Valuing Derivative Securities and Share-Based Compensation for Marital Dissolution Purposes

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As an asset of the marital estate, derivative securities and share-based compensation are subject to special consideration. Restricted stock, stock appreciation rights, and employee incentive stock options often require some future event to occur before those security interests vest. And, once vested, those security interests are often subject to restrictions on transferability. Various important dates (employment, grant, vesting, exercise, expiration) affect the value of these securities to the marital estate. Valuation analysts should be aware of the unique characteristics of these securities and of the effect of such characteristics on the value to the marital estate.

Introduction

For purposes of this discussion, derivative securities and share-based compensation considered for marital dissolution purposes include the following:

- Employee incentive stock options
- Restricted shares
- Stock appreciation rights

These financial instruments are provided by employers as a form of compensation to employees. The value of these financial instruments may need to be estimated for many purposes, including in the case of a marital dissolution.

It is necessary for the valuation analyst (analyst) to carefully define the financial instrument that is subject to valuation. In particular, the definition of the financial instrument should include its attributes.

In addition to the number of shares involved, the attributes of the financial instrument are a function of many different dates:

1. The date of employment
2. The date of the grant
3. The conditions of vesting of the financial instrument
4. The exercise date of the financial instrument

Often, these dates may affect how the share-based compensation is treated for certain marital dissolution purposes.

For financial accounting purposes, stock-based compensation is accounted for under Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) topic 718. "How to account for stock-based compensation for financial statement reporting purposes" is a subject that is different from the subject that is covered in this discussion.

However, there are some overlapping concepts. For both financial statement reporting and income tax reporting purposes, the accountant is concerned with:

1. whether, when granted, the stock-based compensation should be classified as equity or as a liability to the company and
2. whether (and when) periodic changes in the value of stock-based compensation generates compensation expense to the company.

While these concerns affect the treatment of share-based compensation for family law purposes, the focus of this discussion is: What factors affect how derivatives and share-based compensation should be valued for family law purposes.

This discussion focuses on how the share-based compensation affects the financial position of the marital estate.

An important issue that distinguishes the valuation of share-based compensation for family law purposes from the valuation of share-based compensation for financial accounting purposes is the fact that share-based compensation is treated:

1. as an asset on the marital estate's balance sheet for equitable distribution purposes and/or
2. as income on the marital estate's income statement for support purposes.

Before we get to this issue, a foundational discussion for the valuation of share-based compensation may be helpful.

First, it may be useful to review the various reasons why share-based compensation value is required. Accordingly, we will review the terminology that will be used in this discussion.

Second, components of derivative securities and share-based compensation will be covered, and the most common valuation models will be summarized.

Situations Requiring Share-Based Compensation Valuation

Some of the situations that may require the valuation of share-based compensation include the following:

1. At the time share-based compensation is designed, granted, exchanged or terminated
2. For company proxy statement disclosure
3. For financial statement footnote disclosure
4. For determination of compensation of executives for SEC disclosure or for income tax purposes
5. For transferring the ownership of the option to a third party
6. For damages suits in which the value of the option is at issue, such as a breach of contract suit between an existing or former executive and the issuing company
7. For the repurchase of an option by the issuing company
8. For the divorce of an executive who holds an option

The analysis of share-based compensation may be different based on the purpose for which the valuation is performed.

Important Terminology

Hedgers and speculators are better able to meet their financial objectives by trading newly created securities with values that are contingent upon the value of other more basic underlying variables.

These securities are known as "derivative securities."

Some derivative securities are traded on public security exchanges. Some are created specifically by a corporate acquirer to meet the particular needs of the holder of the capital of a corporate seller. Others are made available to corporate clients by financial institutions or added to new issues of securities by underwriters.

Derivative securities are being used more commonly by closely held businesses. These securities are used when the business owners plan their estates or create an employee stock ownership plan.

In addition, derivative securities are used in making corporate acquisitions and divestitures.

There are publicly traded derivative securities that depend upon stock indices, currencies, futures contracts, and interest rates.

Derivatives can be contingent on almost any variable, from the price of beans to the amount of snow falling at a certain ski resort. There are even options on options, called compound options.

