SIFMA Insights

COVID-19 Related Market Turmoil Recap: Part I

Equities, ETFs, Listed Options & Capital Formation

June 2020

Key Takeaways

In light of COVID-19 related market dislocations, SIFMA Research tracked daily market metrics (prices, volumes, volatility) across equities, listed options and ETFs, as well as equity capital formation. This report is the culmination of that work, analyzing market trends from the start of the year through mid-June.

- VIX: Still +176% from the start of the year, but down 58% from its peak
- Volumes: ADVs have settled from the peaks, with equity -35%, options -35% and ETFs -58%
- Index Prices: Rebounded from trough: S&P 500 +37%, DJIA +39%, Nasdaq +42%, Russell 2000 +43%
- IPOs: '19 monthly avg $4.1B vs. March '20 $1.5B (-62%), April $0.5B (-88%) and May $1.8B (-57%)

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Setting the Scene

Background

The emergence of the global pandemic COVID-19 in the first quarter of 2020 caused severe economic and capital markets shocks. In an unprecedented move, federal, state and local governments purposely shut down economic activity to prevent the spread of the virus. Everything from restaurants to theme parks to manufacturing plants closed, and people holed up in their homes. The world as we knew it stopped.

By April, economic statistics painted a bleak picture. The U.S. lost over 23 million jobs, with the reported U3 unemployment rate at 14.7%, according to the Bureau of Labor Statistics (BLS). The U6 statistics[1] provided a more accurate, yet more negative, measure of true unemployment: over 36 million unemployed, 22.8% unemployment rate.

Then came a May surprise. May total nonfarm payroll employment actually rose by 2.5 million, with the unemployment rate declining to 13.3%, reflecting a limited resumption of economic activity that had been curtailed in March and April due to the COVID-19 lockdown. Markets started to rebound, as shown by volatility coming down, volumes heading back to normal levels and index prices recovering.

But just when you thought it was safe to go back in the water, Federal Reserve (Fed) Chairman Jerome Powell tempered market enthusiasm. He indicated Fed projections were that the U.S. would end 2020 with an unemployment rate of 9.3%, with “well into the millions of people who don’t get to go back to their old job or there may not be a job in that industry for them for some time”. In light of the economic uncertainty, the Fed pledged to keep interest rates near zero through 2022 and continue its bond-buying programs for the foreseeable future. Powell noted, “The extent of the downturn and the pace of recovery remain extraordinarily uncertain and will depend in large part on our success in containing the virus.” On this report, market metrics reversed course from their recovery.

From a market structure perspective, markets remained open and functioning. The financial system and market infrastructure have been very resilient, withstanding record high turbulence, not just measured volatility but extreme 1,000 point intraday price swings. That said, there have been some concerns around the closing of physical trading floors, most notably:

- **Equities**: While the NYSE floor was closed (March 23 through May 25), there were no manual designated market maker (DMM) or floor broker processes available for the closing auction. While typically all imbalance orders are filled through these processes, it is our understanding that more market and limit-on-close orders at the closing auction were left unfilled (unfilled orders get canceled back to the buyer/seller). Floor brokers represent around 5% of intraday flow and 33% of open/close auctions. With the floor closure,

[1] Unemployed plus all persons marginally attached to the labor force and total employed part time for economic reasons

floor brokers were not able to execute D Orders to match imbalances. To level set what this means, when the NYSE floor reopened on May 26, the D Orders accounted for 19.1% of closing auction volume.[2]

- **Options**: Additionally, with the closing of the Cboe and other options trading floors, there has been a substantial decline in index options volumes (April 1.6M contracts: -52% M/M from March volatility, -15% to historical levels). Cboe as a group trades 99.2% of total index volumes, and the Cboe exchange handles 99.5% of total Cboe group volume. The Cboe exchange closed its floor temporarily (March 16 through June12), meaning almost all index options volumes were impacted by floor closings. (To be fair, there is a debate on whether it was the closing of trading floors or the extreme market volatility which negatively impacted index options.) Market participants learned from Cboe itself that the activity in complex transactions with greater than six legs is way down, as the functionality to execute these trades electronically was difficult if not nonexistent. [3]

- Additionally, market participants have indicated that there is a benefit to (both sell side and buy side) traders from being together on the trading floor. The floor environment fosters information flow, which was missed during the lockdown and created some temporary pockets of illiquidity in some securities.

Why have markets rallied? On the positive side, the Fed implemented an unprecedented number of programs to improve liquidity in various fixed income markets, coupled with fiscal stimulus. And the Fed continues to vow it will use all of its tools to maintain market liquidity and help the economic recovery. This bolstered investor sentiment in the equities markets.

Yet, the world has changed. Consumer demand has been lowered across multiple sectors. We have experienced supply chain interruptions, and we expect supply chain shifts (bringing supply chains to domestic soil) which could lead to inflation. Markets have handled everything thrown at them, but if we get a second wave of the virus the current level of exuberance could be dashed. We go back to square one, and we could have a second round of turmoil in the markets.

As such, market participants expect market metrics to ebb and flow with each economic report or update on developing a virus vaccine, whether positive or negative news.

[2] Please see SIFMA Insights: NYSE Goes All Electronic – What Does It Mean?
[3] Please see SIFMA Insights: A Deeper Look at US Multi-Listed Options Volumes

Executive Summary

The market turmoil was evidenced by high volatility, sharp price declines and spikes in volumes. Throughout the turmoil, we tracked daily market metrics across equities, ETFs and options, as well as capital formation statistics. Moving through the analysis time period of January 2 to June 15, we highlight:

- **Volatility**: VIX started the year down 19.0% from 2019 levels. VIX peaked at 82.69 on March 16, +563% from the start of the year, and remains elevated at 34.40 (+176% from start of the year, -58% from peak).
- **Volumes**: Markets started the year up versus 2019 levels: equities ADV +10.0% to 2019 average, with listed options ADV +13.4% and ETFs ADV +8.8%.
    - Equity ADV peaked at 19.4 billion shares on February 28, +150% from the start of the year. ADV increased again in June, now at 12.5 billion shares (+62% from Jan 2, +10.8% to May ADV)
    - ETFs peaked at 5.6 billion shares on February 28, +278% from the start of the year. ADV increased again in June, now at 2.4 billion shares (+59% from Jan 2, +22.9% to May ADV)
    - Options ADV peaked at 47.3 million contracts on February 28, +119% from the start of the year. ADV increased in June to 30.7 million contracts (+42% from Jan 2, +15.2% to May ADV)
    - While still elevated, volumes have settled from peaks: equities -35%, options -35% & ETFs -58%
- **Index Prices**: Markets started the year up compared to the average in 2019 by: S&P 500 +11.8%, Dow Jones Industrial Average (DJIA) +9.4%, Nasdaq Composite +14.5% and Russell 2000 +7.8%.
    - S&P 500 index troughed at 2,237.40 on March 23, -31% from the start of the year. The price continues to recover, now 3,066.59 (+5.0% to May avg, -6% from the start of the year)
    - DJIA index troughed at 18,591.93 on March 23, -36% from the start of the year. The price continues to recover, now 25,763.16 (+6.1% to May avg, -11% from the start of the year)
    - Nasdaq index troughed at 6,860.67 on March 23, -25% from the start of the year. Now at 9,726.02, the Nasdaq has fully recovered (and then some); price +7% to start of year (+6.8% to May avg)
    - Russell 2000 index troughed at 991.16 on March 18, -41% from the start of the year. The price continues to recover, now 1,419.61 (+7.9% to May avg, -15% from the start of the year)
    - To date, all four key indexes have rebounded, up from their trough price by: S&P 500 +37.1%, DJIA +38.6%, Nasdaq +41.8% and Russell 2000 +43.2%
- **Capital Formation**: Total issuance of all types slowed substantially in March and remained muted in April: -77% and -37% to the 2019 monthly average ($19 billion) respectively. Issuance then exploded in May, +202% to the 2019 monthly average, driven by secondary offerings. While IPOs followed a similar March and April path, -62% and -88% to the 2019 monthly average ($4.1 billion), they were still down in May (-57% to 2019 average). Conversely, secondary offerings exploded in May, +314% to the 2019 average ($12.1 billion; -77% and -26% in March and April respectively).

Market Volatility

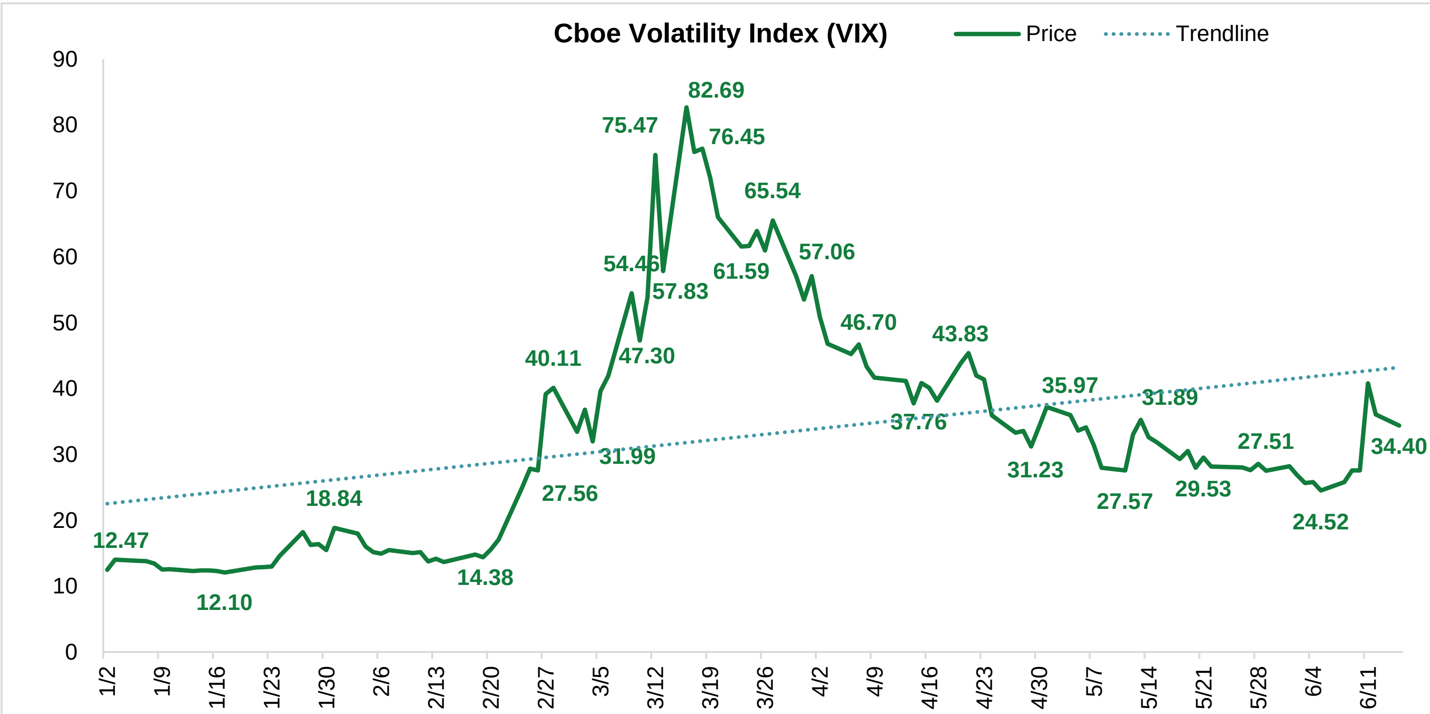
2020 started the year with very low volatility, with the VIX[4] at 12.47, down 19.0% from the 2019 level of 15.39. Then the emergence of the global pandemic COVID-19 caused severe economic shocks and capital markets turmoil, evidenced by movements in the VIX. Moving through the analysis time period of January 2 to June 15, we highlight:

- VIX peaked at 82.69 on March 16, +563% from the start of the year; this represented a historical high, even compared to the global financial crisis[5]
- The VIX peaked but then began to settle quickly, as shown in the monthly average
  - The March average was 57.74, +314% to the January average
  - April decreased 28.2% from the March high to 41.45 (April average +197% to January average)
  - May decreased 46.5% from the March high to 30.90 (May average +122% to January average)
- The VIX remains elevated at 34.40; +176% from the start of the year, yet -58% from its peak

VIX			
2019 Average	15.39	1Q20	31.22
Jan 2	12.47	1Q20/Jan 2	150%
Peak	82.69	Jan Avg	13.94
Peak Date	3/16	Feb Avg	19.63
Peak/Jan 2	563%	Feb/Jan	41%
Trough	12.10	Mar Avg	57.74
Trough Date	1/17	Mar/Jan	314%
June15	34.40	Apr Avg	41.45
June15/Jan 2	176%	Apr/Jan	197%
June15/Peak	-58%	May Avg	30.90
Peak/Trough Spread	70.59	May/Jan	122%

Source: Bloomberg, SIFMA estimates

[4] A real-time market index that represents the market's expectation of 30-day forward looking volatility, as derived from the price inputs of S&P 500 index options. It measures market risk and investor sentiment (fear, stress) and is often called the fear index
[5] Please see SIFMA Insights Spotlight: The VIX's Wild Ride



Source: Bloomberg (Jan 2-Jun 15)

June Trends

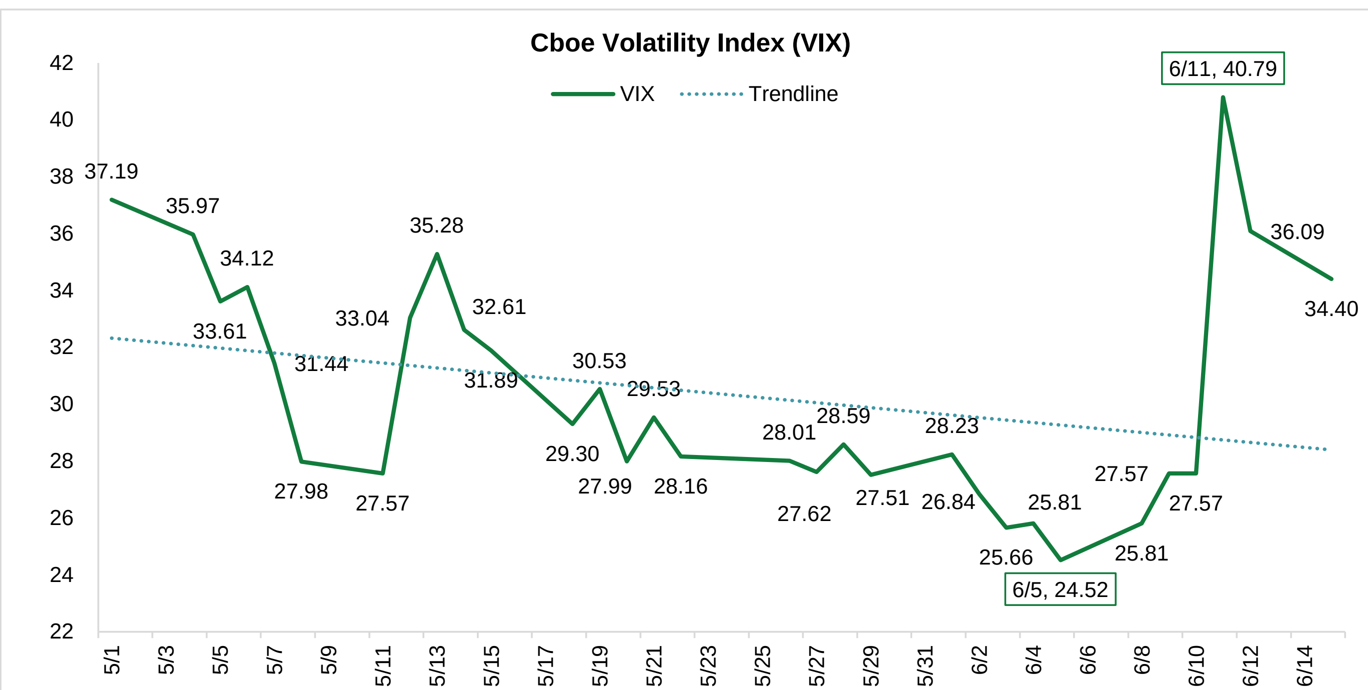
As we entered June, markets thought the VIX was on a steady decline. The May peak was on the first day of the month, while the lowest level was on the last day. The trendline was clearly downward sloping. The VIX reached a new low for May and June of 24.52 on June 5, in reaction to the May jobs report which surprised to the upside. June to date (as of June 15) reached a lower minimum value than in May, 24.52 versus 27.49. Given the lower levels in the first week, the average VIX for June is slightly lower than in May, 29.39 versus 30.90.

