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*One of the major changes brought about by the introduction of international financial reporting standards is the consideration of how entities should account for “payments” that are tied in some way to share values. IFRS-2, Share-based Payment, deals with this.*

In essence this Standard deals with three primary issues. The first is where “payment” is by the issue of shares or other forms of instrument. The second is where there is a cash payment, but the amount is derived from share values or a change in share values. And the third is where the provider of goods or services to an entity has a choice about whether he or she gets paid in cash or shares.

As a practical matter, the major effect of this standard is on remuneration. Employees may receive part of their remuneration in restricted shares, share appreciation rights, or via share options. In the case of restricted shares the employee may not have to pay “fair value”<sup>1</sup> for the shares. Schemes based on share appreciation involve the employee (eventually) receiving cash that is tied to changes in share prices. In the case of share options, the normal arrangement is that no money is exchanged when the option is granted, and if the option is exercised the grantee (i.e., the employee) pays the exercise price for the new shares that are issued.

This article concentrates on the share option accounting, as share options are an international and pervasive form of remuneration, because share options have come in for some criticism, and options involve the use of equity instruments. However it is important to note at the outset that some share-based payment schemes will involve the recognition of a liability, rather than the recognition of an item that affects “equity”. Examples include where some part of a bonus tied to share price changes is not paid out but carried forward. This could easily happen if the employee has not satisfied some conditions



Lisa Crowley, Country 2, 2005, digital photograph. Elam School of Fine Arts

associated with the scheme, for example the employee has not worked the requisite number of years for the payments to be made. A second example is where the company has an obligation to buy back shares held by an executive, where the buy-back will be triggered by the executive's resignation. This amounts to the company writing a put option.

### What are employee share options?

A share option gives its holder the right but not the obligation to buy shares in the granting company, on or before a specified date, and at an agreed price. For example, an employee might be given, at the "grant date"<sup>2</sup>, the right to buy 1,000 shares in Company A at an exercise price of \$5 per share, but only after a three-year time period (of waiting, while continuing to be employed) and only over the following two years. Technically, the option is a warrant, as most of the time new shares are created when the options are exercised. Senior employee share options (i.e., executive share options) agreements often have complicated performance aspects associated with them, for example the options can only be exercised if accounting rates of return reach certain targets, or provided the price of the shares on the share market exceeds some benchmark price by vesting date.<sup>3</sup> Sometimes the exercise price might also change. For example, the exercise price might increase at the company's equity cost of capital, less dividends, each year, or the exercise price might be tied to an international industry index, like the Morgan Stanley Telecommunication Index, which might be appropriate for assessing the performance of companies like Telecom.

Some companies issue restricted shares, but in a way that the shares are really options in disguise. For example a senior manager might be issued shares, which he or she has paid for through a loan made by the company to the employee. There is likely to be a restriction on the shares, for example they may not vest until say three years from grant date. However, the manager also holds a put option written by the company, with an exercise price equal to the subscription price of the shares. In sum, if the share price falls, the manager puts the shares back to the company, receives the cash, and pays off the loan. If the share price rises the manager throws the put away. Effectively the manager owns shares and a put, and has a loan from the company. It can easily be shown that this is equivalent to a call option, so executive stock option accounting would be applied even if this is not "technically" an option.

In many practical cases options are issued with an exercise price that is close to the share price at the time of the initial grant. That is, options are frequently issued "at the money". When the share price exceeds the exercise price the option is described as being "in the money", and the difference between the share price and the exercise price is described as the option's intrinsic value. When the share price is less than the exercise price the option is "out of the money", and the

intrinsic value of the option is zero.

The use of executive stock options, and the extension of these to lower level employees, is widespread, particularly in the United States. Indeed they become an important way of binding employees into a company and aligning the employee's interests with those of the shareholders. In so-called "new economy" companies, where the key asset is staff, (for example in software development and biotechnology) companies need to be sure that their most valuable assets, which can go home every night, will come back in the morning. As slavery is not generally permissible, options can be used to lock employees in to a firm. Hence employee options have vesting periods of up to three years (typically) in New Zealand, and longer periods in the United States. Options also become an important way of paying people without using up cash. In start-ups cash is likely to be in short supply. And a start-up phase of a biotechnology company could actually be quite a long period of time, as FDA approval might be required before a product can be released commercially. Hence companies in the biotechnology and information technology sectors in particular have an interest in how employee stock options might be accounted for.

