

Today's Listed Volatility Markets

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Listed Volatility Markets

- Important Indexes
- Futures
- Options
- ETPs
- Trading Strategies
- Summary / Contact

Important Indexes

- Cboe Volatility Index[®] (VIX[®])
- Cboe 3-Month Volatility Index (VIX3M)
- Cboe VIX of VIX Index (VVIX)
- SPIKES[™]

Important Indexes

Cboe Volatility Index[®] (VIX[®])

- 30 calendar day of expected volatility based on SPX option pricing
- Uses the Friday expiring options with just under and just over 30 days remaining until expiration
- Options and futures trading available on VIX

Important Indexes

Cboe 3-Month Volatility Index (VIX3M)

- Consistent measure of the markets expectations of volatility over the subsequent 3 months
- Uses longer dated SPX options to calculate this figure
- Previous ticker was VXV
- Is a good leading indicator for VIX
- Combined with VIX as a technical indicator based on VIX3M trading at a premium or discount to VIX

Important Indexes

Cboe VIX of VIX Index (VVIX)

- The VIX of VIX is an indicator of the market's expectation for the 30-day forward value of VIX
- Applies more to VIX futures pricing than spot VIX price expectations
- Like VIX3M, VVIX may lead VIX to the upside

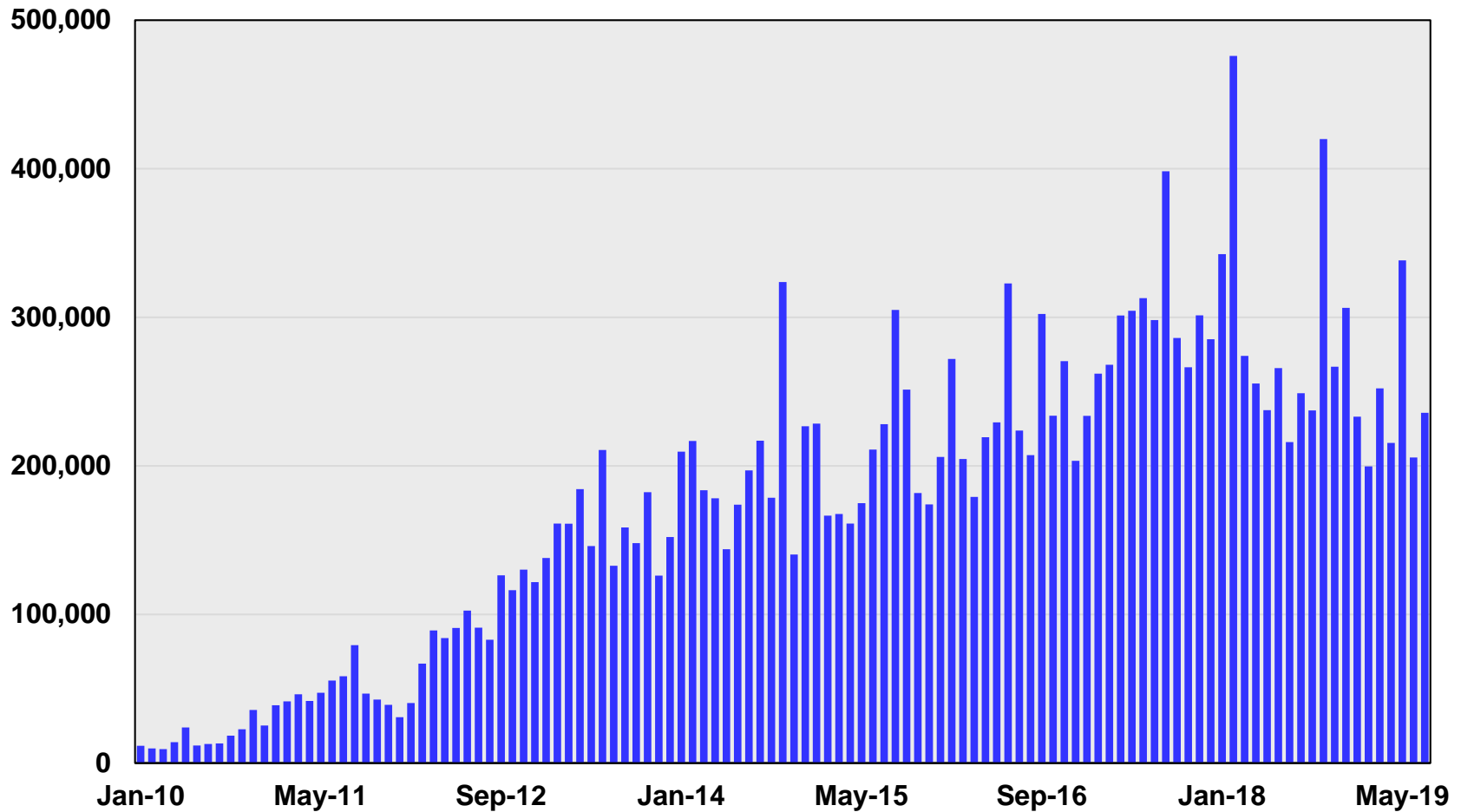
Important Indexes

SPIKES™

- Quoted by MIAX SPIKES indicate 30 day expected volatility
- This measure is based on SPY option pricing instead of SPX
- Options are available and futures planned for the 3rd quarter of this year

Futures

VIX Futures Volume Holding Up Well (ADV by Month)



Options

VIX Option Volume – Through June 2019

Ticker	2019 Rank	2018 Rank	2019 Volume	2018 Volume	Percent Change
SPY	1	1	339,021,531	444,921,359	-23.80%
SPX	2	2	156,547,371	179,910,362	-12.99%
QQQ	3	3	91,510,872	121,504,792	-24.69%
AAPL	4	6	65,433,483	60,270,518	8.57%
VIX	5	4	64,783,216	97,428,664	-33.51%
EEM	6	7	52,582,416	53,166,088	-1.10%
IWM	7	5	42,691,821	62,067,759	-31.22%
AMD	8	14	36,189,135	29,808,062	21.41%
BAC	9	8	34,526,437	48,804,059	-29.25%
FB	10	9	34,397,453	43,126,581	-20.24%

