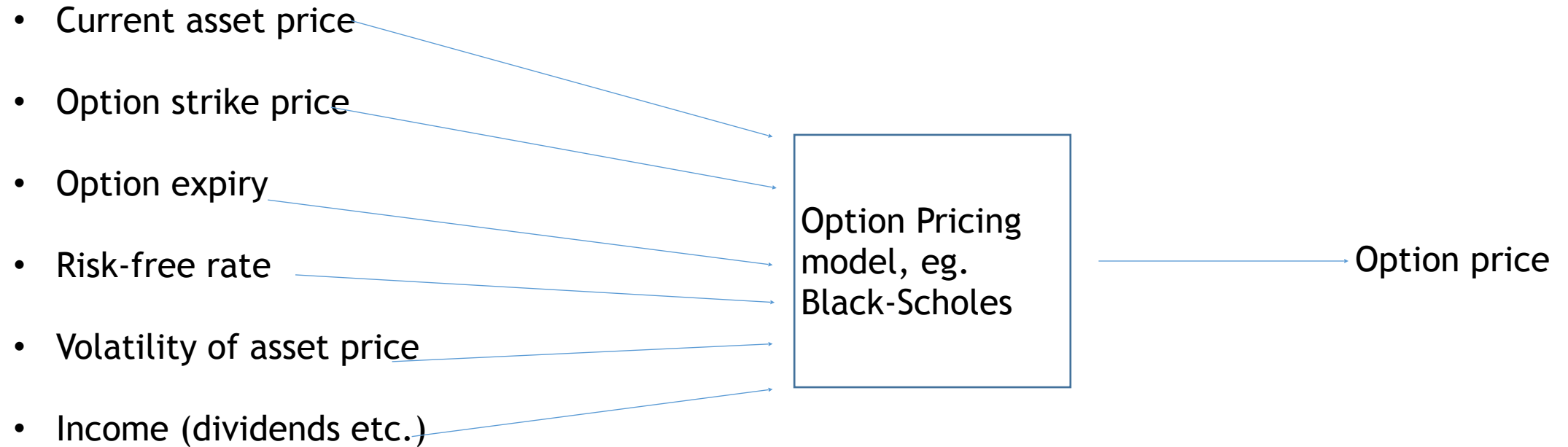


Implied Volatility in Options Trading

The CBOE Volatility Index® (VIX® Index) is considered by many to be the world's premier barometer of equity market volatility. The VIX Index is based on real-time prices of options on the S&P 500® Index (SPX) and is designed to reflect investors' consensus view of future (30-day) expected stock market volatility. The VIX Index is often referred to as the market's "fear gauge".

(CBOE.com)





- Current asset price



- Option strike price



- Option expiry



- Risk-free rate



- Volatility of asset price

- Income (dividends etc.)

?

