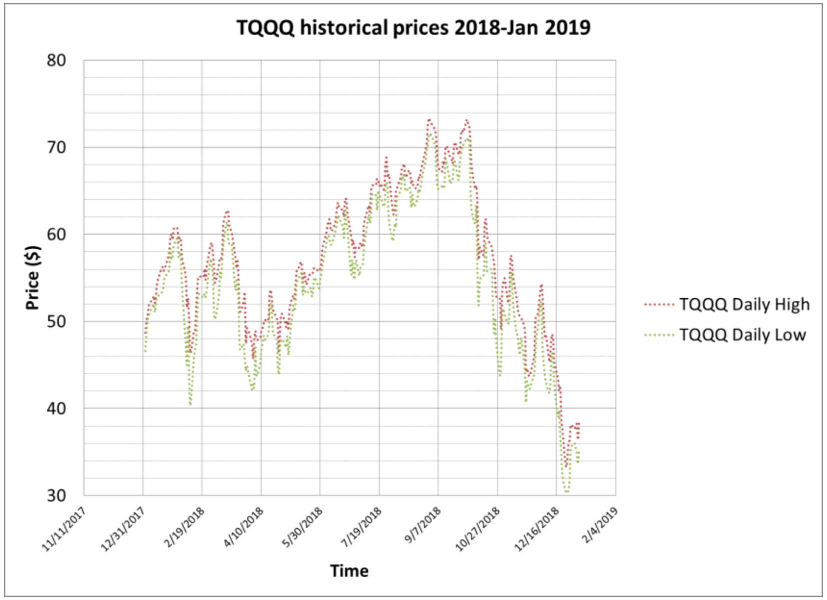
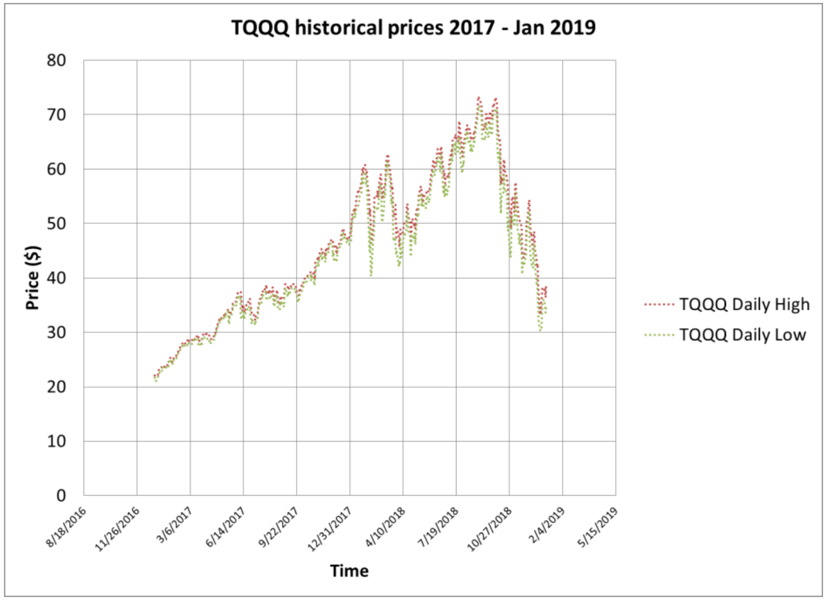
Observations of TQQQ/options and investment strategy

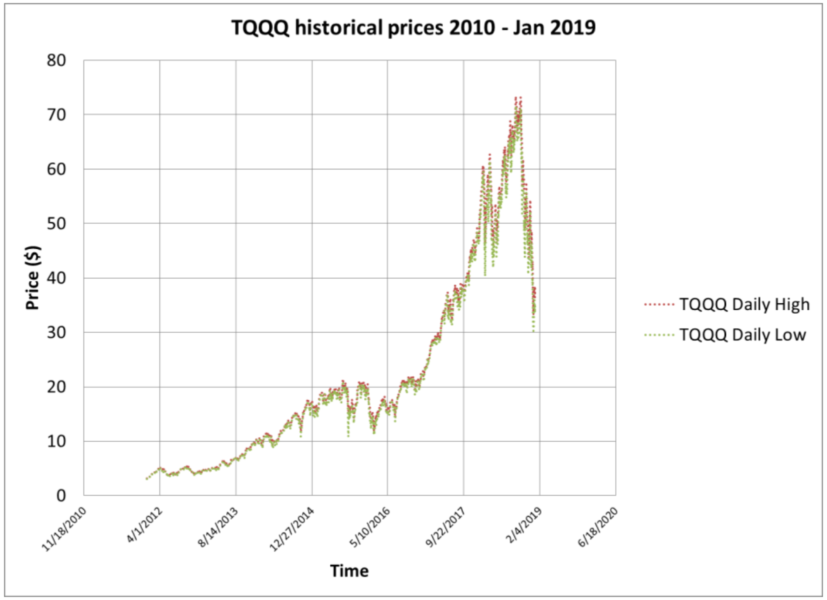
- The volatility of TQQQ price and volume is very high
- TQQQ In-the-money one-month call can double within one week due to the high volatility
- TQQQ out-of-the-money 2-years call can double within one month due to the high volatility
    - Shortcoming: risk of become zero is large
- TQQQ out-of-the-money one month call can triple within one week due to the high volatility
    - Shortcoming: risk of become zero is large
- TQQQ in-the-money one month put can double within one week due to the high volatility
- TQQQ out-of-the-money one month put can >double within one week due to the high volatility
    - Shortcoming: risk of become zero is large
- TQQQ in-the-money one week call can >triple within one week due to the high volatility
    - Shortcoming: time is too short, risk of become zero is large
- The longer the time, the smaller the Implied volatility
- The closer the day to expiration, the higher the volume