The derivative securities considered in this discussion are options to purchase the stock of either a publicly traded company or a closely held company. In either case, there is no public trading market for the option itself.

Although the financial instruments considered in this discussion are more correctly called warrants in the public markets rather than options, we use the term "options" here. This is because these financial instruments arise most frequently in the familiar context of employee incentive stock options. It is also because contracts conveying such instruments in connection with private placements of capital usually use the term "option" rather than the term "warrant."

Financial instruments called options in the public stock market differ from the options addressed here. Publicly traded options are issued by third parties (so that, at exercise, they are satisfied by already outstanding shares) rather than the company itself. Also, public options are issued for periods of months rather than for periods of years.

The financial analysis of derivative securities has become a specialty area in its own right—complete with its own jargon. The following paragraphs provide an explanation of some of the more common terms.

A "stock option" is a derivative security the value of which is contingent on the price of a stock. An option gives the holder the right to do something—to buy or sell the underlying stock. The holder does not have to exercise this right.

This fact distinguishes options from "forwards" and "futures" where the holder is obligated to buy or sell the underlying asset.

A "call option" gives the holder the right to buy the underlying stock by a certain date for a certain price.

A "put option" gives the holder the right to sell the underlying stock by a certain date for a certain price.

A "stock warrant" is of a longer duration than a stock option and is issued by the company rather than by third parties. The pricing of a warrant must take into consideration the potential dilution effect on earnings.

The "strike price" is the fixed price at which the option is exercisable, sometimes called the "exercise price."

The "expiration date" is the last date for the holder to exercise his right. American options are exercisable any time up to the expiration date while European options can only be exercised on the expiration date itself.

The "value" of an option is the sum of its intrinsic value and its time value.

"Intrinsic value" is the difference between the current price for the underlying stock and its strike price. It is never less than zero.

An American option is worth at least as much as the advantages in price it gives its holder to buy the underlying stock.

If the value of the underlying stock is above the exercise price, the option is referred to as being "in the money. If the value of the underlying stock and the exercise price are equal, the option is referred to as being "at the money." If the value of the underlying stock is less than the exercise price, the option is referred to as being "out of the money."

For options that are at the money or out of the money, the intrinsic value is zero but the option may still have time value.

The time value of a stock option is the present value of the expected difference between the value of the stock at the option's expiration date and the option's intrinsic value on a certain date.

It may be optimal for the holder to wait rather than to immediately capture the intrinsic value (and begin to collect dividends and to vote the shares) in order to benefit from the time value of the option.

Important Dates

The value of share-based compensation is often sensitive to dates. Before valuing any asset for family law purposes, the valuation analyst should understand the appropriate measurement date (or "valuation date"). The date of the marriage, the date of separation, the date of filing for divorce, and the trial date are the alternative valuation dates that the analyst may be concerned with.

The valuation of the share-based financial instrument may also be sensitive to other dates, such as the following:

1. The date of employment of the spouse who has been granted the financial instrument
2. The date of the grant of the financial instrument
3. The date in which the financial instrument vests
4. The exercise date of the financial instrument
5. The expiration date of the option

Employment Date

Stock-based compensation may be awarded, for example, at the time of a promotion. An argument may be made that the stock-based compensation was due, at least in part, to the job performance of the employee prior to the date of the grant of the stock-based award.

How the financial instrument is treated for family law purposes may be affected by whether:

1. the employment date is prior to the date of the marriage and
2. the promotion took place after the date of the marital separation.

Grant Date

The grant date is generally considered to be the date on which an employer and an employee reach a mutual understanding of the key terms and conditions of a share-based payment award. Approval by the shareholders or board of directors may be required.

The grant date for an award of equity instruments is the date that the employee begins to benefit from, or be adversely affected by, subsequent changes in the price of the employer's equity shares.

Vesting Date

For purposes of this discussion, the owner is assumed to have a vested right to the financial instrument when the financial instrument cannot be taken away by any third party. We make this assumption even though the owner may not yet possess the financial instrument.

