3-1967

Financial Aspects of Stock Options

Linda H. Kistler

Giving executives stock options in lieu of a salary increase can often cost the company more than the executive gains in tax savings. This article suggests a realistic method of determining the salary level where both sides—executive and company—benefit—

FINANCIAL ASPECTS OF STOCK OPTIONS

by Linda H. Kistler
Lowell Technological Institute

STOCK OPTIONS have been a popular means of executive compensation at the upper executive level for a number of years. Issuance of a stock option gives the recipient the privilege of buying a specified number of shares in his company for a specified sum at a specified future date. Thus the company can reward the executive without the outlay of cash, and—provided the terms do not violate any of the numerous restrictions placed on these plans by the In-

ternal Revenue Service—the executive may reduce the tax rate on this part of his compensation by substituting capital gains for ordinary income taxation.

For the executive, the chief appeal of stock options is financial. If he is in a high income tax bracket, the savings may be substantial. The advantages to the company are less tangible. There is a tendency to regard options as without cost to the company since no money must be paid out. In the

final analysis this attitude is unjustified. By selling shares at a price below the market the company foregoes the difference between the actual selling price and the price for which the stock could have been sold. Furthermore, it loses the tax deduction it would have had if the compensation had been paid in cash.

The purely financial aspects of stock options are not the controlling ones from the company's point of view, however. The principal

reason for offering stock options is to give executives a stake in the company's profitability — and thus an incentive to work harder. In some cases the fact that cash need not be expended may be a major consideration. For young, growing companies without the cash to pay high salaries, the stock option may be an important tool in attracting talent.

Nonfinancial considerations

Even from the option recipient's point of view, the financial considerations may not be the only ones. Prestige, the opportunity to invest in a promising enterprise whose shares otherwise may not be readily available, the chance to realize profit with reduced risk — all have their appeal.

Many predicted a slow death for stock options when the Revenue Act of 1964 both made options less attractive (by requiring that stock purchased under options be held for three years to qualify for capital gains treatment rather than the

six months previously required) and made cash more attractive (by reducing basic income tax rates). This death has not yet occurred. That fact offers additional evidence that a simple cost versus benefit analysis is not a sufficient basis for deciding when and to whom stock options should be given.

Such an analysis, however, while not the whole story, is an essential ingredient of such a decision. This type of analysis is the subject of this article, which presents a mathematical model for determining at what income level an executive derives enough benefit from a stock option to justify the cost of giving it.

Indifference point

As a criterion for the selection of executives to whom stock options could be offered efficiently, several writers have recommended a compensation indifference point method of analysis. The compensation indifference point is the income level the executive must reach for his tax savings from stock options to equal the tax and other costs of the options to the corporation.

On the basis of 1965 income tax rates, Robert R. Frei[1] concluded that an executive and his wife filing a joint return would need to have income in excess of $100,000 per year in order for the individual's tax saving to overbalance the corporation's cost. A similar conclusion is reached by application of the simple model developed by Daniel M. Holland and Wilbur G. Lewellen.[2] If 1965 tax rates are substituted into their formula, a marginal tax rate of 61 per cent becomes the indifference point.

It is obvious that comparatively few of the executives now receiving stock options earn taxable in-

---

[1] Robert R. Frei, "Stock Options in the Light of the 1964 Revenue Act," *Taxes*, December, 1964, pp. 872-888.
[2] Daniel M. Holland and Wilbur G. Lewellen, "Probing the Record of Stock Options," *The Harvard Business Review*, March-April, 1962, pp. 132-150.
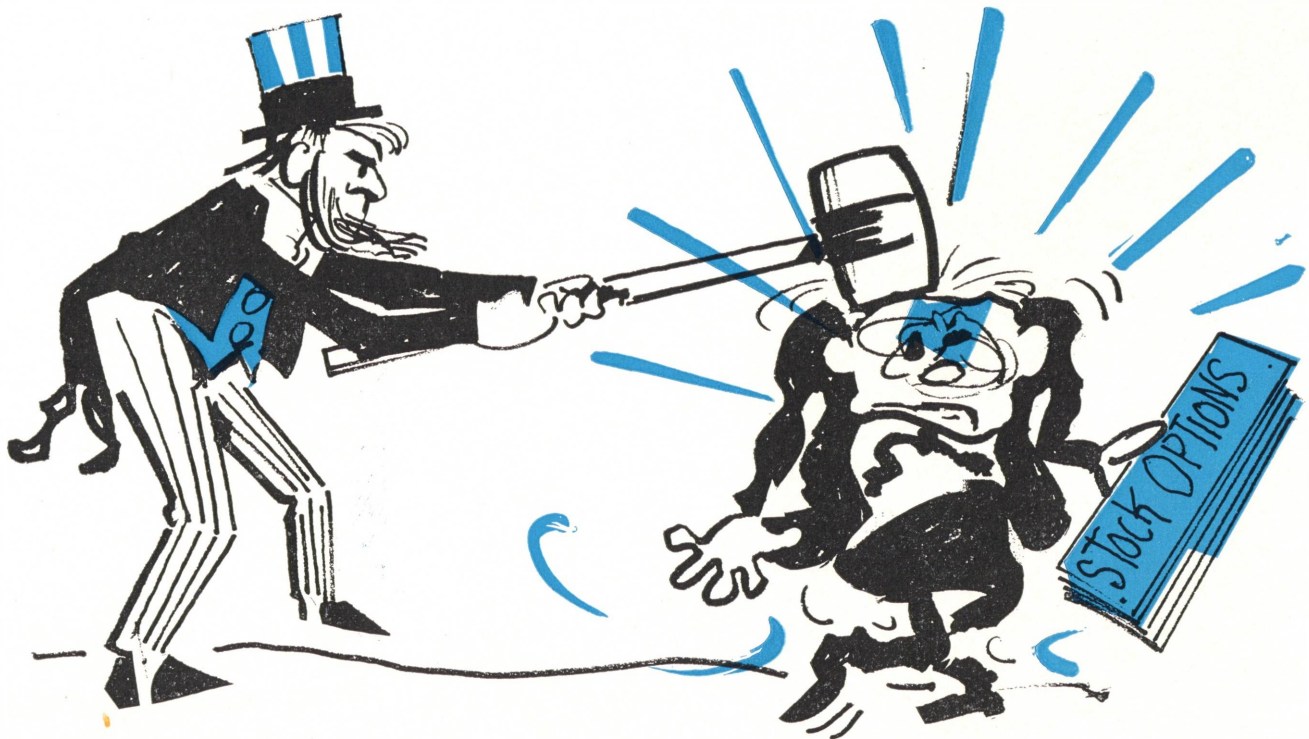
The Revenue Act of 1964, with its significant changes in the requirements for capital gains treatment of stocks acquired under stock options, caused many writers to predict the slow death of such options.

