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Executive Share Options

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Summary

The number of companies granting executive share options is large and growing. Yet the approach to the option plans has not changed significantly in recent years. This paper suggests that changes are needed.

Part A puts forward a new option pricing model for executive share options. It takes into account long-term granting practice (10 year option lives) and the UK income taxes payable by UK based executive.

Part B looks at a new concept in long-term share incentives. It stresses the importance of tracking total shareholder return, and shows how this can be achieved by an escalating strike price option and a dividend accumulation plan. It looks at an analysis of how the FTSE 100 would have performed from 1980-1990.

Résumé

Options d'Actions des Cadres

Un nombre important et croissant de sociétés offre aux cadres des options d'actions. Cependant l'approche de ces plans d'options a peu changé au cours des dernières années. Cet article suggère que des changements sont nécessaires.

La partie A propose un nouveau modèle du prix des options pour les options d'actions des cadres. Il prend en compte la pratique d'attribution à long terme (10 year option lives) et les impôts sur le revenu britanniques que doivent payer les cadres basés au RU.

La partie B considère un nouveau concept de prime d'actions à long terme. Elle souligne l'importance de localiser le rendement total des actionnaires, et montre comment on peut y parvenir par escalating strike price option et un plan d'accumulation de dividendes. Elle étudie une analyse de ce qu'auraient pu être les performances du FTSE 100 de 1980 à 1990.

A Model for valuing conventional grants of executive share options and a look at a new plan designed to track long-term total shareholder return.

INTRODUCTION

Executive share options, with tax advantages for the executive, have been available since 1945 in the US and since 1984 in the UK. They have been very popular with companies and over 5,500 plans have been submitted to the UK Inland Revenue for approval since 1984.

The practice of granting options has emerged in a standard way in response to Inland Revenue rules and institutional investor pressure.

The executive has a fixed number of shares placed under option. Typically he has the right to exercise the option and buy the shares at any time between 3 years and 10 years from the date of grant. Options are not transferable other than on the death of the executive. The option exercise price (the strike price) is fixed at the time of option grant and is market value of the shares at that time. The value of shares placed under option is usually a multiple of salary and approved options have a maximum permitted amount of four times salary (or £100,000 if greater).

Typically either a nominal sum of £1 is charged for the grant of the option or the grant is under company seal without any consideration changing hands.

In the UK there has been an explosion of derivative products. All sorts of options can be bought and sold and significant markets have been developed. There is also a major current debate on short-termism in the City, and yet option granting practice continues as though nothing has been changed since 1984.

In this paper I suggest that conventional option grants should be valued, and their value disclosed to executives at the time that options are granted and subsequently. A model has been designed to arrive at a useable value. I also suggest an alternative to the conventional option grant: a long-term plan that tracks total shareholder return.

(A) A model for valuing conventional grants of executive share options.

Methodology of the Model

The approach to produce a value for the option is a simple one. On the one hand the after tax value of an alternative investment is computed, on the other the loss of the potential dividend stream is deducted. There are four stages to the calculation. Charts 1 and 2 at the end of this paper show the calculation of the Option Value and a demonstration of the calculation respectively.

First, the after-tax yield to redemption for a suitably-long gilt-edged security is determined.

Second, the Initial Option Value is computed without taking into account the dividends likely to be paid on the shares.

Third, the present value of the future dividend stream is calculated.

Finally the present value of the dividend stream is deducted from the Initial Option Value to produce the Option Value.

Each part can be analysed in more detail.

The after-tax yield to redemption.

This is perhaps easiest obtained from a good gilt broker on the day. However, I have built a Javelin model to compute a close approximation of the after-tax yield to redemption using the BONDYTM (bond yield to maturity) function. Using a model also enables quick changes to be made between the after-tax yields for a basic rate and higher rate tax payer.

The following data are needed for the Javelin model to run;

- Date Now
- Redemption date of gilt
- Face value of gilt
- Market Price of gilt for face value
- Coupon on gilt
- Number of interest payments annually
- Marginal rate of tax of individual.

