IMPLIED VOLATILITY NEWBIE GUIDE

隐含波动率 新手指引

Let’s Dive into Implied Volatility

- 没有理论照耀的实践是无效率的，没有实践反馈的理论苍白无力
- 期权市场的核心是什么？
- 这是新手指引，超越入门所需

SIT-TIGHT

占用50分钟

回到定价模型

- Chicken & Egg Problem

底层证券价格 = S

合约执行价 = X

合约到期日 = T

隐含波动率 = σ

无风险收益率 = Rf

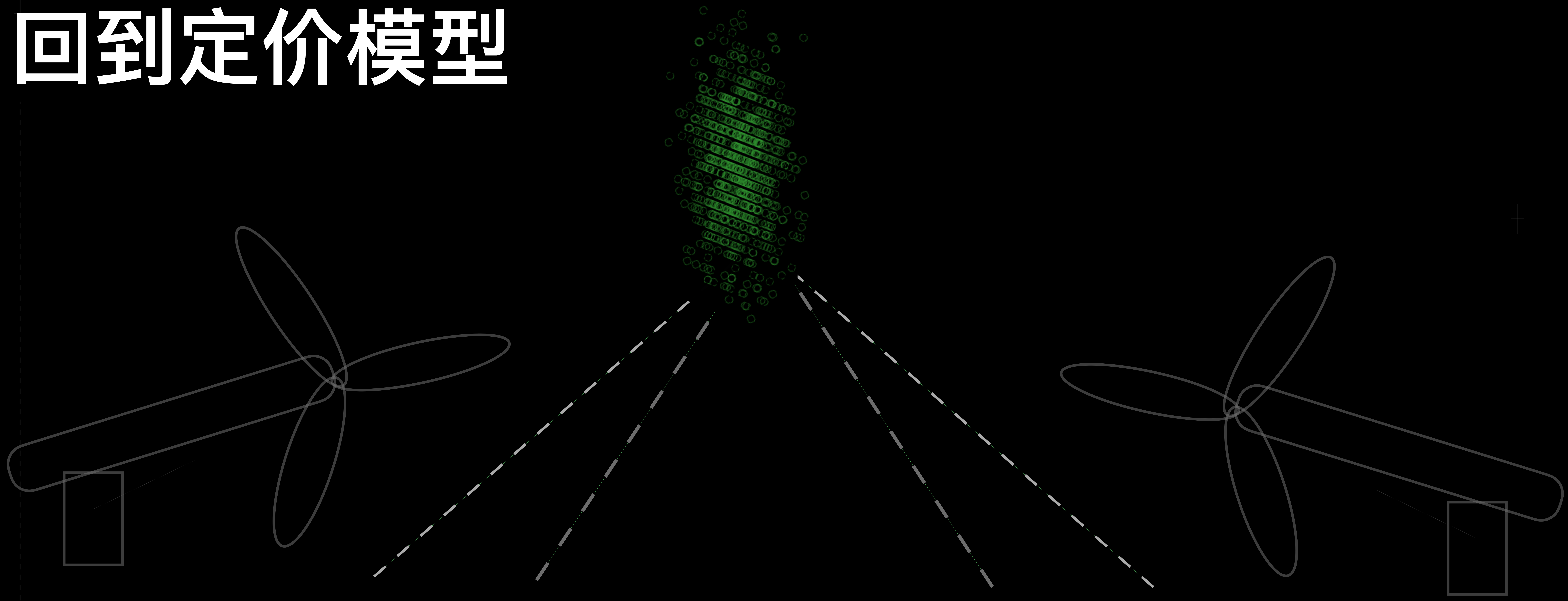
现金股息率 = d

Why

Theo Price

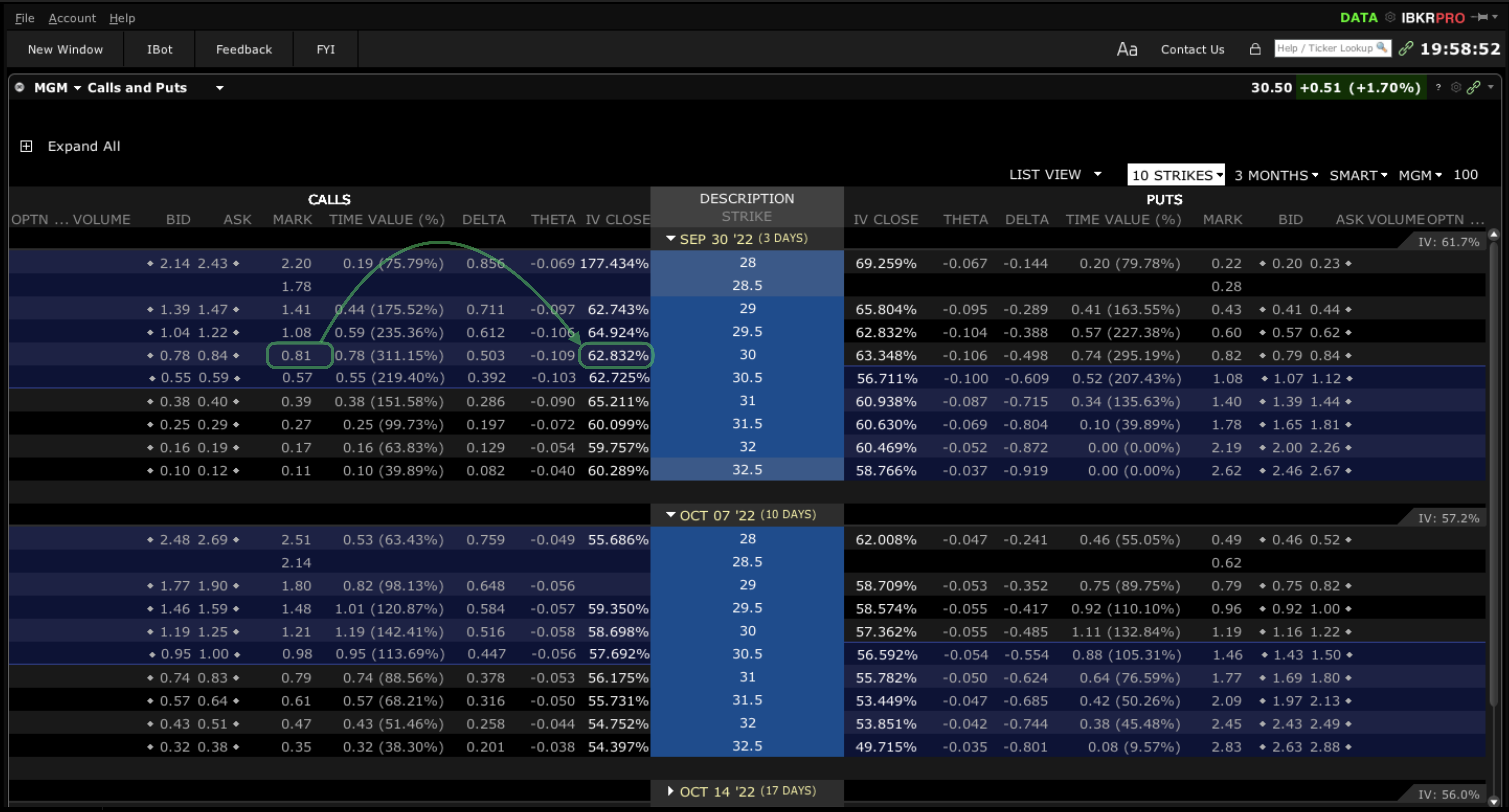
Real Quote

回到定价模型



IMPLIED VOLATILITY NEWBIE GUIDE • 隐含波动率新手指引

2023 更新版本



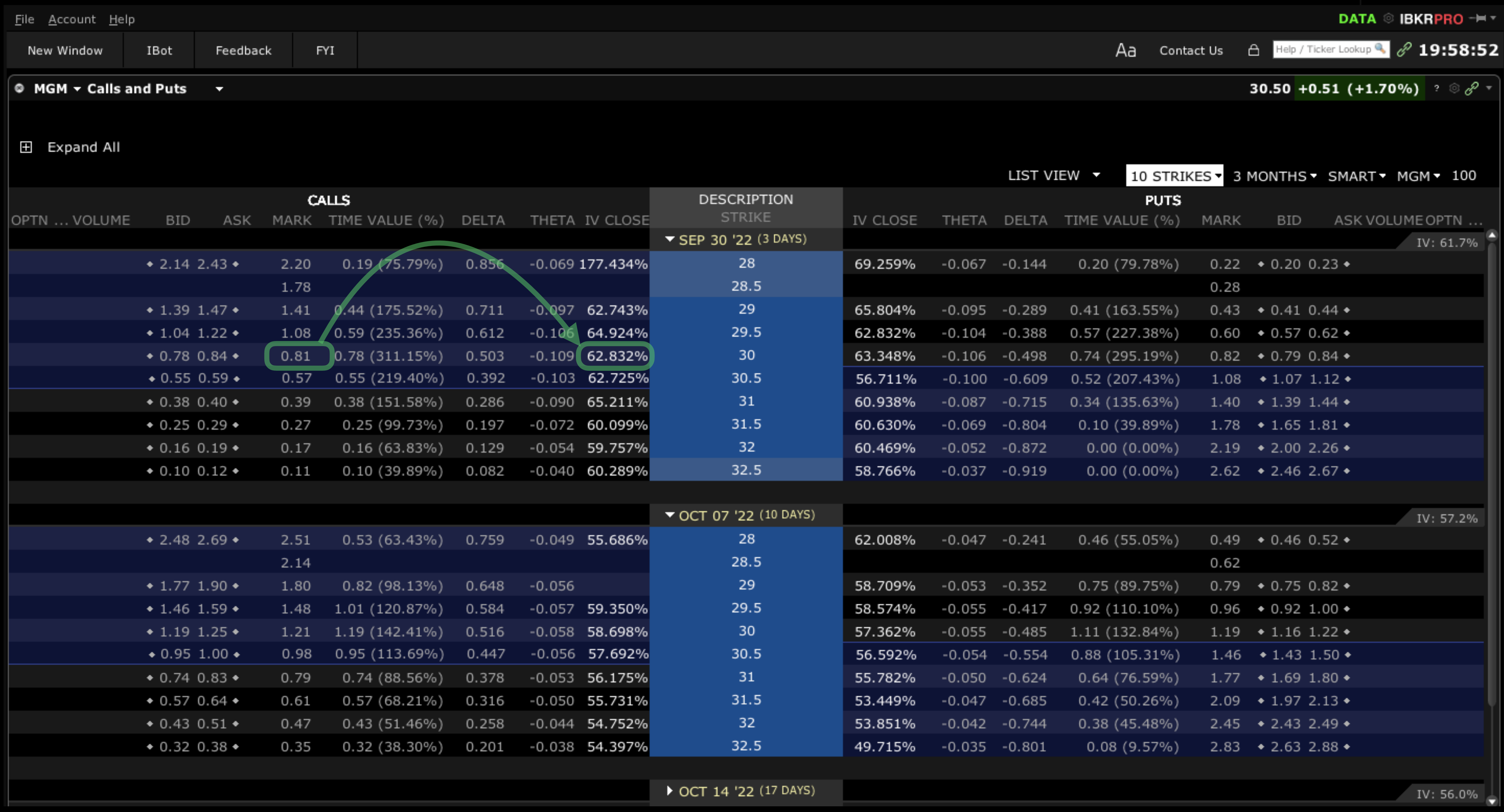
CALLS OPTN ...	VOLUME	BID	ASK	MARK	TIME VALUE (%)	DELTA	THETA	IV CLOSE	DESCRIPTION STRIKE	PUTS IV CLOSE	THETA	DELTA	TIME VALUE (%)	MARK	BID	ASK	VOLUME	OPTN ...
									SEP 30 '22 (3 DAYS)	IV: 61.7%								
		2.14	2.43	2.20	0.19 (75.79%)	0.856	-0.069	177.434%	28	69.259%	-0.067	-0.144	0.20 (79.78%)	0.22	0.20	0.23		
				1.78					28.5					0.28				
		1.39	1.47	1.41	0.44 (175.52%)	0.711	-0.097	62.743%	29	65.804%	-0.095	-0.289	0.41 (163.55%)	0.43	0.41	0.44		
		1.04	1.22	1.08	0.59 (235.36%)	0.612	-0.106	64.924%	29.5	62.832%	-0.104	-0.388	0.57 (227.38%)	0.60	0.57	0.62		
		0.78	0.84	0.81	0.78 (311.15%)	0.503	-0.109	62.832%	30	63.348%	-0.106	-0.498	0.74 (295.19%)	0.82	0.79	0.84		
		0.55	0.59	0.57	0.55 (219.40%)	0.392	-0.103	62.725%	30.5	56.711%	-0.100	-0.609	0.52 (207.43%)	1.08	1.07	1.12		
		0.38	0.40	0.39	0.38 (151.58%)	0.286	-0.090	65.211%	31	60.938%	-0.087	-0.715	0.34 (135.63%)	1.40	1.39	1.44		