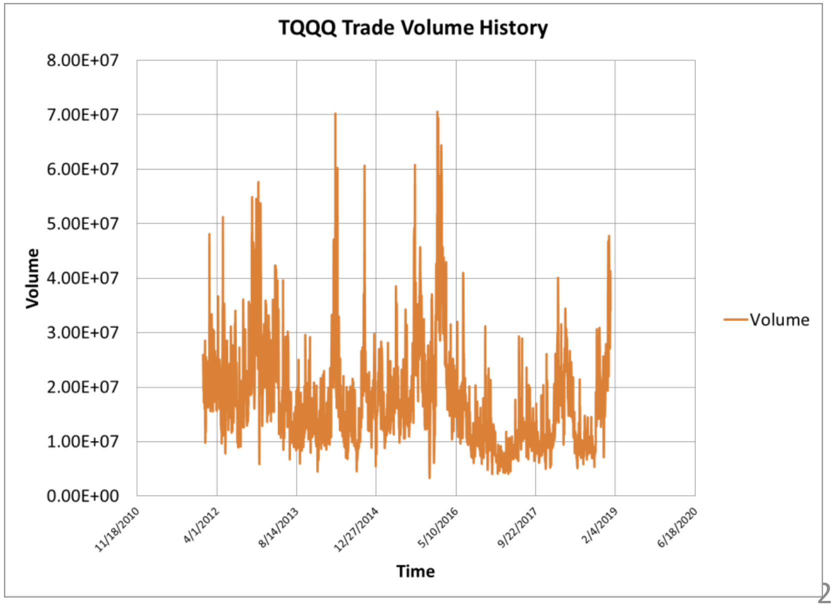
- **Strategy:**
    - trade in-and-out for TQQQ In-the-money one-month call/put, sell when doubles
    - Invest in TQQQ in-the-money 2-years call, aim for the long term, sell when doubles

