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Understanding Employee Stock Option Valuation

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Equity compensation in the form of employee stock options tends to entail significant risk and a high degree of complexity. Unlike stock units, employee stock options differ from actual shares of a company's stock in that they provide the right to buy a set number of shares at a fixed price. Employee stock options afford employees the opportunity to share in a company's success without having to purchase shares outright. Tracking the valuation implications of these option holdings can be complicated. Notably, effective strategies can help mitigate downside risk, while careful planning can help option holders reduce the probability of leaving money on the table.

To understand option valuation, it is critical to review options' "time value," which serves as a key input for appropriate assessment of risk-reward trade-offs. While primarily intended for founders and C-suite executives, this guide may prove helpful for other employees with option holdings as well. We will start by reviewing the basics of employee stock options and option valuation, including time value. We will then tackle the concept of leverage and conclude with how optimal option exercise strategies benefit from incorporating both time value and leverage.

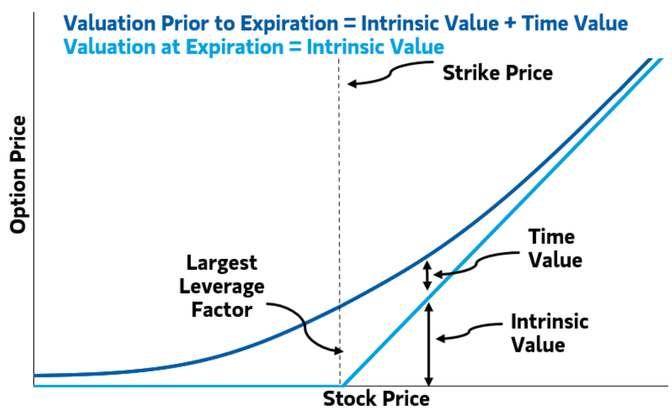
Option Valuation 101: Equity Calls

Equity call options represent the right to purchase shares at a pre-established price, known as the strike price or exercise price, at or up to a specific date called the expiry or expiration date.

By comparing an option's strike price with the current equity price, we can assess each option's intrinsic value, also called its in-the-money value. When the stock price is higher than the option's strike price, the option has a positive intrinsic value equal to the difference between the option's strike and the stock price. When the stock price is at or lower than the option's strike, the option has zero intrinsic value and we may describe it as out-of-the-money.

Prices of options listed on a public exchange typically exceed their intrinsic value. Such excess value is referred to as time value. Please see Exhibit 1 below for a visual representation of time value. An option is considered more valuable than its intrinsic value because the holder has the right—not the obligation—to exercise the option prior to expiry but will typically choose to do so only if the transaction were profitable. As a result, call option holders enjoy the ability to participate fully in a stock's upside appreciation but with a defined maximum loss.

Exhibit 1: Time Value Impacts Option Valuation Prior to Expiry



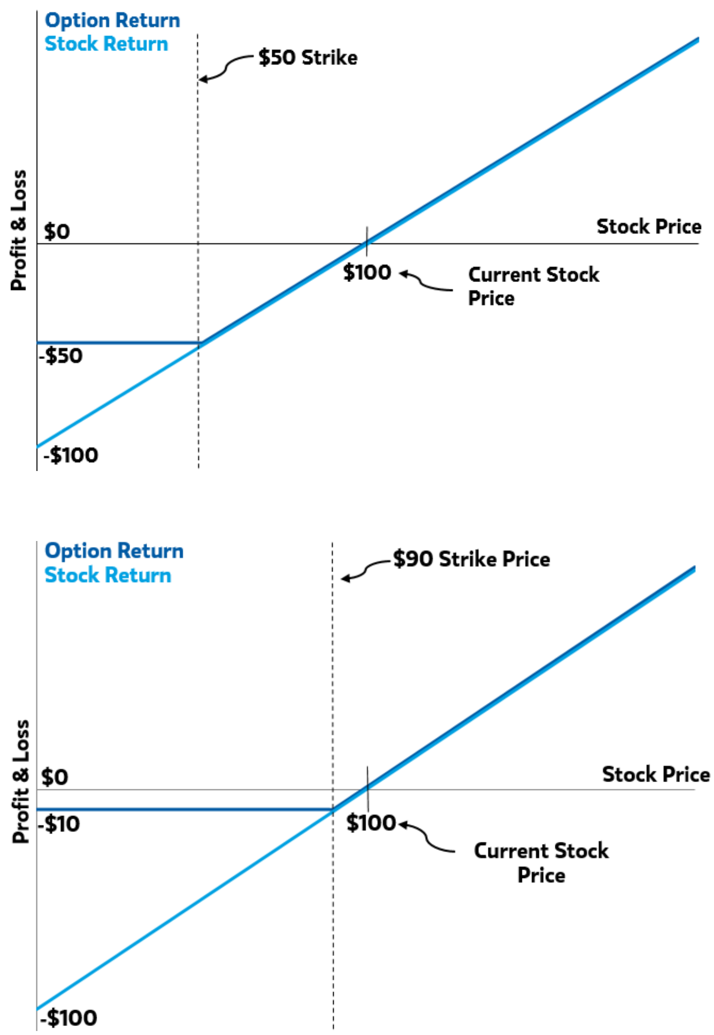
For illustrative purposes only.
Source: Morgan Stanley Wealth Management Global Investment Office