		0.25	0.29	0.27	0.25 (99.73%)	0.197	-0.072	60.099%	31.5	60.630%	-0.069	-0.804	0.10 (39.89%)	1.78	1.65	1.81		
		0.16	0.19	0.17	0.16 (63.83%)	0.129	-0.054	59.757%	32	60.469%	-0.052	-0.872	0.00 (0.00%)	2.19	2.00	2.26		
		0.10	0.12	0.11	0.10 (39.89%)	0.082	-0.040	60.289%	32.5	58.766%	-0.037	-0.919	0.00 (0.00%)	2.62	2.46	2.67		
									OCT 07 '22 (10 DAYS)	IV: 57.2%								
		2.48	2.69	2.51	0.53 (63.43%)	0.759	-0.049	55.686%	28	62.008%	-0.047	-0.241	0.46 (55.05%)	0.49	0.46	0.52		
				2.14					28.5					0.62				
		1.77	1.90	1.80	0.82 (98.13%)	0.648	-0.056		29	58.709%	-0.053	-0.352	0.75 (89.75%)	0.79	0.75	0.82		
		1.46	1.59	1.48	1.01 (120.87%)	0.584	-0.057	59.350%	29.5	58.574%	-0.055	-0.417	0.92 (110.10%)	0.96	0.92	1.00		
		1.19	1.25	1.21	1.19 (142.41%)	0.516	-0.058	58.698%	30	57.362%	-0.055	-0.485	1.11 (132.84%)	1.19	1.16	1.22		
		0.95	1.00	0.98	0.95 (113.69%)	0.447	-0.056	57.692%	30.5	56.592%	-0.054	-0.554	0.88 (105.31%)	1.46	1.43	1.50		
		0.74	0.83	0.79	0.74 (88.56%)	0.378	-0.053	56.175%	31	55.782%	-0.050	-0.624	0.64 (76.59%)	1.77	1.69	1.80		
		0.57	0.64	0.61	0.57 (68.21%)	0.316	-0.050	55.731%	31.5	53.449%	-0.047	-0.685	0.42 (50.26%)	2.09	1.97	2.13		
		0.43	0.51	0.47	0.43 (51.46%)	0.258	-0.044	54.752%	32	53.851%	-0.042	-0.744	0.38 (45.48%)	2.45	2.43	2.49		
		0.32	0.38	0.35	0.32 (38.30%)	0.201	-0.038	54.397%	32.5	49.715%	-0.035	-0.801	0.08 (9.57%)	2.83	2.63	2.88		
									OCT 14 '22 (17 DAYS)	IV: 56.0%								

