MORNING BRIEFING
April 19, 2018

Behavior Modification Empires

See the collection of the individual charts linked below.

(1) Tech and Consumer Discretionary lead the pack ytd. (2) Latest relief rally includes interest-rate-sensitive sectors. (3) Flattening yield curve flattens Financials. (4) Zuckerberg has been in our Facebooks. (5) Loyalty prediction AI tools know who they can and cannot trust. (6) Self-breeding AI. (7) AI will be in the hands of the good, the bad, and the ugly soon. (8) Tech guru says that Google (motto: “Do no evil”) and Facebook (Like or not) have become mind-control vampires. (9) Time to require pay-to-play, instead of sell-my-privacy model. (10) Modern Monetary Theory says federal government budget deficits don’t matter until they do matter (when inflation makes a comeback).

Strategy: A Skittish Rally. The S&P 500 returned to positive ytd performance territory as of Tuesday’s close, with the Technology and Consumer Discretionary sectors leading the charge higher. Here’s where things stand for the index and its sectors ytd through Tuesday’s close: Technology (7.5%), Consumer Discretionary (5.3), S&P 500 (1.2), Health Care (0.6), Energy (0.3), Industrials (-0.7), Financials (-1.4), Materials (-1.6), Utilities (-3.3), Real Estate (-5.9), Consumer Staples (-6.6), and Telecom Services (-7.9) (*Fig. 1*).

Here’s how the S&P 500’s 11 sectors have performed since the market bottomed on February 8: Technology (10.5%), Energy (8.6), Utilities (7.3), Real Estate (5.5), S&P 500 (4.9), Consumer Discretionary (3.8), Materials (3.6), Industrials (3.2), Health Care (2.9), Financials (1.6), Telecom Services (-0.1), and Consumer Staples (-0.6).

Perhaps it’s just early days in this latest market bounce, but the sectors leading the way since the February bottom aren’t those you’d normally expect if all were well in the world. The market’s leadership, outside of Technology and Energy, is coming from sectors that benefit from interest rates that have fallen slightly since the 10-year Treasury yield peaked on February 21 at 2.94% and now stands at 2.87% (*Fig. 2*).

While the 10-year yield has declined, the two-year Treasury yield has risen, leaving the spread between the two much narrower than expected (*Fig. 3*). The flatter curve combined with slower-than-expected loan growth have hurt financial stocks despite a pretty spectacular earnings outlook thanks to lower tax rates (*Fig. 4*). Here are a few examples of how the Financials are faring in recent days:

(1) Comerica’s Q1 adjusted earnings per share came in at $1.54, up from $1.02 a year ago, and its net interest margin expanded to 3.41% from 2.85% in Q1-2017. But investors opted to focus on the bank’s lack of loan growth. Comerica’s total loans outstanding, at $49.2 billion in Q1, was flat compared to Q4. The company blamed the lack of loan growth on seasonality in mortgage banking and a decline in corporate banking. Comerica’s stock fell 3.6% on Tuesday when the broader market rallied; however, it remains up 6.8% ytd through Tuesday’s close.

(2) Wall Street’s brokers also reported strong earnings but were punished by investors who were

disappointed by the amount of capital the firms might return to investors. "On Tuesday, Goldman said it wouldn't repurchase any stock in the second quarter and would instead use its cash to fund growth initiatives like consumer banking and corporate lending," a 4/18 *WSJ* article reported. Goldman Sachs' shares dropped 1.7% Tuesday even though the firm's earnings beat expectations.

(3) On Wednesday, Morgan Stanley's earnings were stronger than expected, but the firm spooked investors by warning that the Federal Reserve's 2018 stress test is more severe than in the past. The implication: Morgan may have to retain more capital instead of using it to fund buybacks or to increase dividends. After selling off a bit on Tuesday, shares recovered on Wednesday.

(4) The S&P 500 Investment Banking & Brokerage industry has rallied sharply during the course of the economic recovery and its forward P/E, at a recent 12.9, is now higher than it has been during the course of the recovery (*Fig. 5*). That multiple is likely sustainable as long as the industry can continue to generate strong earnings growth. Forward earnings are expected to grow 18.1%.

(5) The forward P/E of 13.2 for the S&P 500 Regional Banks is also near a post-recovery high (*Fig. 6*). The industry's forward P/E is actually below the forward earnings growth rate of 20.1% that analysts are forecasting. Unless the yield curve steepens, caution may be warranted in both industries.