Options

VIX Trade

August 21st

VIX @ 15.80 / Sep VIX @ 17.80

Sell VIX Sep 18th 15 Put @ 0.52

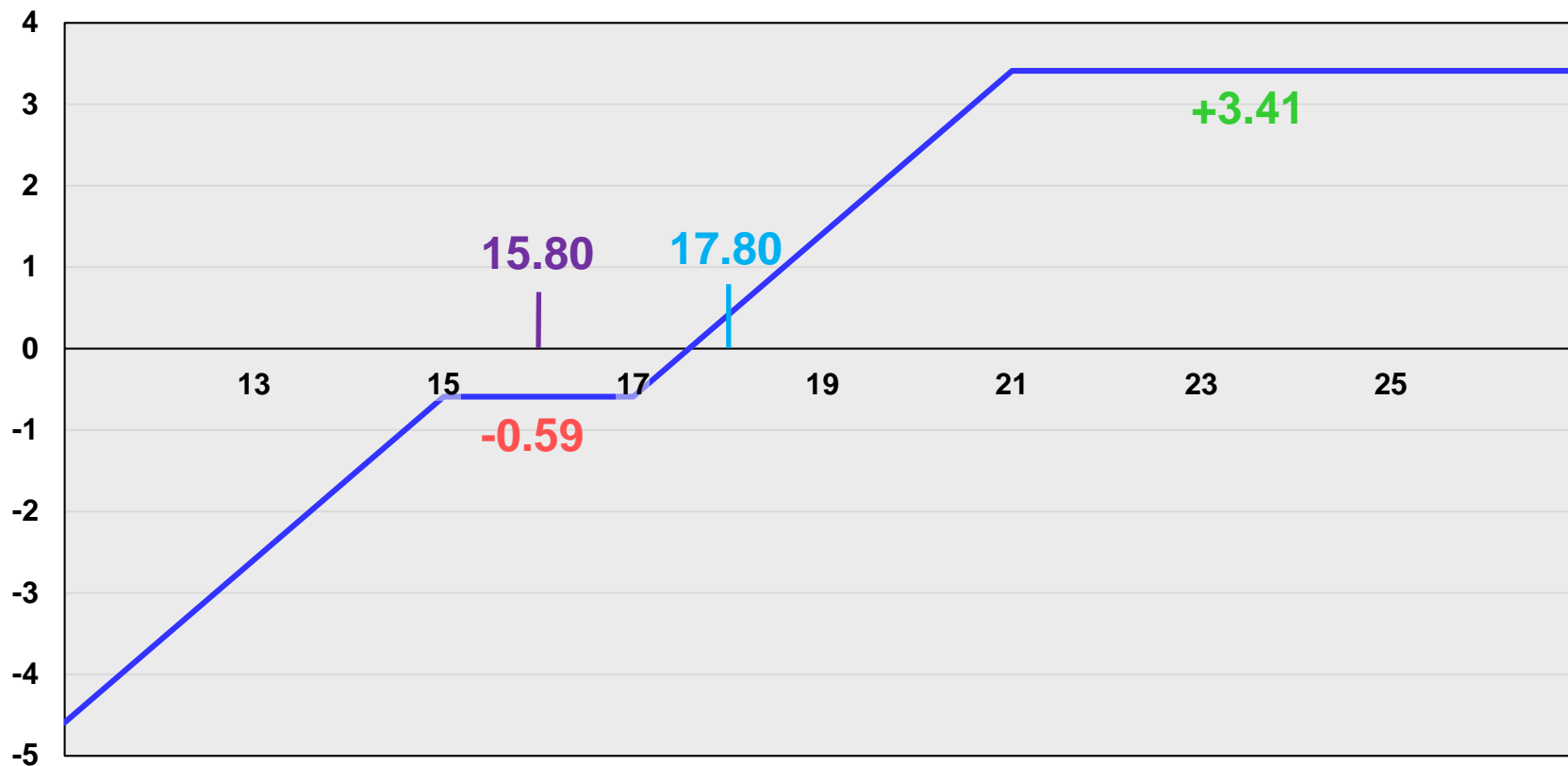
Buy VIX Sep 18th 17 Call @ 2.17

Sell VIX Sep 18th 21 Call @ 1.06

Net Debit = 0.59

Options

VIX Trade – Short Put Plus Long Call Spread



Options

SPIKES Trade

August 6th

SPIKE @ 21.65

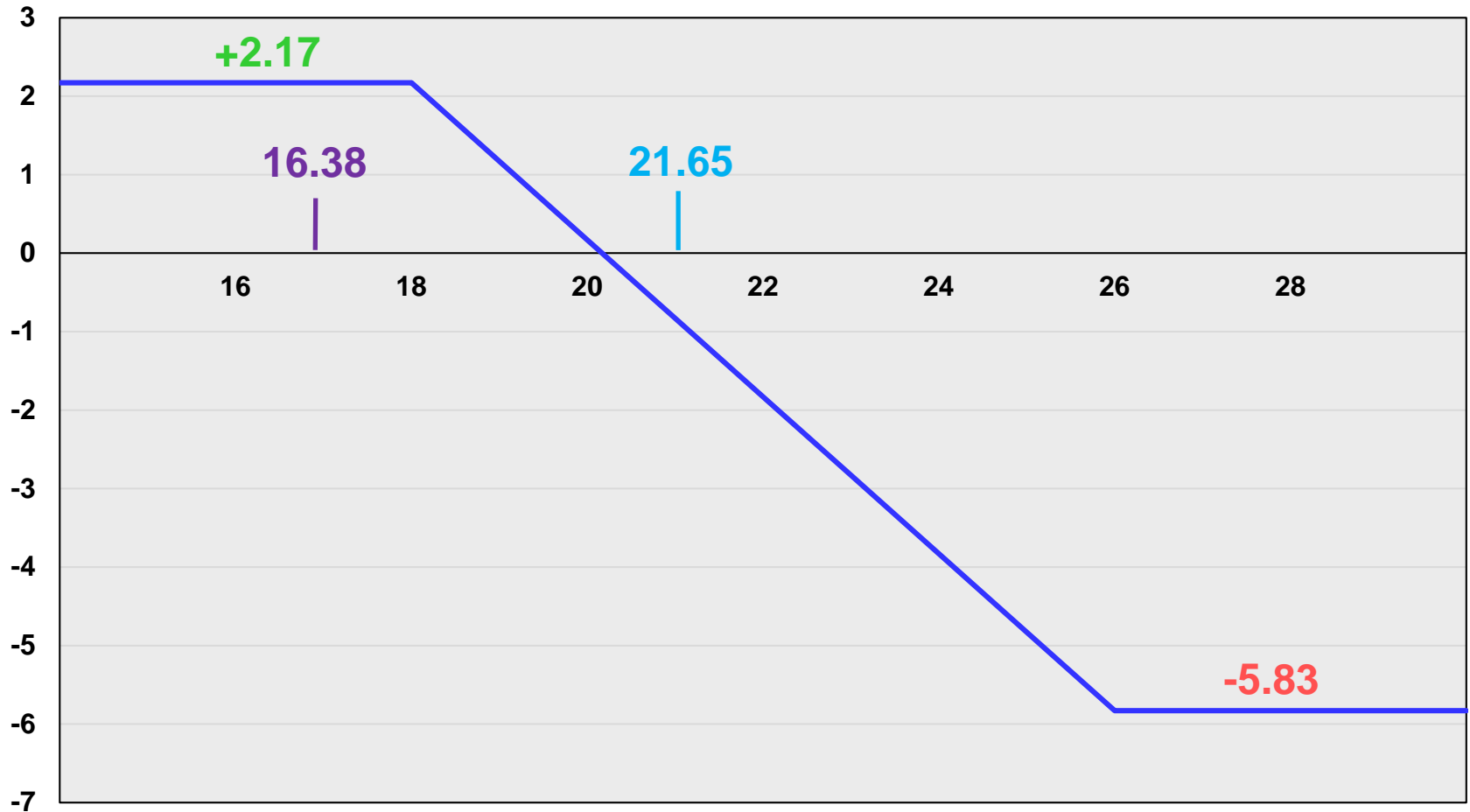
Sell SPIKE Aug 21st 18 Call @ 3.22

Buy SPIKE Aug 21st 26 Call @ 1.05

Net Credit = 2.17

Options

SPIKES Trade – Bear Call Spread



ETPs

- The first volatility related ETPs were VXX and VXZ, launched in early 2009
- The industry grew tremendously until a large move in expected volatility resulted in huge losses for short funds
- Currently there is about \$3 billion invested in these funds

Current ETPs – AUM in Millions(\$)

Ticker	Name	AUM	Max AUM
XVZ	iPath S&P 500 Dynamic VIX ETN	6	350
VXZ	iPath Series B S&P 500 VIX Mid-Term Futures ETN	23	1090
VXX	iPath Series B S&P 500 VIX Short-Term Futures ETN	722	2387
SVXY	ProShares Short VIX Short-Term Futures ETF	304	1691
UVXY	ProShares Ultra VIX Short-Term Futures ETF	484	1135
VIXM	ProShares VIX Mid-Term Futures ETF	46	134
VIXY	ProShares VIX Short-Term Futures ETF	236	340
EXIV	VelocityShares 1X Daily Inverse VSTOXX Futures ETN	12	68
EVIX	VelocityShares 1X Long VSTOXX Futures ETN	2	26
TVIX	VelocityShares Daily 2x VIX Short Term ETN	1057	1467
ZIV	VelocityShares Daily Inverse VIX Medium Term ETN	73	229
VIIX	VelocityShares VIX Short Term ETN	82	24
	Total AUM	3047	10880

