



期权波动率 (Option Volatility) 从入门到精通

#4 - 历史波动率和隐含波动率 Part II



SAM, PowerUpGammas

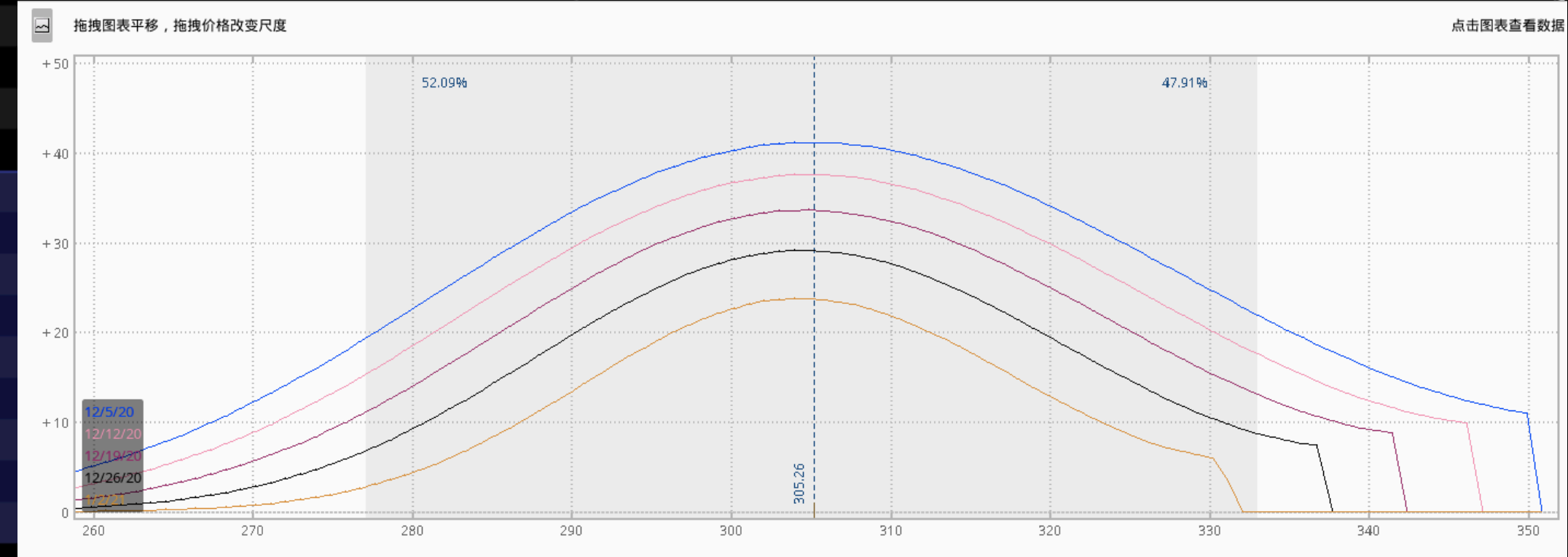


隐含波动率 (Implied Volatility)