### How have companies accounted for executive stock options in the past?

The answer is very straight-forward – no expense has been recognised during the life of the option. If the option lapses, that's the end of it. If the option is exercised, an amount of money is received by the company and (usually) new shares are issued. Using the numbers above, \$5,000 would be banked (assets increase) and Shareholders' Funds (Issued Capital) would also increase.

Those responsible for the development of accounting standards have not found that treatment terribly compelling, and indeed there have been attempts to require the expensing of employee share options. And many users of accounts have also been critical of past practices. Included in the list of critics is Warren Buffett, arguably the world's most successful investor, at least to date. He summed up the issues in the following terms:<sup>4</sup>

*"The most egregious case of let's not face up to reality behavior by executives and accountants have occurred in the world of stock options.... But even when options are structured properly, they are accounted for in ways that make no sense. The lack of logic is not accidental: for decades, much of the business world has waged war against accounting rule makers, trying to keep the cost of stock options from being reflected in the profits of corporations that issue them. Typically, executives have argued that options are hard to value and that therefore their costs should be ignored. At other times managers have said that assigning a cost to options would injure small start-up businesses."*

*“It seems to me that the realities of stock options can be summarized quite simply: If options aren’t a form of compensation, what are they? If compensation isn’t an expense, what is it? And if expenses shouldn’t go in the calculation of earnings, where in the world should they go? The accounting profession and the SEC should be shamed by the fact that they have long let themselves be muscled by business executives on the option-accounting issue.”*

In summary, critics of the “do nothing” approach have argued that there is an expense to recognise, as these options are part of employee remuneration. They also argue that once options are granted there is a claim on the net assets of the company, and this claim should be recognised as part of Shareholders’ Funds. The critics need to justify that the granting of options is an expense that is capable of being recognised. This is a two tier test – first is it an expense, and second can it be reliably measured? To invoke the former test one has to turn to an authoritative definition of the term expense. One such definition is within the International Accounting Standards Board’s Conceptual Framework documents. They define an expense as follows:

*“Expenses are decreases in economic benefits during the accounting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity participants.”*

The argument is that when options (or other equity instruments) are granted to an employee an asset is created, which then gets depleted through the employee providing service. That is, from the company’s perspective the expense represents the consumption of those services.<sup>5</sup> Further, as a result of the grant of options executives holding those options have a claim on the value of the firm. This needs to be recognized, as it effectively dilutes the existing shareholders’ claim on the net assets of the firm.

### What does the new standard require?

Table 1 reproduces in full the text of paragraphs 10 and 15 of IFRS-2. Paragraph 10 indicates that there is an amount that ought to be recognized as an expense. The expense is based

on the fair value of the services provided, and if that cannot be done the expense is based on the fair value of the options granted. As it is virtually impossible to assess the fair value of the services provided by the employee, the normal method of determining expense is therefore going to be the fair value of the options actually granted. That is easier said than done, and some of the issues associated with the valuation of employee options are dealt with below.

Paragraph 15 tells us over what period the expense associated with the options is recognized. This is determined

**Table 1: Relevant provisions of NZ IFRS-2**

For equity-settled share-based payment transactions, the entity shall measure the goods or services received, and the corresponding increase in equity, directly, at the fair value of the goods and services received, unless the fair value cannot be estimated reliably. If the entity cannot estimate reliably the fair value of the goods or services received, the entity shall measure their value, and the corresponding increase in equity, indirectly, by reference to the fair value of the equity instruments granted. *(paragraph 10)*

