

Options Mysteries

What You Didn't Know

By Ryan Litchfield



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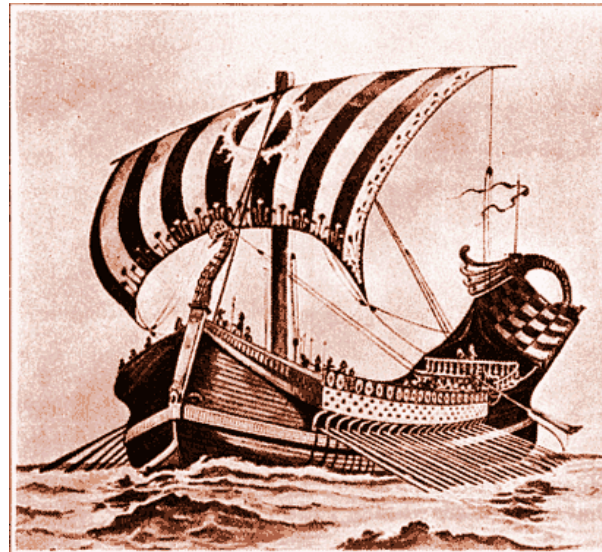
What Makes Them Tick?

- History?
- Option Pricing
 - What is Fair / Theoretical value
- Option Price Movement?
 - How and Why
- Implied Volatility
 - Who cares?
- Delta shenanigans
 - Reading signals



History

- The first options were ... ?
- 332 B.C. Thales – olives, Shipping insurance
- 1637-37
- 1700 – 1733
- 1733 - 1860
- 1872
- 1973
- 1977



Which Came First?

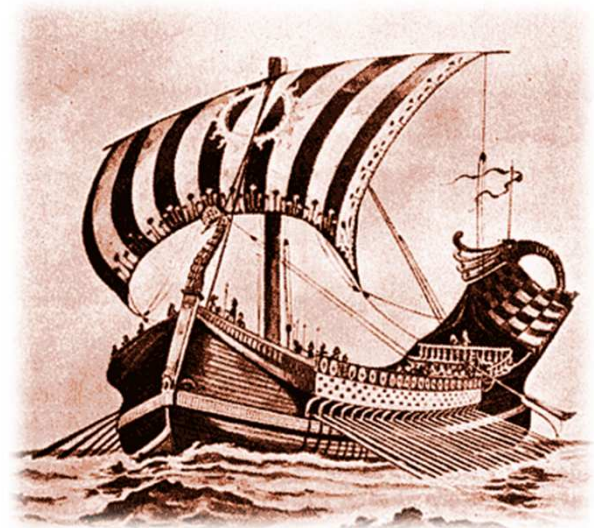
Chicken or the Egg?

Puts or Calls?

Both?

Puts

- Shipping used it like an insurance policy on the cargo reaching the destination



First Documented Options

- Aristotle's book named "Politics", published in 332 B.C. Man named Thales – a great astronomer, philosopher and mathematician Predicted a bumper crop – paid down payment for the rights to all the olive presses for the fall. Then sold the rights for a profit. Call options – and the press owners did a covered call

Tulips 1636

- First massive option trading
- Demand – prices soar
- Call option start for producers
- Spreads to public
- Hysterical participation
 - Mortgaging homes etc.
- Feb 1637 – bubble popped – Option collapse
- Dutch economy collapsed

USA 1872

- Russell Sage, a well known American Financier was the first to create call and put options for trading in the US back in 1872 – unregulated – highly risky
- He bought a seat in the NYSE in 1874, lost a fortune in 1884 – stopped option trading
- He died with a huge fortune of about \$70 million in 1906

USA 1973

- 1970 Black-Scholes gave solid pricing structure
- 1973 CBOE - Standardization!!! Yea!
- Calls were available for regulated trading
- 1977 the puts for hedging began to trade

Option Price Movement

- Options can move with volume activity
 - Volume shows interest – speculation – opinion
 - Traders will trade on speculation
- Options can move with underlying
 - The price is expected to move proportionately but...
- Options can move independently

Price/Option Sync





Who Sets Prices?

- Black and Scholes 1973
 - Nobel Prize 1977
 - **Myron Scholes and Fischer Black**
- Market Makers
 - Just trying to match up trades at a fair price
 - Match market sentiment and risk tolerance
- Brokers
 - Big brokers – big orders
- Traders
 - Pros Big Hedge traders (options not stock)
 - Joes (total volume is apx 50% but small trades)



Fair Value

- Why is it fair?
- Why is it called theoretical?
- Overpriced or underpriced?

