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Equity Research
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U.S. Equity Derivatives Strategy

Impact of Retail Options Trading

We show that retail investors have been driving a significant increase in option (mostly short-dated calls) volumes for large-cap tech stocks. We use several unique data sets and detailed analysis to show that this activity has had a material impact on option prices and is large enough to potentially affect the underlying stock prices. We recommend two option strategies to monetize the resulting distortions.

Single stock option volumes have increased 3x on a YoY basis. The increase in volume is concentrated in short-dated (less than 2-week maturity) calls and particularly in large-cap tech stocks. Increase in volume has been much more significant than the increase in open interest, which indicates that this is speculative intraday activity.

We provide evidence that the increase in option volume is being driven by retail investors. This spike appeared when major retail brokerages cut commissions to zero in October 2019. Buy orders for small-lot call trades (a proxy for retail orders) has increased significantly, and they now represent 40% of overall call volume. 2020 Q2 13F data shows that Direct Retail investors have been the major buyers of large-cap equities.

This option trading activity has significantly impacted the volatility surface for affected stocks. Due to the increased demand, implied volatility for shorter-dated calls has increased relative to puts and longer-dated options for stocks with a large increase in option volume. Interestingly, the volatility risk premium (VRP: implied volatility versus subsequent realized volatility) has not increased meaningfully, indicating that realized volatility has also increased in tandem due to more speculative trading and hedging activity of market makers. Our single stock (SS) option strategy, which sells options based on our VolScore methodology, has outperformed the corresponding SPX option benchmark.

We show that option activity is large enough to potentially impact the underlying stock prices. While stocks with a large increase in option volumes have outperformed over the past year because of better fundamentals, we show that call option demand might have exacerbated this move. Increased call buying demand directly leads to buying pressure on stocks as market makers hedge their risk, and we estimate that the resultant volume is now ~30% of overall stock volume. We show that the correlation of stock returns with normalized option volume has increased this year.

We propose two option strategies to monetize the dislocation caused by the spike in retail activity: We believe that the outperformance of our VolScore strategy will likely continue and hence recommend it as an attractive way to monetize the VRP. These resilient stocks are trading at a significant valuation premium and are therefore prone to drawdowns similar to what we saw over the past few days; hence it is more prudent to go long these names using call spreads, which are especially attractive given fair volatility and flat skew. We screen for flat skew, attractive VRP and elevated option volumes and recommend eight stocks for this strategy.

PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON PAGE 22.

DERIVATIVES

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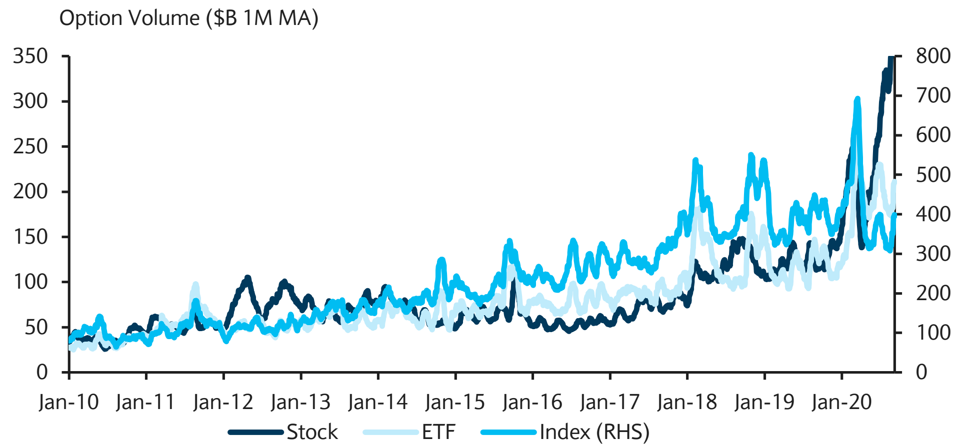
Remarkable Increase in US Single Stock Option Volume

Growth in US single stocks options overtakes Index and ETF options

There has been a remarkable increase in US single stock option volume this year. Figure 1 shows the aggregate dollar option volume (defined as # of Contracts Traded * Stock Price & Multiplier) for Indices, ETFs and single stock options. We see that option volume increased across the board during the depths of the sell-off but while Index and ETF option volumes have normalized that for single stock options has continued to increase. Compared to last year, single stock volume for 2Q 2020 is nearly 3x higher.

FIGURE 1

Growth in US single stock volume outpaced Index and ETF options this year



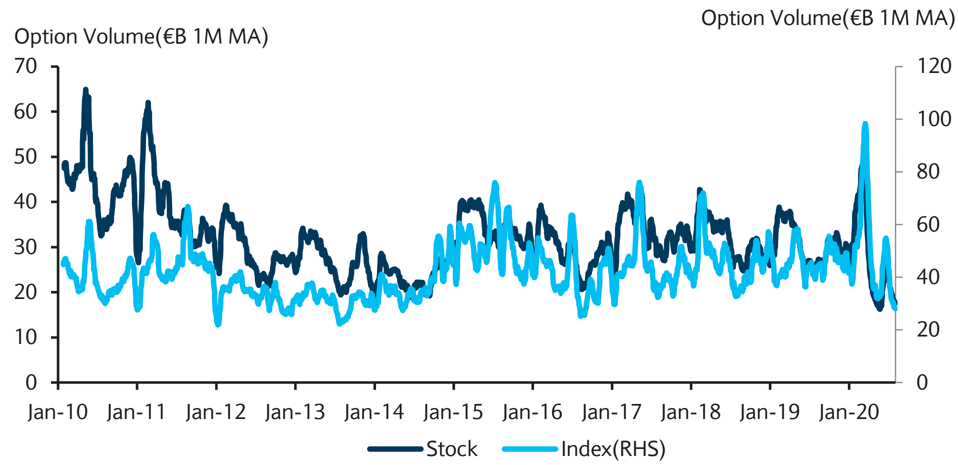
Source: Barclays Research, OptionMetrics.

Note: Option Volume defined as sum of # of contracts * Price & multiplier across the respective underlyings

As we show in Figure 2, this effect is specific for the US market; volumes across the different option categories in Europe has not changed materially. Overall, EU option activity spiked during the depths of the COVID-19 induced sell-off but has declined materially since then and is in fact are lower on a YoY basis. In our opinion, this indicates that leveraged and/or “fast money” investors who are likely to use options are still not active in Europe.

FIGURE 2

European options trading has not increased and in fact down YoY after a brief spike in March



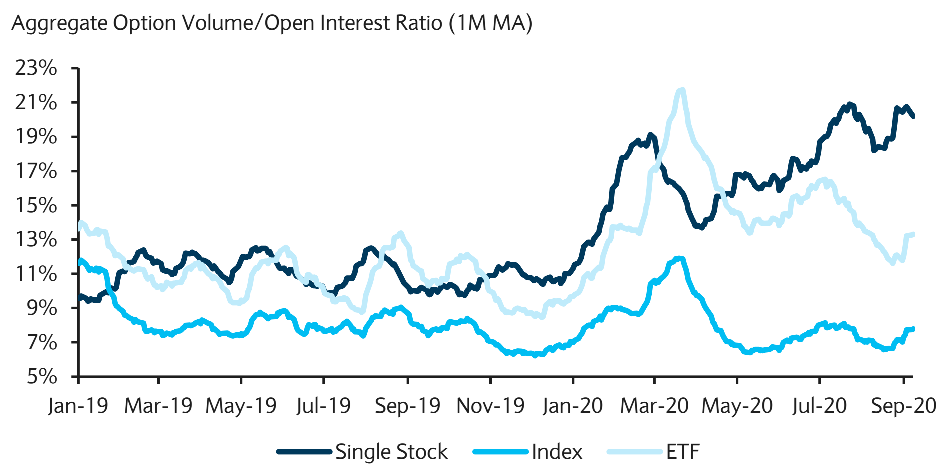
Source: Barclays Research, OptionMetrics, Bloomberg. Note: Index option volume consist of SX5E and DAX index options volumes.

Single stock option volume gains driven by shorter-term trading

While single stock open interest has also increased, the magnitude is not as significant and as a result the ratio of aggregate dollar volume vs option interest (OI) has increased (Figure 3). This indicates that much of the volume increase appears to be day trading and not resulting in positions being held for an extended period of time.