If the equity instruments granted do not vest until the counterparty completes a specified period of service, the entity shall presume that the services to be rendered by the counterparty as consideration for those equity instruments will be received in the future, during the vesting period. The entity shall account for those services as they are rendered by the counterparty during the vesting period, with a corresponding increase in equity. *(paragraph 15)*

to be the vesting period, which in many New Zealand cases is the first two or three years of the option’s life. For example when Pumpkin Patch Limited made its initial public offering (IPO) in June 2004, about two million options were issued to senior employees with a vesting period of three years and an exercise period of the following two years. In essence the executives could exercise the options any time between June 2007 and June 2009, provided the market-based performance hurdle was reached. In that case the exercise price was the IPO price, but the options can only be exercised as long as the share price increased by Pumpkin Patch’s equity cost of capital, less dividends, over the

vesting period. My estimate of the fair value of these options at grant date, each one of which converts into one share if exercised, is about \$0.30<sup>6</sup> each. In aggregate this translates into a total expense of \$600,000 to be recognized over the vesting period – say \$200,000 per annum. In practice this calculation would actually be based on the expected number of options to be exercised, rather than the total number, as some options will lapse if employees resign, die, are made redundant, or are dismissed with cause. And obviously the expected number of options to be exercised could change over the vesting period, depending on what the share price was doing. For example in the case of Pumpkin Patch the share price at the time of writing is about \$2.75 so the options are “deep in the money” but there is another two years to run before the options vest. Executives are less inclined to leave in this situation, than if the options were out of the money.

Therefore, the accounting under IFRS-2 would require the recognition of an expense each year during the vesting period, with a corresponding credit to Equity, to an account likely to be called “Issued Capital (Options)”.

Note that once the fair value of the options is determined

(at the outset), that does not change, even if the expected number of options to be exercised does. Take a situation where, after the options are granted, the share price falls. GDC Communications Limited and Tranz Rail (prior to the bid by Toll Holdings) are examples. The expense would continue to be based on the initial fair value even though the options might be virtually worthless. This point is important - if some option holders resign during the vesting period the expense to be recognised will likely reduce as the option expense will be based on the initial fair value (unaltered) multiplied by a new lower number of options likely to be exercised, and adjusted for any previous years' remuneration expense that has been recognized. This is explained in the Standard, but also in more detail in the implementation guidance notes (referred to as IFRS 2 IG). For example IG9 states "...on a cumulative basis, no amount is recognized for goods and services received if the equity instruments granted do not vest because of a failure to satisfy a vesting condition, e.g. the counterparty fails to complete a specified service period, or a performance condition is not satisfied."

In other cases the options may vest (for example, and employee satisfies the service performance criterion), but the options remain unexercised at the end of their life (for example the share price at that point in time is below the exercise price). At the end of the exercise period, the amount sitting in Shareholders' Funds under the heading Issued Capital (Options) would need to be eliminated. This amount should be transferred back into Retained Earnings, but not through the Income Statement. In summary, the past expense of \$600,000 in the above example would stand, without an offsetting income line when the options expire worthless.<sup>7</sup>

Where the options are exercised, the company would receive cash. As well, the amount credited to Issued Capital (Options) would now be transferred into Issued Capital. A simple example of these procedures is shown in Table 2.

Note that once the options are exercised the look of the Balance Sheet would be the same regardless whether the options had not been accounted for at all during their life (the "do nothing" alternative) or had been expensed during

the vesting period. The only difference would be within Shareholders' Funds. Under the IFRS-2 provisions there would have been an expense recognised each year and hence Retained Earnings would be less by \$600,000 in this example. However Issued Capital would be more, also by \$600,000.

### Impact on companies' profits

The impact on New Zealand companies' profits is likely to be quite small as typically employee options outstanding, if any, are a very small proportion of the total ordinary shares outstanding - in the order of 1% or 2% at most. However, in the US, and particularly in certain sectors of the economy, the impact of expensing options will be large. A Bear Stearns' research team estimated that the impact on companies in the Standard and Poor's 500 index would be to slice five percent off post-tax net income if those companies had expensed options in 2004. For the top 100 companies on the Nasdaq the impact would be 22% on average. The report indicated that Intel's net income would have dropped 17% if it had expensed employee stock options and Cisco's profit would have fallen 24%.<sup>8</sup>

Unsurprisingly, the information technology sector companies have been strongly opposed to expensing stock options. So have biotechnology companies. Many of the companies in these sectors will be start-ups, will have negative cash flow and hence will need to go back to financiers from time to time, and will rely extensively on options in remunerating employees. Those companies would not be enamoured with the prospect of reporting even bigger losses as a consequence of expensing options, as they might feel it will impact on their ability to raise additional capital. Further, they have argued that there is no satisfactory way to determine the fair value of the options in the first place, an issue we turn to below.

