit(?), Brazil, China
 - Canada
- US\$ impact on exports
- Gov't finances-worldwide
- Oil prices (producers)
 - & other commodities
- Downbeat, divisive politics
- Bubbling geopolitical stew

Leading Recession Indicator




YIELD CURVE

1-Year and 10-Year Treasuries
January 1970 - August 2016



Source: Federal Reserve Board, ACT Research: Copyright 2016

Key Freight Markets

- Consumer sectors: 
 - RS: Solid sales and ~3% RDPI trend suggest sustainability
 - Housing: Lean inventories, pent-up demand, constrained
 - Auto: Underlying strength, but volumes appear peaky
- Capital Goods/Machinery: 
 - Popped bubble triggers capex retrenchment across commodity spectrum
 - Strong US\$, soft global markets weaken exports
 - Ample domestic capacity
- Excessive inventories add drag 

No Investment Support

CBV13 - Crude Oil Brent (ICE)



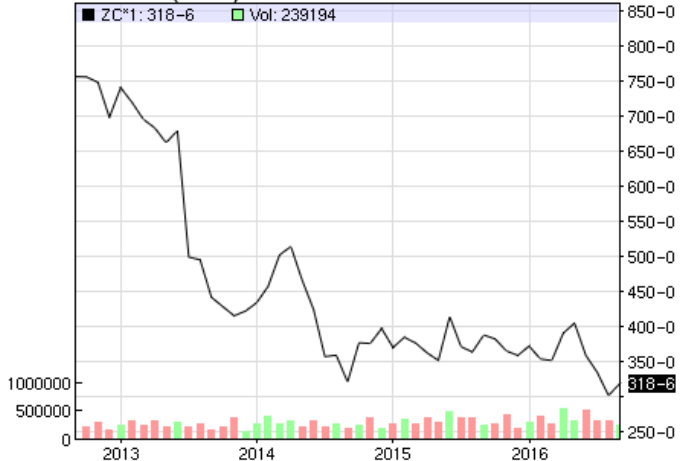
IRON PRICE IN USD



COPPER PRICE IN USD



ZCU12 - Corn (CBOT)



COAL PRICE IN USD



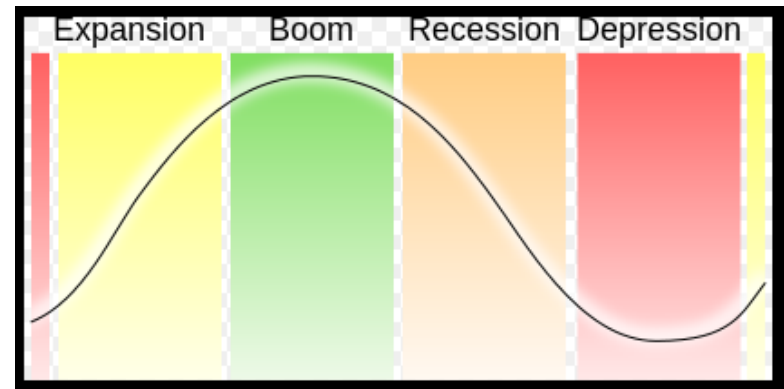
ALUMINIUM PRICE IN USD



Sources: Nasdaq & Quandl

Wave Theory

- Given the length and breadth of commodity overinvestment into mid-2014, **are we looking at a years-long period of anemic investment** as available supply realigns with demand?
 - Negative implications for machinery
 - And by extension, freight

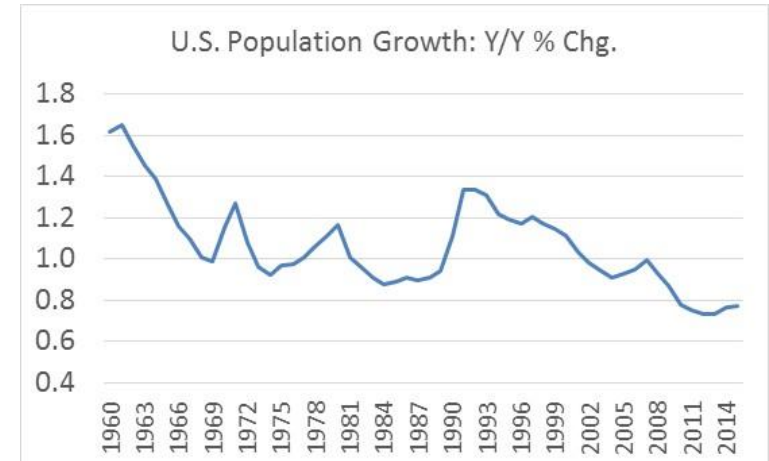


Long-Term Outlook: Slower Growth

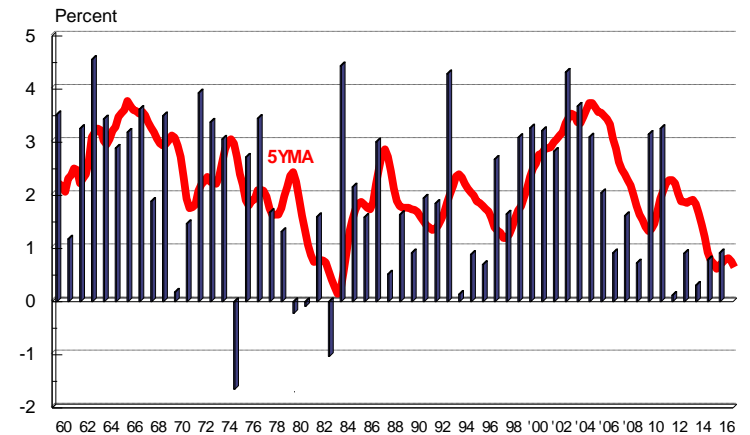
Start	End	Duration (months)	Compound Annual Growth Rate	
			GDP	Mfg IP
Feb-61	Dec-69	106	5.1	6.8
Nov-70	Nov-73	36	5.5	9.4
Mar-75	Jan-80	58	4.6	6.7
Nov-82	Jul-90	92	4.1	4.0
Mar-91	Mar-01	120	3.8	5.6
Nov-01	Dec-07	73	3.0	2.8
Average		81	4.4	5.9
Jun-09	>Aug-16	85 plus	2.1	2.1

Source: National Bureau of Economic Research

Yellen: [Expansions] do not die of old age



U.S. Nonfarm Productivity
Year Over Year Percent Change (5YMA)
1970 - 2014



Source: BLS, ACT Research Co., LLC. Copyright 2016

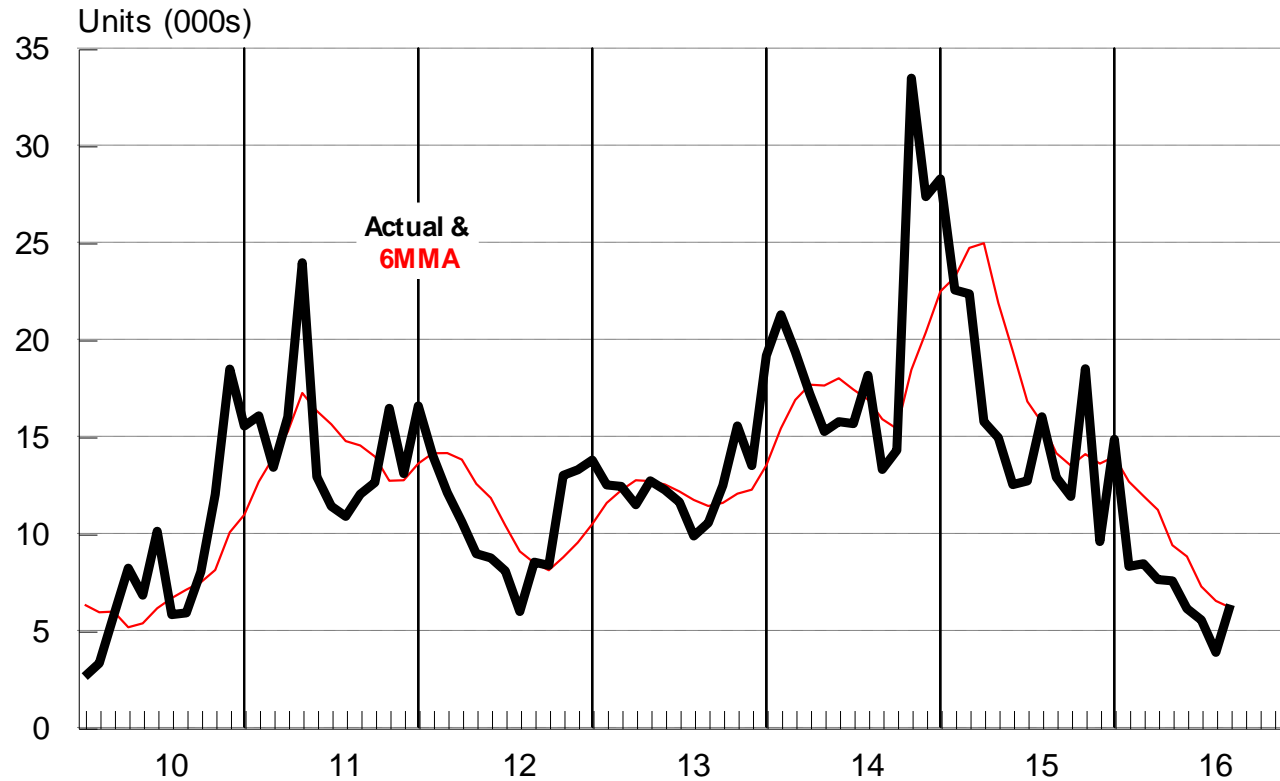
The heavy vehicle market always surprises in the direction it's headed.