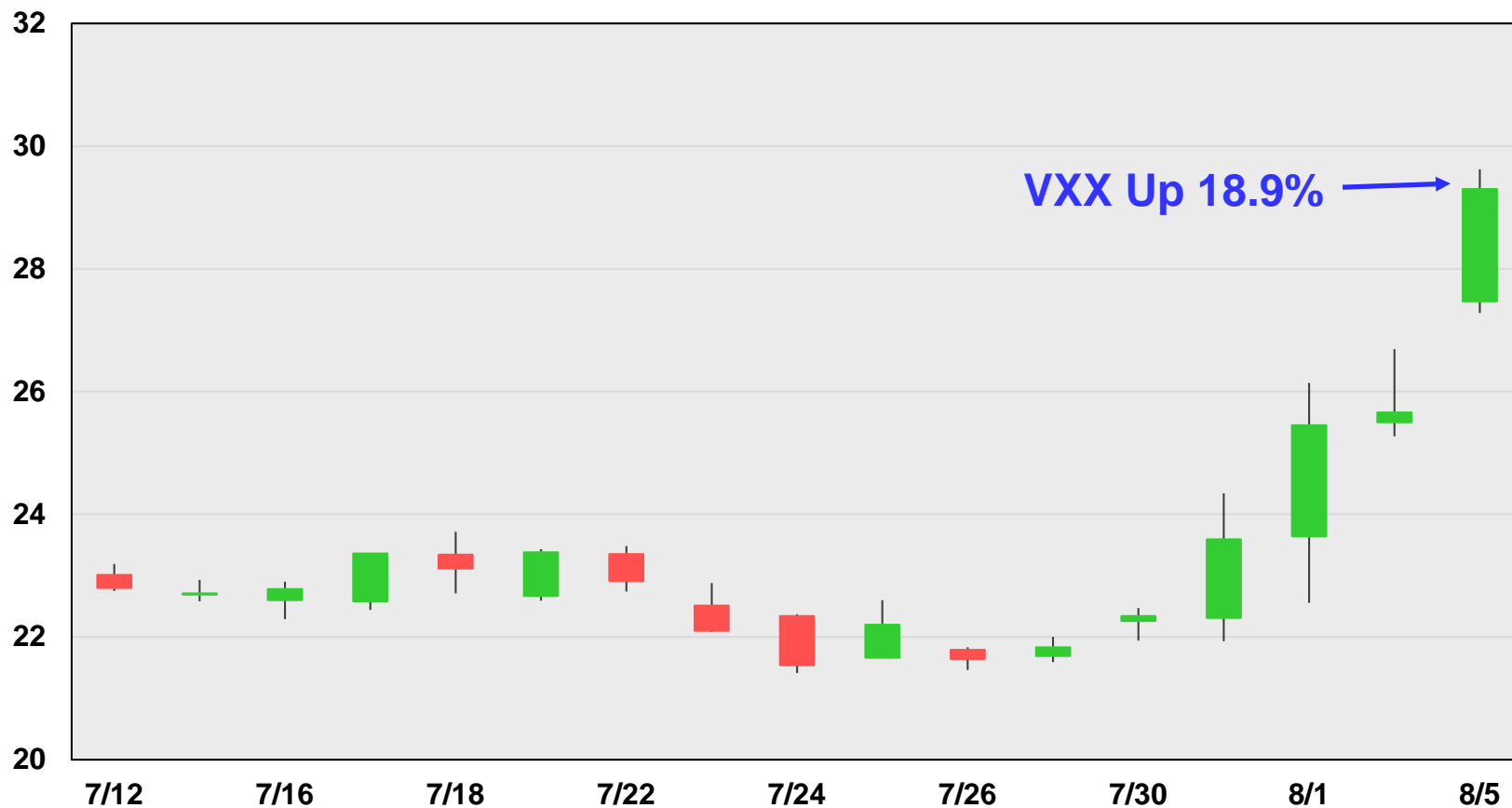
ETP Option Trading

VXX Option Trading in 2019 – First 6 Months

Rank	Underlying	Option Volume
1	SPY	339,021,531
2	SPX	156,547,371
3	QQQ	91,510,872
4	AAPL	65,433,483
5	VIX	64,783,216
6	EEM	52,582,416
7	IWM	42,691,821
8	AMD	36,189,135
9	BAC	34,526,437
10	FB	34,397,453
11	TSLA	32,909,304
12	GE	32,599,558
13	VXX	26,988,503
14	HYG	26,737,084
15	FXI	26,290,623