Then the VIX reversed course and began to move back up. The VIX reached a new high for May and June of 40.79 on June 11, in response to the S&P 500 falling 5.9% from the prior days close. This was the largest one-day drop seen since March 16 (-12.0% D/D), given renewed concerns of a virus resurgence and negative economic forecasts from the Federal Reserve (Chairman Jerome Powell announced the day before that rates would remain near zero through 2022, citing economic uncertainty about the timing and strength of a recovery). June has also now seen a higher maximum level than in May, 40.79 versus 37.19. June's trendline is heading in the opposite direction from May, upward sloping. The trough was on June 5, while the VIX peaked on June 11.

Market participants continue to expect swings – to both the upside and downside – based on economic updates and news on the timing of developing a vaccine for the virus.

VIX			
Jun 15	34.40		
May Avg	30.90	Jun Avg	29.39
May Min	27.51	Jun Min	24.52
Min Date	5/29	Min Date	6/5
May Max	37.19	Jun Max	40.79
Max Date	5/1	Max Date	6/11

Source: Bloomberg, SIFMA estimates



Source: Bloomberg (Jan 2-Jun 15)

Market Volumes

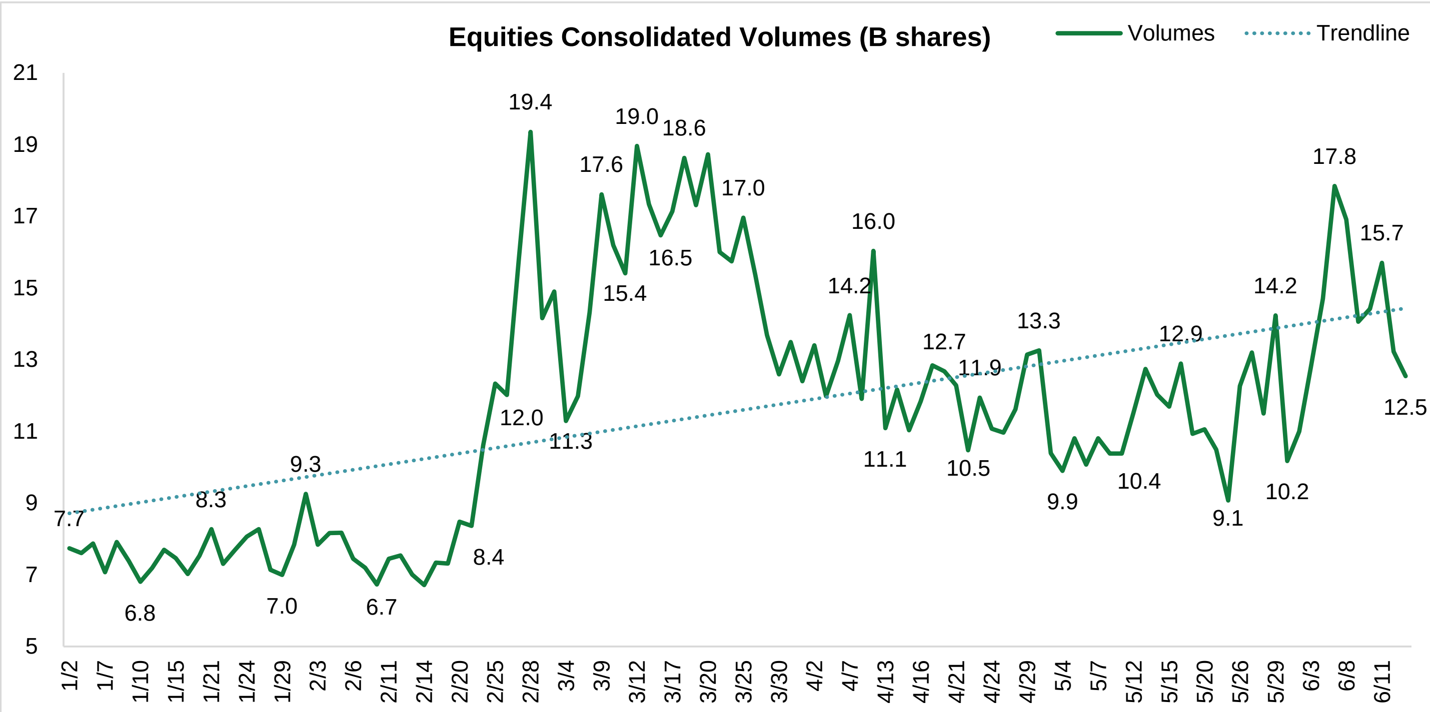
In line with volatility, markets began the year under normal circumstances, exhibiting typical start-of-the-year patterns. Volumes were up versus 2019 levels, yet no segment of the markets exhibited overly unusual patterns: equities ADV +10.0% to 2019 average, with listed options ADV +13.4% and ETFs ADV +8.8%. Moving through the analysis time period of January 2 to June 15, we highlight:

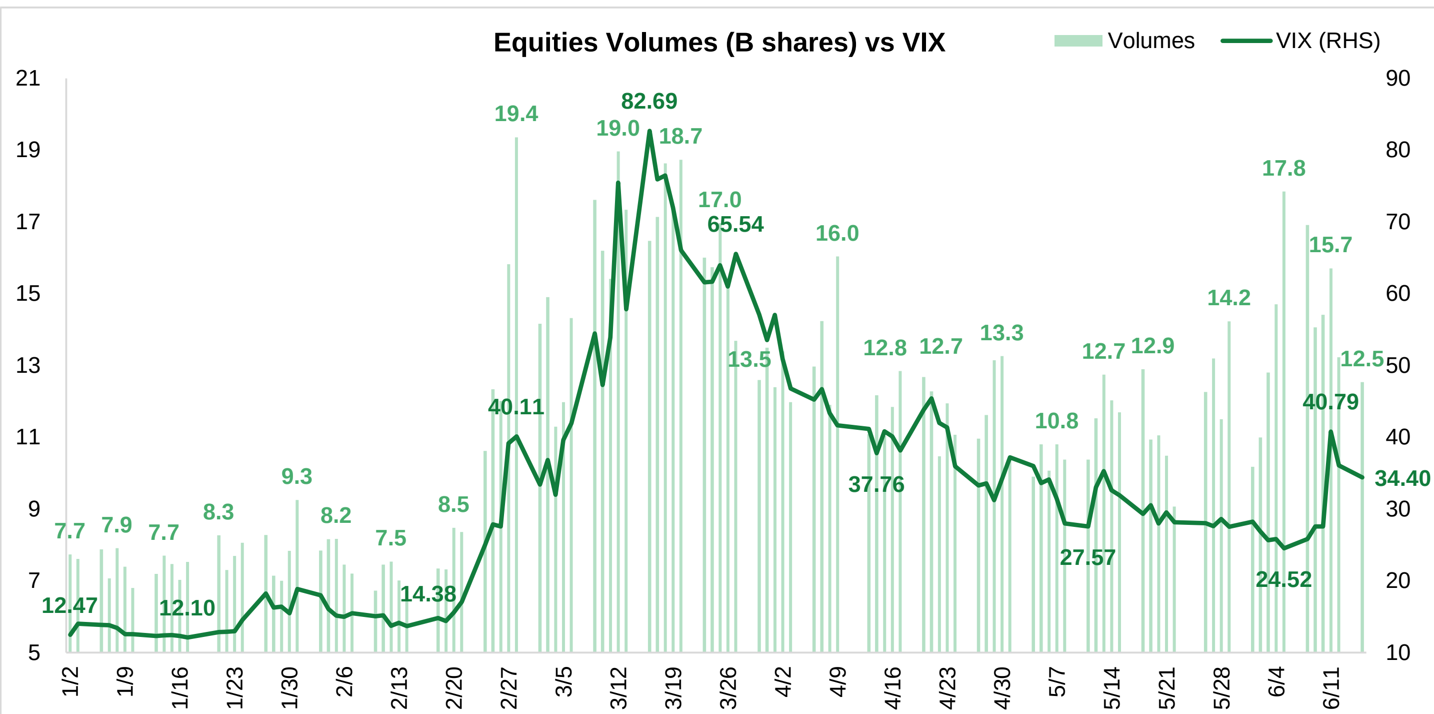
- We note this analysis just looks at levels of volumes and does not assess buy/sell or put/call ratios
- Equity ADV began the year at 7.7 billion shares
    - ADV peaked at 19.4 billion shares on February 28, +150% from the start of the year
    - March ADV was 15.6 billion shares, +105% to January ADV
    - April decreased 21.1% from the March high to 12.3 billion shares (April ADV +62% to January ADV)
    - May decreased 27.7% from the March high to 11.3 billion shares (May ADV +48% to January ADV)
    - ADV increased again in June, now at 12.5 billion shares (+62% from Jan 2, +10.8% to May ADV)
- ETFs ADV began the year at 1.5 billion shares
    - ADV peaked at 5.6 billion shares on February 28, +278% from the start of the year
    - March ADV was 4.2 billion shares, +182% to January ADV
    - April decreased 33.0% from the March high to 2.8 billion shares (April ADV +89% to January ADV)
    - May decreased 53.8% from the March high to 1.9 billion shares (May ADV +30% to January ADV)
    - ADV increased again in June, now at 2.4 billion shares (+59% from Jan 2, +22.9% to May ADV)
- ETF as a percent of total equity volumes began the year at 19.1% (in line with 2019 average of 19.2%)
    - This ratio peaked at 29.8% on March 3, +10.7 pps from the start of the year
    - This ratio fluctuated with the market turmoil: March average 26.5%, April 22.5% and May 16.9%
    - It now sits at 18.8%, -0.3 pps from the start of the year
- Options ADV began the year at 21.6 million contracts
    - ADV peaked at 47.3 million contracts on February 28, +119% from the start of the year
    - March ADV was 29.6 million contracts, +23% to January ADV
    - April decreased 13.2% from March high to 25.7 million contracts (April ADV +7% to January ADV)
    - While May ADV ticked back up, it was still down 10.1% from the March high at 26.6 million contracts (May ADV +11% to January ADV)
    - ADV continued to increase in June to 30.7 million contracts (+42% from Jan 2, +15.2% to May ADV)
- While still elevated, volumes have settled from their peaks: equities -35%, options -35% and ETFs -58%

	Equity ADV	Options ADV	ETFs ADV	ETF % Equity	VIX
2019 Average	7.0	19.1	1.4	19.2%	15.39
Jan 2	7.7	21.6	1.5	19.1%	12.47
Peak	19.4	47.3	5.6	29.8%	82.69
Peak Date	2/28	2/28	2/28	3/3	3/16
Peak/Jan 2	150%	119%	278%	10.7%	563%
Trough	6.7	18.7	1.1	11.7%	12.10
Trough Date	2/14	1/7	2/14	6/8	1/17
June15	12.5	30.7	2.4	18.8%	34.40
June15/Jan 2	62%	42%	59%	-0.3%	176%
June15/Peak	-35%	-35%	-58%	-11.0%	-58%
Peak/Trough Spread	12.6	28.6	4.5	18.1%	70.59
1Q20	11.0	27.5	2.6	23.6%	31.22
1Q20/Jan 2	42%	27%	75%	4.5%	150%
Jan ADV	7.6	24.1	1.5	19.3%	13.94
Feb ADV	9.3	28.8	2.0	21.9%	19.63
Feb/Jan	21%	20%	38%	2.6%	41%
Mar ADV	15.6	29.6	4.2	26.5%	57.74
Mar/Jan	105%	23%	182%	7.2%	314%
Apr ADV	12.3	25.7	2.8	22.5%	41.45
Apr/Jan	62%	7%	89%	3.2%	197%
May ADV	11.3	26.6	1.9	16.9%	30.90
May/Jan	48%	11%	30%	-2.4%	122%