Surprise!

Great Time to be a Buyer

U.S. CLASS 8 TRACTOR NET ORDERS

January '10 - August '16



ACT Research Co., LLC: Copyright 2016

From so good to so bad so fast

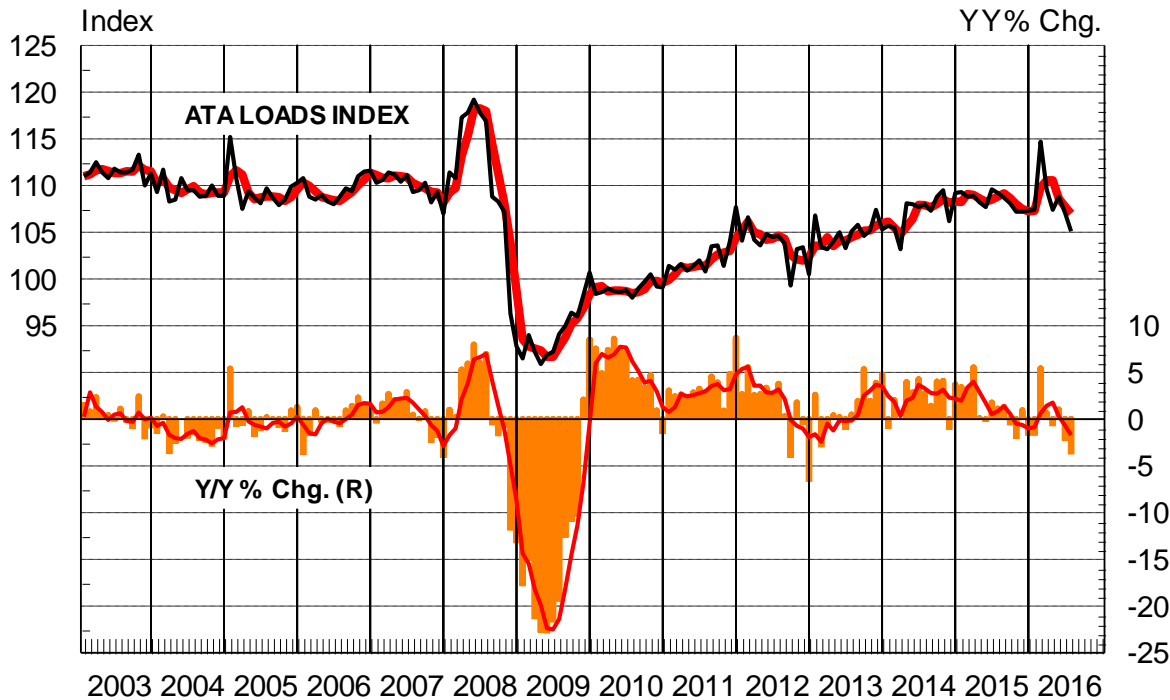
Stagnant Freight Markets

- Freight 101: Truck freight creation is not linear across the economy's different sectors
 - Consumers spending: fewer loads per \$
 - Services = little freight
 - Nondurables = many imports
 - Investment: Multiplicative impact from broad domestic sourcing
 - Capital goods
 - Construction

Five-Plus Quarters No Growth

ATA Truck Loads Index

January '03 - July '16 (2000=100)



2015	
FY2015 y/y @	1.0%
Q1'15:	4.0%
Q2-Q4'15:	0.0%
2016	
YTD'07'16:	-0.2%
July Y/Y:	-3.7%

Source, American Trucking Associations, ACT Research Co., LLC: Copyright2016

Class 8 Lead Indicator Dashboard

ACT Research Class 8 Tractor Dashboard

Category	Metric	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16
	Green Minus Red Tally	-10	-9	-10	-11	-12	-12	-11	-11	-5	-8	-8	-8	-10
Macro & Financial	ISM-PMI Index	51.9	51.0	50.0	49.4	48.4	48.0	48.2	49.5	51.8	50.8	51.3	53.2	52.6
	Non-Auto Durables Mfg Output**	-1.5	-1.4	-1.6	-1.5	-1.3	-0.9	-0.6	-0.4	-0.5	-0.6	-0.6	-0.6	-0.2
	Consumer Spend, Goods only**	4.0	3.8	4.0	3.6	3.5	3.6	3.4	3.1	2.6	2.9	2.9	3.2	3.6
	Residential Const Expend (real) **	21.8	21.9	20.7	18.3	15.6	13.0	10.8	9.2	8.4	5.1	2.3	-0.1	-2.0
	Dow Jones Trucking Stock Index	537.08	492.44	494.76	508.52	508.35	472.01	471.75	510.14	551.40	534.35	545.97	535.07	540.49
Freight	ATA TL Loads**	1.0	0.8	0.1	-0.4	-0.4	-1.7	-1.8	0.9	1.3	0.9	0.8	-0.2	-1.1
	DAT Transcore Loads/Truck	3.4	3.4	2.9	2.6	2.8	3.8	3.9	2.9	2.9	3.0	3.0	3.6	4.4
	DAT Aggregate Contract/Spot Spread	24	26	26	27	28	21	24	34	35	34	33	29	28
	DAT Dry Van Spot Rate*	-1.9	-1.3	-3.2	-6.4	-9.2	-10.1	-7.4	-12.0	-16.6	-15.7	-13.5	-10.8	-6.5
	ATA TL Loads/US C18Tractor Pop Growth Gap	-3.0	-5.0	-7.5	-9.5	-11.0	-13.2	-13.7	-10.9	-10.1	-9.9	-9.1	-9.3	-9.5
ACT data	CI 8 Cancellations (sa)	3044	4467	4508	2483	4039	3605	4639	3120	1780	1598	2536	2445	2833
	CI 8 I/S ratio (sa)	2.64	2.42	2.84	3.29	2.79	3.39	2.58	2.81	2.91	2.85	2.91	3.03	3.02
	Class 8 Inventory Level (000 sa)	69.7	67.1	67.3	70.5	70.2	70.6	72.1	68.0	65.4	64.7	63.7	61.0	61.0
	Class 8 Net Orders to Build (6mma,sa)	0.874	0.836	0.840	0.868	0.864	0.908	0.842	0.835	0.810	0.766	0.783	0.733	0.728
	ACT For Hire - Volume less Capacity	45.0	52.0	41.1	43.8	45.8	45.4	41.6	43.8	48.6	42.5	50.9	51.8	39.6