ETP Option Trading

Shorting Volatility Spikes



VXX Up 18.9% →

ETP Option Trading

- VXX up 18.9% on Monday August 5th
- Weekly options expire in four days
- VXX has previously rallied over 15% in a single day 20 times
- 16 of those observations resulted in VXX closing lower four days later
- Based on history, 80% chance VXX is lower when weekly options expire that week

ETP Option Trading

VXX Bear Call Spread Choices –

								Risk	Reward
Sell	Aug 9th 29.50 Call	1.75	+	Buy	Aug 9th 30.00 Call	1.55	=	0.30	0.20
Sell	Aug 9th 29.50 Call	1.75	+	Buy	Aug 9th 30.50 Call	1.35	=	0.60	0.40
Sell	Aug 9th 29.50 Call	1.75	+	Buy	Aug 9th 31.00 Call	1.20	=	0.95	0.55
Sell	Aug 9th 29.50 Call	1.75	+	Buy	Aug 9th 31.50 Call	0.85	=	1.15	0.85

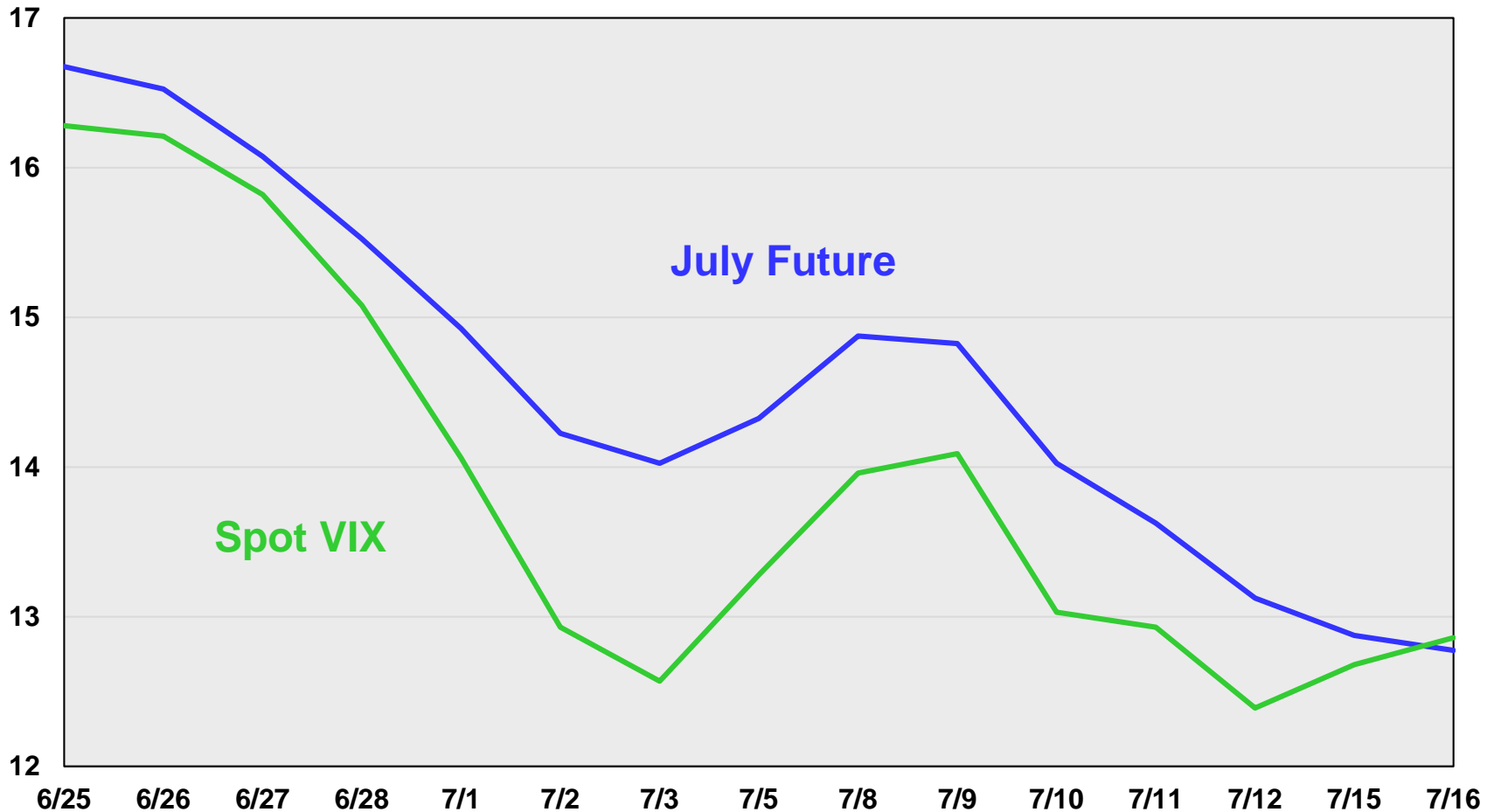
Historically 80% “Win Rate”
Options Priced Differently

