

Valuation Newsletter Highlights



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Estimating Expected Life of Employee Share Option for Financial Reporting Valuation

Introduction

Plans for employee ownership are developed so that employees can own a portion of the business they work for. These kinds of programs are designed to help companies manage their cash flow needs and provide suitable incentives to employees to inspire them.

Even though employee share options are non-cash in nature, it is indisputable that the funding for these plans comes from present shareholders. In addition, the fair value of employee share options shall be determined and recognised as expenses under the requirement of accounting standards such as International Financial Reporting Standard (“IFRS”) 2 Share-based Payment. Depending on the nature of the employee share options, various option pricing models such as Black-Scholes, Binomial, and Monte Carlo Simulation could be adopted for financial reporting valuation purposes. These option pricing models consider several inputs which may have different impacts on the fair value of employee share options as shown in Table 1.

Table 1: Inputs and correlation to fair value of employee share options

Inputs	Correlation to fair value of employee share options(*)
Current price of the underlying shares	Positive correlation
Exercise price of the option	Negative correlation
Dividends expected on the underlying shares	Negative correlation
Risk-free interest rate for the expected life of the option	Positive correlation
Expected life of the option	Positive correlation
Expected volatility of the share price	Positive correlation

(*) A change in one specific input will result in either a positive or negative correlation to the fair value of employee share options, ceteris paribus.

All the inputs listed in Table 1 are important in the valuation of employee share options. However, this paper will only focus on the expected life input, explaining its significance and highlighting factors that should be considered when estimating this input.

Estimating Expected Life of Employee Share Option for Financial Reporting Valuation

Understanding expected life of employee share option

It has been noted that employees tend to exercise their options sooner rather than later. This could be partly because options are not tradable, meaning employees who desire to sell their options are unable to do so and must instead exercise the options and sell the underlying shares.

The expected life of an employee share option is the projected period in which the option holder will keep the option before either exercising or allowing it to expire. Employees often exercise their options before they expire, which usually results in a shorter expected life compared to the contractual life. In general, the longer an option's expected life, the higher its value. It is sub-optimal to exercise an option before the end of its contractual life. This is because exercising an option secures its intrinsic value but loses its time value. As a result, most models recommend that options should be held through to the end of their contractual life.

Share options where the underlying shares have high dividend payouts are an exception to the general principle. In such situations, it will be preferable for an option holder to exercise an option earlier because the shareholder would get to enjoy the high dividends paid, but not the employee share options holder.

In the next section, we will explain the significance of expected life of employee share option.



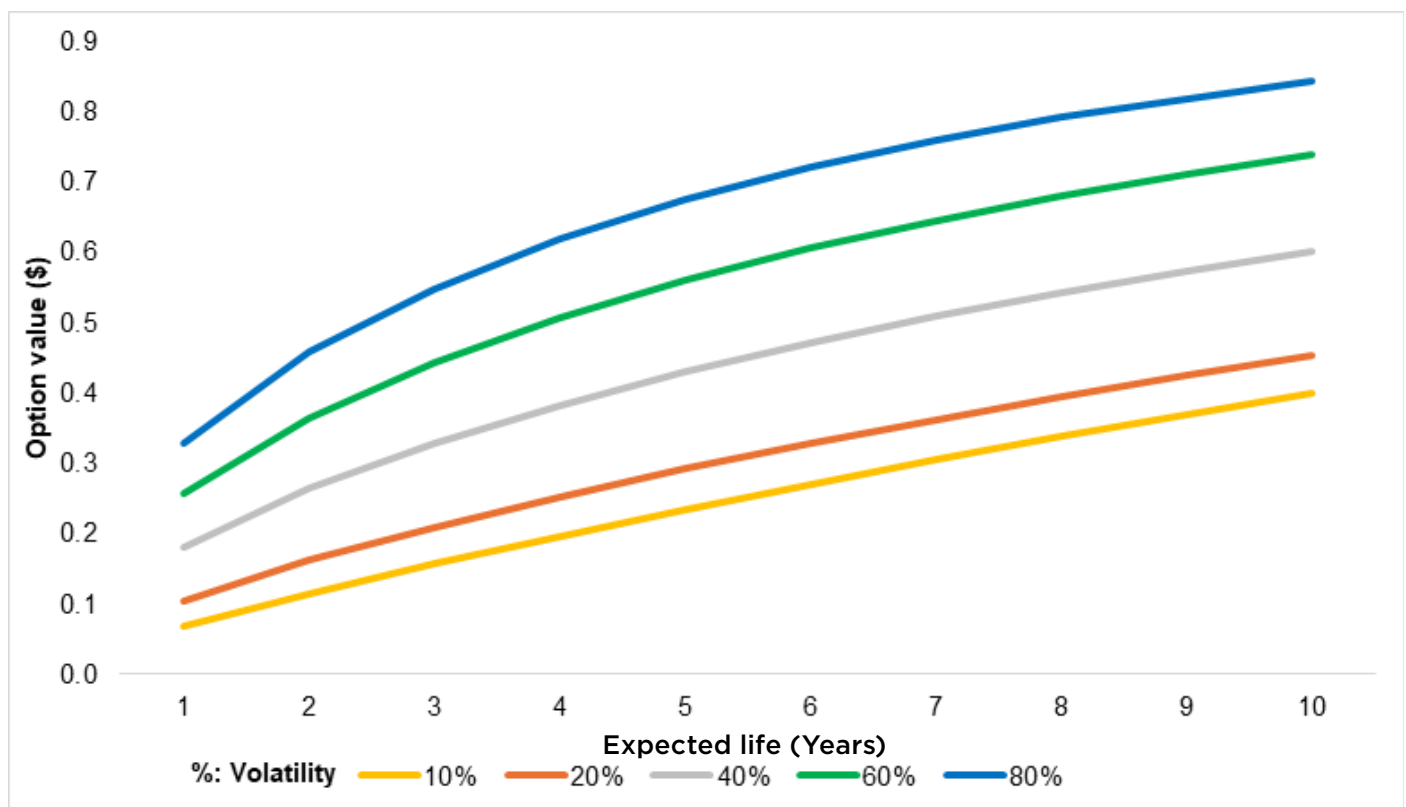
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Significance of expected life of employee share option