FIGURE 3

Increase in single stock options volume to open interest ratio indicates much of the volume increase is due to short-term day trading

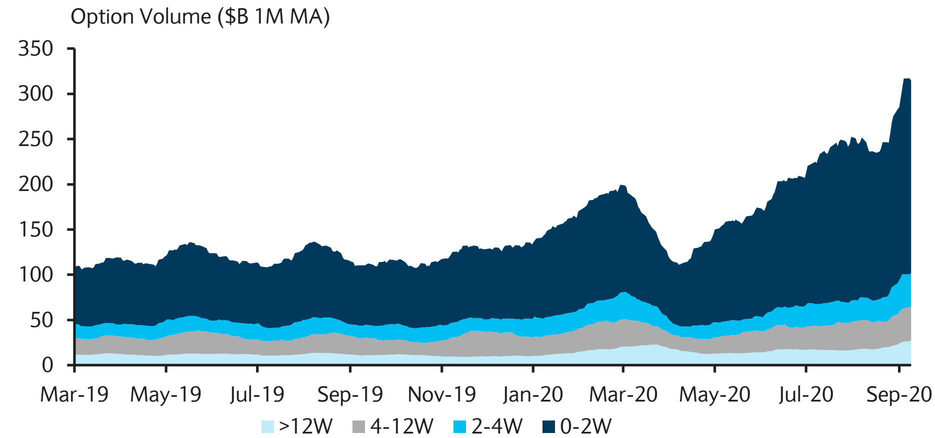


Source: Barclays Research, OptionMetrics.

Dissecting the volume increase, we find that much of the increase has been in short-dated options (less than two weeks' tenor) which again points to the more speculative and high frequency nature of this trading activity.

FIGURE 4

Trading activity in single stock options is dominated by shorter-dated options with less than two weeks to maturity and continues to see strong growth in 2020



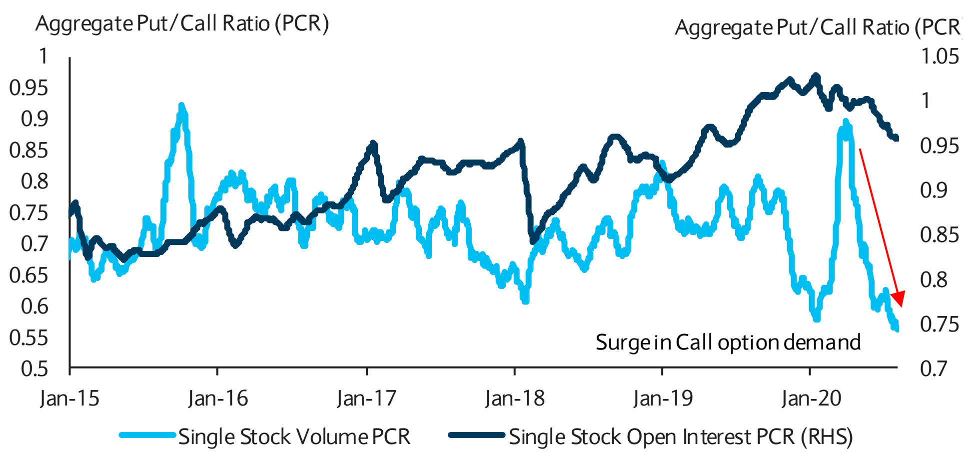
Source: Barclays Research, OptionMetrics

Call Option volume ~2x put option volume in single stocks

Figure 5 calculates the ratio of put versus call volume and we see that this has declined significantly recently indicating that the volumes are being driven by call option trading. While the corresponding open interest ratio has also declined, the magnitude of the drop is not as significant.

FIGURE 5

Put/Call volume ratio for single stock options has dipped to its lowest in last five years indicating extreme demand for call options



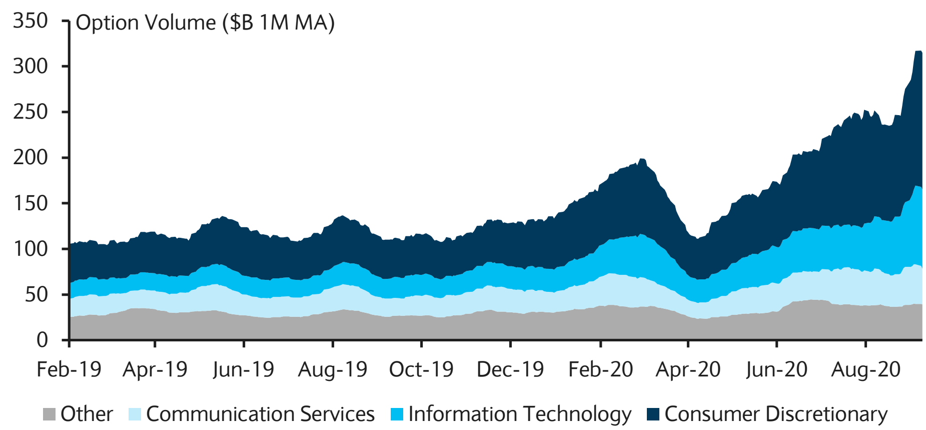
Source: Barclays Research, OptionMetrics.

Increase in options volume dominated by large-cap tech stocks

We next investigate which specific sectors and stocks have seen an increase in option activity. Figure 6 dissects the volume by sector, and we see that most of the increase has been in the consumer discretionary and information technology sectors.

FIGURE 6

Increases in the single stock options volume is dominated by consumer discretionary and information technology sectors



Source: Barclays Research, OptionMetrics.

Drilling down at a single stock level (Figure 7), we find that these are primarily ecommerce related names or what we have called "Resilient" stocks whose business models are flourishing during the COVID-19 pandemic as more activity moves online (*U.S. Equity Strategy: Peering across the Earnings Abyss; 28 May, 2020*).

FIGURE 7

Stocks which have benefited from the highest increase in options trading (Top 20) over the last year have strongly outperformed the market in 2020 year to date and also have a significant overlap with large cap Resilient stocks

Rank	Ticker	July2019 Volume($B)	July2020 Volume($B)	Increase($B)	Rank	Ticker	July2019 Volume($B)	July2020 Volume($B)	Increase($B)
1	TSLA	123.78	1451.61	1327.83	11	FB	100.64	140.22	39.58
2	AMZN	631.71	1475.33	843.62	12	WMT	6.07	41.27	35.20
3	AAPL	152.25	518.78	366.52	13	ZM	2.23	30.82	28.60
4	MSFT	52.05	157.35	105.31	14	BA	60.92	87.86	26.94
5	SHOP	16.04	82.53	66.48	15	ROKU	15.57	38.85	23.27
6	NVDA	40.86	97.81	56.96	16	MRNA	0.02	15.90	15.88
7	BABA	44.84	96.62	51.78	17	GOOG	46.85	61.71	14.87
8	GOOGL	71.87	120.72	48.85	18	PYPL	8.15	22.45	14.30
9	AMD	17.10	60.47	43.37	19	JPM	13.46	26.98	13.52
10	NFLX	135.82	175.51	39.69	20	SQ	9.59	22.82	13.23

Source: Barclays Research, OptionMetrics

Past performance is no guarantee of future results

Option volumes likely being driven by influx of retail traders

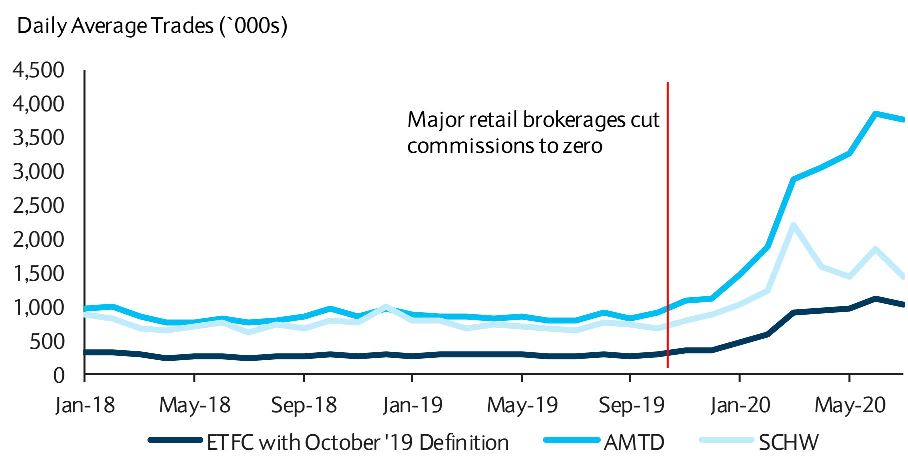
The increase in single-stock liquidity is puzzling since based on anecdotal feedback from Barclays trading desk, the option activity from institutional investors (primarily long-short hedge funds) has not materially increased. One possibility is that this is being driven by retail investors. We don't have direct evidence for this in the absence of a data set which directly classifies option volume in retail and non-retail flow. However, there are several pieces of circumstantial evidence, which supports this view which we discuss next.

Overall retail activity has increased since the introduction of zero commissions

After Robinhood launched its platform in 2013 with free equity trades, pressure had started to increase on larger incumbents. On October 2, 2019, Charles Schwab announced that it would eliminate commissions on stocks, exchange traded funds and options. Other major brokerages such as TD Ameritrade, E*Trade and Fidelity quickly followed suit. This development has led to substantial increase in retail trading activity for the major brokers (Figure 8).