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本

券商的 “IV” 读数不一致

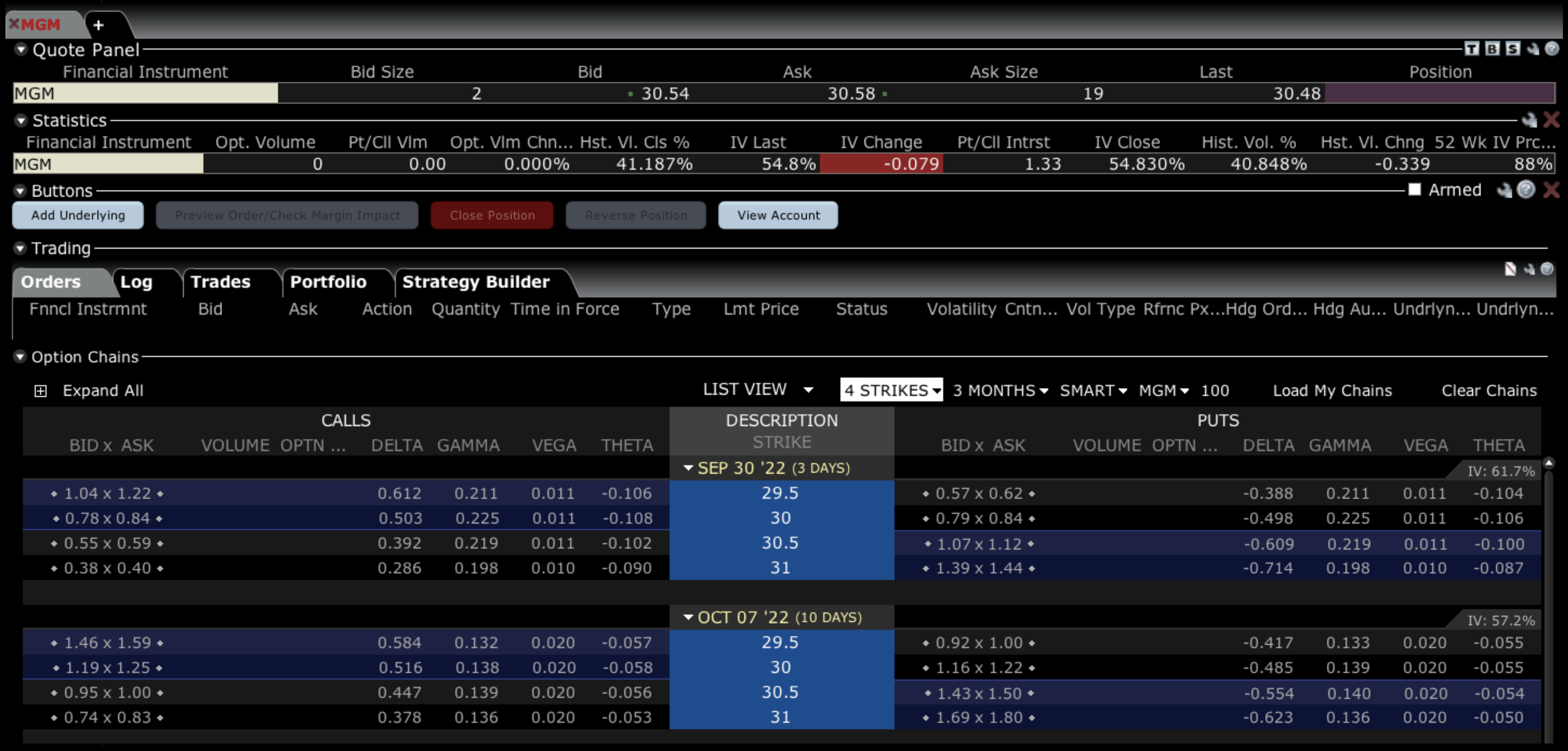
- 使用的定价公式不同
- 同一类定价公式中的基础假设不同
- ……
- 相信你的数据，并持续一致使用