Employees typically do not have the ability to transfer or trade their stock options. As a result, employee stock options do not carry a time value that can be traded or sold. Still, consider applying the concept of time value to help guide the investment decision-making process. Below, we walk through a quick case study to illustrate how we would apply this concept.

It might be tempting for option holders to exercise their options with the highest strike prices first, reasoning that either it could be prudent to monetize these options prior to a stock selloff or that this strategy could minimize potential income taxes upon exercise. While this is an understandable approach, this case study will demonstrate its shortcomings.

In this example, we assume a stock price of $100 and two options: one option with a $90 strike price and another option with a $50 strike price. Should the stock price rise by $20, an investor would be indifferent between the two options, as the intrinsic value for both increases by $20. Should the stock price fall by $20, however, the $90 option's loss is capped at the intrinsic value of $10, as the investor cannot lose any more than the intrinsic value of the option. For the $50 option, however, the intrinsic value declines by $20. Please see Exhibit 2. As a result, investors may benefit from exercising options with lower strike prices first and keeping options with higher strikes. To underscore this conclusion, we can consider the concept of time value.

Exhibit 2: The $50 Option Faces Greater Potential Downside Risk Than the $90 Option



For illustrative purposes only. Assumptions do not reflect an actual client portfolio.
Source: Morgan Stanley Wealth Management Global Investment Office

Time Value

This case study oversimplifies the variables that affect time value but may nonetheless serve as a useful example of how time value may be a tool for managing a portfolio of options. The $50 option has a lower time value than the $90 option; consequently, it faces more downside exposure given its greater amount of intrinsic value per option. Stockholders may experience a full loss of the stock price, whereas option holders' maximum loss is limited to the option's intrinsic value. Option holders inherently forfeit an option's time value upon exercising it. As a result, we may use time value as an estimate of an option's downside exposure. Put another way, as an option's time value decreases, so does the value of holding the option.

In our case study, we only considered the option's strike price, but several other variables play into time value. Please see Exhibit 3 for the other variables that impact time value.

Exhibit 3: Multiple Variables Influence an Option's Time Value

Drivers of Time Value	Description and Considerations
Strike Price	All else equal, the lower the strike price, the lower the time value.
Expiration Date	The greater the time until expiration, the higher the time value.
Stock Volatility	An option on a stock whose price is highly volatile will have a higher time value than an option with lower volatility because it reflects greater potential upside of the stock.
T-Bill Yields	The higher the prevailing T-Bill yields, the higher the time value. This results from the economic trade-off: Owning an option as opposed to the stock allows the holder to have greater economic exposure. A higher interest rate implies a greater amount of hypothetical savings.
Dividend Yield	While holders of options do not receive dividends, stockholders do. All else being equal, an option on a stock with a higher dividend yield will have a lower time value than an option on a stock with no dividend because the dividend reduces the value of the option.

