



Art'o'val Advisors

True Art of Valuation

Valuation Series

4 – Valuation of ESOP

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What are ESOPs?

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- An employee stock ownership plan (ESOP) is a method of rewarding employees that gives them a share of the company's ownership.
- Employees are offered stocks of the company at a low or no additional cost that they can encash after a specific period at a particular price.
- Companies often use ESOPs as a corporate-finance strategy to align the interests of their employees with those of their shareholders.
- The objective of issuing ESOP is to provide an incentive to attract, retain and reward employees of the company and motivate employees to contribute to the growth and profitability of the company.

Important Terms of ESOPs



Option

- Option is a right but not an obligation to purchase the shares of the company on the fulfilment of the conditions mentioned in the ESOP plan at the price decided at the time of grant of options.



Vesting

- It is the entitlement of the option to an employee. Before exercising the option, the employee must wait for a limited period as a condition of ESOP grant.



Grant

- The eligibility of a particular employee (depending on the criteria set) for grant of stock options based on his role and performance is known as grant of option.



Exercise

- The activity of converting the options granted to an employee into shares by paying the required exercise price, i.e., allotment.
- The companies have freedom to determine the exercise price in conformity with the applicable accounting policies, if any.

Types of ESOP

Following are the types of ESOPs that companies offer to the employees:

Employee Stock Option Scheme (ESOS)

- Allows an employee the opportunity to purchase company shares at a predetermined price, typically below the market value.
- These options are typically granted as part of a compensation package and are subject to certain performance goals over a set vesting period.

Employee Stock Purchase Plan (ESPP)

- An employee stock purchase plan (ESPP) allows employees to purchase company stock at a discounted price and gradually increase their ownership stake in the business through periodic investments.

Restricted Stock Units (RSUs)

- Restricted stock units (RSUs) are a type of ESOP that allows employees to convert RSUs into real company stocks in exchange for a certain number of years spent working for the company or when specific performance milestones are achieved.

Restricted Stock Award (RSA)

- Restricted Stock Awards (RSA) is a type of stock-based compensation that involves the grant of a specific number of shares to an employee, subject to certain restrictions.
- Typically, the restrictions on RSA shares are based on the vesting period and other performance goals.

Stock Appreciation Rights (SARs)

- Allows employees to receive a payment based on the appreciation of company stock over a certain period of time.
- Companies can use SARs to provide employees with stock benefits without diluting their equity. On the other hand, employees can benefit from such a plan by cashing in equity gains without taking on any downside risks.

Phantom Equity Plan (PEP)

- A Phantom Equity Plan (PEP) is a type of ESOP that allows employees to receive a payment based on the value of the company's stock without actually owning any shares.

Need of ESOP Valuation



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Following are the reasons why do companies need ESOP Valuation:

1 Companies need ESOP valuation for accounting purposes and tax purposes.

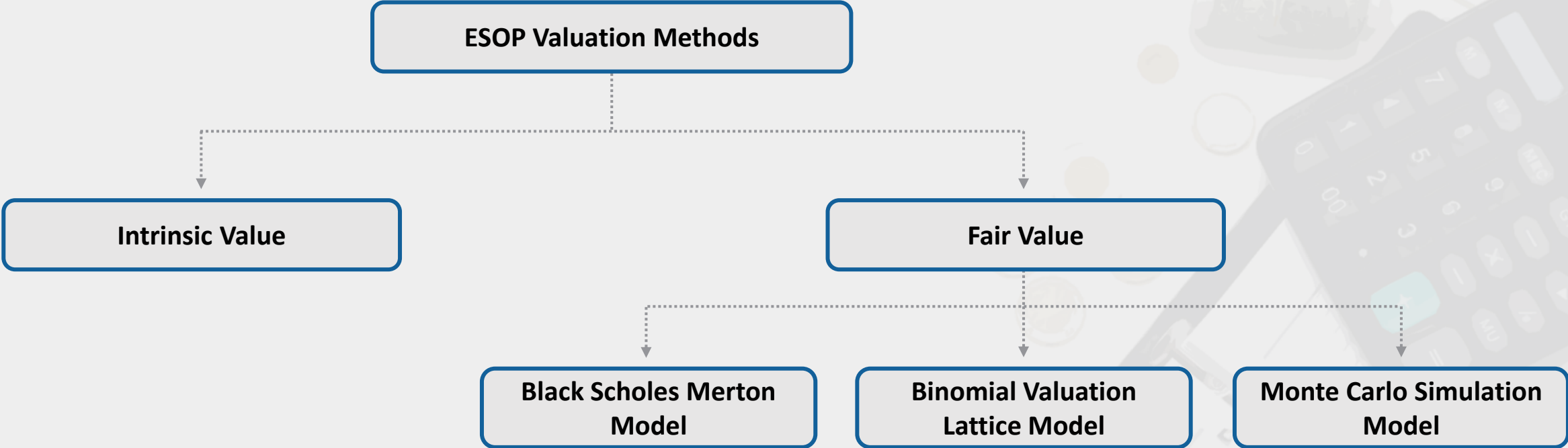
2 The company issuing the ESOPs must record the compensation costs during the vesting period.

