



Valuation of ESOPs and SARs

Determining Fair Value of Options



- **Employee Stock Option Plans (ESOPs)** and **Stock Appreciation Rights (SARs)** are the two most common share-based payment plans used by businesses to reward, attract, and retain the right talent.
- Issuance of such instruments is required to be accounted under **IND AS 102 or Guidance Note on Share based Payments (2020)**, as may be applicable to the Company.
- IND AS 102 requires determining **fair value of options** for both ESOPs or SARs, which in turn requires using **option pricing models** such as Black Scholes Option Pricing Model to determine this fair value.
- Whilst Guidance Note gives Companies option to choose between intrinsic value approach or fair value approach, **disclosures are still required on fair value basis**.
- In this article, we discuss:
 - **Option pricing models** typically used for determining the fair value of ESOPs or SARs;
 - **Key assumptions** used in determining the **fair value / option price**; and
 - **Relative materiality of assumptions** on overall fair value of options and consequently the income statement charge.
- We believe this article would be useful for **all finance professionals as well as auditors** dealing with ESOP accounting as part of their work.



Below are the **three most commonly** used option pricing models:

Black Scholes Option Pricing Model

- **Simple formula application** which is easy to use, understand and can incorporate all features of a plain vanilla ESOP / SAR scheme.
- Factors such as early exercise can be incorporated via assumptions.
- **Does not work** for ESOPs / SARs wherein **vesting or exercise is linked to future share price** or market capitalization targets.

Binomial Lattice Model

- Requires **step wise projection** of share price / option pay off from grant date to exercise date, with each step moving both up and down by a specific factor.
- If time period is long, multiple paths may be needed leading to **computational delays and difficulty**.
- **More flexible than Black Scholes** in handling complex ESOPs / SARs with share price linkages.

Monte Carlo Simulation Model

- Requires fitting **probability distribution** to share price and projecting the same, along with option pay off, under **large number of simulations** (such as 5,000 or 10,000).
- **Requires statistical knowledge** to build such a model.
- **Highly flexible** to handle all type of ESOPs / SARs and widely accepted as a **more sophisticated method of option pricing**.

Black Scholes Option pricing model is the most widely used model for ESOP / SAR Valuation. For standard ESOPs / SARs, all three option pricing models give the same result.

Below are the **key assumptions** used in option pricing, more specifically in the Black Scholes Option Pricing Model:



Each of these assumptions is discussed in more detail in subsequent slides.

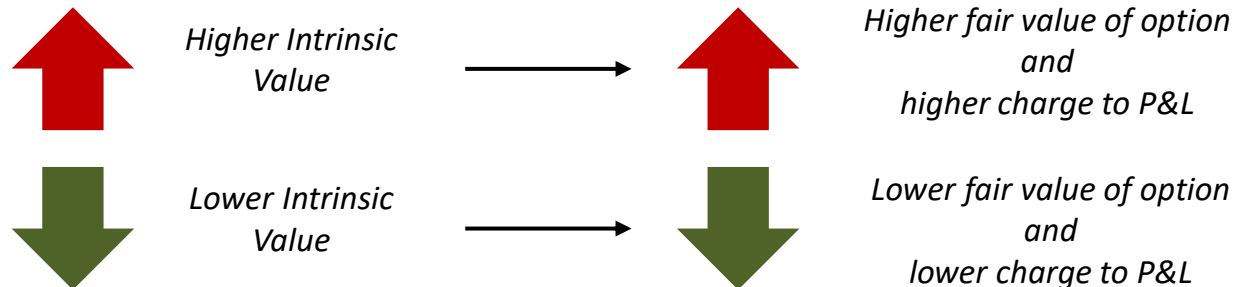
What is it?

- For ESOPs, the key inputs for option pricing are the **share price as on the grant date** and the **exercise price**, whereas for SARs, the essential inputs are the **share price as on the reporting date** and the **strike price**.
- **Difference between share price vis-à-vis the exercise / strike price** gives the **intrinsic value of option** i.e. how much the option is already in the money or out of the money at a given date.
- **Higher the intrinsic value, higher is the option price**. The gap between the two materially impacts option pricing.

How to determine?

- **Exercise price and strike price** are **grant level inputs** provided by Company.
- In case of **Listed companies**, **share price** is easily available. Typically, the closing price on the stock exchange with the **highest trading volume** (if Company is listed on more than one exchange) is considered.
- In case of **Unlisted companies**, share price may not be easily available and may need to be ascertained basis **past shareholding transactions, any share price valuations available** or by studying the **valuation multiples for comparable companies**.

