



MORNING BRIEFING

July 3, 2019

Plastic: The Last Straw

The next *Morning Briefing* will be sent on Monday, July 8.

See the [collection](#) of the individual charts linked below.

(1) Let's hit the beach. (2) Fracking boom sparks explosion in ethane production and plastic plants. (3) The plastics industry is a large driver of future demand for oil and gas. (4) Plastics getting trashed from all directions as recycling and reduced use are pushed by the woke, including some in corporate America. (5) Revised advice for this year's graduates? (6) Companies embracing robots. (7) Waiting for robots to flip burgers at 4th of July BBQs.

Beach Reading List: Forbes Picks Dr. Ed's Book. It's time again for backyard barbecues, beach chairs, and summer reading. At the end of June, Forbes picked six of [The Best Investing Books](#). It said this about mine, third on the list:

"One way to invest is to look at megatrends. Often these are about technology transformations, such as the internet, cloud computing and social networking. To help analyze trends, Edward Yardeni's [Predicting the Markets](#) is a great resource. Keep in mind that—during the past four decades—he has a solid track record of anticipating waves. Just some include globalization and disinflation. He also has a knack for predicting bull-bear turns in the markets."

Energy & Materials: Peak Plastic? The US fracking boom led to low-cost natural gas and natural gas liquids, like ethane. Low-cost ethane prompted many large corporations to invest billions of dollars in US plants that turn ethane into the raw material used to make plastic. That's brought jobs and economic growth to areas hard hit by the decline of US industry.

What could go wrong? Well, recent months have seen a groundswell of support for the elimination of single-use plastics and for plastic recycling. Stories of dead whales with bellies full of plastic products and pictures of litter in the deepest depths of the ocean have flooded the Internet. Municipalities and corporate America have jumped on the bandwagon, making pronouncements aplenty.

Could tree-hugging Millennials (and their "woke" elders) throw cold water on industry's plans to boost plastic production? Would Mr. McGuire be wrong if the 1967 movie "The Graduate" was shot today? Is the future not [plastics](#)? I asked Jackie to take a look. Here is her report:

(1) *Cheap feedstock.* The US fracking miracle has led to a 38% increase in natural gas gross withdrawals in 2018 compared to 2010, according to a 6/4 US Energy Information Administration [report](#). Remarkably, natural gas production has continued to increase over those years, even though the number of rigs being used tumbled and remains low ([Fig. 1](#)). This bounty has led to an extremely low price for natural gas futures, between \$2 and \$3 for much of the past four years ([Fig. 2](#)).

The record amounts of natural gas go to processing plants, where about 90% of hydrocarbon gas liquids (HGLs) are produced. The remainder is produced at petroleum refineries. Ethane is one of the

HGLs, and it's used in the production of plastics, resins, and fibers in many consumer goods. Ethane accounted for 1.7 million barrels a day (mbd) of the 5.0 mbd of HGLs produced last year. Ethane [production](#) has more than doubled from 0.88 in 2010, and it's up 20% from 2017.

As we noted in the 6/20 [Morning Briefing](#), BP's [2019 Energy Outlook](#) puts forward two scenarios about future energy consumption by 2040. If governments ban single-use plastics, the amount of liquid feedstocks used would grow only 4 mbd instead of growing by 10 mbd under the assumption that regulations tighten only modestly.

(2) *Producers produce.* Manufacturers have been quick to build new plants that can turn ethane and other gases into ethylene and other plastic feedstocks. The American Chemistry Council [estimates](#) that since 2010 the chemical industry has announced 333 new projects valued at \$202 billion. About half are near or at completion, and the rest are still in the planning stage.

US manufacturers have added 6.5 million metric tons of polyethylene production capacity since 2017, according to ICIS data quoted in Petrochemical Update's 2/26 [article](#). US producers are expected to add another 12.1 million metric tons of production before 2022. About 25% of polyethylene production is currently exported, and as production expands exports could rise to 90%.

The Gulf Coast has long been a center for ethylene production. Planned projects in Texas include new plants by LyondellBasell and ExxonMobil, and Taiwanese producer Formosa Plastic recently received a permit for a new plant in Louisiana. A second production hub is developing in the Appalachian region (Ohio, Pennsylvania, and West Virginia). Among the largest projects there is Royal Dutch Shell's plant being built outside Pittsburgh; it could cost up to \$10 billion and be completed in the early 2020s, a 3/26 [NYT article](#) stated. Projects in development include an Ohio polyethylene plant owned by PTT Global Chemical of Thailand and South Korea's Daelim Industrial.

