Economics of the Paper Industry

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Adam Josephson, CFA

(917) 368-2289

ajosephson@key.com

Michael LeBlanc

(917) 368-2374

michael.leblanc@key.com

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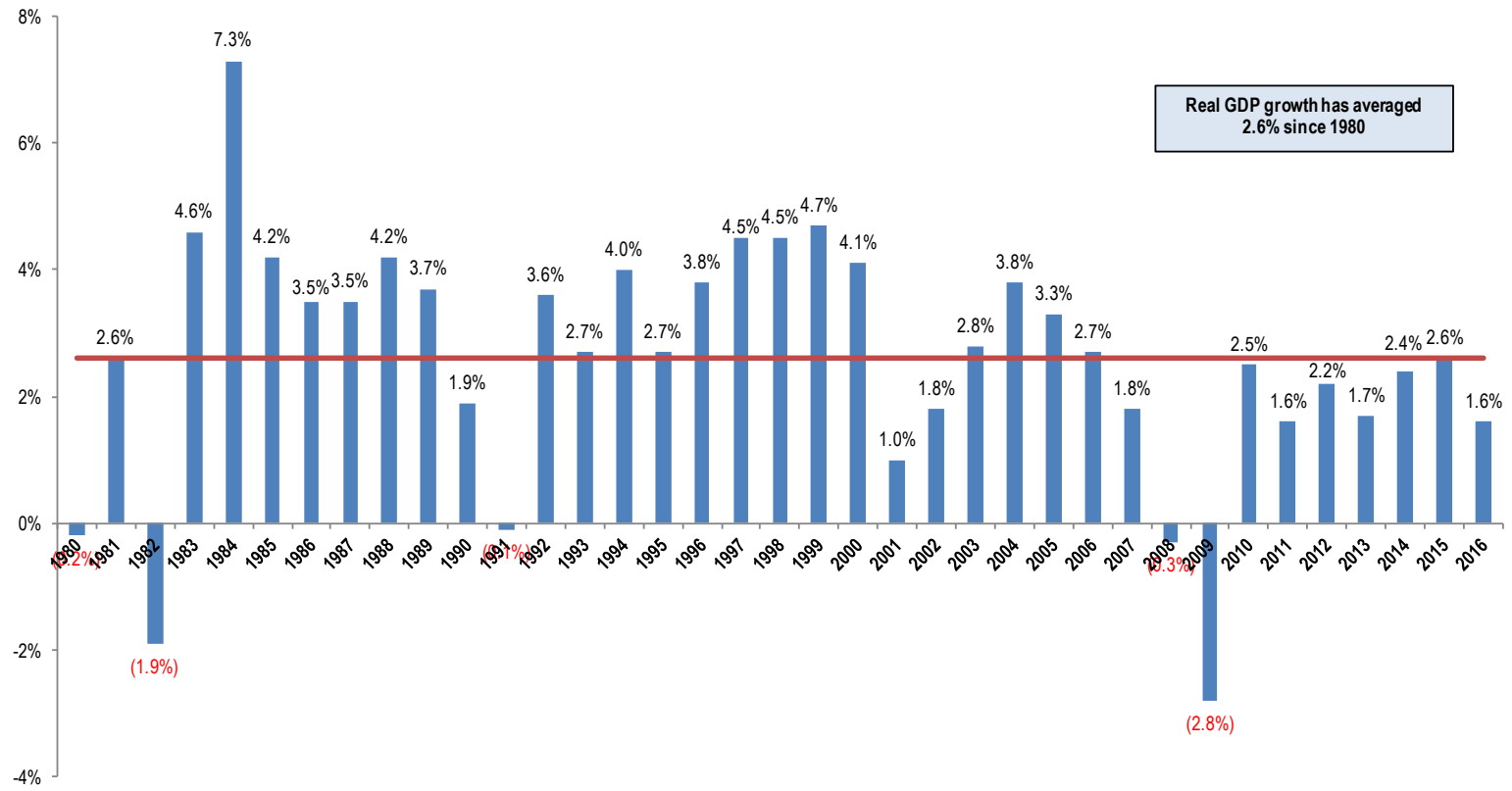
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The Economy

U.S. real GDP growth slowed in 2016

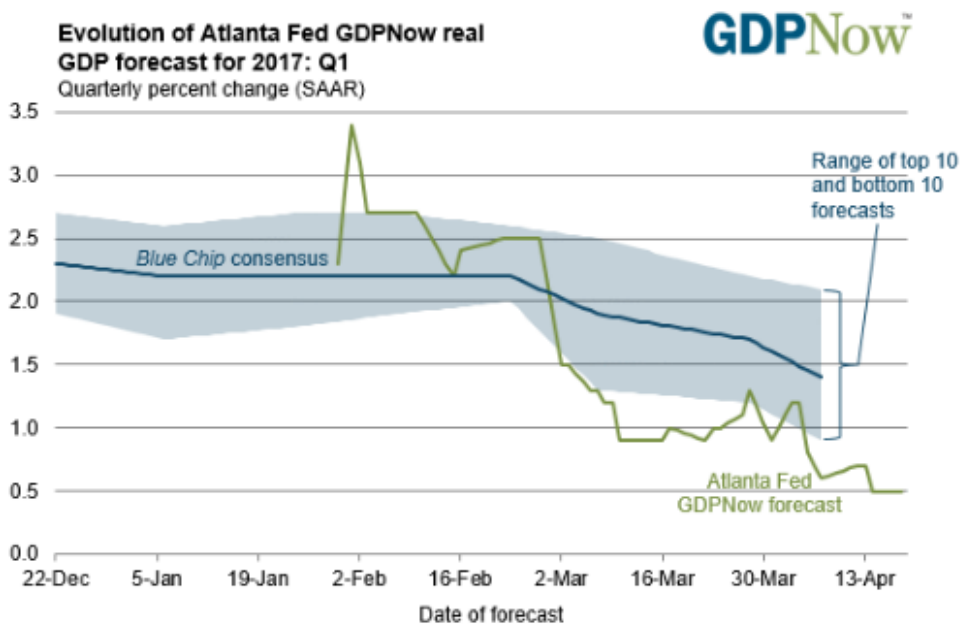
U.S. Real GDP Growth



Source: St. Louis Federal Reserve, Board of Governors of the Federal Reserve System (U.S.)

1Q17 GDP growth came in below expectations

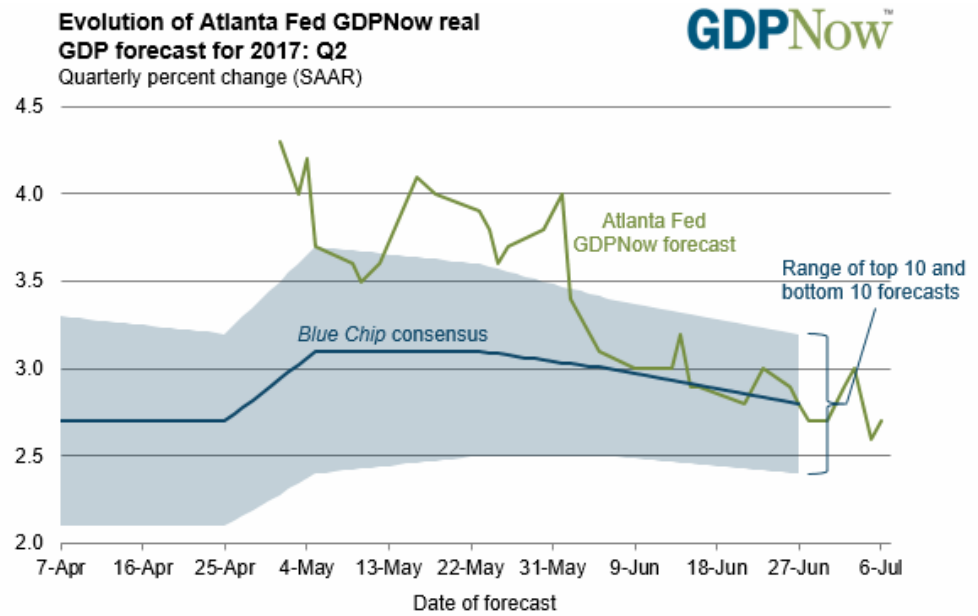
GDPNow 1Q17 Forecast



Source: Federal Reserve Bank of Atlanta, Bloomberg Finance
The official 1Q17 GDP growth was 0.7%