The expected life has an impact on how to estimate other valuation inputs which include the expected volatility of the share price and the risk-free interest rate.

In estimating the expected volatility of the share price, we generally use the historical volatility of the share prices over the most recent period matching the expected life of the option as a proxy for expected volatility. The longer expected life could translate to more fluctuations in the share prices and the higher volatility will result in a higher fair value for the employee share option. Figure 1 shows different option values based on different expected life and expected volatility assumptions.

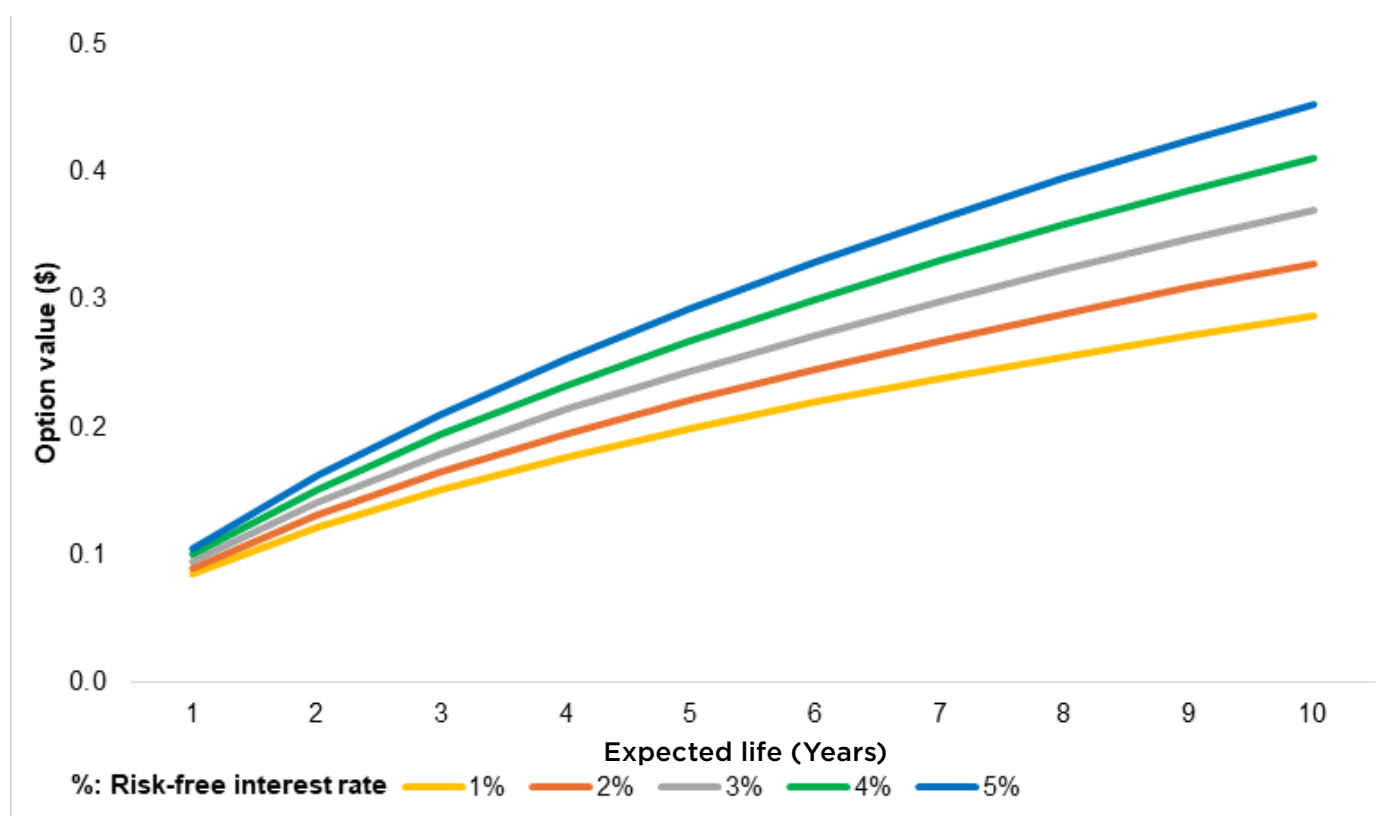
Figure 1: Effects of changing expected life for certain volatility on option value