These plants will have direct and indirect economic benefits. "More than 6,000 tradespeople and laborers will be on the site during the peak summer construction period (of the Shell plant). Some 600 full-time workers will manage automated technology to operate the completed plant. A 97-mile pipeline from gas separation installations in Ohio and West Virginia will supply ethane; a 250-megawatt gas-fired electrical generating station will power the plant," the [NYT](#) article states. And then there are the indirect benefits that will go to businesses serving the folks working at the plants, the local housing industry, and those who are transporting the products being produced for export.

(3) *Not everyone is happy.* The chemical plants presumably will bring pollution and continue to supply the world's plastics habit. "If [the planned projects] succeed in attracting investment to build all these new facilities, a new generation of cheap plastics will flood markets around the world, exposing frontline communities to toxic risks and the world's rivers and oceans to an endless stream of plastic waste," said Steven Feit, staff attorney at the Center for International Environmental Law in a 9/21/17 [press release](#).

(4) *Could the recycling movement take hold?* The only thing standing between these plants and lots of profits is the growing push against the use of single-use plastics and a push to increase recycling. National Geographic published a 6/10 [list](#) of recently announced recycling efforts. Most recently, Canadian Prime Minister Justin Trudeau announced plans to ban single-use plastics by 2021. He'll also make plastic manufacturers and companies that use plastic packaging responsible for the collection and recycling of the materials.

The European Union's Parliament voted to ban the top 10 single-use plastic items found on European beaches by 2021 and to shoot for the recycling of 90% of plastic bottles by 2025. Single-use plastics

are banned from Peru's natural and cultural protected areas, including Machu Picchu, the country announced in January. Washington, DC banned the use of plastic straws at the start of this year, following the lead of Seattle, which banned them last year. And India's Prime Minister Narendra Modi said last year that India would eliminate single-use plastics by 2022.

Vermont and Maine are among the many US states that have banned plastic bags and other single-use plastics this year. "State lawmakers have introduced at least 95 bills in 2019 related to plastic bags, according to the National Conference of State Legislatures (NCSL). Most of these bills would ban or place a fee on plastic bags. Others would preempt local government action or improve bag-recycling programs. Plastic bags have been taxed or banned in 127 nations, according to a United Nations count," a 6/24 Recycling Today [article](#) stated.

Even corporate America is going green. Pepsi will begin packaging in aluminum cans its Aquafina water sold in US food service outlets and its Bubly seltzers next year. More than half of aluminum soda and beer cans are recycled in the US, and 70% of the aluminum used in cans is recycled, according to a 7/1 MarketWatch [article](#). That's far better than plastic beverage containers: just 31.2% of them are recycled, and only 3% are made of recycled plastic. In addition, Pepsi's LIFEWTR will be sold in 100% recycled plastic bottles.

"Tackling plastic waste is one of my top priorities and I take this challenge personally," PepsiCo Chairman and CEO Ramon Laguarta said in a [press release](#).

Coca-Cola Great Britain announced that Sprite bottles will switch from green plastic to clear plastic to enable recycling starting in September. Sprite will also increase the recycled material used in bottles by 50% in 2020, according to a 6/27 [post](#) on Recycling Today. In addition, GLACEAU Smartwater bottles will be made from 100% recycled materials by the end of this year.

(5) *Disruptive development?* The Lawrence Berkeley National Laboratory has developed a new plastic material that can be more easily recycled. It's difficult to separate current plastic objects from additives that might give the plastic color, flexibility, or toughness, explained a 5/8 *Smithsonian* [article](#). This new polymer—called "polydiketoenamine," or "PDK"—can be separated from additives after being dunked in an acidic solution. Colorado State University is developing another recyclable polymer. We'll be watching to see if the world can kick its plastic addiction.

(6) *The numbers.* The S&P 500 Energy sector is the second-worst-performing sector in the S&P 500 so far this year ([Fig. 3](#)). Fears of a global economic slowdown have overshadowed news of OPEC's agreement to extend its output cuts into Q1-2020. Here's the S&P 500 performance derby ytd through Tuesday's close: Information Technology (27.9%), Consumer Discretionary (22.1), Industrials (20.5), Communication Services (19.2), S&P 500 (18.2), Real Estate (18.1), Financials (17.2), Materials (16.8), Consumer Staples (15.0), Utilities (12.5), Energy (11.2), and Health Care (7.7) ([Fig. 4](#)).

Analysts appear optimistic that the Energy sector's fortunes will improve next year. The Energy sector is expected to have a slight drop in revenue this year and a 6.8% increase in revenue in 2020 ([Fig. 5](#)). Likewise, earnings are forecast to decline 10.1% this year and rebound 29.8% in 2020 ([Fig. 6](#)). Net earnings revisions have just turned positive in the past few months, and the Energy sector's forward P/E is 15.2, in line with levels during previous periods of neither boom nor bust ([Fig. 7](#)).