2Q17 GDP growth also came in below expectations

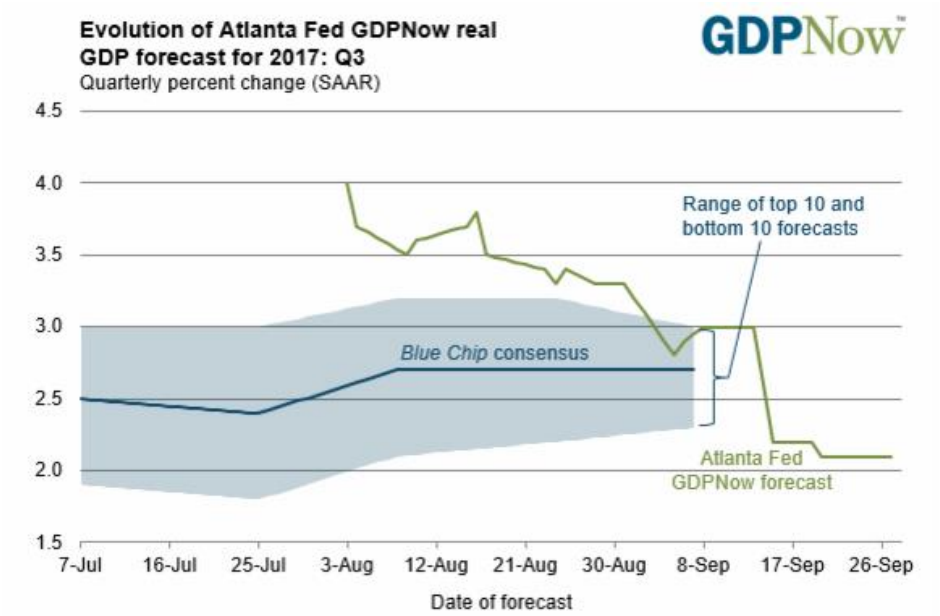
GDPNow 2Q17 Forecast



Source: Federal Reserve Bank of Atlanta, Bloomberg Finance

Expectations for 3Q17 GDP growth continue to decline as well

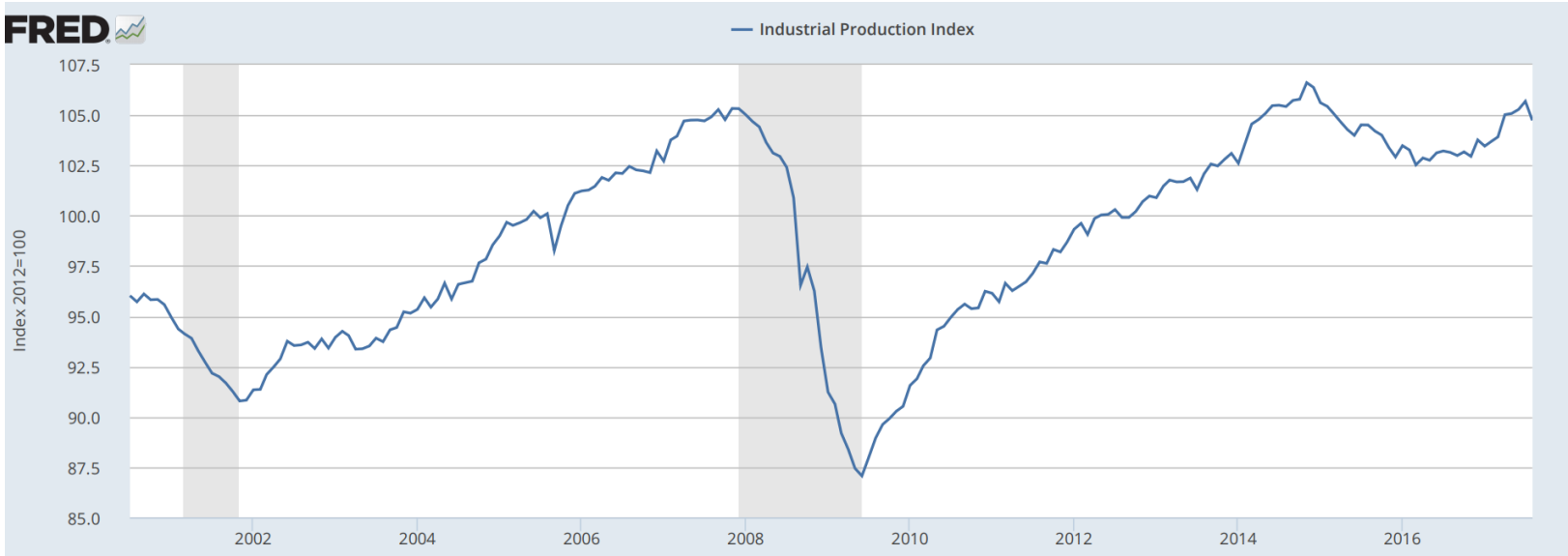
GDPNow 3Q17 Forecast



Source: Federal Reserve Bank of Atlanta, Bloomberg Finance

Industrial production growth has been limited since the beginning of 2014

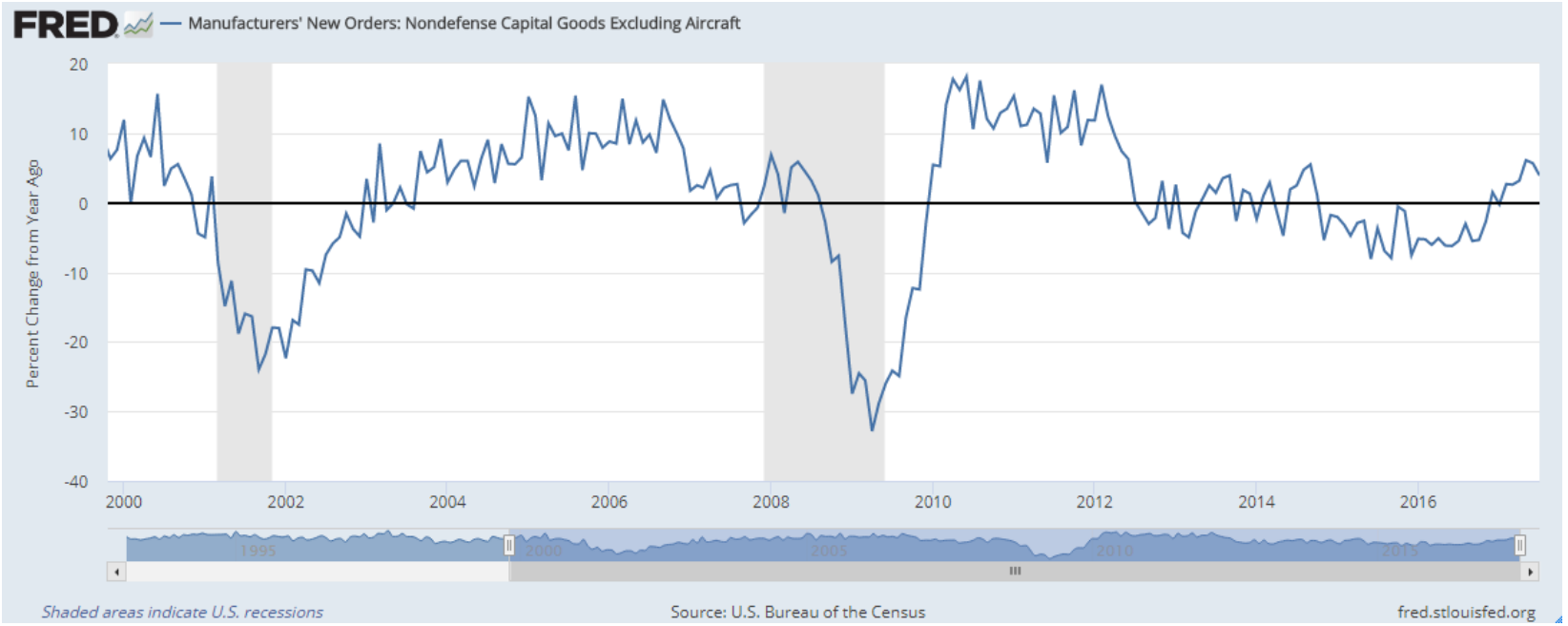
Industrial Production Index



Source: Federal Reserve Bank of St. Louis

Growth in new orders for capital goods has also been limited

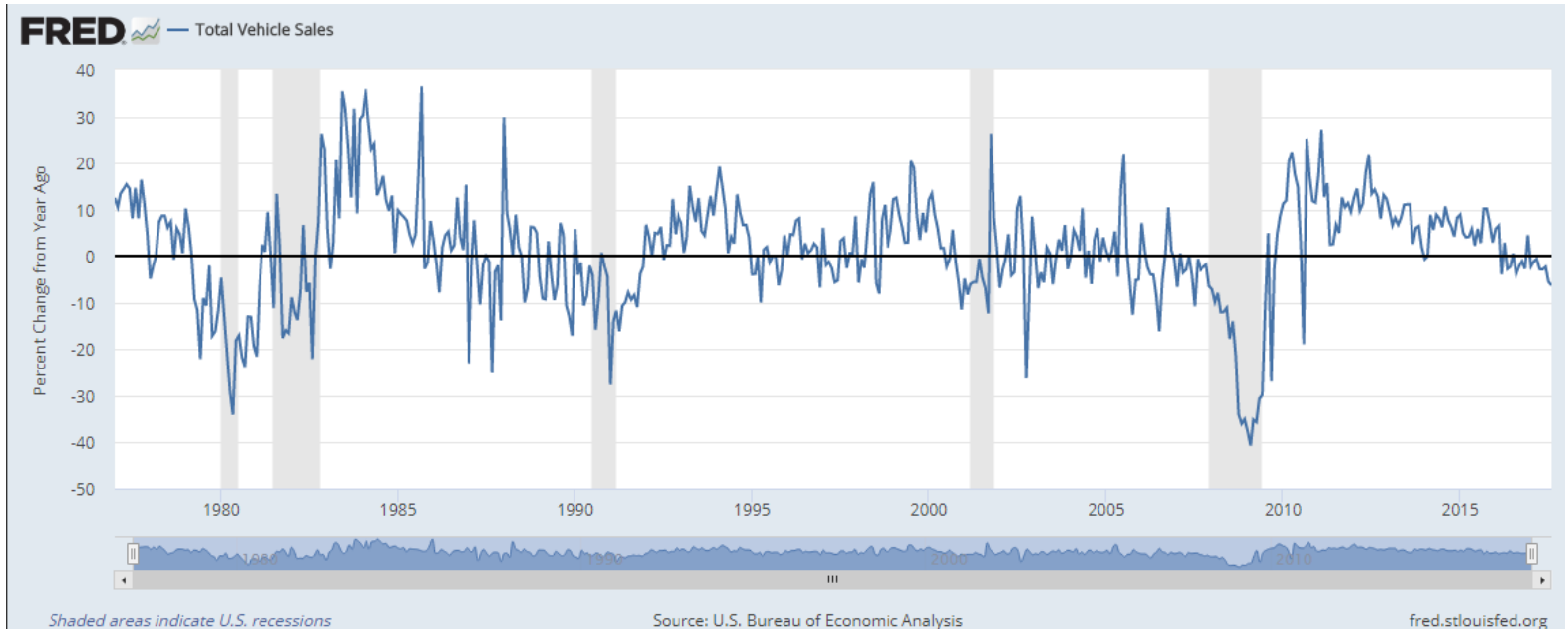
Manufacturers' New Orders: Nondefense Capital Goods Ex. Aircraft