Several sources have recommended a "compensation indifference" method of analysis for determining which executives should be offered a stock option and which would be better off with a standard salary increase.

come in excess of $100,000 a year (especially in view of the current income averaging provisions). On the basis of these analyses a corporation might well conclude that it should curtail its stock option program.

The option situation appears more favorable, however, when the simple formulation is revised to approach reality more closely. This article summarizes, first, the analysis proposed by Holland and Lewellen and, second, the revised model proposed by this author. To unify the analysis, the notations of Holland and Lewellen are used throughout.

Original model

The basic formula for the indifference point (the point at which the overall combined cost to the corporation and executive from increased salary equals the cost of an option gain, with each alternative equally costly to the company) is as follows:

$$C \ (1\text{-}T_g) = \frac{C}{1\text{-}T_c} \ (1\text{-}T_p)$$

In deriving this equation it was necessary to make the salary and option alternatives equally costly to the company so that the company would be indifferent as to which alternative was utilized.

C is the amount of option gain to the executive, i.e., the spread between the fair market value of the shares at the date of exercise and the option price at the date of grant. C is also the cost of the option to the company since the corporation, theoretically at least, could have sold the shares at the market price but actually sold them for less (the option price). No adjustment in the company's cost is made for tax factors since no tax deductions may be made by the company when an option is granted or exercised.

The amount of option gain to the executive after taxes is C $(1\text{-}T_g)$, where T_g is the capital gains tax. (The maximum capital gains tax rate of 25 per cent is assumed to be applicable to most executives who would receive options.)

Had the company decided to give a salary increase rather than an option gain, it could have given —at the same cost—in place of C dollars of option an amount equal to $\frac{C}{1\text{-}T_c}$, where T_c is the corporation tax rate (48 per cent in 1966, assuming corporate profits in excess of $25,000). The after-tax income to the executive then is $\frac{C}{1\text{-}T_c} \ (1\text{-}T_p)$,

where T_p is the marginal personal tax rate.

To determine the marginal personal tax rate at the indifference point the final formula is as follows:

$$T_p^* + 1 - (1\text{-}T_g) \ (1\text{-}T_c)$$

Substituting current tax rates into this equation and solving for T_p^*, we find that a marginal personal tax rate of 61 per cent becomes the indifference point. Thus, an executive would have to earn taxable income of more than $100,000 for an overall tax and other cost advantage to arise from giving an option gain rather than a salary increase. For an executive whose taxable income is in excess of $100,000 the overall cost (employee tax cost and corporation cost) is minimized when any additional compensation to the executive is in the form of

LINDA H. KISTLER, CPA, is assistant professor of accounting at Lowell Technological Institute, Lowell, Massachusetts. Mrs. Kistler is a member of the American Accounting Association, the American Institute of CPAs, and the American Association of University Professors. She received her BS and MS degrees in business administration from Colorado State University in 1964 and 1966, respectively.

increase.

This model provides a simple method for determining which executives should be offered stock options (from the purely financial point of view). However, the marginal tax rate it indicates is so high that the number of executives receiving stock options would be drastically reduced if management actually utilized it.

Revised model

A simple change in the model not only would make it more realistic but also (in many cases) would reduce the indifference point to a lower level. This revision is based on a closer analysis of the corporation's cost.