- All-inclusive projection: 所有市场环境，特殊事件
- 68% 的准确率（置信区间），未来到期波动不会超过

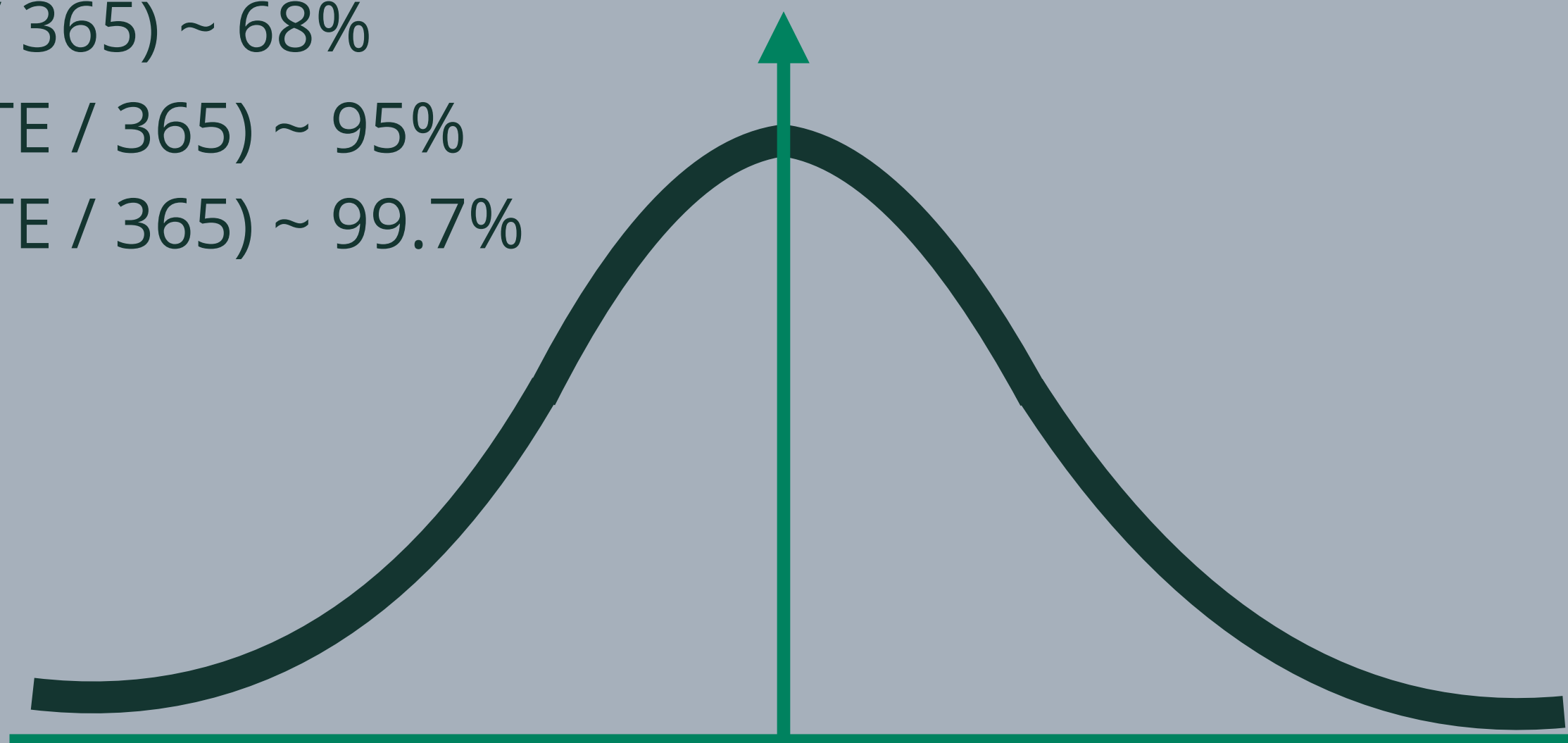
HELE PUT/CALLS (Side by Side)										107.50 -2.63 (-2.39%)									
JUL 07 '23		JUL 14 '23		JUL 21 '23		JUL 28 '23		MORE		TABBED VIEW		PUT/CALL		18 STRIKES		SMART		HELE 100	
CALLS										PUTS									
OPTN OP...	VOLUME	BID	ASK	MARK	TIME VALUE (%)	DELTA	THETA	IV CLOSE	STRIKE	IV CLOSE	THETA	DELTA	TIME VALUE (%)	MARK	BID	ASK	VOLUME	OPTN OP...	
+	9.70	12.10	+	11.20	0.00 (0.00%)	0.997	-0.004	34.644%	99	55.575%	-0.004	-0.003	0.00	0.50	+				
+	9.80	11.60	+	10.20	0.00 (0.00%)	0.995	-0.006	28.711%	100	53.152%	-0.006	-0.005	0.05	2.00	+				
+	8.30	10.20	+	9.20	0.00 (0.00%)	0.993	-0.009		101	158.883%	-0.009	-0.007	0.05	0.10	+				
+	7.90	9.90	+	8.25	0.00 (0.00%)	0.991	-0.012		102	35.806%	-0.012	-0.009	0.05 (8.49%)	0.10	+	0.05	0.10	+	
+	6.00	8.80	+	7.25	0.00 (0.00%)	0.983	-0.022		103	32.615%	-0.022	-0.017	0.10	0.15	+			+	
+	5.80	7.20	+	6.35	0.00 (0.00%)	0.970	-0.040	38.468%	104	32.410%	-0.040	-0.030	0.10 (16.98%)	0.15	+	0.10	0.25	+	
+	4.30	6.20	+	5.45	0.00 (0.00%)	0.951	-0.067		105	37.871%	-0.067	-0.049	0.15 (25.47%)	0.25	+	0.15	0.30	+	