FIGURE 8

Retail investors trading activity has increased since the discount brokerages slashed the trading commission to zero

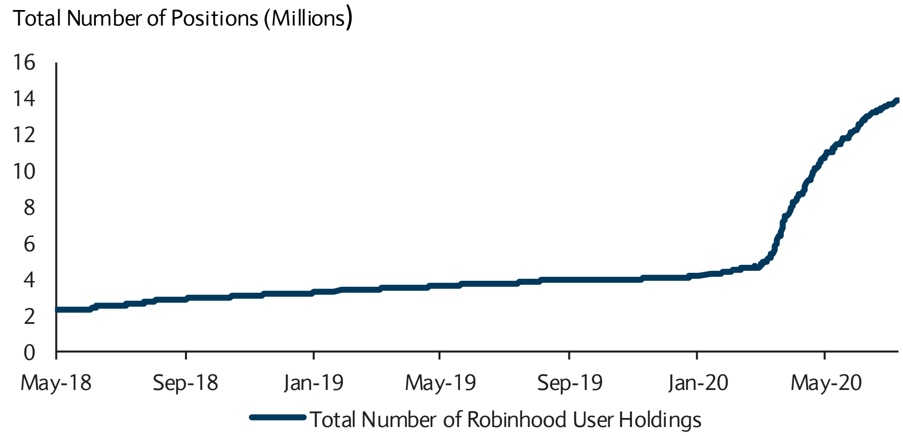


Source: Barclays Research. Note: Daily Average Trades shown for TD Ameritrade, Schwab and E*Trade Financial brokerages.

The retail trading activity also potentially got a significant boost during the COVID-19 lockdown as retail traders had more time in their hands. In particular, the activity by Robinhood traders increased exponentially since the COVID-19 crises (Figure 9).

FIGURE 9

The number stock holdings by the traders of Robinhood traders increased exponentially during the COVID-19 lockdown



Source: RobinTrack, Barclays Research. Note: Robinhood User holdings is for SP500 stocks and data as of July 12th 2020. Initially published in the report *Data and Investment Sciences: Robinhood Can Cause Stocks to Go Up, But It's Not Helping the Market*, 14 July 2020.

13F data indicates that retail investors have continued to buy large cap equities for the first half of the year

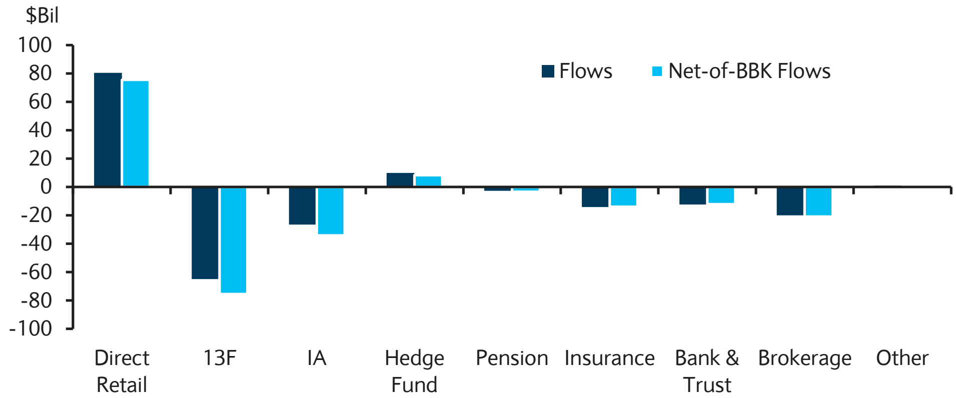
The strong equity rally over the past few months has been puzzling in that anecdotally standard measures of equity flows have not been aggressively positive. However, as we discussed recently, these measures which only capture mutual fund and ETF flows are only part of the story (*Who bought Equities in Covid-19 Selloff?, 22nd July, 2020*). In this report, we construct a complete portrait of US equity ownership and flows which includes all market participants. Importantly, we show that “Direct Retail” or non-institutional investors are an important part of equity ownership and flows. Direct Retail investors are retail investors who do not file 13F reports and invest directly rather than via mutual funds and ETFs. Interestingly, Direct Retail investors generally buy on market dips and did so again in 1Q20. 13F institutional investors typically sell equities during market selloffs while Direct Retail investors provide liquidity.

This was evident during the COVID-19 induced selloff in 1Q20 when Direct Retail investors again bought at the dip. We update this analysis using 2Q data (Figure 10). Remarkably, we find that Direct Retail investors have continued to buy over this time period while 13F investors continued to sell. This is quite remarkable since as discussed above Direct Retail flows tend to be counter-cyclical.

The graph also further breaks down the 13F flows into several sub categories. IA stands for Investment Advisors and includes mutual funds, ETFs and assets of institutional clients (such as pensions, insurance funds and sovereign funds) managed by investment advisors. We see that the fund flows were negative across almost all 13F filers with the exception of the hedge funds who did buy marginally.

FIGURE 10

Direct Retail investors continued to buy equities during the second quarter of 2020



Source: Barclays Research, Refinitiv, Bloomberg

A key advantage of our framework is that it allows us to dig deeper and calculate the positioning of each investor type across SS groups of stocks. Figure 11 shows the positioning bucketed by market capitalization. We note that similar to 1Q, Direct Retail investors are overweight large cap stocks and in fact have increased their allocation.

FIGURE 11

Direct Retail investors have increased their existing overweight position in large cap stocks

	Market		13F			Direct Retail			13F
	Market ($Tril)	Market Weight (%)	Equity Holdings ($Tril)	Active Holdings ($Tril)	Active Weight	Equity Holdings ($Tril)	Active Holdings ($Tril)	Active Weight	Chgs in Active Holdings from Last Qtr
Total	31.5	100%	23.3	-	-	8.1	-	-	-
Size Group									
Mega (1-50)	14.7	46.6%	9.9	-1.00	-4.3%	4.8	1.00	12.4%	-0.22
Large (51-500)	12.6	40.2%	10.0	0.62	2.7%	2.6	-0.62	-7.7%	0.11
Mid (501-1000)	2.5	8.0%	2.2	0.29	1.2%	0.4	-0.29	-3.6%	0.07
Small (1000-)	1.7	5.3%	1.3	0.09	0.4%	0.3	-0.09	-1.1%	0.03

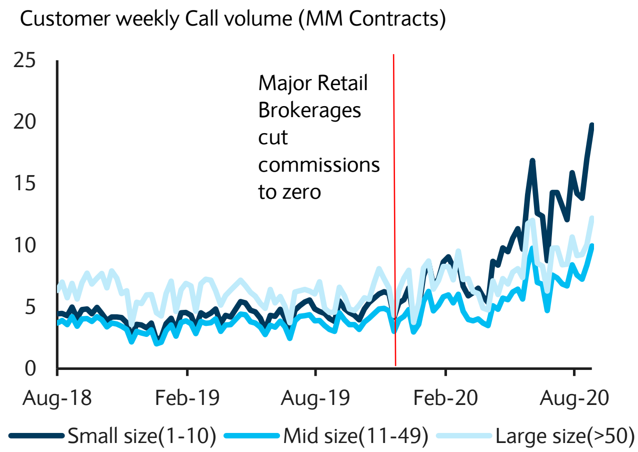
Source: Barclays Research, Refinitiv, Bloomberg

Number of small lot call option trades have increased this year

Finally, we show that a proxy of retail trades shows that retail participation in option trading has increased. While the OCC separates out "customer" trading, there is no differentiation between retail and institutional orders. However, they do break up the trades by lot size and so the small lot size trading can serve as a proxy for retail trading.

FIGURE 12

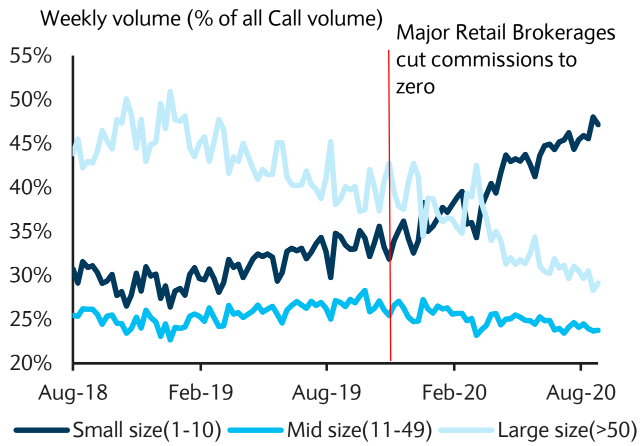
Surge in small order size call option volumes indicates higher retail participation



Source: Barclays Research, OCC
Note: Small/Mid/Large correspond to customer trades in single stocks options with size between 1-10/11-49/>50 contracts, respectively

FIGURE 13

Small lot trades are now 45% of overall call volume

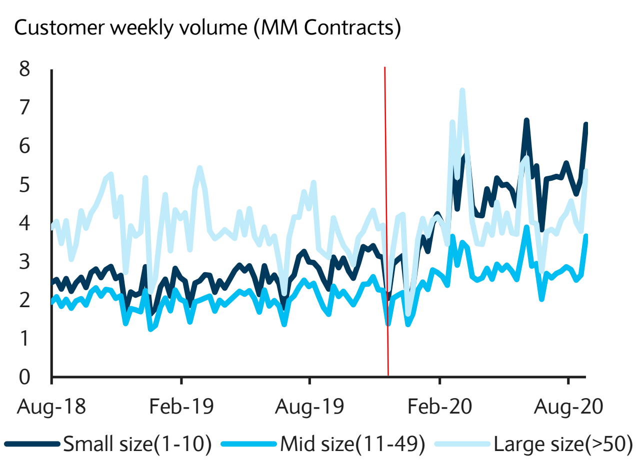


Source: Barclays Research, OCC.
Note: Small/Mid/Large correspond to customer trades in single stocks options with size between 1-10/11-49/>50 contracts, respectively

In Figure 12, we show the weekly customer call volume bucketed by the size of the trade. Figure 13 shows the same data in terms of percentages. We see that before 2020, the majority of trades were larger size trades which indicated higher institutional client activity. However, over the past two years, smaller size trades make up a much bigger fraction of the total volume and these now account for ~45% of the total customer trading and larger lot trading only accounts for 25% of the total.