Last
13
Months

Category	Metric	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
	Green Minus Red Tally	12	10	7	7	8	10	8	6	6	5	-3	-3	-5
Macro & Financial	ISM-PMI Index	55.3	55.6	58.1	55.8	57.3	57.5	54.9	53.9	53.3	52.3	51.6	53.1	53.1
	Non-Auto Durables Mfg Output**	2.9	3.3	3.1	3.2	3.4	3.7	3.6	2.9	1.7	0.6	-0.2	-1.0	-1.3
	Consumer Spend, Goods only**	4.1	4.3	4.8	4.7	4.8	5.1	5.3	5.2	4.2	4.1	4.0	4.2	3.9
	Residential Const Expend (real) **	11.5	8.5	5.1	3.0	1.5	1.2	2.5	4.7	7.5	10.0	13.4	17.1	20.4
	Dow Jones Trucking Stock Index	494.19	510.73	517.68	514.52	532.35	572.18	567.03	523.98	561.68	554.13	518.27	503.32	501.49
Freight	ATA TL Loads**	2.8	2.6	2.6	3.4	3.6	2.6	3.6	3.6	3.4	2.9	0.9	0.6	1.0
	DAT Transcore Loads/Truck	6.9	7.1	7.7	5.9	6.3	6.2	7.4	6.2	4.8	4.7	4.3	4.1	3.6
	DAT Aggregate Contract/Spot Spread	8	12	17	10	12	7	5	13	13	11	18	21	20
	DAT Dry Van Spot Rate*	15.1	13.9	12.5	14.7	15.4	15.6	15.0	11.0	5.3	2.5	4.6	4.7	-1.3
	ATA TL Loads/US C18Tractor Pop Growth Gap	6.8	6.4	6.3	6.9	6.9	5.7	6.5	6.2	5.4	4.2	1.4	-0.1	-1.2
ACT data	CI 8 Cancellations (sa)	1594	2849	3552	2537	1286	1975	2145	3936	2865	2743	2587	2452	2913
	CI 8 I/S ratio (sa)	2.14	2.45	2.12	2.41	2.44	2.03	2.47	2.09	2.00	2.43	2.68	2.34	2.54
	Class 8 Inventory Level (000 sa)	51.9	54.5	54.5	55.7	56.1	56.9	56.1	57.5	58.2	62.3	65.7	67.6	68.8
	Class 8 Net Orders to Build (6mma,sa)	1.159	1.168	1.153	1.161	1.278	1.333	1.386	1.341	1.336	1.284	1.121	1.004	0.896
	ACT For Hire - Volume less Capacity	58.6	57.4	53.7	55.2	55.5	56.0	47.3	45.7	41.9	57.1	44.2	47.9	49.6

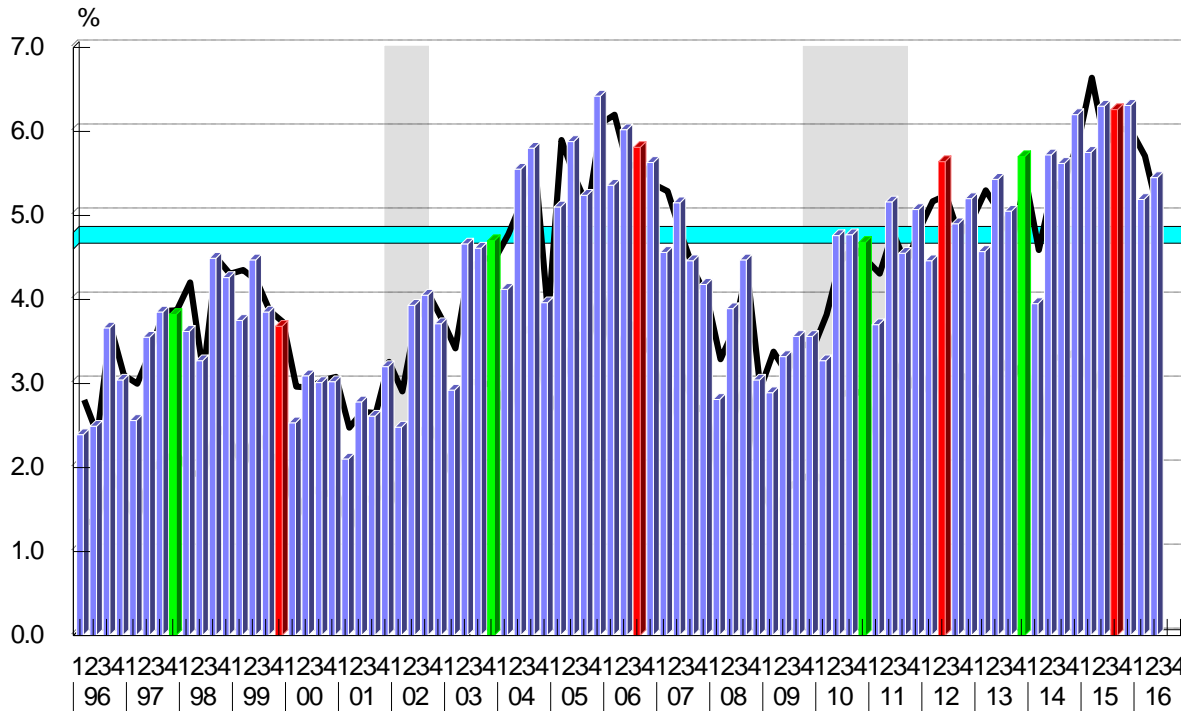
Prior
13
Months

Carriers Buy Trucks to Make Money

(and not pay so much in taxes)

TL Carrier Database: Net Profit Margin

Q1'96 - Q2'16

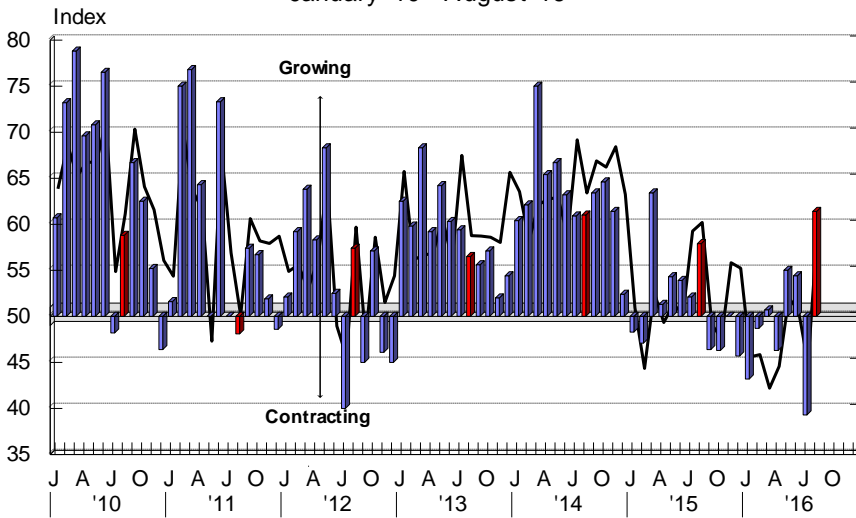


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Capacity Rising Faster Than Freight

**ACT For-Hire Truckload Index
Freight Volumes**

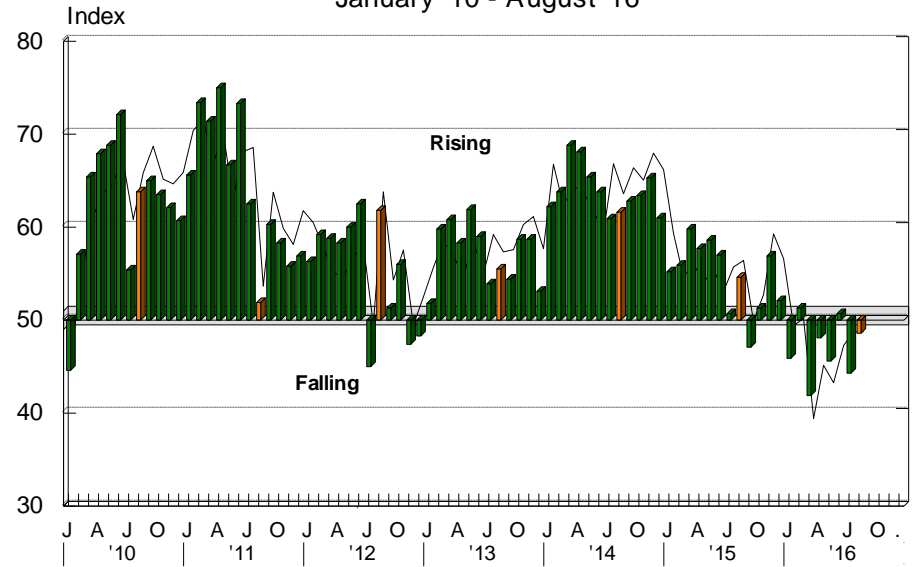
January '10 - August '16



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**ACT For-Hire Truckload Index
Freight Rates**

