

Probability Calculator

A probability calculator will give you the probability of the stock price being above or below your option position's breakeven point (or any point, for that matter) based on all the factors that affect your option at that moment in time. The three most important factors are: price of the underlying security, time until expiration and volatility.

The results show both closing probabilities (at end of period) and the probabilities of the boundary prices *ever* being exceeded (the probability that the boundary prices will be exceeded *at any time during* the period).

Probability Calculator is based on a rigorous implementation of the mathematics underlying the Black-Scholes model: that stock prices follow a stochastic process described by geometric Brownian motion.

1. Overview:

Symbol: 1

Price	Date/Vol	Dividend
2 Underlying Price: <input type="text" value="1236.91"/> Low Target Price: <input type="text" value="1198.69"/> High Target Price: <input type="text" value="1240"/> <small>Default targets are one standard deviation from underlying price</small>	Future Date: <input type="text" value="Nov Exp. 11/19/11"/> Implied Volatility: <input type="text" value="ATM Volatility"/> <input type="text" value="28.93%"/> Interest Rate: <input type="text" value="0.2974"/>	Dividend Yield: <input type="text" value="2.136"/>
<input type="button" value="Restore Defaults"/> <input type="button" value="Calculate"/>		

Probabilities at the Future Date of the Underlying

Finishing Below Lowest Target Price	Target Price	Finishing Between Target Prices	Target Price	Finishing Above Highest Target Price
11.94%	1198.69	42.6%	1240	45.46%
Probability of Touching	23.15%		92.42%	

Underlying Prices for each Standard Deviation Interval at the Future Date

-3	-2	-1	+1	+2	+3
1142.75	1173.12	1204.29	1269.15	1302.88	1337.5

The parameters are entered in the section 2 and the results are displayed in the section 3 (described below).

2. Entering the parameters (fig. 1,2):

Data may be loaded for a symbol automatically, or it may be entered manually. To enter data for a specific symbol, enter a symbol in the text box labeled "Symbol," then click "Lookup." (fig.1)

Underlying Price - The price of the stock today.

Low Target Price, High Target Price - The stock price range for which you want to calculate the probability. Default target prices are one standard deviation from **Underlying Price**. You may change the Low and High Target Prices at your own discretion.

Future Date – The date in future for which the probability will be calculated. It can be set by selecting an Expiration Date or entered manually by choosing "custom" in a dropdown menu.

Implied Volatility – Implied volatility of the stock. You may either select the desired IV Index or Historical Volatility meaning from the dropdown menu or enter volatility manually.

Interest Rate - Interest rate for the same period as the probability calculation.

Dividend Yield – Annual dividend-price ratio.

After entering the parameters press "Calculate" to start calculations.

3. The Results (fig. 3):

The calculations are presented in convenient graphical form.

Finishing Between Target Prices – The probability of the **Underlying Price** at the **Future Date** to finish between **Target Prices**.

Finishing Below Lowest Target Price – The probability of the **Underlying Price** at the **Future Date** to finish below **Low Target Price**.

Finishing Above Highest Target Price – The probability of the **Underlying Price** at the **Future Date** to finish above **High Target Price**.

Probability of Touching Target Prices – The probability of the **Underlying Price** to touch (take the same value) the **Target Prices** for the period from today till **Future Date**.

The lowest table shows the Underlying Prices for each Standard Deviation Interval at the Future Date.