



## OptionsHawk Monthly Market Brief – May 2020

### S&P 500 (SPX) Technicals

**Analysis:** The S&P 500 has rallied sharply off March lows and was turned away right at the major VPOC level as well as a 61.8% Fibonacci retracement. We closed below the 8 day moving average to start May, a sign of weakening momentum, and a bearish cross with the 21 day moving average would validate a sell signal. There has yet to be major damage to breadth and a few area of support nearby to save the uptrend while a move needs to clear the red rectangle highlighted to really start a true recovery back to highs, a lot of overhead supply as the real early March breakdown level has now been retested. An anchored VWAP off the February highs comes into play right near where the 4/21 low was while VWAP off the lows is the thick pink line near 2650.



### Key Levels

	Support	Resistance
Level 1	2,775	2,855
Level 2	2,720	2,950
Level 3	2,630	3,010
Level 4	2,550	3,045

## Fundamental Valuation Bands

	2020		Value	2021		Value
	EPS	Multiple	Level	EPS	Multiple	Level
<b>Bull</b>	140	20	2,800	150	21	3,150
<b>Neutral</b>	130	17	2,210	140	17	2,380
<b>Bear</b>	120	15	1,800	130	15	1,950

## Market Health/Sentiment Check

Indicator	Level	Implications
Short Term Moving Average Slopes	Flattening	Neutral
Long Term Moving Average Slopes	Flat to Down	Bearish
8/21 Week EMA Crossover	Below	Bearish Trend
NYSE McClellan Oscillator (NYMO)	22.1	Neutral
NYSE Summation (NYSI)	61.6	Above 8 EMA - Bullish
NYSE A/D (Cumulative)	193,239	Above 40 EMA, Bullish
NYSE TRIN 21 MA	1.083	Neutral
NAAIM	78.55	Overly Bullish
AAIL Sentiment	30.6% Bulls	Below Historical Average
Investors Intelligence Survey	46.6 Bulls	2 Month High
CBOE Equity Put/Call 50 MA	0.74	Bullish
VIX:VXV Ratio	0.98	Neutral

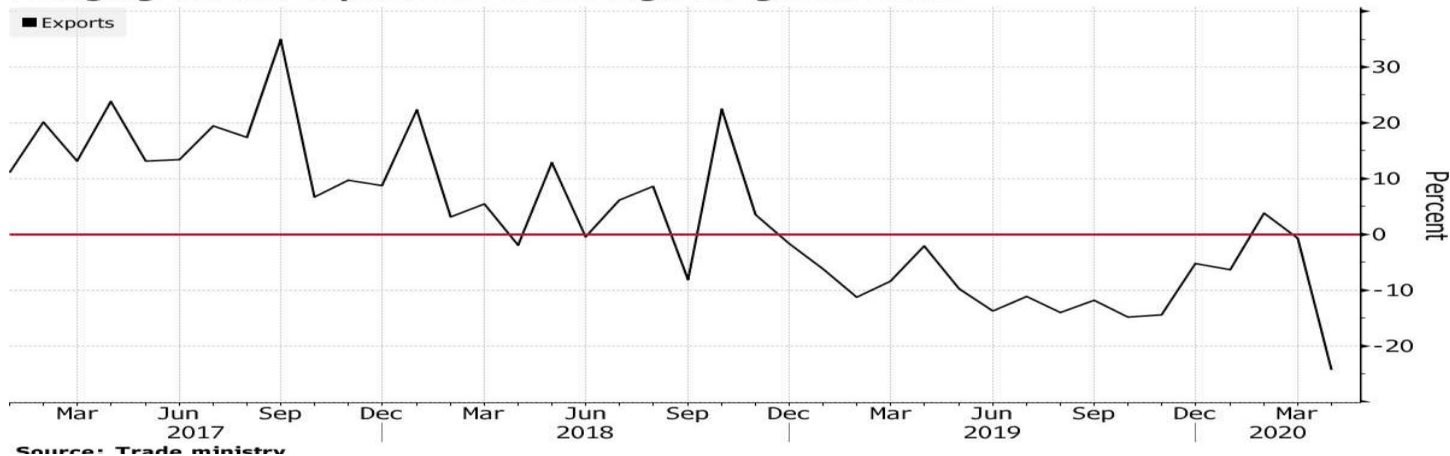
## Macro Catalyst Watch and Review

### Macro Data & Indicators

There is little need to go into any particular number and can summarize with global economies are in a dire situation seeing record weak economic data such as surging jobless claims, destruction across consumer spending, sharp declines in industrial output, and diminished consumer confidence. South Korea's exports fell in April by the most since the global financial crisis, offering an early indication of how the coronavirus pandemic is slamming world trade.

### Shipment Slide

Plunging Korean exports are a bad sign for global trade

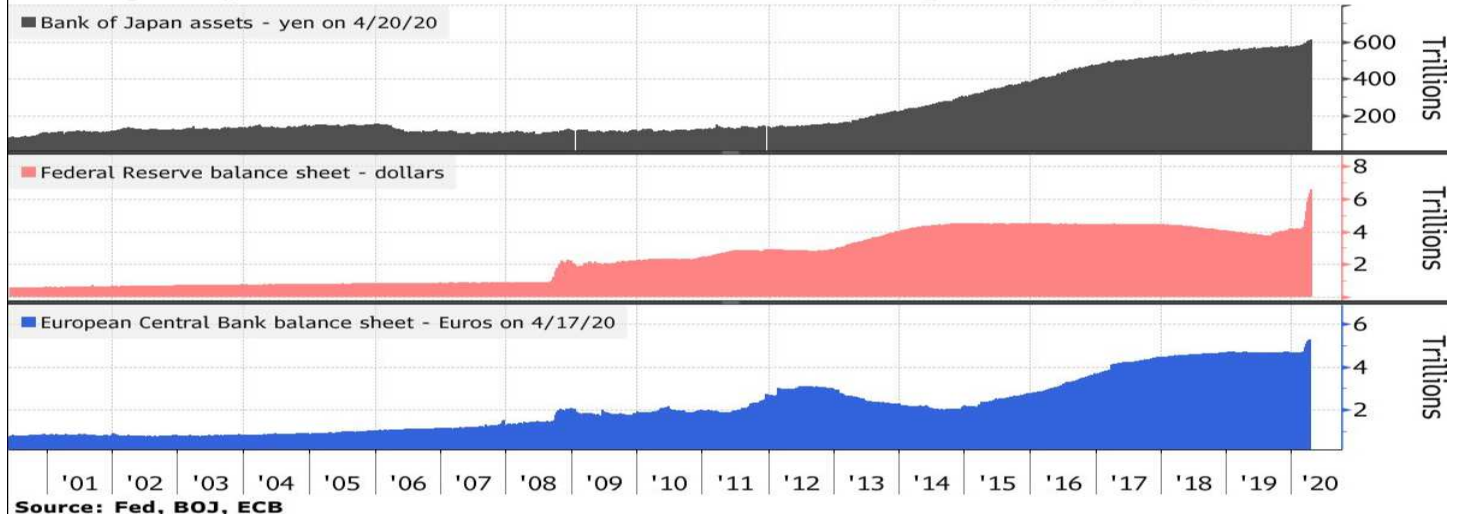


## Central Banks

The month of April saw massive fiscal and monetary stimulus turn back on across the globe. The ECB, BOJ, and Fed are all undergoing expansions of the balance sheet and lending at ultra-low rates. Emerging market central banks have started buying government debt, a policy that carries a lot of extra risk in countries with fragile currencies. The BOJ basically announced unlimited QE and the Fed has made it clear it has plenty of remaining ammunition. Central Banks are truly pushing the limits to combat the coronavirus economic impact.