Technology: AI Goes to Washington. When Facebook CEO Mark Zuckerberg testified in the Senate last week, one thing leapt out: He's placing a big bet on the ability of developers to perfect artificial intelligence (AI) so that it can solve many of Facebook's problems. A 4/11 *Washington Post* article counted more than 30 references to AI during the CEO's two days of testimony.

Facebook already uses AI to rid the website of hateful speech and fake accounts trying to spread misinformation. Zuckerberg noted in his congressional testimony that AI is finding and deleting "99% of terrorist propaganda and recruitment efforts posted by Islamic State in Iraq and Syria (ISIS) and al Qaeda-related Facebook accounts," a 4/13 *Scientific American* article reported.

However, its efforts are imperfect at best. It will take five to 10 years to perfect AI so that it understands "linguistic nuances," Zuckerberg warned. Even then, critics believe he's being optimistic and perhaps using AI as a cop-out. Until AI utopia can be developed, bring on the humans. Facebook is hiring 5,000 employees to work on security and content review, bringing the number of folks focused on the task up to 20,000.

We decided it was high time to take a look at how Facebook and other industry leaders are currently using AI to (theoretically) improve our online—and offline—experiences. Here's what Jackie found:

(1) *AI today*. AI already has become intertwined in our everyday lives. Business Insider last year put together a comprehensive list of AI capabilities that currently exist. The list includes transcribing speech, translating languages, speaking, recognizing objects in images, and reading emotions on faces. AI can be used to drive a car, fly a drone, read an X-ray, and analyze DNA. It can detect crop disease, sort cucumbers, spot burglars in your home, predict social unrest, trade stocks, handle insurance claims, and do legal research. AI can even beat humans at their own games—Jeopardy!, Super Mario, Breakout, Go, and Texas Hold 'Em poker.

AI has come a long way since 2013, when the Facebook AI Research (FAIR) lab opened. Its goal was to predict what Facebook users wanted to see, whether it be in news feeds, advertisements, or chatbots. The company uses a tool called "DeepText" to analyze posts and "DeepFace" to recognize people in photos.

Facebook and Google also use AI to help computers develop AI: "Inside Facebook, engineers have designed what they like to call an 'automated machine learning engineer,' an artificially intelligent system that helps create artificially intelligent systems. It's a long way from perfection. But the goal is to create new AI models using as little human grunt work as possible," explained a 5/6/16 *Wired* article.

The tool is called "Flow." "Flow is designed to help engineers build, test, and execute machine learning algorithms on a massive scale, and this includes practically any form of machine learning—a broad technology that covers all services capable of learning tasks largely on their own. … [With Flow] Facebook trains and tests about 300,000 machine learning models each month. Whereas it once rolled a new AI model onto its social network every 60 days or so, it can now release several new models *each week*."

Recently leaked documents revealed Facebook is offering advertisers tools to target Facebook users based on how the users may think and act in the future, according to a 4/16 article in *The Daily Mail*. The "loyalty prediction" software guesses whether a user is about to stop using a product or a service based on the user's profile. The advertiser could use this information to send advertisements to the user's Facebook feed in an effort to change the user's decision.

(2) *AI tomorrow*. A 1/5 CNBC article tapped industry experts to forecast how AI would change the way we live and work in 2018. Expect to see the rise of a smart personal assistant that will anticipate what you need based upon daily routines. A growing number of gadgets will be voice controlled, from lamps to TVs to cars. Facial recognition will increasingly be used for security, just as a credit card or license is used today. More businesses will deploy AI, as will the medical world since AI increasingly will be used in diagnoses. And content, new articles and video, will be created using AI.

(3) *AI arms race*. Zuckerberg frequently referred to the race between the good guys at Facebook and the bad guys posting inappropriate things on Facebook. However, there's another, potentially more important, race going on in AI between the US and China.

Last July, China announced its plan "to become the world's dominant power in all aspects of artificial intelligence, military and otherwise, by 2030," noted a 3/2 *WSJ* essay. The Chinese military has established national laboratories imitating those in America, and the labs have access to reams of data that would be deemed confidential in America. Russia is also focused on AI. The *WSJ* essay contends: "Moscow has focused on creating autonomous weapons powered by AI and hopes in the coming decade to have 30% of its military robotized, which could transform how it fights."

Meanwhile, the US military is having a hard time striking partnerships with American tech companies because of the government bureaucracy involved and the corporations' fears that the military will use the technology to kill people.