Implied Volatility

- What does it imply?
 - It is the volatility that creates the current price
- Why is there a difference?
 - Historical = value
 - Implied = price
- ‘Smile’ curve vs. Slope
- Pros (hedge) use whatever they think is right



Option Display

File View Preferences More

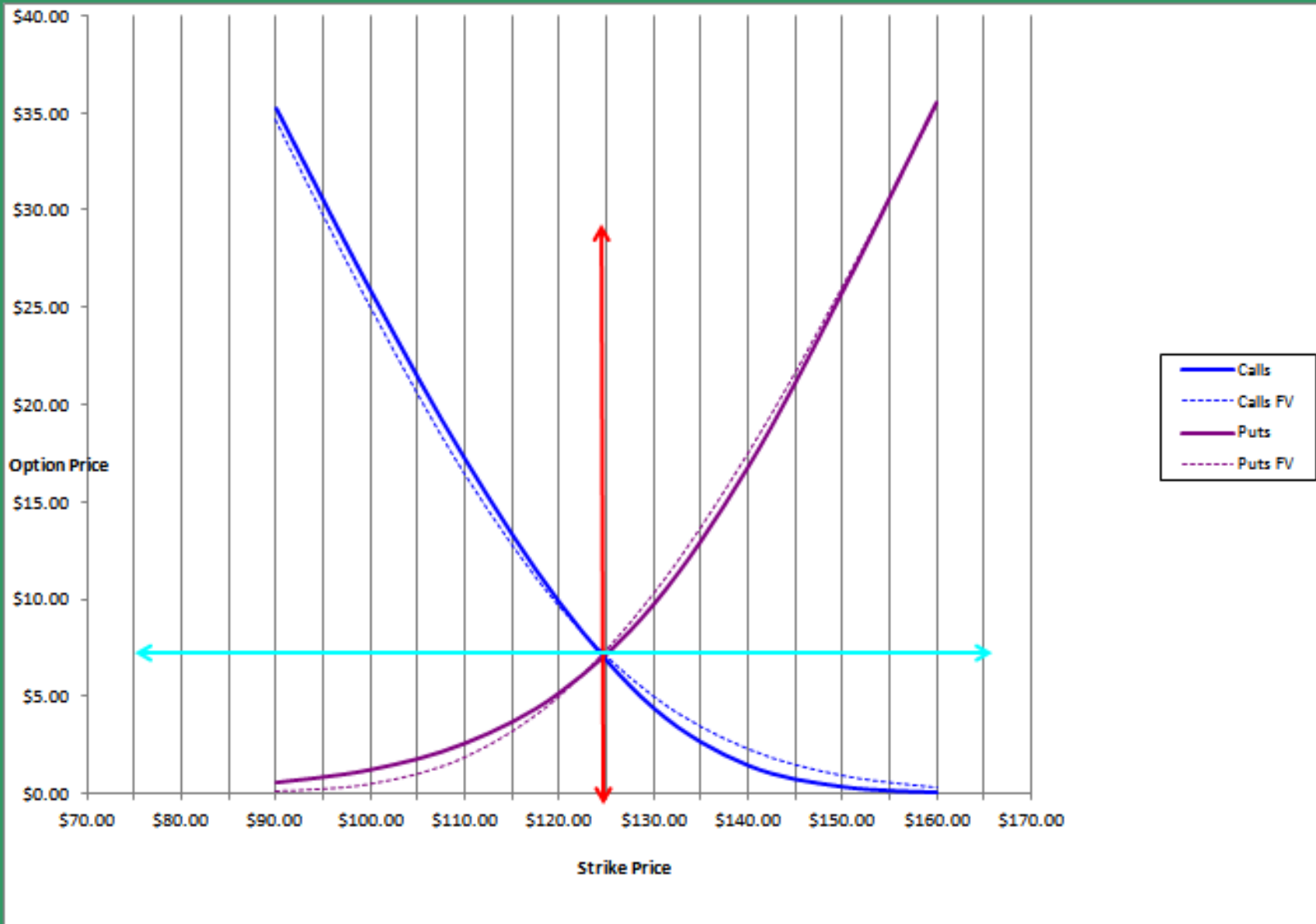
Trade Qty 1 Security AAPL

Last Price Change 427.40 High Low DivAmt 0.00 DivDate 12/30/99 AnnHI 431.36 AnnLOW 310.50 EPS 28.04 Volatility 33 Name AAPL