				CALLS				DESCRIPTION				PUTS					
OPTN ... VOLUME	BID	ASK	MARK	TIME VALUE (%)	DELTA	THETA	IV CLOSE	STRIKE	IV CLOSE	THETA	DELTA	TIME VALUE (%)	MARK	BID	ASK	VOLUME	OPTN ...
								SEP 30 '22 (3 DAYS)									IV: 61.7%
	2.14	2.43	2.20	0.19 (75.79%)	0.856	-0.069	177.434%	28	69.259%	-0.067	-0.144	0.20 (79.78%)	0.22	0.20	0.23		
			1.78					28.5					0.28				
	1.39	1.47	1.41	0.44 (175.52%)	0.711	-0.097	62.743%	29	65.804%	-0.095	-0.289	0.41 (163.55%)	0.43	0.41	0.44		
	1.04	1.22	1.08	0.59 (235.36%)	0.612	-0.106	64.924%	29.5	62.832%	-0.104	-0.388	0.57 (227.38%)	0.60	0.57	0.62		
	0.78	0.84	0.81	0.78 (311.15%)	0.503	-0.109	62.832%	30	63.348%	-0.106	-0.498	0.74 (295.19%)	0.82	0.79	0.84		
	0.55	0.59	0.57	0.55 (219.40%)	0.392	-0.103	62.725%	30.5	56.711%	-0.100	-0.609	0.52 (207.43%)	1.08	1.07	1.12		
	0.38	0.40	0.39	0.38 (151.58%)	0.286	-0.090	65.211%	31	60.938%	-0.087	-0.715	0.34 (135.63%)	1.40	1.39	1.44		
	0.25	0.29	0.27	0.25 (99.73%)	0.197	-0.072	60.099%	31.5	60.630%	-0.069	-0.804	0.10 (39.89%)	1.78	1.65	1.81		
	0.16	0.19	0.17	0.16 (63.83%)	0.129	-0.054	59.757%	32	60.469%	-0.052	-0.872	0.00 (0.00%)	2.19	2.00	2.26		
	0.10	0.12	0.11	0.10 (39.89%)	0.082	-0.040	60.289%	32.5	58.766%	-0.037	-0.919	0.00 (0.00%)	2.62	2.46	2.67		
								OCT 07 '22 (10 DAYS)									IV: 57.2%
	2.48	2.69	2.51	0.53 (63.43%)	0.759	-0.049	55.686%	28	62.008%	-0.047	-0.241	0.46 (55.05%)	0.49	0.46	0.52		
			2.14					28.5					0.62				
	1.77	1.90	1.80	0.82 (98.13%)	0.648	-0.056		29	58.709%	-0.053	-0.352	0.75 (89.75%)	0.79	0.75	0.82		
	1.46	1.59	1.48	1.01 (120.87%)	0.584	-0.057	59.350%	29.5	58.574%	-0.055	-0.417	0.92 (110.10%)	0.96	0.92	1.00		
	1.19	1.25	1.21	1.19 (142.41%)	0.516	-0.058	58.698%	30	57.362%	-0.055	-0.485	1.11 (132.84%)	1.19	1.16	1.22		
	0.95	1.00	0.98	0.95 (113.69%)	0.447	-0.056	57.692%	30.5	56.592%	-0.054	-0.554	0.88 (105.31%)	1.46	1.43	1.50		
	0.74	0.83	0.79	0.74 (88.56%)	0.378	-0.053	56.175%	31	55.782%	-0.050	-0.624	0.64 (76.59%)	1.77	1.69	1.80		
	0.57	0.64	0.61	0.57 (68.21%)	0.316	-0.050	55.731%	31.5	53.449%	-0.047	-0.685	0.42 (50.26%)	2.09	1.97	2.13		
	0.43	0.51	0.47	0.43 (51.46%)	0.258	-0.044	54.752%	32	53.851%	-0.042	-0.744	0.38 (45.48%)	2.45	2.43	2.49		
	0.32	0.38	0.35	0.32 (38.30%)	0.201	-0.038	54.397%	32.5	49.715%	-0.035	-0.801	0.08 (9.57%)	2.83	2.63	2.88		
								OCT 14 '22 (17 DAYS)									IV: 56.0%

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本



三个层面 IV 读数

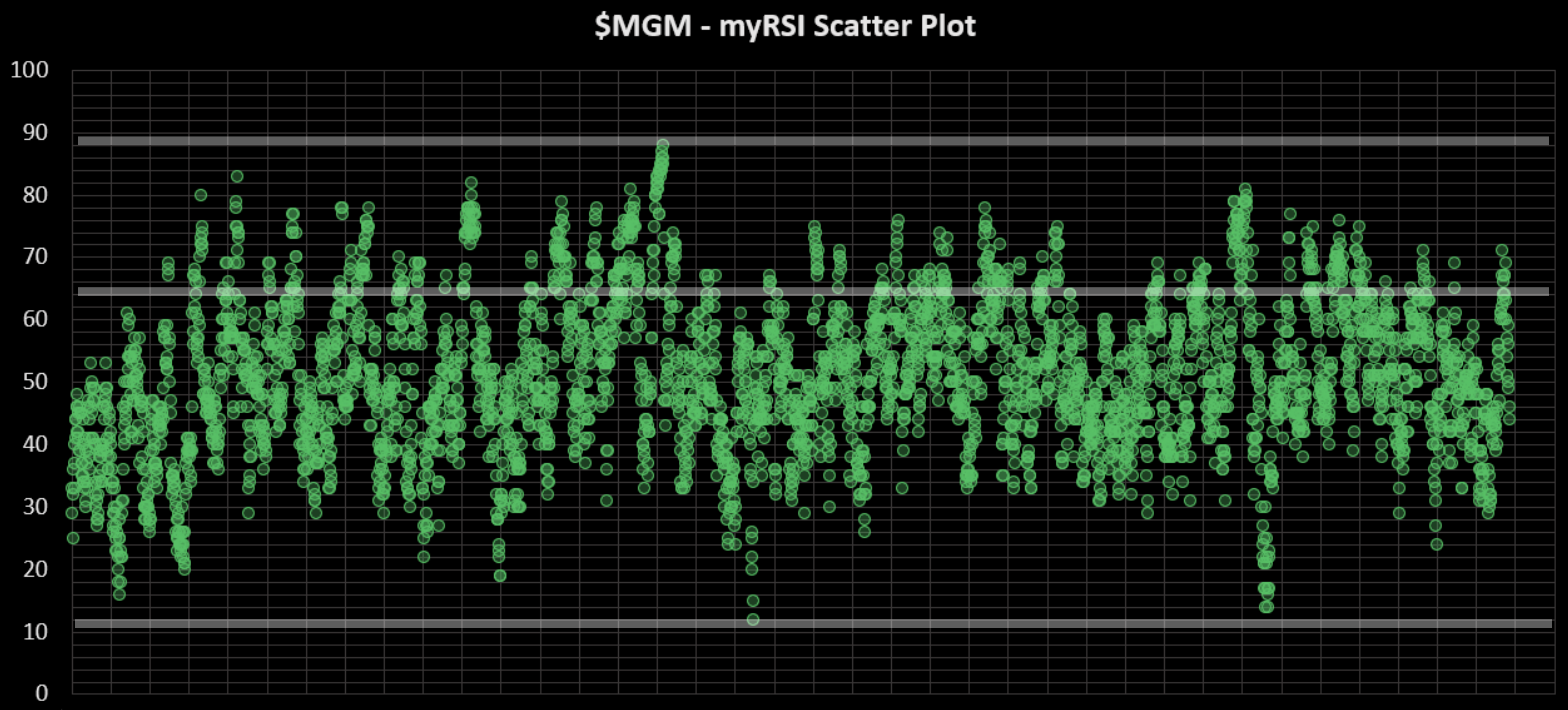
- 执行价层面- Plugged from pricing model
- 到期日层面 - Weighting Strike Level Reading
- 股票层面 - Weighting Strike and Expiration Level Reading