Source: Federal Reserve Bank of St. Louis

Total vehicle sales have been declining in recent months

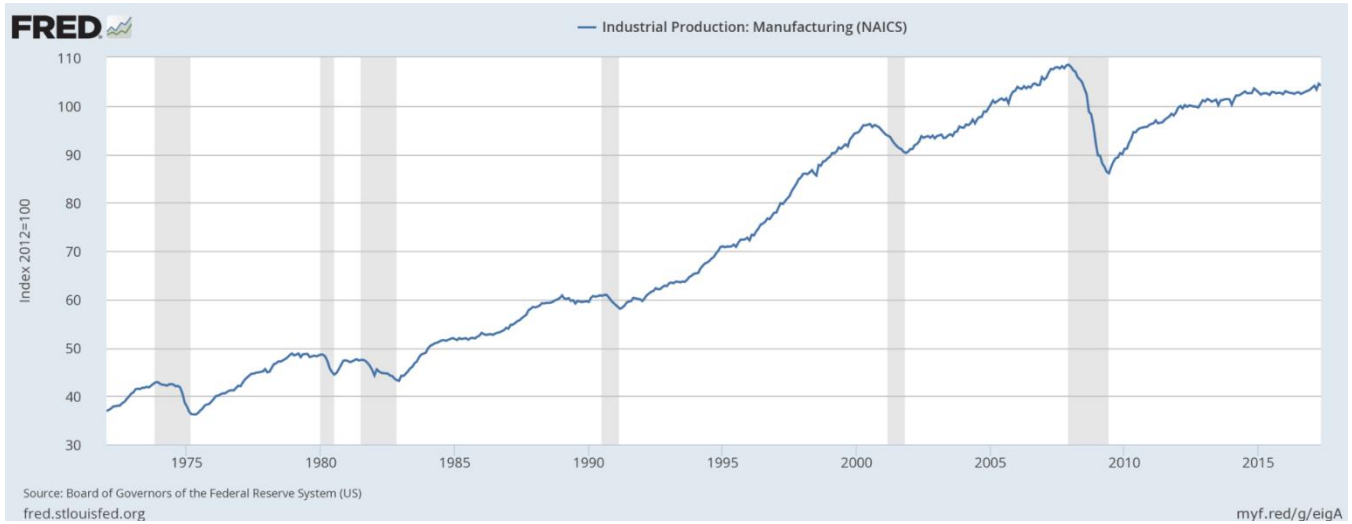
U.S. Vehicle Sales



Source: St. Louis Federal Reserve

And growth in non-durable industrial production has also been limited

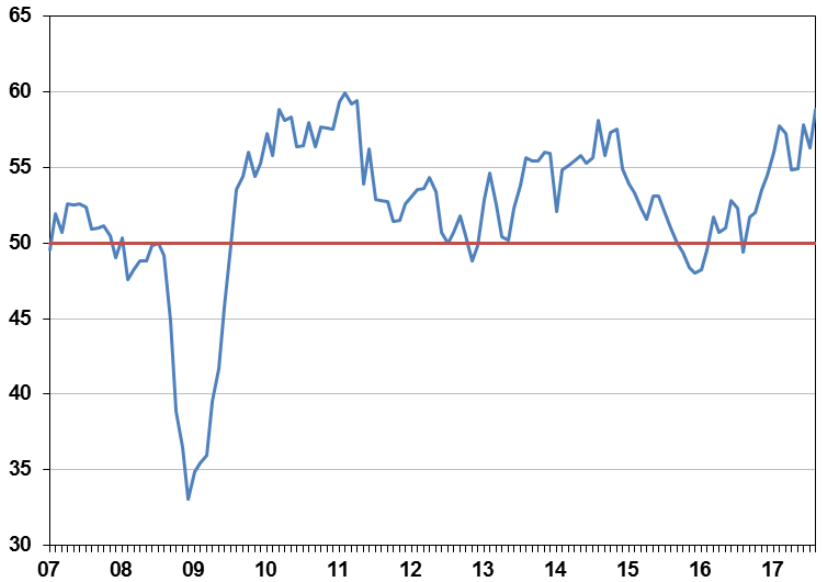
Non-Durable Industrial Production



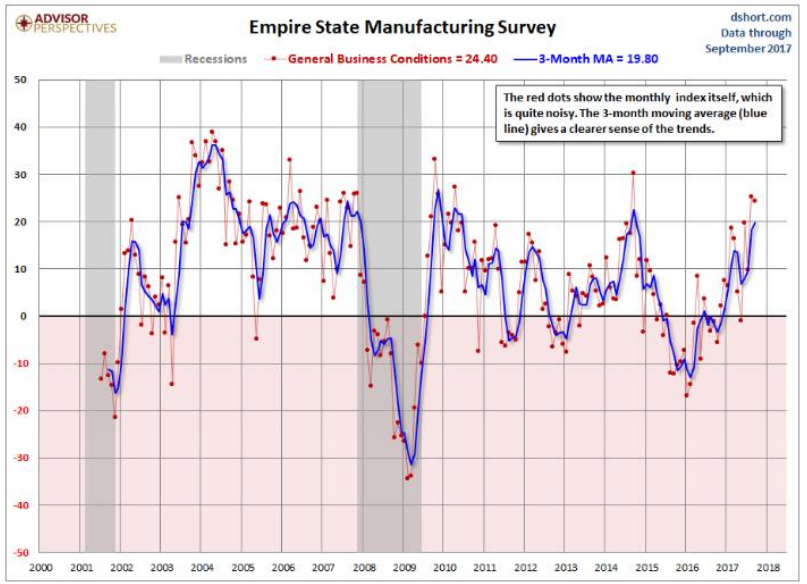
Source: St. Louis Federal Reserve

The survey data has been more positive, but as evidenced by the previous slides, this optimism has yet to show up in the "hard data"

ISM PMI



Empire State Manufacturing Survey

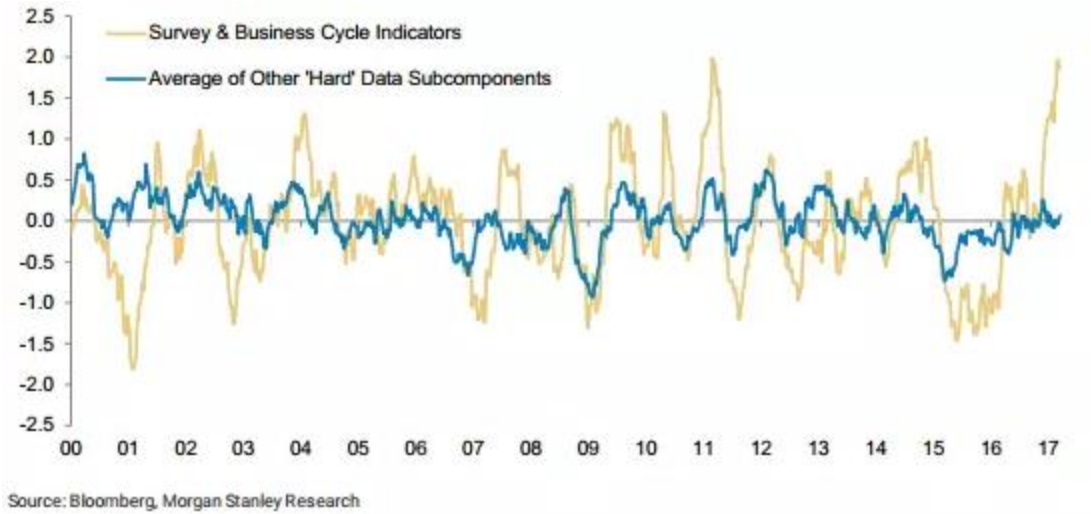


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Source: RISI *Paper Packaging Monitor,* Institute of Supply Management, Advisor Perspectives

In other words, there is a clear divergence between the "hard" and "soft" data

Hard v. Soft Data

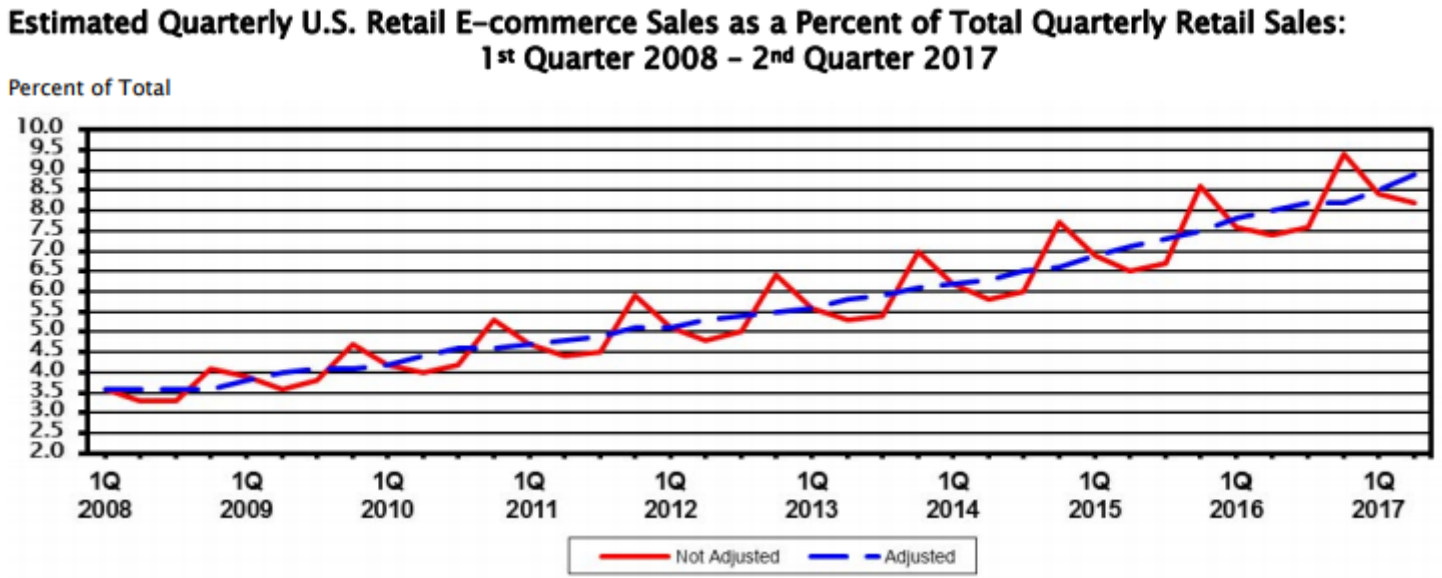


Source: Bloomberg, Morgan Stanley Research

The Changing Retail Landscape

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1. Consumers are increasingly shopping online