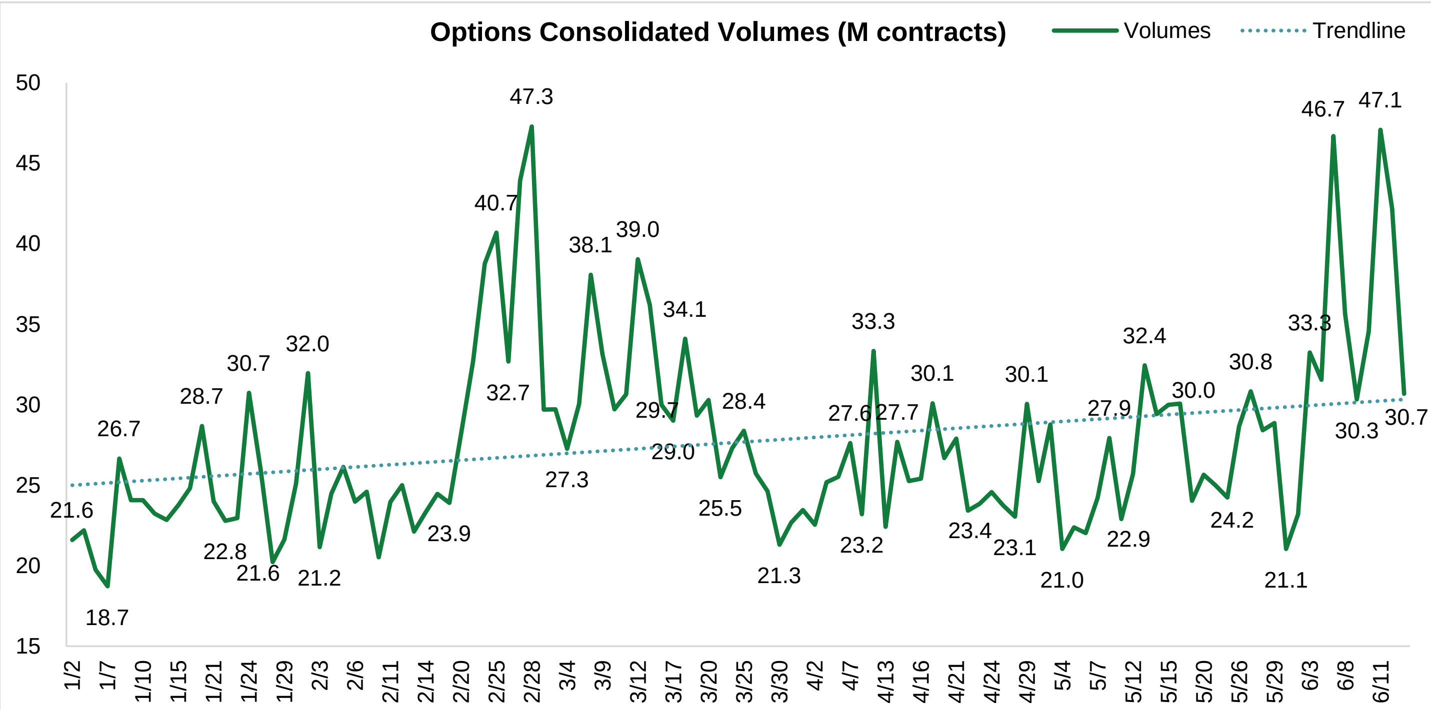
Source: Bloomberg, CBOE Global Markets, SIFMA estimates

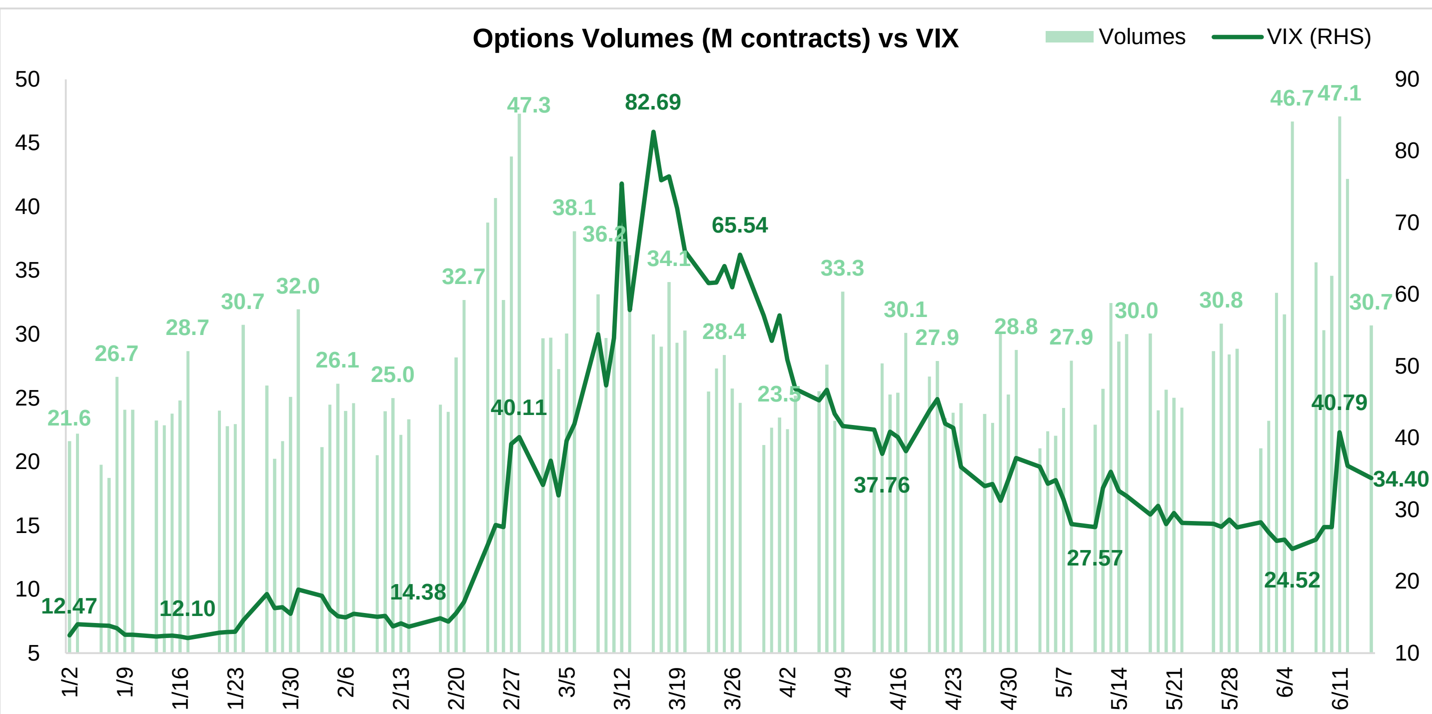
Note: Options ADV = contracts millions; Equities & ETF ADV = shares billions; averages for VIX and ETF % total





Source: Cboe Global Markets, SIFMA estimates (Jan 2-Jun 15)





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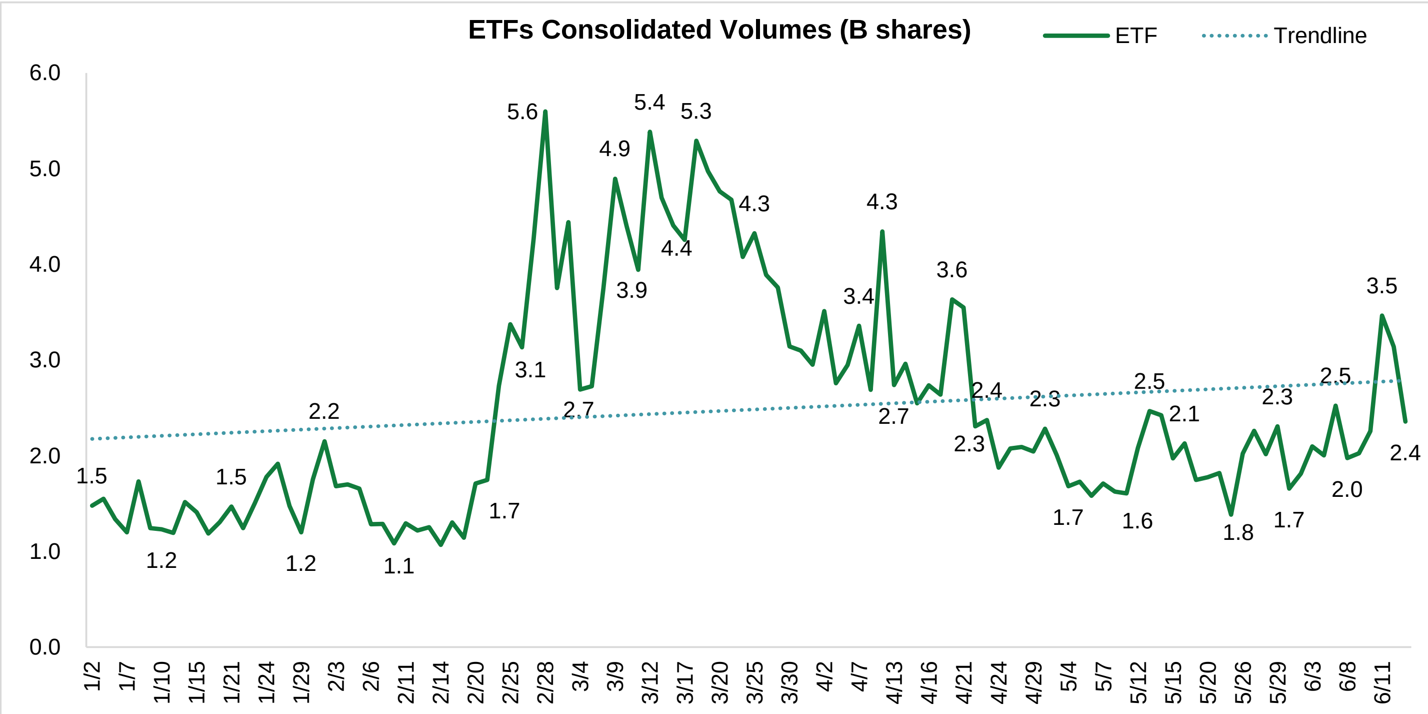

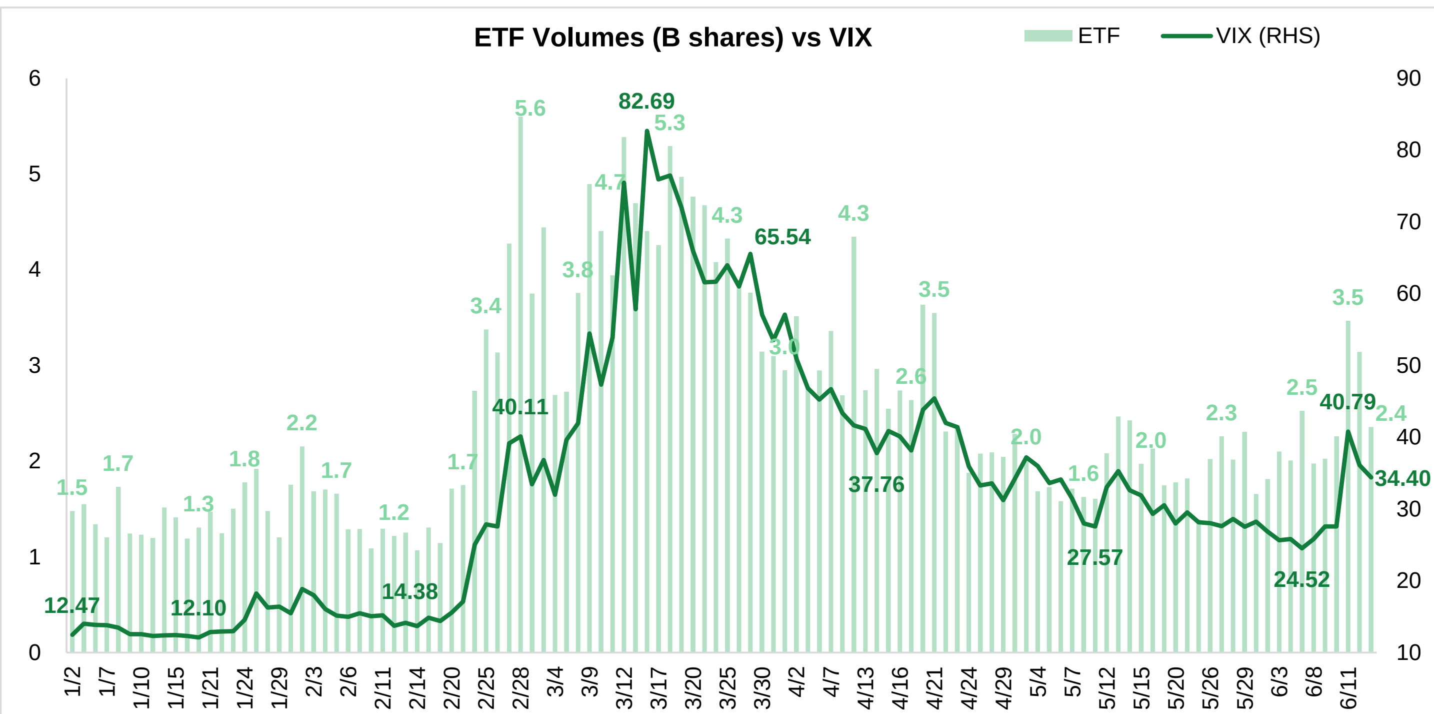

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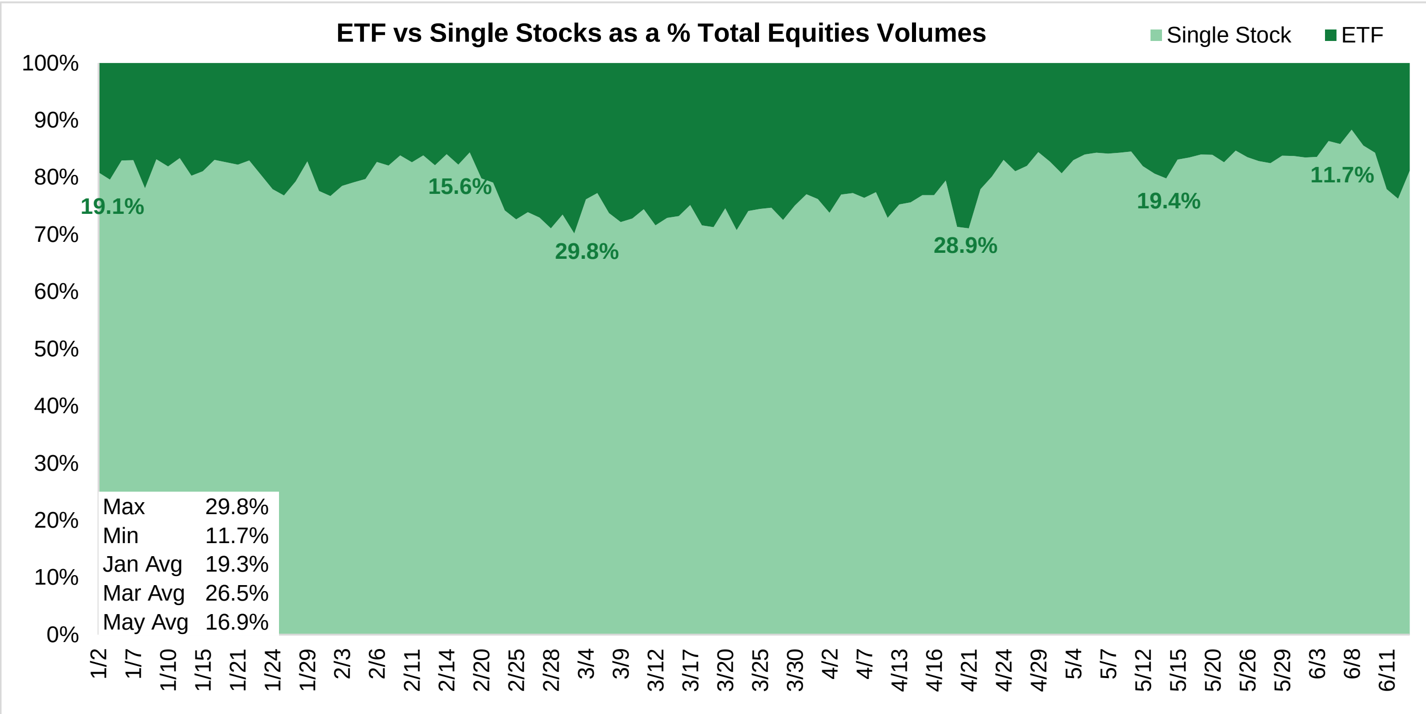


Source: Cboe Global Markets, SIFMA estimates (Jan 2-Jun 15)

June Trends

As noted in the volatility section, June has experienced dramatic swings, based on economic news. The start of the month saw increased investor sentiment as the May jobs report came in better than expected. This excitement was reversed once Fed Chair Powell announced rates would stay near zero given economic uncertainty, taming the enthusiasm that the economy was recovering faster than expected. Volumes reacted on all of these announcements.