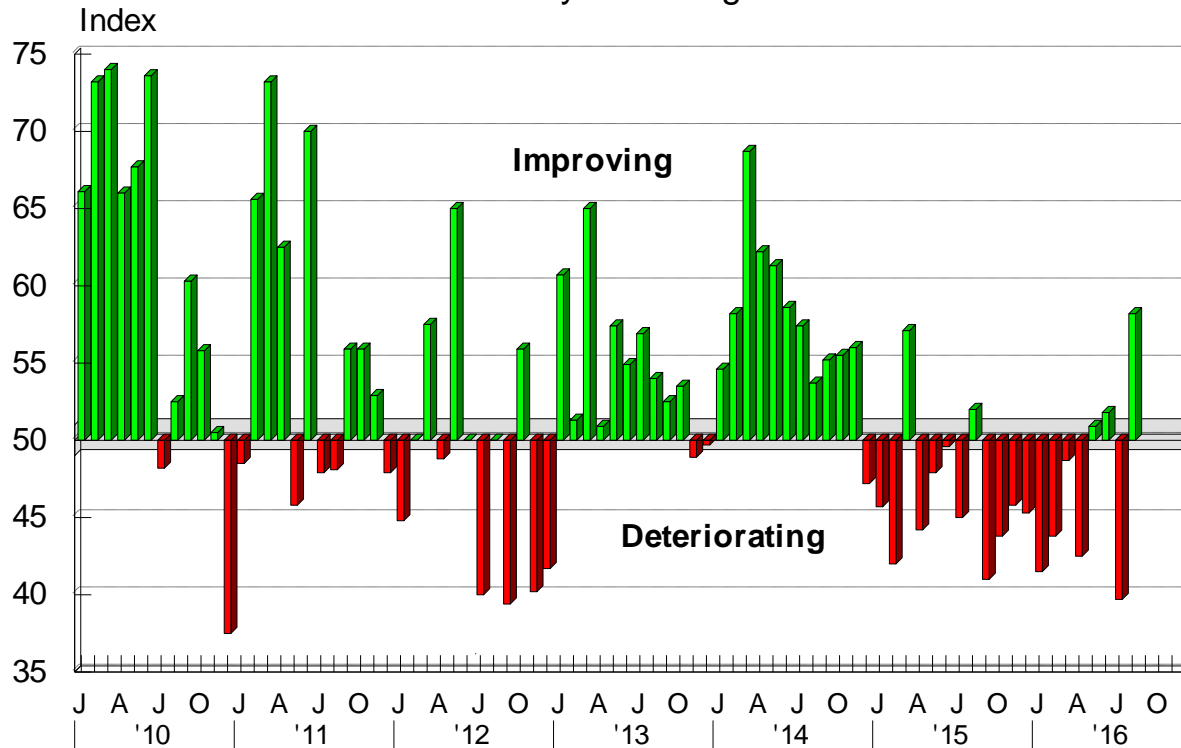
January '10 - August '16



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Capacity Rising Faster Than Freight

ACT For-Hire Trucking Survey
Supply-Demand Balance
Freight Volume Index Less Fleet Capacity Index
January '10 - August '16

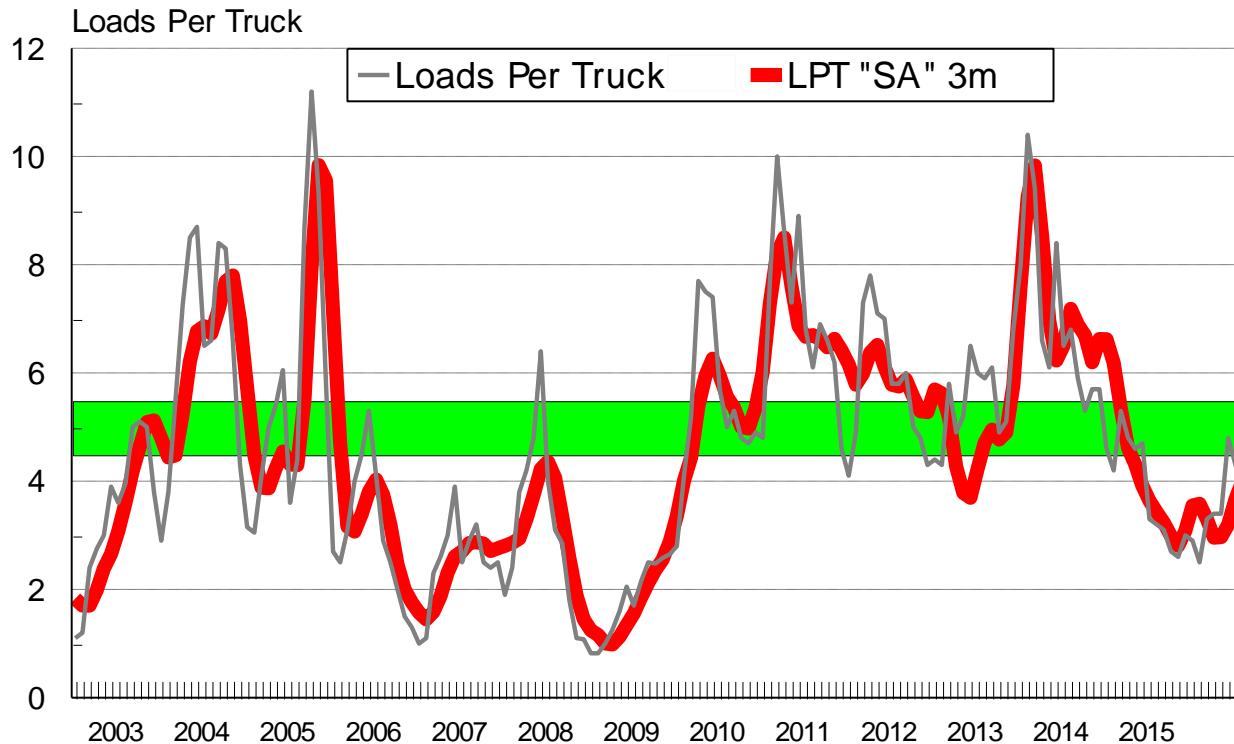


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Supply-Demand Imbalance...

DAT Trendlines: Load Per Truck Aggregate

January '03 - August '16 (2000=100)