### QE Redux

Assets pile up on central bank balance sheets in resurgent buying programs



### Catalyst Watch

Date	Event
5/5/2020	Final April PMI's
5/8/2020	US Jobs Report
5/15/2020	US Retail Sales, Industrial Production
5/20/2020	FOMC Minutes
5/22/2020	May Flash PMI's
6/10 – 6/12	G7 Leaders Summit
By 6/30/2020	US Bank Stress Test Results
8/24/2020	Republican Convention
8/27/2020	Jackson Hole
9/29/2020	Presidential Debate
10/7/2020	VP Debate
10/15/2020	2 <sup>nd</sup> Presidential Debate
10/22/2020	3 <sup>rd</sup> Presidential Debate
11/3/2020	US Election

## Bull & Bear Flow Monthly Leaderboard

### OPTIONSHAWK DATABASE AGGREGATE FLOW BIAS MONTH AHEAD

<b>BULLISH</b>	TSLA, JD, MA, UNH, ATVI, ROKU, MCHP, TWLO, JNJ, TPX, PYPL, AYY, EBAY, GILD, BPMC, TEAM, ALNY, COST, EQIX, GPN
<b>BEARISH</b>	TLRD, TRGP, T, CMPR, LGND, PAYC, IRM, HUBS, BKNG, CAR, HTZ, TRHC, XOM, CAT, FANG, BYD, PPG, H, CHD, GSX, UI, UPS

## Hawk Vision – 5 Technical Set-Ups in Quality Fundamental Stocks (Hawk 350 Universe) with Options Flow

\*\*\* We highlight these kind of set-ups daily in the OptionsHawk Trading Hub\*\*\*

**Alibaba (BABA)** has remained firmly in an uptrend and recently seen size September \$205 call accumulation, pulling back last week retesting a breakout level.



**JP Morgan (JPM)** is a best in class Bank that has seen some size put sales recently and also longer dated size call accumulation, forming a bottoming pattern with room to recover back to \$115.



**Costco (COST)** shares pulled back off highs recently and forming a large inverse head and shoulders pattern on the daily.



**Zoetis (ZTS)** shares flagging tightly after rallying off lows and seen October \$150 calls bought 1000X recently, a best-in-class play.



**Electronic Arts (EA)** consolidating a strong move off lows forming a pennant pattern with plenty of upside room on the weekly for a continuation breakout.



## Options Radar Highlights

**4/8/2020 - Corning (GLW)** with 3,000 November \$22 calls bought yesterday around \$2 and follows 2,500 August \$22 calls and 1,200 January 2022 \$25 calls bought recently. GLW had a more than \$900K buy in the January \$20 calls on 3/10. Shares are right at major trend support from the 2008 and 2012 lows as well as a high-volume node from the 2010-2014 consolidation. GLW has been forming a small base under \$22 with a low-volume node above that targets \$24 and then ultimately back up to \$28. The \$15.67B company trades 10.3X earnings and 1.36X sales with a 4.5% yield and a Current Ratio of 2.1. They have around \$2.5B in cash and a total Debt/Capital of 37%. GLW's near-term is clouded by uncertainty around production delays in consumer mobile for the 2H but a largely well-known story and they've got a well balanced portfolio with content across Samsung, Sony, Realme, and Huawei which have all resumed production near capacity. Meanwhile, their Life Sciences business could see an uptick due to COVID-19 for materials like PCR consumables, storage plates, tubes and storage, and virus production hyperflasks. GLW also recently announced a partnership with Qualcomm (QCOM) for 5G mmWave infrastructure platforms for enterprises, giving them more long-term optionality for growth. Analysts have an average target for shares of \$31. MSCO downgrading to Neutral in January as they saw most of their demand driven catalysts around mid-year while auto and life sciences are further out from material commitments. BAML with a Buy for shares, \$34 PT, seeing a number of longer-term themes to benefit from including 5G and hyperscale cloud spending. Short interest is 3.3%. Hedge fund ownership rose 4.3% in Q4. Masters Capital a buyer of call options while Levin Capital a buyer of stock.

**4/14/2020 - Palo Alto Networks (PANW)** with two bullish trades on 4/13 as 200 September \$180 calls opened above \$20 and 1000 of the June \$190 calls opened for \$10.25. PANW has 2000 April \$180 calls in open interest that bought on 4/6 and 3000 June \$200 calls that opened in a buy-write on 3/6. PANW shares are down 23% YTD but have rebounded the last month with \$200 likely resistance followed by the 200 MA at \$214. The \$17.55B network security leader trades 31X Earnings, 19.7X FCF and 5X EV/Sales with a lot of cash on the balance sheet to manage through tougher times. PANW has been active with bolt-on acquisitions and announced a \$420M deal for CloudGenix recently that accelerates its efforts to integrate SD-WAN with Prisma Access and closes a competitive gap. PANW remains a long-term leader in the cloud security market which is seen with a 21.2% CAGR through 2022. PANW has transitioned to a multi-platform company, 3 different platforms, one around cloud security, one around enterprise security, and one around AI and ML deployed to cybersecurity. Prisma for cloud security, Cortex for endpoint and SOAR and then Strata for core firewall. It sees a \$72.6B TAM for 2022. Palo Alto with a sizable insider buy on 11-27 from CEO Nikesh Arora of 25,000 shares at \$221.54, a greater than \$5.5M buy. Arora joined PANW in 2018 after spent 14 years at Google in a business development role before moving on to Softbank where he was considered Masa Son's successor. On 3/4 a Director bought around \$3M in stock in the \$179.75 to \$188.60 range. Analysts have an average target of \$212.50 and short interest at 6% of the float has nearly doubled over the last quarter. Rosenblatt upgraded shares to Buy with a \$225 target on 4/13 seeing it benefitting from the work-from-home trend with recent positive industry checks and seeing upside from its VPN solution. It notes "Overall, we believe that the company has the right vision and product strategy to be one of the best-positioned vendors in an increasingly complex hybrid environment, which is the reality today. With the company likely seeing incremental business from COVID-19 over the next few years, we have higher confidence that it can meet its 3-year plan that calls for 20% billings and revenue growth." Deutsche Bank noted the uptick in Firewall demand due to remote access increasing though sees the prospect of deal delays, and cut its target to \$180 on 4/1. Stifel out positive 3/31 on the latest M&A deal and has a Buy rating with a \$280 target, and sees this as another step in Palo's increasingly aggressive efforts in evolving its solution stack away from traditional appliances toward more flexible and scalable cloud-delivered solutions. Hedge Fund ownership rose 1.7% in Q4 filings, Cadian Capital and Hound Partners reducing concentrated stakes but still large holders, while Farallon added to its position, and Alyeska and Highline started new concentrated positions.