%in 40 %out 40 Composite All

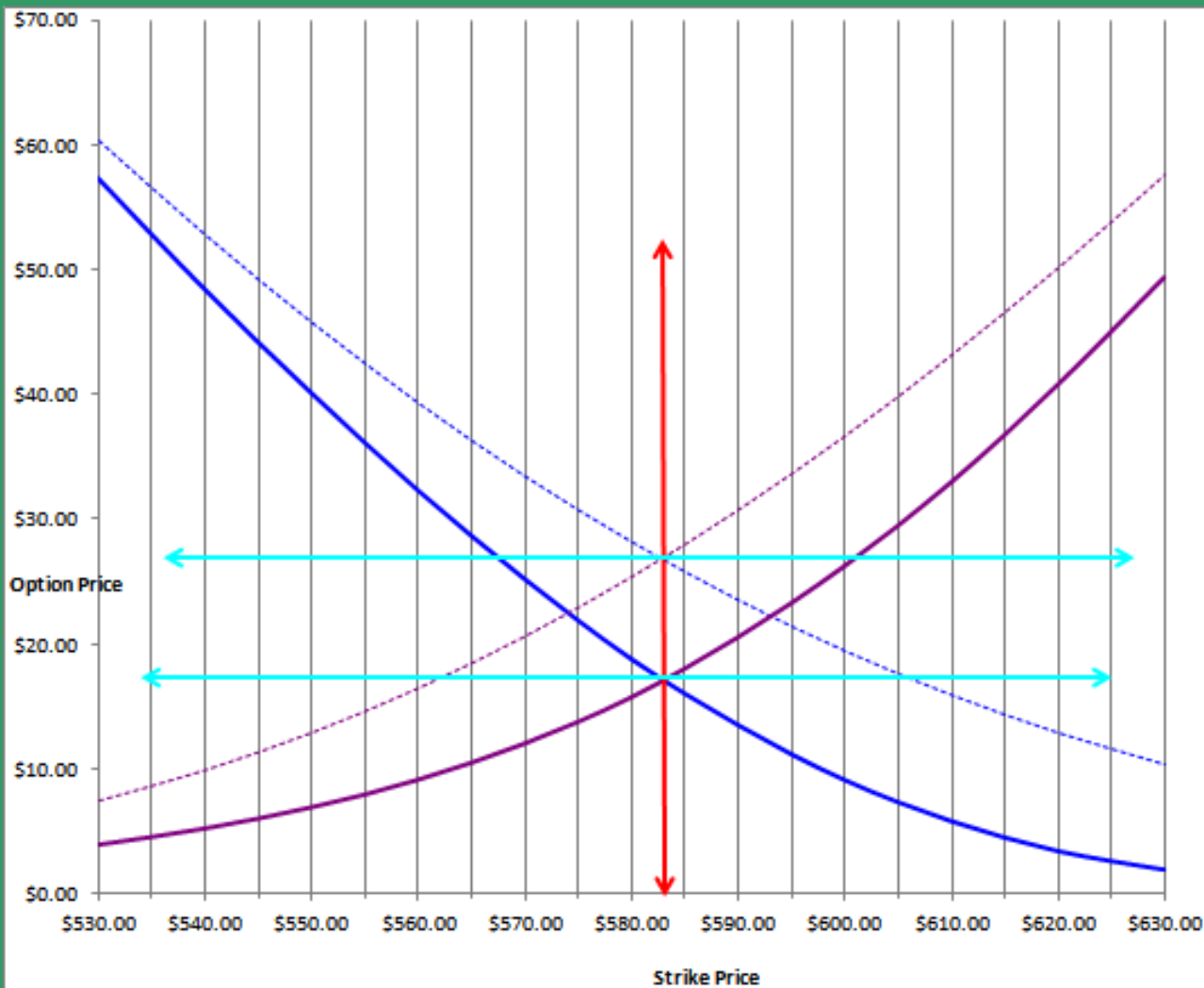
Jan/2012		Feb/2012	Mar/2012	Apr/2012	May/2012	Jul/2012	Oct/2012	Jan/2013	Jan/2014											
c_low	c_high	c_open1	c_vol	c_iv	tmval	c_hr	c_fv	c_bid	c_ask	c_name	p_bid	p_ask	p_fv	tmval	p_hr	p_vol	p_open1	p_low	p_high	p_iv
				1	77.40	100	77.40			AAPL 01/27/12 350 C			.00	.00						33
				1	72.40	100	72.40			AAPL 01/27/12 355 C			.00	.00						33
				1	67.40	100	67.40			AAPL 01/27/12 360 C			.00	.00						33
				1	62.40	100	62.40			AAPL 01/27/12 365 C			.00	.00						33
		338	91	.10	100	57.40	57.50	58.35		AAPL 01/27/12 370 C	.35	.38	.00	.35			1,845			85
		78	88	.15	100	52.40	52.55	53.60		AAPL 01/27/12 375 C	.50	.56	.00	.50			2,680			84
		1,416	82	.65	100	47.40	48.05	48.20		AAPL 01/27/12 380 C	.69	.75	.00	.69			3,245			82
		51	82	.70	100	42.40	43.10	43.90		AAPL 01/27/12 385 C	1.00	1.05	.00	1.00			11,979			81
		769	81	1.25	100	37.41	38.65	39.20		AAPL 01/27/12 390 C	1.47	1.51	.00	1.47			12,332			80
		337	81	1.95	100	32.42	34.35	34.75		AAPL 01/27/12 395 C	2.05	2.13	.02	2.05			2,891			80
		5,181	80	2.75	99	27.46	30.15	30.60		AAPL 01/27/12 400 C	2.85	2.89	.06	2.85	1		5,247			79
		795	79	3.70	97	22.58	26.10	26.55		AAPL 01/27/12 405 C	3.80	3.90	.18	3.80	3		2,040			79
		2,775	79	5.00	92	17.87	22.40	22.75		AAPL 01/27/12 410 C	5.00	5.15	.47	5.00	8		2,818			78
		2,205	78	6.50	84	13.48	18.90	19.25		AAPL 01/27/12 415 C	6.55	6.70	1.08	6.55	16		2,947			77