The Initial Option Value

Once this after-tax yield has been given, it is relatively simple to compute the initial option value by;

(a) Calculating the present investment needed to grow to the option exercise price (which in most cases is equal to the market value of the shares placed under option). We therefore need to know the value of shares that are to be placed under option. Traditionally in the UK this has been determined as a multiple of the executive's salary and the model asks for the salary level and the multiple of salary that is to be placed under option.

(b) Deducting the investment amount calculated in (a) from the current Market Value of the shares placed under option hence giving the Initial Option Value.

The present value of the future dividend stream

The Initial Option Value is not by itself a satisfactory measure of the worth of the option because it pays no regard to the future dividend stream that a shareholder will receive but an option holder will not.

The Initial Option Value needs to be reduced, therefore, to take into account this difference.

The model attempts to quantify this difference and to value it, and uses that value to adjust the Initial Option Value. The model user is asked to provide the following data.

- the dividend yield of the shares
- the assumed future share price growth
- the risk-free (gross) rate of interest available to the option holder.

It is accepted that the assumed share price growth is difficult to forecast with great accuracy. It is needed by the model, however, to calculate the future dividend stream. Most British companies, it is accepted, do not have the most direct of links between share price and dividend payments (or underlying profits and dividend payments for that matter) and some model users may prefer to assume a more or less fixed dividend. This can be obtained by inserting the current dividend yield and 0% assumed future share price growth.

The model calculates the annual dividend receivable by the number of shares placed under option. The present value of that dividend stream is then calculated by discounting at the risk free rate of interest.

Calculating the Option Value

The present value of the future dividend stream is deducted from the Initial Option Value to give the Option Value. The model then goes on to demonstrate the relative position of the shareholder and the option holder.

Points for consideration

If the share price appreciation or dividend yield is sufficiently high the option has no value. This is because we are looking at the relative positions of an option holder and a shareholder and attempting to equate them. The Option Value is the amount that puts the two holders in a similar position given certain assumptions about the company. Clearly if the dividend yield is so great that the present value of future dividends is greater than the Initial Option Value, there is no Option Value, and the rational investor would choose instead to buy the shares in the market at the current market price. (If there was enough of such activity it may push up the share price and reduce the yield sufficiently to give the option a value once again).

Another initially controversial point is that a share with a greater perceived value will have a lower Option Value than a share with a smaller perceived value. If shares A and B are currently the same value and produce the same yield, but A is expected to grow in value more quickly than B then the Option Value of A will be less than the option value of B. This is because the option holder will need to invest more money in buying the future dividend stream of A and a greater deduction will be made from the Initial Option Value to determine the Option Value.

Once again this demonstrates the underlying approach of the model which is to put the optionholder in the same position as a shareholder, and not to produce a speculative investment vehicle.

(B) A look at a new plan to track long-term shareholder return.

In the 1980's executive share options appear to have met the need for which they were introduced. With their operation, however, a number of serious shortcomings have emerged which are of particular interest to the investment community:

- the options as currently granted are not truly long-term incentives,

- current option pricing pays no regard to long-term interest rates or inflation,

- conventional options are not directly affected by dividends or demergers.

I have developed an alternative approach to option plans, the *Cockman Combined Plan* or *CCP*, which addresses these shortcomings. I examine the issues and outline the solutions to them below.

A Long Term Incentive

Typical options are not long-term incentives. The requirements of the Inland Revenue are simple. If approved options are exercised sooner than three years from the date of grant or more frequently than every three years from a previous exercise, then the notional gain arising (the option spread) is taxable as income under Schedule E. If exercise is after at least three years, notional gains are not taxed as income but actual gains on subsequent disposal of the shares are liable to capital gains tax.

The reasons behind the Inland Revenue's three year stand have been well explained. If exercise were permitted any more frequently then income-taxable cash salaries would be sacrificed for non income-taxable options (remember that in 1984 the top rate of income tax was 60% and the top rate of capital gains tax was 30%). A three year gap may satisfy the Inland Revenue, but it should not and does not satisfy long-term investors in companies.