+	2.85	4.70	+	4.55	0.00 (0.00%)	0.903	-0.135	35.655%	106	31.890%	-0.120	-0.097	0.35 (59.42%)	0.35	+	0.35	0.40	+	
+	2.70	3.90	+	3.65	0.00 (0.00%)	0.866	-0.148	30.601%	107	33.696%	-0.133	-0.134	0.40 (67.91%)	0.50	+	0.40	0.55	+	
+	1.40	3.00	+	2.80	0.00 (0.00%)	0.787	-0.184		108	30.981%	-0.169	-0.213	0.55 (93.37%)	0.60	+	0.55	0.65	+	
+	2.00	2.30	+	2.10	0.94 (159.58%)	0.667	-0.220	29.906%	109	30.376%	-0.205	-0.334	0.85 (144.30%)	0.90	+	0.85	0.95	+	
+	1.40	1.75	+	1.60	1.34 (227.49%)	0.519	-0.258		110	31.534%	-0.243	-0.482	1.30 (220.70%)	1.40	+	1.30	1.50	+	
+	0.95	1.25	+	1.10	0.95 (161.28%)	0.377	-0.236		111		-0.221	-0.624	0.81 (137.51%)	1.95	+	1.75	2.10	+	
+	0.65	0.90	+	0.75	0.65 (110.35%)	0.265	-0.214	33.090%	112		-0.200	-0.738	0.51 (86.58%)	2.60	+	2.45	2.80	+	
+	0.40	0.65	+	0.55	0.40 (67.91%)	0.157	-0.150		113		-0.135	-0.847	0.00 (0.00%)	3.40	+	2.35	4.20	+	
+	0.25	1.80	+	0.45	0.25 (42.44%)	0.101	-0.117		114		-0.102	-0.903	0.00 (0.00%)	4.30	+	2.70	4.70	+	
+	0.15	1.40	+	0.40	0.15 (25.47%)	0.064	-0.087		115		-0.063	-0.940	0.00 (0.00%)	5.20	+	4.70	6.30	+	
+	0.10	1.20	+	0.30	0.10 (16.98%)	0.037	-0.046		116		-0.026	-0.968	0.00 (0.00%)	6.15	+	4.70	7.90	+	