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The risk-free interest rate used in an option pricing model is generally derived from zero coupon government bond yields in the currency in which the option's exercise price is denominated with a maturity matching to the expected life of the option. Any changes in the expected life will also affect the risk-free interest rate, which in turn will impact the fair value of the employee share option. Figure 2 shows different option values based on different expected life and risk-free interest rate assumptions.

Figure 2: Effects of changing risk-free interest rate for certain volatility on option value



As the expected life influences the determination of other valuation inputs, there is no doubt that it is a critical component in the valuation of employee share options. Typically, the expected life is estimated first, before other inputs such as expected volatility and risk-free interest rates are determined.

Estimating Expected Life of Employee Share Option for Financial Reporting Valuation

Estimating expected life of employee share option

It is a common practice that, the following factors should be considered when determining the expected life of the employee share option:

- The length of the vesting period
- The historical exercisable pattern of employees
- The employee's level within the organisation
- Expected volatility of the underlying shares
- Mid-point period

The length of the vesting period

The vesting period is the time in which all the stipulated vesting conditions of a share-based payment agreement must be met. One example of a vesting condition would be the requirement of being employed by the organisation throughout the vesting period. An employee share option typically cannot be exercised until the end of the vesting period. Hence, the vesting period will affect the employee's holding period of their options which will impact the expected life of the employee share option. In other words, the expected life should generally be longer than the vesting period. This is illustrated in Table 2.

The historical exercisable pattern of employees

Historical data regarding the average length of time that similar options have been exercised could be adopted as a proxy for the expected life. This approach might be appropriate for companies that have issued significantly similar options in the past and observed that the historical exercise behaviour of employees follows a certain pattern and could be used as a benchmark for determining the expected life.

The employee's level within the organisation

Higher level employees often exercise their options later than lower level employees. Higher level employees usually have more financial capacity and flexibility. They could be less likely to exercise their options promptly because they are able to wait for a possibly higher payout or more desirable market conditions, aiming to maximise their financial returns. Furthermore, to preserve their interest in the company's success and to keep a stake in its future, higher level employees may be encouraged to hold onto their options. As such, an employee's level within the organisation will affect their willingness to exercise their options, which will impact the expected life of employee share option.