VIX Futures Price Behavior

- VIX is often in contango where the spot index is at a discount to futures pricing
- As VIX expiration approaches, the futures and spot index price tend to converge
- There are methods to take advantage of this price behavior

VIX Futures Price Behavior

VIX and July 2019 VIX Daily Prices



VIX Futures Price Behavior

Short July Futures

Thursday July 11

Sell Short VXN9 @ 13.60

Tuesday July 16

Buy to Cover VXN9 @ 12.80

Profit = +0.80

VIX Futures Price Behavior

- Sell short XX days to expiration, cover the day before expiration
- Standard futures contracts only
- Settlement pricing used for test
- One test with no screen
- Second test only sell short when futures higher than spot VIX
- January 2007 through August 2019 expirations

VIX Futures Price Behavior

Short Futures Final Few Days Until Expiration

Days to Exp.	Total PL	Trades	Wins	Win %	Max Gain	Max Loss	Avg. PL
9	91.83	152	99	65.13%	8.05	-14.38	0.60
8	82.82	152	101	66.45%	7.70	-14.93	0.54
7	85.40	152	96	63.16%	9.60	-13.35	0.56
6	63.30	152	102	67.11%	7.60	-9.86	0.42
5	100.20	152	109	71.71%	7.60	-11.23	0.66
4	70.24	152	103	67.76%	11.08	-10.17	0.42
3	63.85	152	103	67.76%	10.45	-5.45	0.46
2	31.41	152	91	59.87%	5.19	-8.25	0.21

VIX Futures Price Behavior

Screen Short Futures Final Few Days Until Expiration

Days to Exp.	Total PL	Trades	Wins	Win %	Max Gain	Max Loss	Avg. PL
9	81.85	114	79	69.30%	7.00	-14.38	0.72
8	50.45	124	80	64.52%	5.80	-14.93	0.41
7	41.73	117	72	61.54%	6.10	-13.35	0.36
6	56.18	117	80	68.38%	5.00	-9.86	0.48
5	66.10	112	82	73.21%	6.50	-11.23	0.59
4	60.38	117	84	71.79%	4.80	-6.11	0.52
3	38.38	123	84	68.29%	4.83	-5.45	0.31
2	7.15	98	59	60.20%	2.40	-8.25	0.07

VIX Futures Price Behavior

Alternative Approach

Thursday July 11

Buy VIX Jul 17th 19 Put @ 5.50

Tuesday July 16

Sell VIX Jul 17th 19 Put @ 6.25

Profit = +0.75

Summary / Contact Info

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Periodic Commentary

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