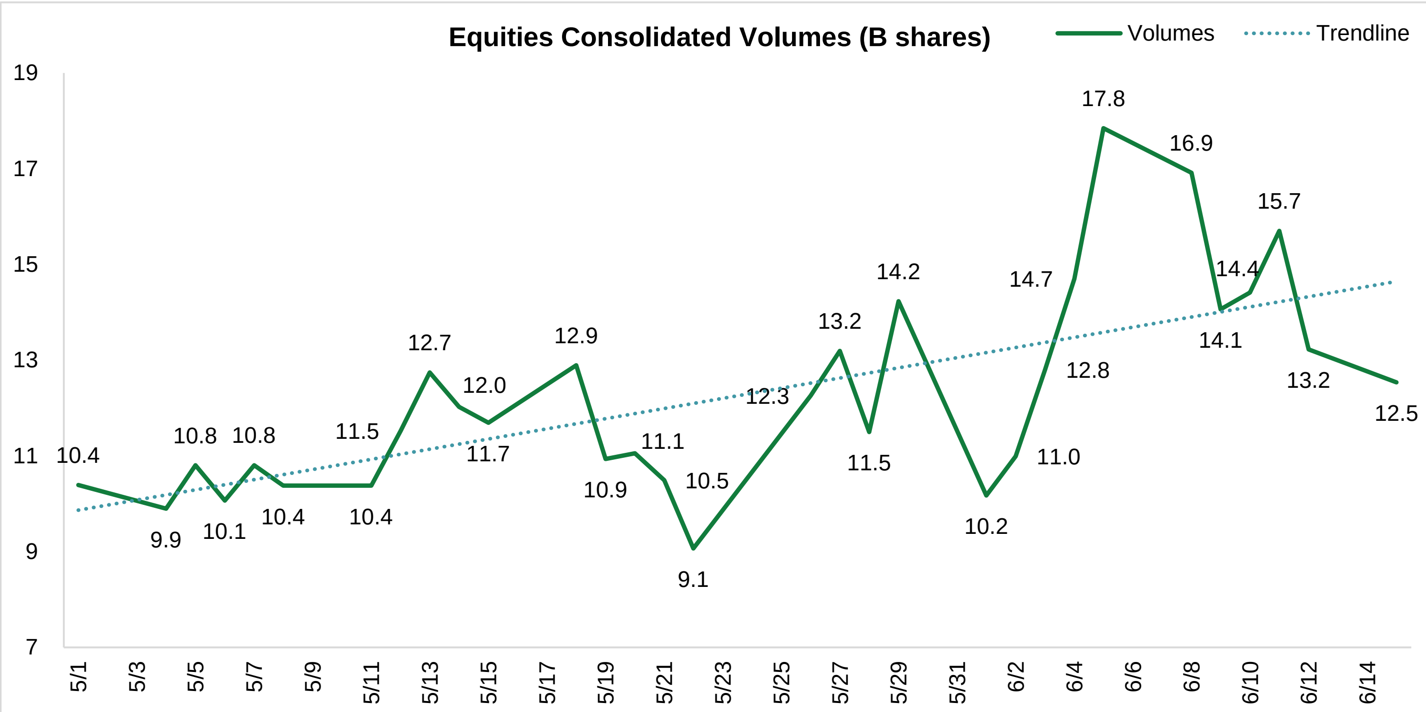
- **Equities**: While ADV was starting to come down in May, volumes picked up at the end of the month and remain higher in June (12.5 billion shares, versus ~7 billion shares historically)
- **ETFs**: ETFs experienced a similar trend, with ADV now at 2.4 billion shares (versus 1.4 billion shares historically)
- **Options**: ADV had started to come down in May, but increased in a much greater fashion in June than equities did; volumes have started to settle again (30.7 million contracts, versus ~19 million contracts historically)

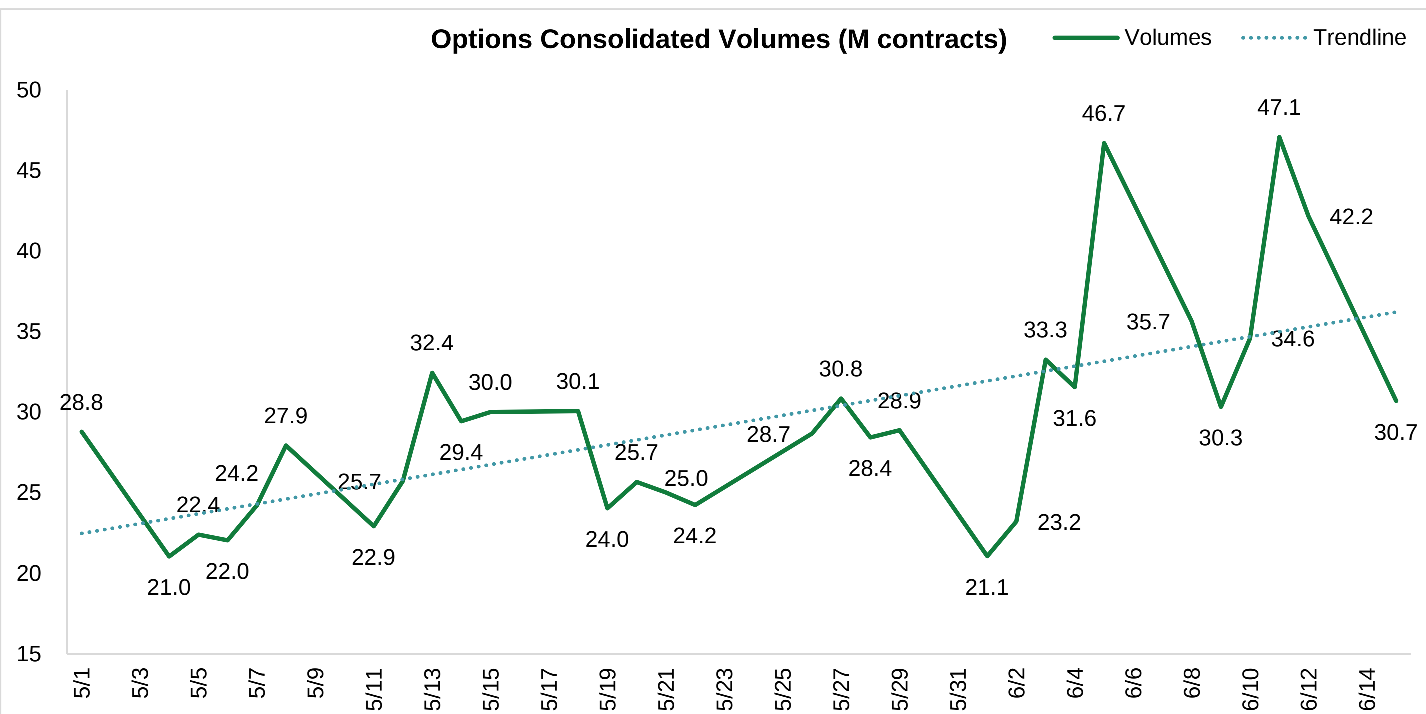
Market participants expect volumes to ebb and flow with each economic report or news of progress towards a vaccine, whether good or bad news.

	Equity ADV	Options ADV	ETFs ADV	ETF % Equity	VIX
June 15	12.5	30.7	2.4	18.8%	34.40
May ADV	11.3	26.6	1.9	16.9%	30.90
May Min	9.1	21.0	1.4	15.3%	27.51
Min Date	5/22	5/4	5/22	5/22	5/29
May Max	14.2	32.4	2.5	20.2%	37.19
Max Date	5/29	5/13	5/13	5/14	5/1
June ADV	13.9	34.2	2.3	16.5%	29.39
June Min	10.2	21.1	1.7	11.7%	24.52
Min Date	6/1	6/1	6/1	6/8	6/5
June Max	17.8	47.1	3.5	23.7%	40.79
Max Date	6/5	6/11	6/11	6/12	6/11

Source: Bloomberg, CBOE Global Markets, SIFMA estimates

Note: Options ADV = contracts millions; Equities & ETF ADV = shares billions; averages for VIX and ETF % total





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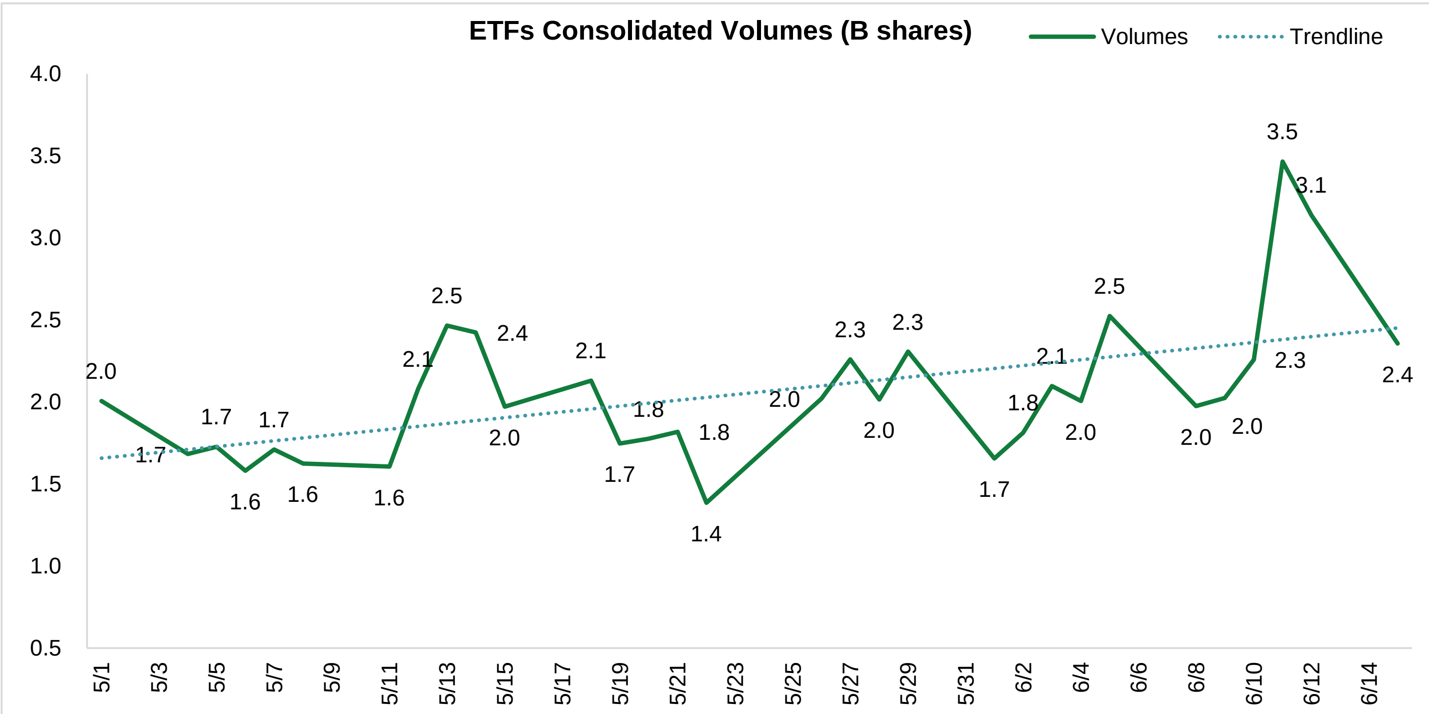


Source: Cboe Global Markets, SIFMA estimates (Jan 2-Jun 15)