The vesting date may be conditioned upon a requisite service period or a performance event. Or, the vesting date may be market based.

Requisite Service Period

Most commonly, an explicit service period is stated within the terms of the share-based compensation award.

For example, the employee may be granted the option to acquire 100 shares of the employer company's stock at today's price, with 20 shares vesting on each of the following five anniversary dates of the grant.

An implicit service period is one that is not explicitly stated but inferred from an analysis of the terms and other facts and circumstances involving the grant.

And, the service period may be one that is derived from the application of valuation procedures when the option matures, based on certain market conditions that would be outlined in the share-based compensation award.

Performance Event

The financial instrument may be structured to mature when performance conditions are met.

Examples of such performance conditions could be when the company, division, or department achieves a certain level of sales, or a profit margin, or a reduced error rate.

Market-Based Event

The financial instrument may be structured to mature when a specific marketplace milestone is achieved. An example of such a milestone may be a market share target, the regulatory approval of a particular product, the company target share price is surpassed, or when the company's shares are successfully listed in a public offering.

In some instances, the award may be expressed as a certain dollar amount that will be the basis for the stock price used in the grant of options on the date that the condition is met.

Multiple Service Periods

When multiple service periods exist and the award of the option depends on achieving one *or* the other, the requisite service period is usually the shortest of the possible periods.

When multiple service periods exist and the award of the option depends on achieving one *and* the other condition, the requisite service period is usually the longest of the possible periods.

Complications arise when there is both a service period condition and one or more performance conditions and perhaps a market condition is specified or implied by the terms of the option.

Exercise Date

The exercise date is the first date on which the holder of the financial instrument may put the financial instrument into effect.

In order to comply with Internal Revenue Code Section 409A requirements, the stock option may be exercised by the employee only upon the occurrence of one of the following specified events:[1]

1. A change in ownership control or effective control of the corporation
2. The employee's separation from service
3. Employee disability
4. Employee death
5. The occurrence of an unforeseeable employee emergency
6. A specified fixed date in the future

An unforeseeable emergency may be one of the following:

1. A severe financial hardship resulting from an illness or accident to the employee, employee's spouse, or employee's dependent

2. A loss of the employee's property due to a casualty
3. Another unforeseeable and extraordinary circumstance

Expiration Date

The expiration date is the final date on which the holder of the financial instrument may put the financial instrument into effect. Some options may expire without being exercised.

Restricted Stock

Unregistered shares of stock are not registered for trading—or are restricted from trading—on a stock exchange. Unregistered shares cannot be freely traded in the open market.

When publicly traded companies issue restricted (unregistered) stock, the restricted stock is typically sold at a price discount compared to the price of the (registered) publicly traded stock.

Restricted shares of public corporation stock may not (temporarily) be traded directly on a stock exchange. However, the investor has certainty that, in a relatively short time period, the trading restrictions will lapse.

The shares of stock of a closely held corporation, on the other hand, may never be traded directly on a stock exchange. The prospect of any level of efficient marketability is much lower for closely held company shares than it is for restricted public company shares.

There are a variety of empirical studies regarding the prices of private transactions in restricted securities. These transaction price data can be used for comparison with prices of the same company unrestricted securities eligible for trading on the open market.

The analysis of this body of restricted stock empirical pricing evidence indicates that significant discounts for lack of marketability (DLOM) are usually appropriate with regard to the pricing of restricted stock.

The restricted stock transactions analyzed in the studies covering the 1968 to 1988 period (where the average DLOM was approximately 35 percent) were generally less marketable than the restricted stocks analyzed after 1990 (where the average DLOM ranged between 20 percent and 25 percent).

Stock Appreciation Rights

Stock appreciation rights (SARs) and phantom stock are similar to each other. Both essentially are cash bonus plans, although some plans pay out the benefits in the form of shares.

SARs typically provide the employee with a cash payment based on the increase in the value of a stated number of shares over a specific period of time. Phantom stock provides a cash or stock bonus based on the value of a stated number of shares, to be paid out at the end of a specified period of time.

