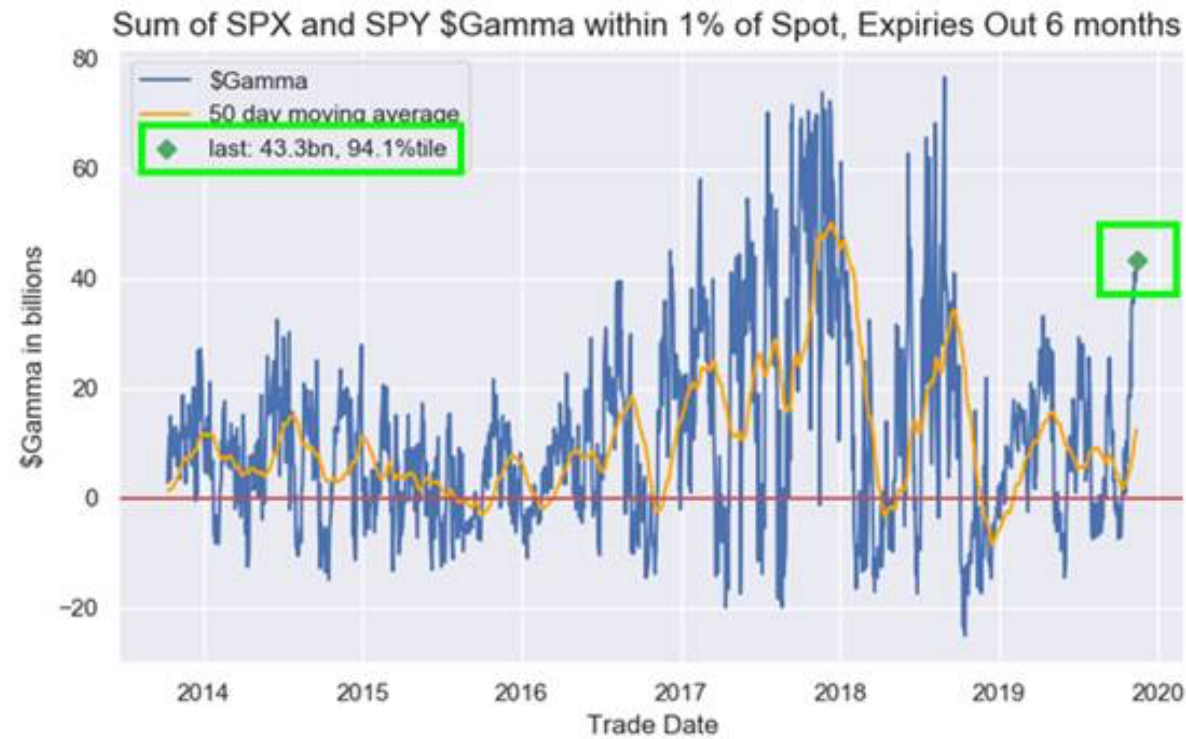


## CTA MODEL POSITIONS IN GLOBAL EQUITIES NEARLY CONSENSUALLY “+100% LONG” ONCE AGAIN:

### CTA Position Estimates

		Sig(Today)	Sig(1d)	Sig(1w)	Sig(1m)	CurrentLevel	LevelToSell	LevelToBuy	Pos(Today)	Pos(1d)	Pos(1w)	Pos(1m)
Equities	S&P 500	100	100	100	44	3091.9	2922.84	nan	26.62	25.84	23.45	10.1
	Russell 2000	100	100	100	-100	1595.7	1544.99	nan	21.15	20.93	19.13	-19.4
	NA SDAQ 100	100	100	100	44	8275	7727.2	nan	22.41	21.6	19.74	8.6
	Euro Stoxx 50	100	100	100	100	3711	3316.21	nan	19.48	19.34	18.06	17.4
	Nikkei 225	100	100	100	79	23550	20855.8	nan	21.03	20.25	20.37	15.3
	DAX	100	100	100	100	13290.5	11939.9	nan	19.25	19.27	18.26	17.48
	FTSE100	100	100	100	23	7356.5	7168.38	nan	2.08	2.09	1.98	0.42
	CAC40	100	100	100	100	5920	5302.78	nan	0.98	0.97	0.88	0.85
	Hang Seng	72	72	61	23	26982	24987.2	27581.6	3.17	3.12	2.57	0.98
	HangSeng CH	100	100	61	23	10672	10538.5	nan	4.79	4.79	2.83	1.16
	ASX SPI 200	100	100	100	100	6744	6459.71	nan	13.38	13.3	12.85	12.6
	KOSPI 200	100	100	100	79	284.1	269.337	nan	3.33	3.25	3.2	2.45
	Bovespa	100	100	100	44	107146	104634	nan	1.78	1.81	1.69	0.79