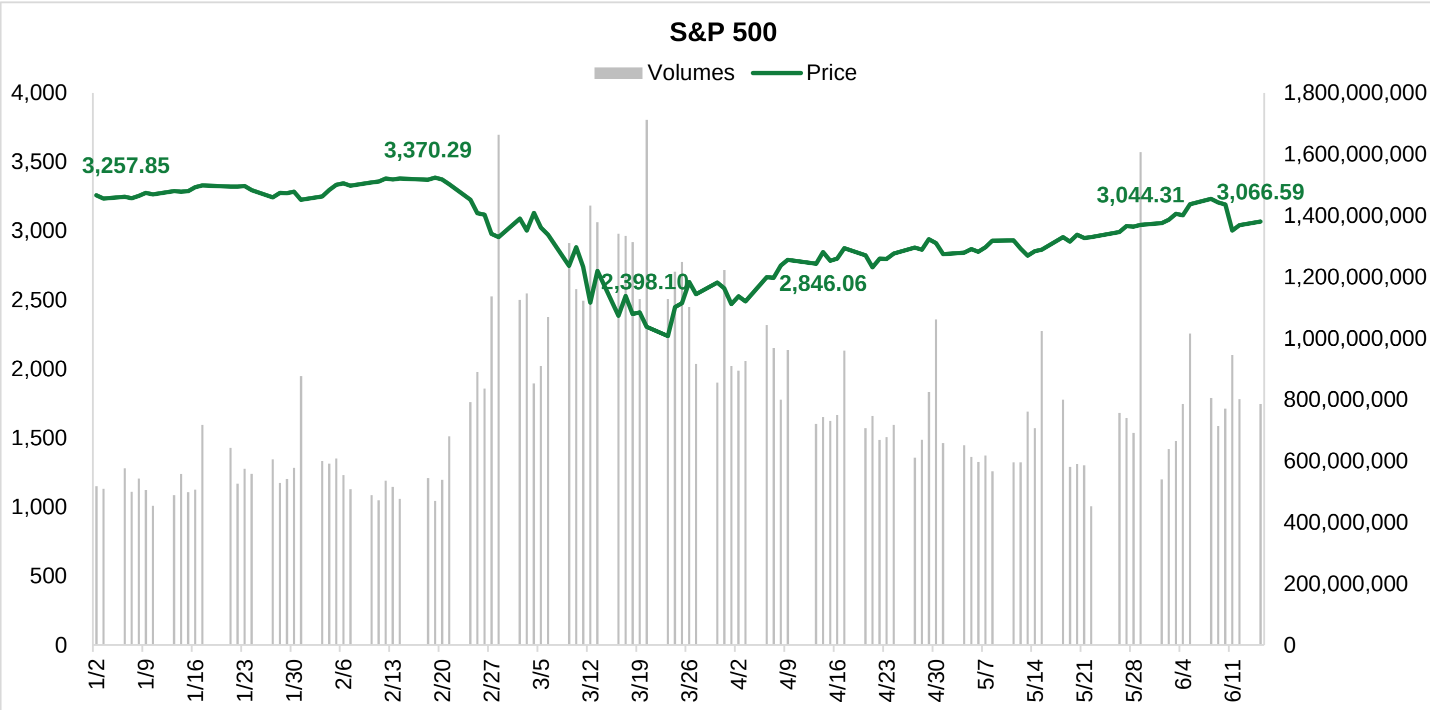
Market Index Prices

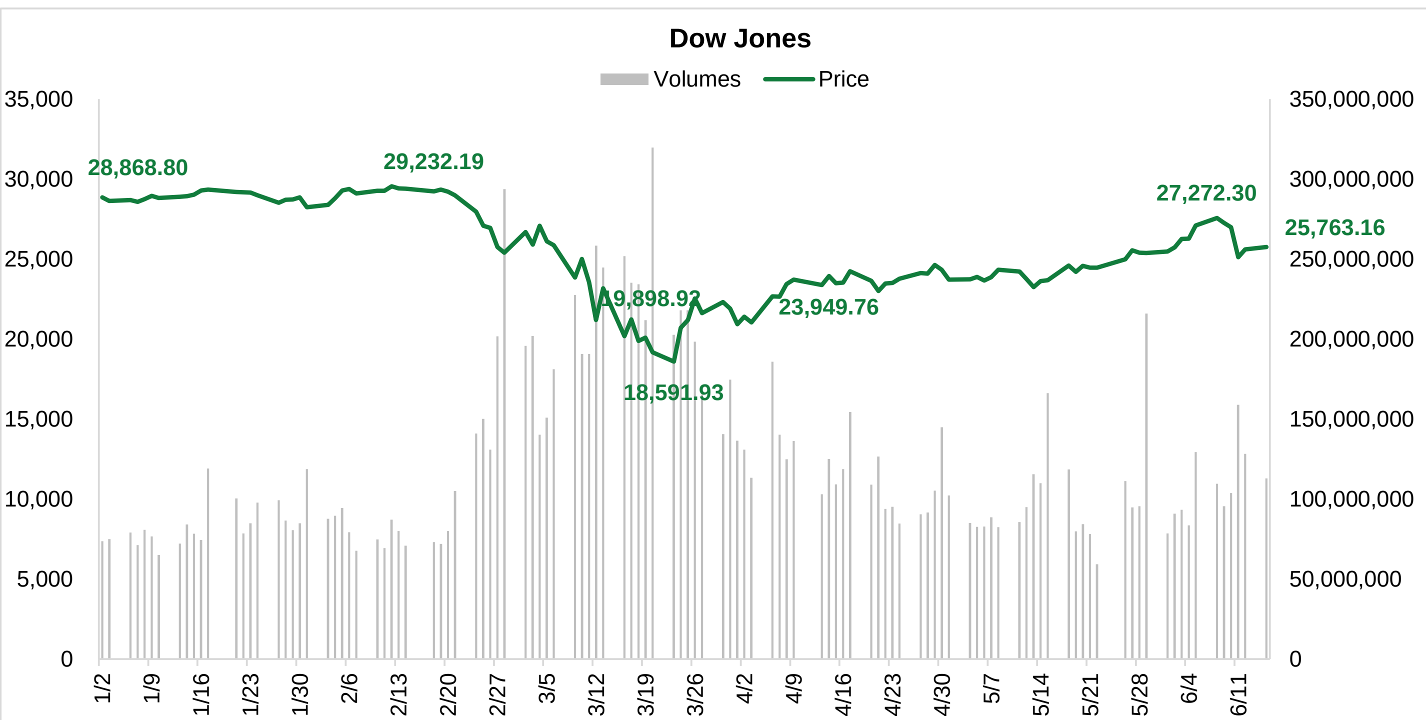
Markets started the year poised to continue their run, with the main index prices on January 2 up compared to the average in 2019 by: S&P 500 +11.8%, Dow Jones Industrial Average (DJIA) +9.4%, Nasdaq Composite +14.5% and Russell 2000 +7.8%. Then came COVID-19, and as volatility increased index prices decreased. Moving through the analysis time period of January 2 to June 15, we highlight:

- The S&P 500 index began the year at a price level of 3,257.85
  - The price troughed at 2,237.40 on March 23, -31% from the start of the year
  - The average price in March was 2,652.39, -19% to the January average
  - April average price increased 4.1% from the March low to 2,761.98 (April avg -16% to January avg)
  - May average price increased 10.1% from the March low to 2,919.62 (May avg -11% to January avg)
  - The price continues to recover at a slower pace, now 3,066.59 (+5.0% to May avg, -6% from the start of the year)
- The DJIA index began the year at a price level of 28,868.80
  - The price troughed at 18,591.93 on March 23, -36% from the start of the year
  - The average price in March was 22,637.42, -22% to the January average
  - April average price increased 2.9% from the March low to 23,293.90 (April avg -19% to January avg)
  - May average price increased 7.2% from the March low to 24,271.02 (May avg -16% to January avg)
  - The price continues to recover at a slightly slower pace, now 25,763.16 (+6.1% to May avg, -11% from the start of the year)
- The Nasdaq index began the year at a price level of 9,092.19
  - The price troughed at 6,860.67 on March 23, -25% from the start of the year
  - The average price in March was 7,772.21, -16% to the January average
  - April average price increased 6.7% from the March low to 8,292.41 (April avg -10% to January avg)
  - May average price increased 17.2% from the March low to 9,105.66 (May avg -1% to January avg)
  - Now at 9,726.02, the Nasdaq has fully recovered (and then some), with its price now +7% to the start of the year (+6.8% to May avg)
- The Russell 2000 index began the year at a price level of 1,666.77
  - The price troughed at 991.16 on March 18, -41% from the start of the year
  - The average price in March was 1,216.62, -27% to the January average
  - April average price decreased further (-1.1%) from the March level to 1,203.10 (April avg -28% to January avg)
  - May average price increased 9.4% from the April low to 1,315.68 (May avg -21% to January avg)
  - The price continues to recover at a slightly slower pace, now 1,419.61 (+7.9% to May avg, -15% from the start of the year)
- To date, all four key indexes have rebounded, up from their trough price by: S&P 500 +37.1%, DJIA +38.6%, Nasdaq +41.8% and Russell 2000 +43.2%

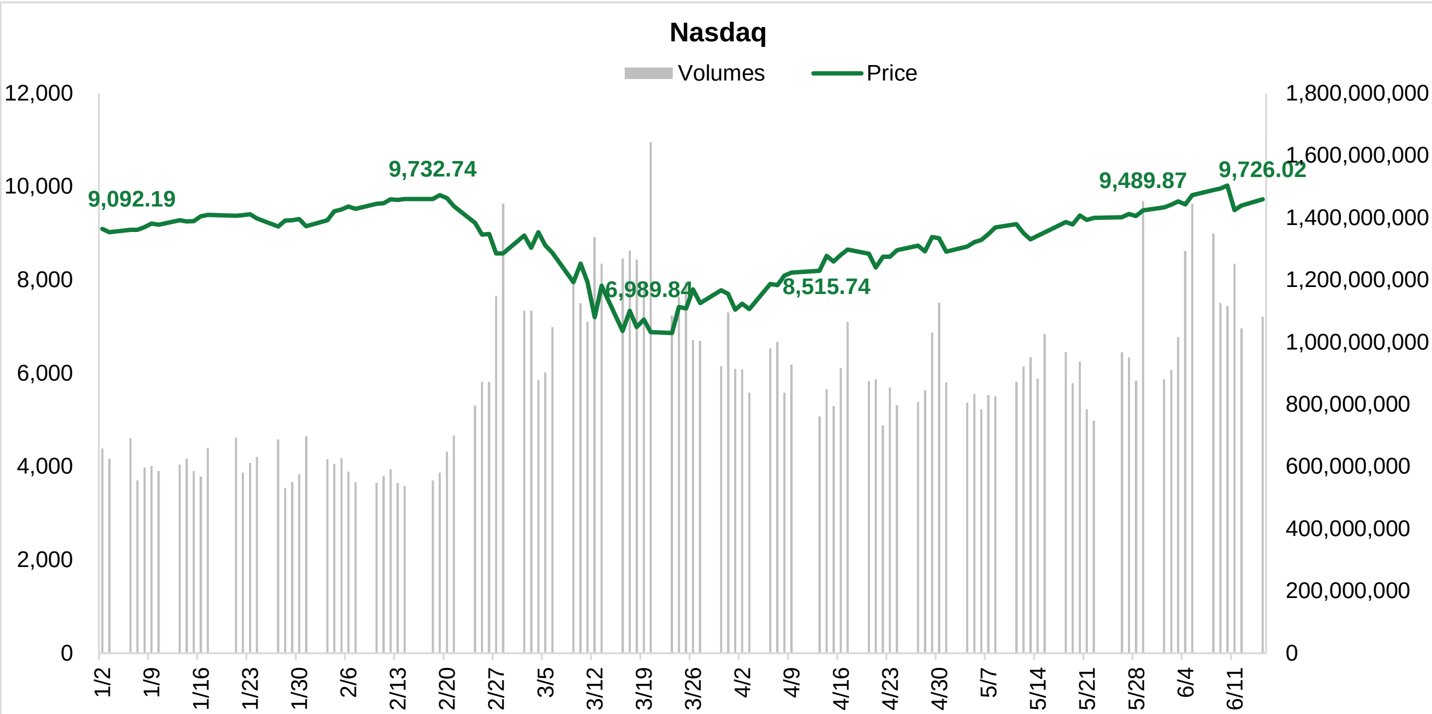
	S&P 500	DJIA	Nasdaq	Russell 2000		VIX
2019 Average	2,913.36	26,379.54	7,940.13	1,546.16	2019 Average	15.39
Jan 2	3,257.85	28,868.80	9,092.19	1,666.77	Jan 2	12.47
Trough	2,237.40	18,591.93	6,860.67	991.16	Peak	82.69
Trough Date	3/23	3/23	3/23	3/18	Peak Date	3/16
Trough/Jan 2	-31%	-36%	-25%	-41%	Peak/Jan 2	563%
Peak	3,386.15	29,551.42	9,817.18	1,705.22	Trough	12.10
Peak Date	2/19	2/12	2/19	1/16	Trough Date	1/17
June15	3,066.59	25,763.16	9,726.02	1,419.61	June15	34.40
June15/Jan 2	-6%	-11%	7%	-15%	June15/Jan 2	176%
June15/Trough	37%	39%	42%	43%	June15/Peak	-58%
Peak/Trough Spread	1,148.8	10,959.5	2,956.5	714.1	Peak/Trough Spread	70.59
1Q20	3,055.87	26,554.48	8,771.73	1,499.42	1Q20	31.22
1Q20/Jan 2	-6%	-8%	-4%	-10%	1Q20/Jan 2	150%
Jan Avg	3,278.20	28,879.99	9,233.36	1,666.65	Jan Avg	13.94
Feb Avg	3,277.31	28,519.73	9,418.85	1,642.04	Feb Avg	19.63
Feb/Jan	-0.03%	-1%	2%	-1%	Feb/Jan	41%
Mar Avg	2,652.39	22,637.42	7,772.21	1,216.62	Mar Avg	57.74
Mar/Jan	-19%	-22%	-16%	-27%	Mar/Jan	314%
Apr Avg	2,761.98	23,293.90	8,292.41	1,203.10	Apr Avg	41.45
Apr/Jan	-16%	-19%	-10%	-28%	Apr/Jan	197%
May Avg	2,919.62	24,271.02	9,105.66	1,315.68	May Avg	30.90
May/Jan	-11%	-16%	-1%	-21%	May/Jan	122%

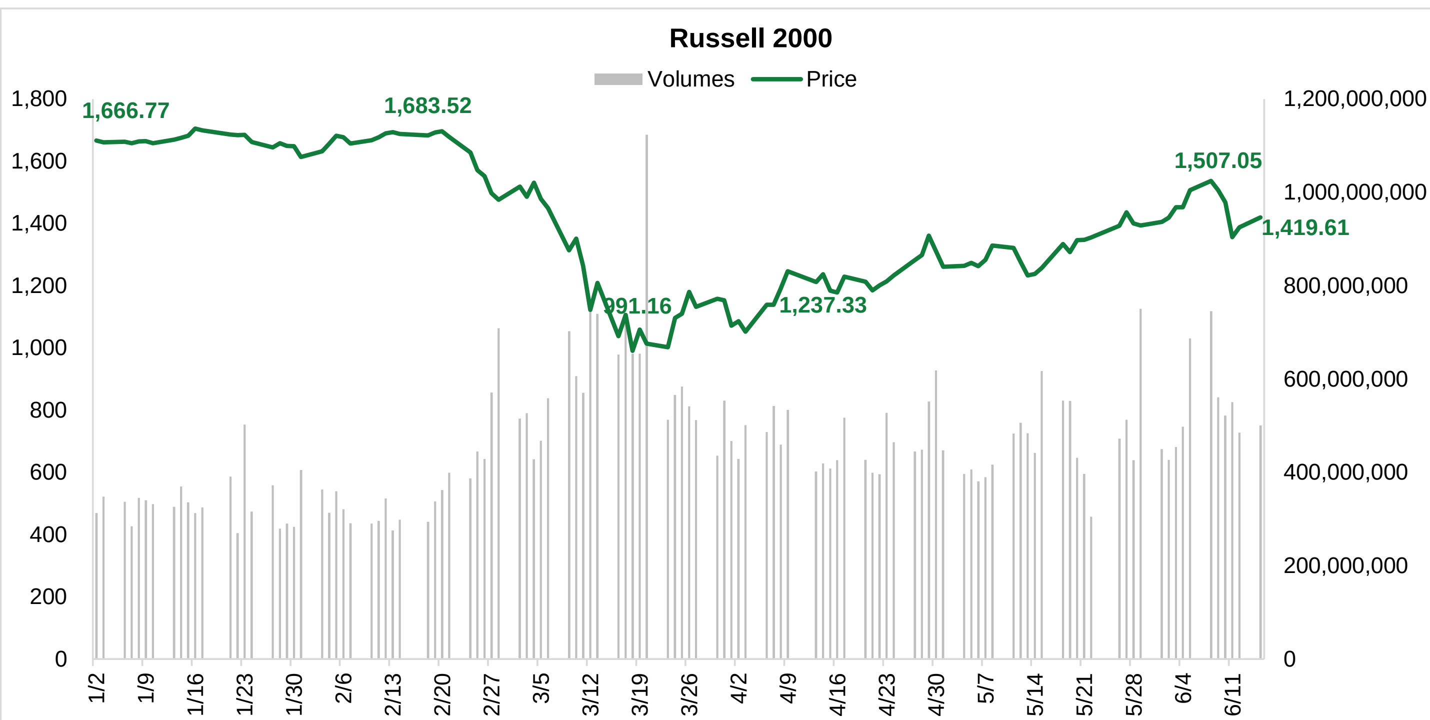
Source: Bloomberg, SIFMA estimates





Source: Bloomberg, SIFMA estimates (Jan 2-Jun 15)