amazon

Alibaba Group

Walmart

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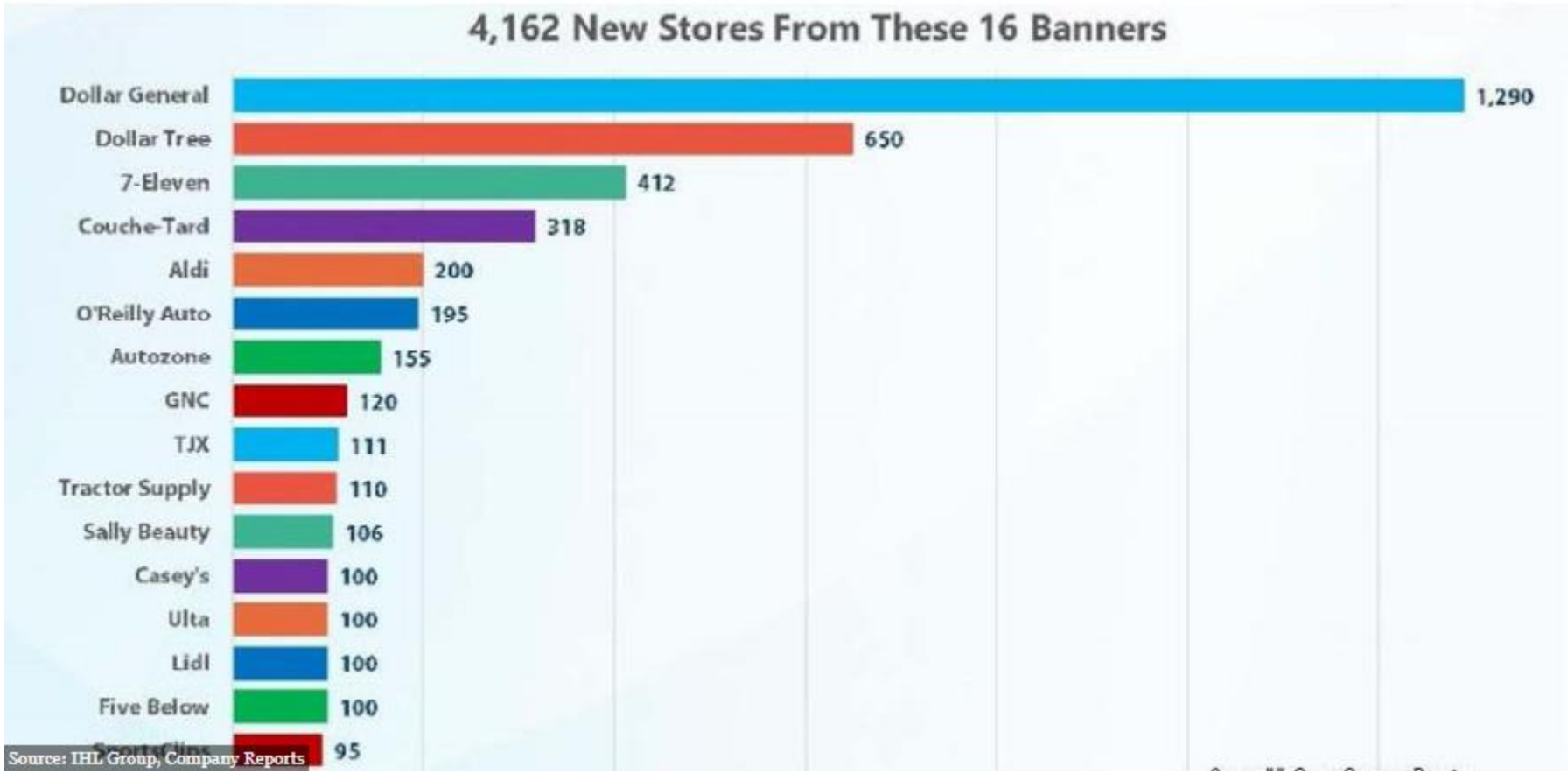
Source: U.S. Census Bureau

1(cont.) Not surprisingly, a number of retailers are closing stores



Source: Forbes, IHL Group, Company Reports

1(cont.) New store openings are dominated by discount/convenience stores



Source: Forbes, IHL Group, Company Reports

2. Consumer preference is shifting toward fresh food and away from packaged food...beer and soda consumption has also been declining in recent years

U.S. Packaged Food - Organic Volume

Company	1Q14	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	1Q16	2Q16	3Q16	4Q16	1Q17	2Q17	3Q17
Campbell Soup (vol/mix)	2.0%	(2.0%)	6.0%	1.0%	(3.0%)	(1.0%)	(2.0%)	(2.0%)	(2.0%)	(1.0%)	(1.0%)	(1.0%)	0.0%	(2.0%)	
Conagra Brands	(3.0%)	(7.0%)	0.0%	(1.0%)	0.0%	(2.0%)	0.0%	(3.0%)	(4.0%)	(4.0%)	(7.0%)	(7.0%)	(5.0%)	(5.0%)	
Frito-Lay NA	3.0%	2.0%	2.0%	2.0%	3.0%	0.0%	0.5%	1.0%	1.0%	2.0%	2.0%	1.0%	(1.5%)	0.0%	
General Mills (NA Retail)	(1.0%)	1.0%	(2.0%)	(3.0%)	(3.0%)	(4.0%)	(2.0%)	(3.0%)	(2.0%)	(5.0%)	(7.0%)	(10.0%)	(10.0%)	(8.0%)	(3.0%)
J.M. Smucker (vol/mix)	(1.0%)	0.0%	(5.0%)	(3.0%)	(4.0%)	5.0%	5.0%	1.0%	5.0%	(1.0%)	(3.0%)	(1.0%)	(1.0%)	(5.0%)	
Kellogg (North America)	(2.9%)	(4.0%)	(2.3%)	(3.5%)	(2.3%)	(0.9%)	(2.4%)	(1.3%)	(1.1%)	(2.4%)	(1.9%)	0.5%	(4.9%)	(3.7%)	
Kraft Heinz (U.S. vol/mix)							(3.9%)	(4.6%)	0.1%	(3.1%)	(0.5%)	1.4%	(4.2%)	(0.8%)	
Average	**(0.5%)**	**(1.7%)**	**(0.2%)**	**(1.3%)**	**(1.6%)**	**(0.5%)**	**(0.7%)**	**(1.7%)**	**(0.4%)**	**(2.1%)**	**(2.6%)**	**(2.3%)**	**(3.8%)**	**(3.5%)**	

Source: Company filings, KeyBanc Capital Markets Inc.

Note: Conagra changed its reporting structure in 3Q16; we are using the weighted average of Conagra's four segments as of 4Q16

Note: For those companies whose fiscal years do not end in December, we have taken their most recent quarterly results.

U.S. Beer and Soda Volume

	2012	2013	2014	2015	2016
U.S. industry beer volume[1]	0.8%	(1.8%)	(0.6%)	(0.3%)	(1.0%)
U.S./Canada non-alcoholic beverage can volume[2]	(1.2%)	(4.0%)	(2.7%)	(1.6%)	0.2%
Coke's North American CSD volume	(1.0%)	(2.0%)	(1.0%)	0.0%	0.0%
PepsiCo's North American CSD volume	(4.0%)	(5.0%)	(2.0%)	(2.0%)	(2.5%)

Source: [1] Per AB InBev estimates, [2] Per CMI, Company filings

2(cont.) Growth in HPC markets has slowed noticeably as well

Kimberly-Clark Organic Sales

	2011	2012	2013	1Q14	2Q14	3Q14	4Q14	2014	1Q15	2Q15	3Q15	4Q15	2015	1Q16	2Q16	3Q16	4Q16	2016	1Q17	2Q17
Total	3.0%	5.0%	4.0%	4.0%	5.0%	4.0%	3.0%	4.0%	5.0%	4.0%	5.0%	5.0%	5.0%	2.0%	3.0%	0.0%	1.0%	2.0%	(1.0%)	(1.0%)

Source: Company filings

Unilever Organic Volume

	2011	2012	2013	1Q14	2Q14	3Q14	4Q14	2014	1Q15	2Q15	3Q15	4Q15	2015	1Q16	2Q16	3Q16	4Q16	2016	1Q17	2Q17
Total	1.6%	3.4%	2.5%	1.9%	1.9%	0.3%	(0.4%)	1.0%	0.9%	1.3%	4.1%	1.9%	2.1%	2.6%	1.8%	(0.4%)	(0.4%)	0.9%	(0.1%)	0.0%
North America	(1.8%)	1.1%	(2.0%)	(1.0%)	0.9%	1.7%	1.2%	0.7%	(0.5%)	(1.3%)	1.7%	(1.7%)	(0.5%)	(0.1%)	1.1%	0.9%	2.5%	1.1%	(1.1%)	0.6%

Source: Company filings

Colgate-Palmolive Organic Volume

	2011	2012	2013	1Q14	2Q14	3Q14	4Q14	2014	1Q15	2Q15	3Q15	4Q15	2015	1Q16	2Q16	3Q16	4Q16	2016	1Q17	2Q17
Total	3.0%	3.0%	5.0%	5.0%	2.5%	2.0%	2.5%	3.0%	1.5%	3.0%	1.5%	1.0%	2.0%	3.5%	1.5%	1.5%	(1.0%)	1.5%	(2.0%)	(1.0%)
North America	2.0%	2.0%	3.5%	4.5%	2.5%	3.0%	3.0%	3.5%	1.5%	3.0%	2.5%	2.0%	2.0%	4.0%	3.5%	1.5%	0.0%	2.5%	(5.0%)	(2.0%)

Source: Company filings

So what does all this mean for the paper markets?