### The politicisation of accounting standards

The standard setting body in the US, the Financial Accounting Standards Board (FASB), developed an accounting standard in the early 1990s that required the expensing of employee stock options. The intense lobbying that followed the release

Table 2: An example

Assume that the expected number of options to be exercised is 2,000,000, that the exercise price is \$1.25, and that the fair value of each option is \$0.30. The vesting period is three years. Assuming that the estimate of 2,000,000 does not change, then the accounting for each of the three years would be as follows:

Debit Remuneration Expense	\$200,000
Credit Issued Capital (Options)	\$200,000

Note that the number of options might change on a year-by-year basis (depending on staff departures etc.), in which case the numerical amount of the entry could be different each year.

If the options are exercised (all at once is assumed here), we would have:

Debit Bank	\$2,500,000
Debit Issued Capital (Options)	\$600,000
Credit Issued Capital	\$3,100,000

If the options expire worthless at the end of the exercise period (all having previously vested), the entry would be:

Debit Issued Capital (Options)	\$600,000
Credit Retained Earnings	\$600,000

of the exposure draft resulted in the FASB issuing a final standard that allowed an alternative footnote disclosure of the impact of employee options. A huge majority of companies opted for the footnote alternative. Recently the FASB has tried again to move to expensing of employee share options in the body of the accounts. The House of Representatives passed legislation that substantially watered down the FASB's requirements, but this legislation has not been passed by the Senate. And it would not be a surprise to discover that the promoters of the legislation in the House of Representatives came from California.

Apart from some emotive arguments that expensing would kill the American entrepreneurial spirit and would be the death of Silicon Valley, an argument was advanced that determining fair value of options issued is an exceedingly difficult task – so much so that the amount assigned will lack reliability. We now turn to the issue of how employee share options are valued.



Lisa Crowley, Country 1, 2005, digital photograph. Elam School of Fine Arts

### Fair value of employee share options

The value of an option depends on six variables – the share price at the time, the exercise price, interest rates, time to run to expiry, the volatility of the returns on the underlying shares, and dividends expected to be paid during the life of the options. There are other factors that make the valuation more complex. The major one is that typically employee share options do not vest for a period of time, and then can be exercised at any time after service vesting, subject to any remaining performance hurdles being satisfied, and also subject to any insider trading provisions that may exist. Hence, employee share options are a mixture of European and American options (if they were traded on an exchange they would be known as Bermudan options). If the performance hurdles are market based (as in the Pumpkin Patch case) this, too, needs to be factored into the valuation.

With traded options there is a simple rule – don't exercise call options on non-dividend paying shares early. But while options on markets can be traded, employee share options lack liquidity. Liquidity is valuable, and the only (easy) way in which the managers can create liquidity is to exercise their rights and then sell the shares. So early exercise is common, perhaps motivated by the desire of the employees to diversify their wealth. Effectively they will be allocating some of the

monetary wealth away from where their human capital is allocated. And this raises another issue – the employees may be assigning a value to the options that is less than the cost of the options to the company, creating a deadweight loss.

All this suggests that valuing employee options is difficult and there is some considerable uncertainty in the final numbers. However they are likely to be a substantially better estimate than the estimate of expense used currently, which is zero. Further, the uncertainty is probably no greater than with other items that we take for granted – like the useful life of an asset for depreciation purposes.

Most valuers will use some form of binomial option pricing model to determine “fair value”, and the binomial model can cope with most of the complexity that has been described above. Some will use the Black-Scholes-Merton option-pricing model, and use expected life (not total life) of the option in the formula.

The more complicated the option, the more likely a binomial solution will be needed. From the company's perspective, this will not come for free – firms will need to employ a financial expert to determine the initial fair value, every time the firm grants new options. Of course, it is acknowledged that firms do need to know what options are worth if they are part of a remuneration package, so it can be argued that the net incremental cost of having to “book” the amount into the accounting system is quite low.