		7,349	77	8.40	73	9.60	15.80	16.00		AAPL 01/27/12 420 C	8.25	8.50	2.19	8.25	27		4,628			76
		5,576	75	10.35	58	6.38	12.75	12.85		AAPL 01/27/12 425 C	10.25	10.50	3.98	10.25	42		2,754			75
		9,503	73	10.00	43	3.92	10.00	10.10		AAPL 01/27/12 430 C	12.50	12.65	6.52	9.90	57		2,034			72
		6,399	70	7.50	28	2.21	7.50	7.60		AAPL 01/27/12 435 C	14.90	15.20	9.81	7.30	72		747			69
		5,831	68	5.45	17	1.14	5.45	5.50		AAPL 01/27/12 440 C	17.80	18.15	13.74	5.20	83		101			67
		2,398	65	3.70	9	.54	3.70	3.85		AAPL 01/27/12 445 C	21.15	21.50	18.13	3.55	91		52			65
		8,162	64	2.55	4	.23	2.55	2.60		AAPL 01/27/12 450 C	24.90	25.30	22.83	2.30	96		46			63
		1,437	63	1.71	2	.09	1.71	1.74		AAPL 01/27/12 455 C	28.95	30.05	27.69	1.35	98		20			65
		1,893	62	1.10	1	.03	1.10	1.14		AAPL 01/27/12 460 C	33.35	34.55	32.63	.75	99		20			65
		1,183	62	.73		.01	.73	.78		AAPL 01/27/12 465 C	38.05	38.90	37.61	.45	100					64
		3,059	64	.53		.00	.53	.58		AAPL 01/27/12 470 C	42.80	43.70	42.60	.20	100					66
		1,507	66	.42		.00	.42	.45		AAPL 01/27/12 475 C	47.25	48.75	47.60	-.35	100		30			65
		728	68	.32		.00	.32	.34		AAPL 01/27/12 480 C	52.15	53.65	52.60	-.45	100					67
		210	69	.22		.00	.22	.27		AAPL 01/27/12 485 C	57.65	58.85	57.60	.05	100					83
		142	71	.18		.00	.18	.20		AAPL 01/27/12 490 C	61.45	64.10	62.60	-1.15	100					70
		615	72	.13		.00	.13	.14		AAPL 01/27/12 495 C	66.10	69.80	67.60	-1.50	100					84