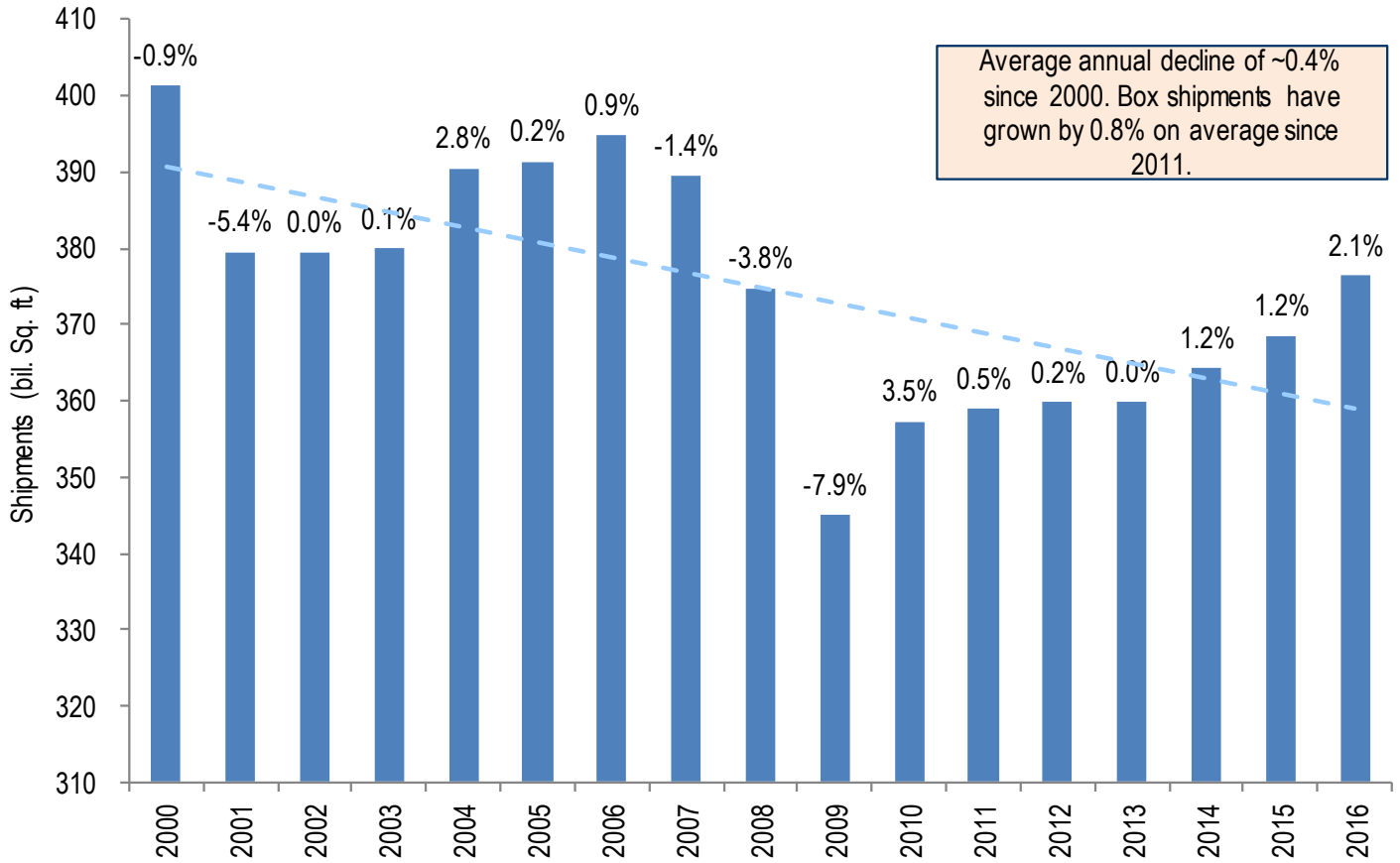
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Containerboard

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Box demand has been flattish for years, but improved significantly in 2016 likely on account of e-commerce and an improved agricultural market on the West Coast

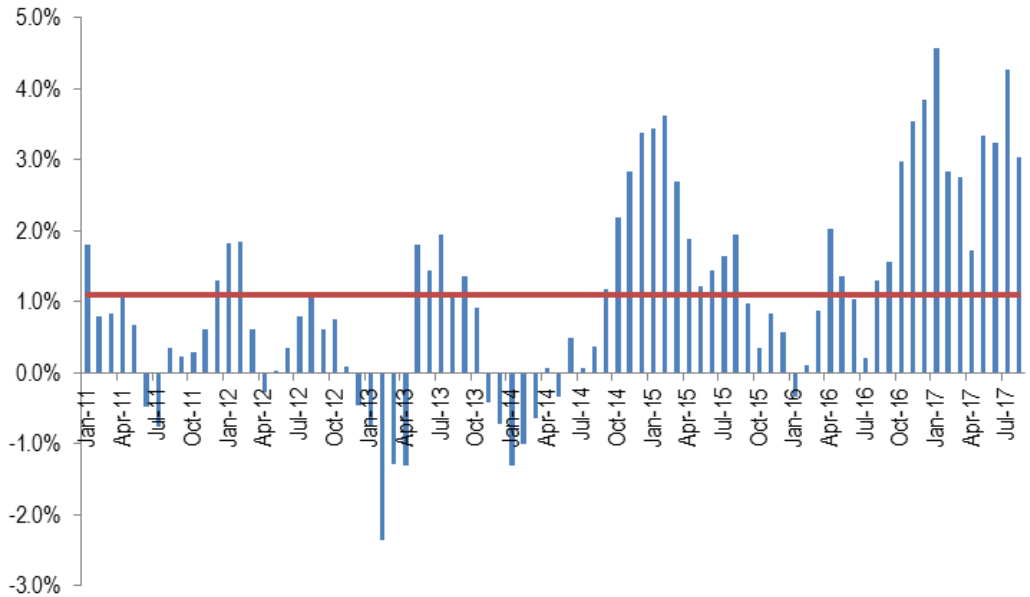
U.S. Actual Box Shipments



Source: FBA

Box demand has been unusually strong over the last 12 months, likely on account of e-commerce and an improved agricultural market on the West Coast

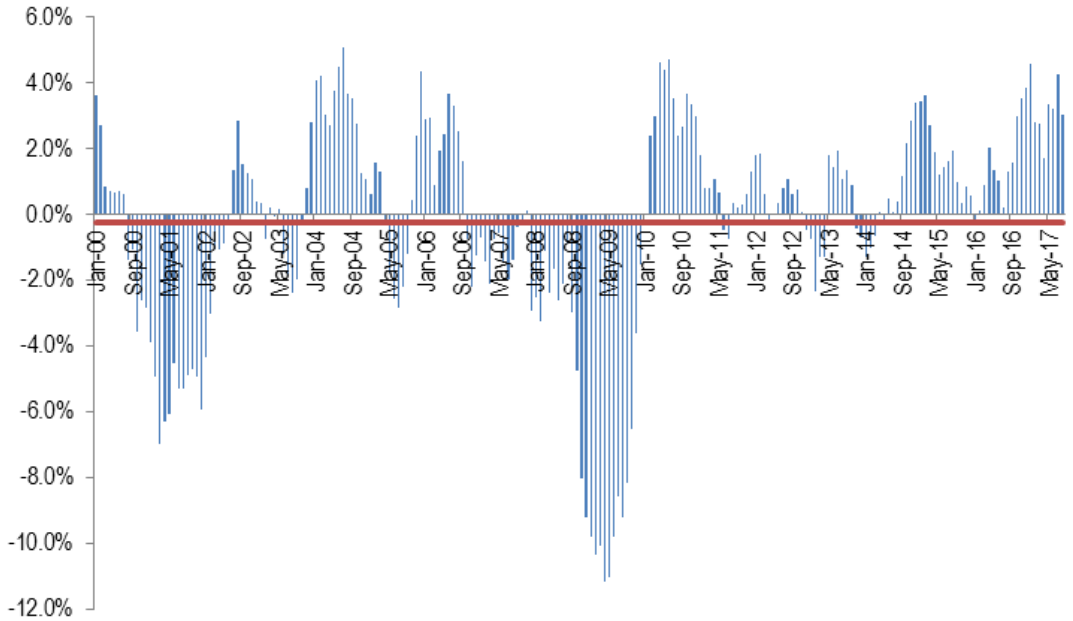
Rolling 3-Month Blended Average Box Shipments 2011-pres. (through Aug. 2017)



Source: FBA, KeyBanc Capital Markets Inc.