Apart from market based performance hurdles that have to be incorporated into the valuation, the major estimation problems centre around the measurement of the volatility of share price returns. Take the case of Pumpkin Patch. Clearly the initial valuation of the options would have to be done before the shares start trading, so volatility of the share returns in that company cannot be observed. Instead about all one can do is use volatility measures of shares of companies in the same industry, which are listed. Unfortunately, as a practical matter, different estimates of volatility can have a major impact on the option's value, and this gets worse the longer the term of the option. Plenty of articles are still being published on this issue, and the US Securities and Exchange Commission has recently published a 64 page Bulletin outlining alternative valuation methodologies that might be

applied.<sup>9</sup> One very recent working paper suggested that we think about employee share options as 90-day options that get renewed every 90 days until they are exercised, which if the employee leaves and the options have vested, will normally be no more than 90 days after departure. The amount to be expensed each quarter would be based on the difference between the value of the option and its intrinsic value. The authors argue that this reduces difficulty with parameter estimation during this short window.<sup>10</sup>

### Concluding comment

The basic accounting for share based payments for remuneration is therefore quite simple – expense an amount over a vesting period. The main difficulties are associated with (a) determining a reliable fair value for the instrument, and (b) determining a reasonable estimate of the number of instruments that will not lapse during the vesting period. The former, fair value, is bound up in some reasonably sophisticated valuation procedures. The latter is a management-derived estimate that will depend upon internal judgments on a year-by-year basis, although by the end of the vesting period one will know how many options will vest. In my view the determination of the fair value will be the more difficult aspect. However, all leading firms of financial advisers will have experts in this area, and will have developed models that can satisfy most computational needs.

It seems reasonably clear that this standard will put right something that has been wrong – failure to record part of remuneration expense in the Income Statement. In that sense NZ IFRS-2 is a welcome improvement, although as a practical matter in New Zealand, its influence is likely to be slight. In the United States, however, where the FASB's Standard has similar provisions the impact will be huge. It is likely to alter the way in which executives get remunerated, and not necessarily for the better as high-powered share-based incentives are important in some industries. That is, while it is important to know what options cost or are worth, options are also important in some industries because of their strong incentive effects. And at least in the short term some US firms, particularly those in information technology and biotechnology, will continue to moan about the negative impacts that this Standard has.

### References

1. The term “fair value” features prominently in many of the International Financial Reporting Standards. It is defined as “the amount for which an asset could be exchanged, a liability settled, or an equity instrument granted could be exchanged, between knowledgeable, willing parties in an arm's length transaction”. The International Financial Reporting Standards are promulgated by the International Accounting Standards Board (IASB).
2. The grant date is “the date at which the entity and another party agree to a share-based payment arrangement. . . . At grant date the entity confers on the counterparty the right to cash, other assets or equity instruments of the entity, provided the specified vesting conditions, if any, are met”.
3. The vesting date is a date at the end of the vesting period. IFRS-2 defines the vesting period as the “...period during which all the specified vesting conditions of a share-based payment arrangement are to be satisfied”. Vesting conditions are “the conditions that must be satisfied for the counterparty to become entitled to receive cash, other assets or equity instruments of the entity, under a share-based payment arrangement. Vesting conditions include service conditions...and performance conditions...”
4. This is taken from Buffett's Letter to Shareholders of Berkshire Hathaway Inc., 1992.
5. These issues are dealt with more fully in the IFRS-2 Basis for Conclusions document, especially around paragraphs BC34 – BC53.
6. This is based on the use of a binomial option pricing model, with the market based performance hurdle built into the analysis.
7. BC 219 states “The lapse of a share option at the end of the exercise period does not change the fact that the original transaction occurred. . . . The Board therefore concluded that the only accounting entry that might be required is a movement within equity, to reflect that the share options are no longer outstanding (ie as a transfer from one type of equity interest to another)”. This is quite vague.
8. These data are taken from a Reuters report of 22 March 2005 titled “Options expense would eat 5 pct of SP 500 net – study”.
9. *SEC Gives Leeway in Measuring Option Value*. Retrieved 30 March, 2005, from <http://accounting.smartpros.com/x47589.xml>
10. Finnegan, J. *Innovative New Technique Proposed to Expense Employee Stock Option Grants*. Retrieved August, 2005, from [http://www.fenews.com/fen37/one\\_time\\_articles/bulow\\_shoven/bulow\\_shoven.html](http://www.fenews.com/fen37/one_time_articles/bulow_shoven/bulow_shoven.html)