Stock Price \$124.58



Quasi ATM [Ask] \$7.34
Quasi ATM [FV] \$7.48

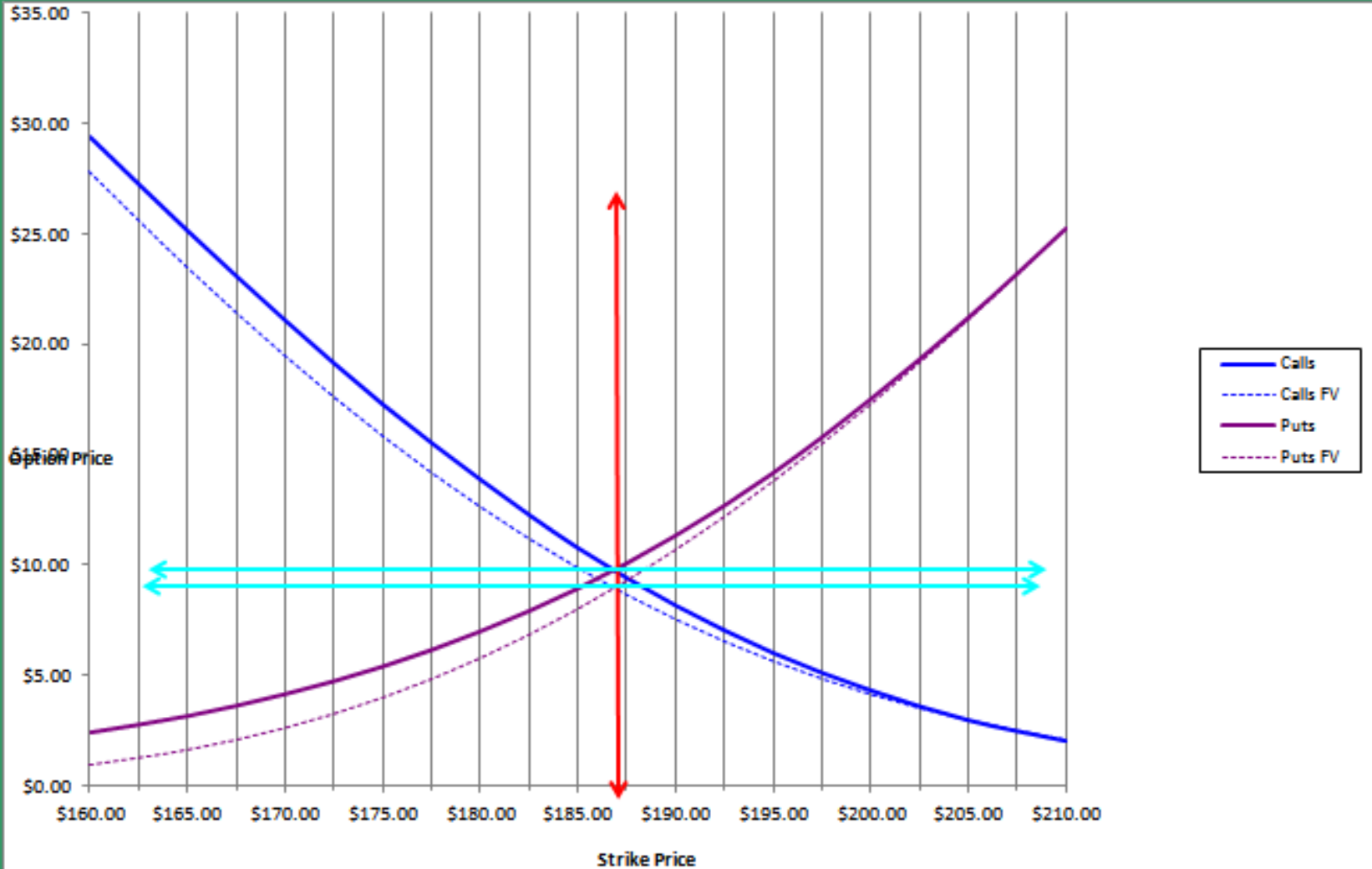
Stock Price \$582.94



Quasi ATM [Ask] \$17.28