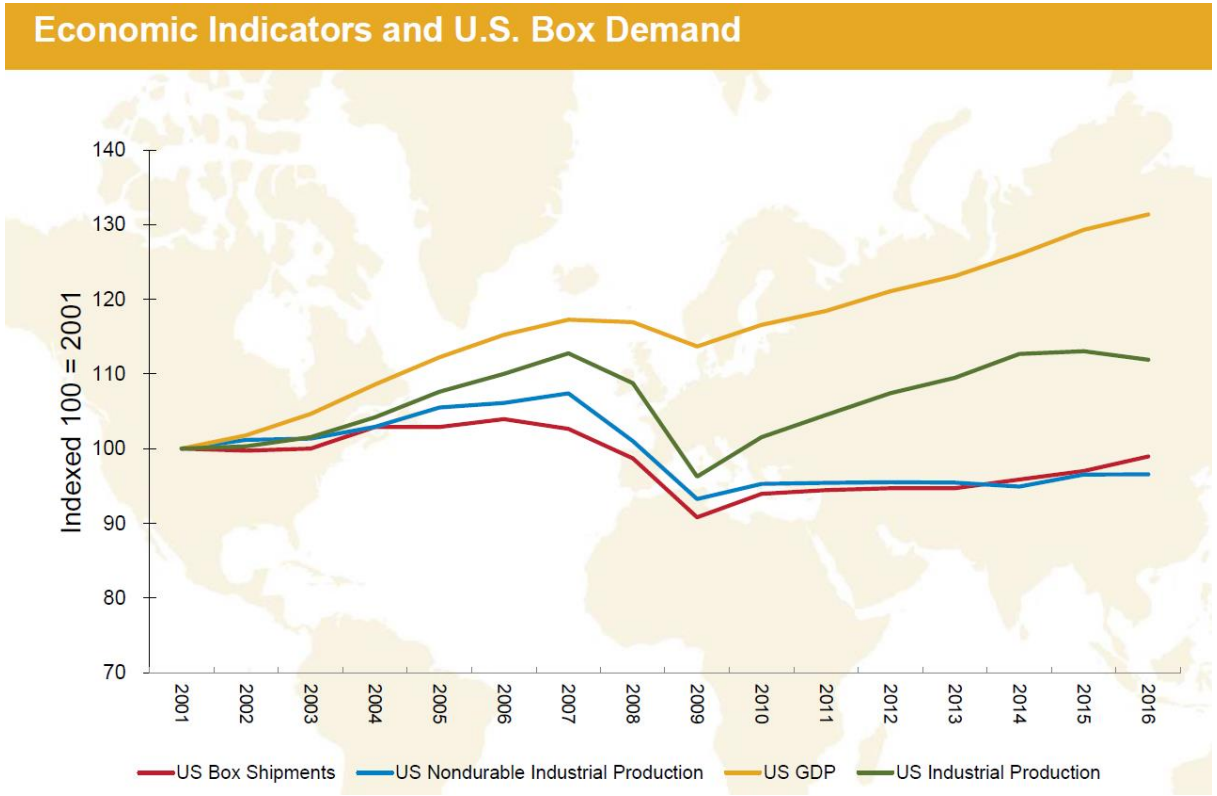
Box demand has been unusually strong over the last 12 months, likely on account of e-commerce and an improved agricultural market on the West Coast

Rolling 3-Month Blended Average Box Shipments 2000-pres. (through Aug. 2017)



Source: FBA, KeyBanc Capital Markets Inc.

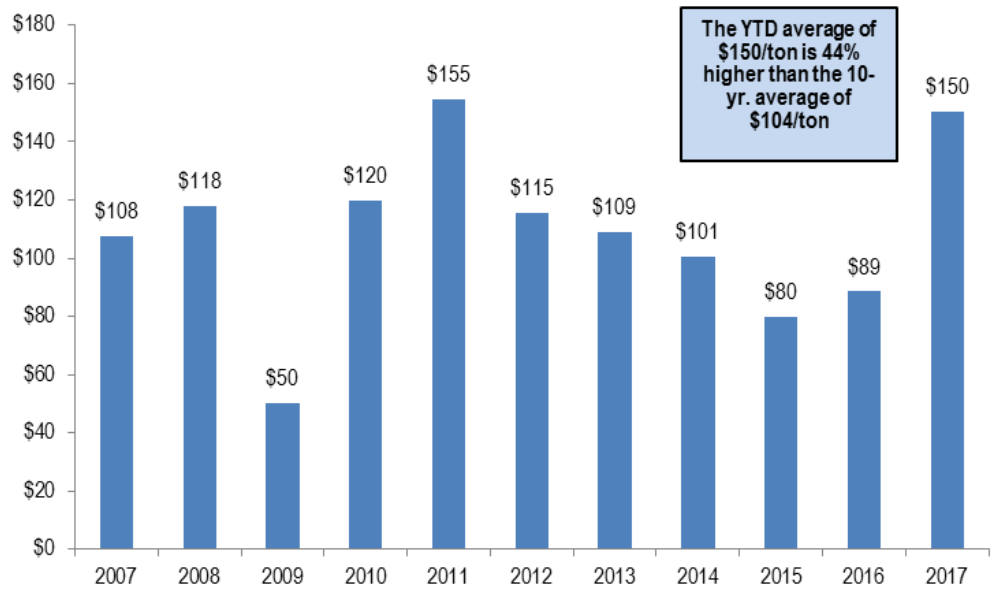
Box demand has typically tracked non-durable demand, but that relationship has broken down of late



Source: International Paper

While e-commerce has helped boost box demand, it has also helped push up OCC prices, such that the YTD average price is 44% above the 10-year average

U.S. Average OCC Price (Jan.-Sep., $/ton)



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Source: RISI

Even with e-commerce growth, there will likely be longer-term pressure on box demand given weak demand for non-durable goods, which is a major end market for boxes…

U.S. Packaged Food - Organic Volume

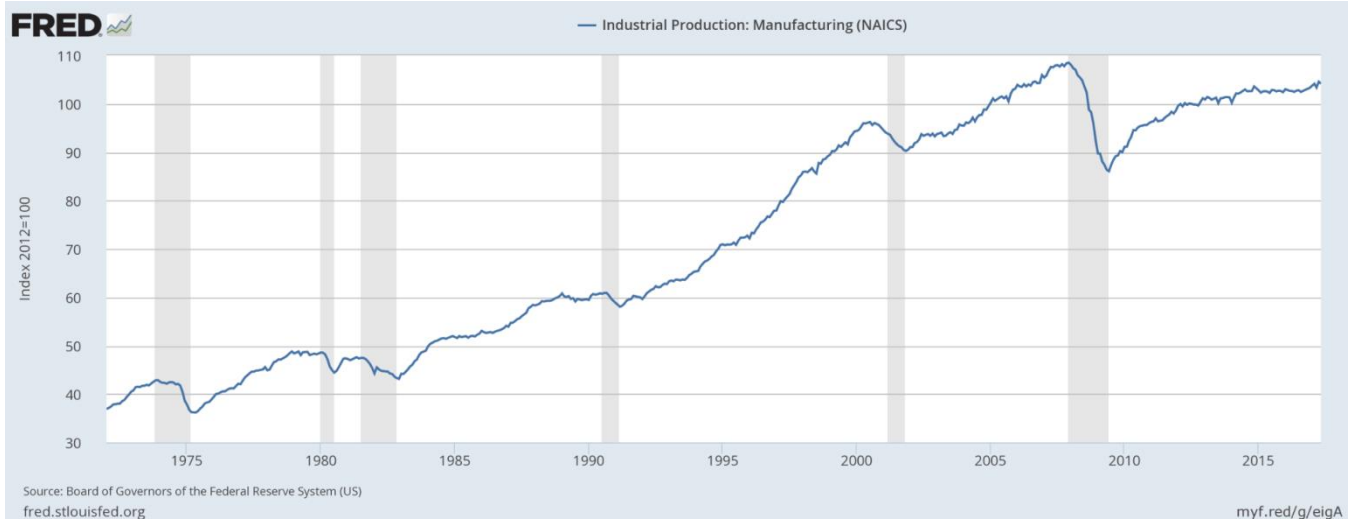
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Conagra Brands	(3.0%)	(7.0%)	0.0%	(1.0%)	0.0%	(2.0%)	0.0%	(3.0%)	(4.0%)	(4.0%)	(7.0%)	(7.0%)	(5.0%)	(5.0%)	
Frito-Lay NA	3.0%	2.0%	2.0%	2.0%	3.0%	0.0%	0.5%	1.0%	1.0%	2.0%	2.0%	1.0%	(1.5%)	0.0%	
General Mills (NA Retail)	(1.0%)	1.0%	(2.0%)	(3.0%)	(3.0%)	(4.0%)	(2.0%)	(3.0%)	(2.0%)	(5.0%)	(7.0%)	(10.0%)	(10.0%)	(8.0%)	(3.0%)
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Kellogg (North America)	(2.9%)	(4.0%)	(2.3%)	(3.5%)	(2.3%)	(0.9%)	(2.4%)	(1.3%)	(1.1%)	(2.4%)	(1.9%)	0.5%	(4.9%)	(3.7%)	
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Source: Company filings, KeyBanc Capital Markets Inc.