FIGURE 14

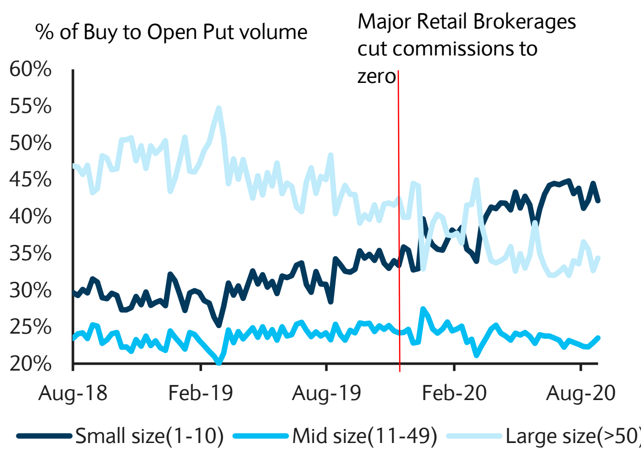
Increase in small lot puts volume has not been as dramatic as for calls



Source: Barclays Research, OCC
Note: Small/Mid/Large correspond to customer trades in single stocks options with size between 1-10/11-49/>50 contracts, respectively

FIGURE 15

As a result, the fraction of small lot put volume is not significantly higher versus the large lot trades

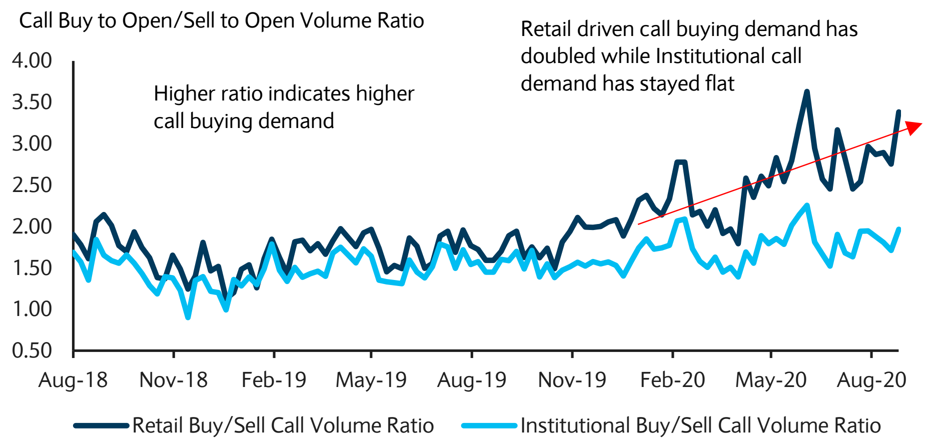


Source: Barclays Research, OCC
Note: Small/Mid/Large correspond to customer trades in single stocks options with size between 1-10/11-49/>50 contracts, respectively

Figure 14 and Figure 15 show the same metrics for puts. Here we see that while small lot trades have also increased, the gap between small and large lot trade percentages is not as large. This dovetails with the idea that it is retail call option volume that is driving the volume increase. Figure 16 digs into this deeper and shows that retail call option activity is primarily on the buy side. We can see that since October 2019 there has been a strong divergence between the trading behaviour of the retail vs institutional regarding the direction of call option trading activity. The net demand for call options measured as the ratio of call buys versus sales from retail has more than doubled while the corresponding metric for institutional investors has remained range bound.

FIGURE 16

Net call buying to open volume from retail has effectively doubled since October 2019 year while institutional net call buying demand has remained relatively unchanged



Source: Barclays Research, OCC. Note: Call Volume linked to customer driven trades which are classified as trades to open (trades which lead to an increase in open interest)

Some of the trends described above bear signatures of retail trading

- Low option premium means that retail investors can get significant equity exposure for small initial cash outlay by essentially buying a “lottery ticket”.
- This also explains why the increase in volumes have been in shorter dated options where is the premium is especially lower. Generally, institutional clients tend to trade longer-dated options.
- The fact that the open interest has not increased as much implies that these trading activity is unlikely to be from institutional clients whose trading horizon is not intra-day.

Impact of surge in options trading on volatility surface

While the previous section discussed changes in option and stock liquidity, we now examine if these trends have impacted the option surface in any meaningful manner. Specifically, we look at the impact of the surge in single name options activity on the option markets on the Implied Volatility Risk Premia (VRP or the difference between implied volatility and realized volatility), Term Structure (difference between short dated and long dated implied volatility) and Skew. (difference between put and call implied volatility). We focus on the impact of the increased trading activity to the shorter-dated volatility as we have seen that the increase in the trading volume has been in the options with the expiration date of one month and lower.

As we have seen in the previous section, the increase in single stock (SS) option activity has been dominated in the ‘Resilient’ stocks and also significant overlap with large cap names, and we create a basket of the top 100 single stock names by highest increase in option volumes over the past year. We create another group that excludes the Top 100 stocks with the highest option activity change, which is assigned to the 'Rest' and is intended to track single stocks with lower option activity. We then calculate market cap weighted bottoms up VRP, Terms Structure and Skew metrics for these two groups of stocks.

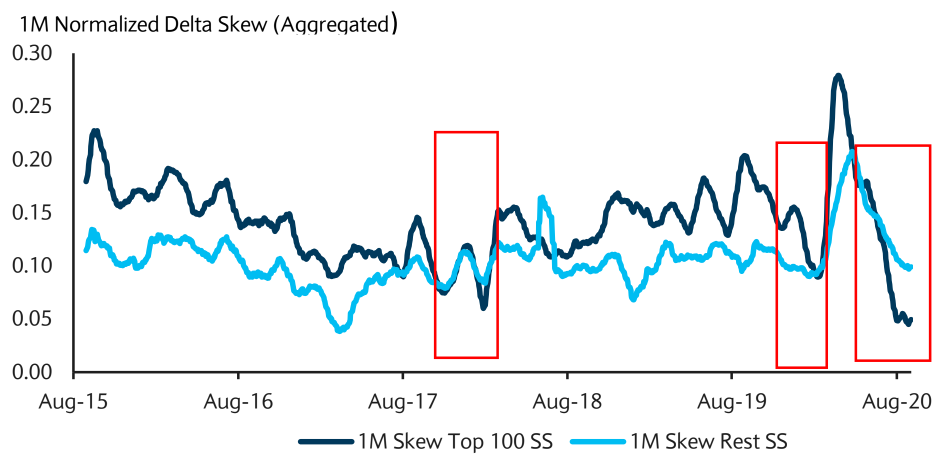
Skew for single stock options has flattened

Skew is an indicator of relative demand for put vs call options. Based on the spike in investor activity we have highlighted in the previous section especially in the call option trading, we would expect the skew to flatten driven by upside demand. We show the market-cap weighted 1M normalized delta skew for Top 100 and the rest of the universe in Figure 17. The skew for top 100 names has historically been steeper than the rest of the universe. The 1M skew diverged significantly during the 2020 selloff as the skew for both Top 100 and rest of the universe steepened.

We find the impact of the uptick in trading activity in single stock options has led to a significant flattening of skew especially in the past couple of months, for the Top 100 names relative to the rest of the single stock universe. Similar dynamic was seen in early 2018 and 2020 when the stocks had rallied sharply and we witnessed the corrections in February 2018 and March 2020.

FIGURE 17

Skew in the large caps has flattened significantly relative to rest of the stocks the indicating excessive bullishness comparable to the rally in early 2018



Source: Barclays Research, OptionMetrics. Note: Skew: Aggregated single stock 1M normalized delta skew. We track two groups labelled as Top =Top 100 single stocks by highest options volume increase in 2020 and Rest =All stocks excluding the Top 100 single stocks.