The City of London is constantly being accused of a short-termist approach to investment by managements of UK companies. Such managements should themselves adopt a longer term view and accept that their options may not be exercisable for a period of at least seven years and preferably nearer to ten years.

Another reason for introducing a long-term plan is to cope with the vagaries of the Stock Market. It is accepted that although the Stock Market may be giving unjustifiable price indicators at any point in time, it is not and cannot be giving unjustifiable price indicators over the long-term. In the long-term the share price will reflect the underlying performance of the company and therefore represent an appropriate basis for a reward mechanism for management. If management were forced to take a seven to ten year view of their share options, the panic of "under water" options following the crashes of October 1987 and 1989 would not be so marked.

A long-term plan removes the opportunity for executives to attempt to outguess the market as to the best time to exercise an option. Rather the executive is forced to concentrate on producing superior long term performance. By long-term I am referring to a period of seven to ten years from the date the option is granted.

The first element in the design of a Cockman Combined Plan is the requirement that the plan be genuinely long-term

The risk-free return factor

Any shareholder in a public company could choose instead to invest in a long-term government security and obtain a risk-free return. Investors in equities are aiming to do better than this risk-free return, and over time, as a generality, they have. However, the message given to an executive who is granted a traditional share option is a different one. The option exercise price (or strike price) is fixed on the day the option is granted, usually at the market value of the shares on that day. Even if the subsequent increase in the share price is due to nothing more than inflation, the executive can derive a gain by exercising his option, because his strike price is fixed.

Most executives would agree that they should only receive a reward for giving the shareholders a better return than they could otherwise have obtained in an entirely risk-free manner. The way to achieve this is to increase the option exercise price by the long-term interest rate. Let us say that over a ten year period this rate is estimated to be 9%. The price is therefore increased at 9% a year. So for an option granted for seven years over shares with an initial market value of £100,000, the eventual option exercise price would be £182,804 (£100,000 x $(1 + 9\%)^7$).

Only if the market value of shares under option at that point in time exceeded £182,804 would the option be worth exercising. This is an effective way of concentrating management effort on producing superior long-term returns to shareholders.

The second element in the design of the Cockman Combined Plan is the escalation of the option exercise price in line with a long-term interest rate

The impact of dividends and demergers

Under a conventional option plan, the executive holding an option receives no benefit from any dividends that the company pays, and now that companies are focusing on core businesses and 'spinning off' non-core companies, the dividends can be significant. Clearly an option plan represents simply an opportunity for an executive to acquire shares in the future and until the shares are issued to him, a dividend stream will not accrue.

I have concluded that this inability of an option plan to track total shareholder return, that is both capital appreciation and dividend yield, is a major flaw in the design of a long-term incentive plan which is based only on options. Hence the title *Cockman Combined Plan* because, to solve this problem, I have combined a share option plan (with long-term and escalating strike price features) with a restricted share plan.

A restricted share plan is a plan in which shares are awarded to executives, but until a time period of restriction has elapsed, the executive cannot sell the shares. Under the *CCP* the restricted period would end when the underlying long-term option is exercised, that is not before seven years have passed from the time of the *CCP* award.

Until that time, whenever the company pays a dividend to its shareholders, the amount of the dividend that would have been paid to the executive on his option shares (had they been issued) is paid instead into the restricted share plan, and shares are purchased in the market for that executive. These shares accumulate for the executive on the same long-term timescale as the option. This will, of course, increase the expenses of the company. However, because the *CCP* is targetted at a few senior executives I have assumed that there will not be any material impact on the share value over the period. Similarly, I have not taken account of any benefit arising to the company from the additional subscription price payable by executives on exercise of their *CCP* options.

The third element of the Cockman Combined Plan is to combine a restricted share plan with the long-term option plan to accumulate the notional dividend yield

Summary of the Cockman Combined Plan

* The plan is genuinely long-term.