Impact on Fair Value and P&L Charge



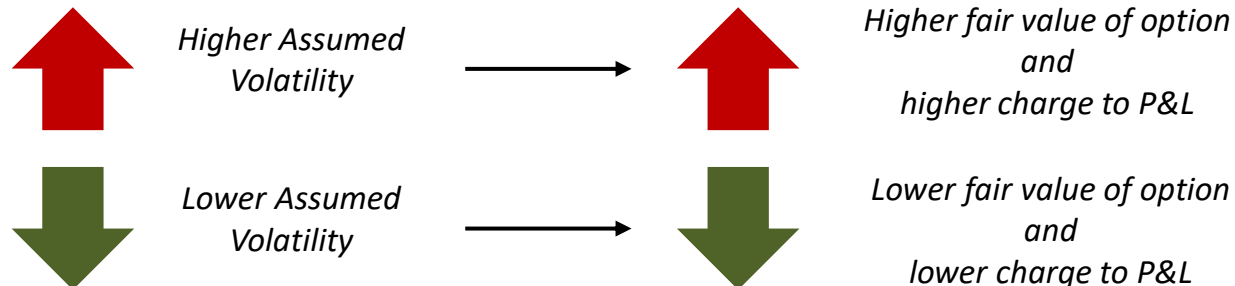
What is it?

- It is a measure of the **amount by which share price** of Company is **expected to fluctuate** during a given period.
- In option pricing, volatility captures the **time value of option** i.e. the possibility that the option can be **more in the money** over the expected term of the option.
- It is one of the **key assumptions** in option pricing and the resultant **option prices are materially sensitive** to the volatility assumption.

How to determine?

- **IND AS 102** requires volatility assumption to be set **using market consistent data** available at the **date of grant** for ESOPs or **reporting date** for SARs.
- For **Listed Companies**, their **own share price movements** for the expected term of option is generally referred. For **unlisted or newly listed companies**, data of **comparable companies or similar sector companies** is generally considered.
- **Judgments are required** to be made on **appropriateness of past data** for future purposes (such as inclusion or exclusion of covid years etc.) as well as choosing the comparable peer set / consistent approach for unlisted companies.

Impact on Fair Value and P&L Charge



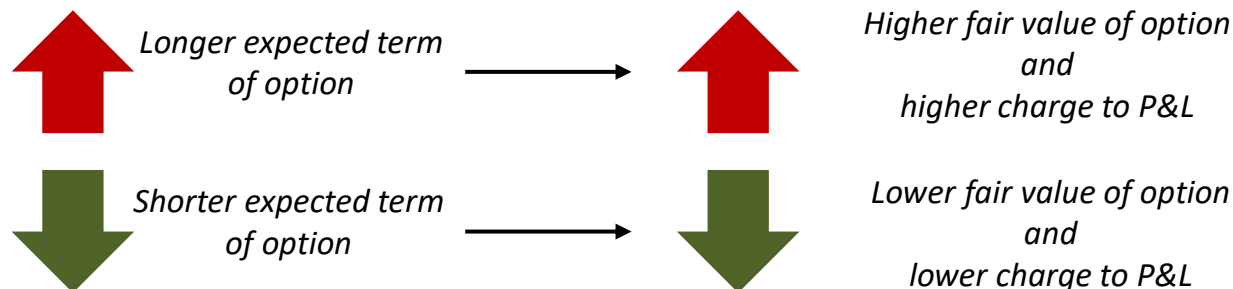
What is it?

- It reflects the period of **time from grant date** to the date on which the **option is expected to be exercised**.
- Expected term of the option, in conjunction with expected volatility, influences time value of option i.e. **longer the expected term** for given volatility, **higher** is the chance of **option being more in the money** in future.
- It's a **relatively material assumption** in option pricing along with expected volatility.

How to determine?

- For **Listed Companies**, expected term of option is generally set **separately for each vesting tranche**, taking **average of vesting period and exercise / expiry period**.
- For **Unlisted Companies**, exercise is typically **linked to happening of corporate transactions or liquidity events** (such as fund raise etc.). Hence, an overall assumption of expected time to exercise based on **management inputs** is factored and tranche wise bifurcation is not required.
- Allowance needs to be made for factors like **early exercise, historical exercise patterns, termination rates** etc.

Impact on Fair Value and P&L Charge



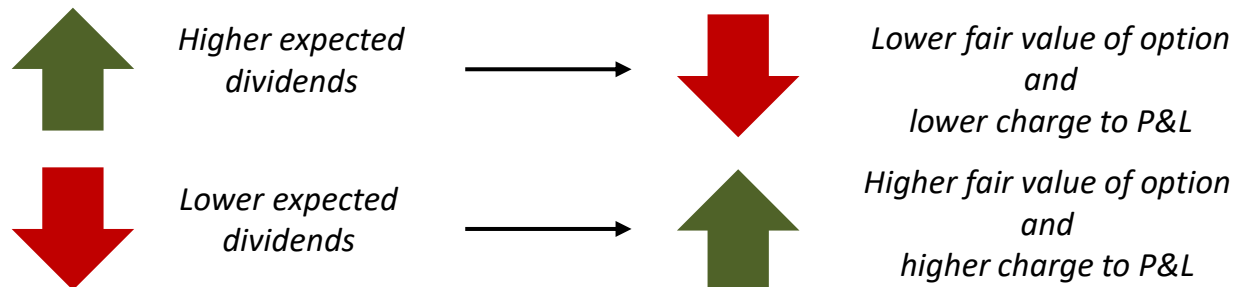
What is it?