股票的隐含波动率是高/低

- $ABC DTE30 IV = 35%, $XYZ DTE30 IV = 65%
- 金融市场，更有意义的是与“自己”对比

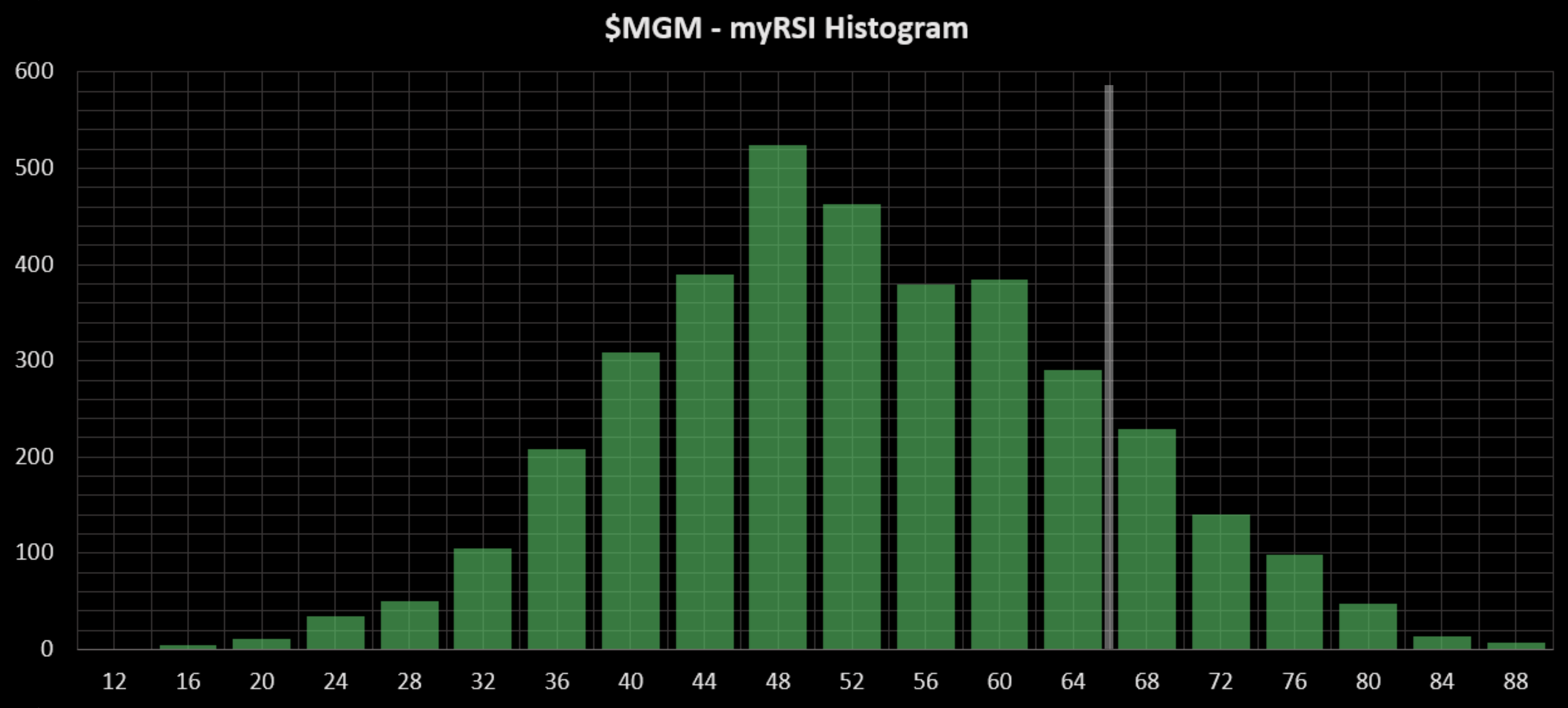
通用思维 - 线性市场例子：

- RSI = 65
- RSI Rank = (65 - 10) / (90 - 10) = 68.8%



通用思维 - 线性市场例子：

- RSI = 65
- RSI Percentile = 91%



运用到隐含波动率

- $ABC DTE30 IV = 35%, $XYZ DTE30 IV = 65%
- IV Rank / IV Percentile——太阳底下没有新鲜事
- 检查你的券商 - Deal Breaker
  - 是否可以展示 / 筛选 IV 的相对读数
  - 是否可以展示 Ticker Level 盈亏图
  - 是否可以展示 Portfolio Level 盈亏图
  - 是否有关于 Implied Volatility 的其他类型图表

IMPLIED VOLATILITY NEWBIE GUIDE • 隐含波动率新手指引

2023 更新版本

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本

隐含波动率 = 未来波幅

MGM ▾ Calls and Puts ▾ 30.62 +0.63 (+2.10%)

⊞ Expand All

EM = STK * IV * sqrt (DTE / 365)