SARs may not have a specific settlement date; like options, the employees may have flexibility in when to choose to exercise the SAR. Phantom stock may pay dividends; SARs typically would not. Capital gains tax treatment is usually not available for these types of share-based compensation.

Employee Incentive Stock Options

In creating employee stock options, the issuing company will endeavor to set the strike price of the option at the fair market value of the underlying shares. When the strike price is set at fair market value, the intrinsic value of the stock option is zero. And, the only value of the stock option is its time value.

Under these circumstances, the Internal Revenue Service has generally determined that the recipient has no income to report during the year of the stock option issuance.

Income that is eventually derived from the option is determined to be ordinary income to the recipient if the recipient exercises the option to buy the underlying securities and subsequently sells the securities within 12 months.

To qualify for a tax break, the owner must hold the shares for two years after the grant of the incentive stock option (ISO) and for at least one year after its exercise.

Any gain from the time of the grant to the time of the sale is taxed at capital gains rates, which are always lower than ordinary income rates.

Holding the shares for more than 18 months after exercise and before selling the shares puts the owner in the capital gains tax bracket. Planning around the alternative minimum tax is important.

There is an income tax benefit with ordinary nonqualified stock options (NSOs), too. Any appreciation above the option-grant price is taxed as ordinary income, payable at the time of exercise.

When the stock is sold, any subsequent appreciation is taxed as capital gains as long as the shares are held for more than one year. Exercising an NSO early to minimize the ordinary-income-tax hit and to make most of the income a capital gain may also reduce the recipient's total tax expense.

Of course, whether the security owner comes out ahead by exercising early depends on the following factors:

1. How the underlying stock performs during the holding period
2. Dividends
3. Voting rights
4. Other similar factors

To the issuing employer company, the issuance of employee incentive stock options is an event that is reported in the employer financial statements.

Components of Stock Option Values

The typical components of stock option values include the following:

1. *The current price of the underlying stock*
   As the stock price increases, call options become more valuable and put options become less valuable.
2. *The strike price*
   As the strike price decreases, call options become more valuable and put options become less valuable.
3. *The time to expiration*
   The owner of a longer-lived option has more of the exercise opportunities available than the shorter-lived option owner. Put and call options become more valuable as the time to expiration increases.
4. *The volatility of the stock price*
   Volatility is the relative fluctuation of the underlying stock price. Put and call options become more valuable as the stock price volatility increases.
5. *The risk-free interest rate*
   While the investor's carrying cost increases with an increase in the risk-free interest rate, the expected growth rate in the underlying stock price tends to dominate this effect. As the risk-free interest rate increases, the price of call options increases and the price of put options decreases.
6. *The dividends expected during the life of the option*
   The payment of dividends on the underlying stock detracts from an option's value. This is because:
   a. the option holder does not receive the dividends and
   b. the company pays out retained earnings that otherwise might be available for reinvestment.

   These earnings would contribute to the growth in value of the underlying stock.

   Call options are more valuable when expected dividends are zero or small. Put options are more valuable when dividends increase in size.

To value marketable stock options, most valuation models incorporate the following factors:

1. Time to expiration date
2. The risk-free interest rate during the period
3. Estimated dividends
4. Stock price volatility
5. A probability distribution of ending share prices

The Black-Scholes option pricing model effectively treats the time between the current time and the expiration of the options as one time period divided into an infinite number of discrete periods.

The binomial option pricing model, on the other hand, divides the time period between the current

time and the expiration of the options into discrete periods—most often one year.

The binomial model is sometimes used to estimate the effect on the value of employee stock options of factors such as:

1. vesting periods and
2. employee turnover.

Most compensation consultants have endorsed the Black-Scholes option pricing model for purposes of quantifying employer stock option value. Derived to value a fully transferable short-term call on a European-type option for non-dividend-paying instruments, the model has been tweaked, squeezed, and reshaped numerous times.

The Black-Scholes option pricing model has been adapted to conform to nontransferable, long-term American warrants on dividend-paying instruments where:

1. exercise is contingent on employment and
2. the holder cannot be expected to behave like a highly liquid well-diversified investor.