Demand for shorter-dated options has led to a flatter term structure

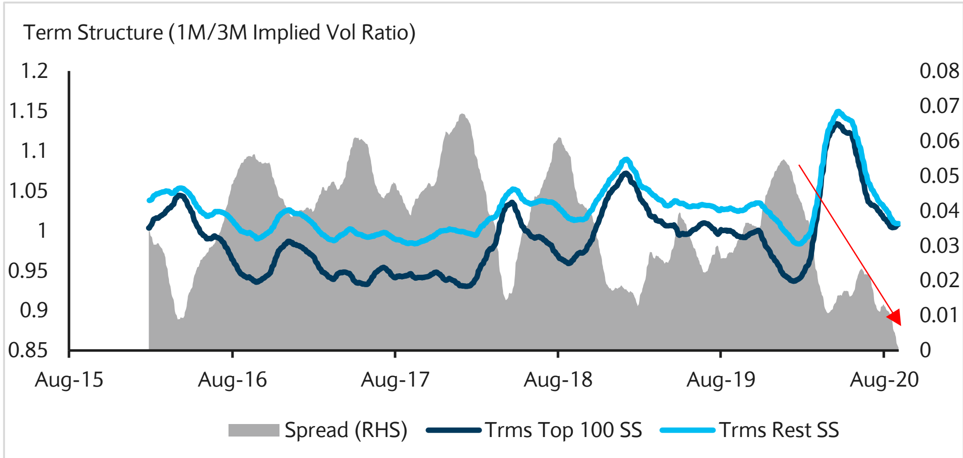
Investor demand for the options especially in the shorter dated options has impacted the implied volatility term structure especially for options with highest options trading activity. In Figure 18, we show the aggregate term structure of Top 100 and Rest baskets with the term structure defined as ratio of 1M/3M implied volatility.

As expected in times of risk-off events the term structure ratio rises (or flattens) driven by investor buying shorter dated volatility. In 2020, the absolute levels of the 1M/3M term structure for both the basket of stocks rose dramatically during the March 2020 sell-off and has since reverted closer to the historical levels. But on a relative basis, the spread between the term structure for the Top 100 option basket vs the rest of the universe has collapsed despite the absolute levels of the term structure settling lower.

The declining term structure spread indicates that the demand from options investors is leading to higher 1M implied volatility on names with highest increase in option activity.

FIGURE 18

Demand for shorter-dated options especially in the stocks with highest options increase (Top 100) has driven the term structure spread to decline to the lowest level in five years…



Source: Barclays Research, OptionMetrics. Note: Term Structure Single Stock 1M/3M Aggregated Implied volatility ratio: We track two portfolios labelled as Top = Top 100 single stocks by highest options volume increase in 2020 and Rest =All stocks excluding the Top 100 single stocks. Term Structure is smoothed with 3M moving average.

But Volatility Risk Premium has been muted…

Despite the significant uptick in speculative options activity and option market makers stuck in short gamma positions, the VRP (Volatility Risk Premium measured as the difference between 1M implied volatility and subsequent 1M realized volatility) for Top 100 SS basket has actually declined relative to the VRP for single stocks with lower options volume.

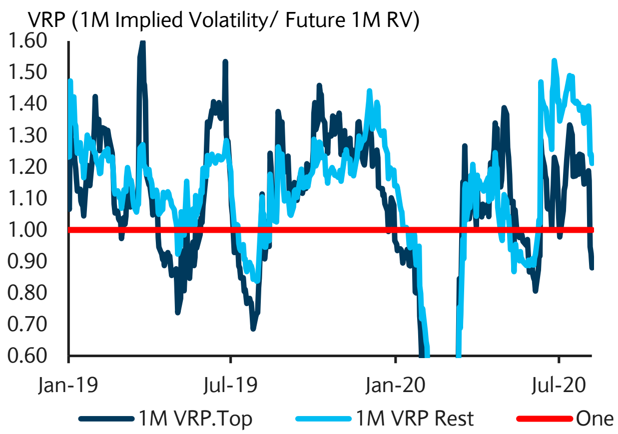
We look at volatility risk premium to see if the premium was impacted by the uptick in trading activity. We plot the 1M VRP for both the Top 100 and Rest of universe single stock names. While there was significant impact on the absolute levels of VRP itself which is to be expected during sharp sell-off. Given the strong rally in the aftermath the VRP recovered for both the Top 100 and Rest baskets and the VRP for the Top 100 is now lower than that for the Rest.

This is puzzling considering the implied volatility for the Top 100 basket has increased given the higher demand and should in principle cause them to trade at a higher premium to realized volatility. The above result implies that even realized volatility has increased at a faster pace for the Top 100 stocks.

This elevated realized volatility is not surprising given the retail-driven speculative interest and hedging activity of market makers who are short options and hence need to buy (sell) stocks as they rally (sell off) to manage their stock exposure (negative gamma trading). This indicates that the investors pilling into options in Top 100 names are not overpaying for the realized volatility.

FIGURE 19

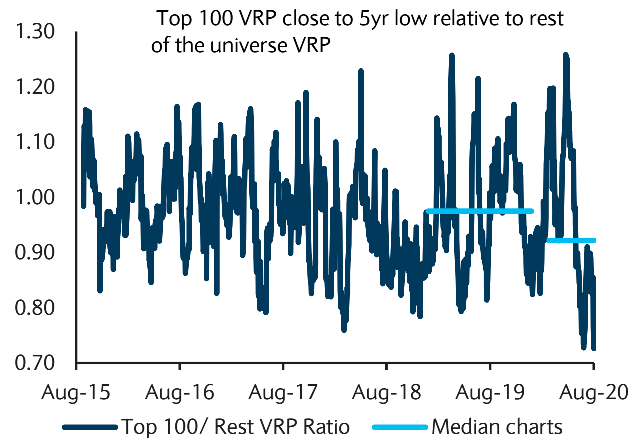
While the absolute VRP recovered after the COVID-19 sell-off and subsequent rally, there is a divergence in the VRP for the Top 100 and Rest of the universe baskets…



Source: Barclays Research, OptionMetrics. Note: VRP: Volatility Risk Premium = Aggregated single stock 1M implied volatility – 1M Future Realized volatility. We track two portfolios labelled as Top = Top 100 single stocks by highest options volume increase in 2020 and Rest =All stocks excluding the Top 100 single stocks.

FIGURE 20

… Surprisingly despite strong investor flow driving up implied volatility, Top 100 basket experienced sharply lower VRP relative to the Rest of the universe for bulk of the rally indicating elevated realized volatility



Source: Barclays Research, OptionMetrics, Option metrics Note: VRP: Volatility Risk Premium = Aggregated single stock 1M implied volatility – 1M Future Realized volatility. We track two portfolios labelled as Top = Top 100 single stocks by highest options volume increase in 2020 and Rest =All stocks excluding the Top 100 single stocks.

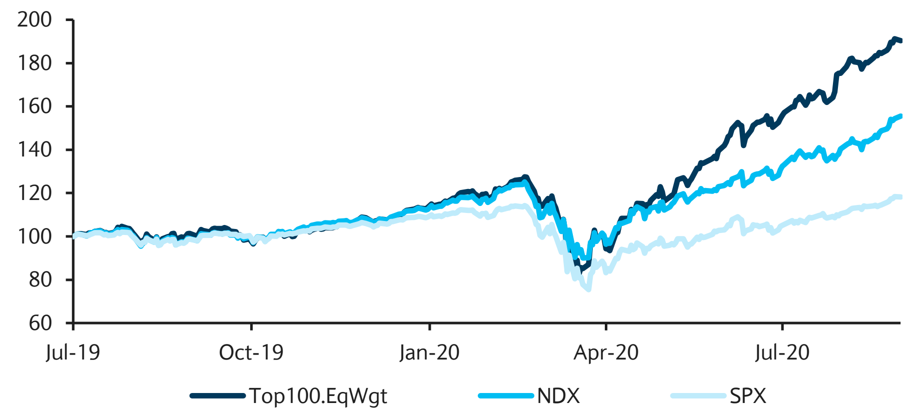
Impact of stock option volume on stock returns

Stocks with higher option activity have also outperformed

Figure 21 shows that the equal-weighted Top 100 portfolio has significantly outperformed both the equal-weighted S&P 500 and NDX indices.