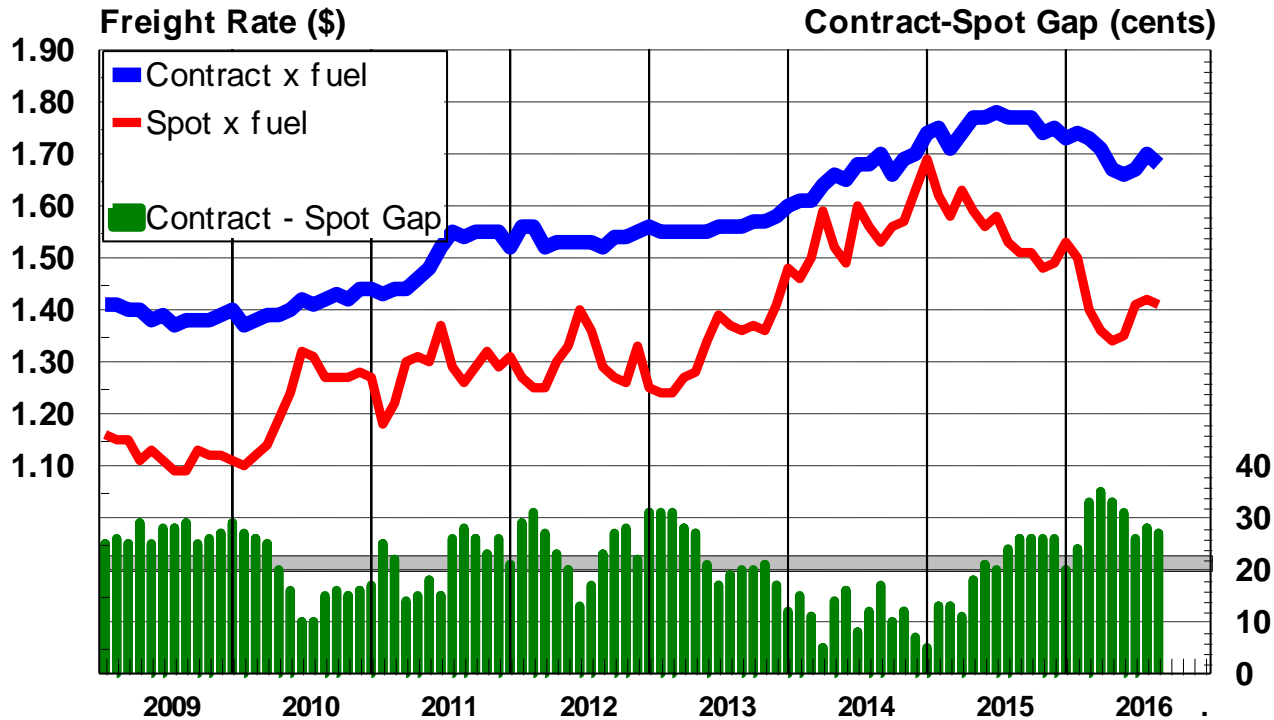


Source, Transcore Commercial Technology Group, ACT Research Co., LLC: Copyright 2016

Supply-Demand Imbalance

DAT Trendlines: Dry Van Revenue per Mile

January '09 - August '16 (2000=100)



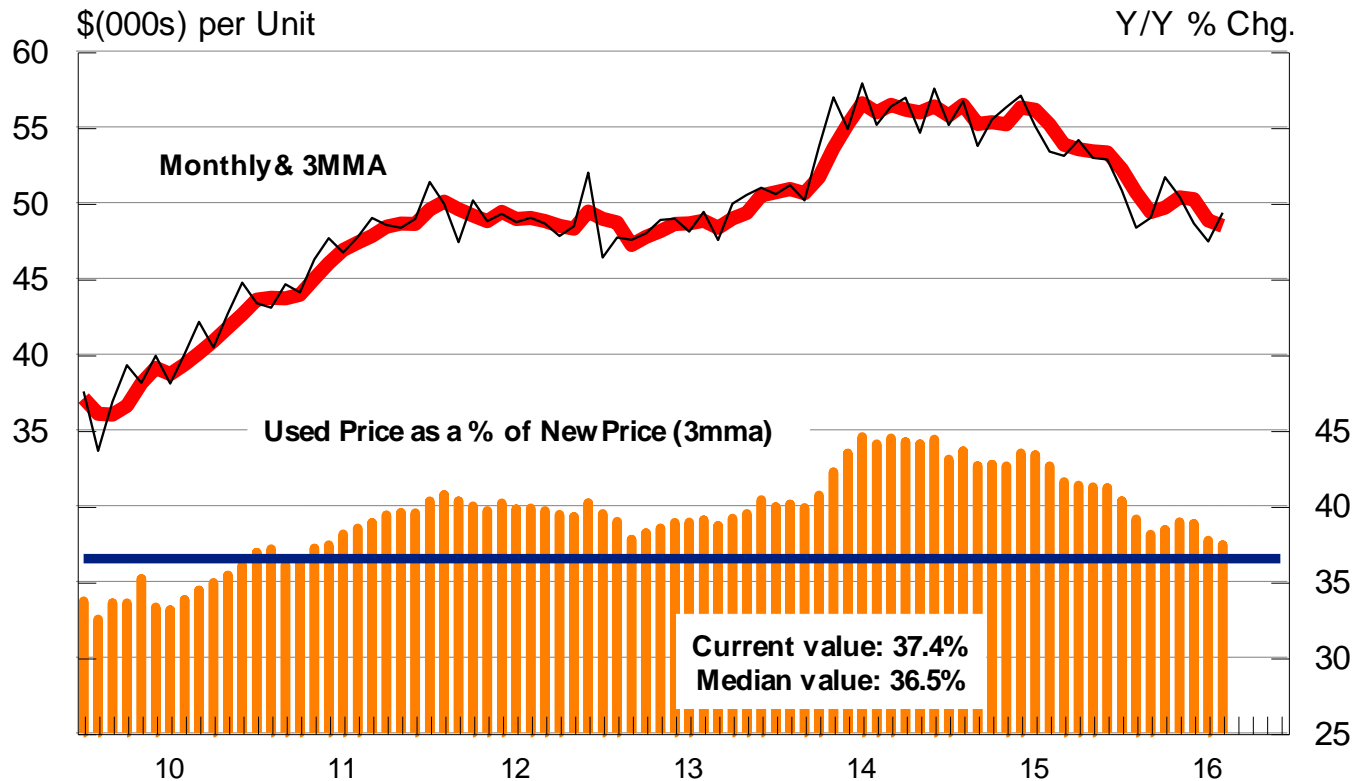
Wide spot-contract rate gap implies difficult 2017 contract rate environment

Source: Transcore Commercial Technology Group, ACT Research Co., LLC: Copyright 2016