Source: Bloomberg, SIFMA estimates (Jan 2-Jun 15)

June Trends

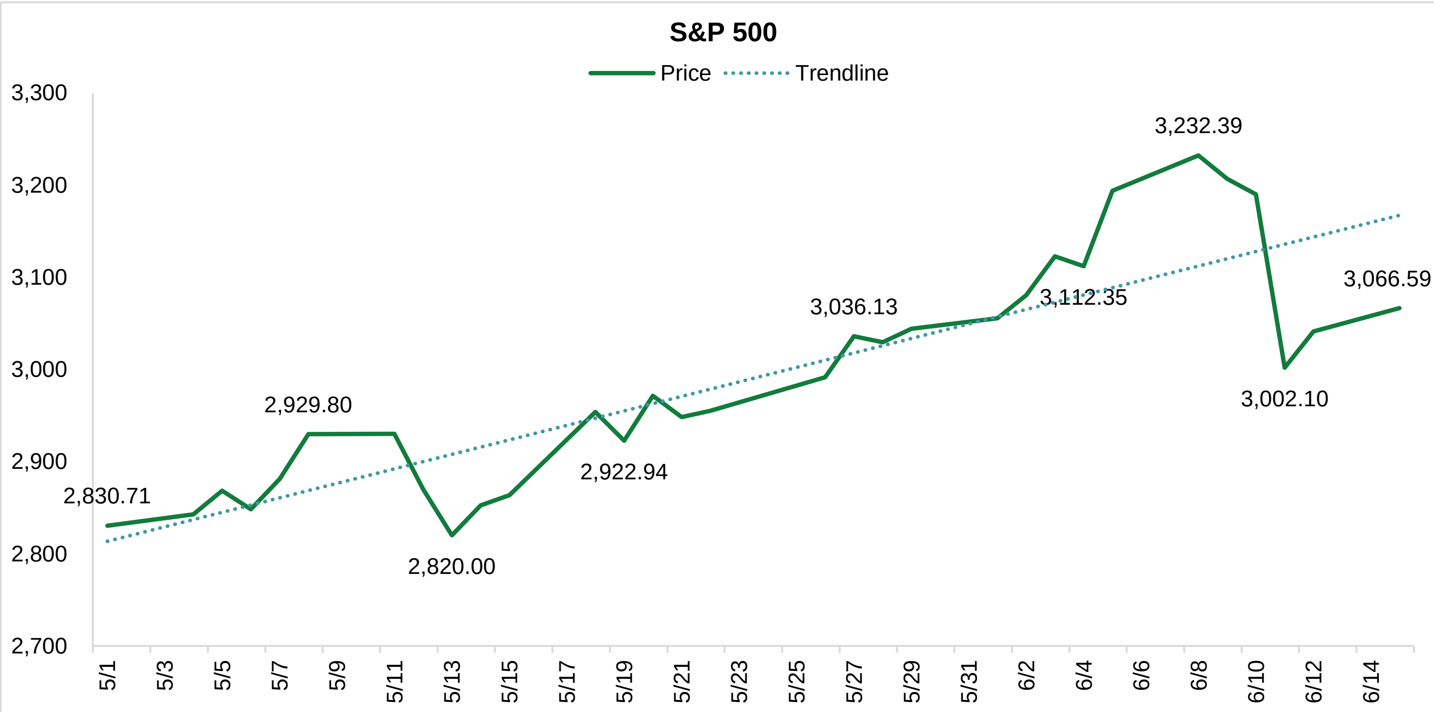
The June swings continue, based on economic news. Index prices started climbing higher on the surprise May jobs report, then came back down after Fed Chair Powell spoke (rates remaining near zero through 2022). Price levels reacted on all of these announcements.

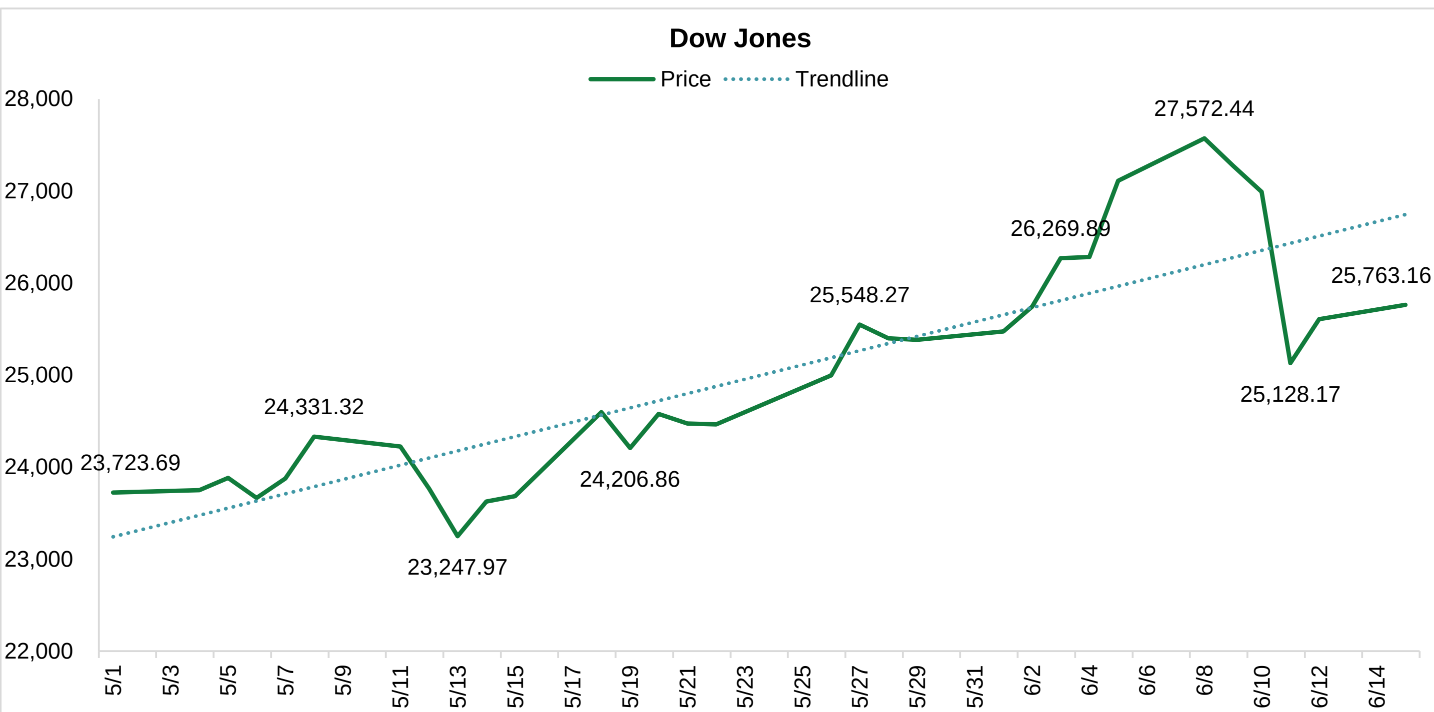
- **S&P 500**: The price was on a strong upward sloping trajectory to start the month, coming back down on economic news; now at 3,066.59, the price is above the average 2019 level of 2,913.36
- **DJIA**: The DJIA June price chart mimics the S&P 500 chart almost perfectly, with the current level of 25,763.16 starting to get back to the average 2019 level of 26,379.54
- **Nasdaq**: The Nasdaq continues to climb, with the current price of 9,726.02 well above the average 2019 level of 7,940.13
- **Russell 2000**: Being more closely aligned to the U.S. economy and consisting of smaller market cap companies, the Russell recovery lags the other indexes; currently at 1,419.61, it remains down 15% from the start of the year and behind the average 2019 level of 1,546.16

Market participants expect index prices to mark investor sentiment as they increase and decrease according to economic reports and news of progress towards a vaccine. Sentiment is also impacted by the fear level around a resurgence of the virus.

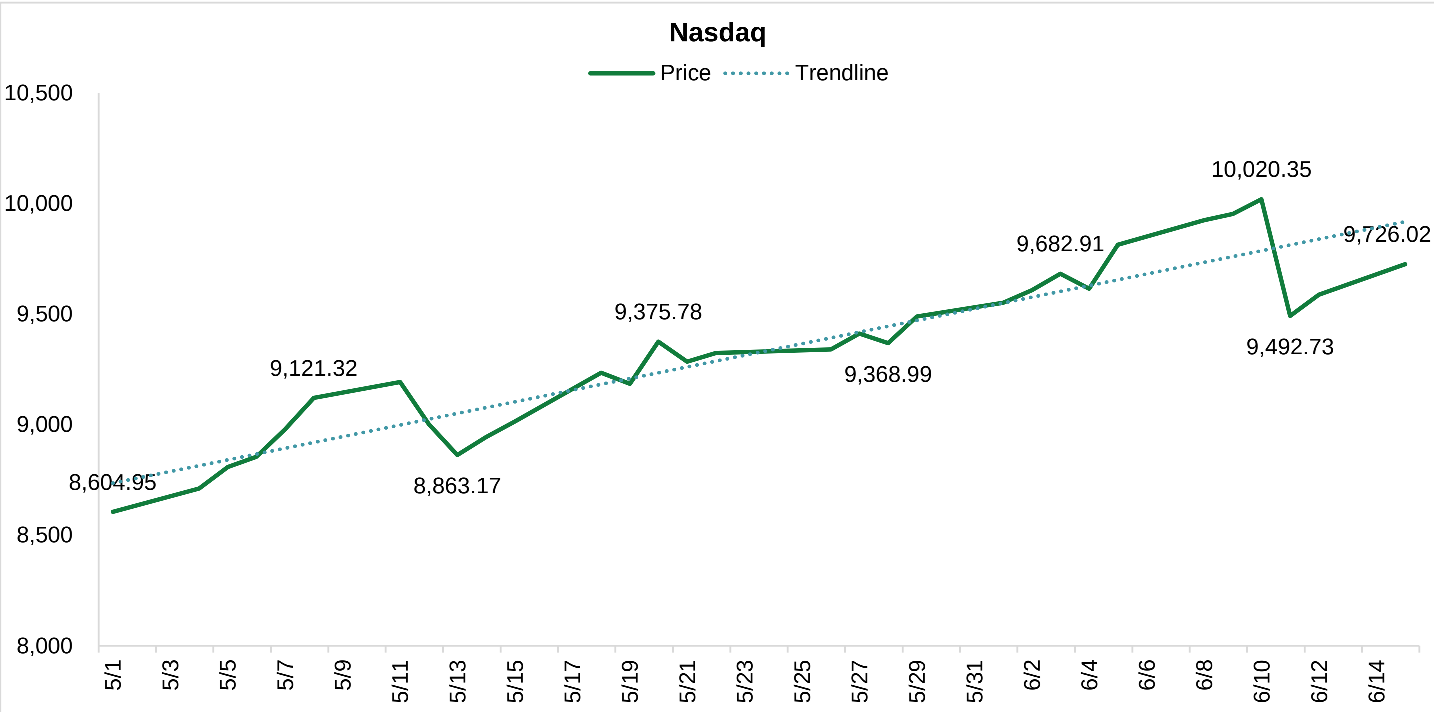
	S&P 500	DJIA	Nasdaq	Russell 2000	VIX
June 15	3,066.59	25,763.16	9,726.02	1,419.61	34.40
May Avg	2,919.62	24,271.02	9,105.66	1,315.68	30.90
May Min	2,820.00	23,247.97	8,604.95	1,233.25	27.51
Min Date	5/13	5/13	5/1	5/13	5/29
May Max	3,044.31	25,548.27	9,489.87	1,436.36	37.19
Max Date	5/29	5/27	5/29	5/27	5/1
June Avg	3,118.67	26,292.00	9,725.42	1,446.34	29.39
June Min	3,002.10	25,128.17	9,492.73	1,356.22	24.52
Min Date	6/11	6/11	6/11	6/11	6/5
June Max	3,232.39	27,572.44	10,020.35	1,536.90	40.79
Max Date	6/8	6/8	6/10	6/8	6/11

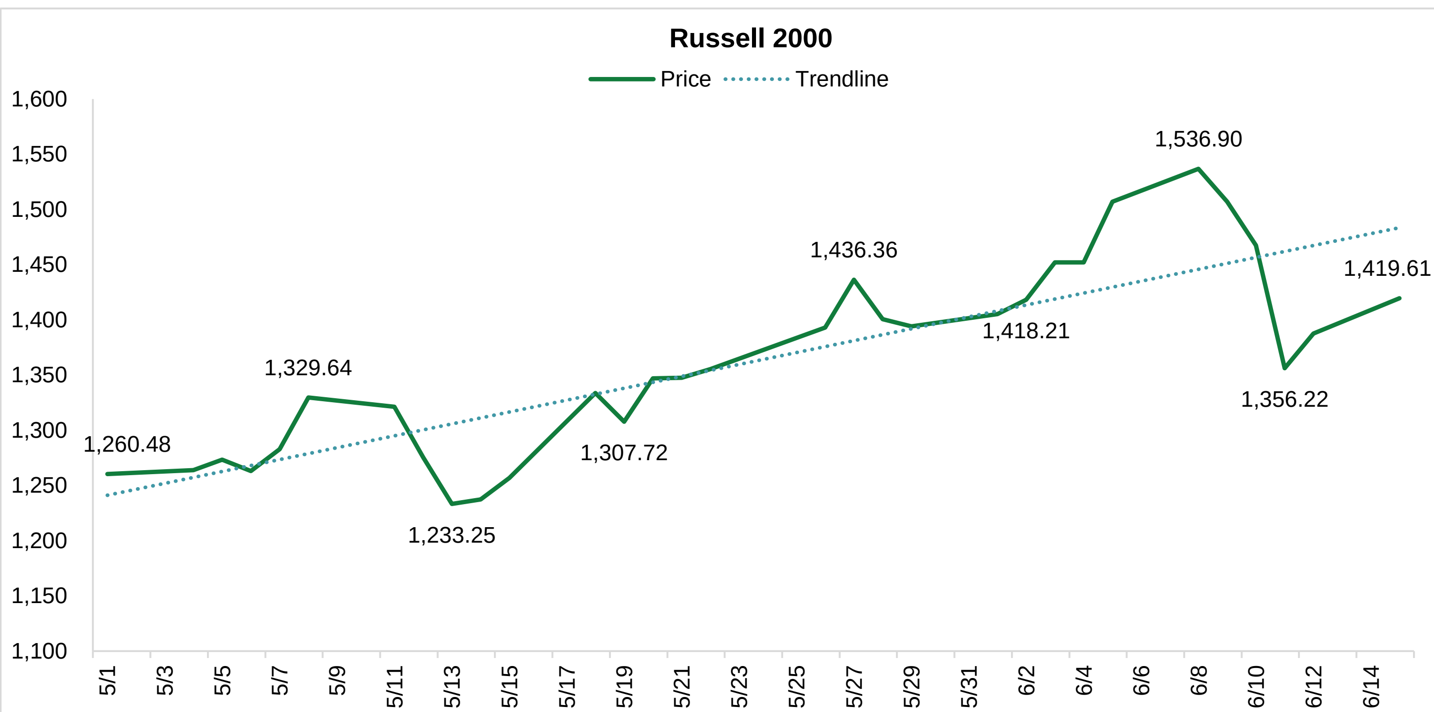
Source: Bloomberg, SIFMA estimates





Source: Bloomberg (Jan 2-Jun 15)





Source: Bloomberg (Jan 2-Jun 15)

Capital Formation

[6]Total issuance of all types slowed substantially in March and remained muted in April: -77% and -37% to the 2019 monthly average ($19 billion) respectively. Issuance then exploded in May, +202% to the 2019 monthly average, driven by secondary offerings. While IPOs followed a similar March and April path, -62% and -88% to the 2019 monthly average ($4.1 billion), they were still down in May (-57% to 2019 average). Conversely, secondary offerings exploded in May, +314% to the 2019 average ($12.1 billion; -77% and -26% in March and April respectively).