Option Pricing
model, eg.
Black-Scholes

Option price



- Current asset price



- Option strike price



- Option expiry



- Risk-free rate



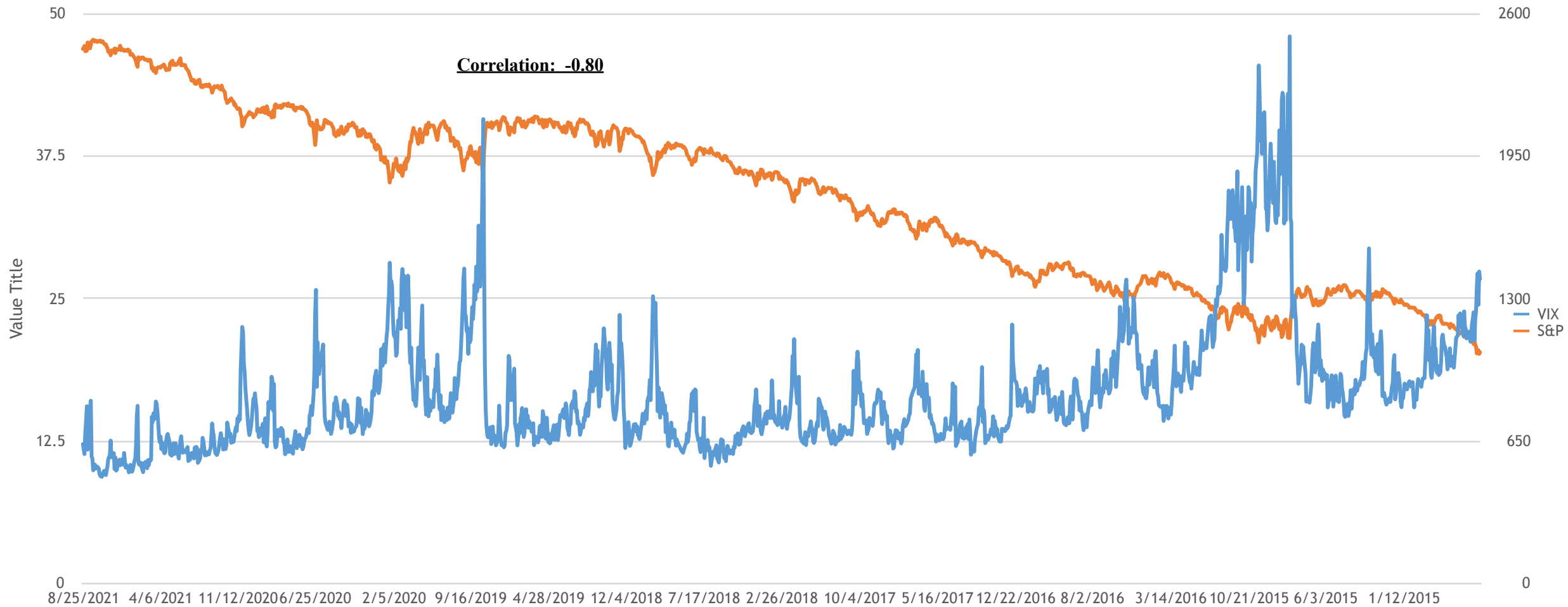
- Option price

- Income (dividends etc.)

?

Option Pricing
model, eg.
Black-Scholes

Volatility of asset
price



S&P 500



16%

2,438

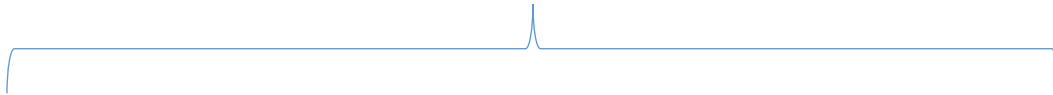
16%



2,353

68%

2,525



Actions

- Buy options when they're "cheap"
- Sell options when they're "expensive"
- How do we know what "cheap" or "expensive" looks like?
 - ...implied volatility!

Actions

- Buy options when they're "cheap"
- Buying put options to protect the downside
 - Limits losses when there's a downturn
 - Gives you confidence to stay in a position, which can be useful even if there's no downturn
 - Can close out put for a profit following a temporary downturn and profit on the market swings
- Buying puts when implied volatility is low
 - Puts are "cheap" at this time
 - There's often a calm before the storm, so low IV could be a signal of impending downturn

Actions

- Sell options when they're “expensive”
- Put writing and covered call writing
- Studies show best time to be writing puts on the S&P 500 was after the 2008 crash (prior to it was the worst time! 😞)

Key steps

- Volatility is a unique feature of an investment
- Get to know the typical levels of implied volatility for a specific asset
- Look out for deviations from norm
- Look out for deviations across different option contracts

3000139 - Individual Account

Show: AAPL More Calls And Puts Sep 15 2017 Go Refresh

APPLE INC (AAPL) Last 159.72 Change 0.45 Bid 159.72 Ask 159.73 Volume 14,817,315 Trade | News | Chart

September 15 2017 Calls **AAPL @ 159.72** **September 15 2017 Puts**
21 Days to Exp