TQQQ History – large volatility and volume so far

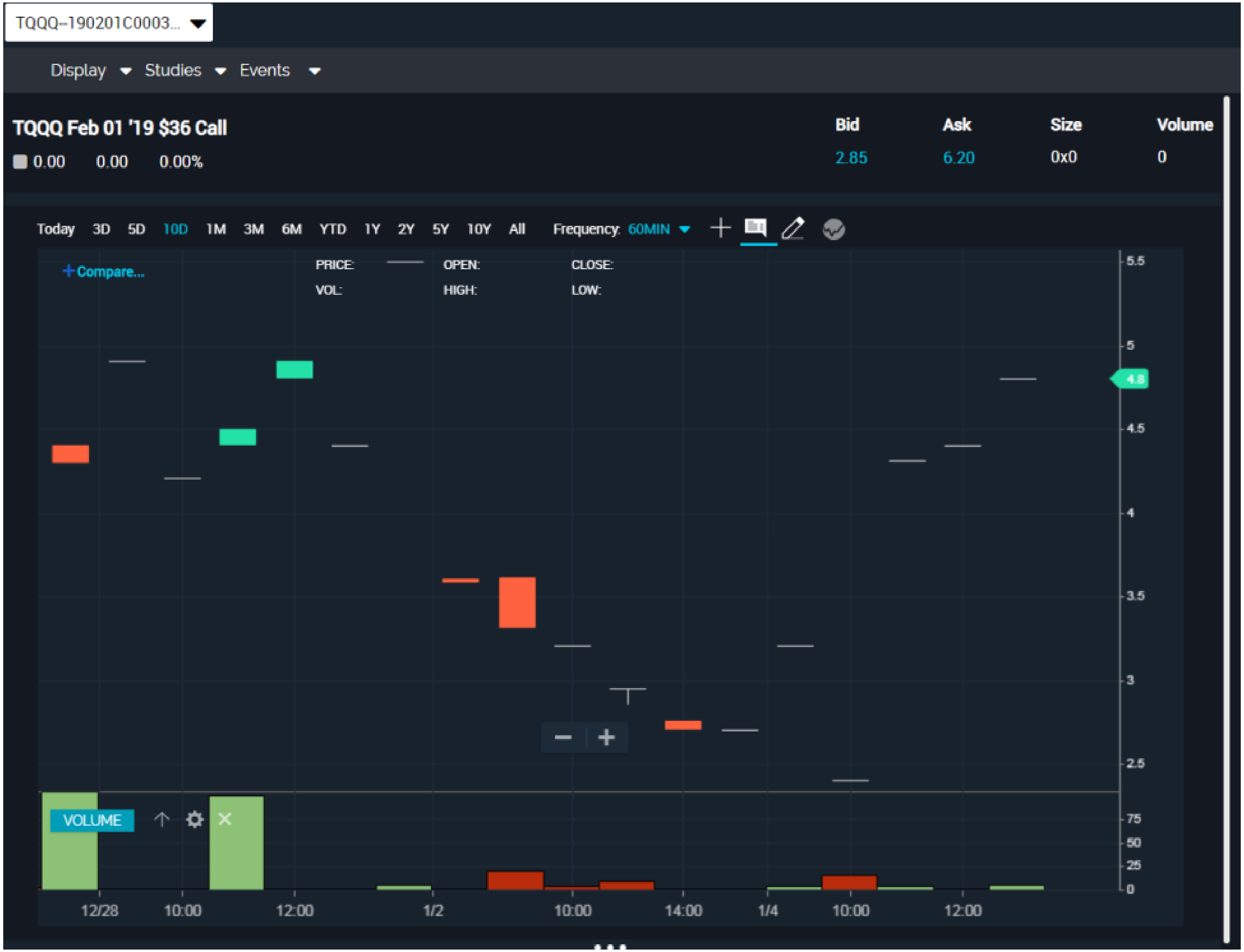




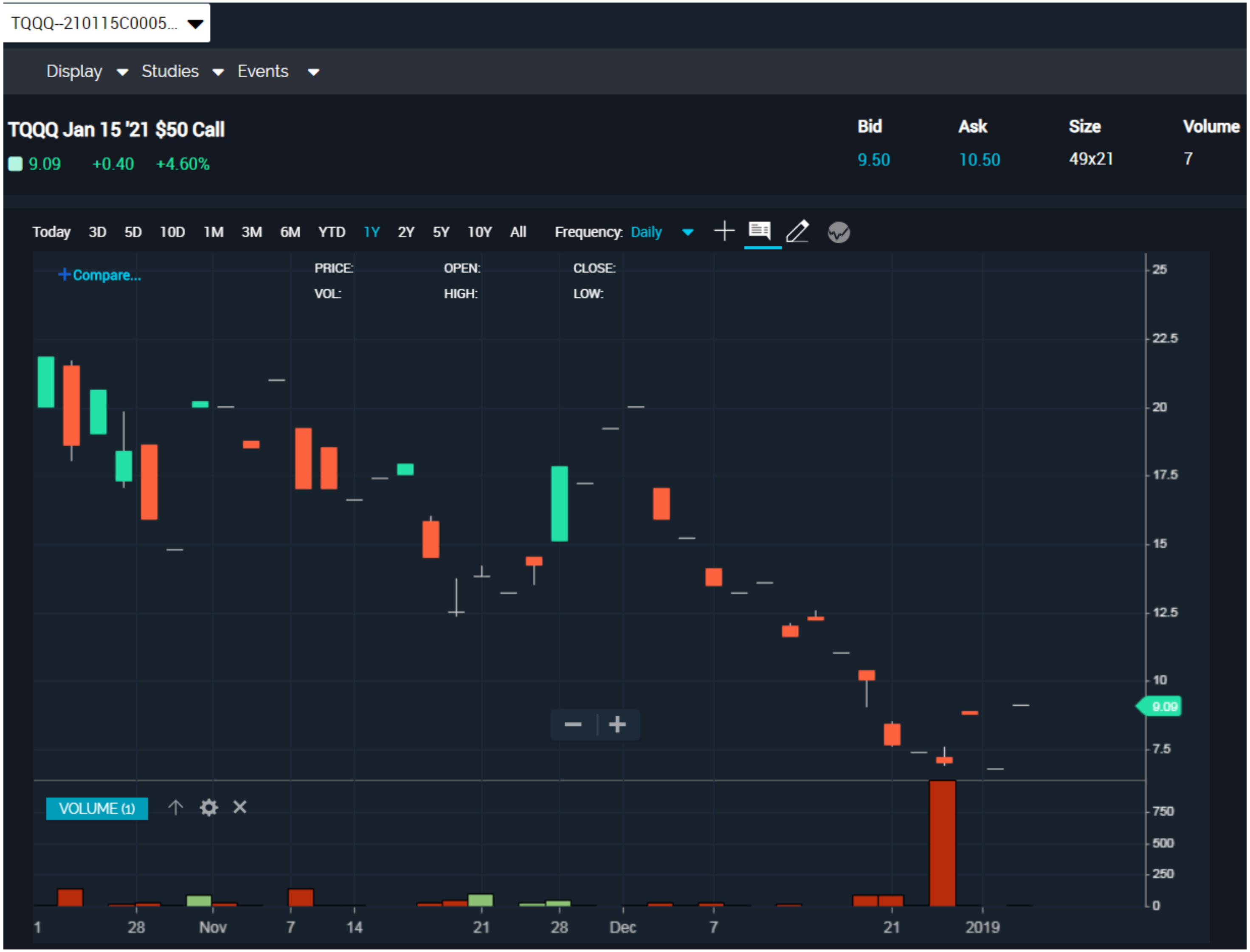




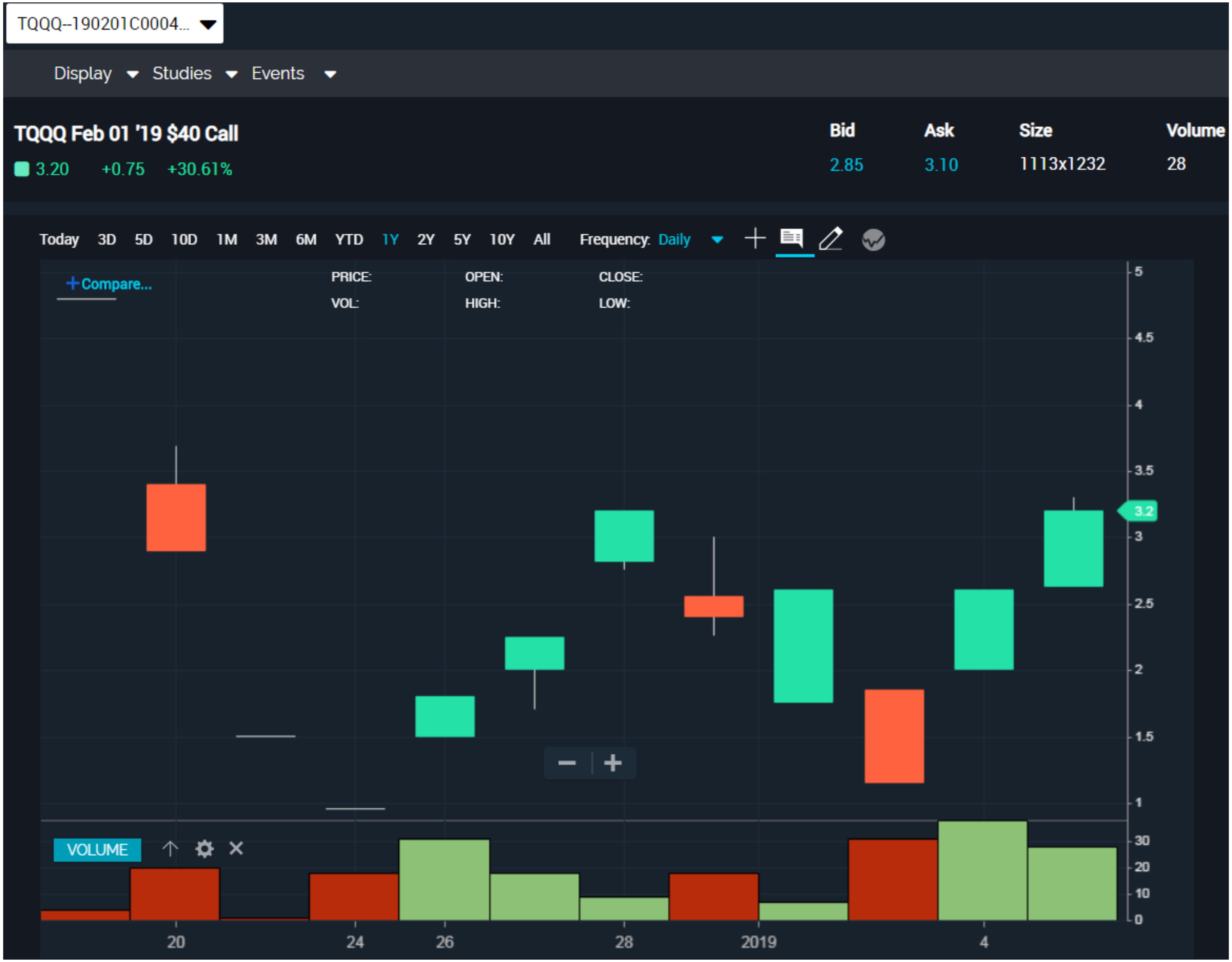
TQQQ In-the-money one-month call can double within one week due to the high volatility



