

# When Do I Exercise My Stock Options?

<b>Topic:</b>	How to Value Employee Stock Options
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<b>Executive Summary:</b>	One of the hardest decisions for an executive to make is when to exercise employee stock options. Vantage has developed a framework for making that decision based on objective data

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"I stay up nights worrying about when to exercise my options, I want to make the right choice with so much at stake," says one client. Another client asks, "Why is it so hard to decide when to pull the trigger on my option grants?"

One of the most difficult questions facing our executive clients is when to exercise their non-qualified stock options. It is fraught with psychological dangers because there is always 20/20 hindsight after the exercise. If the stock goes up, the executive thinks a mistake was made, if the stock goes down it merely confirms the genius in him or her.

If the executive analyzes his particular situation appropriately, he should not be concerned about second-guessing the decision to exercise a given option grant. There are proven financial tools to use that will aid in the decision making process that will take out much of the emotional trauma connected with the issue. We at Vantage use these tools when we advise our corporate employee clients on their option strategy.

What we are analyzing below are options that are non-qualified, vested and "in the money" which means that the strike price is below the current market value so that the executive would realize a profit. In addition, the decision under analysis is whether to hold on to the options or to exercise them and immediately sell the stock to realize the cash proceeds. There is another alternative where an executive could exercise the option and hold some or all of the stock without selling it, but that is a subject for another article.

Second, any stock option analysis would be done as part of a financial plan which would have first determined the executive's asset mix, risk tolerance, tax situation, and financial goals. These elements are crucial in determining the recommended course of action.

## First Factor-Concentration of Net Worth in Company Stock

Many executives will not only have large stock option positions in their company stock, but they often have additional company stock in their 401(k) plans or have restricted stock. We often see a company executive that has a dangerously high percentage of his net worth (as well as his salary) tied up in employer stock. If we see this high concentration we suggest diversifying by either selling the company stock in the 401(k) plan and/or by exercising stock options perhaps sooner than someone with an already diversified asset portfolio.

## Second Factor-Black-Scholes and the Time Value Remaining on Option

The Black-Scholes Model (BSM) of valuing options is considered one of the most important concepts in modern financial theory. It was developed to determine the "theoretical" full value of an option. While there are certain assumptions within the original BSM that are not exactly the same as employee stock options, there have been subsequent "add-ons" that make the results much closer to the typical employee stock option terms (we use the BSM

with add-ons but will still call it BSM in this paper). Moreover, most companies use a variation of the BSM model when they calculate the cost of issuing stock options to their employees for financial reporting purposes. In general terms the formula is:

$$\text{Black-Scholes Option Value} = \text{In-The-Money Value of Option} + \text{Time Value Remaining on Option}$$

By computing the Black-Scholes value of your options, we are able to estimate the remaining time value of your options.

$$\text{Time Value Remaining on Option} = \text{Black-Scholes Option Value} - \text{In-The-Money Value of Option}$$

Without going into mind-numbing detail as to the inputs into the formulas, there are five key elements that determine the outcome:

1. The expiration date of the option
2. The strike price of the option
3. The volatility of the stock (how narrow or wide the price fluctuates)
4. The risk-free rate of return (eg. current interest rate on appropriate government securities)

The time value remaining on the option is a key metric in determining when to exercise options. The lower the time value remaining on the option, the more desirable it is to exercise. For example, deep in-the-money options with a low time value remaining would be a good candidate for selling and diversifying if the executive is heavily concentrated in company stock.

One can make three broad generalizations as to the impact on the time value remaining on the option:

1. The time value decreases as the expiration date approaches.
2. The time value decreases as the in-the-money amount increases.
3. The time value increases as the stock volatility increases.

## Case Study Example

Tom, a 58 year old executive at a major corporation came in to see us for a financial plan. We prepared his net worth statement from the information gathered at our first meeting.

Cash	\$50,000
Brokerage Account	\$600,000
401(k) Plan (non-company stock)	\$800,000
Residence (net of mortgage)	\$750,000
Stock Options (value in-the-money)	<u>\$1,165,000</u>
Total Net Worth	\$3,365,000

From this statement we can see that Tom has 35% of his net worth in company stock options in addition to his salary. His concentration in company stock is very high relative to his other investments. Tom is very bullish on his company's future and he has not exercised any of his options beyond the ones that were close to expiration. He feels very strongly that the stock will continue to go up even though it has been rather volatile over the past several years.

We analyzed his vested stock options and came up with the following information:

Current Stock Price	Option Strike Price	Number of Shares	Expiration of Option	In the Money Value (Pre-tax)	Remaining Time Value of Option (TV)	Black Scholes Option Value (BSV)	TV/BSV or "Insight Ratio" *
\$60	\$22	10,000	4/1/08	\$380,000	\$20,863	\$400,863	5.20%
\$60	\$24	11,000	4/1/09	\$286,000	\$34,083	\$430,083	7.92%
\$60	\$49	10,000	4/1/10	\$110,000	\$115,877	\$225,877	51.30%
\$60	\$58	14,000	4/1/11	\$28,000	\$251,993	\$279,993	90.00%
\$60	\$47	11,000	4/1/12	\$143,000	\$153,651	\$296,651	51.80%
\$60	\$48	9,000	4/1/13	\$108,000	\$143,377	\$251,377	57.04%
\$60	\$62	11,000	4/1/14	\$0	\$258,526	\$258,526	100.00%
<b>Totals</b>				<b>\$1,165,000</b>	<b>\$978,371</b>	<b>\$2,143,371</b>	

\*The Insight Ratio is a registered trademark of Net Worth Strategies, Inc., Bend, OR and it is calculated using the industry's leading professional stock option analysis software, StockOpter Insight. For more information visit: [www.networthstrategies.com](http://www.networthstrategies.com).

From the above information, we discussed with Tom the wisdom of diversifying his portfolio in light of his high concentration in company stock options. The first two grants show that based on the estimated inputs in the model, the Black-Scholes value of the options has been almost fully realized and therefore they would be prime candidates for exercise and reinvestment in a broadly diversified portfolio. He took our advice, exercised the first two grants and reinvested the proceeds in several high quality mutual funds and exchange traded funds.

We also explained that using the last column or "Insight Ratio" one can see how much time value is remaining on each option grant. For example the \$49 option grant expiring 4-1-2010 has 51.30% of its time value yet to be realized. This ratio is very helpful when making decisions about when and which grant to exercise. In general, the grant with the lowest Insight Ratio would generally be the one to exercise first.

If you are like many option holders, you are asking yourself, "At what Insight Ratio level should I exercise my options?" Unfortunately, there is no single rule to follow. Upcoming cash flow needs are a good indicator of one's planning horizon and risk profile. The more time you have before you need to fund major expenses such as retirement or college, the longer you can wait prior to taking action on your stock options. However, by understanding and measuring the time value unique to each of your option grants, you can make a well-informed judgment about how to manage your personal goals in the context of your tolerance for risk and your other financial goals.

Vantage's independent financial advisors would be happy to provide an analysis of your stock option grants as part of our *Executive AdvAntage* program, please email us at the address below or call 847-590-9191.

*The information contained herein is of a general nature and should not be relied upon without first consulting a financial advisor. If you would like further information please email [info@vantagefinancial.com](mailto:info@vantagefinancial.com).*

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