* The plan links the rewards of the executive to total shareholder return.

* The plan requires an increasing share price over the long-term period to be of any value to executives.

Uses of the CCP

The CCP is intended for those senior executives in a company who are responsible for delivering total shareholder return. It is intended to focus attention on the long-term performance of a few key executives in the company It is not intended for widespread use throughout an organisation, nor for the executives of subsidiary companies.

Our reasons for suggesting its narrow use are to retain its power as an incentive. When such a plan is offered to individuals who cannot influence total shareholder return it cannot be an incentive to them. In such cases a divisional long-term bonus plan combined with a much more modest and widespread equity participation plan, such as savings related options or profit sharing share schemes, would be a far more effective way to achieve the right mixture of incentive and wider employee share ownership.

The divisional long-term bonus plan can, in the case of a group with large subsidiaries, be based on the same principles as the *CCP* itself. Indeed it is often easier to design such plans because equity in the subsidiary is not used, and a more appropriate approach to valuation of the subsidiary is possible.

Taxation aspects

The Inland Revenue has confirmed that the escalating strike price can be an acceptable part of an Inland Revenue approved share option scheme. Further, the income tax due on a restricted share plan can, with the prior agreement of the Inland Revenue, be deferred until the restrictions are lifted. As far as dividends received are concerned, clearly the recipient will have his basic rate liability satisfied by the associated tax credit and only be liable to higher rates of tax on the dividends after they are received. There are, therefore, no tax obstacles to the introduction of a *CCP*.

Analysis of FTSE 100 Companies

On first consideration of these ideas, executives are not likely to be happy to give up the fixed strike price of their existing option plans. However, I have run a comparison of all the FTSE 100 companies at June 1990 for which data is also available back to 1980 looking at traditional options and the *CCP*. 20 companies in the June 1990 FTSE 100 list do not have share price and dividend data for all the years. These are generally privatisation companies. The remaining 80 have been

analysed, but in presenting some of the findings I have excluded one further company, Polly Peck, as its exceptional growth distorts the remaining 79. The results are interesting.

The data for each company was supplied by Datastream International and takes account of rights issues and bonus issues from 1980 to 1990. For each company I have assumed that a sufficient number of shares worth £100,000 were placed under a conventional option and a *CCP*.

For the conventional option the option gain is the increase in value of each share multiplied by the number of shares placed under option.

For the *CCP* there are three stages to the valuation. First, the option exercise price has been increased each year by the long-term interest rate. As a result the option gain is smaller than for a conventional option. Secondly, dividends have been "used" to buy shares in the company in the market at the average price between the 1st January at the beginning and end of each calendar year in which such dividends were paid. The shares so purchased have been valued at the same price as the option shares at time of exercise of option. Thirdly, the dividends accruing on the shares which are themselves held in the restricted share plan have been assumed to be paid out to the shareholders and not reinvested. The cash value of dividends net of basic rate tax is shown as a separate item.

Chart 3 shows for a sample of 15 companies the results of the gains that would have been derived by £100,000 worth of shares being placed under a conventional share option and a *CCP* over a ten year period from 1 January 1980. 68 companies out of 80 would show a higher result from the *CCP* and 12 a lower result. The average value to the option holders before tax would be £712,014 for the *CCP* and £563,544 for the conventional option. (Chart 4 illustrates the percentage differences between the total gains accruing under the *CCP* and a conventional option for the same sample.)

If I shorten the option period to seven years and look at results from say, 1981 to 1988, then 57 companies show a better result with the *CCP* as against 23 with the conventional option. Average gains would be £339,667 for the *CCP* and £301,124 for the conventional option. Changes to option grant date and option length do not appear to affect the findings emerging from my model.

However, even if the results were different, I still consider that a plan that measures total shareholder return is fairer both to shareholders and executives than a share option scheme in isolation.

The model can be used not only to calculate relative past performance but also to estimate relative future performance, taking into account projections for share price performance and dividend yields for the next ten year business cycle. Therefore the model is as much a predictor of the future as a measure of the past.