In a dark view of the future, AI could be used to speed up warfare to a point where humans can't keep up: "In a futuristic example, a military AI program would identify weak points in enemy infrastructure that humans couldn't detect and then devise attacks—conventional or cyber—against the targets. If a nation were willing to turn over all decision-making to machines, the strikes could be launched within nanoseconds of identifying the target. 'In hyperwar, the side that will prevail will be the side that is able to respond more quickly,' Gen. Allen said. 'Artificial intelligence will collapse the decision-action loop in a very big and very real way.'" That's certainly enough to keep you awake at night.

(4) *Pay for search and social media?* Facebook is facing pushback even from the tech community. Jaron Lanier, a computer philosophy writer and one of the fathers of virtual reality, recently gave a TED Talk that called into question how we are using virtual reality and the future of social media.

During the '90s, tech elites decided that the Internet should be free to ensure everyone could access it, Lanier explained. To fund free access, the advertising model was created and Google and Facebook were born. But advertising-funded companies have evolved into "behavior modification empires."

With behavior modification, treats are given for good behavior and a shock is given for bad behavior. Pavlov's dog, for example, salivated when a bell rang. Social media has symbolic punishment and reward. You feel great when someone "Likes" your post and awful when no one responds. So people are caught up posting things that will generate Likes. The system also amplifies messages from those who post negative things, cranks, and paranoids.

Lanier's solution: Have a system where users pay for search and social networking just as users pay for TV produced by Amazon, Netflix, and HBO. If you pay, a search about a medical question will result in authoritative medical advice instead of information from cranks. He believes that companies and their shareholders can do better under this new model without relying on behavior modification and spying.

The stakes are high: "I don't believe our species can survive unless we fix this," says Lanier. "We cannot have a society in which if two people wish to communicate the only way that can happen is if it's financed by a third person who wishes to manipulate them. In the mean time, if the companies won't change, delete your accounts—okay?"

Fiscal Policy: Do Deficits Matter? Yesterday, Melissa and I reviewed the Congressional Budget Office (CBO) report *The Budget and Economic Outlook: 2018 to 2028*. It was released last week. The headlines told a grim story. The cumulative federal budget deficit over the next 10 years is projected to be $12.4 trillion. Treasury debt held by the public is set to double from $14.7 trillion this year to $28.7 trillion in 2028. Over this same period, the ratio of this debt to GDP will rise from 77% to nearly 100%. The CBO warns:

"The likelihood of a fiscal crisis in the United States would increase. There would be a greater risk that investors would become unwilling to finance the government's borrowing unless they were compensated with very high interest rates; if that happened, interest rates on federal debt would rise suddenly and sharply."

That's a logical and widespread view, though bond investors haven't really acted on it so far. The 10-year Treasury bond yield is up from a record low of 1.37% on July 8, 2016 to 2.87% yesterday. There's no sense of a financial crisis so far. According to an older theory that recently has gained a lot of attention, deficits might not matter unless they cause the economy to overheat. If you haven't heard of it yet, allow us to introduce you to our basic understanding of Modern Monetary Theory (MMT):

(1) *MMT & GDP.* MMT is based on the logic that for every lender, there must be a borrower. MMT is founded on a macroeconomic accounting identity, which is derived from rearranging the variables of GDP found in the National Income & Product Accounts (NIPAs). It's important to realize that the formula is a matter of accounting and not a matter of opinion or theory.

Bill Mitchell, professor of economics at the University of Newcastle in Australia, has an informative 2012 three-part blog post that served as the basis for his 2016 book on MMT, which describes the equation and its mechanics in detail. The gist is that there are three sectors in the economy: the private sector, the public sector, and the foreign sector. Mitchell quotes economist Lawrence Ritter, who back in 1963 explained: "Any one sector may invest more or less than it saves, or borrow more or less than it lends. However, for the economy as a whole, saving must necessarily equal investment, and borrowing must equal lending plus hoarding."

For the accounting to work, the three sectors in the economy must balance and cannot all run deficits at the same time. It is widely known that the US is currently running a public deficit and a trade deficit. By definition, the US therefore must be running a private-sector surplus. So to focus only on the government deficit isn't seeing the whole picture.

(2) *Deficits & inflation.* Under MMT taken to the extreme, the government may borrow and spend to infinity and beyond. Taken that way, more borrowing leads to more funds for the private sector (assuming the trade deficit is a constant). That isn't a fiscal risk because the government controls the creation of money and can never run out of it to pay its debts. Even advocates of running large deficits seem to realize, however, that there are limits on spending. Stephanie Kelton, a professor at Stony Brook University and well known proponent of MMT, explained in a 10/5/17 *NYT* article: "No country can commit to large-scale infrastructure investment unless it has the available labor, machinery, concrete and steel. Trying to spend too much will cause an inflation problem."

