

# EXPLORING THE OPTIONS ISSUES

## RIGHTS AND DIVIDENDS: SOME WIN, SOME LOSE



by **BRENDAN LAWLOR**

***Current methods of dealing with adjustments for rights issues and dividends can impose substantial "penalties" on option-holders. Different procedures could preserve value and protect investors.***

**T**he market for options has grown considerably since the publication by Black and Scholes of their pricing formula ("The Pricing of Options and Corporate Liabilities", *Journal of Political Economy*, March 1973). The growth has also reflected increased investor sophistication and the rise of the entrepreneurs. (An option on a stockmarket share grants the right to buy that share at a guaranteed future price, exercisable on a specific future date. This is known as a call option. The equivalent right to sell is known as a put option.)

The purpose of this paper is to:

- show that the current basis for adjusting options for rights issues is incorrect and to propose a proper procedure;

- propose a stock exchange listing requirement that will protect option-holders when large dividends are paid on a stock;

- discuss options as a source of cheap corporate finance;

- stimulate a deeper, and in particular longer-dated, options market in Australia;

- show that many potential applications of option theory exist in the securities market – for example, bad-debt provisions in security analysis and associated securitisation.

The current method of adjusting option prices for rights issues is identical to that applying to the underlying shares. That is, the theoretical ex-rights price is current equity plus cash paid, divided by the number of shares, including new

stock issued.

However, the option-holder does not participate in the rights issue, not being a stock-holder. He pays no cash; therefore, from his point of view, the rights issue has the effect of a bonus issue, applying only to the holders of shares.

The following example (see next page) shows that under the current method of adjusting options, the rights discount is subtracted from the exercise price of the option, with no adjustment being made to the number of options on issue.

This is compared with a proposed method which adjusts both the price and the number of options, using the ratio of ex-rights to "old" stock prices as a factor, rather than the rights discount.

It can be confirmed, using the Black and Scholes pricing formula, that the proposed method yields the same option price that existed before the rights issue. Value is preserved and the investor has been protected.

The example indicates a shortfall in value of approximately 8 per cent using the current method. Thus, an investor who has made, say, \$20,000 on options related to rights issues as in the example would expect, under the proposed method, a further \$1,600 ( $\$20,000 \times 0.08$ ) plus interest.

The concept can be applied to dividend payments to overcome a dilemma pointed out by Black and Scholes in their 1973 work. They said:

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## Alternative Option Adjustments

### Stock data:

Stock at \$10; Rights (1-for-4) at \$8  
Theoretical ex-rights price  $\frac{10 \times 4 + 8 \times 1}{5} = \$9.60$

Rights discount \$0.40; Ratio new/old stock price 96%

### Option data:

Exercise (strike) price \$15; 1 lot = 1,000 options

### Current option adjustment for rights issue:

Ex-rights strike price:  $\$15 - 0.40 = \$14.60$ ; Ex-rights no. of options:  $1,000 \times 1 = 1,000$

### Proposed adjustment:

Ex-rights strike price:  $\$15 \times 0.96 = \$14.40$ ; Ex-rights no. of options:  $1,000 \div 0.96 = 1,042$

"It is not clear what adjustment might be made in terms of options to protect the holder against loss due to a large dividend on the stock and to ensure that the option value will be the same as if the stock paid no dividend. Currently the exercise price of a call option is generally reduced by the amount of any dividend paid on the stock. A liquidating dividend of all company assets will reduce the price of the stock and the value of the option to zero, no matter what adjustment is made to the exercise price of the options."

Again, from the point of view of option-holders, a dividend is effectively a bonus issue with, say, half of the stock capitalised and paid in cash to the stock-holders.

The method I have proposed solves this anomaly. A dividend of, say, one-half of corporate equity will require halving the exercise price and doubling the number of options.

I recommend that stock exchange listing requirements should include such a provision to encourage fair investment and protection of the public.