Expected volatility of the underlying shares

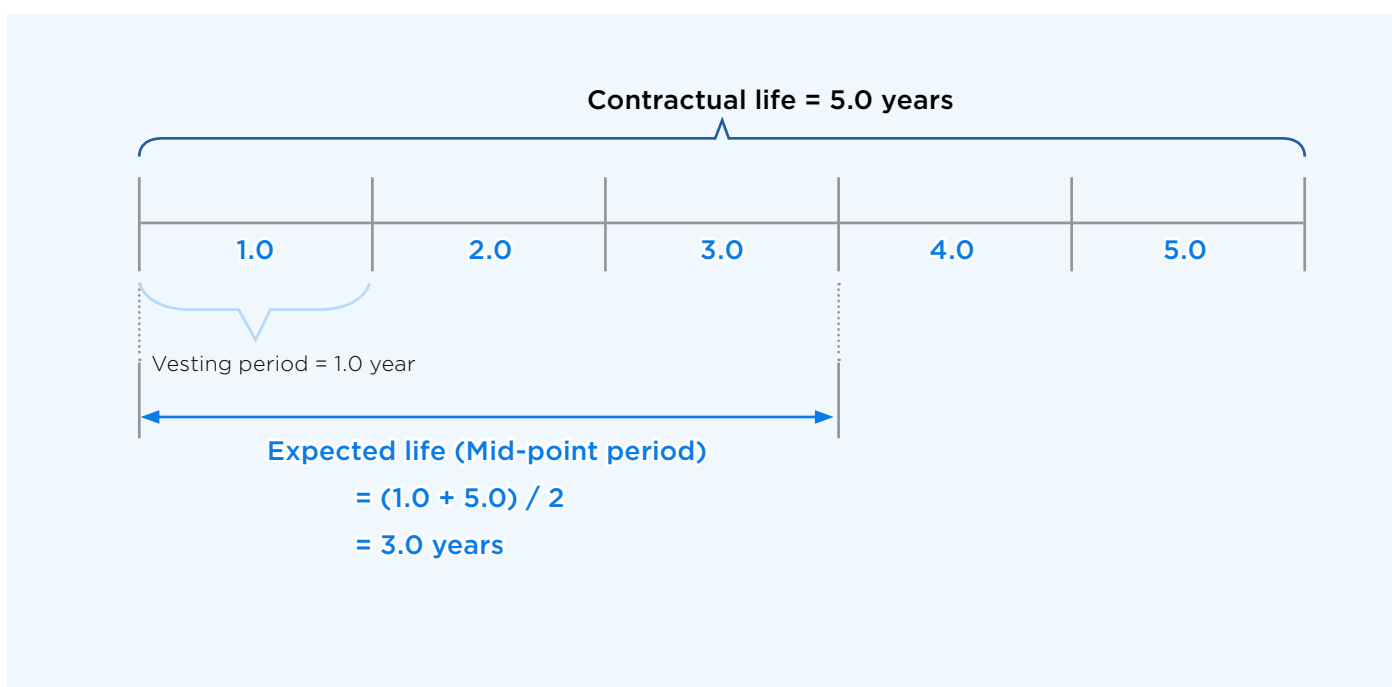
The expected volatility of the underlying shares refers to how much the price of the underlying share is predicted to move over a given period. Options on more volatile shares may be exercised sooner than options on less volatile shares.

Estimating Expected Life of Employee Share Option for Financial Reporting Valuation

Mid-point period

Some of the aforementioned factors require a detailed analysis of the employees' past exercise behaviour in order to determine the expected life of the employee share option. In the absence of such information, in practice, the expected life of the employee share options can be computed by taking the mid-point of the vesting period and the contractual life. This is termed as the "simplified method" which is the typically accepted practice. For example, if the vesting period and contractual life of an option is 1.0 year and 5.0 years respectively, then the expected life of the option based on mid-point period will be 3.0 years. This is equivalent to the sum of 1.0 year and 5.0 years and divided by 2 as shown in Figure 3.

Figure 3: Estimating expected life based on the "simplified method"



In some situations, employee share options might vest in instalments over the vesting period. Based on paragraph IG11 of IFRS 2, each instalment should be treated as a separate share option grant and valued separately. This is because each instalment has a different vesting period, and hence the fair value of each instalment will differ. Variations in the vesting periods across instalments or tranches can lead to differences in the expected life of each tranche, resulting in different fair values for each one.

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Table 2 provides an example of how the expected life of an employee share option with a contractual life of 10.0 years and graded vesting over four years (25% of the options in each grant vest end of each year) is computed.

Table 2: Estimating expected life based on the “simplified method” for each tranche

	Contractual life (Years)	Vesting period (Years)	Expected life of option with different vesting periods (Years)
Tranche 1	10.0	1.0	Expected life of option at first vesting point = $(10.0 + 1.0) / 2$ = 5.5
Tranche 2	10.0	2.0	Expected life of option at second vesting point = $(10.0 + 2.0) / 2$ = 6.0
Tranche 3	10.0	3.0	Expected life of option at third vesting point = $(10.0 + 3.0) / 2$ = 6.5
Tranche 4	10.0	4.0	Expected life of option at fourth vesting point = $(10.0 + 4.0) / 2$ = 7.0

Conclusion

Estimating the expected life is critical in the valuation of employee share options for financial reporting, as it directly impacts on the fair value calculations of the options, and indirectly influences the determination of other valuation inputs including the expected volatility of the share price and the risk-free interest rate. A reasonable estimate of the expected life requires a deep understanding of historical exercise patterns, employee behaviour, features of the options, and market conditions. In certain circumstances, such as when data on employees' historical exercise patterns is unavailable, the adoption of the “simplified method” is also widely accepted.