- It represents the **level of dividends** that could be **expected on the equity shares** of the Company, underlying the Option.
- Most **ESOPs in India do not pay dividend** until they are converted to shares. Hence, **expected dividend is an input** in option pricing and **reduces the value of the option**.
- The **materiality** of this assumption depends upon the **quantum of expected dividend payable** and the **expected term of option**.

How to determine?

- Set based on **actual dividends paid** in the past **adjusted** for **current financial health** of Company and **management input** on continuing the expected dividend stream in future or increasing the same.
- For **new or emerging entities**, management input along with dividend paid by comparable companies is required to be factored.
- Note that if dividends are payable on the option (such as sometimes in case of RSUs issued outside India), expected dividend is not required to be adjusted in determining fair value of options.

Impact on Fair Value and P&L Charge



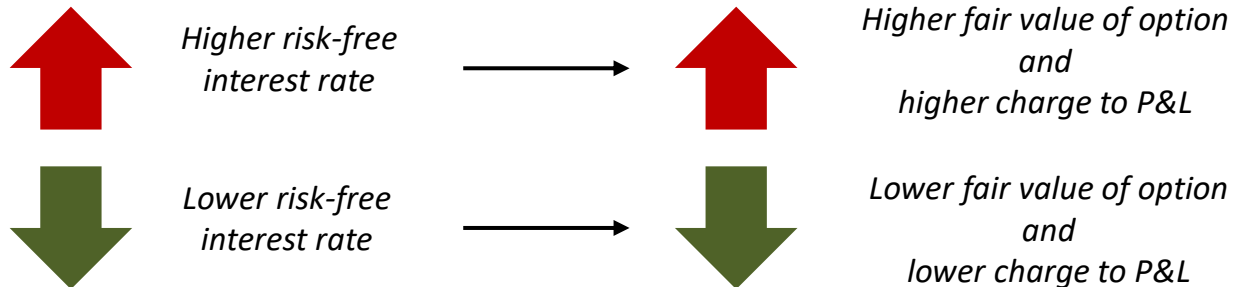
What is it?

- It is effectively the **implied yield on zero-coupon government bonds** (i.e. considered absolutely risk free investment) over the expected term of option.
- Typically an **increase in risk free interest rate increases the option price** as the money saved by purchasing the option (than the underlying share) can be invested at this higher rate of return.
- The impact of the risk free interest rate on the option price is **relatively less material** compared to expected volatility and expected term of option.

How to determine?

- Typically, yield on zero-coupon government bonds is required to be used.
- In India, zero coupon bond yields are not available and hence **annualized yield on government bond of appropriate duration** is taken as a proxy.
- **Duration** for this purpose is kept equal to **expected term of option**.

Impact on Fair Value and P&L Charge



- It is important to carefully choose the **method** and the **assumptions** used in **determining the fair value** of share-based employee benefits (ESOPs, SARs etc.) as the same materially impacts the charge to Income statement on account of these instruments.
- We often see companies take arbitrary approaches in determining the assumptions, ignoring the accounting standard requirements as well as the available data / benchmarks within and outside the Company. Due considerations of these factors can help the companies in **assessing the correct charge to Income Statement** for such instruments.
- Companies may also benefit from assessing the **likely Income statement charge for future grants** as part of their **budgeting exercise** to ensure they are well aware of the level of charge in future years.
- This can ensure that the Companies are not in for a surprise when producing accounting results for the grants made during the year.



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About KPAC



Research driven

- KPAC is a research driven actuarial consulting firm **providing actuarial and consulting services** since 2013.
- Empowered by **creative thinking and research-oriented approach**, we offer solutions that go beyond 'just-compliance'.



Going Beyond Compliance

- KPAC delivers customised solutions with use of data analytics and continuous research, which helps clients in **optimum recognition of liability and better management of expenses**.
- KPAC also helps clients in reducing volatility of expenses through ALM, better planning and budgeting, etc.



Strong Clientele

- Driven by passion to exceed expectation every single time, KPAC is providing valuation and consulting services to **more than 1000 clients** (including large corporate houses and MNCs)
- KPAC's **engagements spread across all parts of India** and in various other countries like USA, Australia, UK, Middle East, SAARC countries.



Strong Team

- KPAC has a **strong team of consultants** and domain experts, who focus on delivering excellence each time.
- Each consultant has experience of handling assignments of large corporate houses and complicated employee benefits.

Your employees are worth more than a 'cut-copy-paste' scheme taken off the net. Invest in creating the right scheme which will truly align interests and motivate your employees.

Please hire experts who understand all that goes into creating a stock ownership plan and save yourself the hassle, time, and unwarranted risk of trying to figure this out yourself.

Reach out in case you require any further information:



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