LIST VIEW ▾ | 10 STRIKES ▾ | 3 MONTHS ▾ | SMART ▾ | MGM ▾ | 100

CALLS								DESCRIPTION	PUTS								
OPTN ... VOLUME	BID	ASK	MARK	TIME VALUE (%)	DELTA	THETA	IV CLOSE	STRIKE	IV CLOSE	THETA	DELTA	TIME VALUE (%)	MARK	BID	ASK	VOLUME	OPTN ...
								SEP 30 '22 (3 DAYS)									IV: 61.7%
								OCT 07 '22 (10 DAYS)									IV: 57.2%
								OCT 14 '22 (17 DAYS)									IV: 56.0%
								OCT 21 '22 (24 DAYS)									IV: 54.5%
	2.90	3.05	2.97	0.95 (47.18%)	0.706	-0.033	57.898%	28	57.739%	-0.031	-0.295	0.89 (44.20%)	0.91	0.89	0.93		
	2.26	2.42	2.32	1.31 (65.07%)	0.622	-0.035	53.258%	29	54.588%	-0.033	-0.379	1.23 (61.09%)	1.26	1.23	1.29		
	1.97	2.08	2.03	1.52 (75.50%)	0.576	-0.036	54.790%	29.5	55.328%	-0.033	-0.425	1.44 (71.52%)	1.47	1.44	1.50		
	1.71	1.81	1.76	1.71 (84.93%)	0.529	-0.036	54.963%	30	54.023%	-0.034	-0.472	1.63 (80.96%)	1.70	1.68	1.72		
	1.46	1.56	1.51	1.46 (72.52%)	0.482	-0.035	54.125%	30.5	53.930%	-0.033	-0.520	1.38 (68.54%)	1.95	1.93	1.97		
	1.24	1.32	1.28	1.24 (61.59%)	0.434	-0.034	53.622%	31	53.236%	-0.032	-0.568	1.14 (56.62%)	2.22	2.19	2.26		
	1.05	1.13	1.09	1.05 (52.15%)	0.386	-0.033	53.039%	31.5	52.490%	-0.030	-0.617	0.96 (47.68%)	2.53	2.51	2.57		
	0.90	0.94	0.92	0.90 (44.70%)	0.342	-0.031	52.555%	32	52.063%	-0.029	-0.660	0.74 (36.75%)	2.86	2.79	2.89		
	0.72	0.79	0.75	0.72 (35.76%)	0.299	-0.030	51.813%	32.5	49.647%	-0.027	-0.704	0.60 (29.80%)	3.20	3.15	3.25		
	0.59	0.64	0.62	0.59 (29.30%)	0.257	-0.027	53.939%	33	50.421%	-0.024	-0.747	0.45 (22.35%)	3.56	3.50	3.65		
								OCT 28 '22 (31 DAYS)									IV: 54.8%
								NOV 04 '22 (38 DAYS)									IV: 56.5%
								NOV 18 '22 (52 DAYS)									IV: 54.9%
								DEC 16 '22 (80 DAYS)									IV: 52.4%

- Price * Std
- Price * N * Std
- Duration Adjustment
- **Price Range = STK+/-EM**
- **思考：使用哪一个 IV?**
  >>> 定价原理 / 统计原理
- **拓展1：期权定价中的平方根**
- **拓展2：置信区间 >>> N**

Download Excel File

Expected Move Calculator				
Stock Price	30.62	**Standard Deviation**		
Implied Volatility (Ann.)	54.50%	1	2	3
Contract DTE	24	68.2%	95.4%	99.7%
Expected Move		**4.28**	**8.56**	**12.84**
	Upper	34.90	39.18	12.84
	Lower	26.34	22.06	- 12.84

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本

Articles | Free Resource | School

- eBook
- Free Tutorial [Vol.2]
- Free Tutorial [Vol.3]

Download Excel File

Free Tutorial File [Vol.3]

Excel 会放在这里

Heikin Ashi 图表是否具有市场优势

YouTube | Excel | PDF

计划之外，情理之中，"夺命"期权卖水 (It is okay for Option Selling)

YouTube | PDF

错误的交易认知，无尽的深渊

YouTube | PDF

夏季市场，投资者是走是留 (Lazy Summer Drowsy Trader)

YouTube | PDF

关于 VIX Index 的一些基础数据

YouTube | PDF

Listen to Free Tutorial Audio [Vol.3]

1	PowerUpGammas-Heikin Ashi 图表是否具有市场优势	15:47
2	PowerUpGammas-计划之外，情理之中，"夺命"期权卖水 (It is okay for Op...	11:27
3	PowerUpGammas-错误的交易认知，无尽的深渊	17:34
4	PowerUpGammas-夏季市场，投资者是走是留 (Lazy Summer Drowsy Tra...	11:26
5	PowerUpGammas-关于 VIX Index 的一些基础数据	6:33
6	PowerUpGammas-带期权交易者重新认识 $GLD-作为资产组合对冲背后的...	14:40