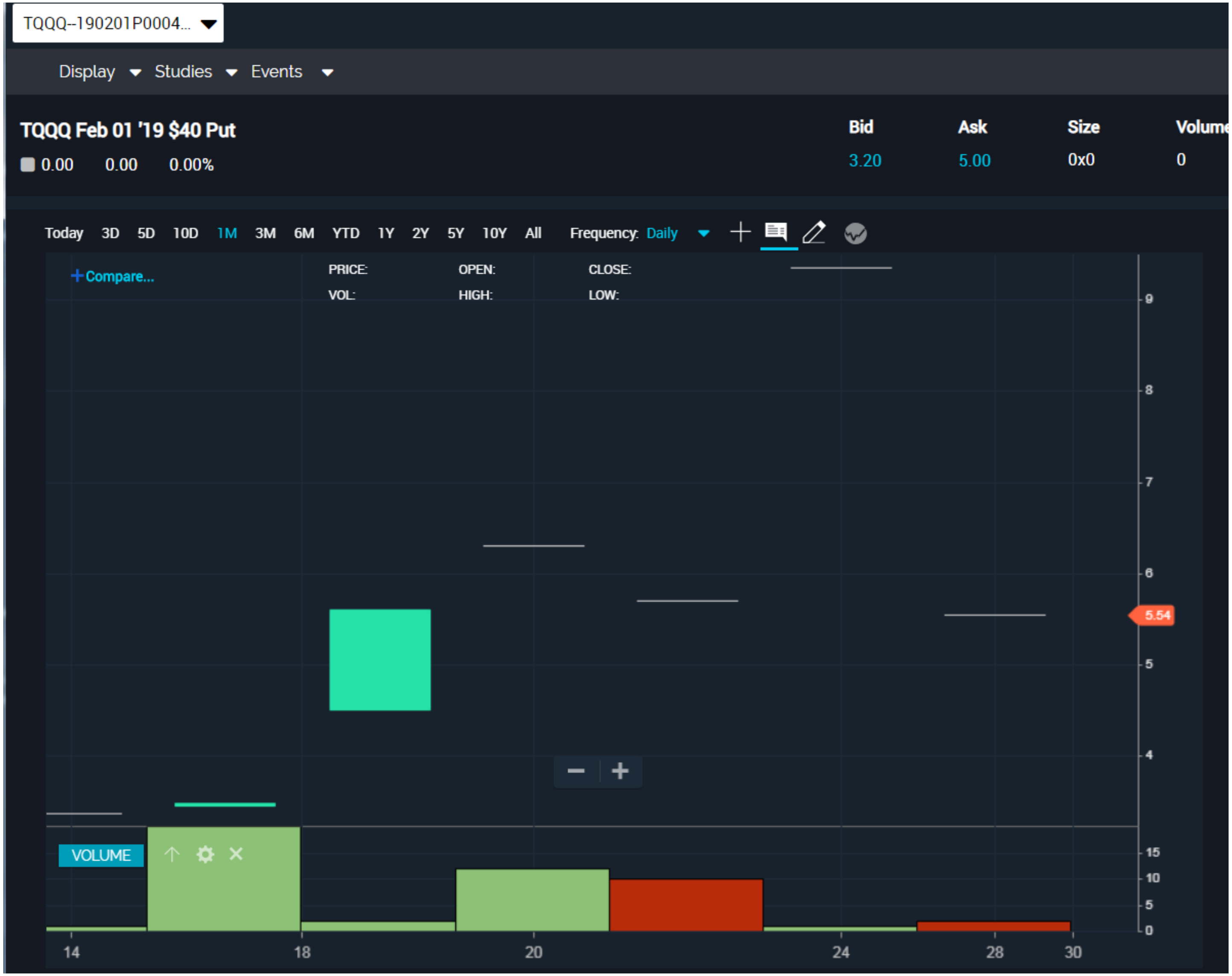
TQQQ out-of-the-money 2-years call can double within one month due to the high volatility