HELE PUT/CALLS (Side by Side)										107.50 -2.63 (-2.39%)									
JUL 07 '23		JUL 14 '23		JUL 21 '23		JUL 28 '23		MORE		TABBED VIEW		PUT/CALL		18 STRIKES		SMART		HELE 100	
CALLS										PUTS									
OPTN OPN I...	VOLUME	BID	ASK	MARK	TM VL (%)	DELTA	THETA	IV CLOSE	STRIKE	IV CLOSE	THETA	DELTA	TM VL (%)	MARK	BID	ASK	VOLUME	OPTN OPN I...	
+	12.30	13.50	+	13.25	1.24 (46.7...)	0.811	-0.224	64.454%	99	68.505%	-0.210	-0.189	1.30 (49.0...)	2.00	+	1.30	3.50	+	
+	11.80	13.10	+	12.45	1.74 (65.6...)	0.790	-0.236	64.259%	100	74.340%	-0.222	-0.211	2.10 (79.2...)	2.20	+	2.10	2.35	+	
+	11.10	13.40	+	11.65	2.04 (76.9...)	0.768	-0.247	63.889%	101	77.811%	-0.233	-0.232	1.35 (50.9...)	2.45	+	1.35	2.80	+	
+	10.20	11.50	+	10.90	2.14 (80.7...)	0.746	-0.258	63.168%	102	72.280%	-0.244	-0.254	1.80 (67.9...)	2.65	+	1.80	2.90	+	
+	9.40	11.10	+	10.30	2.34 (88.2...)	0.722	-0.267	63.338%	103	89.213%	-0.253	-0.278	2.90 (109....)	3.05	+	2.90	3.40	+	
+	8.50	10.00	+	9.70	2.44 (92.0...)	0.696	-0.278	69.832%	104										
+	8.40	9.50	+	9.05	3.34 (126....)	0.671	-0.285	71.626%	105										
+	7.60	8.80	+	8.45	3.54 (133....)	0.645	-0.289	54.375%	106										
+	6.30	8.50	+	7.85	3.24 (122....)	0.616	-0.298	67.195%	107										
+	7.10	7.40	+	7.20	5.04 (190....)	0.589	-0.299	66.898%	108										
+	6.50	6.90	+	6.65	5.44 (205....)	0.560	-0.302	79.463%	109										
+	6.00	6.40	+	6.20	5.94 (224....)	0.531	-0.302	79.281%	110										
+	5.50	5.90	+	5.70	5.50 (207....)	0.502	-0.300		111										
+	5.00	5.40	+	5.20	5.00 (188....)	0.473	-0.300	76.232%	112										
+	4.60	5.00	+	4.85	4.60 (173....)	0.444	-0.298	75.512%	113										
+	4.20	5.40	+	4.45	4.20 (158....)	0.416	-0.292	78.936%	114										
+	2.90	4.30	+	4.05	2.90 (109....)	0.388	-0.286	77.346%	115										
+	2.65	4.30	+	3.65	2.65 (99.9...)	0.362	-0.282		116										