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

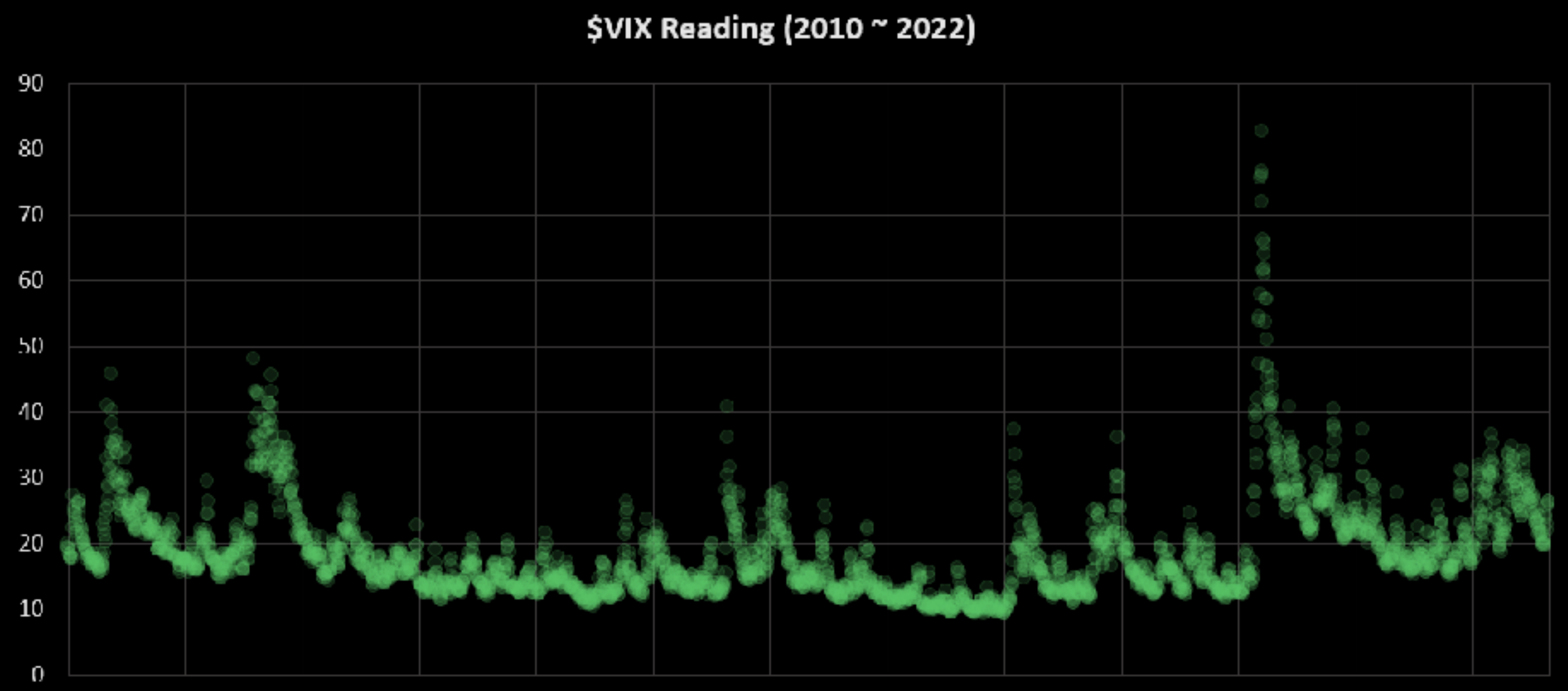
2023 更新版本

- 思考：哪个相对“准确”
- IV 就是期权的价格：e.g, IV = 0 or 100%

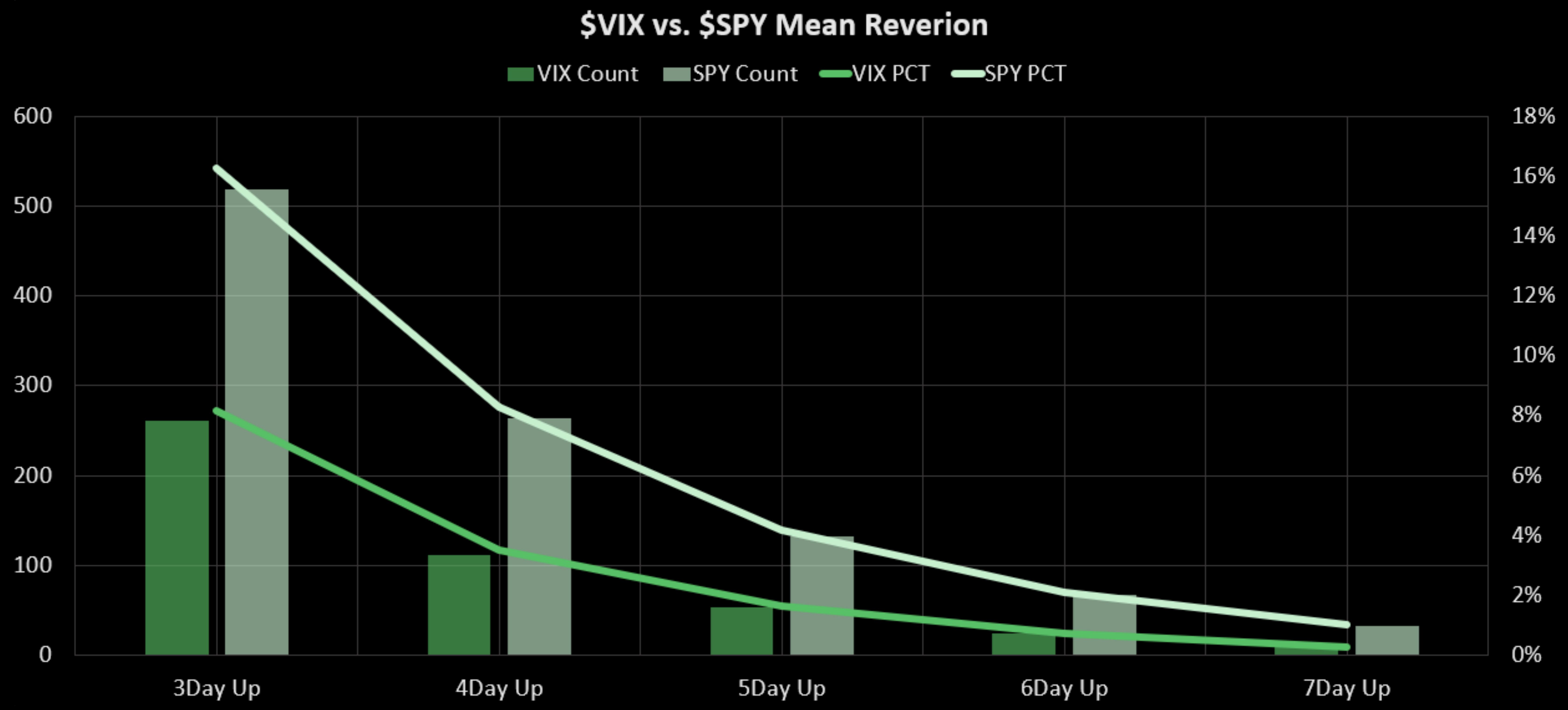
STK = 30.62								
IV (Ann.)	61.70%	57.20%	56.00%	54.50%	54.80%	56.50%	54.90%	52.40%
DTE	3	10	17	24	31	38	52	80
Expected Move	**1.71**	**2.90**	**3.70**	**4.28**	**4.89**	**5.58**	**6.35**	**7.51**
Upper	32.33	33.52	34.32	34.90	35.51	36.20	36.97	38.13
Lower	28.91	27.72	26.92	26.34	25.73	25.04	24.27	23.11

