

# Special Stock Option Watch

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Are “Golden Parachutes” necessary and what is the adequate amount for such compensation payments? This is analysed in the first article of this issue of “Stock Option Watch”.

The article by Professor Fabel (University of Konstanz) deals with the ongoing court case concerning the compensation payments of Mannesmann-Vodafone/Airtouch. His main conclusion is that the only issue which should be considered in this context is whether the relevant payments were excessively high.

In the second article Christina Elschner (ZEW) and Prof. Robert Schwager (University of Goettingen) compare the total costs of stock option plans for Austria, Germany, Switzerland, United Kingdom and the United States. Different characteristics of stock option plans are considered.

Matthias Meitner (ZEW) and Christoph Beckmann (University of Erlangen-Nürnberg) analyse the effects of different accounting standards on the disclosure of the costs of stock option plans. The authors compare the consequences of appropriate accounting rules of U.S.-GAAP, IAS/IFRS and the German Commercial Code. In addition, aspects of financial statement analysis and accounting policy are addressed.

The fourth article, by Prof. N. Khoury, Prof. J.-M. Gagnon and S. El Goul (all three from Université Laval, Québec), deals with the performance of different option pricing models concerning the evaluation of stock option plans. The model which assumes deterministic volatility appears to offer the best performance.

*Dr. Erik Lüders (Université Laval and New York University)  
and Dr. Michael Schröder (ZEW)*

## Takeover Battles and “Golden Parachutes”

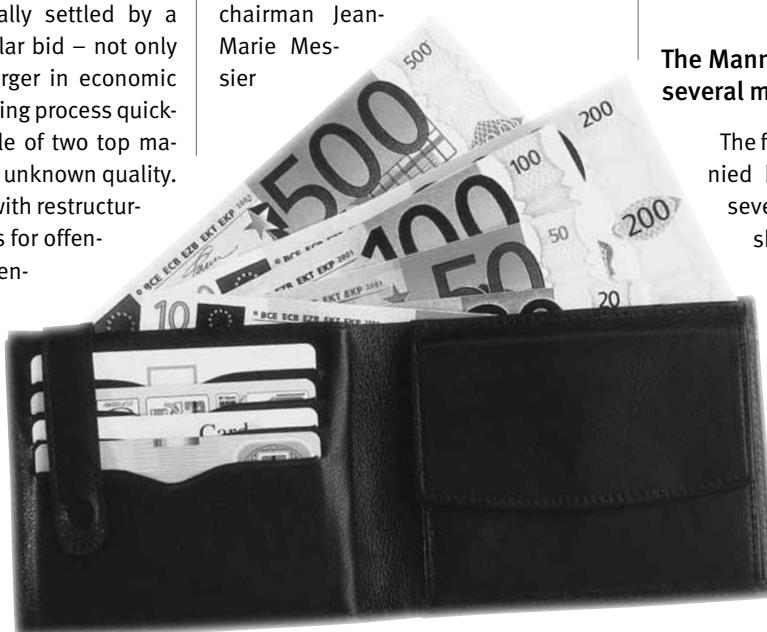
British-based Vodafone-Airtouch’s takeover of Germany’s Mannesmann in February 2000 – finally settled by a 180.95 billion US-Dollar bid – not only marks the largest merger in economic history so far. The bidding process quickly evolved into a battle of two top managements of hitherto unknown quality. The costs associated with restructuring the two companies for offensive, respectively defensive reasons, public and investor relations activities, consulting and legal advice, and loans can safely be estimated to have exceeded 750 million US-Dollars. Two law suits were filed; one by Mannesmann di-

rected at Goldman-Sachs claiming a conflict of interest, the other by Vivendi chairman Jean-Marie Messier

charging Mannesmann chairman Klaus Esser with “libelling.”

### **The Mannesmann Case: several million of severance pay**

The final settlement was accompanied by a Euro 31 million direct severance pay to Esser; in total shareholders may have offered up to Euro 57 million in severance pay to the Mannesmann chief executives. However, these payments only introduced a new legal battle field. On March 12, 2001, the General State Attorney at the Mannesmann headquarter in Düsseldorf officially opened his investigations charging Esser



and members of the Mannesmann supervisory board, including current Deutsche Bank chairman Josef Ackermann as well as former Metal Union head Klaus Zwickel, with “unfaithfulness.” The overconfident behavior of the defendants on the first days of court pro-

exercising a variety of tasks. This effort as such is clearly non-contractible. In particular, both the Vodafone-Airtouch and the Mannesmann managements devoted significant effort to the pursuit of very similar acquisition policies prior to meeting in the market for firms. Of course,

separate incentive intensity rewarding the success in mergers and acquisitions and would furthermore require this intensity to be conditioned on the synergistic gains realized by the potential merger. Specifically, given that the manager’s incentive scheme can realistically not be conditioned in this way, there always exist highly synergistic takeover opportunities in which the incentive pay alone fails to internalize the benefits of the resulting merger such as to induce efficient contest behavior.



cedures in March 2004 immediately led journalists as well as legal and economic scholars to question the ethics of such “golden parachutes” for top managers. In contrast, Siemens chairman Heinrich von Pierer, for instance, claims that the threat of successful “unfaithfulness” charges would significantly reduce the manager’s ability to make strategic decisions.

**Incentives for managers**

Taking a contract-theoretic perspective, severance pay generally constitutes part of the implicit and explicit compensation package designed to provide incentives for managers. When strategic decisions are delegated to top managers, it will generally be necessary to “distort” the incentive scheme in order to ensure a commitment of the management in strategic competition. The market structure determines if and how much weight should be attached to various performance measures such as the share value, the book value obtained using a particular cost accounting method, or even the revenue of the firm. All of these measures constitute proxies for the success of management effort in

the two managements also engaged in other investment and organizational activities to enhance their firms’ competitiveness in the information and telecommunication industry.