Aggregate Values Back to Par

Used Class 8: Average Retail Selling Price

January '10- August '16

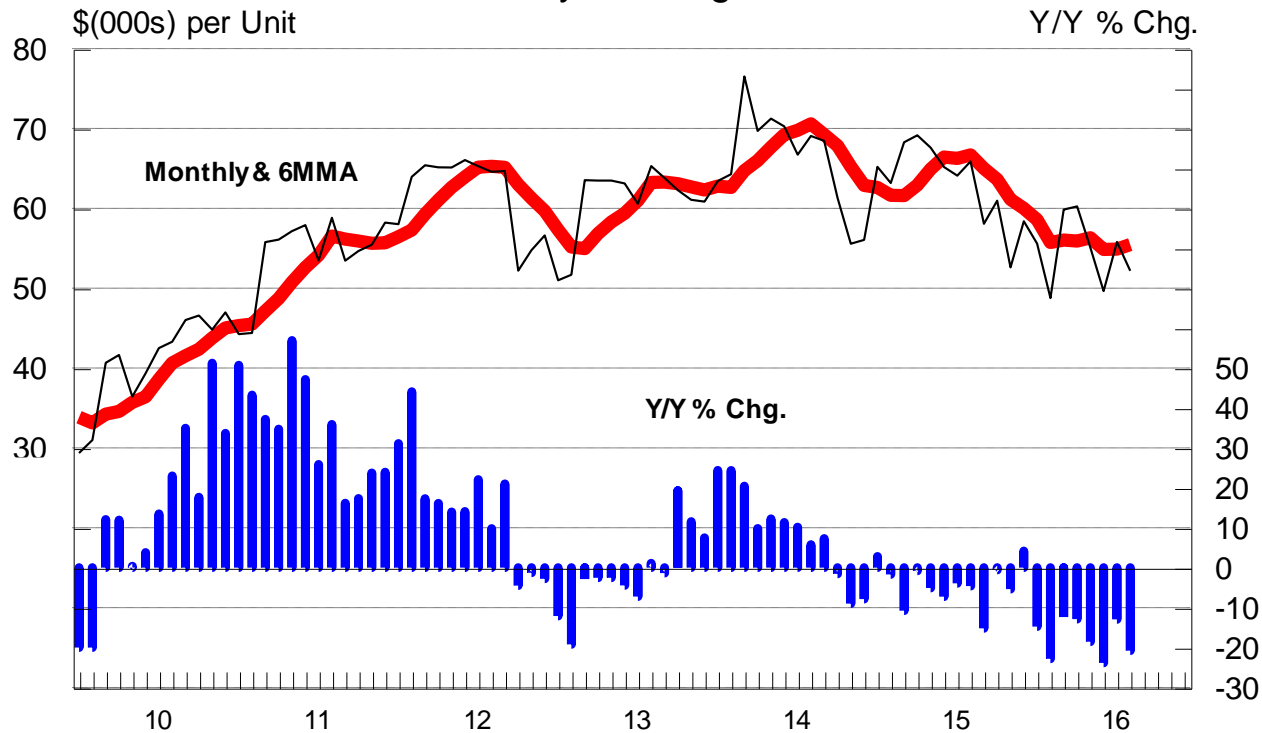


Will Not Revisit Recent Highs

Class 8: Average Retail Selling Price

Late Model, 4-5 years 400k-500k Miles

January '10- August '16



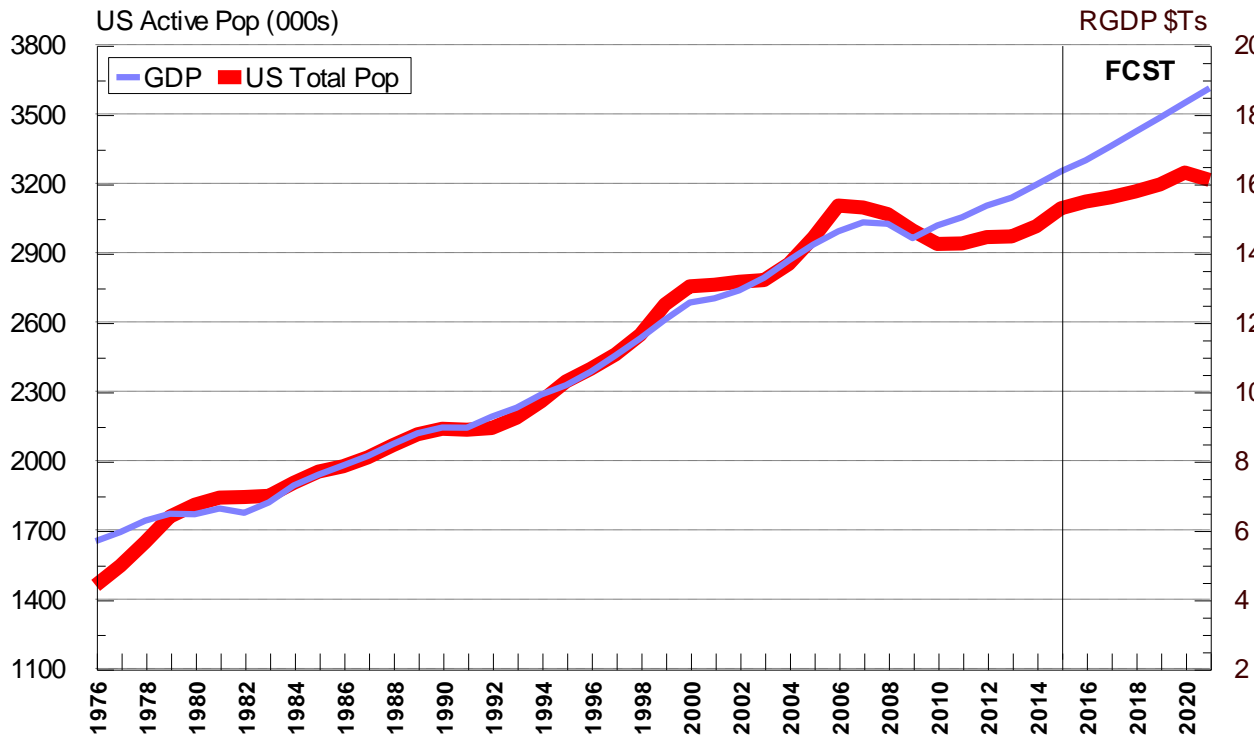
Strong sales from 2012-2016 suggest peaky valuations are unlikely to return for late-model trades anytime soon

Fewer trucks are required to do the same amount of work

Productivity: Paradigm Shift

Class 8 Total Population & U.S. Real GDP

1976 - 2021f



Productivity Paths:

Increased Density

Increased Utilization

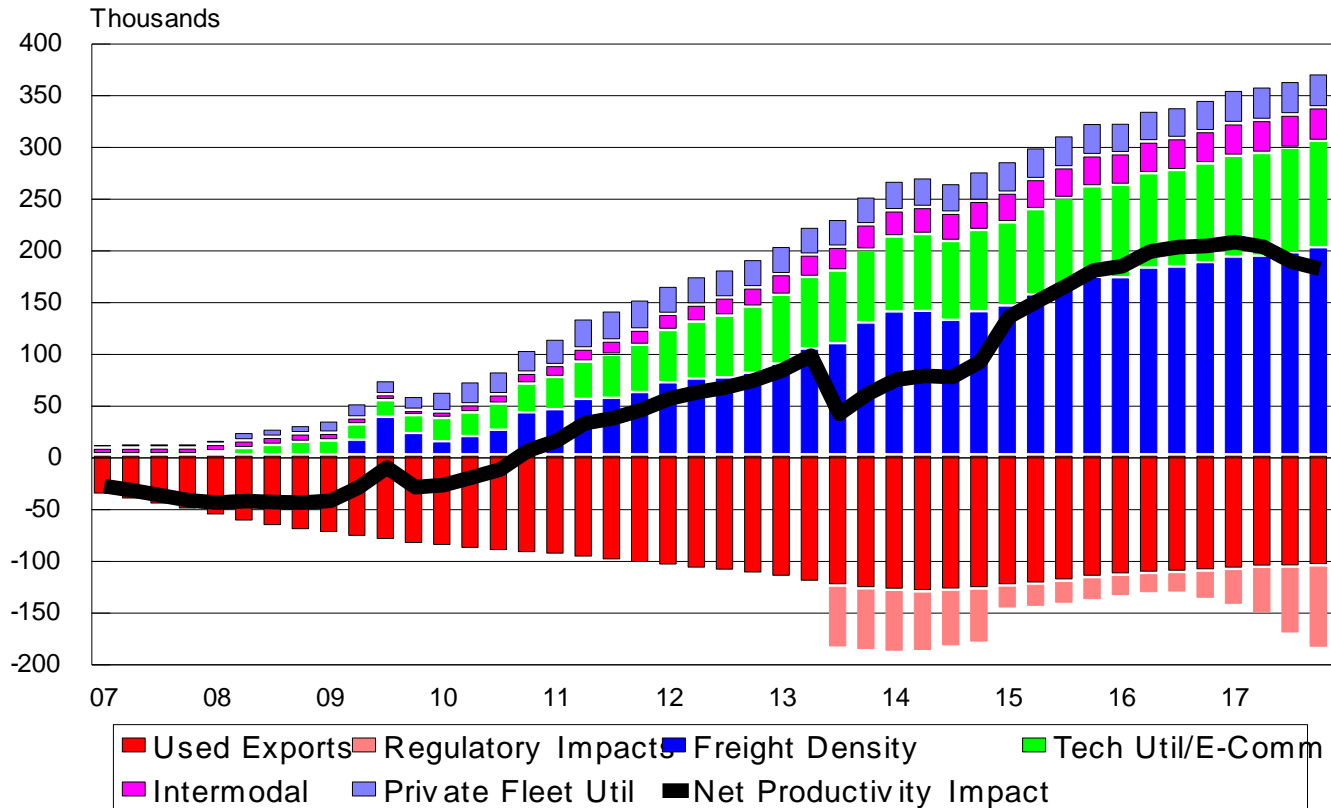
Modal shifting

Online retail shift

Productivity impact since 2009 estimated at around 10% of total U.S. tractor market