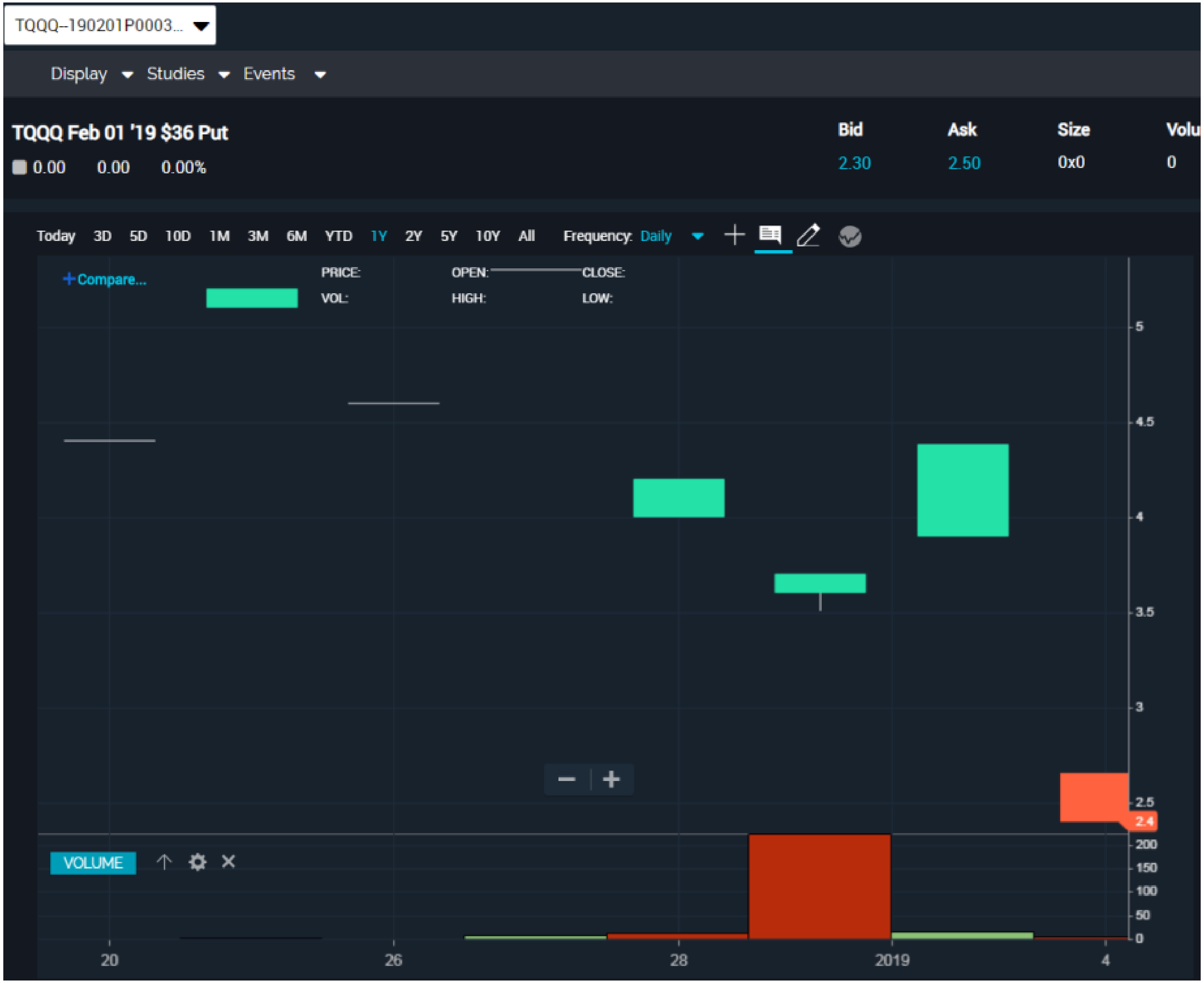
TQQQ out-of-the-money one month call can triple within one week due to the high volatility



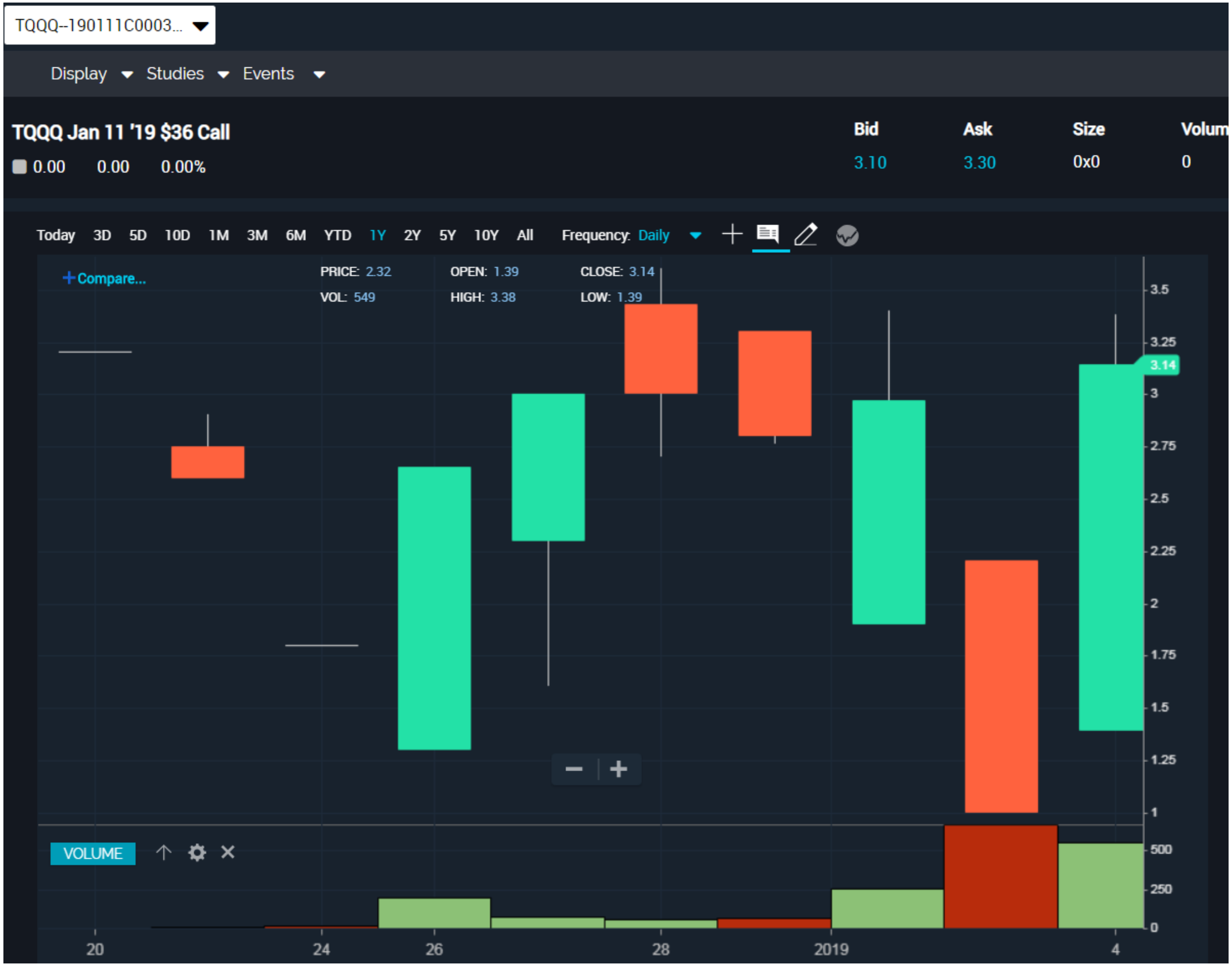
TQQQ in-the-money one month put can double within one week due to the high volatility