This would open the way to a mature options market uninhibited by adverse corporate dividend policy. Entrepreneurs would be able to make substantial plays against a hostile corporate who, at present, can dividend-strip the company, leading to disaster for a raider using options weapons.

As a corollary, the concept overcomes a long-standing technical objection to the Black and Scholes option formula (i.e., that it ignores dividend payments) and clears the way to a stable and efficient long-dated options market.

Options can be seen as a cheap source of corporate finance. A company issuing options owes the investor nothing should the exercise price not be reached before the expiry of the options' life. On the other hand, should the company prove to be a dud, investors would have minimised their losses, compared with full equity investments. But should the

company prove to be a bonanza, both company and investors win. Cast in this light, ordinary shares are beginning to look a little dull.

This approach came to me as a result of analysing venture-capital companies. Surely the stock of such companies is essentially "option stock"; that is, options parading as stock (out of 10 companies, say, an average of eight duds and two bonanzas). Limited downside, unlimited upside, with price heavily discounted for risk.

Option valuation formulas can be applied to a number of issues of major concern to security analysts. Consider bad debt provisions, banking credit analysis and insurance (with salvage). Each of these involves an analysis of the size of a potential loss and the change of that loss occurring. Generally, these two factors move inversely with each other: the greater the loss if a tanker were to go down in the Persian Gulf, the smaller the probability of the event.

This is what option formulas do for

## PENSIONS AND SUPERANNUATION

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19. Douglas, Roger: op. cit. "Report on Retirement Income System", April 1988. ". . . the Canadian National Council of Welfare" concluded "that tax incentives for superannuation turn logic and equity upside down, favouring those who need help least and driving an additional wedge between the incomes of the have and have-not elderly."

20. Foster, Chris: op. cit. p113. "A major concern of superannuation pensioners . . . is that they are disadvantaged because they cannot avoid the fringe benefits income test . . . Solutions include . . . providing fringe benefits to all pensioners."

21. Douglas, Roger: op. cit. "The need to provide some special encouragement for long-term finance was carefully considered by the 1981 (Campbell) Committee of Inquiry into the Australian

us: they convert all such combinations into an average, contingent on some "minimum" circumstances occurring; e.g., the exercise of an option because of a rise above the exercise price. The practical application of this to analysis of company accounts seems unlimited. The technique should be part of the analyst's standard tool kit.

Finally, I point out that the standard option valuation formula of Black and Scholes is incorrect for two reasons:

■ The formula includes the market rate of interest. Stocks depend not on interest rates but on the stock earning rate, which the formula ignores. Black and Scholes erred in confusing riskless arbitrage with mere hedging. Absence of arbitrage implies the use of a (riskless) rate of interest, since a riskless hedged position long in stock and short in options is market-neutral. "Hedging merely reduces, but never eliminates, risk," wrote P. Cootner in *The Random Character of Stock Market Prices* (Cambridge: M.I.T. Press) in 1964.

■ The formula gives only a mean value. Since a volatility factor for the variance of stock earnings is included, it must logically follow that variance option prices also exist. For how can a mean value tell all in an uncertain world? Option variance enables rational pricing of the option profit loading demanded by option issuers.

The correct formulas are soon to be published in an article by this author ("Option Theory") in *Econometrika*. □

Financial System. It recommended the removal of taxation exemption for superannuation net investment income. It concluded that should the Government choose to pursue a policy of greater neutrality between various forms of saving, this would not necessarily mean a reduced overall supply of long-term capital.

22. "Government Economic Statement" (New Zealand), December 1987, Annex 3. "It is sometimes argued that superannuation tax privileges are required to encourage savings, especially for retirement. These arguments have been closely considered. However they do not stand up. There is no rationale for encouraging savings through one particular institutional form. Moreover, much of the savings through superannuation schemes are withdrawn and spent long before retirement. The effect of the existing concessions is more likely to influence the form than the overall level of savings." □