3 Additionally, ESOP valuations help to determine the perquisite tax due by the company's personnel.

4 The increased compensation expenditure lowers the company's earnings per share (EPS), and excess taxes requirements make the ESOP plan undesirable.

5 Therefore, it is necessary to plan ESOP well, and ESOP valuation is crucial in this context.

Valuation Methodology



Intrinsic Value

Intrinsic Value



Intrinsic Value is the measure of the extent to which the market price of the share exceeds the exercise price of the option. In other words, "intrinsic value" is the profit that accrues to employees on account of the higher market value of the shares.



In a nutshell, intrinsic value is the difference between the market price and the price of exercising the option with any upfront payment.



Intrinsic value is an imputed gain that an employee receives by selling their option.



If market price is below the exercise price, then intrinsic value of the option will be zero.

Following is the example of intrinsic value

ESOP is granted to the employees by the company they work for, and the company's share's current market price is 100. It can be exercised after two and a half years for Rs. 60, in which case, the Intrinsic Value of the options is Rs. 40.

In another case, if the share's current market price were Rs. 50, there would be no Intrinsic Value of the option given to the employees since the exercise price is more than the current market price. Therefore, the options could not be exercised in such a case and ended up standing lapsed. The difference between the Intrinsic Value method and the Fair Value method is the time value.

Fair Value

There are three methods for determining fair value of ESOPs:

1

Black Scholes Merton Model

- The Black Scholes Merton (BSM) model is a model of price variation over time of financial instruments such as stocks that can, among other things, be used to determine the price of an option. This is the most widely used option valuation model.
- The model assumes the price of heavily traded assets follows a geometric Brownian motion with constant drift and volatility. When applied to a stock option, the model incorporates the constant price variation of the stock, the time value of money, the option's strike price, and the time to the option's expiry.

$$\text{Call Option Price (C)} = \text{Current Stock Price (St)} \times \text{Normal Distribution (N)} \times \text{Probability Factor (d1)} - \text{Strike Price (Ke)} \times \text{(Risk Free Interest Rate (r) x Time of Maturity (t))} \times \text{Normal Distribution (N)} \times \text{Probability Factor (d2)}$$

Assumptions of the Black-Scholes model:

The option is European and can only be exercised at expiration.

Markets are efficient i.e., market movements cannot be predicted.

There are no transaction costs in buying the option and returns on the underlying are normally distributed.

The risk-free rate and volatility of the underlying are known and constant.

Fair Value (cont'd)

2

Binomial Valuation Lattice Model

- Binomial option pricing model is used to price options and is based on the concept of no arbitrage.

$$Value_{end} = \frac{Balance_{end}}{ConversionPrice} * CallValuePerShare$$

Where

$$ConversionPrice \text{ (or Exercise Price)} = stockPrice \text{ Per Note} * ConversionPercentage$$

ExercisePrice is determined per the note – sometimes lowest, sometime the volume-weighted average of all, or lowest in window. Conversion Percentage is as per note.

$$CallValuePerShare = StockFraction * StockPrice_{valueDate} + BondPortion$$

CallValuePerShare is based on a Call-replicating portfolio of a stock and a fraction of a bond. The Stock price is the closing price on the valuation date.

$$BondPortion = \frac{CallPayoff_{lower} - StockPayoff_{lower} * StockFraction}{(1 + rate_{rf})}$$

Where the risk-free rate is the Tbill rate for the Tbill that is closest to, but less than, the remaining term of the note.