Source: Morgan Stanley Wealth Management Global Investment Office

Leverage

Leverage factors materially into an option holder's exercise strategy. Leverage refers to the tendency of an investor's potential profit or loss to rise or fall at a greater percentage rate than the underlying asset. As one common example, homeowners who finance their purchase with a mortgage hold a leveraged position in their home value. Given a 20% down payment and a prospective 10% rise or fall in the home value, homeowners will experience a 50% gain or loss in their equity value.

Options likewise include inherent leverage, given their fixed strike prices. As indicated in Exhibit 1, options tend to experience their maximum leverage when near their strike price. At-the-money options have no intrinsic value, but the first few percentage points' rise from the strike price offers a significant boost to the option's value. Here, we define the leverage factor as the measure of the impact to the option's price given changes in the stock price. Please see Exhibit 4 below for different examples of how the amount of leverage changes depending on the strike price. To summarize, once the stock price rises well above the option's strike price, the leverage factor declines.

Exhibit 4: Leverage Factors Tend to Diminish Once a Stock Has Moved Well Above Its Strike Price

Stock Price	Stock Price Increase	New Stock Price	Strike Price	Value of Option	New Option Value	Change in Option Value	Leverage Factor
$20	20%	$24	$18	$2	$6	200%	10.0x
$20	20%	$24	$10	$10	$14	40%	2.0x
$20	20%	$24	$2	$18	$22	22%	1.1x

For illustrative purposes only. Assumptions do not reflect an actual client portfolio.
Source: Morgan Stanley Wealth Management Global Investment Office

Strategic Implications of Time Value and Leverage

Given potential embedded leverage, options may provide greater growth potential than equity units. Thus, a bullish investor may prioritize exercising options with limited leverage or may sell shares, given that they have no leverage. This strategy may be particularly helpful in cases with a longer time to expiration, which affords more opportunity for the stock price to appreciate.

As a rule of thumb, investors may benefit from exercising or liquidating options with the lowest strike price and shortest time to expiry first, given their more limited time values. For an investor with multiple grants of options across different expirations and strikes, it may be difficult to determine which to exercise first. Calculating each option's time value as a percentage of its total fair value can help to clarify the picture. Additional factors to consider, beyond time value and leverage, may include liquidity needs, willingness to assume market risk, overall concentration in the stock, performance expectations for the stock and corporate requirements. Option holders should consider coordinating with an equity planning specialist, who can make tailored recommendations, before implementing these strategies.

Conclusion

Tracking the multiple variables that can affect employee stock and option values can be complicated, but Morgan Stanley Wealth Management stands ready to help investors navigate these variables. Morgan Stanley's equity planning specialists have built up a wealth of experience in guiding clients regarding their executive compensation. Moreover, we have developed proprietary tools that can quantify these considerations and help clients make decisions with confidence. To discuss further, please reach out to your Morgan Stanley Financial Advisor.

Disclosure Section

Risk Considerations

Before engaging in the purchase or sale of **options**, potential clients should understand the nature of and extent of their rights and obligations and be aware of the risks involved, including, without limitation, the risks pertaining to the business and financial condition of the issuer of the underlying security or instrument. Options investing, like other forms of investing, involves tax considerations, transaction costs and margin requirements that can significantly affect the profit and loss of buying and writing options. The transaction costs of options investing consist primarily of commissions (which are imposed in opening, closing, exercise and assignment transactions), but may also include margin and interest costs in particular transactions. Transaction costs are especially significant in options strategies calling for multiple purchases and sales of options, such as multiple leg strategies, including spreads, straddles and collars. If you are considering options as part of your investment plan, your Morgan Stanley Financial Advisor or Private Wealth Advisor is required to provide you with the "Characteristics and Risks of Standardized Options" booklet from the Options Clearing Corporation. Clients should not enter into options transactions until they have read and understood the Disclosure Document, as options are not appropriate for everyone, and discuss transaction costs with their Financial Advisor or Investment Representative. Please ask your Financial Advisor, Private Wealth Advisor for a copy of the Characteristics and Risks of Standardized Options booklet. A copy of the ODD is also available online at: http://www.theocc.com/about/publications/publication-listing.jsp. Supporting documentation for any claims (including any claims made on behalf of options programs or the options expertise of sales persons), comparisons, recommendations, statistics, or other technical data, will be supplied upon request.

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