FIGURE 21

Top 100 basket of stocks with highest options volume increase has outperformed equal weighted SPX and NDX by a significant margin



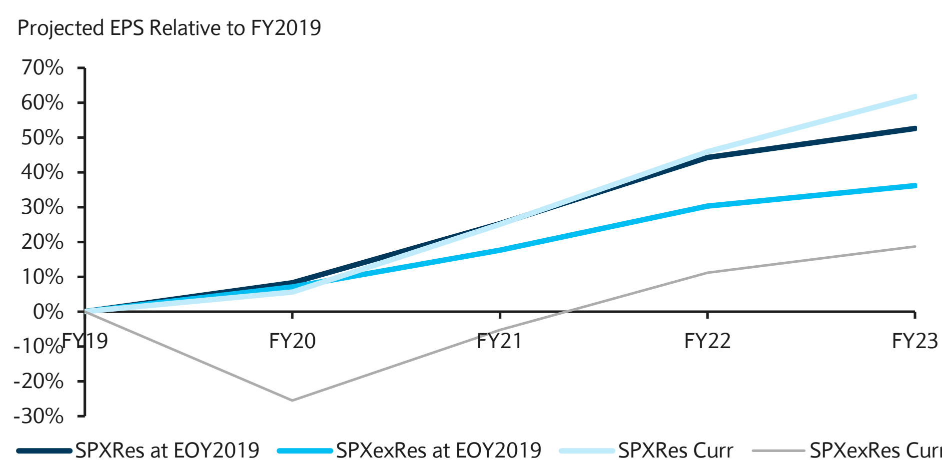
Source: Barclays Research, OptionMetrics. Note: Top 100 basket is comprised of stocks with highest YoY increase in option volume. All the performance is using equal weighted portfolio including SPX and NDX

However, most of this outperformance is due to stronger fundamentals for these "Resilient" stocks, As we have highlighted before,(*U.S. Equity Strategy: Peering across the Earnings Abyss; 28 May, 2020*), these stocks' earnings have been quite resilient during the current COVID-19 pandemic since their ecommerce geared business models has allowed them to take market share from brick and mortar companies.

Indeed Figure 22 shows that the Resilient stocks' earnings have not been seriously affected by the COVID-19 induced recession. While expectations for non-resilient stocks have been marked down to -30% for FY2020, those for Resilient stocks are expected to remain modestly positive. More importantly, looking over the next few years, earnings growth for the former is expected to remain sub-par relative to pre-COVID-19 expectations while that for Resilient stocks has not materially changed.

FIGURE 22

Resilient stocks' earnings have weathered the pandemic recession quite well

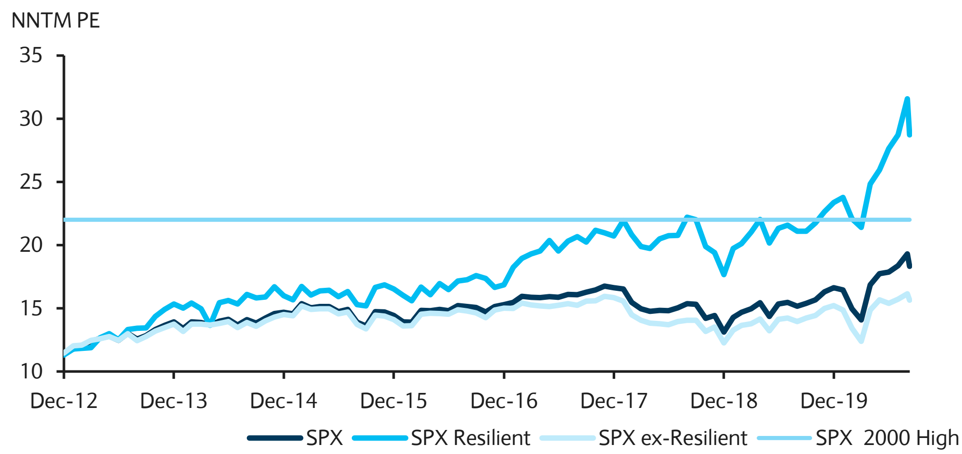


Source: Barclays Research, Refinitiv, Bloomberg

However, it appears that this good news has already been baked into the Resilient stock prices. Figure 23 shows that while overall SPX valuations are quite extended and approaching the 2000 dot-com levels, much of this over-valuation is coming from Resilient stocks.

FIGURE 23

Resilient stocks are trading at significant valuation premium



Source: Barclays Research, Refintiv, Bloomberg

Note: NNTM PE = Next to Next Twelve Month Price to Earnings ratio using consensus earnings

Given these fundamentals, it is unlikely that the option activity has led to the entire outperformance (in other word correlation is not causation). However, we believe that the option volume has potentially exacerbated the move as we discuss next.

Option market maker hedging flow is now quite significant

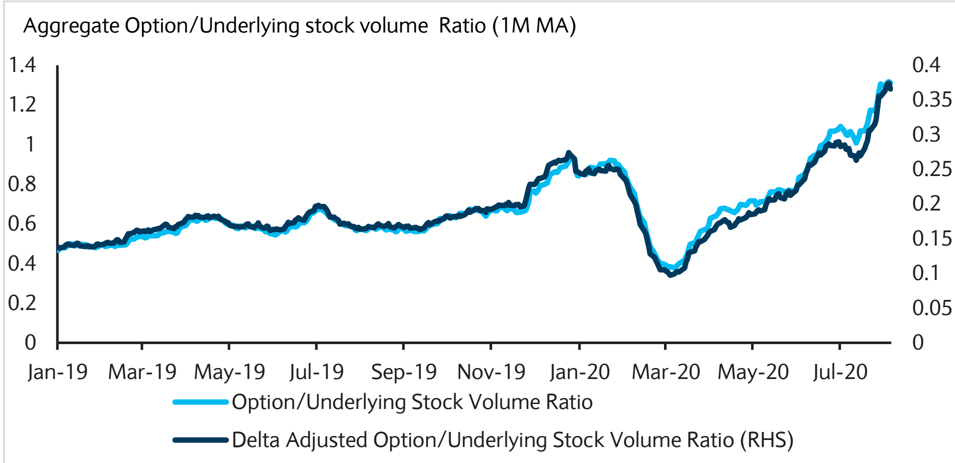
Figure 24 shows that the ratio of the aggregate dollar option vs stock volume has increased significantly indicating that there appears to be higher activity in options versus the underlying stock. Indeed, the option volume now comparable to the stock volume.

This demand in options can be transmitted to the underlying stocks by the hedging activity of market makers. When a customer comes in with an option order, a market maker takes the other side of the flow. If the market maker is not able to offload the short option position immediately via opposite flow, he hedges the delta (stock exposure) risk in the underlying cash equity market. This creates a buying pressure on the stock if the option demand is sufficiently larger. Figure 24 also shows the delta adjusted volume which is a measure of market maker hedging flow and we see that this is now almost 40% of the overall stock volume.

Note that besides the impact of customer order, the risk management by market makers of their existing short option traders can also exacerbate the moves in stocks. As the stock rises (falls), the stock exposure of market maker changes and they need to buy (sell) the underlying stock. In other words, market makers are short convexity which can increase the stock moves in either direction.

FIGURE 24

Market marker hedging volume has increased significantly and now accounts for ~40% of overall stock volume

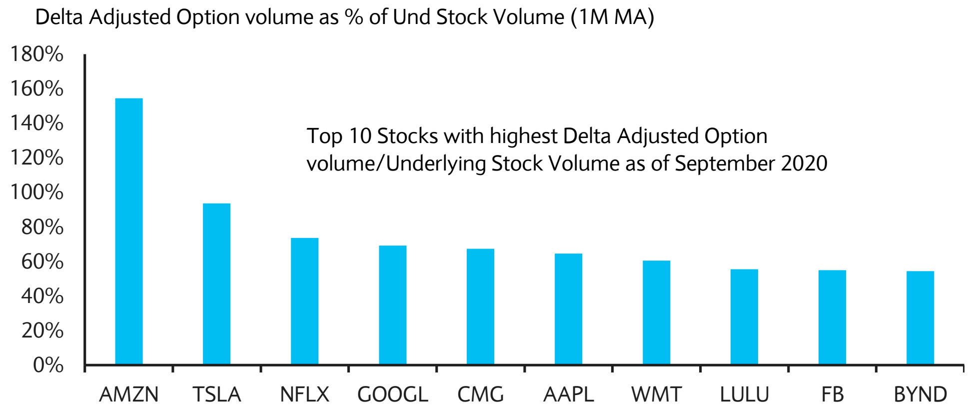


Source: Barclays Research, OptionMetrics.

Figure 21 shows the aggregated volume and masks some extreme levels for individual stocks. In Figure 25, we show the top 10 stocks with highest ratios of delta adjusted option volume/underlying stock volume (1M moving average) as of September 2020. Not only are these ratios significantly higher than the aggregate ratio shown in Figure 24, it exceeds the stock volume in one instance. There is no conundrum here. While Delta Adjusted Option Volume filters into the underlying stock volume, please note that market makers don't pass through all the volume into the underlying stock as the options risk can be offset by 1) two-way order flow (so the delta hedging is not needed), 2) As we gross both call and put option deltas, the net delta impact is lower and 3) Market markets use proxy hedges such as ETFs to hedge out the stock delta.