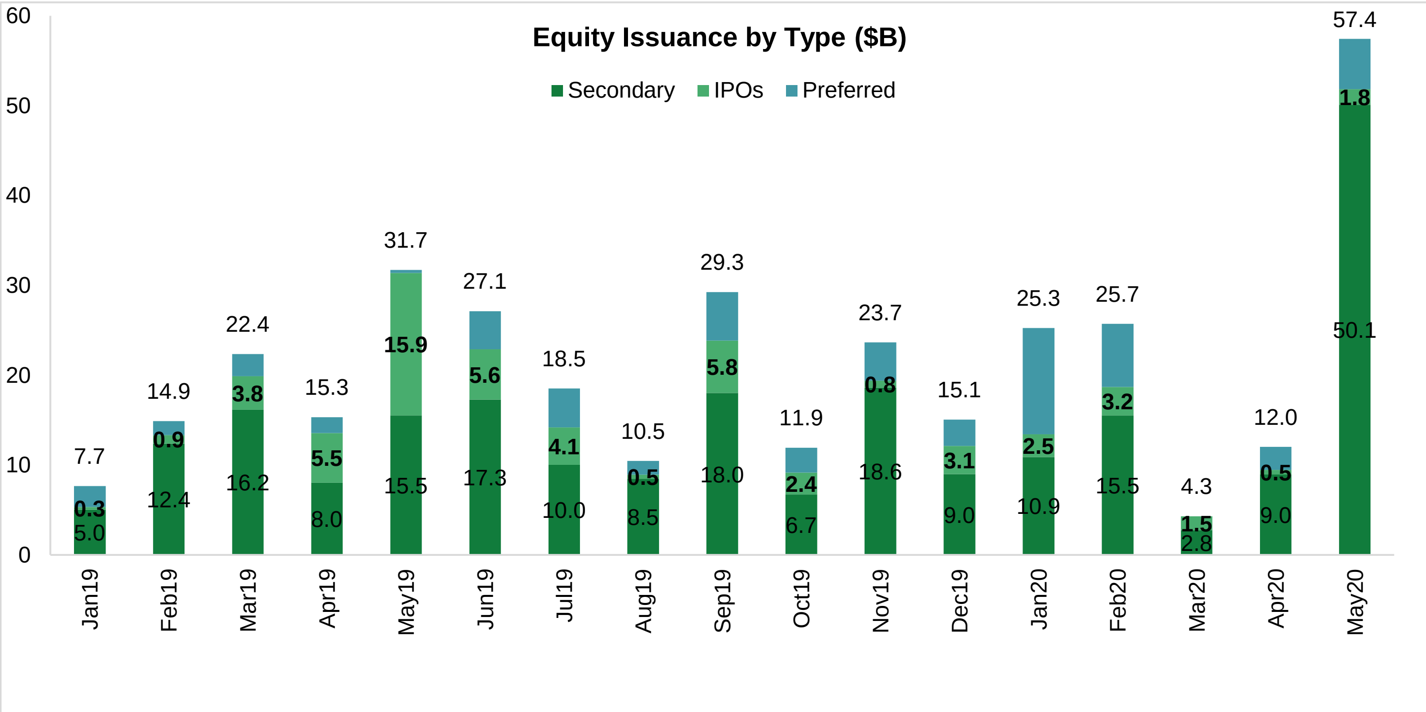
Issuance was not stopped completely during the turmoil. The President of the NYSE Group (a subsidiary of Intercontinental Exchange/ICE), Stacey Cunningham, indicated on a recent CNBC interview that the NYSE executed $35 billion of total issuance during the shutdown (closed March 23 through May 25). The exchange even brought some people back onto the floor to ensure smooth execution of a few deals.

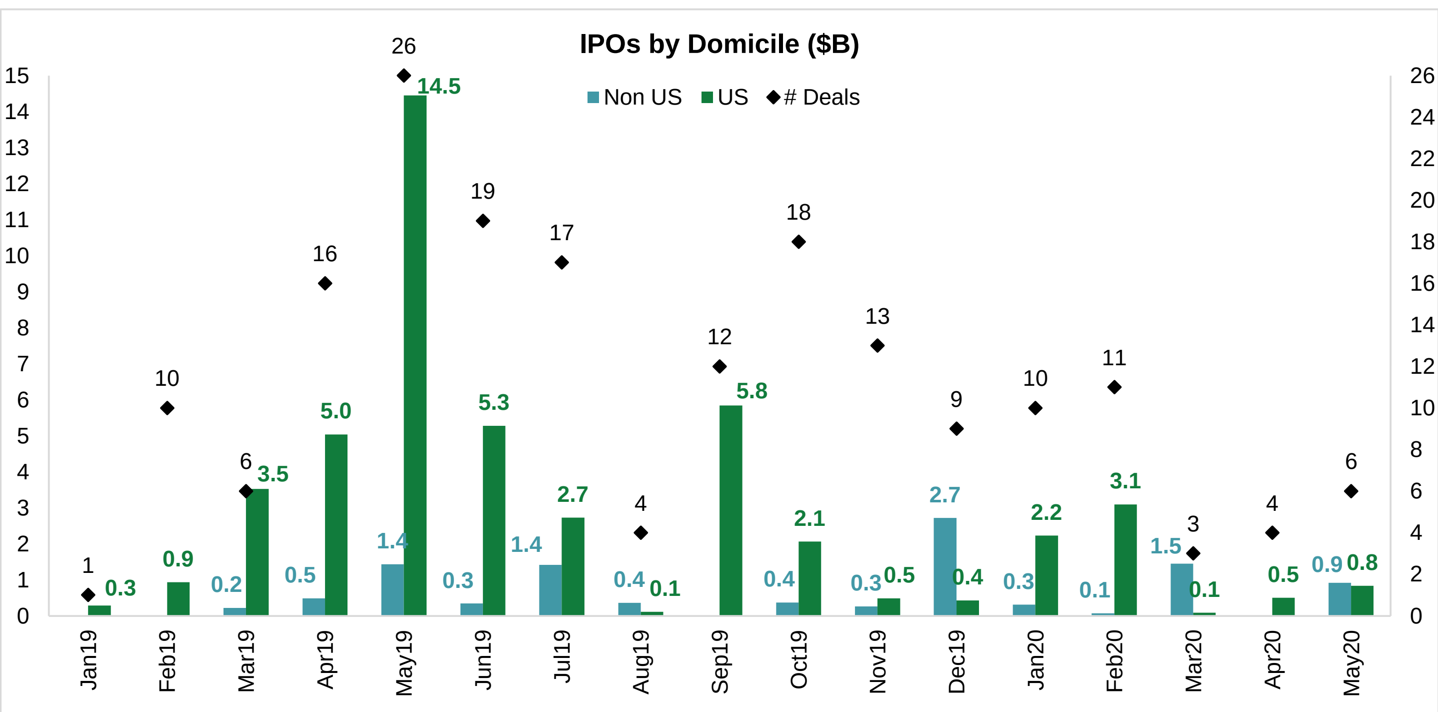
The first type of issuance to come back were secondary offerings (follow-ons), as companies sought to shore up balance sheets. At the height of the turmoil, the few IPOs were in healthcare, particularly biotech, and technology. The landscape is shifting, with many special purpose acquisition companies (SPAC) coming to market. These firms see unique opportunities in this environment with many struggling companies available for purchase. Given the success of other IPOs, some consumer firms are now coming back to market as well. A large IPO pipeline is building as markets improve and companies get more comfortable doing virtual roadshows. In fact, both listings exchanges have built out processes to execute virtual IPOs.

[6] We track Dealogic deals, excluding BDCs, SPACs, ETFs, CLEFs and rights offers; data may differ from that reported by exchanges

Issuance Trends

- **Total Issuance**: 2019 monthly average $19.0B versus March 2020 $4.3B (-77%), April $12.0B (-37%) and May $57.4B (+202%)
  - YTD 2020 versus 2019 (January to May): total issuance +36%, secondary offerings +54% and IPOs -64%
- **Secondary Offerings**: 2019 monthly average $12.1B versus March 2020 $2.8B (-77%), April $9.0B (-26%) and May $50.1B (+314%)
  - Secondaries represented 87% of May total issuance, 4.1x the 2019 monthly average
- **IPOs**: 2019 monthly average $4.1B versus March 2020 $1.5B (-62%), April $0.5B (-88%) and May $1.8B (-57%)
  - There were 3 IPOs in March, followed by 4 in April and 6 in May; this compares to a 2019 monthly average of 12.6
  - YTD 2020 versus 2019 (Jan to May): total IPO count -42% (34 vs. 59)
  - On average in 2019, non-U.S. IPOs represented 15.6% of total deal value; YTD 2020 (January to May) this is running at 28.9%, with the majority coming in March



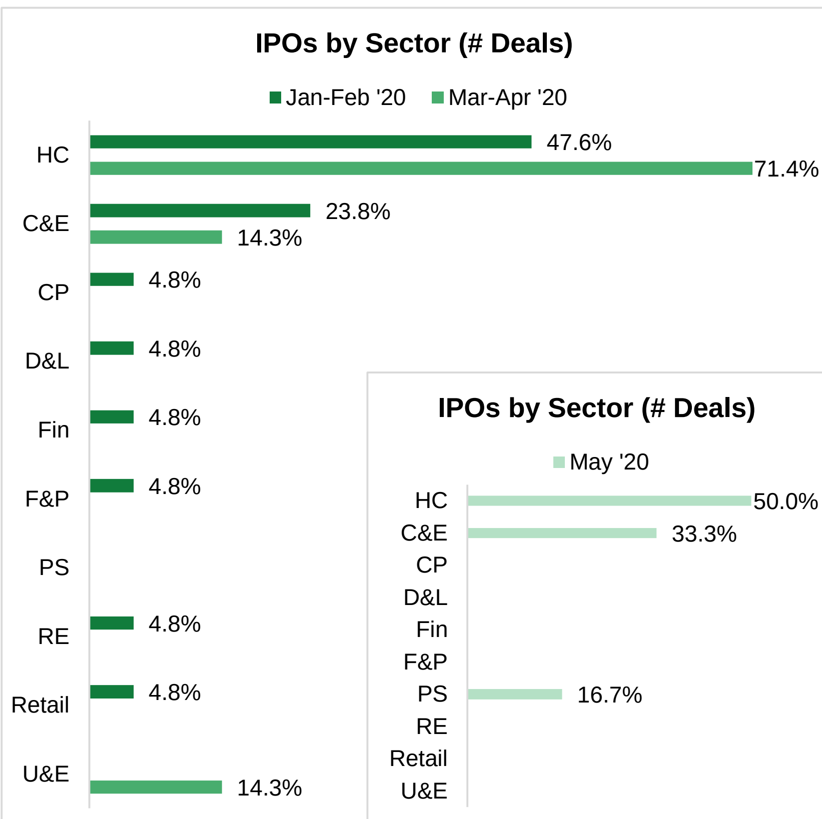


Source: Dealogic

Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

IPO Sector Breakout

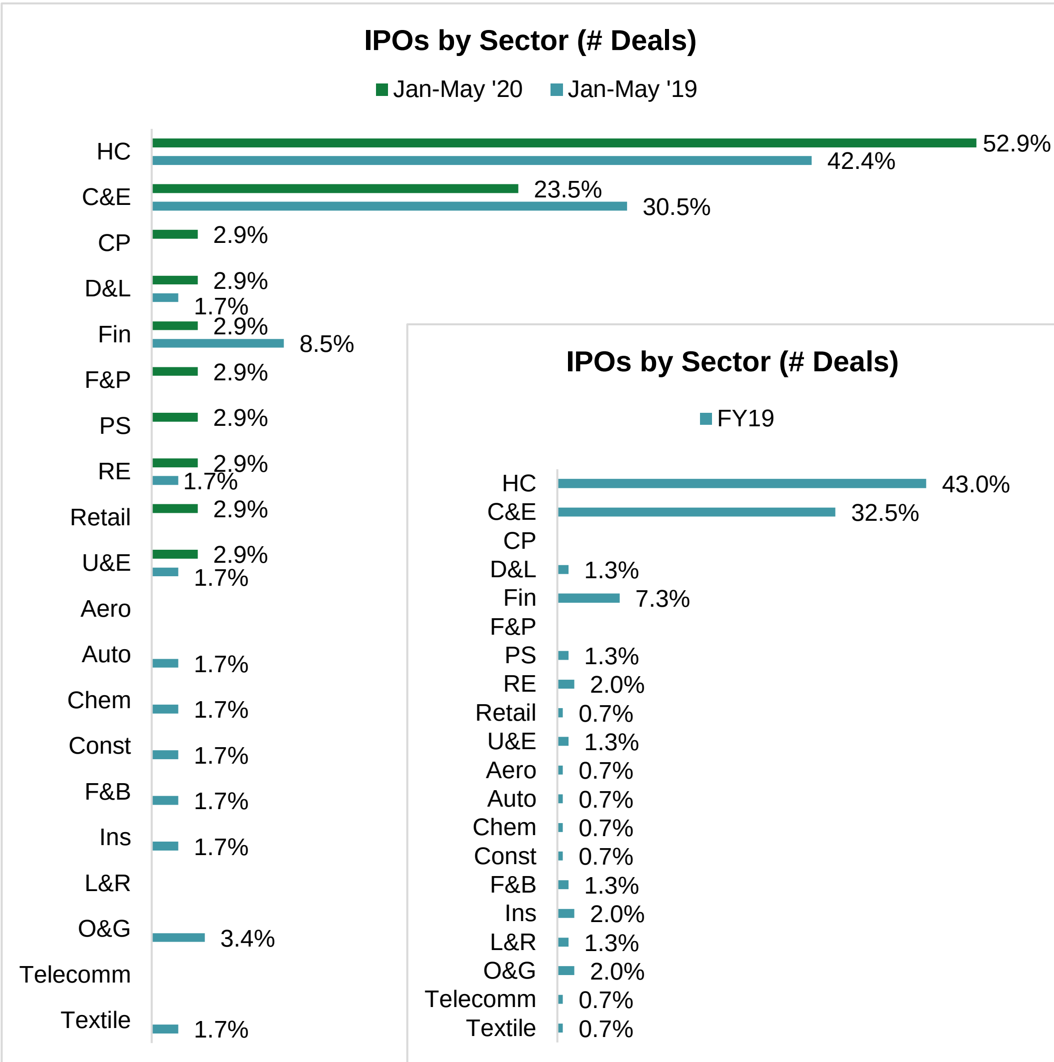
- **2020**: In the height of the turmoil, March and April, 71.4% of the IPOs (by deal count) were in healthcare (HC), with the only other IPOs in computers and electronics (C&E) and utility and energy (U&E)
    - In the January to February period, HC was 47.6% of the total, followed by C&E at 23.8%
    - There were IPOs in only 3 sectors in the March to April period, versus 8 from January to February
    - In May, HC was 50.0% of the total, followed by C&E at 33.3%
- **2020 vs. 2019**: In 2019, HC IPOs lead at 43.0% of the total (by deal count), followed by C&E at 32.5% and financials at 7.3%
    - Comparing YTD (January to May): HC is higher in 2020 (52.9% versus 42.4% in 2019), but C&E is less (23.5% versus 30.5% in 2019)
    - There were IPOs in 10 sectors, versus 13 in 2019