Choose a Strategy Trade Get Quote P&L Calc Clear Selections

	IV	Delta	Open Int	Vol	Change	Last	Bid	Ask	Strike	Bid	Ask	Last	Change	Vol	Open Int	Delta	IV	
<input type="checkbox"/>	26.55	0.910	33	40	0.00	13.15	13.25	13.30	147.00	0.41	0.43	0.43	-0.15	88	512	-0.088	26.22	<input type="checkbox"/>
<input type="checkbox"/>	26.04	0.896	27	71	0.95	12.85	12.30	12.40	148.00	0.48	0.50	0.49	-0.18	49	1,168	-0.102	25.68	<input type="checkbox"/>
<input type="checkbox"/>	25.69	0.878	88	0	0.00	11.25	11.40	11.50	149.00	0.57	0.59	0.58	-0.19	56	490	-0.118	25.24	<input type="checkbox"/>
<input type="checkbox"/>	25.13	0.860	17,612	53,446	0.22	10.59	10.50	10.60	150.00	0.68	0.69	0.70	-0.19	55,159	43,859	-0.138	24.80	<input type="checkbox"/>
<input type="checkbox"/>	23.98	0.800	197	91	0.17	8.47	8.35	8.45	152.50	1.04	1.06	1.03	-0.33	300	1,423	-0.199	23.86	<input type="checkbox"/>
<input type="checkbox"/>	23.19	0.718	35,498	867	0.06	6.43	6.40	6.50	155.00	1.58	1.61	1.62	-0.30	2,754	31,269	-0.281	23.06	<input type="checkbox"/>
<input type="checkbox"/>	22.46	0.618	2,340	4,684	0.05	4.80	4.70	4.75	157.50	2.36	2.38	2.39	-0.32	613	1,496	-0.383	22.34	<input type="checkbox"/>
<input type="checkbox"/>	21.96	0.503	126,893	4,274	0.00	3.30	3.25	3.35	160.00	3.40	3.45	3.45	-0.35	1,475	26,757	-0.498	21.71	<input type="checkbox"/>
<input type="checkbox"/>	21.58	0.386	6,699	1,848	-0.05	2.19	2.17	2.20	162.50	4.80	4.85	4.85	-0.34	122	237	-0.617	21.41	<input type="checkbox"/>
<input type="checkbox"/>	21.33	0.277	68,112	1,629	-0.09	1.36	1.36	1.38	165.00	6.50	6.55	6.69	-0.36	44	2,361	-0.726	21.22	<input type="checkbox"/>
<input type="checkbox"/>	21.27	0.188	1,710	326	-0.07	0.84	0.81	0.84	167.50	8.45	8.55	8.53	-0.27	36	469	-0.815	21.27	<input type="checkbox"/>
<input type="checkbox"/>	21.35	0.121	61,985	340	-0.07	0.46	0.47	0.49	170.00	10.55	10.70	10.05	-1.05	24	2,677	-0.889	20.84	<input type="checkbox"/>

Choose a Strategy Trade Get Quote P&L Calc Clear Selections

Show: AMZN

More

Calls And Puts

Sep 15 2017

Go

Refresh

AMAZON.COM INC (AMZN)

Last 949.88

Change -2.58

Bid 949.70

Ask 950.20

Volume 1,694,607

Trade | News | Chart

September 15 2017 Calls

AMZN @ 949.88

21 Days to Exp

September 15 2017 Puts

Choose a Strategy

Trade

Get Quote

P&L Calc

Clear Selections

	IV	Delta	Open Int	Vol	Change	Last	Bid	Ask	Strike	Bid	Ask	Last	Change	Vol	Open Int	Delta	IV	
<input type="checkbox"/>	20.97	0.638	199	1	-0.21	30.77	27.40	28.25	935.00	11.85	12.30	12.05	0.55	89	1,105	-0.362	20.77	<input type="checkbox"/>
<input type="checkbox"/>	20.82	0.598	337	11	-2.75	24.25	24.30	25.10	940.00	13.65	14.10	13.78	0.48	157	1,735	-0.402	20.53	<input type="checkbox"/>
<input type="checkbox"/>	20.47	0.558	251	72	-2.03	22.30	21.10	22.10	945.00	15.60	16.10	15.35	0.35	42	761	-0.443	20.27	<input type="checkbox"/>
<input type="checkbox"/>	20.43	0.536	42	8	-2.23	20.61	19.75	20.75	947.50	16.55	17.20	17.50	2.65	32	83	-0.465	20.10	<input type="checkbox"/>
<input type="checkbox"/>	20.37	0.515	831	602	-2.13	18.87	18.55	19.30	950.00	17.80	18.30	17.80	1.00	134	3,501	-0.486	20.03	<input type="checkbox"/>
<input type="checkbox"/>	20.24	0.494	52	336	-4.32	17.38	17.25	17.95	952.50	18.85	19.65	19.20	1.11	8	68	-0.508	19.94	<input type="checkbox"/>
<input type="checkbox"/>	20.17	0.472	424	78	-1.46	16.35	16.05	16.70	955.00	20.25	20.80	20.40	1.00	105	768	-0.530	19.86	<input type="checkbox"/>
<input type="checkbox"/>	20.09	0.450	71	21	-1.00	15.75	14.85	15.55	957.50	21.45	22.25	22.20	2.20	11	83	-0.552	19.78	<input type="checkbox"/>
<input type="checkbox"/>	20.04	0.429	1,367	100	-0.88	14.57	13.90	14.30	960.00	22.90	23.50	23.20	1.40	35	1,749	-0.575	19.66	<input type="checkbox"/>
<input type="checkbox"/>	19.89	0.407	68	13	-1.30	13.50	12.65	13.30	962.50	24.10	25.00	23.90	1.00	10	57	-0.597	19.48	<input type="checkbox"/>
<input type="checkbox"/>	19.86	0.386	569	19	-3.15	12.10	11.70	12.30	965.00	25.65	26.50	26.10	1.85	22	759	-0.619	19.44	<input type="checkbox"/>
<input type="checkbox"/>	19.82	0.365	74	3	-1.63	11.67	10.80	11.35	967.50	27.15	28.10	24.20	-1.95	3	108	-0.640	19.36	<input type="checkbox"/>