Disruption: The Robots Arrive. The right technology at the right time can be magical. That magic alignment may be about to push the mass adoption of industrial robots. ARK Investment Management forecasts a sharp decline in the price of industrial robots just as some manufacturers are looking to move manufacturing outside of China because of existing and threatened tariffs and keep costs low in

the process. Robots may be the answer. Let's take a look:

(1) *Cheaper by the day.* Industrial robot costs will drop by 50%-60% by 2025, and that should prompt an uptick in robot adoption, according to a 4/17 ARK [report](#). ARK forecasts robot unit sales will hit 3.4 million in 2025, up from about 380,000 in 2017. Its unit cost estimate of \$10,856 is far below Boston Consulting Group's estimate of \$23,831.

"Fundamental to our analysis is Wright's Law: that is, for every cumulative doubling in number of units produced, costs will decline by a consistent percentage," the ARK report states. Boston Consulting Group, conversely, sees the price improvements stalling, as the underlying material costs can't continue to fall. But ARK believes manufacturing innovations like 3D printing will reduce the use and weight of materials, prolonging the cost saving.

(2) *History plays a role.* President Trump's existing and threatened tariffs on goods produced in China and imported into the US give manufacturers a renewed appreciation for a geographically diversified manufacturing base that potentially includes the US. To exit China and keep costs down, manufacturers could look toward robots. Even before the tariffs hit, the market for all robots was expected to more than double from \$103.1 billion in 2018 to \$214.4 billion by 2021, according to data from International Data Corp. cited in a 1/8 [article](#) on ManufacturingAutomation.com.

(3) *Tech advancing in leaps and bounds.* Manufacturing robots need a lesson in sensitivity. So one South Korean team is using light to measure pressure. The researchers are hoping the technology could be wrapped around robots, making the sensors like a skin. Collaborative robots are learning how to work with humans. Using them is attractive because it doesn't require entirely changing the manufacturing line and, since humans would remain on the job, consistency can be improved.

Boston Dynamics has created a robot that can pick, move, and stack boxes, skills that are useful in a warehouse. Suction cups allow for lifting, and an "on-board vision system" permits the robot to see what it's doing, according to this 3/28 [writeup](#) in *Popular Mechanics*.

(4) *Marty goes shopping.* Grocers, renowned for slim margins, are embracing robots. Marty, the Robot is coming soon to 500 Giant Food Stores, Stop & Shop, and Martin's locations. The googly-eyed robot built by Brain Corp. will be on the lookout for problems, like spills or trip hazards. Upon identifying a hazard, Marty will call for help over the store's public announcement system. Marty also will keep an eye out for out-of-stock and incorrectly priced items, according to a 1/14 *Popular Mechanics* [article](#).

Walmart uses Brain robots to clean aisles. Brain [announced](#) on 4/10 that Walmart will add another 1,500 robot floor cleaners to its stores by year-end, bringing its total robot fleet to 1,860.

Amazon long has had robots that picked items off of shelves and brought them to workers to pack. Joining them, Reuters [reported](#) on 5/13, will be machines that box and label ordered items at four to five times humans' rate.

Now if only Amazon would deliver a robot to man our Fourth of July barbecue.

CALENDARS

US. Wed: ADP Employment 140k, Jobless Claims 220k, Challenger Job Cuts, Merchandise Trade - \$53/4b. Factory Orders -0.5%, ISM & IHS Markit NM-PMIs 56.0/50.7, MBA Mortgage Applications, DOE Crude Oil Inventories, Baker-Hughes Rig Count. **Thurs:** None. **Fri:** Nonfarm Payroll Employment Total, Private, and Manufacturing 163k/155k/1k, Unemployment Rate 3.6%, Average Hourly Earnings

0.3%/m/m/3.2%/y/y, Average Weekly Hours 34.4. (DailyFX estimates)

Global. Wed: Eurozone, Germany, France, and Italy C-PMIs 52.1/52.6/52.9/49.5, Eurozone, Germany, France, and Italy NM-PMIs 53.4/55.6/53.1/50.0, UK C-PMI & NM-PMI 51.0/51.0, China Caixin NM-PMI 52.6. **Thurs:** Eurozone Retail Sales 0.4%/m/m/1.6%/y/y, Japan Household Spending 1.4% y/y. **Fri:** Germany Factory Orders -0.1%/m/m/-6.3%/y/y, Japan Leading & Coincident Index 95.3/103.2. (DailyFX estimates)