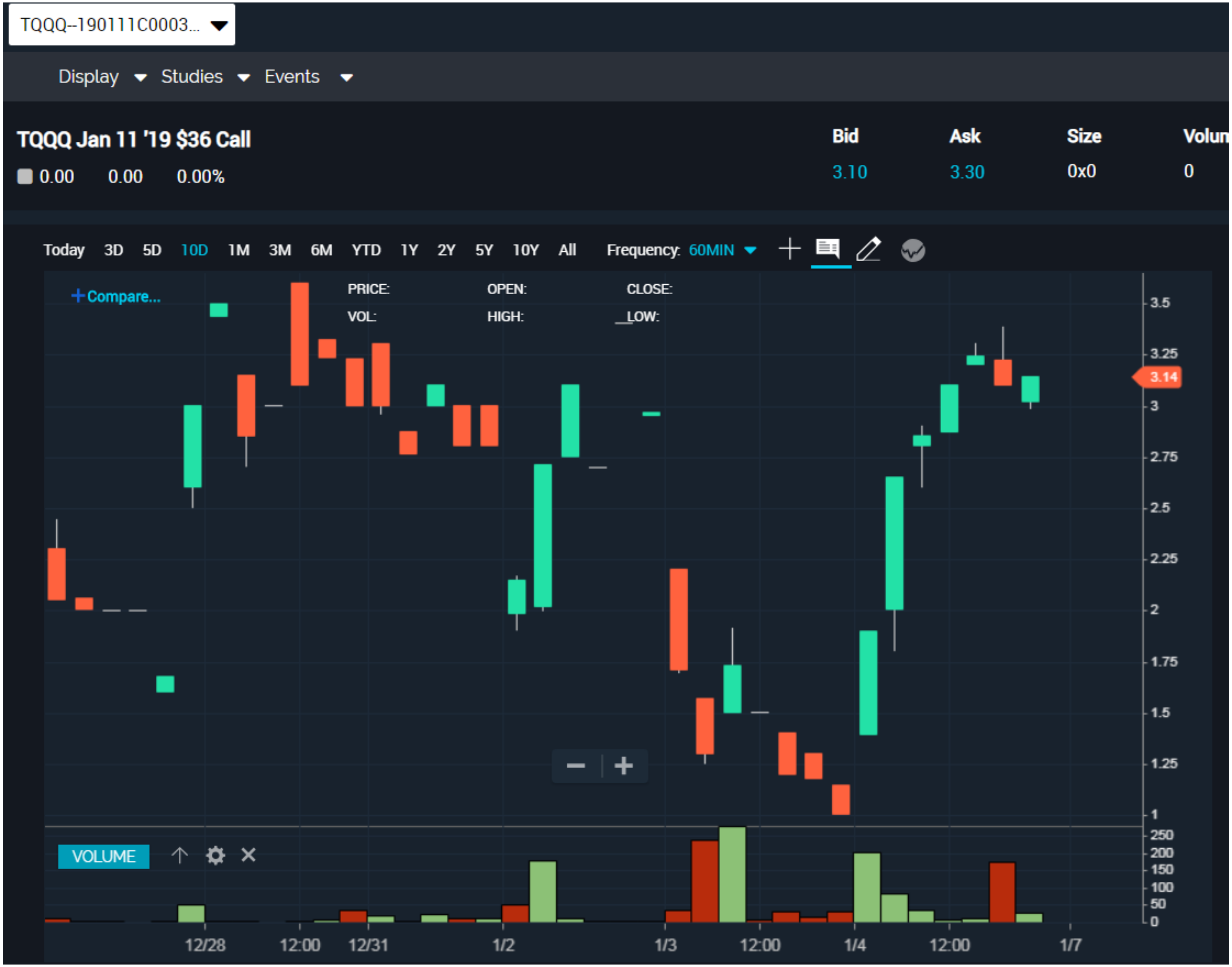
TQQQ out-of-the-money one month put can >double within one week due to the high volatility



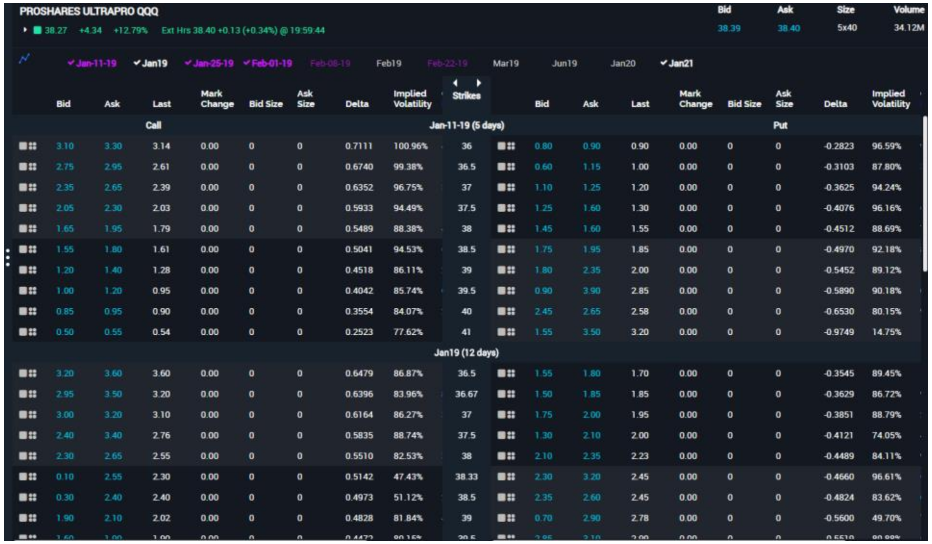
TQQQ in-the-money one week call can >triple within one week due to the high volatility



TQQQ in-the-money one week call can >triple within one week due to the high volatility