**4/21/2020 - Marvell Tech (MRVL)** with 5000 August \$33 calls bought on 4/20 in the \$0.73 to \$0.83 range and action picked up midday and traded 17,500X on the session. MRVL saw 20,000 May \$28 calls sold to open on 4/8 and next reports in late May after expiration, and also has some size call open interest with 23,000 of the January \$35. MRVL has shown relative strength to Semi peers and shares down just 2.3% YTD, a choppy pattern since 2019. The \$17B Semi trades 18.75X Earnings, 6.3X Sales and has a 0.92% yield with a fortified balance sheet. MRVL has been seeing improving operating margins and delivers solutions to move, store and process all the world's data, and targeting the Tech infrastructure segment which is boosted by its acquisition of Cavium a few years ago. It sees storage disruptions, enterprise upgrade cycle, 5G and Data Center as key drivers of growth with an estimated TAM of \$23.5B for FY21 comprised of Storage, Networking and Arm Server. Analysts have an average target of \$29 and short interest down 38.7% Q/Q to 3.9% of the float. MRVL announced an expanded relationship with Nokia for 5G and will start chipping its first custom product later this year. UBS was out positive on 3/27 for its 5G exposure. Jefferies noting on 3/5 that MRVL is a primary beneficiary of the 5G network buildout with recent design wins and has a \$32 target. Piper also raising its target to \$32 seeing multiple growth drivers in place for 2H20. Hedge Fund ownership was down 2.55% in Q4 filings, Whale Rock the only notable top holder and reduced its position in Q4.

**4/28/2020 - Biogen (BIIB)** with two bullish trades on 4/27 as the September \$300 calls were bought 335X for over \$1M and the June 2021 \$280 puts were sold to open 370X for \$1.7M. BIIB has some scattered bullish open interest across June, September and January 2021 expirations as well. BIIB shares pulled back sharply last week on earnings but quickly found support near YTD VPOC and remains well above a rising 200 day moving average. BIIB can also put in a higher low on a developing rising weekly channel pattern. BIIB announced on 4/22 plans to complete its US filing for its Alzheimer's drug aducanumab in Q3. BIIB shares jumped in early February after winning a patent challenge from Mylan on Tecfidera. The \$50B Biotech now trades just 9.1X Earnings, 3.5X Sales and 7.65X FCF with a strong balance sheet with around \$4.5B in cash. BIIB beat estimates handily last week but shares sold off on the Alzheimer's filing date being much later than impatient investors had hoped. Analysts have an average target of \$320 on shares and short interest low at 2.3% of the float. Canaccord raised shares to Buy with a \$360 target in late January not wanting to underestimate investor fear of potentially missing out of an approval of the first ever disease-altering therapy for Alzheimer's, a massive addressable market and high unmet need. HC Wainwright defended shares on the sell-off last week and has a Buy rating and \$335 target seeing the delay insignificant in the context of the bigger picture and not worth reading into negatively. Citi cut shares to Sell with a \$240 target noting an approval event has now moved to 2021 and fears the FDA may ask for another trial while Tecfidera IP overhang remains with the district court decision later this year. OpCo moved its target to \$365 and sees a potential rolling review process by the FDA given the fast-track status. Barclays cut its target to \$370 seeing the sell-off warranted as an insufficient explanation given for the delay but also notes the significant potential opportunity remains and investors are likely to return to the story. Hedge Fund ownership fell 6% in Q4 filings, Berkshire Hathaway disclosing a new starter position.

### Earnings Recap

<u>Strong Beats</u>	<u>Bullish Themes</u>	<u>Weak Outlooks</u>	<u>Bearish Themes</u>
NDAQ, TW, MKTX, CME, CBOE, ICE	Exchanges – Volatility	PHM, NVR	Homebuilders
PG, KMB	Consumer Goods – Pantry Stockpiling	PNC, FITB, FHN, CMA	Regional Banks
LLY, SNY, JNJ, AZN, PFE, NVS, ABBV	Pharmaceuticals	NOC, GD, BA	Aero/Defense
ABT, TMO, DGX, LH	Diagnostics	CROX, GIL, HBI, COLM, TPR	Apparel & Footwear
TSM, ENTG, IPHI, TER, LRCX, MKSI	Semiconductor Equipment	LAZ, CG, SF, IVZ, BX	Asset Mgmt.
LMT, TDY	Defense Spending		
DXCM, MASI	Med-Tech Growers w/ Moats		



UNH, ANTM, HUM, CI	Managed Care		
KNX, ODFL, SAIA, SNDR	Truckers		
MDLZ, SJM, PEP, KO	Snacks & Beverage		
SPGI, MSCI, TRU, EFX	Fin-Tech		
AVY, CCK, PKG, GPK, IP, AVY	Packaging		
CTXS, FFIV, AKAM, BAND	Networking Software		
PRAH, CRL, BAX, TECH, ECL, WST	Pharma/Lab Services		
UTHR, BIIB, VRTX, AMGN, BMRN, GILD	Biotech		

## Theme of the Month

### *Cloud Security*

With more people working remotely due to Shelter-in-Place mandates, the look of enterprise IT has changed significantly in recent months. Instead of centralized locations and on-premise infrastructure, companies big and small are reliant on a wide array of devices in different locations all connected to the cloud. And, while this can create certain conveniences that an office setting can't replicate, it poses unique risks with respect to security. A survey conducted by Fugue Security in April reported that 84% of IT and cloud professionals were concerned about maintaining the security of their networks during the shift to remote work.