The Black-Scholes Option Pricing Model

In 1973, Fisher Black and Myron Scholes derived what remains as the most widely used and best known theoretical model for the valuation of marketable options. The model is based on the assumption that it is possible to set up a perfectly hedged position consisting of owning the shares of stock and selling a call option on the stock.

Any movement in the price of the underlying stock will be offset by an opposite movement in the option's value, resulting in no risk to the investor.

This perfect hedge is riskless and, therefore, should yield the riskless rate of return. If it does not yield the riskless rate, the option is mispriced, the hedge is not perfect, and the option should be revalued until the hedge yields the riskless rate. Black and Scholes inferred that when the option is correctly priced, the perfect hedge results.

The assumptions underlying the Black-Scholes model are not intuitively pleasing. Nevertheless, it is important for the analyst to be familiar with these option pricing model assumptions.

The Black-Scholes model assumptions are summarized as follows:

1. The short-term interest rate is known and is constant through time.
2. The stock price follows a random walk in continuous time with a rate of variance in proportion to the square of the stock price.
3. The distribution of possible stock prices at the end of any finite interval is lognormal.
4. The variance of the rate of return on the stock is constant.
5. The stock pays no dividends and makes no other distributions.
6. The option can be exercised only at maturity.
7. There are no commissions or other transaction costs in buying or selling the stock or option.
8. It is possible to borrow any fraction of the price of a security to buy it, or to hold it, at the short-term interest rate.
9. A seller who does not own a security (a short seller) will simply accept the price of the security from the buyer and agree to settle with the buyer on some future date by paying him an amount equal to the price of the security on that date. While this short sale is outstanding, the short seller will have the use of, or interest on, the proceeds of the sale.
10. The income tax rate, if any, is identical for all transactions and all market participants.

"Most compensation consultants have endorsed the Black-Scholes option pricing model for purposes of quantifying employer stock option value."

There are many assumptions and computations that need to be made to derive the option value using the Black-Scholes formula.

For example, the model was developed to value European options. Dividends are ignored and when dividends are paid, they are paid at one time and not continuously. Also, fluctuations in the economy preclude rational acceptance of the assumption that investors can borrow or lend at a constant riskless interest rate.

Over the years, much additional empirical research has been conducted, and adjustments have been made to the Black-Scholes option pricing model in order to correct for the original model's limitations.

No universally accepted replacement for the Black-Scholes option pricing model has surfaced. This means that two companies with identical characteristics but different analysts could arrive at different valuations for their stock options. When the valuation methodology is not consistent across competitors, the results will not be widely embraced.

While the Black-Scholes model results for a particular company may seem reasonable, most managers and executives will regard option pricing models as black boxes that can be exchanged for new ones if the results don't square with intuition or earnings objectives.

The empirical research that has been done to improve upon the model is, ultimately, supportive of the Black-Scholes model. Differences between market prices and the Black-Scholes prices have usually been small when compared to transaction costs.

Publicly traded call options need not be exercised in order to realize the profits from an increase in the price of the underlying security, because they can be sold to another investor, who receives the rights associated with the contract.

Executive or employee stock options do not have this advantage. This is because they are usually nonmarketable. However, the basic determinants of the value of traded options are also relevant to the value of any option-type contract.

Employee stock options have the following attributes:

1. Special risks of forfeiture (e.g., termination of employment)
2. Required holding periods (e.g., to take advantage of capital gain treatment)
3. Transferability restrictions (sometimes the employee options at a publicly traded company are options on shares that are not registered for public trading or, in a privately held company are shares subject to a strict buy-sell agreement)
4. Other contingencies that make employee stock options much different from publicly traded options

Black-Scholes model values reflect the value of an option as if there was a market for the option itself. In the case of privately owned companies, an option for which there is no ready market is worth less than an otherwise identical option for which there is a public market.

Some analysts recommend a Monte Carlo simulation process to estimate the value of employee incentive stock options.

Under the Monte Carlo simulation process, a computer could generate a 60-month or 120-month forecast for a company's stock price, assuming certain growth, volatility, and dividend characteristics and then discount back to a present value the amount by which an employee incentive stock option would be in the money upon expiration. This procedure is repeated several thousand times using alternative input variables.