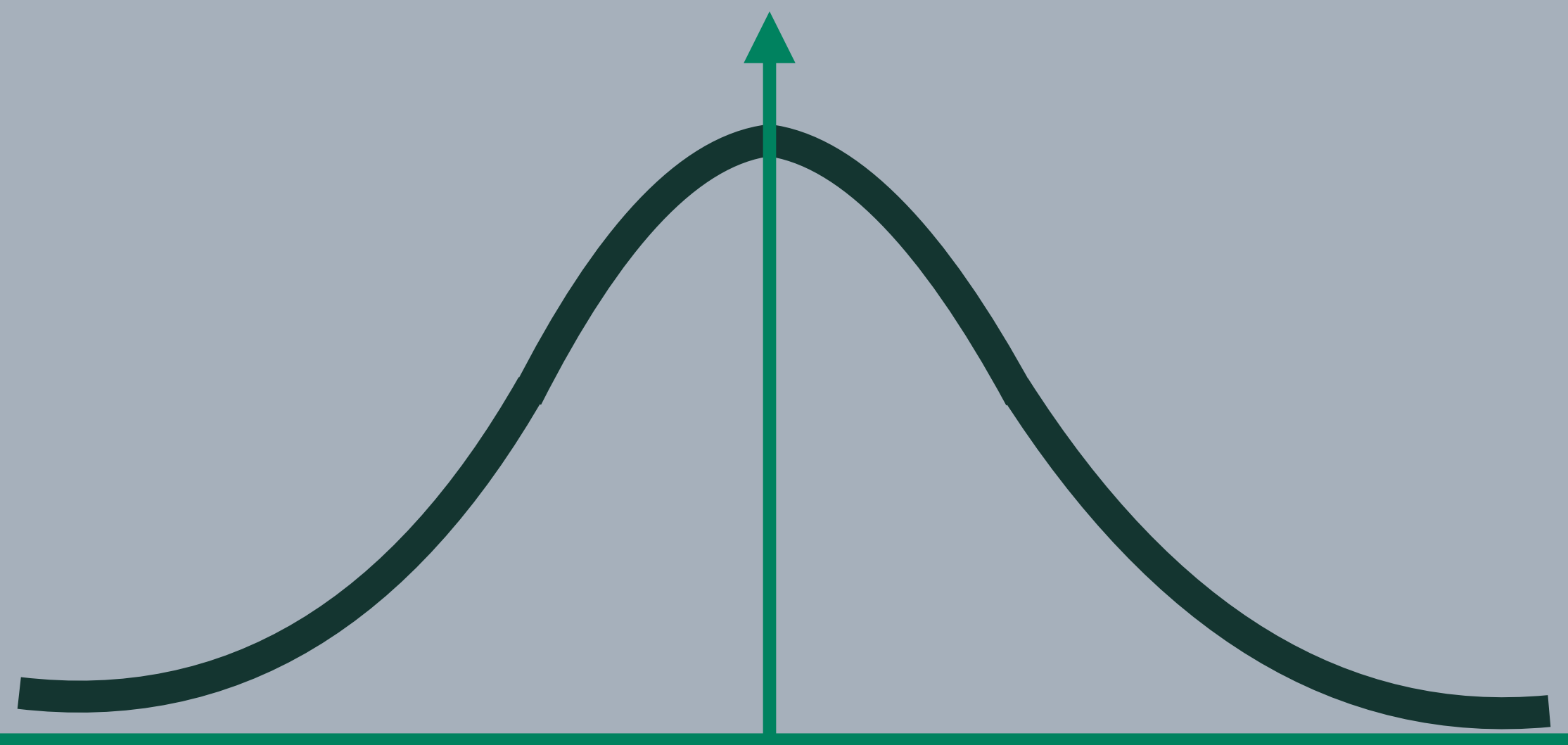
隐含波动率和概率

- 不论是历史波动率还是期权隐含波动率，都是在以股价回报（或股价的对数）为正态分布的假设条件下的数学计算结果
- 已知均值，标准差，求解既定置信区间下的取值范围
 - 1Std = $STK * IV * \sqrt{DTE / 365} \sim 68\%$
 - 2Std = $STK * 2 * IV * \sqrt{DTE / 365} \sim 95\%$
 - 3Std = $STK * 3 * IV * \sqrt{DTE / 365} \sim 99.7\%$





IV, Delta, 胜率



SPY PUT/CALLS (Side by Side)											
JUL 21 '23		AUG 18 '23		SEP 15 '23		OCT 20 '23		MORE		441.79 -2.00 (-0.45%)	
16 DAYS		44 DAYS		72 DAYS		107 DAYS					
OPTN	OPN I...	VOLUME	BID	ASK	MARK	TM VL (%)	DELTA	THETA	IV CLOSE	STRIKE	
	44.8K				7.31		0.612	-0.160	11.134%	440	
	5.23K				6.60		0.576	-0.158	11.140%	441	
	10.5K				5.90		0.537	-0.156	10.629%	442	
	9.65K				5.25		0.497	-0.151	10.326%	443	
	19.3K				4.63		0.456	-0.147	10.388%	444	
	24.1K				4.06		0.414	-0.140	10.269%	445	
	15.2K				3.54		0.373	-0.133	10.171%	446	
	3.49K				3.07		0.331	-0.125	10.038%	447	
	8.71K				2.63		0.293	-0.117	9.911%	448	
	3.81K				2.25		0.255	-0.107	10.019%	449	
	34.8K				1.91		0.222	-0.098	9.818%	450	
	4.96K				1.61		0.188	-0.088	9.806%	451	
	10.7K				1.35		0.161	-0.078	9.711% C	452	
	2.40K				1.12		0.135	-0.069	9.757%	453	
	6.64K				0.94		0.113	-0.060	9.618%	454	
	12.3K				0.76		0.093	-0.052	9.689%	455	
	11.0K				0.63		0.077	-0.045	9.720%	456	
	6.52K				0.52		0.063	-0.039	9.767%	457	
	4.18K				0.43		0.052	-0.033	9.678%	458	
	995				0.34		0.042	-0.028	9.912%	459	
	27.5K				0.28		0.035	-0.024	9.920%	460	
	4.07K				0.19		0.023	-0.017	9.988%	462	
	2.31K				0.12		0.015	-0.012	10.262%	464	
	9.13K				0.11		0.013	-0.011	10.439%	465	
	1.21K				0.09		0.010	-0.009	10.385%	466	
	928				0.07		0.007	-0.006	10.535%	468	
	13.1K				0.05		0.005	-0.005	10.972%	470	
	1.58K				0.04		0.004	-0.004	11.495%	472	
	423				0.03		0.003	-0.003	12.071%	474	
	5.60K				0.02		0.002	-0.003	11.500%	475	
	311				0.02		0.002	-0.003	12.547%	476	
	294				0.02		0.002	-0.002	12.535%	478	