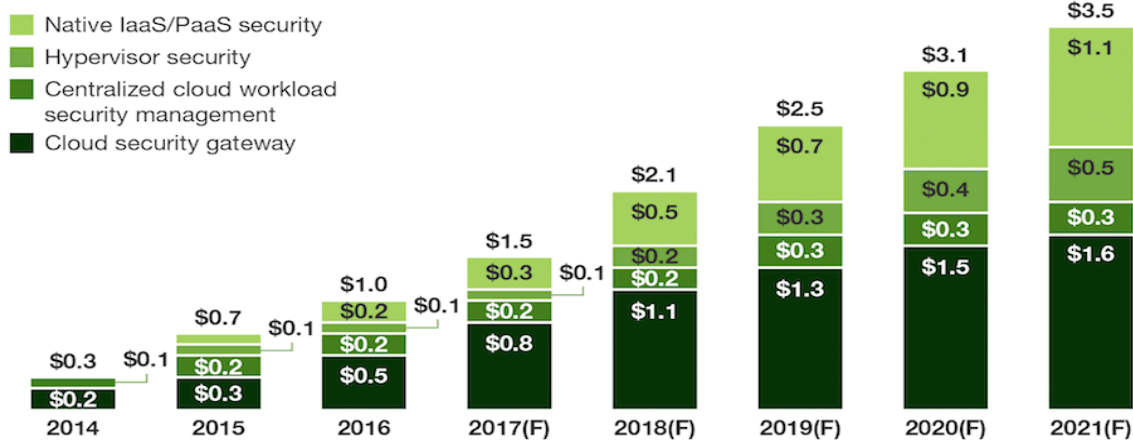
Within a traditional business setting, the focus is narrow: one network. But, remote work spreads out the potential plane of attack to several hundred or thousands of locations which can make it much more difficult to manage. In a centralized environment something as simple as Wi-Fi is set up by professionals and secure. But teams can't verify that for every one of their employee's homes. And, as Shelter-in-Place orders start to get relaxed, this could start including public places like coffee shops.

Cloud exploits or vulnerabilities are also more difficult to detect using traditional security analysis tools, says Fugue. Identity masking and access management can be hacked in a manner whereby a system believes that nothing is wrong since the attacker uses the same gateway to enter the cloud as authorized users. The firm's survey found 90% of IT professionals worry they have suffered a breach already that they haven't detected.

## Global cloud security solutions spending

(US\$ billions)

CAGR (2016 to 2021): 28.1%



F = Forecast

Source: Forrester Data: Cloud Security Solutions Forecast, 2016 To 2021 (Global)

Cloud remains a major focus of enterprise spending and coronavirus and WFH will pull forward a number of spending projects including off-premise or remote security. A Credit Suisse CIO survey in early 2020 showed that cloud and security were the top two priorities for budgets ahead of things like AI/big data, analytics, digital transformation and AI. And, as hardware spending remains slow, hybrid cloud is expected to comprise 20% of IT budgets within the next five years. Global cloud spending is expected to exceed \$600B in the next five years, according to industry reports like Gartner and IDC, yet cloud security spending remains nascent at \$12.6B and set to accelerate significantly.

There are a lot of cloud-based security companies or those that offer cloud capabilities. But three stand-out as more pure-plays on the space, and at smaller market caps than the leader **CrowdStrike (CRWD)**.

**Zscaler (ZS)** is an \$8.73B provider of a wide range of cloud security services. They offer solutions that allow users to connect to SaaS applications remotely and securely. Their main product is Zscaler Internet Access (ZIA) which is an internet and web gateway from the cloud. It includes things like firewall, anti-virus, content and URL filtering to stop hoaxes or phishing, sandboxing and more in one centralized place rather than a massive deployment of individual investments. They also offer Zscaler Private Access (ZPA) which is a next-generation VPN. Credit Suisse downgraded shares recently as they expect business transformations to slow down in the near-term but did acknowledge Zscaler's advantage in providing secure, distributed application access at a time when stay-at-home orders have mandated most employees work remotely. Rosenblatt thinks ZS is the best-positioned security software company to benefit from the current secular trend towards cloud-based security platform. The firm thinks cloud-based security will be one of the top spending priorities in the future and Zscaler's ZIA business will quickly rebound as a result and provide strong incremental growth.

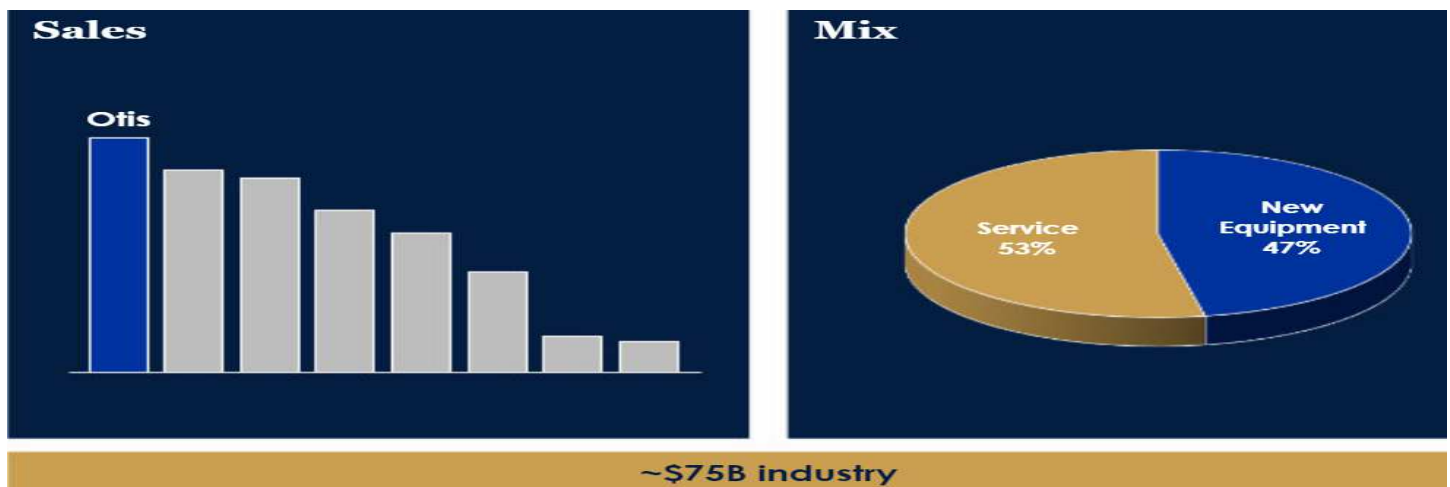
**Qualys (QLYS)** is a \$3.95B company which does endpoint protection and security. The company's big product from a work-from-home point-of-view is their endpoint protection solution which continuously monitors a wide array of devices and other assets on a network. The Qualys cloud platform allows companies to see everything from hardware specs, installed software, locations, vulnerabilities, users, and more on every device no matter where it is in the world. This gives them continuous monitoring and threat discovery. Rosenblatt upgraded shares in mid-April after recent industry checks showed Qualys is quietly building a reputation as a go-to vendor for securing cloud deployments that leverage container-based technologies. The firm also thinks the major shift due to coronavirus towards remote work could help the company to start monetizing the increasing adoption of the Cloud Agents in the near future.