Option pricing model for UK equities CHART 1

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Variables

8.026%	given after tax yield to redemption for gilt
100p	share price at time of option grant
3.00%	dividend yield
5.00%	assumed future share price growth
7	year life of option (maximum 15)
£25,000	salary of employee at time of option grant
2	multiple of salary placed under option (maximum 4)
40%	marginal rate of income tax
10.00%	risk-free rate of interest
140.71	p future value of share at end of option period

Calculation

Value of shares under option	£50,000
Number of shares under option	50,000
After tax yield to redemption	8.026%

Value of option	for holding for	1 share
		£.p
Initial Option Value	20,875	0.42
less present value of future Dividends	(8,338)	(0.17)
Option Value	12,537	0.25

Demonstration of calculation CHART 2

	for holding	for 1 share
A buys shares worth	£50,000	£1.00
Total expense of A	50,000	1.00
	50,000	1.00
B purchases future dividends for	8,338	0.17
B invests in gilt described above	29,125	0.58
B purchases option for option value	12,537	0.25
Total expense of B	50,000	1.00
at end of option period: A has holding worth	£70,355	£1.41
B receives proceeds from gilt	50,000	1.00
B has option gain of	20,355	0.41
B's holding is worth	£70,355	£1.41

A and B have received similar income streams

CONVENTIONAL OPTION GAIN v CCP **CHART 3**

Company Name	Conventional option gain	CCP Return for executive Total	option spread	dividend shares	dividend cash
BOC Group	£880,702	£1,102,846	£743,965	£329,100	£29,780
General Electric	£244,775	£193,594	£108,039	£78,924	£6,632
Glaxo	£2,787,09	£3,307,979	£2,650,354	£624,546	£33,078
GUS	£213,953	£165,262	£77,217	£80,363	£7,682
Hanson	£2,168,612	£2,856,710	£2,031,875	£758,916	£65,919
Legal & General	£698,113	£976,253	£561,377	£370,108	£44,769
Marks & Spencer	£420,779	£440,991	£284,043	£143,289	£13,659
Pearson	£688,718	£860,250	£551,982	£282,115	£26,153
Prudential Corp	£638,832	£896,844	£502,095	£350,472	£44,277
Reckitt & Colman	£602,962	£706,607	£466,225	£222,709	£17,673
Reed International	£932,558	£1,244,322	£795,822	£413,200	£35,300
Royal Bank of Scot	£565,825	£733,212	£429,089	£274,614	£29,508
Smith & Nephew	£701,457	£851,936	£564,721	£258,764	£28,451
Tarmac	£972,340	£1,334,839	£835,604	£440,630	£58,605
Thorn EMI	£190,793	£174,792	£54,057	£108,158	£12,577

COMPARISON AND % DIFFERENCE **CHART 4**

Company Name	Conventional option gain	CCP Return for executive Total	CCP v conventional difference	% difference
BOC Group	£880,702	£1,102,846	£222,144	25.22%
General Electric	£244,775	£193,594	(£51,181)	-20.91%
Glaxo	£2,787,091	£3,307,979	£520,888	18.69%
GUS	£213,953	£165,262	(£48,691)	-22.76%
Hanson	£2,168,612	£2,856,710	£688,098	31.73%
Legal & General	£698,113	£976,253	£278,140	39.84%
Marks & Spencer	£420,779	£440,991	£20,212	4.80%
Pearson	£688,718	£860,250	£171,532	24.91%
Prudential Corp	£638,832	£896,844	£258,012	40.39%
Reckitt & Colman	£602,962	£706,607	£103,645	17.19%
Reed International	£932,558	£1,244,322	£311,763	33.43%
Royal Bank of Scot	£565,825	£733,212	£167,386	29.58%
Smith & Nephew	£701,457	£851,936	£150,478	21.45%
Tarmac	£972,340	£1,334,839	£362,498	37.28%
Thorn EMI	£190,793	£174,792	(£16,001)	-8.39%