不同的隐含波动率

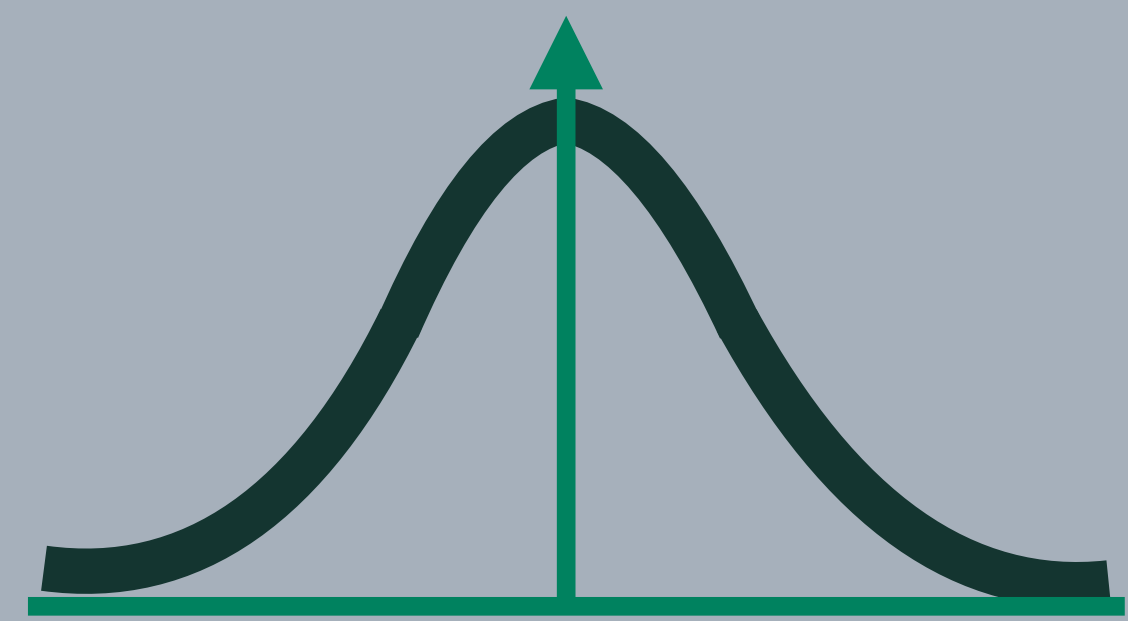
三个层面 IV 读数

- 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

Financial Instrument	Bid Size	Bid	Ask	Ask Size	Last	Position
MGM	2	30.54	30.58	19	30.48	

Financial Instrument	Opt. Volume	Pt/CII Vlm	Opt. Vlm Chn...	Hst. VI. Cls %	IV Last	IV Change	Pt/CII Intrst	IV Close	Hist. Vol. %	Hst. VI. Chng	52 Wk IV Prc...
MGM	0	0.00	0.000%	41.187%	54.8%	-0.079	1.33	54.830%	40.848%	-0.339	88%

CALLS		DESCRIPTION		PUTS	
BID x ASK	VOLUME OPTN ...	DELTA	GAMMA	VEGA	THETA
SEP 30 '22 (3 DAYS) IV: 61.7%					
1.04 x 1.22		0.612	0.211	0.011	-0.106
0.78 x 0.84		0.503	0.225	0.011	-0.108
0.55 x 0.59		0.392	0.219	0.011	-0.102
0.38 x 0.40		0.286	0.198	0.010	-0.090
OCT 07 '22 (10 DAYS) IV: 57.2%					
1.46 x 1.59		0.584	0.132	0.020	-0.057
1.19 x 1.25		0.516	0.138	0.020	-0.058
0.95 x 1.00		0.447	0.139	0.020	-0.056
0.74 x 0.83		0.378	0.136	0.020	-0.053





不同的隐含波动率

▼ 16 12月 22 (742) 100													28.04% (±102.849)		
26.98%	1.59	.65	55.64	C	57.41	C	16 12月 22	280	31.78	C	33.35	C	25.95%	1.59	-.34
26.72%	1.62	.63	52.72	Q	54.55	C	16 12月 22	285	33.74	C	35.35	C	25.63%	1.62	-.36
26.41%	1.64	.61	49.87	Z	51.59	C	16 12月 22	290	35.79	C	37.44	C	25.31%	1.65	-.38
26.11%	1.66	.60	47.11	C	48.74	C	16 12月 22	295	37.93	C	39.62	C	25.00%	1.67	-.40
25.97%	1.68	.58	45.06	N	45.87	Z	16 12月 22	300	40.15	C	41.88	Q	24.68%	1.69	-.42
25.65%	1.70	.56	42.21	Z	43.35	C	16 12月 22	305	42.49	C	44.44	C	24.44%	1.70	-.44
25.33%	1.71	.54	39.44	N	40.92	C	16 12月 22	310	44.93	C	46.89	C	24.15%	1.71	-.46
24.97%	1.72	.52	36.69	Q	38.49	C	16 12月 22	315	47.42	C	49.44	C	23.85%	1.72	-.48
24.78%	1.72	.50	34.57	C	36.17	C	16 12月 22	320	50.04	C	52.09	C	23.57%	1.72	-.50
24.47%	1.72	.48	32.12	C	33.93	C	16 12月 22	325	52.76	C	54.82	C	23.29%	1.72	-.52
24.22%	1.72	.46	29.98	C	31.80	C	16 12月 22	330	55.55	C	57.65	C	23.01%	1.71	-.54
24.02%	1.71	.45	28.61	N	29.20	P	16 12月 22	335	58.50	C	60.58	C	22.75%	1.70	-.56