**Tenable (TENB)** is a \$2.5B company that helps enterprises identify and assess vulnerabilities and risk. Their primary product is tenable.io which is a cloud-based product that accurately analyzes a remote network's misconfigurations and

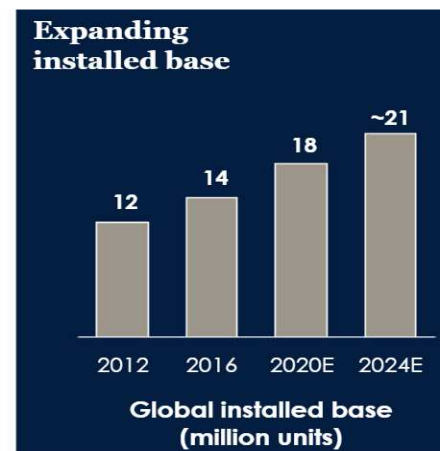
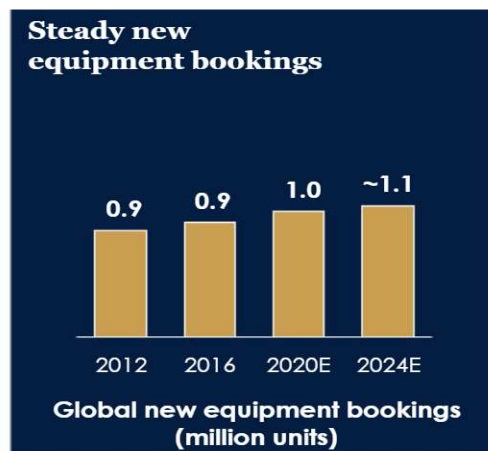
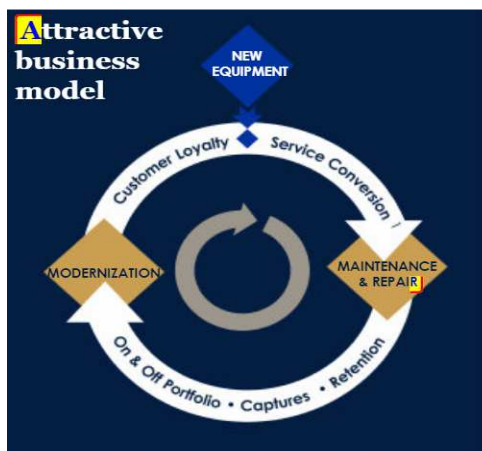
provides actionable solutions. Fugue’s survey found that misconfigurations within a cloud-based setup were the most at-risk areas of entry for hackers. TENB makes existing security systems better and more efficient by finding blind spots and consistently running assessments on a changing environment to find weaknesses. So, as employees individual environments change, TENB can help keep a company up-to-date and secure. Monness Crespi starting at Buy citing the company's singular focus on the vulnerability management market. The analyst thinks TENB is differentiating itself with innovative new products while maintaining a focus on its core competencies and checks with resellers suggest Tenable's product offerings are viewed as narrower in scope relative to rivals but are "considered among the best in terms of functionality and quality."

**Spin-Off of the Month**

**Otis (OTIS)** with a \$20.9B market cap was recently a spin-off from United Tech (UTX) and is a leading maker and servicer of elevators and escalators worldwide. It operates in a \$75B industry with the top five companies accounting for 70% of sales, and urbanization seen as a key secular growth trend as well as a growing middle class and digitalization.



OTIS did \$13.1B in sales in 2019 and has 69,000 employees. It has best-in-class margins with runway for expansion and robust free cash flow generation. It has an attractive recurring business model as it grows its installed base and service profits are 2.5X that of equipment over the product lifecycle. It sees significant opportunities in EMEA and China modernization. It also has an aging global installed base with 54% of equipment older than 10 years. The services segment is the key growth contributor and is now utilizing data and IoT leveraging technology and enhancing subscription services, and also boosting margins from the mix. OTIS currently trades 11X EV/EBITDA with a 2% dividend yield. OTIS looks like a true long-term compounder with a strong moat.



## Small Cap of the Month

**Bandwidth (BAND)** has been a steady strong performer with shares +22.5% YTD. The \$1.88B company operates a cloud-based software-powered communications platform, a CPaaS provider enabling enterprises to operate voice/text services across mobile applications and connected devices. Its sophisticated and easy-to-use software APIs allow enterprises to enhance their products and services by incorporating advanced voice and text capabilities. Its customers include Google Voice, Microsoft Office 365 Skype for Business, Dialpad, GoDaddy, Kipsu, Rover and ZipRecruiter, among many others. The CPaaS market is large and rapidly growing. According to International Data Corporation (“IDC”), the global CPaaS market will be \$8.2 billion in 2021. Market growth will be driven by enterprise demand for cloud applications and the need to integrate communications services into any workflow, customer-facing application or business process. BAND is uniquely positioned versus others as it owns the underlying IP network and software platform offering a competitive advantage in one-stop shopping. BAND should see a boost from the work from home trend that is causing a surge in demand for video conferencing as it provides voice access for dial-into meetings and powers the voice of leading UCC providers like Zoom, Microsoft, and Google.

