Ch 16 Employee Stock Options

Employee stock options are call options on a company's stock granted by the company to its employees.

Contractual Arrangements

Employee stock options

- often last as long as 10-15 years
- often the strike price is equal the stock price on grant date (initially at-the-money)

Features of employee stock option plans

1. Vesting period during which options cannot be exercised
2. Employees forfeit options when leaving job during vesting period
3. When leaving after vesting period, employees forfeit options that are out of the money and must exercise vested options that are in the money immediately
4. Employees cannot sell the options
5. When an employee exercises the options, the company issues new shares and sells them to the employee for the strike price

The Early Exercise Decision

Feature (4) above leads to employee stock options being exercised early more often than exchange-traded or OTC call options.

Regular call options should never be exercised early

- option holder does better by selling the option rather than early exercising
- however, employee stock options cannot be sold

Do Options Align the Interests of Shareholders and Managers?

agency costs - losses experienced when interests of agents and principals are not aligned

Managers are the agents of the shareholders.

Employee stock options are very useful for startups

- way to motivate employees to work hard
- successful IPO means employees gain
- unsuccessful company means options are worthless

Options granted to senior execs are controversial due to the asymmetric payoff of options

- stock price goes up $\rightarrow$ shareholders gain and execs are rewarded
- stock price does down $\rightarrow$ shareholders lose but execs only fail to gain (no loss to execs)

This leads to a preference for **restricted stock units**

- gains/losses of execs mirror those of other shareholders

Arguments against stock options for execs

- exec will time announcing good news to increase stock price just before exercising options
- exec will move earnings from one quarter to another for the same reason
- exec may take actions to reduce stock price just before grant date
- execs are motivated to focus on short-term profits at expense of long-term performance
- source of distraction due to being large component of exec compensation

A potential solution is to require execs to give notice to the market of an intention to trade their company's stock.

Accounting Issues

Accounting standards require options to be valued on the grant date and the amount to be recorded as an expense in the income statement for the year in which the grant is made.

- valuation at a later time is not required

Arguably options should be revalued at financial year ends until they are exercised or reach end of life.

- same treatment as other derivative transactions entered into by the company
- if option becomes more valuable, there would be an additional amount to be expensed
- if option declines in value, there would be a positive impact on income

Advantages

- cumulative charge to the company would reflect actual cost of the options
  – zero if not exercised
  – option payoff if exercised
- the charge in a particular year would depend on option pricing model used
  – cumulative charge over option life would not
- arguably less incentive for company to engage in backdating practices

Disadvantages

- introduces volatility into the income statement

Alternatives to Stock Options

Restricted stock units (RSUs)

- shares that will be owned by the employee at a future time (the vesting date)

Market-leveraged stock units (MSUs)

- variation on RSUs
- number of shares that will be owned on the vesting date is S_T/S_0 where S_0 is stock price on grant date and S_T is stock price on vesting date

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If stock market as a whole goes up, employees with stock options tend to do well, even if the company's stock price does less well than the market. Combat this by tying the option strike price to the performance of the S&P 500. Increase in the index leads to increase in strike price, and vice versa. Then the company's performance has to beat the index performance for the options to become in-the-money.

Alternative to using the S&P 500 as the reference index is to use an industrial sector index.

Valuation

Accounting standards give companies latitude in choosing a method for valuing employee stock options.

The "Quick and Dirty" Approach

expected life - average time for which employees hold option before it is exercised or expires

- can be estimated from historical data
- reflects the vesting period, impact of employees leaving the company, and tendency for early exercise

Use the Black-Scholes-Merton model with the option life T set equal to the expected life.
The volatility is estimated from historical data.

Note that there is no theoretical basis for this method.
However, the results are not unreasonable.

Binomial Tree Approach

Build a binomial tree and adjust the rules used when rolling back through the tree to reflect:

1. Whether the option has vested
2. Probability of the employee leaving the company
3. Probability of the employee choose to exercise the option

The Exercise Multiple Approach

A simple model where employee exercises as soon as:

1. the option has vested
2. the ratio of the stock price to strike price is above a certain level

The ratio that triggers exercise is the *exercise multiple*

- calculate from historical data

A Market-Based Approach

Value an employee stock option by seeing what the market would pay for it.

Dilution

New employee stock option issuance leads to dilution for existing stock holders. The dilution takes place when the market first hears about the stock option grant. The possible exercise is anticipated and reflected in the stock price.

If the stock price that reflects the dilution is used in valuation of options, no further adjustment for dilution is needed.

The cost of stock option grants should be weighed against the benefits such as lower regular employee renumeration and less employee turnover.

Backdating Scandals

backdating - practice of marking a document with a date that precedes the current date

Research shows that stock prices tend to increase after reported grant dates, and that stock prices also tend to decrease before reported grant dates. The pre-grant and post-grant stock price patterns also became more pronounced over time. Statistical tests shows the patterns were almost impossible to occur by chance.

SEC requirement to report option grants within two business day showed a huge reduction in the abnormal returns around the grant dates.

Companies and executives that engaged in backdating have faced legal troubles.