▶ 20 1月 23 (777) 100													26.74% (±100.108)	
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▼ 今日期权统计数据

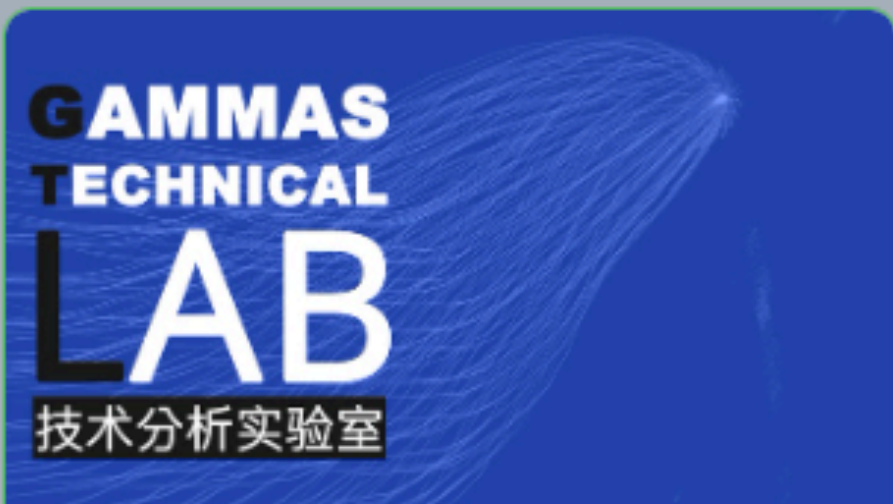
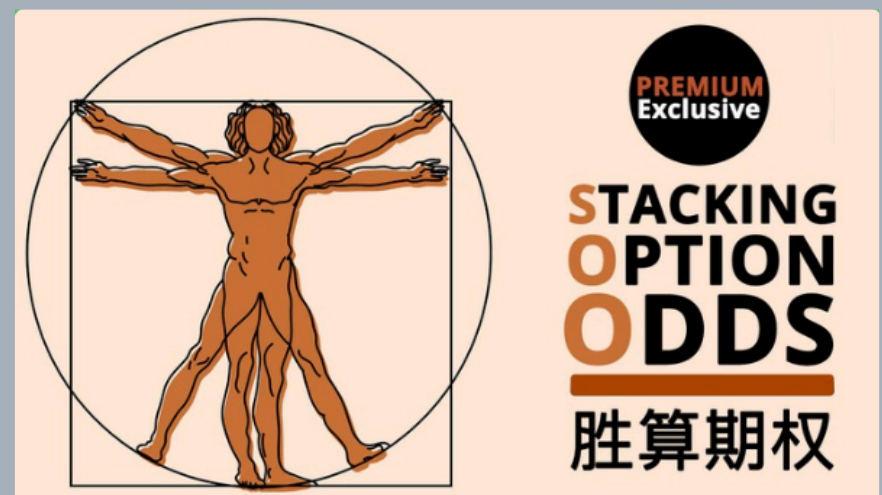
52周隐含波动率高: 0.785	交易分析	买权	卖权	总计	热门指数	0.395	
52周隐含波动率低: 0.14	总成交量:	725,042	1,175,194	1,900,236	买权热门指数	0.313	
当前隐含波动率百分数: 20%	在买方价或更低价交易:	227,932	464,810	692,742	卖权热门指数	0.449	
52周历史波动率高: 0.932	...总数的%:	31%	39%	36%	波动率热门	0.999	
52周历史波动率低: 0.081	在卖方价或更高价交易:	279,051	418,568	697,619	股票热门指数	0.812	
当前历史波动率百分数: 10%	...总数的%:	38%	35%	36%	卖权/买权比率	1.621	
隐含波动率: 27.10%	市场间:	218,059	291,816	509,875			
VWAP: 305.015	...总数的%:	30%	24%	26%			
	Delta介于 ✪						
	0 ... 20	181,150	24%	687,110	58%	868,260	45%
	21 ... 40	210,881	29%	289,310	24%	500,191	26%
	41 ... 60	188,548	26%	142,930	12%	331,478	17%
	61 ... 80	59,859	8%	39,777	3%	99,636	5%
	81 ... 100	84,604	11%	16,067	1%	100,671	5%