Adding Up the Pieces

U.S. Tractor Fleet Productivity Impacts 2007-2017

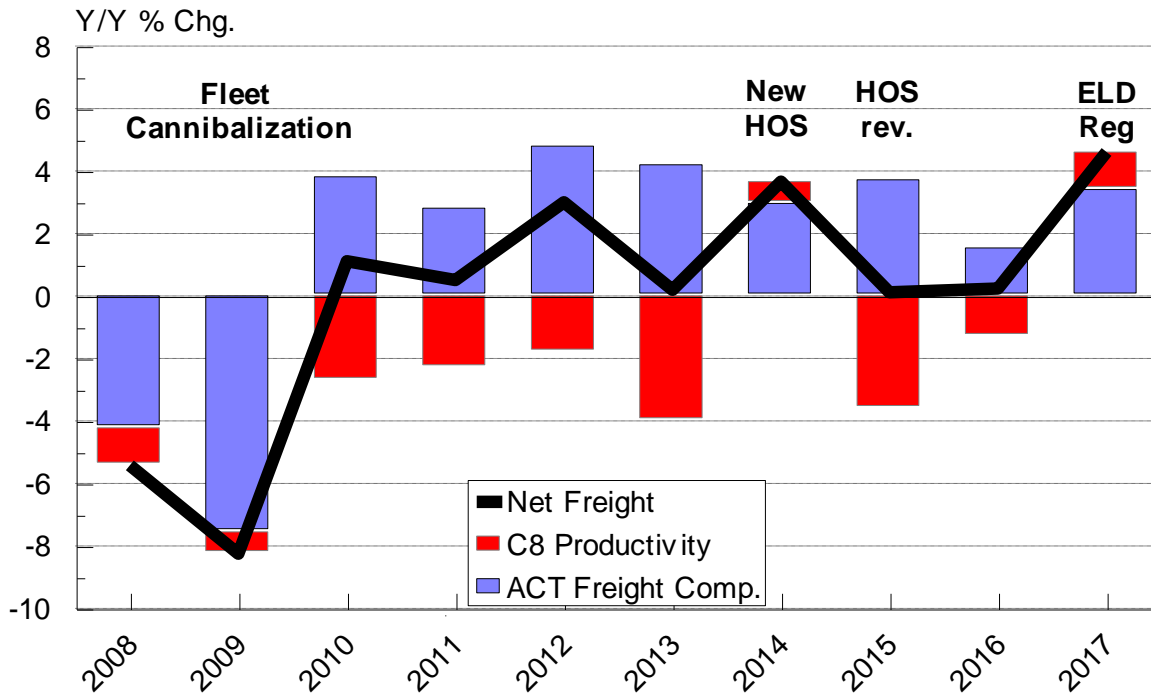


ACT Research Co., LLC: Copyright 2016

Productivity Impacts Demand-Side

NET FREIGHT: ACT Freight Composite less HD Tractor Productivity

2008 - 2017 (Year/Year)



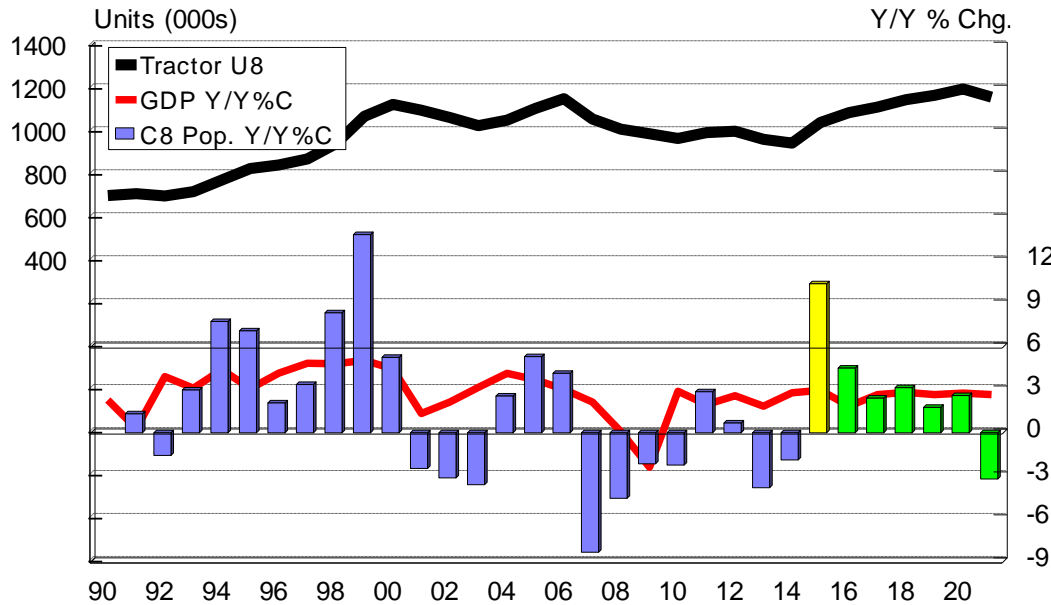
Net Freight:
 Freight Growth less
 Productivity Growth

Source: ACT Research Co., LLC: Copyright 2016

2015-2016 Supply-Side Surge

U.S. Class 8 TRACTORS/Articles: Late Model 8 & Under

1990 - 2020



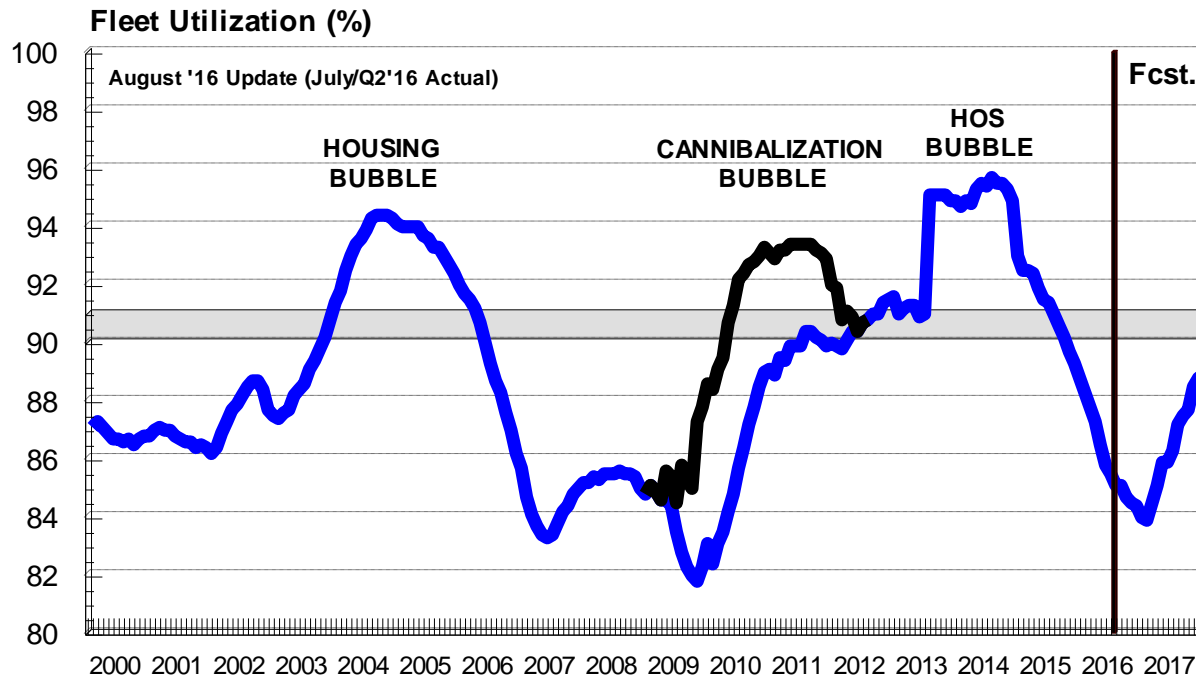
At 2.0% GDP, U.S. **tractor** demand should be ~155k units/yr.

If productivity offsets freight growth, tractor replacement is ~130k-135k/yr.

demand + SUPPLY = Overcapacity

U.S. Class 8 Implied Tractor Fleet Utilization Rate

2000 - 2017



Negative freight plus positive retail sales boost excess capacity into end of '16

Utilization rebound in 2017 predicated on productivity hit from ELD adoption + positive freight environment

(OOIDA v. FMCSA ELD heard in Sept.)