In the original model the cost of the option to the company is defined as the difference between the fair market value of the shares at the date of exercise and the option price at the date of grant. Thus, if the market price of the stock is $100 and the company is obligated to issue a share under option for only $70, the company apparently incurs a cost of $30.

This formulation overlooks a significant factor. When a corporation sells shares to the public, the net proceeds per share from the issuance are less than the current price because of costs of flotation, underwriting costs, and dealer discounts. The amount of such costs varies widely but has been estimated to average 5 to 15 per cent of the gross amount receivable when the stock is sold to the public.

If a share of stock were sold publicly for $100, the corporation might receive only $90 (assuming a 10 per cent flotation rate). It is the market price less flotation costs that must be compared with the option price to obtain a realistic "cost" of the option to the company. In the illustration previously cited, the cost to the company would be $20, not $30.

It is possible to incorporate the factor of flotation costs into the original formulation and to revise

A simple change in the classic indifference point model not only would make it more realistic but would reduce the indifference point to a lower level. This revision is based on a closer analysis of the corporation's cost.

the analysis accordingly. When flotation costs are considered, the formula may be restated in final form as follows:

$$T_p^* = \frac{(1-T_c)}{\dfrac{R(1-F)-1}{[(R-1)\ T_g - RF] + T_c}}$$

where F is the rate of flotation costs and R is the ratio of fair market value of the stock at the date of exercise to the option price. (The formula reduces to the original model if a flotation rate of zero is assumed.) The value ratio R is necessary in order to define the option gain to the employee.

Illustration

The general applicability of the revised formula can be demonstrated by means of an illustration. Assume that a company wants to give X dollars of additional compensation to a number of its executives but also wants to minimize the overall tax and other costs, considering the corporation and the employee as a team.

The company, which has issued shares to the public in the past, estimates its flotation costs to be 5 per cent of the gross proceeds from a public issuance. That is, in the past, every dollar of stock proceeds was reduced by five cents of flotation costs; therefore, F in the equation is equal to .05. Assume further that the company plans to grant any stock options at the fair market value at the date of grant. (This is required for a qualified stock option under the Revenue Act of 1964.) Furthermore, if any options are issued, the optionee may not exercise the option and purchase stock until one year following the date of grant. (The waiting period could be any length of time, but a common requirement is one year.)

Management has to make an "educated estimate" of the fair market value of the company's stock one year after the date of grant if the company is going to evaluate objectively the results of

Management has to make an "educated estimate" as to the fair market value of the company's stock one year after the date of grant if the company is going to evaluate honestly a salary gain vs. an option gain.

a salary gain versus option gain decision. The estimate of fair market value one year in the future cannot be exact, of course. However, utilizing past experience, current market conditions, and future expectations regarding market behavior, it would be possible to construct a series of probable market values one year hence. The tools of statistical probability could be employed.

For purposes of illustration we shall arbitrarily assume there is a .99 probability that the market value will increase to 1.3 times the option price in one year ($R = 1.3$) and a .75 probability the market value will be 1.5 times the option price in one year.

It is now possible to substitute the various estimated fair market values into the formula and calculate two indifference points. Our tax percentages would be as follows: (T_c), the corporate tax rate, is .48; (T_g), the capital gains rate, is .25; (F), the flotation rate, is .05; and marginal personal tax rates for 1966 would apply.

Substituting into the revised formula, if R is 1.3, the marginal personal tax rate is 50.2 per cent. We can conclude that an executive whose ordinary taxable income is above $52,000 should receive additional compensation as option gain, rather than as salary increase, if the overall cost is to be minimized.

Assuming that the market value of the stock rises to 1.5 times the option price ($R = 1.5$), the marginal personal tax rate would be 54.1 per cent under the revised formula. An executive should have ordinary taxable income in excess of $64,000 before he should be given an option gain instead of a salary increase in order to minimize the overall cost.

More realistic results

Results more nearly in accordance with reality are obtained from the revised model. In the original model we found that only when an executive's taxable income exceeded $100,000 would it be efficient to give an option gain rather than a salary gain. In the revised model the indifference point varies, depending upon estimates of the fair market value of the stock at the date of exercise.

The addition of flotation costs adds realism to the simple model and provides a more useful management tool for the selection of executives to whom options might be offered. In addition, the revised analysis indicates that executives whose income levels are much lower than $100,000 can efficiently be granted options as a compensation device. The complicating fac-

tor of flotation costs makes it appear that the high income brackets usually mentioned when options are discussed may not be realistic.

Application

The revised model introduced here could easily be applied to the salary versus option decision problem. The model would provide a realistic starting point for the selection of executives to whom options should be given. A corporation using the model could substitute facts descriptive of its own circumstances, could solve the equations, and could then use the results as one criterion for selection of optionees.

A re-examination of option policies probably would be valuable for many companies. If overall cost to the corporation and tax to the employee is to be minimized, those executives whose salaries do not exceed the indifference point of the revised model probably should not receive options unless other considerations are deemed more important by management. Selectivity is an important consideration when options are granted, and the revised model presented here should be a valuable management tool in developing a realistic and rational basis for option versus salary decision problems.