Market Highlights

- The International Valuation Standards Council (IVSC) has announced that, from January 2025, the **latest edition of the International Valuation Standards (IVS)** will be freely accessible to the public in a digital format via the IVSC's website. This change, which removes an existing paywall, coincides with the effective date of the newest edition of IVS and represents an important step in supporting the widespread adoption and implementation of these standards across global markets. The decision to make IVS publicly accessible reflects the IVSC's commitment to promoting consistent valuation standards and enhancing their implementation worldwide. By providing free access to the most up-to-date standards, the IVSC aims to remove barriers and make it easier for valuation professionals, regulators, investors, and all other stakeholders to engage with and apply these standards in their work.

(Source: IVSC)

- **The IVAS-IVSC Business Valuation Conference 2024**, themed 'Intangible Impact: Unlocking Business Value in the New Economy,' took place on 28 August and attracted over 1,000 participants, including policymakers, business leaders, and valuation professionals. This year, the conference, jointly organised by the Institute of Valuers and Appraisers Singapore (IVAS) and the IVSC, was held for the first time in conjunction with IP Week @ SG, in collaboration with the Intellectual Property Office of Singapore (IPOS). It is announced that IVAS will seek public feedback on proposed guidelines for valuing Intangible Assets (IA) in 2025. These guidelines, developed with leading international Valuation Professional Organisations (VPOs) and aligned with IVS, aim to enhance the credibility of IA valuations.

The conference also spotlighted updates to the International Valuation Standards, effective 31 January 2025, which will address the integration of Environmental, Social, and Governance (ESG) factors in valuations, particularly those using Automated Valuation Models (AVM) and AI. IVAS announced new initiatives, including a professional development course on the Intangibles Disclosure Framework (IDF) launching in late 2024, and a refreshed Chartered Valuer and Appraiser (CVA) Programme with ESG and IA content beginning in 2025.

(Source: IVSC)

- Amid an increasing volume of mergers and acquisitions (M&As) conducted globally, the IVAS is looking to roll out its **CVA programme** to markets in South-east Asia, in a bid to standardise valuation practices across the region. IVAS is next looking to tie up with regional partners – such as institutes of higher learning or professional educational institutes – to physically offer the programme in markets outside Singapore. The CVA programme is spread across 18 months, including the assessment. It is conducted entirely online for overseas participants at the moment, while those based in Singapore are able to attend in-person classes at the Nanyang Technological University, IVAS' academic partner.

(Source: Business Times)

- The IVSC has published the final paper in its **Perspectives Series on Intangible Assets**, titled "Making Intangibles More Tangible: Series Lessons". This conclusive paper brings together the insights and findings from the entire series, offering a comprehensive view on the valuation of intangible assets, which have become increasingly pivotal in today's global economy.

(Source: IVSC)

Market Highlights

- The IVSC has published its **2024 Agenda Consultation**, aiming to shape the future of the IVS. The Agenda Consultation seeks to gather feedback on key valuation topics from a wide range of stakeholders, including valuation practitioners, VPOs, financial institutions, investors, academics, corporations, and regulators. The consultation period is now open until 9 October 2024.
(Source: IVSC)
- The **IVSC AGM 2024** will be hosted by the Hong Kong Institute of Surveyors (HKIS) and will take place at Dorsett Kai Tak, Hong Kong. This prestigious event, spanning three days from 20-22 November, is a cornerstone for valuation professionals, offering an unparalleled opportunity to engage with global leaders and stakeholders in the field.
(Source: IVSC)
- A **review group** has been set up to give recommendations on how to strengthen the development of Singapore's stock market, the Monetary Authority of Singapore (MAS) announced on 2 August 2024. It comes after the Singapore Exchange (SGX) had its worst year for listings last year. The review group will have two broad areas of focus. The Enterprise and Markets workstream will look at addressing market challenges, fostering listings and facilitating market revitalisation. The Regulatory workstream will focus on enhancing the regulatory regime to help the market grow and build investors' confidence. The review group will assess the state of the market and existing efforts, as well as come up with recommendations on how to attract primary and secondary listings, improve liquidity and promote the development of SGX-listed companies. It will also propose outreach and communication strategies to support enhancing the attractiveness of Singapore's equity market. The group will recommend a set of measures and complete their report within 12 months, MAS said.
(Source: CNA)

THANK YOU

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