Note: Conagra changed its reporting structure in 3Q16; we are using the weighted average of Conagra's four segments as of 4Q16

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Non-Durable Industrial Production

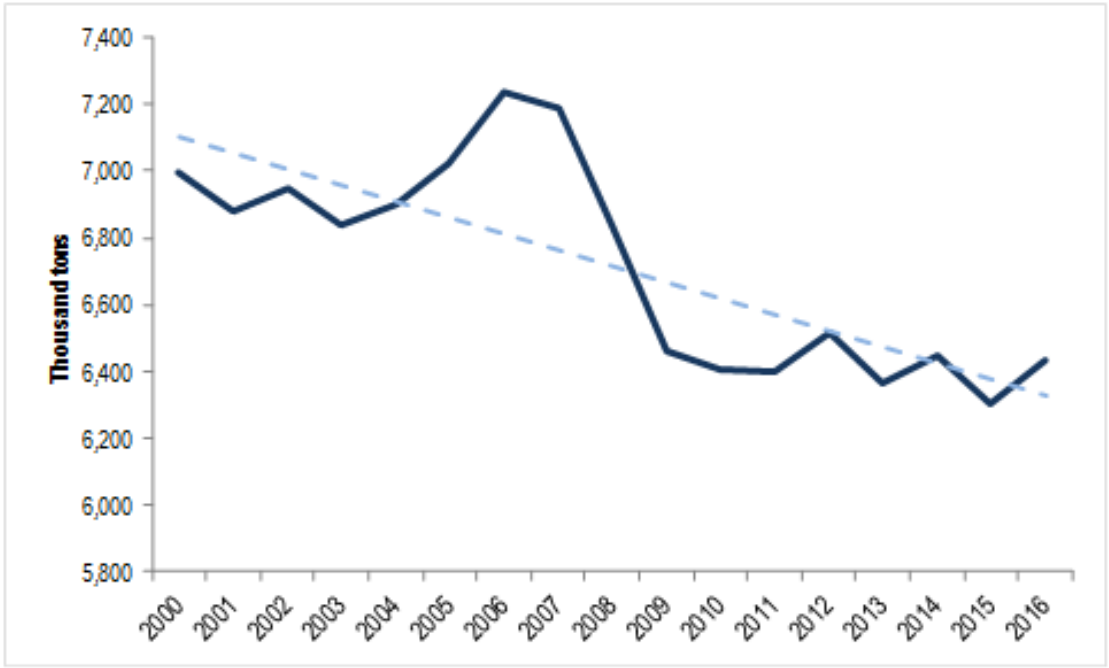


Source: Company filings, Board of Governors of the Federal Reserve System (U.S.), KeyBanc Capital Markets Inc.

Boxboard

Boxboard demand has been trending downward, largely on account of declining CPG demand

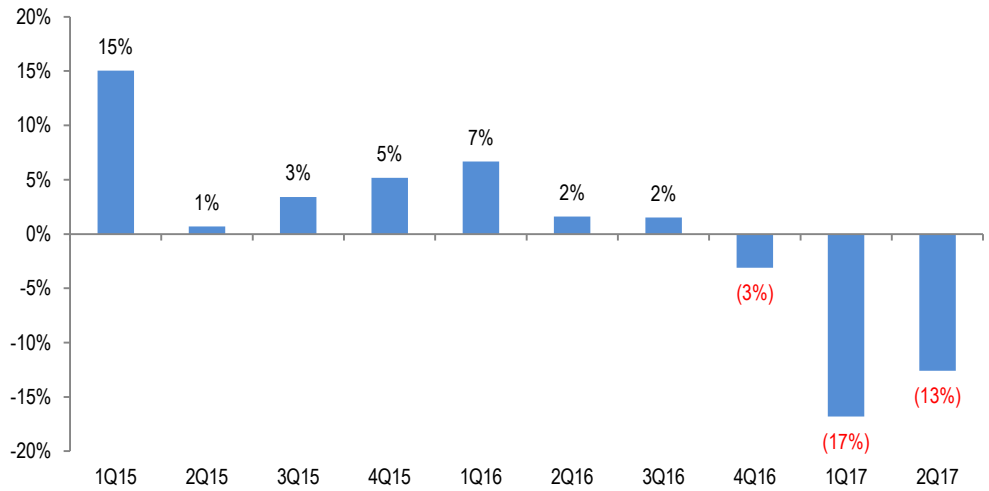
N.A. Boxboard Apparent Consumption 2000-2016



Source: RISI, KeyBanc Capital Markets Inc.

Graphic Packaging's (GPK) adj. EBITDA has declined on account of weak demand and higher input costs

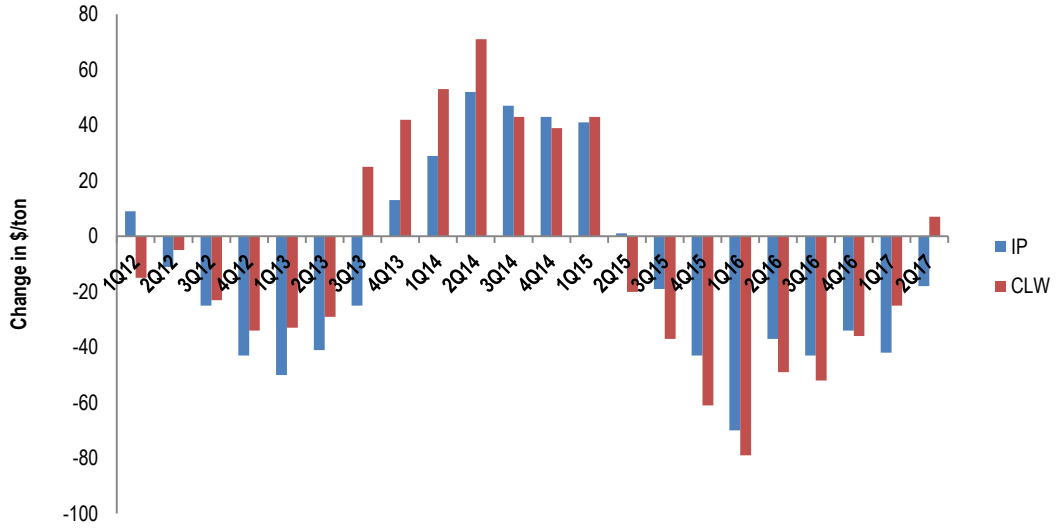
Chg. in GPK's Adj. EBITDA



Source: Company filings

SBS price/mix has declined for International Paper (IP) and Clearwater Paper (CLW) as well

SBS Producers' Price/Mix Trends



Source: Company reports, KeyBanc Capital Markets Inc.

Tissue

Tissue producers have faced a "competitive" and "challenging" environment in 2017

"I will acknowledge near-term environment in tissue has been a little bit more challenging. We've experienced more competitive activity, notably in core markets of ours like North America and Western Europe…So it has been a challenging environment in the first half. We expect the environment to continue to be challenging…" – *Kimberly-Clark Corp. at Barclays Global Consumer Staples Conference*

KeyBanc Capital Markets

Source: Thomson Reuters

Tissue producers have faced a changing retail channel mix away from grocery toward discount retailers

Change in Industry Retail Channel Mix

U.S. TISSUE INDUSTRY RETAIL CHANNEL MIX[2]	2009	2016
Grocery	37%	31%
Mass+ Supercenter	28%	29%
Club	22%	25%
Drug	7%	4%
Dollar	3%	4%
All Other	3%	7%

Source: Clearwater Paper Investor Presentation

[2] IRI panel data for Retail channel share by dollar amount sold through week ending Jan. 1, 2017

There is also substantial capacity being added in the coming years, which has put pressure on prices

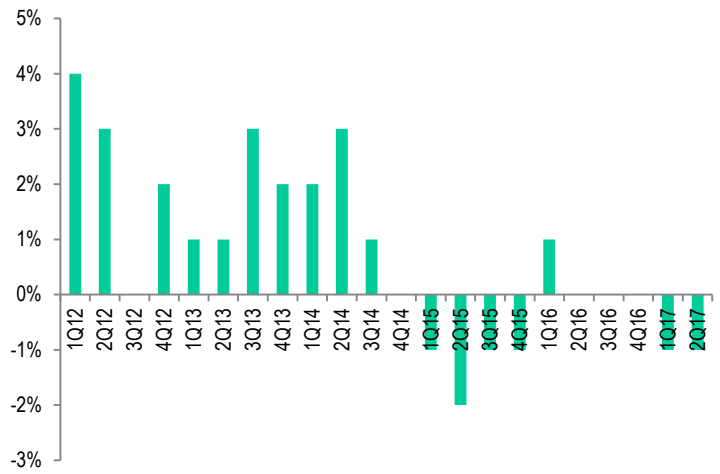
2016-2019 Capacity Changes in the North American Tissue Industry

COMPANY	MILL/LOCATION	CONV/TAD	CAPACITY CHANGE	ESTIMATED DATE	CHANNEL/BUSINESS/PRODUCTS
Announced New Capacity through 2019					
Von Drehle Corporation	Natchez, MS	Conv	35,000	2016:Q1	Valmet Advantage NTT
St. Croix Tissue (APP)	Baileyville, ME	Conv	70,000	2016:Q1	PrimeLine W8 PM from Adritz
First Quality Tissue	Anderson, SC	TAD	70,000	2016:Q2	TAD PM Valmet
St. Croix Tissue (APP)	Baileyville, ME	Conv	70,000	2016:Q3	PrimeLine W8 PM from Andritz
Clearwater Paper	Neenah, WI	Conv	(32,000)	2016:Q4	Shutdown of 2 conventional PMs
Orchids Paper Products	Barnwell, SC	Conv	35,000	2017:Q1	PM likely Valmet
Resolute Forest Products	Calhoun, TN	Conv	66,000	2017:Q1	Valmet Advantage NTT
Marlboro Paper Inc.	Drummondville, QC	Conv	(6,000)	2017:Q1	Permanent mill closure
Deerfield Tissue	Augusta, GA	Conv	(20,000)	2017:Q2	Permanent mill closure
Essity (ex-SCA)	Flagstaff, AZ	Conv	(63,000)	2017:Q2	Permanent mill closure
Little Rapids Corporation	Shawano, WI	Conv	11,000	2017:Q3	Replacement PM
Kruger Products	Crabtree, QC	Conv	22,000	2017:Q3	Replacement PM
Sofidel America	Circleville, OH	Conv	77,000	2018:Q1	Valmet Advantage NTT
ST Tissue	Franklin, VA	Conv	50,000	2018:Q2	PM Rebuild
Sofidel America	Circleville, OH	Conv	77,000	2018:Q3	Valmet Advantage NTT
First Quality Tissue	Anderson, SC	TAD	70,000	2018:Q4	Valmet Advantage TAD PM
Irving Consumer Products	Fort Edwards, NY	TAD	70,000	2018:Q4	Valmet Advantage TAD PM
Clearwater Paper	Shelby, NC	Conv	70,000	2019:Q1	Valmet Advantage NTT
First Quality Tissue	Lock Haven, PA	TAD	70,000	2019:Q2	Andritz TAD PM
First Quality Tissue	Anderson, SC	ATMOS	75,000	2019	Voith Retail/P.L./BRT
Georgia-Pacific	Eastern USA	TAD	80,000	2019	TAD PM
Net Capacity Change through 2019			897,000		