隐含波动率价格特性

- 线性市场中，股价存在均值回归现象



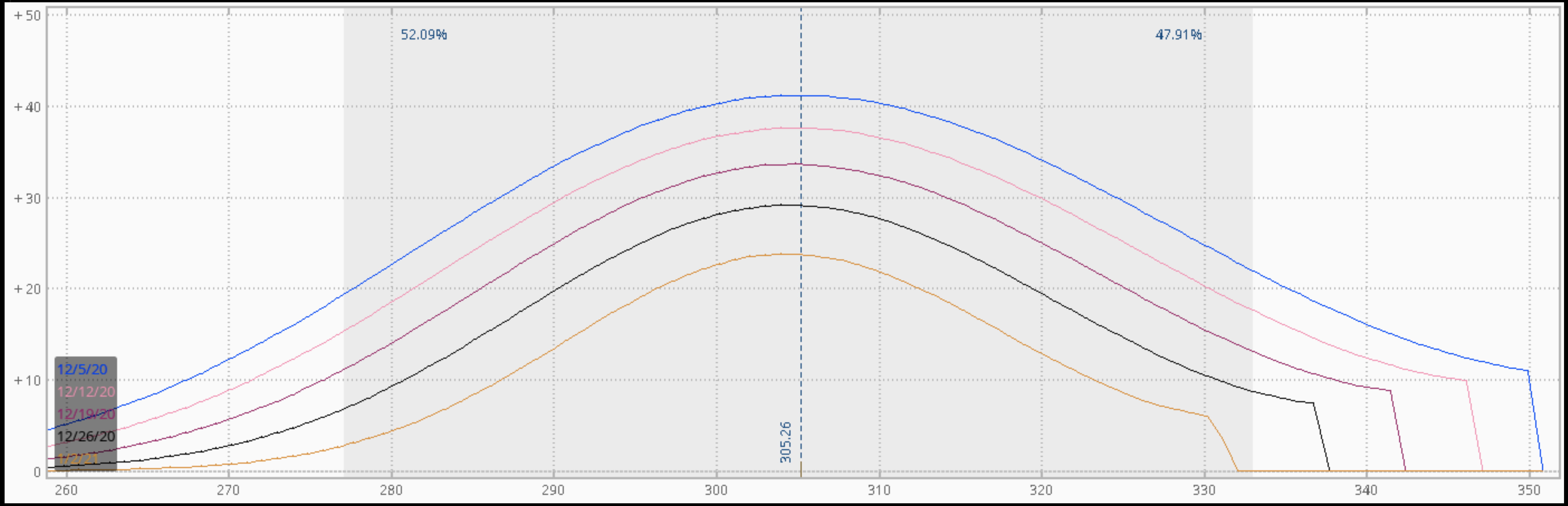
隐含波动率价格特性


$VIX vs. $SPY Mean Reverion
VIX Count
SPY Count
VIX PCT
SPY PCT
600
500
400
300
200
100
0
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
3Day Up
4Day Up
5Day Up
6Day Up
7Day Up

隐含波动率高低何用

- 从 Vega 角度理解策略特性
  - 思考：当隐含波动率较高的时候，不同的策略有有什么回报特点

- 线性市场中，股价存在均值回归现象
- 期权市场中，隐含波动率均值回归特性更加明显
  - Linear Market: Buy dip, sell rally
  - Option Market: Buy (IV) dip, sell (IV) rally



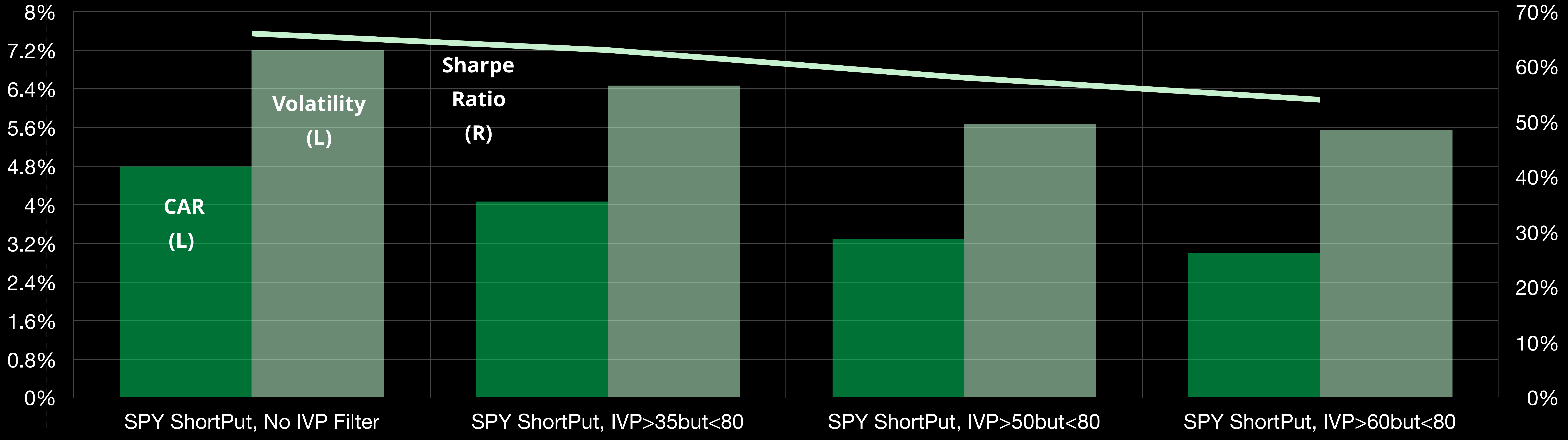
金科玉律——隐含波动率低买高卖?

- 与其听别人说，不如自己去算一算
  - 逻辑思辨对市场实践有帮巨大帮助
  - 利用数据辅助思考将如虎添翼
- 在不同 IVP 情况下使用 Option Selling 策略有何区别

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本

$SPY	CAR	Sharpe Ratio	Volatility
SPY ShortPut, No IVP Filter	4.79%	66%	7.21%
SPY ShortPut, IVP>35but<80	4.06%	63%	6.46%
SPY ShortPut, IVP>50but<80	3.28%	58%	5.67%
SPY ShortPut, IVP>60but<80	2.99%	54%	5.54%



Let’s Wrap It Up...

- Implied Volatility 来源——Theory simplifies complicated things
  没有理论照耀的实践是无效率的，没有实践反馈的理论苍白无力
- 识别 Implied Volatility 高低——Leverage linear market
- 解读 Implied Volatility 读数——(Log)-Normal in statistics
- Implied Volatility 特性——Greeks, pricing model, strategies
- 刻意忽略真实市场——Non-constant Implied Volatility across strikes

IMPLIED VOLATILITY NEWBIE GUIDE · 隐含波动率新手指引

2023 更新版本

PowerUpGammas SCHOOL