After eliminating the out of the money results, the average valuation is an unbiased estimate of how much the option is really worth.

So-called Monte Carlo simulations are now easier and more reliable to run than imperfect modifications of traditional formulas. They may be more adaptable, understandable, and reliable for particular valuation projects.

Stock Price

Typically, employer corporations issue stock options with a strike price that is equal to the fair market value of the underlying stock on that date. For a publicly traded company, the safe harbor is to use the publicly traded price.

For a privately owned company, there are three safe harbor provisions:[2]

1. The use of a stock fair market value valuation formula
2. A stock valuation by a qualified individual who does not have to be independent of the corporation
3. A stock valuation by an independent third-party appraiser

If a fair market valuation formula is used:

1. the seller must offer to sell the stock to the prospective buyer only at the formula value and
2. the buyer can only sell the stock to the next prospective buyer at the formula value.

A valuation by a nonindependent person is a provision that seems to exist so that a start-up corporation can avoid the cost of an independent appraisal.

A Stock Valuation by an Independent Third-Party Appraiser

The factors to be considered under a reasonable valuation method[3] to set the strike price for a privately owned employer company include the following:

1. The value of the tangible assets and the value of the intangible assets of the corporation
2. The present value of the anticipated future cash flow of the corporation
3. The market value of a stock or equity interest in similar publicly traded corporations or in other entities engaged in a substantially similar trade or business
4. Recent arm's-length transactions involving the sale or transfer of such stock or equity interests

Just as with generally accepted business valuation approaches and methods used for other purposes, the regulations recognize that:

1. the valuation may consider price premiums and price discounts, if appropriate, and
2. business valuations developed for other purposes unrelated to employee compensation may support the reasonableness of the value used for employee compensation purposes.

Volatility

Volatility is an important factor in many option valuation models—usually the most important factor. As volatility increases, the chance that a stock will do very well or very poorly increases. Since the employee owns a call option, he or she would be expected to benefit from price increases but would be protected from the downside risk. This is because the employee has nothing to lose.

One could argue that volatility is not an important factor in the valuation of employee incentive stock options because of their many restrictions. To reiterate, these incentive stock option restrictions are as follows:

1. Employee stock options cannot be sold.
2. Employee stock options cannot be exercised until they vest.
3. The underlying stock may be restricted from sale to third parties.
4. Once the options are exercised, the employee faces a tax incentive to hold the stock for at least one year (ordinary income tax rates apply to the gain if the stock is sold within one year and capital gains tax rates apply thereafter).

While volatility is an important factor in the valuation of publicly traded stock options, its impact on the value of employee stock options is not clear.

The volatility factor is a function of the past variability in the returns on the stock as measured by changes in the stock price. When valuing the options of a privately held employer company, reliable historical prices are typically not available.

Using the price series of a comparable public company to estimate the volatility factor may not be an acceptable proxy.

The options model input should reflect expected future volatility, which may not be accurately represented by measures of historical volatility. The period during which historical volatility is measured should not reflect events affecting the stock price that are not expected to recur in the future.

If the risk of an investment in the company going forward is expected to be significantly different than historical measures of risk, the analyst should consider other methodologies of estimating future risk.

For privately held employer companies, it is not possible to observe historical measures of volatility. The analyst should, therefore, use some other benchmark as a basis for the volatility input. Some analysts use a stock market index that they deem to be comparable to the risk facing the subject company.

Alternatively, the analyst can select a group of publicly traded companies that are deemed to be sufficiently comparable, in effect creating a custom "index" by which to estimate the volatility of the subject employer stock.

Other Complications Regarding Options for Marital Dissolution Purposes

When the valuation analyst adds to the important dates the date of the marriage and the date of the marital dissolution proceeding, the possible controversies emerge.

Depending on the various dates of employment, the components of the option, and the beginning and end of the marriage, the value of the option may need to be disaggregated.

For financial statement reporting, understanding the components of the option is complicated enough. Consideration of the dates of employment and marriage add other dimensions to the analysis in order to measure the value of options for family law purposes.