SPX / SPY CONSOLIDATED OPTIONS “\$GAMMA” AND “\$DELTA” SHOW EXTREME POSITIONING:



SPX Futures Positioning



US Eq Futures Positioning





QQQ net gamma > 95.5%tile AND net delta > 97.8%tile since 2013								
QQQ Equity Forward Returns								
	1d	1w	2w	1m	2m	3m	6m	12m
Return	-0.7%	-1.8%	-0.6%	-2.9%	0.4%	0.2%	1.8%	7.1%
Median	-0.5%	-2.2%	0.2%	-2.0%	-0.4%	0.8%	3.6%	6.8%
Pct	46%	57%	32%	33%	64%	32%	31%	53%
Z	-0.7	-1.0	-0.4	-1.1	-0.5	-0.7	-0.9	-0.9
Hit %	40%	25%	50%	25%	50%	75%	75%	100%
Excess Hit %	-16%	-36%	-14%	-44%	-26%	-7%	-11%	8%
Min	-1.5%	-4.0%	-5.6%	-7.9%	-2.6%	-5.2%	-9.7%	1.7%
Max	0.1%	1.1%	2.8%	0.1%	5.0%	4.5%	9.7%	12.9%
Count	5	4	4	4	4	4	4	3
(All Med)	0.1%	0.5%	0.8%	1.6%	3.3%	4.7%	9.5%	19.3%
(All Avg)	0.1%	0.3%	0.7%	1.4%	2.8%	4.2%	8.4%	16.7%
(All SD)	1.0%	2.2%	2.9%	3.9%	5.0%	5.8%	7.3%	11.0%