FIGURE 25

The top 10 stocks with the highest ratio of delta adjusted option volume (as of September 2020) are the most likely candidates for excessive impact of the retail call buying demand on the underlying stock prices via the market maker delta hedging channel



Source: Barclays Research, OptionMetrics. Note: While Delta Adjusted Option Volume filters into the underlying stock volume, please note that market makers don't pass through all the volume into the underlying stock as the options risk can be offset by 1) two way order flow (so the delta hedging is not needed), 2) As we gross both call and put option deltas, the net delta impact is lower and 3) Market markets can use proxy hedges to hedge out the stock delta

Correlation of stock moves vs normalized option volume have become significantly stronger post COVID-19 sell-off

In order to establish a concrete link between the sizeable single stock option volumes and stocks prices impact in the current rally we look at the correlation between stock moves and option volumes. While same day correlation does not imply causation we are asking if option volume is a "factor" that explains the cross-sectional variation of daily returns.

As a first step, we calculate normalized option volume metrics so that we can compare them across stocks. We define the normalized metric as Excess Option Volume (EOV) = Option Volume of a Stock/Normalization Factor to normalize volume across stocks. There are several sensible choices for the normalization factor:

- Trailing 1-month Option Volume
- Open Interest
- Market Cap
- Same day stock volume
- Trailing 1-month stock volume

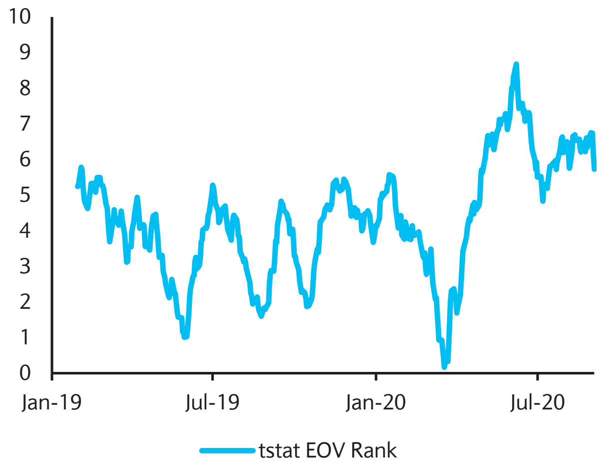
The option volume can be chosen to be the total option call or put volumes. We take these raw values and calculate the percentile rank across the universe to avoid the effect of outliers and calculate the daily cross-sectional correlation of these metrics with stock returns.

We find the strongest relationships with Call Volume/ Call Open interest and Call Volume/Trailing 1M average Call Volume. Our final EOV factor is simply the average of these two metrics.

In Figure 26 we can see the cross sectional regression t-stat and see the strong relationship between higher Call EOV and total return of the underlying stock. The sharp increase in the t-stat post the COVID-19 sell-off also fits in with the dramatic increase of the call buying activity seen in the single stock space. Not only has the t-stat increased sharply it has also remained relative stable in terms of sign which is encouraging. The explanatory power of the EOV metric also increased sharply with a jump in R^2 since March 2020 indicating normalized call volume activity explain a larger portion of the single stock equity returns (Figure 27).

FIGURE 26

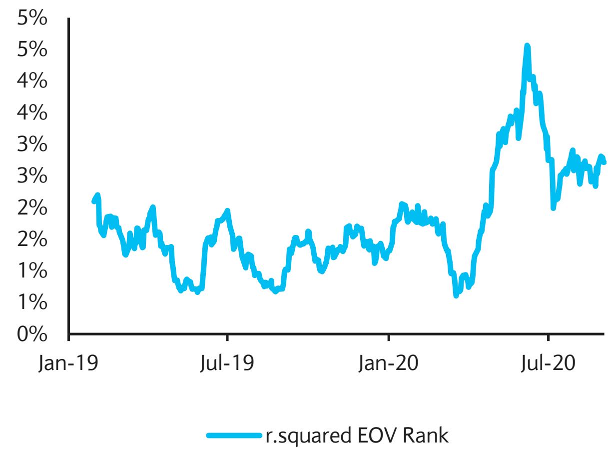
Cross section regression indicates a strong positive relationship between normalized Call option volume and single stock return…



Source: Barclays Research, OptionMetrics. Note: EOV: Excess Option Volume metric is comprised of Call Volume/ 1M trailing Call Volume and Call Volume/Call Open interest. Regression statistics shown for Cross sectional ranked regression single stock return ~ EOV. T-stat show is the one month moving average of daily cross-sectional regression,

FIGURE 27

…and the correlation between the call volume activity and stock returns increased sharply post the COVID-19 sell-off

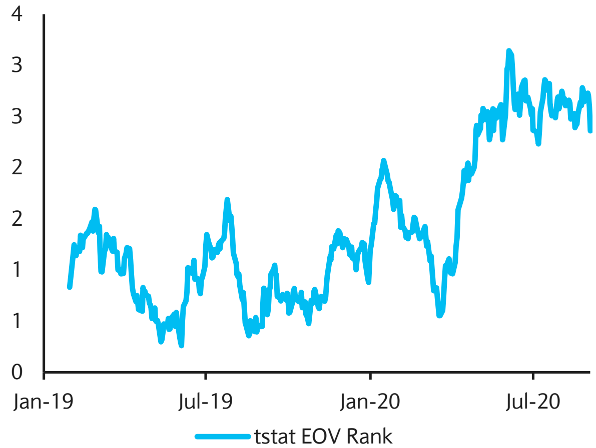


Source: Barclays Research, OptionMetrics. Note: EOV: Excess Option Volume metric is comprised of Call Volume/ 1M trailing Call Volume and Call Volume/Call Open interest. Regression statistics shown for Cross sectional ranked regression single stock return ~ EOV. R-squared show is the one month moving average of daily cross-sectional regression,

Next to isolate the impact on the Top 100 stock which have seen the highest option volume increase we apply the same cross sectional regression methodology as before, but trim our starting universe is the Top 100 stock basket. We would expect the results of the cross-sectional regression to be stronger give the sharply higher option volume increase and impact on the option surface. The regression t-stat and r-squared shown in the two figures below for Top 100 option names shows a similar trend but the correlation is significantly stronger indicating a potentially strong link between call option volume and stock returns. This provides strong evidence that the option activity is having a direct impact on the underlying stock prices.

FIGURE 28

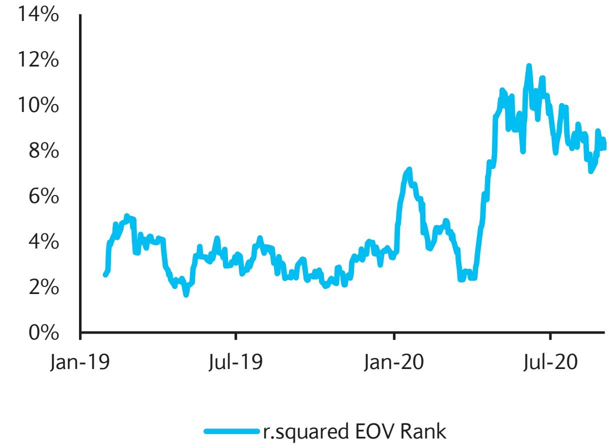
For Top 100 single stock with highest option volume change the cross sectional regression also indicates a strong positive relationship between normalized call option volume and single stock return…



Source: Barclays Research, OptionMetrics. Note: EOV: Excess Option Volume metric is comprised of Call Volume/ 1M trailing Call Volume and Call Volume/Call Open interest. Regression statistics shown for Cross sectional ranked regression single stock return ~ EOV

FIGURE 29

…but the correlation between the normalized call activity and stock return is significantly higher relative to the entire universe.



Source: Barclays Research, OptionMetrics. Note: EOV: Excess Option Volume metric is comprised of Call Volume/ 1M trailing Call Volume and Call Volume/Call Open interest. Regression statistics shown for Cross sectional ranked regression single stock return ~ EOV

Monetizing retail driven options volatility dislocation

As discussed above influx of sizable retail options trading which is dominated by outright short-term call buying and short gamma positioning from market makers has led to volatility dislocations across single stock skew, term structure and VRP. With the substantial demand for options, SS options have been the chief beneficiary over index volume leading dislocations being more pronounced in the single stock options volatility surface.

We recommend two trade ideas (one delta hedged and unhedged) to benefit from the SS volatility surface dislocations we have highlighted:

- **Monetizing elevated volatility using selective VolScore based short delta hedged straddles on single stocks.**
- **Buying outright call spreads and call 1x2s on Resilient stocks to monetize extremely flat skew and attractive VRP.**

Trade Idea: Selective Short Single Stock volatility with Rich VolScore to monetize retail flow driven volatility dislocation

Recently it has been noted that the index VRP looked attractive based on the elevated implied volatility. Since the sell-off in March 2020, there has been a pronounced dispersion in the single stocks volatility complex especially with the VRP.

In Figure 30., we show that over the past few months our VolScore strategy which monetizes the volatility risk premium in single stock options has outperformed the SPX index option based benchmark after several years of inline performance.