Source: Dealogic, SIFMA estimates

Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

HC	Healthcare	Fin	Finance	Retail	Retail
C&E	Computers & Electronics	F&P	Forestry & Paper	U&E	Utility & Energy
CP	Consumer Products	PS	Professional Services		
D&L	Dining & Lodging	RE	Real Estate/Property		



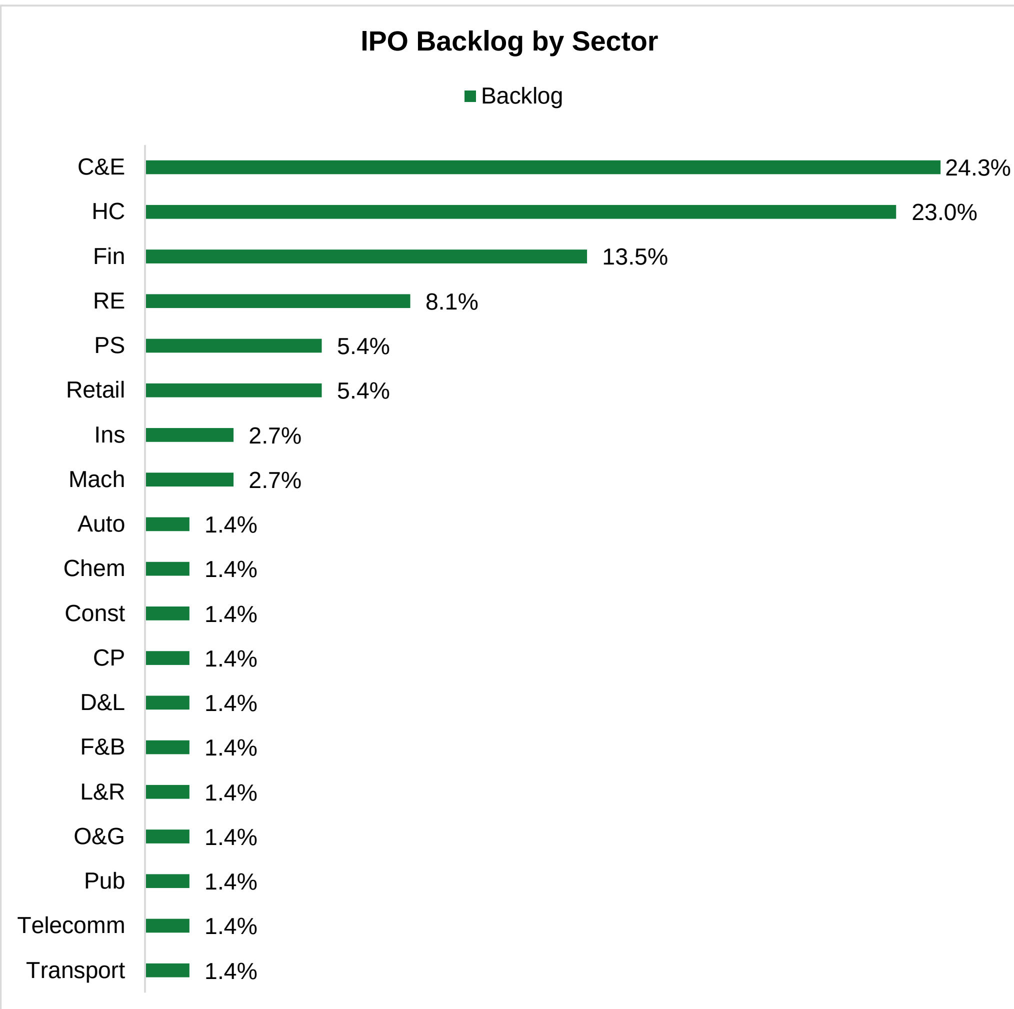
Source: Dealogic, SIFMA estimates

Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

HC	Healthcare	Fin	Finance	Retail	Retail	Chem	Chemicals	L&R	Leisure & Recreation
C&E	Computers & Electronics	F&P	Forestry & Paper	U&E	Utility & Energy	Const	Construction/Building	O&G	Oil & Gas
CP	Consumer Products	PS	Professional Services	Aero	Aerospace	F&B	Food & Beverage	Telecomm	Telecommunications
D&L	Dining & Lodging	RE	Real Estate/Property	Auto	Auto/Truck	Ins	Insurance	Textile	Textile

IPO Backlog

- The IPO pipeline (filed, not yet launched) stands at 74, 2.2x the number of deals executed this year (34)
- The backlog is skewed to Computers and electronics 24.3%, healthcare 23.0% and finance 13.5%
- The backlog is much more diversified than seen during the market turmoil, 19 sectors versus only 4 from March through May



Source: Dealogic, SIFMA estimates
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

HC	Healthcare	PS	Professional Services	Auto	Auto/Truck	Auto	Auto/Truck	Pub	Publishing
C&E	Computers & Electronics	Retail	Retail	Chem	Chemicals	Chem	Chemicals	Telecomm	Telecommunications
RE	Real Estate/Property	Const	Construction/Building	CP	Consumer Products	CP	Consumer Products	Transport	Transportation
Fin	Finance	Mach	Machinery	D&L	Dining & Lodging	D&L	Dining & Lodging		

Appendix: Terms to Know

FINRA	Financial Industry Regulatory Authority
SEC	Securities and Exchange Commission
ADV	Average Daily Trading Volume
ATS	Alternative Trading System
Best Ex	Best Execution
CAT	Consolidated Audit Trail
Dark Pool	Private trading venues, not accessible by the public
EMS	Equity Market Structure
MM	Market Maker
NMS	National Market System
OPR	Order Protection Rule
OPRA	Options Price Reporting Authority
PFOF	Payment For Order Flow
Reg NMS	Regulation National Market System
SIP	Security Information Processor
SRO	Self Regulatory Organization
Tick Size	Minimum price movement of a security

Bid	An offer made to buy a security
Ask, Offer	The price a seller is willing to accept for a security
Spread	The difference between the bid and ask price prices for a security, an indicator of supply (ask) and demand (bid)
NBBO	National Best Bid and Offer
Locked Market	A market is locked if the bid price equals the ask price
Crossed Market	A bid is entered higher than the offer or an offer is entered lower than the bid
Opening Cross	To determine the opening price of a stock, accumulating all buy and sell interest a few minutes before the market open
Closing Cross	To determine the closing price of a stock, accumulating all buy and sell interest a few minutes before the market close

Order Types	
AON	All or none; an order to buy or sell a stock that must be executed in its entirety, or not executed at all
Block	Trades with at least 10,000 shares in the order
Day	Order is good only for that trading day, else cancelled
FOK	Fill or kill; must be filled immediately and in its entirety or not at all
Limit	An order to buy or sell a security at a specific price or better
Market	An order to buy or sell a security immediately; guarantees execution but not the execution price
Stop	(or stop-loss) An order to buy or sell a stock once the price of the stock reaches the specified price, known as the stop price

Call	The right to buy the underlying security, on or before expiration
Put	The right to sell the underlying security, on or before expiration
Holder	The buyer of the contract
Writer	The seller of the contract
American	Option may be exercised on any trading day on or before expiration
European	Option may only be exercised on expiration
Exercise	To put into effect the right specified in a contract
Underlying	The instrument on which the options contract is based; the asset/security being bought or sold upon exercise notification
Expiration	The set date at which the options contract ends, or ceases to exist, or the last day it can be traded
Stock Price	The price at which the underlying stock is trading, fluctuates continuously
Strike Price	The set price at which the options contract is exercised, or acted upon
Premium	The price the option contract trades at, or the purchase price, which fluctuates constantly
Time Decay	The time value portion of an option's premium decreases as time passes; the longer the option's life, the greater the probability the option will move in the money
Intrinsic Value	The in-the-money portion of an option's premium
Time Value	(Extrinsic value) The option premium (price) of the option minus intrinsic value; assigned by external factors (passage of time, volatility, interest rates, dividends, etc.)
In-the-Money	For a call option, when the stock price is greater than the strike price; reversed for put options
At-the Money	Stock price is identical to the strike price; the option has no intrinsic value
Out-of-the-Money	For a call option, when the stock price is less than the strike price; reversed for put options

IPO	Private company raises capital buy offering its common stock to the public for the first time in the primary markets
Bought Deal	underwriter purchases a company's entire IPO issue and resells it to the investing public; underwriter bears the entire risk of selling the stock issue
Best Effort Deal	Underwriter does not necessarily purchase IPO shares and only guarantees the issuer it will make a best effort attempt to sell the shares to investors at the best price possible; issuer can be stuck with unsold shares
Follow-On Offering	(Follow-on public offering) Issuance of shares to investors by a public company already listed on an exchange
Direct Listing	(Direct placement, direct public offering) Existing private company shareholders sell their shares directly to the public without underwriters. Often used by startups or smaller companies as a lower cost alternative to a traditional IPO. Risks include, among others, no support/guarantee for the share sale and no stock price stabilization after the share listing.
Underwriting	Guarantee payment in case of damage or financial loss and accept the financial risk for liability arising from such guarantee in a financial transaction or deal
Underwriter	Investment bank administering the public issuance of securities; determines the initial offering price of the security, buys them from the issuer and sells them to investors.
Bookrunner	The main underwriter or lead manager in the deal, responsible for tracking interest in purchasing the IPO in order to help determine demand and price (can have a joint bookrunner)
Lead Left Bookrunner	Investment bank chosen by the issuer to lead the deal (identified on the offering document cover as the upper left hand bank listed)
Syndicate	Investment banks underwriting and selling all or part of an IPO
Arranger	The lead bank in the syndicate for a debt issuance deal
Pitch	Sales presentation by an investment bank to the issuer, marketing the firm's services and products to win the mandate
Mandate	The issuing company selects the investment banks to underwrite its offering
Engagement Letter	Agreement between the issuer and underwriters clarifying: terms, fees, responsibilities, expense reimbursement, confidentiality, indemnity, etc.
Letter of Intent	Investment banks' commitment to the issuer to underwrite the IPO
Underwriting Agreement	Issued after the securities are priced, underwriters become contractually bound to purchase the issue from the issuer at a specific price
Registration Statement	Split into the prospectus and private filings, or information for the SEC to review but not distributed to the public, it provides investors adequate information to perform their own due diligence prior to investing
The Prospectus	Public document issued to all investors listing: financial statements, management backgrounds, insider holdings, ongoing legal issues, IPO information and the ticker to be used once listed
Red Herring Document	An initial prospectus with company details, but not inclusive of the effective date of offering price
Roadshow	Investment bankers take issuing companies to meet institutional investors to interest them in buying the security they are bringing to market.
Non-Deal Roadshow	Research analysts and sales personnel take public companies to meet institutional investors to interest them in buying a stock or update existing investors on the status of the business and current trends.
Pricing	Underwriters and the issuer will determine the offer price, the price the shares will be sold to the public and the number of shares to be sold, based on demand gauged during the road show and market factors
Stabilization	Occurs for a short period of time after the IPO if order imbalances exist, i.e. the buy and sell orders do not match; underwriters will purchase shares at the offering price or below to move the stock price and rectify the imbalance
Quiet Period	(Cooling off period) The SEC mandates a quiet period on research recommendations, lasting 10 days (formerly 25 days) after the IPO
Reg S-K	Regulation which prescribes reporting requirements for SEC filings for public companies
Reg S-X	Regulation which lays out the specific form and content of financial reports, specifically the financial statements of public companies
Form S-1	Registration statement for U.S. companies (described above)
Form F-1	Registration statement for foreign issuers of certain securities, for which no other specialized form exists or is authorized
Form 10-Q	Quarterly report on the financial condition and state of the business (discussion of risks, legal proceedings, etc.), mandated by the SEC
Form 10-K	More detailed annual version of the 10Q, mandated by the SEC
Form 8-K	Current report to announce major events shareholders should know about (changes to business & operations, financial statements, etc.)
Greenshoe	Allows underwriters to sell more shares than originally planned by the company and then buy them back at the original IPO price if the demand for the deal is higher than expected, i.e. an over-allotment option
Tombstone	A plaque awarded to celebrate the completion of a transaction or deal

Appendix: SIFMA Insights Research Reports

SIFMA Insights Market Structure Primers: www.sifma.org/primers

- Global Capital Markets & Financial Institutions
- Electronic Trading
- US Capital Formation & Listings Exchanges
- US Equity
- US Multi-Listed Options
- US ETF
- US Fixed Income
- SOFR: The Transition from LIBOR

SIFMA Insights: www.sifma.org/insights

- A Deeper Look at US Multi-Listed Options Volumes
- NYSE Goes All Electronic – What Does It Mean?
- Spotlight: The VIX's Wild Ride
- Spotlight: The 10th Anniversary of the Flash Crash
- The Evolution of the Fintech Narrative

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