## Develop & Deliver the Power to Communicate



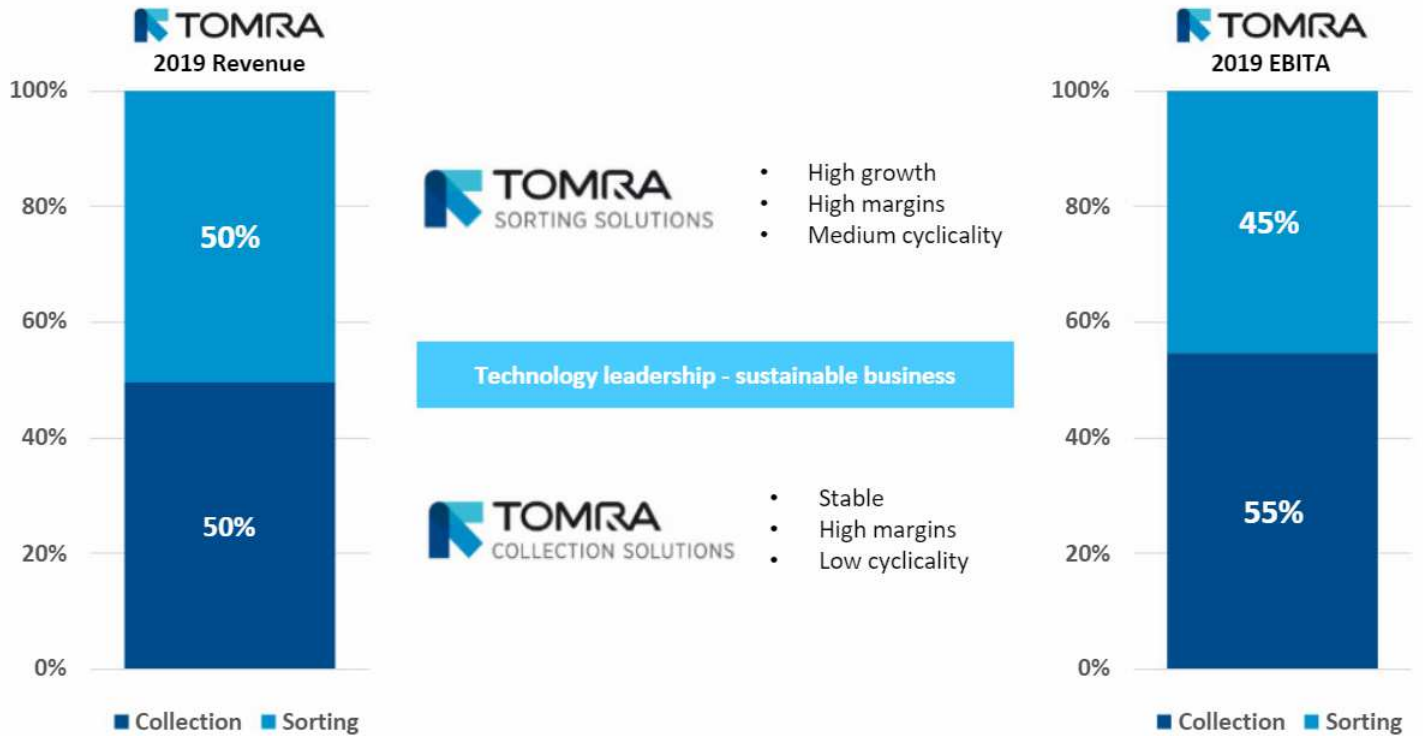
**TRUSTED BY:** Top enterprise brands



BAND shares currently trade 6X FY20 EV/Sales with revenues seen rising 16% in 2020 and 19% in 2021. BAND has a debt-free balance sheet and trades around 10X cash. Its dollar-based net retention rate, which measures customers' increased utilization of its platform, was 107%, 118% and 113% for the years ended December 31, 2017, 2018 and 2019, respectively. BAND is likely to continue to see a rise in use-cases as technologies evolve including integration of voice within applications and the rise of voice as an interface.

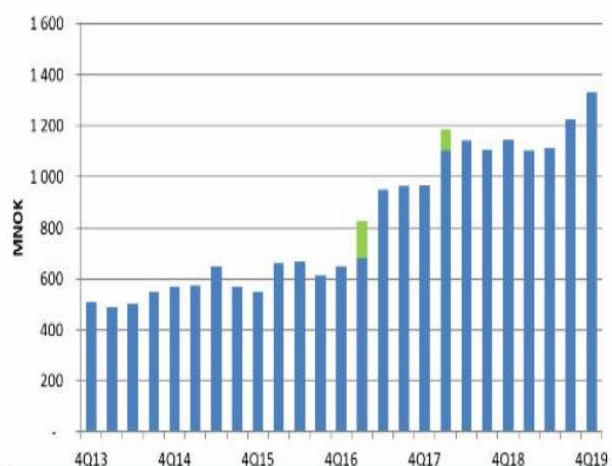
## International Stock of the Month

**Tomra Systems (TOM:NO)** is a creator of sensor-based solutions to resource productivity within the business streams of vending, materials recovery, recycling, mining and food. Tomra is positioned well towards a few notable megatrends with a leading market position in Collection Solutions, Food Sorting, Recycling Sort and Mining Sorting. It is estimated that by 2025 solid waste generation will rise 70% compared to 2010 levels as global consumption continues to grow. Tomra has solutions to solve environmental issues and solve the problem of 32% of all plastic packaging ending up in nature every year. Tomra sees significant potential to reuse good materials with only 14% of plastic currently being recycled while 50-60% of paper is recycled. Tomra also will play a pivotal role in the Food supply chain with its sorting solutions.

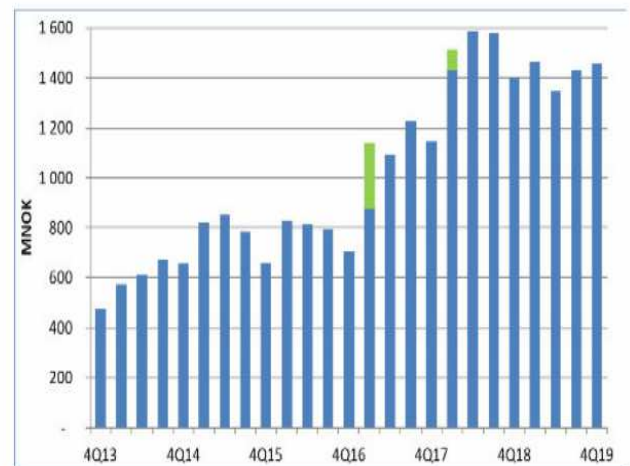


Tomra has a market cap of near \$52B. Shares trade 26X FY19 EV/EBITDA and 4.7X EV/Sales with a 1% dividend yield. Tomra has grown EBITDA 18% and 11.8% the last two years.

### Order intake



### Order backlog



## IPO Watch

**PPD (PPD)** came public earlier this year as a leading provider of drug development services to the biopharmaceutical industry. It has been in business for more than 30 years and serves all of the top 50 biopharmaceutical companies in the World as ranked on R&D spending, and has been involved with 66 drug approvals. PPD's objective and ROI to customers is to accelerate the development of safe and effective therapeutics to allow quicker time to market and lengthened periods of market exclusivity. Its clinical development services include all phases of development, peri- and post-approval and site and patient access services. Its laboratory services offer a range of high-value, advanced testing services, including bioanalytical, biomarker, vaccine, good manufacturing practice and central laboratory services.

PPD currently carries a market cap of \$7.66B and is trading 17.65X Earnings and 2X Sales. Its financial results from 2015 through 2018 include:

\* Increased direct revenue from \$2,073.5 million for 2015 to \$2,837.8 million for 2018, representing a compound annual growth rate ("CAGR") of 11.0%.

\* Increased Adjusted EBITDA from \$537.2 million for 2015 to \$751.8 million for 2018, representing a CAGR of 11.9%. Increased Adjusted EBITDA margin (defined as Adjusted EBITDA divided by direct revenue) from 25.9% for 2015 to 26.5% for 2018.

The drug development process involves the testing of drug candidates to demonstrate safety and efficacy in order to meet regulatory requirements. Developing new drugs for the treatment of human disease is an extremely expensive, complex, high-risk and time-consuming process. It is estimated that bringing a new drug or medical device to market can take up to 15 years and cost \$2.5 billion or more. The drug development process consists of two stages: pre-clinical and clinical. The clinical stage is the most time-consuming and expensive part of the drug development process. During the clinical stage, the drug candidate undergoes a series of tests in humans, including healthy volunteers, as well as participants with the targeted disease or condition. Human trials usually start on a small scale to assess safety, efficacy and dosage (Phase I-II) and then expand to larger trials (Phase III) to test efficacy and safety in the target population. Phase IV, or post-approval trials, involve monitoring or verifying the risks and benefits of a drug product.