(3) *Room to run*. Even so, the government probably has some more room to run these days before risking inflation than it did in the past. Fiscal policy isn't the only factor impacting inflation; obviously, the interest rates set by the Fed do too. We know that the Fed is currently in the process of raising interest rates with the aim of maintaining low and stable inflation around 2.0% y/y. So too, secular forces are weighing on inflation: globalization, technological innovation, and aging demographics. Perhaps for these reasons, the CBO estimates that inflation (by the measure of personal consumption expenditures) will settle around 2.0% y/y over the forecast period despite the large-scale projected deficits.

CALENDARS

US. Thurs: Leading Indicators 0.3%, Jobless Claims 230k, Philadelphia Fed Manufacturing Index 20.1, Weekly Consumer Comfort Index, EIA Natural Gas Report, Quarles. **Fri:** Baker-Hughes Rig Count, Williams, Evans. (*Wall Street Journal* estimates)

Global. Thurs: UK Retail Sales -0.4%m/m/1.4%y/y, Japan Headline, Core, and Core-Core CPI 1.0%/0.9%/0.5% y/y, Australia Employment Change & Unemployment Rate 20k/5.5%. **Fri:** Eurozone Consumer Confidence -0.1, Canada Retail Sales Total and Ex Autos 0.5%/0.5%, Canada Headline & Core CPI 2.4%/2.0% y/y. (DailyFX estimates)

STRATEGY INDICATORS

Stock Market Sentiment Indicators (*link*): Our Bull/Bear Ratio (BBR) fell further below 3.00 this week. The BBR sank for the fifth week from 3.50 to 2.20 over the period—the lowest since November 2016. Thirteen weeks ago, it was at 5.25—which was the highest reading since early April 1986. Bullish sentiment edged up to 43.6% this week after falling the prior three weeks from 55.5% to 42.2%—with most bulls fleeing to the corrections camp (to 39.2% from 27.7%); this week's correction percentage fell to 36.6%. Meanwhile, bearish sentiment climbed for the seventh week from 14.4% to 19.8% over the period, to its highest reading since September 2017, after little change the prior few weeks. The AAII Ratio declined for the fourth week last week from 63.3% to 37.9% over the period. Bullish sentiment fell from 36.8% to 26.1% over the four-week span, while bearish sentiment rose from 21.3% to 42.8%.

S&P 500 Earnings, Revenues & Valuation (*link*): Last week saw S&P 500 consensus forward revenues edge down less than 0.1% from a record high, but forward earnings rose for a third week to a record high. The 2018, 2019, and forward profit margin forecasts were steady w/w at 11.8%, 12.4%, and 12.0%, respectively. Prior to the passage of the TCJA in December, the forward profit margin had been steady at 11.1% since October, which was the highest since September 2015 and up from a 24-month low of 10.4% in March 2016. The annual growth expectations for revenues and earnings were steady w/w, but their forward growth calculations were mixed. Forward revenue growth for the S&P 500 was steady w/w at 5.9%, which is little changed from an 80-month high of 6.3% at the end of February. That reading compares to a cyclical low of 2.7% in February 2016. Forward earnings growth improved 0.1ppt w/w to 15.6%. That's down from 16.9% in February, which was the highest since October 2010, but it's up 4.5ppts from 11.1% prior to the passage of the TCJA, and up 11.6ppts from the cyclical low of 4.8% in February 2016. Among the 11 sectors, the forward earnings growth forecast ticked down 0.1ppt for Industrials, and improved for Energy (up 0.7ppt) and Health Care (up 0.1ppt). Energy's contribution to forward growth peaked at the start of 2017. Looking at last week's results, the S&P 500 ex-Energy's forward growth was steady at 5.5% for revenues and 14.3% for earnings. The S&P 500 ex-Energy forward profit margin remained steady at a record high of 12.6%, which is up from 11.7% before the TCJA. The S&P 500's forward P/E was steady at 16.4, which compares to a 16-year high of 18.6 at the market's peak in late January and a 15-month low of 14.9 in January 2016. The S&P 500 price-to-sales ratio of 1.97 was also unchanged, and compares to late January's record high of 2.16.