Quasi ATM [FV] \$26.91

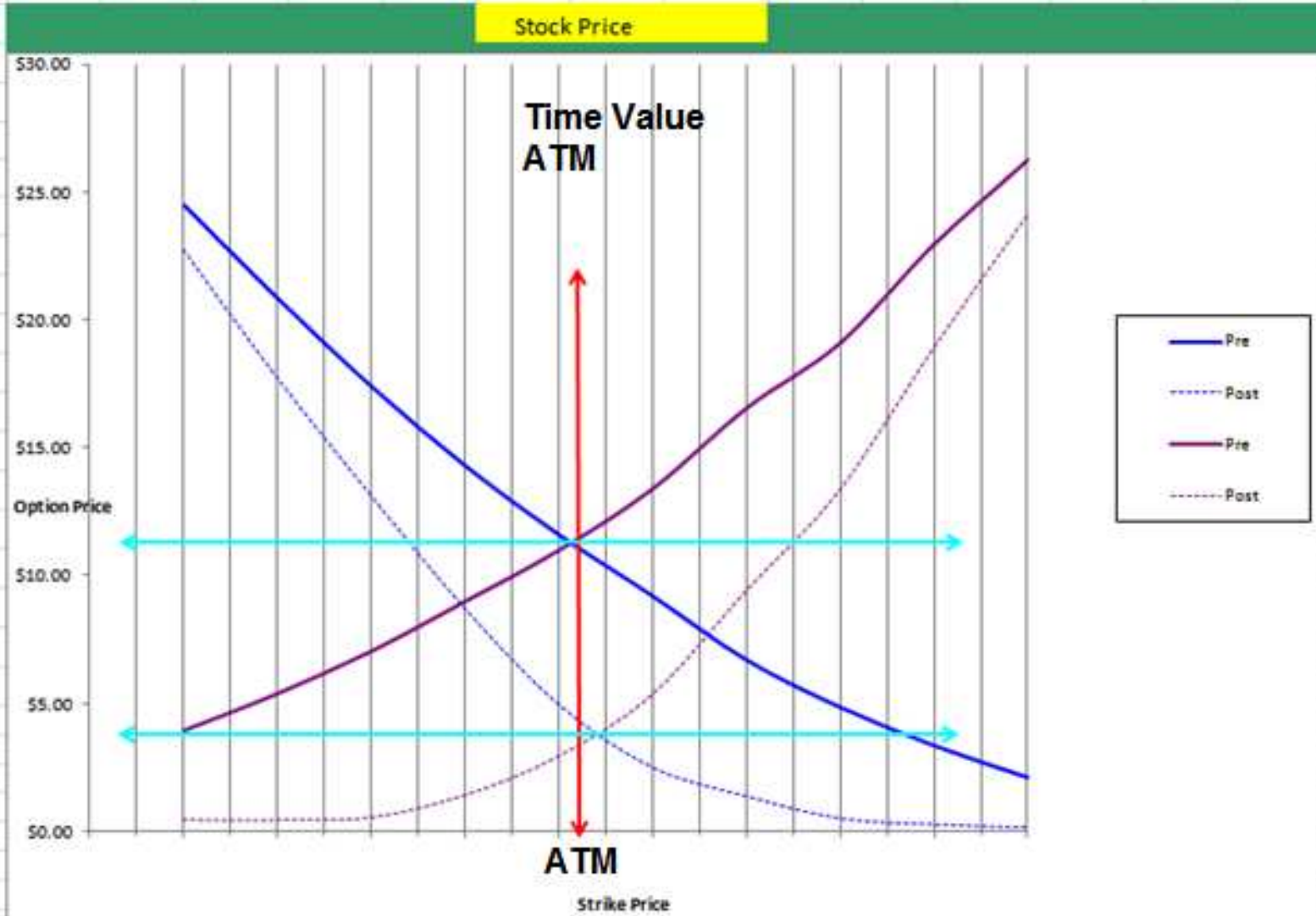
Stock Price \$186.90



Quasi ATM **[Ask]** \$9.81

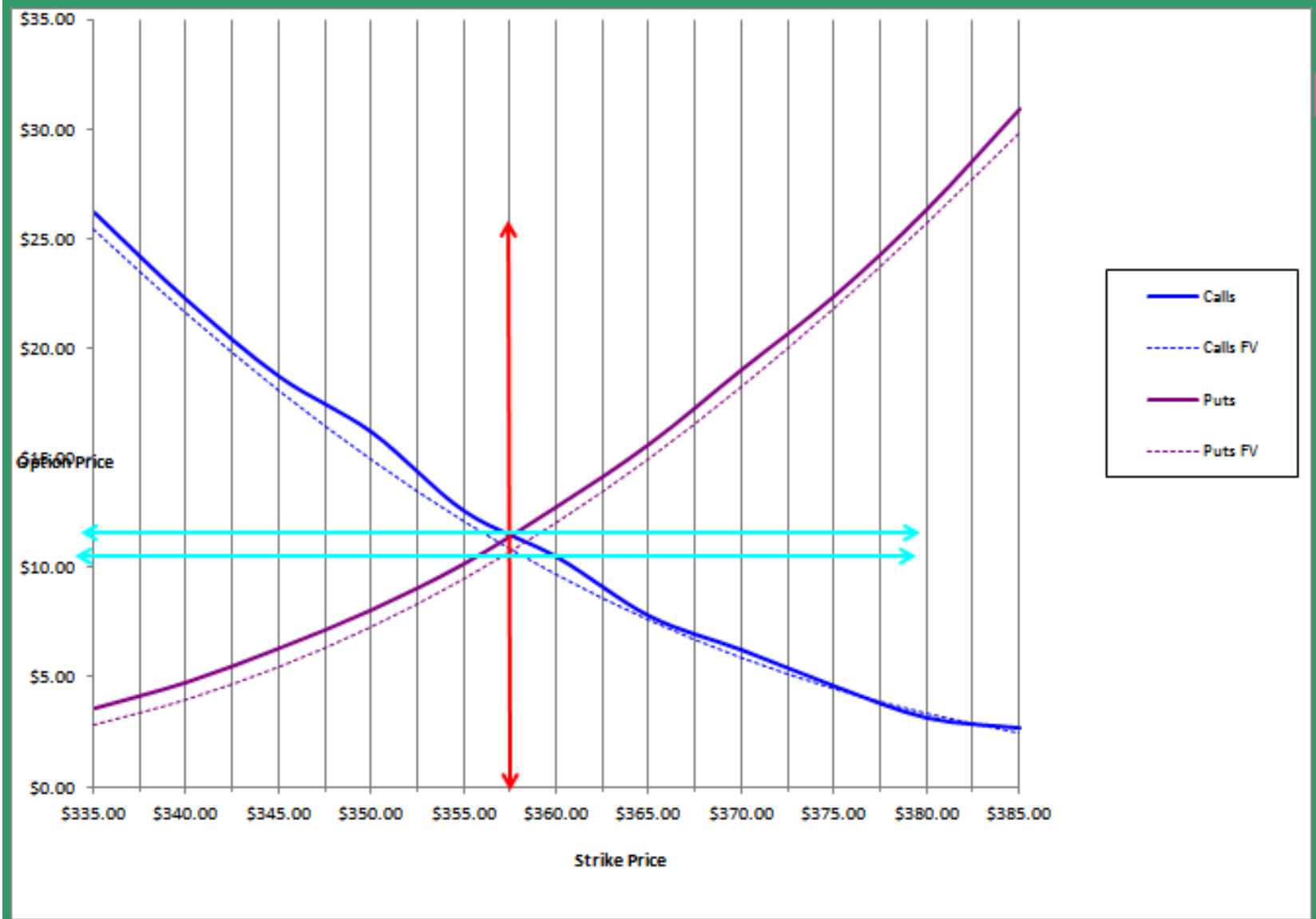