FREE TUTORIAL

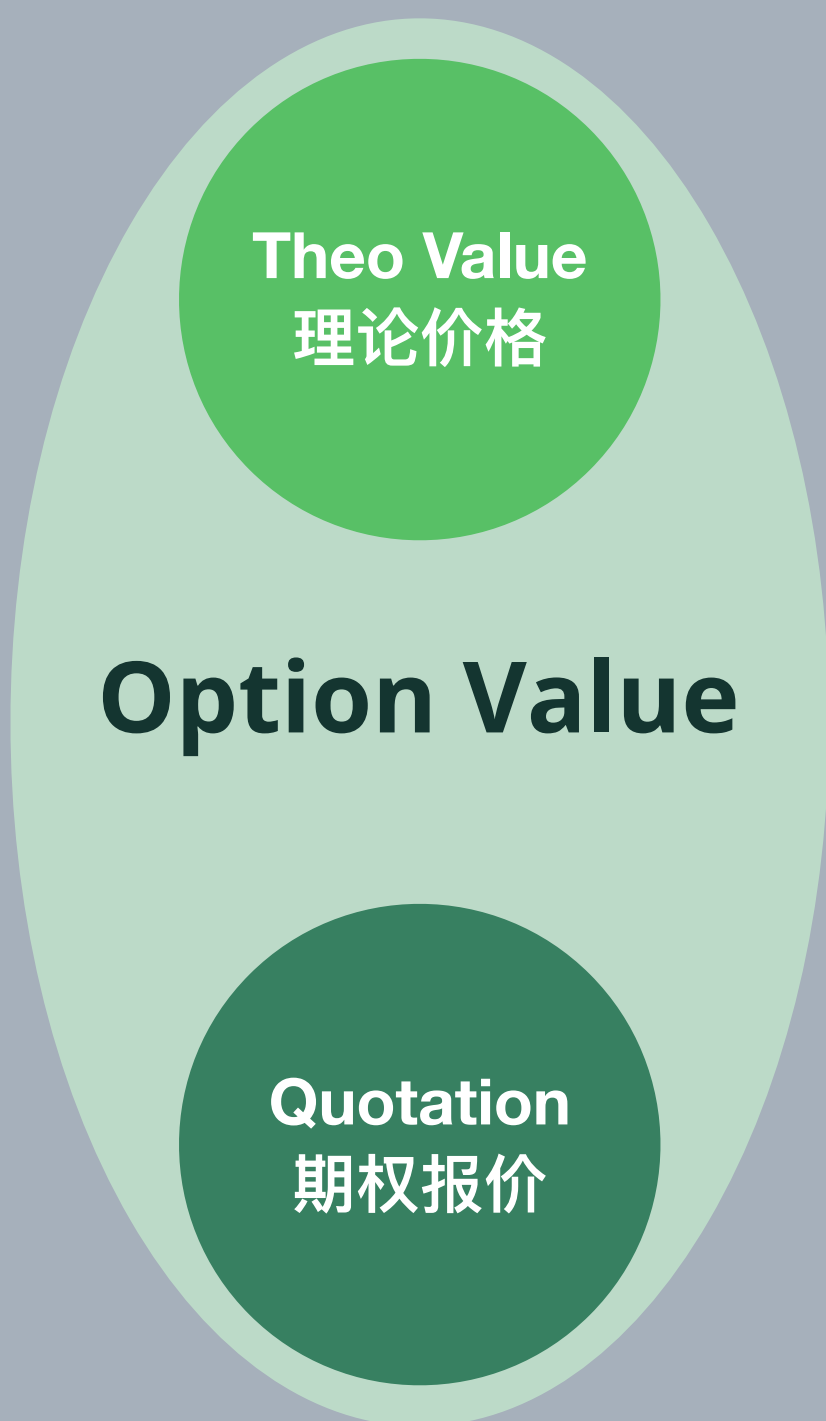


进入PowerUpGammas School

我们给你的不是一堆结论，而是逻辑；
不仅告诉你表面事实，而是强调背后原理。
你接受的一切信息，将构成你的思维方式；
不成体系的知识，将最终遗忘。



不同的隐含波动率



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 = R_f

现金股息率 = d

执行价

Strike Level

到期日合约

Expiration Level

股票层面

Ticker Level