Parties to the marital dissolution may not agree as to whether the option value is part of the marital estate and, if so, the portion of the value of the option that should be considered to be:

1. the deferral of annual income that is eligible for support or
2. an asset subject to disposition.

Stock options that are designed to vest and become exercisable over a period of time may be considered both compensation for past services and incentive for the employee to continue employment in the future.

Alternatively, let's assume that the employer stock options were granted to the spouse:

1. during the marriage and vested during the marriage,
2. during the marriage and vested after the date of the marital dissolution proceeding,
3. before the marriage and vested during the marriage, or
4. before the marriage and vested after the date of the marital dissolution proceeding.

What portion of the value of the subject employer stock options is marital property versus separate property?

To respond to this issue, many family law courts begin with an understanding of the intrinsic value of the stock options.

Intrinsic Value

One of the first factors to observe in a stock option valuation is the intrinsic value of the option. If an option is in the money (i.e., the prevailing stock price is greater than the exercise price of a vested option) and the option holder is able to exercise the option at the current time, then it is reasonable to assume that the value of the option is equal to the amount by which it is in the money.

However, there is additional value to holding the option and having the right, but not the obligation, to exercise the option in the future. This conclusion is particularly true when there is a significant amount of time before expiration.

For example, let's consider an option with the following features:

1. The stock price is $20.
2. The exercise price is $10.
3. The time to expiration is 5 years.
4. The volatility is 40 percent.

If the risk-free rate is 5 percent, the Black-Scholes model indicates an estimated option value of $13.00, which is $3.00 greater than the $10.00 intrinsic value of the option.

Therefore, a valuation analyst who used the $10.00 intrinsic value as a measure of the value of the option may be significantly underestimating the value of the option.

As the time to expiration decreases, the value of the stock option decreases toward its intrinsic value. Exhibit 1 illustrates how the value of the stock option changes with the time to expiration.

The difference is the time value of the option. There are some advantages and disadvantages of holding the option and not owning the underlying shares as of the valuation date.

The advantages include deploying elsewhere the money that would be used to exercise the shares and avoiding any immediate taxes that might be due upon exercising the option.

The disadvantages include not receiving any dividends that would be awarded on the underlying shares and not being able to vote the underlying shares.

Stock options that were granted and vested during the marriage are usually considered marital property and an asset of the marital estate.

As an asset, the value of the stock options can be considered one of the assets available for distribution. If they can be transferred, then the valuation issues are less complicated.

If the stock options are able to be transferred to the nonemployee spouse, that is the preferred method of distribution because it effects a clean break (without the need for communication or valuation) between the parties.

However, transfer of executive stock options is rarely permitted by the issuing company. In addition, valuation analysts should note that options distributed to the nonemployee spouse may still be:

1. at risk if they lapse upon termination of employment or
2. subject to insider trading rules.

In some circumstances, family law courts will adopt a deferred distribution method under which the court constructs a "trust" that holds the options until their final value is determined. At that time, the proceeds of the stock options are distributed.

One remaining complication associated with vested stock options is the extent to which the annual compensation portion of the option during the period it increased in value should be considered deferred income for spousal support purposes.

Exhibit 1
Comparison of Time to Expiration and Comparison of Volatility to Stock Option Value

Years to Expiration	Volatility					
	25%	30%	35%	40%	45%	50%
1/12	10.04	10.04	1.0.04	10. 04	10.04	10.04
1/6	10.08	10.08	10.08	10. 08	10.08	10.08
1/4	10.12	10.12	10.12	10.12	10.12	10.13
1/2	10.25	10.25	10.25	10.25	10.27	10.28
3/4	10.37	10.37	10.38	10.40	10.43	10.48
1	10.49	10.50	10.52	10.55	10.61	10.69
1 1/2	10.73	10.76	10.81	10.89	10.99	11.13
2	10.97	11.02	11.10	11.22	11.37	11.55
3	11.45	11.54	11.68	11.87	12.09	12.33
4	11.91	12.04	12.22	12.46	12.73	13.02
5	12.34	12.50	12.73	13.00	13.30	13.63

Coverture Factor

There may be no single characterization for whether stock options are awarded for past, present, or future services.