Quasi ATM **[FV]** \$9.03

ATF Option Curve Graph



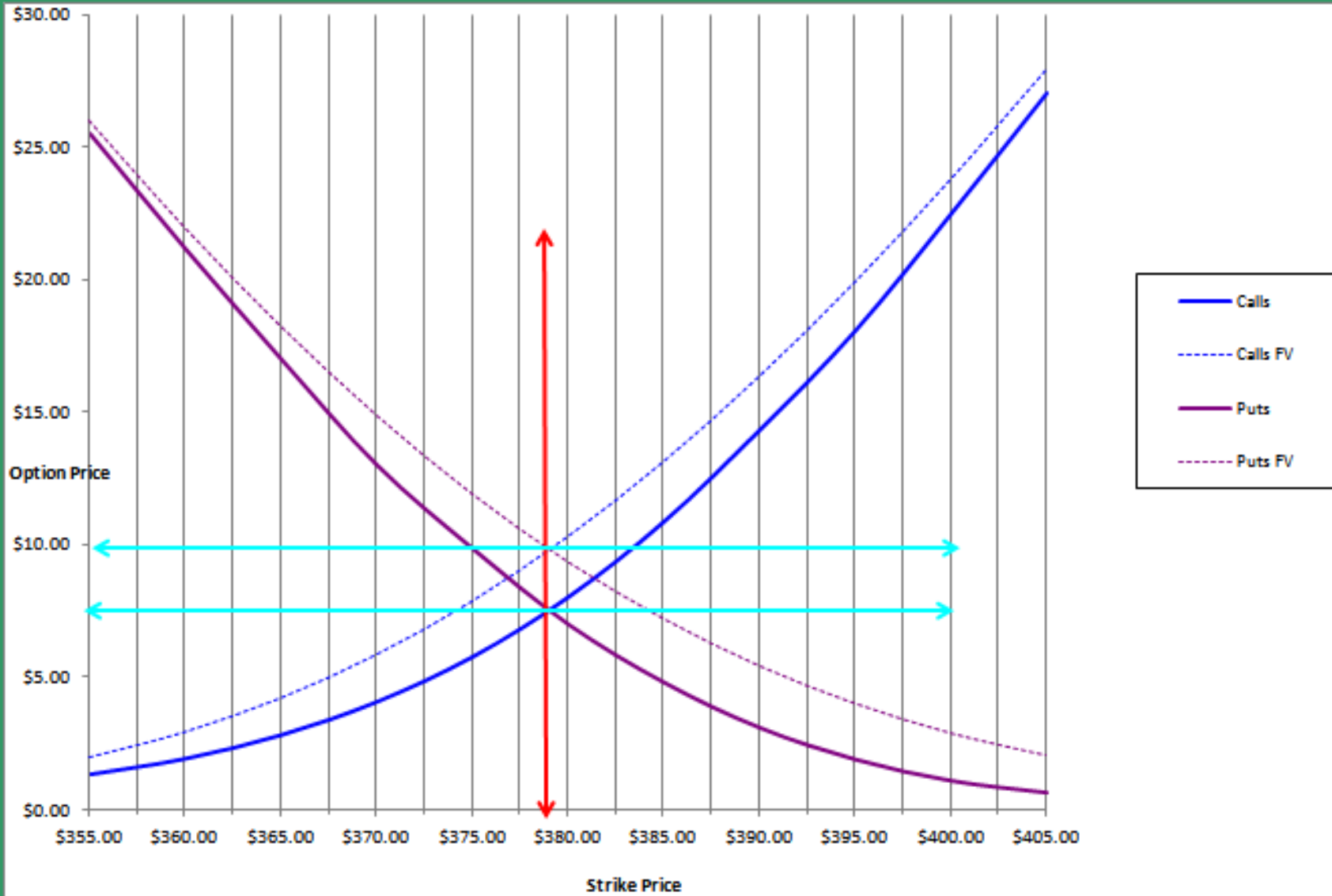
Quasi ATM [Ask] \$11.36
Quasi ATM [FV] \$4.16