STRATEGY INDICATORS

S&P/Russell LargeCaps & SMidCaps ([link](#)): All of these price indexes have healthy gains so far in 2019. LargeCaps is back at record highs, and only the S&P SmallCap 600 is still in a correction. Here's how they rank ytd through Monday's close, along with their percentage changes since LargeCap's record highs in recent weeks and SMidCap's in late August: Russell LargeCap 1000 (18.6% ytd, record high), S&P LargeCap 500 (18.2, record high), S&P MidCap 400 (17.4, -4.8), Russell SmallCap 2000 (16.4, -9.8), and S&P SmallCap 600 (13.0, -13.1). Forward earnings rose last week for all three S&P indexes, continuing their rebounds that began during March. LargeCap's has risen during 17 of the past 20 weeks; MidCap's 12 of the past 16 weeks; and SmallCap's 11 of the past 14 weeks. LargeCap's was at a record high for a fourth week for the first time since late October, while MidCap's and SmallCap's are 1.0% and 5.5% below their mid-October highs. During October, analysts had been expecting double-digit percentage earnings growth for 2019. While those forecasts have dropped sharply since then, they are stabilizing now. Here are the latest consensus earnings growth rates for 2018, 2019, and 2020: LargeCap (22.7%, 2.8%, 11.7%), MidCap (22.7, 0.8, 14.3), and SmallCap (22.4, 2.7, 18.7).

S&P 500 Growth vs Value ([link](#)): The S&P 500 Value index surged 7.9% during June, ahead of the 6.1% rise for the S&P 500 Growth index. On a ytd basis, Growth index still leads with a gain of 20.2% through Monday's close, ahead of the 16.1% rise for Value. Both of these indexes are out of a correction now and close to record highs: Growth is 0.1% below its 6/20 record high, while Value is 2.9% below its record high more than 18 months ago on 1/26/18. Since the election in late 2016, Growth's 51.4% gain is more than double the 24.7% increase logged by Value. Looking at the fundamentals, Growth is expected to deliver higher revenue growth (STRG) and earnings growth (STEG) than Value over the next 12 months. Specifically, 7.8% STRG and 9.3% STEG are projected for Growth, respectively, versus 4.1% and 6.2% for Value. Prior to the selloff in February 2018, Growth's P/E of 21.8 on 1/26/18 was its highest since May 2002, while Value's 16.6 on 1/3/18 was its highest since April 2002. Growth's valuation is at the highest level since the Tech bubble deflated in 2002. Through Monday, Growth's P/E was back up to 21.3 from its 50-month low of 15.9 on 12/24, and Value's 13.8 was up from a six-year low of 11.5 on 1/3 of this year. Regarding NERI, Growth's was positive in June for a second month, but dropped to 2.9% from 4.1% in May. That compares to a 25-month low of -4.4% in February and a record high of 22.3% in March 2018. Value's NERI was negative in June for an eighth month, edging down to -1.8% from a six-month high of -1.5%; that compares to a 34-month low of -9.8% in February and a record high of 21.2% in March 2018. The Tax Cuts and Jobs Act (TCJA) sharply boosted the consensus forward earnings estimates and the forward profit margin for both Growth and Value. They're rising again now after dropping in late 2018, but remain below their record highs. Growth's forward profit margin of 16.0% is up from 14.4% prior to the TCJA's passage, but down from its record high of 16.7% during mid-September. Value's forward profit margin of 10.3% is down from a record high of 10.5% in December, but up from 9.1% prior to the TCJA.

US ECONOMIC INDICATORS

Construction Spending ([link](#)): Construction spending in May unexpectedly fell as investment in private

construction projects sank to a 2.5-year low. Overall spending contracted 0.8% in May—the first decline since November—while April's (to 0.4% from 0.1%) gain was revised slightly higher. Investment remains at a very high level, within 2.3% of last May's record high. Public construction investment took a small step back in May, falling 0.9%, after soaring 15.6% the first four months of this year to a new record high. Meanwhile, private construction spending fell for the fourth time this year, declining 0.7% in May and 2.6% ytd. Private nonresidential construction is stalled around March's record high, slipping 2.3% during the two months through May, following a 3.7% advance during the four months through March. Residential investment remains very weak, declining for the ninth time in 10 months, by 0.5% m/m and 10.2% over the period—as home-improvement and single-family spending plunged 20.5% and 7.0%, respectively over the 10-month period, while multi-family construction soared 10.7% to a new record high.

Auto Sales ([link](#)): Motor vehicle sales in June retained May's bounce. Total sales inched down to 17.3mu (saar) last month after jumping 1.0mu in May—from 16.4mu to 17.4mu—after being below 17.0mu three of the first four months of this year. Domestic light-truck sales held near its cyclical high, at 9.9mu (saar), after soaring to 10.0mu in May—which was the strongest pace since July 2005. Meanwhile, domestic car sales remain in a virtual freefall since peaking at 6.1mu (saar) during August 2014, holding at 3.5mu (saar) in June, the lowest level since February 2010. Sales of imports remained at 3.9mu (saar) in June—nearing last May's peak of 4.0mu—which was the strongest pace since August 2009.

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