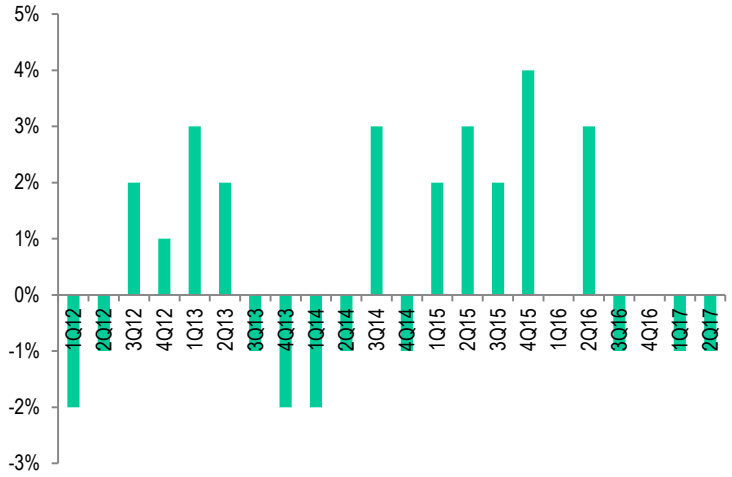
Source: RISI, Clearwater Paper Investor Presentation
Note: Total tissue capacity is ~10M tons

On account of higher capacity and a shifting retail mix, Kimberly-Clark has experienced declining volume and price in recent quarters

Kimberly-Clark Consumer Tissue Price Growth



Kimberly-Clark Consumer Tissue Volume Growth



KeyBanc Capital Markets

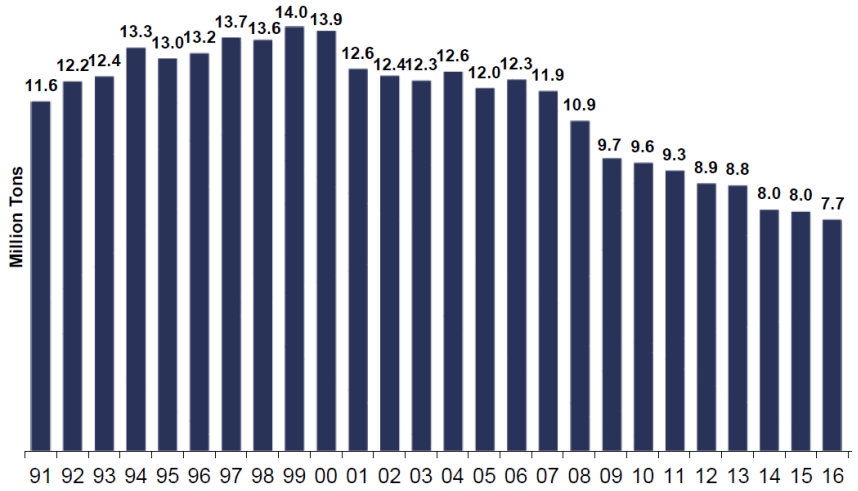
Source: Company filings

Uncoated Freesheet

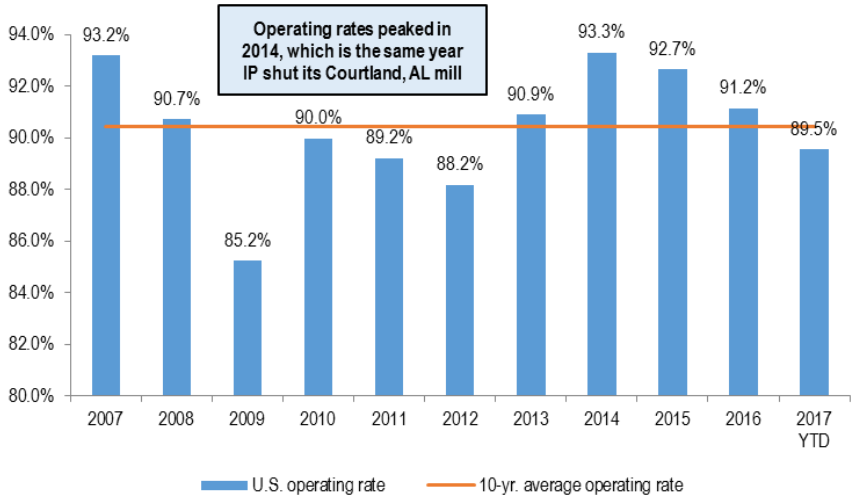
KeyBanc Capital Markets

The market for uncoated freesheet paper is declining at a rate of 3-5%/year; industry operating rates have been declining since 2014 as a result

U.S. Uncoated Freesheet Demand



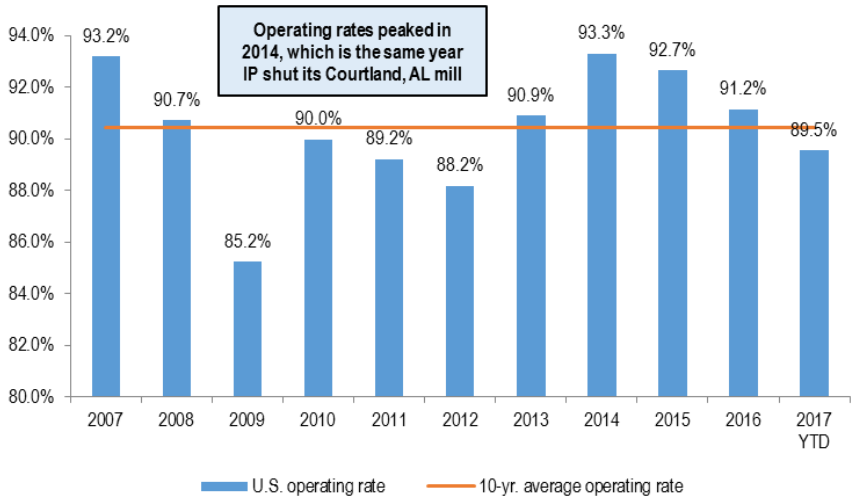
U.S. Uncoated Freesheet Operating Rates



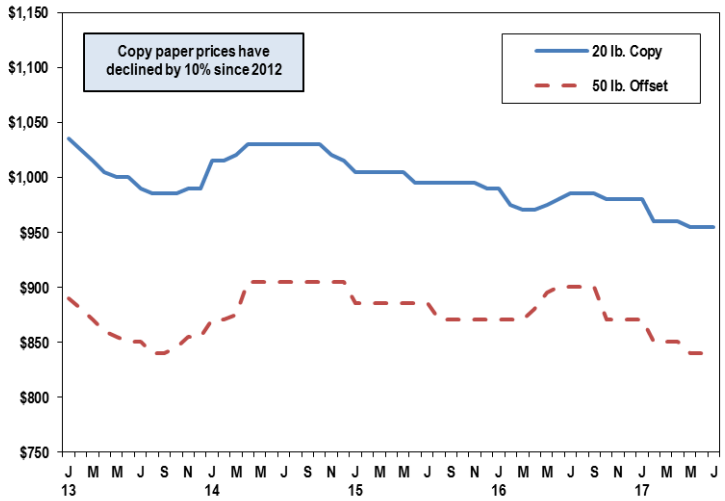
Source: International Paper, KeyBanc Capital Markets Inc., RISI, AF&PA

YTD, the uncoated freesheet market has been weak, with low operating rates, and an abundance of supply

U.S. Uncoated Freesheet Operating Rates



U.S. Uncoated Freesheet Prices ($/ton)



Demand for uncoated freesheet (paper) has declined by 5.1% YTD, which is worse than what Domtar estimates is an average annual decline of 3-5%. Consequently, operating rates are below average and copy paper prices have declined by $25/ton since January.

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Source: RISI, AF&PA

Questions?



Disclosure Appendix

Important disclosures for the companies mentioned in this report can be found at https://key2.bluematrix.com/sellside/Disclosures.action.
Please refer to the analysts' recently published reports for company-specific valuation and risks.

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	KeyBanc Capital Markets					Industrial				
			IB Serv/Past 12 Mos.					IB Serv/Past 12 Mos.	
Rating	Count	Percent	Count	Percent	Rating	Count	Percent	Count	Percent
Overweight [OW]	294	44.08	63	21.43	Overweight [OW]	84	42.42	12	14.29
Sector Weight [SW]	362	54.27	55	15.19	Sector Weight [SW]	110	55.56	9	8.18
Underweight [UW]	11	1.65	1	9.09	Underweight [UW]	4	2.02	1	25.00

Rating System:
Overweight (OW) – We expect the stock to outperform the analyst's coverage sector over the coming 6-12 months.
Sector Weight (SW) – We expect the stock to perform in line with the analyst's coverage sector over the coming 6-12 months.
Underweight (UW) – We expect the stock to underperform the analyst's coverage sector over the coming 6-12 months.

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