$$StockFraction = \frac{CallPayoff_{upper} - CallPayoff_{lower}}{StockPayoff_{upper} - StockPayoff_{lower}} = 1.0 \text{ (by definition)}$$

$$CallPayoff_{upper|lower} = StockPayoff_{upper|lower} - ExercisePrice$$

$$StockPayoff_{upper|lower} = StockPrice_{valueDate} * (1 + P(up|down))$$

$$P(down) = \frac{1}{P(up)}$$

Where P(up) is the expected volatility over the remaining term of the note:

$$\sigma_{term} = \sigma_{historical} * \sqrt{\text{round}\left(\frac{term_{remaining}}{7} * 5\right)}$$

Assumptions of Binomial Option Pricing models:

There are only two possible prices for the underlying asset on the next day.

The underlying asset does not pay any dividends.

Markets are frictionless i.e. there are no taxes and no transaction cost.

The two possible prices are the up-price and down-price.

Rate of interest is constant throughout the expected life of the option.

Investors are risk neutral i.e. investors are indifferent towards risk.

Computational Algorithms

- Monte Carlo methods are a class of computational algorithms that are based on repeated computation and random sampling.

Option Pricing

- Options can be priced by Monte Carlo simulation. First, the price of the underlying asset is simulated by random number generation for a number of paths. Then, the value of the option is found by calculating the average of discounted returns over all paths.

Risk Free Interest Rate

- The option is priced under risk-neutral measure, the discount rate is the risk-free interest rate.

Simulation Estimates

- In order to get a good estimate from simulation, the variance of the estimator should go to zero and thus the number of samples should go to infinity, which is computationally not feasible. Therefore, variance reduction techniques such as antithetic variates and control variates help us to obtain a better estimate in simulation.


Challenges in Valuing ESOP

Following are the common issues faced while valuing ESOPs:




Risk free rate of return

- The risk free rate being considered for the calculation is the interest rate applicable for a maturity equal to the expected life of the options based on the zero-coupon yield curve for Government Securities or 10 years government bonds.



Expected Life of Option

- For valuations, we must examine the option's probable life, not its overall life. For predicted life, average the maximum and minimal option lives for each grant vesting.



Expected future volatility

- The volatility is a measure of how much the share price deviates from its average value over a period of time.
- A common way to estimate future volatility is to calculate the historical volatility of the share and use that with any appropriate adjustments for one-off events as an approximation of future volatility.
- In case of a private company, market price of the shares is not readily available and hence volatility cannot be determined. In such cases, annualized volatility of the comparable companies listed on the recognized stock exchange can be adopted.



Dividend yield

- Dividends lower share prices. ESOP holders don't accumulate dividends throughout the ESOP term.
- Dividends provided before the ESOP exercise can lower ESOP value.
- Therefore, companies must establish a dividend yield rate. Historical dividend pay-out could be used to anticipate future dividend yield.

Key Inputs of ESOP Valuation

Following are the variables that influence the fair value of the ESOP:

Underlying Variable	Change in Variable	Changes in Call Option
Exercise Price	↑	↓
Market Price	↑	↑
Current Dividend Yield	↑	↓
Risk Free Rate of Return	↑	↑
Maturity Period	↑	↑
Volatility of the Stock	↑	↑

Financial Reporting of ESOP



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Ind AS 102 specifies the financial reporting by an entity when it undertakes a share-based payment transaction. In particular, it requires an entity to reflect in its profit or loss and financial position the effects of share-based payment transactions, including expenses associated with transactions in which share options are granted to employees.

Assets	ESOPs has no direct impact on the assets side of the balance sheet other than an increase in cash balance or other assets resulting from the financing aspects of certain plan structure.
Liability	ESOP is recorded under current liabilities as accrued plan contribution.
Equity	Under equity, an ESOP Loan Contra Account is created and deducted from the total equity shares of the company resulting into reduction in the net equity. The amount of reduction in the contra account is measured by the amount of compensation expense recorded on the financial statement attribution to ESOP activity.
Income Statement	In the income statement, ESOP reflects as compensation cost.
Cashflow Statement	Reflected as reduction in cashflow from operating activities.
EPS	Shares allocated released or committed to be released are considers as outstanding, In such cases convertible preferred stocks are considered as equity stock equivalent . This will reduce the number of shares outstanding until an ESOP loan is fully amortized.



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Thank You



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