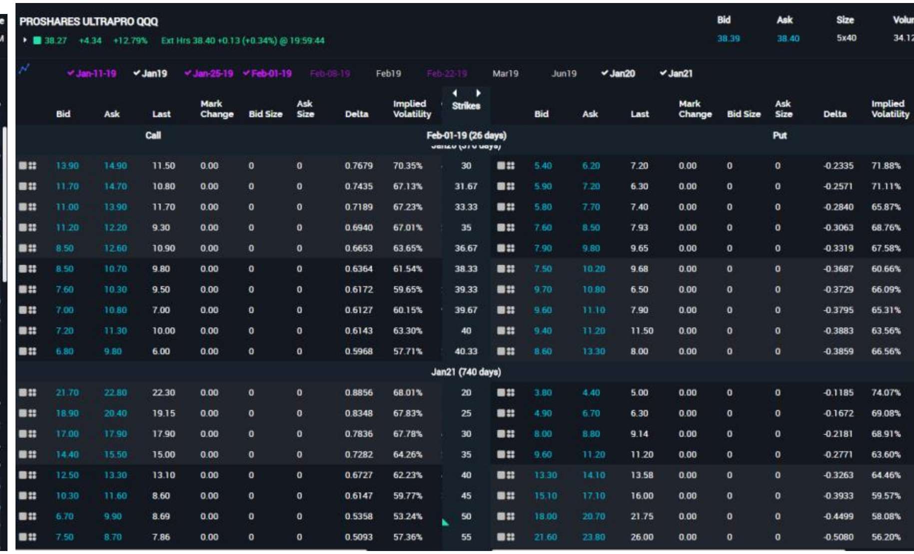
The longer the time, the smaller the Implied volatility



PROSHARES ULTRAPRO QQQ — 38.27 +4.34 +12.79% Ext Hrs 38.40 +0.13 (+0.34%) @ 19:59:44 — Bid 38.39, Ask 38.40, Size 5x40, Volume 34.12M

Jan-11-19 | Jan19 | Jan-25-19 | Feb-01-19 | Feb-08-19 | Feb19 | Feb-22-19 | Mar19 | Jun19 | Jan20 | Jan21

Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility	Strikes	Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility
		Call						Jan-11-19 (5 days)						Put		
3.10	3.30	3.14	0.00	0	0	0.7111	100.96%	36	0.80	0.90	0.90	0.00	0	0	-0.2823	96.59%
2.75	2.95	2.61	0.00	0	0	0.6740	99.38%	36.5	0.60	1.15	1.00	0.00	0	0	-0.3103	87.80%
2.35	2.65	2.39	0.00	0	0	0.6352	96.75%	37	1.10	1.25	1.20	0.00	0	0	-0.3625	94.24%
2.05	2.30	2.03	0.00	0	0	0.5933	94.49%	37.5	1.25	1.60	1.30	0.00	0	0	-0.4076	96.16%
1.65	1.95	1.79	0.00	0	0	0.5489	88.38%	38	1.45	1.60	1.55	0.00	0	0	-0.4512	88.69%
1.55	1.80	1.61	0.00	0	0	0.5041	94.53%	38.5	1.75	1.95	1.85	0.00	0	0	-0.4970	92.18%
1.20	1.40	1.28	0.00	0	0	0.4518	86.11%	39	1.80	2.35	2.00	0.00	0	0	-0.5452	89.12%
1.00	1.20	0.95	0.00	0	0	0.4042	85.74%	39.5	0.90	3.90	2.85	0.00	0	0	-0.5890	90.18%
0.85	0.95	0.90	0.00	0	0	0.3554	84.07%	40	2.45	2.65	2.58	0.00	0	0	-0.6530	80.15%
0.50	0.55	0.54	0.00	0	0	0.2523	77.62%	41	1.55	3.50	3.20	0.00	0	0	-0.9749	14.75%
								Jan19 (12 days)								
3.20	3.60	3.60	0.00	0	0	0.6479	86.87%	36.5	1.55	1.80	1.70	0.00	0	0	-0.3545	89.45%
2.95	3.50	3.20	0.00	0	0	0.6396	83.96%	36.67	1.50	1.85	1.85	0.00	0	0	-0.3629	86.72%
3.00	3.20	3.10	0.00	0	0	0.6164	86.27%	37	1.75	2.00	1.95	0.00	0	0	-0.3851	88.79%
2.40	3.40	2.76	0.00	0	0	0.5835	88.74%	37.5	1.30	2.10	2.00	0.00	0	0	-0.4121	74.05%
2.30	2.65	2.55	0.00	0	0	0.5510	82.53%	38	2.10	2.35	2.23	0.00	0	0	-0.4489	84.11%
0.10	2.55	2.30	0.00	0	0	0.5142	47.43%	38.33	2.30	3.20	2.45	0.00	0	0	-0.4660	96.61%
0.30	2.40	2.40	0.00	0	0	0.4973	51.12%	38.5	2.35	2.60	2.45	0.00	0	0	-0.4824	83.62%
1.90	2.10	2.02	0.00	0	0	0.4828	81.84%	39	0.70	2.90	2.78	0.00	0	0	-0.5600	49.70%



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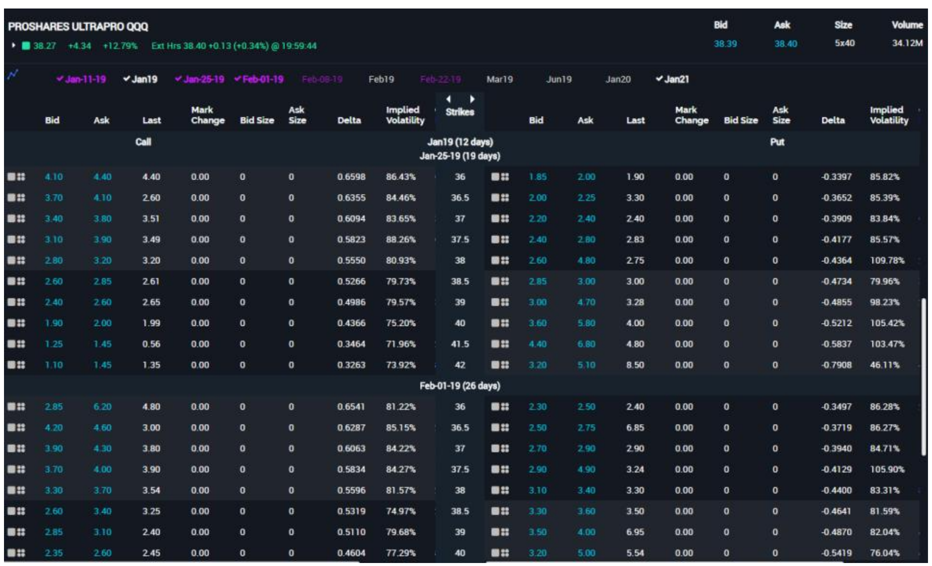
Jan-11-19 | Jan19 | Jan-25-19 | Feb-01-19 | Feb-08-19 | Feb19 | Feb-22-19 | Mar19 | Jun19 | Jan20 | Jan21

Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility	Strikes	Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility
		Call						Feb-01-19 (26 days)						Put		
13.90	14.90	11.50	0.00	0	0	0.7679	70.35%	30	5.40	6.20	7.20	0.00	0	0	-0.2335	71.88%
11.70	14.70	10.80	0.00	0	0	0.7435	67.13%	31.67	5.90	7.20	6.30	0.00	0	0	-0.2571	71.11%
11.00	13.90	11.70	0.00	0	0	0.7189	67.23%	33.33	5.80	7.70	7.40	0.00	0	0	-0.2840	65.87%
11.20	12.20	9.30	0.00	0	0	0.6940	67.01%	35	7.60	8.50	7.93	0.00	0	0	-0.3063	68.76%
8.50	12.60	10.90	0.00	0	0	0.6653	63.65%	36.67	7.90	9.80	9.65	0.00	0	0	-0.3319	67.58%
8.50	10.70	9.80	0.00	0	0	0.6364	61.54%	38.33	7.50	10.20	9.68	0.00	0	0	-0.3687	60.66%
7.60	10.30	9.50	0.00	0	0	0.6172	59.65%	39.33	9.70	10.80	6.50	0.00	0	0	-0.3729	66.09%
7.00	10.80	7.00	0.00	0	0	0.6127	60.15%	39.67	9.60	11.10	7.90	0.00	0	0	-0.3795	65.31%
7.20	11.30	10.00	0.00	0	0	0.6143	63.30%	40	9.40	11.20	11.50	0.00	0	0	-0.3883	63.56%
6.80	9.80	6.00	0.00	0	0	0.5968	57.71%	40.33	8.60	13.30	8.00	0.00	0	0	-0.3859	66.56%
								Jan21 (740 days)								
21.70	22.80	22.30	0.00	0	0	0.8856	68.01%	20	3.80	4.40	5.00	0.00	0	0	-0.1185	74.07%
18.90	20.40	19.15	0.00	0	0	0.8348	67.83%	25	4.90	6.70	6.30	0.00	0	0	-0.1672	69.08%
17.00	17.90	17.90	0.00	0	0	0.7836	67.78%	30	8.00	8.80	9.14	0.00	0	0	-0.2181	68.91%
14.40	15.50	15.00	0.00	0	0	0.7282	64.26%	35	9.60	11.20	11.20	0.00	0	0	-0.2771	63.60%
12.50	13.30	13.10	0.00	0	0	0.6727	62.23%	40	13.30	14.10	13.58	0.00	0	0	-0.3263	64.46%
10.30	11.60	8.60	0.00	0	0	0.6147	59.77%	45	15.10	17.10	16.00	0.00	0	0	-0.3933	59.57%
6.70	9.90	8.69	0.00	0	0	0.5358	53.24%	50	18.00	20.70	21.75	0.00	0	0	-0.4499	58.08%
7.50	8.70	7.86	0.00	0	0	0.5093	57.36%	55	21.60	23.80	26.00	0.00	0	0	-0.5080	56.20%



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Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility	Strikes	Bid	Ask	Last	Mark Change	Bid Size	Ask Size	Delta	Implied Volatility
		Call						Jan19 (12 days) Jan-25-19 (19 days)						Put		
4.10	4.40	4.40	0.00	0	0	0.6598	86.43%	36	1.85	2.00	1.90	0.00	0	0	-0.3397	85.82%
3.70	4.10	2.60	0.00	0	0	0.6355	84.46%	36.5	2.00	2.25	3.30	0.00	0	0	-0.3652	85.39%
3.40	3.80	3.51	0.00	0	0	0.6094	83.65%	37	2.20	2.40	2.40	0.00	0	0	-0.3909	83.84%
3.10	3.90	3.49	0.00	0	0	0.5823	88.26%	37.5	2.40	2.80	2.83	0.00	0	0	-0.4177	85.57%
2.80	3.20	3.20	0.00	0	0	0.5550	80.93%	38	2.60	4.80	2.75	0.00	0	0	-0.4364	109.78%
2.60	2.85	2.61	0.00	0	0	0.5266	79.73%	38.5	2.85	3.00	3.00	0.00	0	0	-0.4734	79.96%
2.40	2.60	2.65	0.00	0	0	0.4986	79.57%	39	3.00	4.70	3.28	0.00	0	0	-0.4855	98.23%
1.90	2.00	1.99	0.00	0	0	0.4366	75.20%	40	3.60	5.80	4.00	0.00	0	0	-0.5212	105.42%
1.25	1.45	0.56	0.00	0	0	0.3464	71.96%	41.5	4.40	6.80	4.80	0.00	0	0	-0.5837	103.47%
1.10	1.45	1.35	0.00	0	0	0.3263	73.92%	42	3.20	5.10	8.50	0.00	0	0	-0.7908	46.11%
								Feb-01-19 (26 days)								
2.85	6.20	4.80	0.00	0	0	0.6541	81.22%	36	2.30	2.50	2.40	0.00	0	0	-0.3497	86.28%
4.20	4.60	3.00	0.00	0	0	0.6287	85.15%	36.5	2.50	2.75	6.85	0.00	0	0	-0.3719	86.27%
3.90	4.30	3.80	0.00	0	0	0.6063	84.22%	37	2.70	2.90	2.90	0.00	0	0	-0.3940	84.71%
3.70	4.00	3.90	0.00	0	0	0.5834	84.27%	37.5	2.90	4.90	3.24	0.00	0	0	-0.4129	105.90%
3.30	3.70	3.54	0.00	0	0	0.5596	81.57%	38	3.10	3.40	3.30	0.00	0	0	-0.4400	83.31%
2.60	3.40	3.25	0.00	0	0	0.5319	74.97%	38.5	3.30	3.60	3.50	0.00	0	0	-0.4641	81.59%
2.85	3.10	2.40	0.00	0	0	0.5110	79.68%	39	3.50	4.00	6.95	0.00	0	0	-0.4870	82.04%
2.35	2.60	2.45	0.00	0	0	0.4604	77.29%	40	3.20	5.00	5.54	0.00	0	0	-0.5419	76.04%

The closer the day to expiration, the higher the volume