PPD's total addressable market is greater than \$51 billion, consisting of clinical development services, including peri- and post-approval services and site and patient enrollment services, and laboratory services. In addition to competing in the clinical development services (Phase I-III), or clinical research organization ("CRO"), market, it made strategic investments to strengthen our position in the laboratory services market and expanded the addressable market to include the markets for investigator and patient recruitment and peri- and post-approval services. A summary of addressable market by key services areas is included below:

	Phase I-III Clinical Services	Phase IV / Peri- & Post- Approval Services	Site and Patient Access Services	Laboratory Services
	Trials involving the testing of drug safety and efficacy in both small and large patient populations	Trials and real-world evidence studies to evaluate effectiveness, safety and value	Investigator and patient recruitment services market	Specialized testing services for pre-clinical and clinical development
<b>Market Size</b>	\$20.4 billion	\$10.0 billion	\$10.4 billion	\$10.4 billion
<b>Projected Market Growth</b>	6.0-9.0%	6.0-7.0%	5.0-6.0%	7.0-8.0%

Source: Jefferies equity research, Grand View Research. Market size based on current estimates; projected market growth based on forward market growth rate projections from 2019 to 2021 rather than historic growth rates. Estimated market size for site and patient access services based on estimated 2019 investigator and patient recruitment services spend in chronic condition and vaccine trials.

PPD sees five key trends impacting end markets and creating increased demand for its services:

- Growth in R&D spending. Biopharmaceutical companies must continually invest in drug development in order to create innovative new therapies or use existing drugs to treat new indications, to address unmet medical needs and to replace lost revenues when their then currently marketed drugs lose patent protection. From 2008 to 2018, R&D spending increased approximately 3.3% annually, driven by long-term secular fundamentals including a 30% increase in active investigational new drug applications (“INDs”) and an approximately 80% increase in average annual U.S. Food and Drug Administration (“FDA”) approvals from 2008 to 2018.
- Increased levels of outsourcing by biopharmaceutical companies. As biopharmaceutical companies continue to seek ways to reduce clinical development costs and focus resources on core competencies, we believe they will continue to increase the amount of clinical development work they outsource to CROs. Outsourcing penetration as a percentage of total development spending by biopharmaceutical companies increased from approximately 36% in 2007 to approximately 49% in 2018.
- Increased complexity in clinical development. Clinical trials continue to increase in complexity due to a confluence of factors, which has led to more complex trial design, difficulties in enrolling protocol eligible patients, longer duration of clinical trials and greater overall clinical trial cost. As a result, we expect biopharmaceutical companies to increasingly seek partners, like us, that have the experience and expertise to conduct cost-effective clinical studies.
- Biotechnology sector growth. The rate of biotechnology companies’ R&D spending growth has been higher than that of traditional pharmaceutical companies in recent years, fueled by a robust funding environment, both public and private. In addition, many biotechnology companies are smaller, discovery research-focused organizations that do not find it economically attractive to invest in the infrastructure and personnel necessary to conduct their clinical development programs on their own, and we believe they will continue to rely on CROs, like us, for their global drug development needs.
- Increasing importance to prove value of new therapies. Peri- and post-approval studies transform real-world data into real-world evidence. This enables biopharmaceutical companies to develop better therapies and optimize the commercial potential of their new therapies.

#### Competition Comments from S-1

The CRO industry is fragmented and we face intense competition from numerous competitors. We primarily compete against other global, full service CROs similar to us, mid-size and small specialty CROs, in-house departments of biopharmaceutical companies and, to a lesser extent, universities, teaching hospitals and other organizations. The larger CROs against which we compete include Covance Inc. (“Covance”), ICON plc (“ICON”), IQVIA Holdings Inc. (“IQVIA”), PAREXEL International Corporation, PRA Health Sciences, Inc. (“PRA Health Sciences”) and Syneos Health, Inc. (“Syneos Health”), among others. Some of these competitors, including the in-house departments of biopharmaceutical companies, may have greater capital, deeper expertise in selected areas and more resources than us. In recent years, IQVIA and Syneos Health have engaged in mergers to add new or ancillary services, which might be attractive to consumers. In addition, our competitors that are smaller specialized CROs might compete effectively against us based on price and other commercial terms, as well as on their concentrated size and focus.

PPD does screen fairly well versus peers though with a steep valuation and carries a lot of debt. Charles River (CRL) continues to be the best-in-class name but PPD is a new one to keep an eye on in a healthy backdrop for the entire group.

Tickers	Company Name	1 Year % Change	Mkt. Cap	EV to EBITDA	Net Income CAGR	EBITDA P/E CAGR	Revenue CAGR	EBITDA Margin	3 Year ROIC	EV to FCF	FCF Margin	Debt to EBITDA	FCF to Debt	OCF to Sales
<b>IQV</b>	Iqvia Holdings Inc	(5.10%)	24,846	15.1x	1%	61% 21.46x	5%	21.65%	7.03	43.1x	7.53%	4.7x	0.07	0.11
<b>LH</b>	Laboratory Corp.	6.34%	15,898	11.1x	-16%	8% 21.37x	2%	17.70%	8.62	21.0x	9.04%	3.0x	0.07	
<b>ICLR</b>	ICON PLC	10.65%	7,990	16.5x	5%	13% 23.10x	6%	17.64%	25.42	22.8x	12.90%	0.7x	1.02	0.12
<b>PPD</b>	PPD, Inc.		7,847	23.0x	87%	3% 20.43x	8%	19.27%		2.1x	7.62%	6.7x	0.07	
<b>CRL</b>	Charles River	(0.04%)	6,777	13.6x	6%	14% 21.27x	10%	23.06%	12.56	24.5x	12.99%	2.9x	0.19	0.17
<b>PRAH</b>	PRA Health Sciences, Inc.	(8.17%)	5,581	12.6x	9%	17% 18.22x	5%	17.38%	12.80	36.4x	5.85%	2.2x	0.26	0.12
<b>SYNH</b>	Syneos Health, Inc.	8.45%	5,259	12.1x	4%	4% 18.27x	5%	13.80%	11.23	30.3x	5.44%	4.3x	0.11	0.08
<b>MEDP</b>	Medpace Holdings, Inc.	46.62%	3,011	18.6x	12%	8% 29.71x	15%	17.37%	9.63	15.7x	21.37%	0.3x		0.23
<b>Average</b>		8.39%	9,651	15.3x	14%	16% 21.73x	7%	18.48%	12.47	24.5x	10.34%	3.1x	0.26	0.14