Choose a Strategy

Trade

Get Quote

P&L Calc

Clear Selections

Highlighted options are in-the-money.

Rows marked in red are non-standard options.



Go



Show: **TSLA**

More

Calls And Puts

Sep 15 2017

Go

Refresh

View: **Standard** Non-Standard

TESLA INC (TSLA)

Last 350.97

Change -1.96

Bid 350.80

Ask 351.02

Volume 1,749,040

[Trade](#) | [News](#) | [Chart](#)

September 15 2017 Calls

TSLA @ 350.97

21 Days to Exp

September 15 2017 Puts

Choose a Strategy

Trade

Get Quote

P&L Calc

[Clear Selections](#)

	IV	Delta	Open Int	Vol	Change	Last	Bid	Ask	Strike	Bid	Ask	Last	Change	Vol	Open Int	Delta	IV	
<input type="checkbox"/>	33.98	0.701	130	1	-0.39	21.61	19.25	19.60	337.50	5.90	6.10	5.95	0.28	9	208	-0.304	35.00	<input type="checkbox"/>
<input type="checkbox"/>	33.78	0.670	1,905	235	-2.46	17.34	17.45	18.00	340.00	6.70	6.90	6.73	0.33	141	2,774	-0.334	34.76	<input type="checkbox"/>
<input type="checkbox"/>	33.56	0.638	112	2	-2.83	16.27	15.85	16.35	342.50	7.55	7.75	7.83	1.11	12	391	-0.366	34.43	<input type="checkbox"/>
<input type="checkbox"/>	33.55	0.603	1,321	67	-4.05	14.20	14.45	14.80	345.00	8.50	8.70	8.60	0.52	197	1,465	-0.399	34.17	<input type="checkbox"/>
<input type="checkbox"/>	33.05	0.569	186	13	-3.60	12.90	12.85	13.30	347.50	9.55	9.75	9.80	1.00	29	333	-0.432	33.96	<input type="checkbox"/>
<input type="checkbox"/>	32.83	0.534	2,588	374	-1.40	11.79	11.50	11.90	350.00	10.70	10.90	10.80	0.68	107	2,596	-0.467	33.80	<input type="checkbox"/>
<input type="checkbox"/>	32.78	0.498	545	27	-2.80	10.49	10.35	10.60	352.50	11.85	12.25	12.05	1.45	38	89	-0.502	33.67	<input type="checkbox"/>
<input type="checkbox"/>	32.69	0.462	1,340	170	-1.44	9.42	9.20	9.45	355.00	13.25	13.50	13.35	0.85	27	714	-0.537	33.52	<input type="checkbox"/>
<input type="checkbox"/>	32.64	0.427	169	11	-1.44	8.16	8.15	8.40	357.50	14.65	15.10	15.20	2.55	5	20	-0.571	33.62	<input type="checkbox"/>
<input type="checkbox"/>	32.71	0.393	3,326	80	-1.18	7.37	7.25	7.45	360.00	16.20	16.65	16.28	1.28	14	1,674	-0.605	33.63	<input type="checkbox"/>
<input type="checkbox"/>	32.60	0.359	153	2	-0.90	7.10	6.30	6.60	362.50	17.75	18.25	19.80	0.00	0	26	-0.638	33.46	<input type="checkbox"/>
<input type="checkbox"/>	32.55	0.326	2,735	62	-0.98	5.55	5.50	5.80	365.00	19.50	20.00	17.90	-2.40	3	1,340	-0.669	33.60	<input type="checkbox"/>

Choose a Strategy

Trade

Get Quote

P&L Calc

[Clear Selections](#)

Highlighted options are in-the-money.

Rows marked in red are non-standard options.



Go