S&P 500 Sectors Earnings, Revenues & Valuation (*link*): Consensus forward revenue forecasts rose w/w for just two of the 11 sectors and forward earnings forecasts rose for six sectors. Energy and Tech had both measures improve w/w. Forward revenues and earnings are at or around record highs for 5/11 sectors: Consumer Discretionary, Consumer Staples, Health Care, Industrials, and Tech. Energy's forward revenues and earnings are back on uptrends after stalling during 2016-2017, and its earnings have about tripled from their 18-year low in April 2016. Forward P/S and P/E ratios are down from their recent highs for all sectors, and all edged down w/w with the exception of three: Energy, Materials, and Tech. Energy's valuations remain elevated relative to historical levels, but are normalizing now after soaring in 2016 when revenues and earnings collapsed. Energy's P/S ratio of 1.25 compares to a record high of 1.56 in May 2016, and its P/E of 19.6 is down from a record high of 57.5 then. Due to the TCJA, higher margins are expected y/y in 2018 for all sectors but Real Estate, but that sector's earnings includes gains from property sales and typically improves as the year progresses. Real Estate was the sole decliner w/w as it edged down 0.1ppt. Two sectors posted a 0.1% gain w/w in their forward profit margin: Energy and Utilities. Here's how the sectors rank based on their current forward profit margin forecasts: Information Technology (22.4%), Financials (18.4), Real Estate (16.2), Telecom (13.2), Utilities (12.1), S&P 500 (12.0), Materials (11.5), Health Care (11.2), Industrials (10.1), Consumer Discretionary (8.1), Consumer Staples (7.1), and Energy (6.4).

S&P 500 Q1 Earnings Season Monitor (*link*): With over 10% of S&P 500 companies finished reporting results for Q1-2018, the percentages of companies with positive earnings and revenue surprise results are mixed compared to the same point during the Q4 earnings season, but their overall revenue and earnings surprise and y/y growth metrics are stronger. Of the 52 companies in the S&P 500 that have reported through mid-day Tuesday, 79% exceeded industry analysts' earnings estimates by an average of 5.7%; they have averaged a y/y earnings gain of 30.8%. At the same point during the Q4-2017 reporting period, a lower percentage of companies (77%) in the S&P 500 had beaten consensus earnings estimates by a lower 2.9%, and earnings were up a lower 18.4% y/y. On the revenue side, 83% beat sales estimates so far, with results coming in 1.8% above forecast and 10.6% higher than a year earlier. At this point in the Q4 season, a higher 87% had exceeded revenue forecasts by a lower 1.3%, and sales rose a lower 8.8% y/y. Q1 earnings results are higher y/y for 94% of companies, vs a lower 80% at the same point in Q4, and Q1 revenues also are higher y/y for 94% vs 93% a quarter ago. These figures will change markedly as more Q1-2018 results are reported in the coming weeks. The early results on revenues are very encouraging, particularly the percentage of companies growing revenues y/y. Q1-2018 should mark the seventh straight quarter of positive y/y earnings growth and the strongest since Q4-2010 in part due to lower tax rates.

GLOBAL ECONOMIC INDICATORS

European Car Sales (*link*): In March, EU passenger car registrations (a proxy for sales) declined 5.3% y/y—the first decline this year, and the first March drop since 2014. However, the ACEA noted that "last year's results (with the best March figures on record) constituted a high basis of comparison." Three of the five largest markets posted declines last month, led by a 15.7% y/y drop in the UK—though UK sales have been declining on a y/y basis since April 2017. New car demand also fell in Italy (-5.8% y/y) and Germany (-3.4), while it rose in France (2.2) and Spain (2.1). Despite March's decline, passenger car sales in the three months through March edged up 0.7% y/y, with sales in Spain (10.5), Germany (4.0), and France (2.9) rising, while demand fell in the UK (-12.4) and Italy (-1.5). The strong performance of the new EU member states is worth highlighting, according to the report, as sales increased 11.9% y/y during the first quarter of this year.

Eurozone CPI (*link*): March's CPI rate moved up to 1.3% y/y (below the flash estimate of 1.4%), after slowing steadily from November's 1.5% to a 14-month low of 1.1% in February. March's rate remained below the ECB's goal of just under 2.0%. Looking at the main components, rates for food, alcohol, and tobacco (to 2.1% from 1.0% y/y) and services (1.5 from 1.3) accelerated—accounting for 1.08ppt of March's 1.3% rate—while price increases for non-energy industrial goods (0.2 from 0.6) and energy (2.0 from 2.1) decelerated. The core rate—which excludes energy, food, alcohol, and tobacco—was at 1.0% for the third month. Of the top four Eurozone economies, inflation rates in France (1.7% y/y) and Germany (1.5) were above the Eurozone's 1.3% rate, while Italy's (0.9) was below; Spain's matched the Eurozone's rate. Along with Italy, Ireland (0.5) and Portugal (0.8) had among the region's lowest rates.

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