## Insider Activity Monthly Recap

For Detailed Write-Ups Visit <https://www.optionshawk.com/options-trader/insider-trading-spotlight/>

Trade Date	Ticker	Company	Insider Name	Insider Title	Price	Qty	ΔOwn	Value
4/9/2020	SFIX	Stitch Fix, Inc.	Gurley J William	Dir, 10%	\$15.80	1,000,000	100%	\$15,804,650
4/1/2020	HDS	Hd Supply Holdings, Inc.	Wolfe Lauren Taylor	Dir	\$26.23	267,584	29%	\$7,018,337
4/16/2020	JPM	Jpmorgan Chase & Co	Burke Stephen B	Dir	\$87.99	75,000	50%	\$6,598,958
4/3/2020	EQIX	Equinix Inc	Luby William K	Dir	\$632.22	5,000	15%	\$3,161,100
4/3/2020	NXRT	Nexpoint Residential Trust, Inc.	Dondero James D	Pres	\$21.81	94,500	4%	\$2,061,045
4/3/2020	MGM	Mgm Resorts International	Salem Paul J	Dir	\$10.39	195,000	15%	\$2,027,025
4/1/2020	MGM	Mgm Resorts International	Salem Paul J	Dir	\$10.87	182,000	16%	\$1,978,759
4/23/2020	DRI	Darden Restaurants Inc	Lee Eugene I Jr	Pres, CEO	\$58.50	25,641	17%	\$1,499,999
4/22/2020	T	At&t Inc.	Luczo Stephen J	Dir	\$29.38	36,000	22%	\$1,057,579
4/17/2020	KEY	Keycorp /new/ Science Applications International Corp	Gorman Christopher M.	Pres, COO	\$10.36	100,000	18%	\$1,036,000
4/3/2020	SAIC	Science Applications International Corp	Keene Nazzic S	CEO	\$70.75	14,300	16%	\$1,011,769
4/23/2020	DRI	Darden Restaurants Inc	Wilmott Timothy J	Dir	\$58.50	17,094	New	\$999,999
4/21/2020	CUTR	Cutera Inc	Plants J Daniel	Dir	\$10.50	95,238	23%	\$999,999
4/14/2020	SMPL	Simply Good Foods Co	Kilts James M	Dir	\$16.63	47,089	6%	\$783,122
4/23/2020	DRI	Darden Restaurants Inc	Sonstebly Charles M	Dir	\$58.50	12,820	136%	\$749,970
4/17/2020	MS	Morgan Stanley	Luczo Stephen J	Dir	\$38.68	19,000	11%	\$734,871
4/22/2020	SNX	Synnex Corp	Miau Matthew	Dir	\$71.47	10,000	0%	\$714,700
4/13/2020	HII	Huntington Ingalls Industries, Inc.	Bilden Philip M.	Dir	\$192.77	3,117	26%	\$600,864
4/16/2020	RHP	Ryman Hospitality Properties, Inc.	Reed Colin V	COB, CEO	\$27.16	21,900	2%	\$594,828
4/23/2020	DAL	Delta Air Lines, Inc.	Jackson Jeanne P	Dir	\$22.72	25,510	-221%	\$579,585
4/9/2020	SMPL	Simply Good Foods Co	Ghez Nomi	Dir	\$16.32	30,000	27%	\$489,461
4/21/2020	CFG	Citizens Financial Group Inc/ri	Koch Charles John	Dir	\$19.53	25,000	36%	\$488,200
4/9/2020	WSM	Williams Sonoma Inc	Bellamy Adrian D P	Dir	\$50.55	9,600	15%	\$485,250
4/14/2020	APOG	Apogee Enterprises, Inc.	Johnson Lloyd Emerson	Dir	\$18.75	25,140	>999%	\$471,306
4/2/2020	PLCE	Childrens Place, Inc.	Matthews Norman S	Chairman of the Board	\$15.89	28,300	32%	\$449,570
4/2/2020	PLCE	Childrens Place, Inc.	Matthews Norman S	Chairman of the Board	\$15.89	28,300	32%	\$449,570
4/14/2020	SRC	Spirit Realty Capital, Inc.	Hsieh Jackson	Pres, CEO	\$29.31	10,200	4%	\$298,962
4/24/2020	SFNC	Simmons First National Corp	Makris George Jr	COB, CEO	\$17.04	16,000	4%	\$272,620



4/23/2020	SYF	Synchrony Financial	Aguirre Fernando	Dir	\$16.55	15,300	403%	\$253,215
4/23/2020	DRI	Darden Restaurants Inc	George David C	EVP, COO	\$58.50	4,273	7%	\$249,971
4/23/2020	DRI	Darden Restaurants Inc	Fogarty James P	Dir	\$58.50	4,273	32%	\$249,971
4/13/2020	SMPL	Simply Good Foods Co	Ratzan Brian K.	Dir	\$16.00	15,000	23%	\$240,000
4/1/2020	NA	Cardinal Ethanol LLC	Baker Robert Nathan	Dir, 10%	\$6,000.00	39	2%	\$234,000
4/6/2020	LYB	Lyondellbasell Industries N.V.	Patel Bhavesh V.	CEO	\$49.35	4,654	1%	\$229,675
4/28/2020	EIG	Employers Holdings, Inc.	Paquette Michael Scott	EVP, CFO	\$29.32	7,500	28%	\$219,870
4/24/2020	ALLY	Ally Financial Inc.	Clark Mayree C	Dir	\$14.25	15,000	29%	\$213,750
4/27/2020	WBS	Webster Financial Corp	Flynn Elizabeth E	Dir	\$26.25	8,000	36%	\$210,010
4/20/2020	CFG	Citizens Financial Group Inc/ri	Hankowsky William P	Dir	\$20.56	10,000	29%	\$205,600
4/17/2020	SCHW	Schwab Charles Corp	Goldfarb Mark A	Dir	\$36.17	5,530	22%	\$200,048
4/3/2020	KSS	Kohls Corp	Prising Jonas	Dir	\$11.15	17,938	103%	\$200,009

## Sector ETF Set-Up of the Month

**Materials (XLB)** is a group that tested and held substantial support and now has rallied sharply off the lows, a group that is likely to benefit from lower input costs, but on the demand side a weaker global Macro will be offsetting in the near-term. XLB has exposure to chemicals, mining and even some packaging with top holdings including LIN, APD, NEM, EXL, SHW, DD, DOW, PPG, BLL and CTVA, overall a group of high quality stocks comprising the top 10 which account for 68.67% of the holdings.



## Monthly Educational and Insightful Links

[Investment Principle Checklists](#)

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**Not Investment Advice or Recommendation**

Any descriptions "to buy", "to sell", "long", "short" or any other trade related terminology should not be seen as a recommendation. The Author may or may not take positions in any of the names mentioned, and is not obligated to disclose positions, nor position sizes.

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