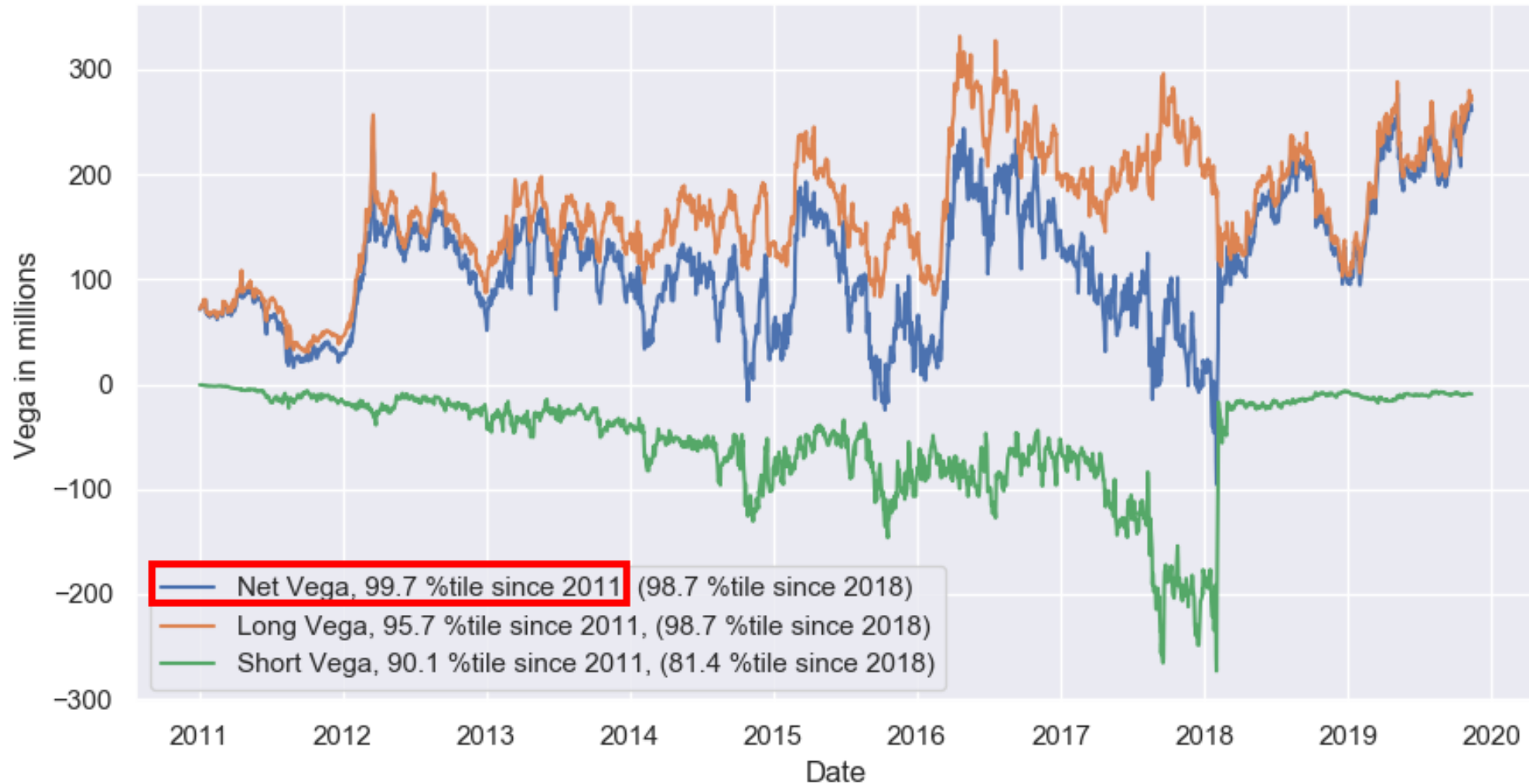
QQQ net gamma > 95.5%tile AND net delta > 97.8%tile since 2013								
VIX Index Forward Returns								
	1d	1w	2w	1m	2m	3m	6m	12m
Return	2.9%	16.3%	7.9%	19.4%	3.8%	62.4%	22.6%	18.3%
Median	2.6%	13.8%	5.1%	14.6%	-0.2%	37.0%	29.5%	-1.1%
Pct	57%	56%	62%	56%	70%	63%	28%	63%
Z	0.3	0.8	0.2	0.5	0.0	1.6	0.4	0.2
Hit %	80%	100%	75%	75%	50%	75%	75%	33%
Excess Hit %	34%	54%	30%	29%	4%	27%	26%	-20%
Min	-1.2%	3.4%	-11.7%	-2.0%	-16.2%	-21.7%	-10.3%	-15.0%
Max	7.4%	34.3%	33.3%	50.4%	31.7%	197.1%	41.7%	71.0%
Count	5	4	4	4	4	4	4	3
(All Med)	-0.6%	-1.2%	-1.5%	-1.5%	-2.3%	-1.1%	-1.0%	2.9%
(All Avg)	0.3%	1.4%	2.2%	3.3%	4.3%	5.6%	6.3%	9.5%
(All SD)	8.5%	18.5%	23.7%	29.3%	31.9%	35.9%	36.4%	42.3%

### SHORT TERM VIX ETN VEGA

(Tuesday 11/05/2019 to Tuesday 11/12/2019)

- Long vega: decreased by 0.1mm to 270.2mm
- Short vega: increased by 0.5mm to 9.4mm
- **Net vega: decreased by 0.7mm to 260.8mm**

Short Term VIX ETN Vega as of 11/12/2019



## NON-COMMERCIAL VIX FUTURES VEGA

(Tuesday 10/29/2019 to Tuesday 11/05/2019)

- Long vega: increased by 3.9mm to 84.8mm
- Short vega: increased by 19.6mm to 288.4mm
- **Net vega: decreased by 15.7mm to -203.6mm**

Non-Commercial VIX Futures Vega as of 11/05/2019