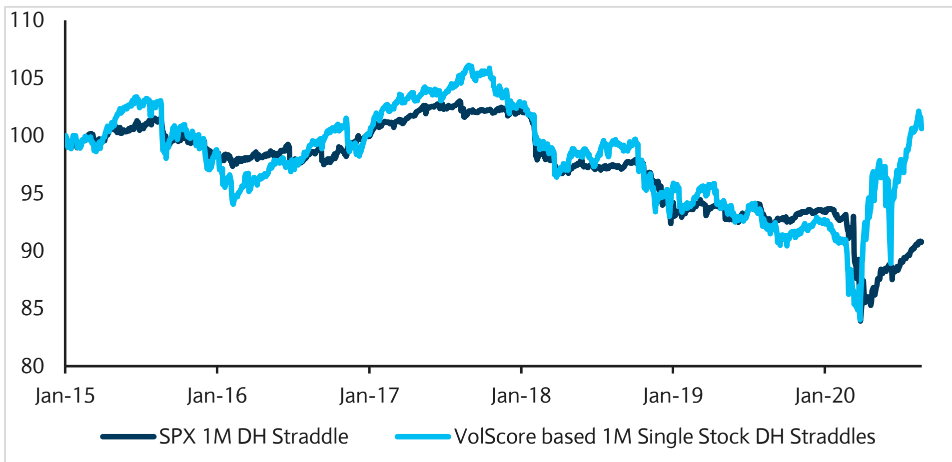
This strategy sells one month daily delta hedged straddles on 50 stocks chosen based on our VolScore metric (*VolScore Based Strategies*, 5/11/11). We calculate the VolScore for each stock in our universe with liquid options. We use both the stock-sector implied volatility spread and the implied – adjusted realized volatility spread to calculate the VolScore. Using the standard realized volatility is not recommended since it is highly susceptible to large moves which are quite common for single stocks. However, a large move does not necessarily indicate a sustained increase in implied volatility and hence it is important to treat these outliers appropriately. Our adjusted realized volatility is one potential methodology which we have found to be quite robust. We track the performance of this and other volatility selling strategies in our monthly publication: Systematic *Volatility Strategies Monthly*.

The outperformance of the single stock short volatility is driven by not only the elevated implied volatility on the back of sizeable single stock option trading but also the ability to selectively monetize the stocks with rich VRP. As we have highlighted above the VRP has not expanded uniformly for names linked to high option activity.

We expect the outperformance of our VolScore strategy to continue as long as the retail demand remains high and so recommend it as an attractive way to monetize the volatility risk premium.

FIGURE 30

Given the frothy speculative trading and short market maker positioning, selective selling single stock volatility (via delta hedged straddles) using VolScore Based approach has added significant value by screening for rich volatility names in 2020



Source: Barclays Research, OptionMetrics Note: Performance for short delta hedged straddles and details of the strategies can be found in the appendix in our monthly publication *Systematic Volatility Strategies Monthly: August 2020*, Sep 2, 2020.

Trade Idea: Buy Cheap Call Spreads/Call 1x2s on Resilient Names

As discussed above, after their impressive run the Resilient stocks are trading at significantly elevated valuations even after the recent underperformance. Given the frothy valuations, we think it is more prudent to express a positive view using call spreads rather than outright stock exposure.

Given the recent correction in the Resilient stocks, we recommend establishing long positioning using limited loss structures to position for further rally. We recommend positioning for Resilient names using long call spreads that monetize the significantly flat skew and relatively low VRP. While the VRP is indeed lower for the Resilient stocks and these stocks have been moving sufficiently to own outright options, the absolute levels of volatility are still very elevated. In addition, despite the recent correction in September 2020, the headwinds from extremely high valuations of Resilient stocks (*Equity Compass: Resilient* *stocks drive SPX returns*, September 8, 2020) is likely to cause a drag in the future performance.

We recommend selling the upside OTM volatility using call spreads, as we have shown in Figure 17 the skew on high option activity names has been very flat driven by excessive demand for upside from the investors. We recommend call spreads on stocks with associated metrics which have flat skew, fair VRP (realized volatility is elevated) and recent option volume is elevated and a member of the 'Resilient' stock group.

FIGURE 31

Attractive long call spreads candidates to position for further upside in the Resilient stocks. These candidates benefit from flat skew, relatively low VRP and elevated levels of investor options activity

Ticker	Company Name	Skew 3M: Percentile 2Y	Skew 3M: Current	Implied Volatility 3M: Current	Realized Volatility 3M	IV/RV Ra
NVDA	NVIDIA CORP	0.022	0.022	0.606	0.46	1.3
AAPL	APPLE INC	0.026	-0.006	0.486	0.43	1.1
MSFT	MICROSOFT CORP	0.038	0.093	0.402	0.356	1.1
ADBE	ADOBE INC	0.038	0.132	0.517	0.409	1.3
EBAY	EBAY INC	0.072	0.055	0.422	0.296	1.4
NFLX	NETFLIX INC	0.2	0.081	0.545	0.465	1.2
GOOGL	ALPHABET INC-CL A	0.234	0.141	0.404	0.301	1.3
AMZN	AMAZON.COM INC	0.327	0.106	0.492	0.371	1.3

Source: Barclays Research, OptionMetrics.

ANALYST(S) CERTIFICATION(S):

I, Maneesh S. Deshpande, hereby certify (1) that the views expressed in this research report accurately reflect my personal views about any or all of the subject securities or issuers referred to in this research report and (2) no part of my compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this research report.

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Materially Mentioned Stocks (Ticker, Date, Price)

Adobe Inc. (ADBE, 11-Sep-2020, USD 471.35), Overweight/Positive, CD/CE/J

Alphabet Inc. (GOOGL, 11-Sep-2020, USD 1515.76), Overweight/Positive, A/CD/CE/D/J/K/L/M/N

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Amazon.com, Inc. (AMZN, 11-Sep-2020, USD 3116.22), Overweight/Positive, CD/CE/J/K/M/N

Apple, Inc. (AAPL, 11-Sep-2020, USD 112.00), Equal Weight/Neutral, A/CD/CE/D/E/J/K/L/M/N

eBay, Inc. (EBAY, 11-Sep-2020, USD 52.77), Overweight/Positive, CD/CE/J/K/M/N

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Microsoft Corp. (MSFT, 11-Sep-2020, USD 204.03), Overweight/Positive, CD/CE/J/K/M/N

Netflix, Inc. (NFLX, 11-Sep-2020, USD 482.03), Overweight/Neutral, CD/CE/J/K/N

NVIDIA Corp. (NVDA, 11-Sep-2020, USD 486.58), Overweight/Neutral, CD/CE/J/K/M

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In addition to the stock rating, we provide industry views which rate the outlook for the industry coverage universe as Positive, Neutral or Negative (see definitions below). A rating system using terms such as buy, hold and sell is not the equivalent of our rating system. Investors should carefully read the entire research report including the definitions of all ratings and not infer its contents from ratings alone.

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Overweight - The stock is expected to outperform the unweighted expected total return of the industry coverage universe over a 12-month investment horizon.

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Hewlett Packard Enterprise Company (HPE)	HP Inc. (HPQ)	Juniper Networks, Inc. (JNPR)
Keysight Technologies, Inc. (KEYS)	Motorola Solutions, Inc. (MSI)	NetApp, Inc. (NTAP)
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Ubiquiti, Inc. (UI)	Western Digital Corporation (WDC)	
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Chewy, Inc. (CHWY)	eBay, Inc. (EBAY)	Electronic Arts, Inc. (EA)
Expedia Inc. (EXPE)	Facebook, Inc. (FB)	GoDaddy Inc. (GDDY)
Groupon, Inc. (GRPN)	GrubHub, Inc. (GRUB)	GSX Techedu Inc. (GSX)
IAC/InterActiveCorp (IAC)	JD.com, Inc. (JD)	Lemonade Inc (LMND)
Lyft, Inc. (LYFT)	Match Group, Inc. (MTCH)	MercadoLibre (MELI)
NetEase, Inc. (NTES)	Peloton Interactive, Inc. (PTON)	Pinduoduo Inc. (PDD)
Pinterest, Inc. (PINS)	Revolve (RVLV)	Shopify (SHOP)
Snap, Inc (SNAP)	Spotify Technology S.A. (SPOT)	Stitch Fix (SFIX)
Take-Two Interactive Software (TTWO)	Tencent Holdings Ltd. (TCEHY)	Trip.com Group Ltd. (TCOM)
Tripadvisor Inc. (TRIP)	Twitter, Inc. (TWTR)	Uber Technologies Inc. (UBER)
Weibo Corporation (WB)	Wix.com Ltd. (WIX)	Yelp, Inc. (YELP)
Zillow, Inc. (ZG)	Zynga Inc. (ZNGA)	
U.S. Media		
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Salesforce.com Inc. (CRM)	SAP SE (SAP)	SecureWorks (SCWX)
ServiceNow, Inc. (NOW)	Slack Technologies (WORK)	SolarWinds Corporation (SWI)
Splunk Inc. (SPLK)	Talend S.A. (TLND)	Teradata Corp. (TDC)
Tufin Software Technologies (TUFN)	Varonis Systems, Inc. (VRNS)	Veeva Systems Inc. (VEEV)
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Zscaler, Inc. (ZS)		

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