The number of unvested options that should be recognized as part of the marital estate is subject to dispute. The analyst should be aware of some of these issues and consult with legal counsel regarding their resolution for marital dissolution purposes.

To determine how much, if any, of the unvested options constitute marital property, some jurisdictions use a time rule (i.e., a coverture factor).

The following formula illustrates how a typical coverture factor is calculated:

Number of Months from Grant Date to Valuation Date

divided by

Number of Months from Grant Date to Vesting Date

times

Number of Shares to Be Vested (not subject to divestment) on Vesting Date

equals

Number of Units to Be Divided

In some jurisdictions, the number of units to be divided are valued at the intrinsic value on the measurement date and that valuation conclusion is adjusted for personal income taxes.

A sample coverture calculation is presented in Exhibit 2.

Income Taxes

Personal income taxes associated with the ownership of share-based compensation should be considered in the valuation process. The personal income taxes may be at the ordinary income tax rate or they may be at the capital gains tax rate.

Typically, personal income taxes will encumber the value of the share-based compensation. However, in some circumstances, some personal income taxes may already have been incurred and paid.

Presenting the Results

Analysts should ensure that they follow all relevant professional standards and any other relevant standard established by their state's board of accountancy, by other licensing agencies, and by other professional organizations to which the analyst may belong.

Typically, this means that, in addition to meeting competency requirements, avoiding conflicts of

Exhibit 2
Coverture Factor Simplified Example

27.7	Number of Months from Grant Date to Valuation Date
	divided by
60	Number of Months from Grant Date to Vesting Date
	times
70,000	Number of Shares to be Vested (i.e., not subject to divestment on the vesting date)
	equals
32,317	Number of Units to be Divided
	times
$23.69	Intrinsic Value minus Exercise Price
	equals
$765,582	Pretax Dollar Value of Marital Estate Portion of the Unvested Shares

interest, and reporting any reservations regarding the scope of the engagement, the valuation report should include significant engagement findings and events.

The valuation opinion report will usually include the following items:

1. A valuation opinion letter summarizing the valuation and the value conclusions
2. Sections summarizing the relevant valuation theory, methodology, procedures, analyses, and conclusions
3. An exhibit section presenting a summary of the quantitative and qualitative valuation analyses
4. A statement of assumptions and limiting conditions
5. The valuation analyst's certification or representation
6. The professional qualifications of the principal analysts

Exhibit 3 on the following page presents a sample list of stock option valuation documents that may be requested from the client.

Summary

Share-based compensation has been an important tool used by employer companies to reduce their immediate compensation costs and to incentivize employees. The treatment of share-based compensation for family law purposes can be quite different from the treatment of share-based compensation for financial statement reporting purposes.

Share-based compensation can come in all sizes and types. The financial instruments addressed in this discussion include restricted stock, SARS, and employee incentive stock options.

Employee incentive stock options are those issued by the employer company on whose stock the option constitutes a call, usually (1) as part of an employee incentive stock option or (2) in conjunction with raising capital for the company.

Most commonly, the strike price for an employee incentive stock option is the fair market value of the underlying share. The most common pricing model used to value stock options is the Black-Scholes option pricing model.

And, the most sensitive factor that affects the value of the option is the volatility of the price of the underlying employer shares.

Often in family law cases, the attributes of the stock option are disaggregated because introducing the date of employment and the date of the marriage into the equation may cause the value of the stock options to be considered in a different light.

Option value, once disaggregated, may influence both the marital estate's balance sheet for distribution purposes and the marital estate's income statement for support purposes.

The danger of rigidity and the resulting unfairness from a blind application of a formulaic approach still exists. No one rule will be responsive to the many different reasons why stock-based compensation is granted.

Notes:

1. Sect. 409A(a)(2)(A).
2. Regs. Sect. 1.409A-1(b)(5)(iv)(B)(2).
3. Regs. Sect. 1.409A-1(b)(5)(iv)(B)(1).

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