Stock Price \$357.62



Quasi ATM [Ask] \$11.51
Quasi ATM [FV] \$10.82

Stock Price \$379.12



Quasi ATM [Ask] \$7.55

Quasi ATM [FV] \$9.82

DELTA

- Only predictor
- Not used by pros

CALL SERIES	Feb-12	MA: \$379.03												
Option Symbol	Strike Price	Bid Price	Ask Price	Intrinsic Value	Time Value	Theoretic Value	Difference	Volume	Open Interest	Delta	Gamma	Theta	Implied Volatility	Last
MA FEB12 325 C	325	53.6	54.5	54.03	0.47	54.11	0.39	7	737	0.99	0.001	-0.02	53.68%	53.3
MA FEB12 330 C	330	48.9	49.55	49.03	0.52	49.18	0.37	32	201	0.98	0.002	-0.03	43.67%	49
MA FEB12 335 C	335	44	44.6	44.03	0.57	44.3	0.3	50	406	0.97	0.002	-0.05	37.42%	43.2
MA FEB12 340 C	340	39.2	39.8	39.03	0.77	39.49	0.31	131	697	0.96	0.004	-0.07	35.24%	39
MA FEB12 345 C	345	34.35	34.9	34.03	0.87	34.81	0.09	163	473	0.93	0.005	-0.1	31.85%	33.8
MA FEB12 350 C	350	29.65	30.15	29.03	1.12	30.29	-0.14	1082	1440	0.9	0.007	-0.14	29.98%	29.52
MA FEB12 355 C	355	25.05	25.5	24.03	1.47	25.99	-0.49	417	536	0.85	0.009	-0.18	28.28%	25.25
MA FEB12 360 C	360	20.65	21.15	19.03	2.12	21.95	-0.8	808	877	0.8	0.012	-0.22	27.36%	20.7
MA FEB12 365 C	365	16.55	17	14.03	2.97	18.24	-1.24	516	730	0.73	0.013	-0.25	26.20%	16.55
MA FEB12 370 C	370	12.85	13	9.03	3.97	14.88	-1.88	717	856	0.66	0.015	-0.28	24.45%	13
MA FEB12 375 C	375	9.55	9.85	4.03	5.82	11.91	-2.06	1081	631	0.58	0.016	-0.3	24.25%	9.55
MA FEB12 380 C	380	6.85	7	0	7	9.35	-2.35	1186	1166	0.5	0.016	-0.31	23.47%	6.95
MA FEB12 385 C	385	4.65	4.8	0	4.8	7.2	-2.4	508	717	0.42	0.016	-0.3	23.19%	4.61
MA FEB12 390 C	390	2.87	3.1	0	3.1	5.42	-2.32	832	547	0.34	0.015	-0.28	22.97%	2.75
MA FEB12 395 C	395	1.76	1.9	0	1.9	4	-2.1	341	625	0.27	0.014	-0.26	23.00%	1.85
MA FEB12 400 C	400	1	1.1	0	1.1	2.88	-1.78	674	943	0.21	0.012	-0.22	23.22%	1
MA FEB12 405 C	405	0.53	0.65	0	0.65	2.04	-1.39	230	368	0.16	0.01	-0.19	23.84%	0.6
MA FEB12 410 C	410	0.28	0.38	0	0.38	1.41	-1.03	101	397	0.12	0.008	-0.15	24.50%	0.28
MA FEB12 415 C	415	0.15	0.25	0	0.25	0.95	-0.7	16	95	0.09	0.006	-0.12	25.37%	0.21
MA FEB12 420 C	420	0.05	0.15	0	0.15	0.63	-0.48	149	406	0.06	0.005	-0.09	25.97%	0.12
MA FEB12 425 C	425	0	0.13	0	0.13	0.41	-0.28	0	190	0.04	0.004	-0.07	27.08%	0.18
MA FEB12 430 C	430	0	0.11	0	0.11	0.26	-0.15	0	322	0.03	0.003	-0.05	28.09%	0.06

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Price Movement:

Who, What, When and Why

Thursday, March 1, 8-10 p.m. ET

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Special price: \$99

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