Bailout: 2018 ELD Impact Swag

	Market Share Estimates	Implied Units	ELD Penetration	Units w/ ELD	Units w/o ELD	% "Excess" Miles	Compliance Productivity loss	Capacity Impact
							0%	
Active Tractor Pop.		1,505,000						
Private	47%	708,000	100%			0%		-
For Hire:	53%	798,000						
Expedited	7%	56,000	100%	56,000	-	0%		-
LTL	10%	80,000	100%	80,000	-	0%		-
Large TL	25%	200,000	90%	180,000	20,000	0%		-
Mid TL	20%	160,000	25%	40,000	120,000	5%		6,000
Sm. TL	28%	224,000	10%	22,400	201,600	10%		20,160
OO	10%	80,000	0%	-	80,000	20%		16,000
Total For-Hire Implication				378,400	421,600			42,160
					28%			
Total Tract Fleet Capacity Impact (%)								2.8%
For-hire Fleet Only Capacity Impact (%)								5.3%

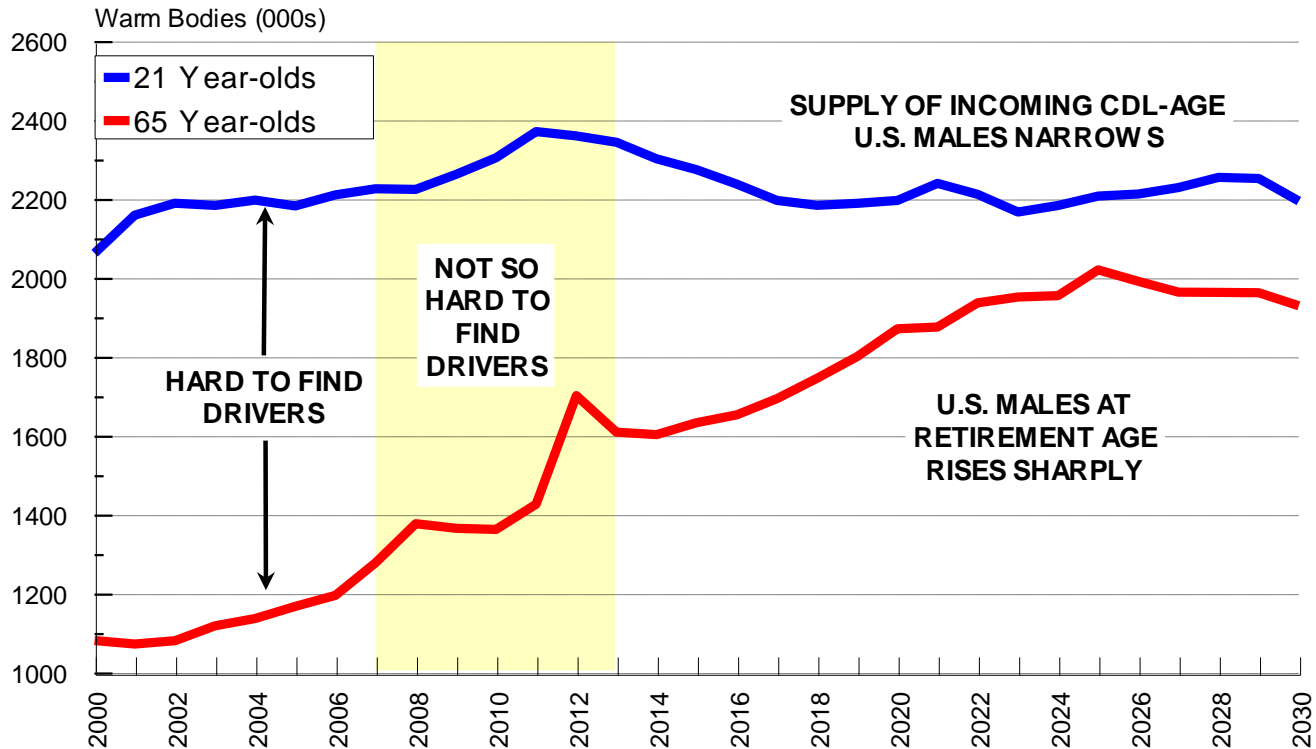
Driver/Tech Shortage

- **The freight will get delivered**
 - Freight determines driver demand, not the reverse
 - Shortage is a problem of prosperity
 - What's worse – not enough freight (2008-09) or not enough drivers (2014)?
- **There is no substitute mode for heavy tractor-trailer combinations for most truck freight**
- **Shortage is actionable by management**
 - The Law of Supply & Demand has not been repealed
 - Freight volumes, fuel prices are “macro,” externally set
 - Shortage does not preclude profitability, rather correlated
 - There is no “Easy Button” in a competitive market

Unfriendly Demographics

DRIVER SUPPLY: U.S. MALES Potential Hires & Impending Retirees

2000-2030



Source: U.S. Census Bureau, ACT Research Co., LLC: Copyright 2015

Little Change in 100 Years

The Traffic World (now part of *Journal of Commerce*)

Dec. 12, 1914

The Truck Driver Problem

- “Practically every truck manufacturer and nearly all employers **complain of the great difficulty of securing drivers who are competent** and who will work handling freight aside from those who drive horses. They are agreed that the profit or loss from truck transportation is largely dependent upon the drivers, **and yet a majority of truck owners will hire the men who will work cheapest**, entrusting valuable property in their keeping...)

2021: GHGp2

What we think we know

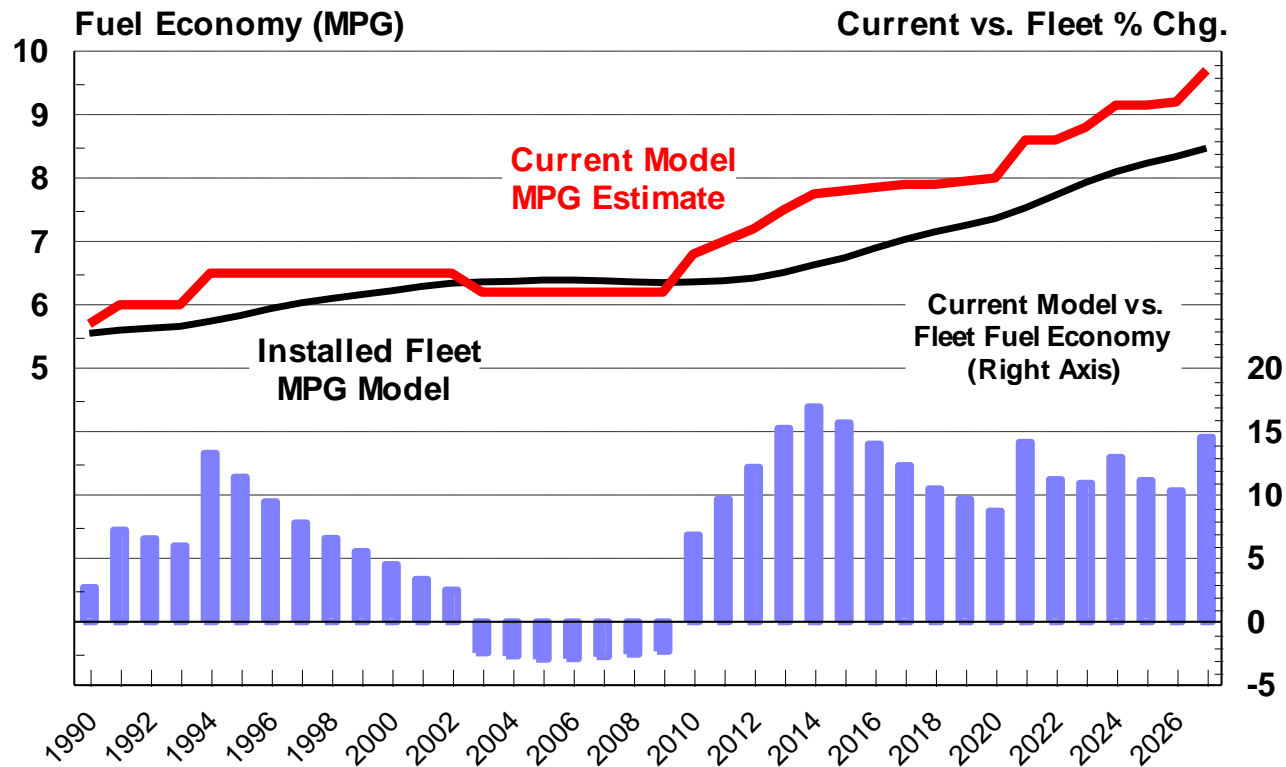
- Cost: \$6,500 - \$7,500
- + tax (FET, state): \$1,300 - \$1,500
- Total New Cost: \$7,800 - \$9,000
- New tractor FE 13% (~+1mpg)
- Miles/Year: 90,000
- Diesel \$*/gal: \$ 3.00
- Months to payback: **24 - 28**

* Higher or lower \$gal will impact payback period

Long tail for New Vehicle FE Premium

ACT Research: Fleet MPG Estimates

1990 - 2027 Forecast



Source: ACT Research Co., LLC: Copyright 2016

Summary

- Difficult environment heading into 2017
 - No near-term economic catalyst
 - Commodity prices critical to freight recovery
 - Overcapacity during contract negotiation season will keep pressure on profitability
 - ELD adoption & better economy should improve conditions in 2H'17 leading to better 2018 balance
 - Unfavorable 7th Circuit Court ELD ruling would push better environment to mid'2018



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