**Mergers and Acquisitions as a contest**

However, the market for firms differs significantly from the industry’s product and factor markets. Given the legal-institutional framework, but also for practicality shareholders are asked to consent to their chief executives’ proposals in cases of mergers and acquisitions only ex-post. Since they can only be retained or dismissed, top managers thus perceive the competitive mechanism in the market for firms as a contest.

The issue is therefore whether the regular incentive compensation excluding the promise of severance pay provides sufficiently differentiated performance pay to efficiently control the management’s strategic decisions concerning prices, quality, and quantities in output and input markets as well as its contest behavior in the market for firms. Following Fabel and Kolmar (2003), an adequate contract would have to specify a

**Extent of severance pay**

In these cases only the credible promise – i.e., the shareholder’s commitment – to offer severance pay to the contest loser can restore at least second-best efficiency. Obviously, efficiency – even less second-best efficiency – does not constitute a self-evident ethical norm. Yet, efficiency typically constitutes the benchmark for judging the performance of economic agents in a given institutional environment. The relevant alternative for the evaluation of efficiency is not the ideal world of perfect incentives but a situation where managers do not receive any severance pay. With no severance pay triggering even more wasteful contest behavior, the judicial test of an “unfaithfulness” charge brought up by shareholders should then be confined to evaluating if the severance pay has been excessive. Again, economic analysis yields a clear-cut characterization of efficient severance pay. In order to set appropriate contest incentives, the manager’s severance pay must be equal to her expected post-merger income assuming that she would be retained and applying the pre-merger compensation rules of her original contract.

*Oliver Fabel*

**Reference:**

Fabel, Oliver and Martin Kolmar (2003), Management Takeover Battles and the Role of the “Golden Handshake”, Discussion Paper, Department of Economics, University of Konstanz.

# Do Employer-Provided Stock Options Reduce Compensation Costs?

In an international comparison, employer-provided stock options are found to be subject to different tax regulations regarding the time of taxation and the taxable. In the following we analyse and compare the influence of several forms of taxation on the compensation costs borne by employers.

The analysis is carried out applying a simulation method recently developed by the ZEW. The simulation model determines the taxes and charges incurred in association with the compensation of a typical highly qualified employee. As a rule, the compensation paid to highly skilled staff comprises several components, one of which involves stock options. We also take cash compensation and old-age provision into account in our analysis. The ZEW model adopts an intertemporal approach which allows us to analyse all taxes and charges that are levied on stock options over time, beginning with the granting of the option and ending with the sale of the stock.

The model quantifies the compensation costs necessarily incurred by an employer who wishes to provide his employee post-tax and other charges remuneration of 100,000 euros. 20 percent of total compensation consists of stock

options, 60 percent of cash compensation 20 percent of old-age provision.

## Simulation model

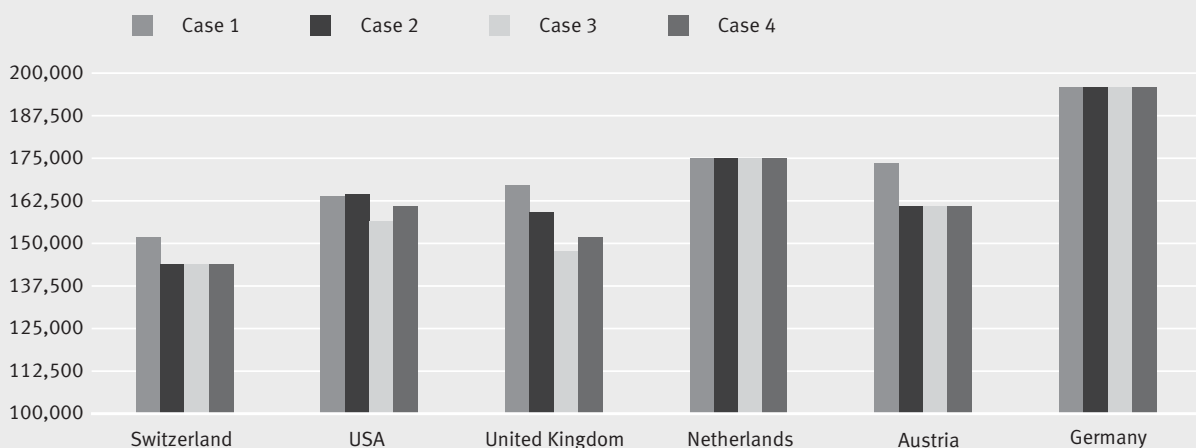
The simulation model is used to analyse non-tradable stock options which, in some countries, are subject to preferential taxation. We compare the provision of stock options with the standard case in which the employee receives cash compensation instead. The employer's costs in the context of granting stock options consist of the opportunity costs from the reduced exercise price, which is equal to the benefit the employee receives, and of the employer's contributions to social security levied on this compensation component. We ignore expenditures arising from the organisation and administration of stock option plans.

At the level of the employee, the value of the option is subject to personal income tax and possibly subject to social insurance. The disposable income after taxes and charges received by the employee thus consists of the gain out of the sale of the stock less all taxes and charges paid in context with the options. We simulate the assessment under cer-

tainty and at an interest rate of 5 percent. We vary the vesting and exercise timing as well as the sale of the underlying stock in order to isolate the effects of various tax regulations.

The figure shows the results of our simulation. First, we consider the standard case without stock options but with additional cash compensation instead. In the following cases, the employer receives stock options. In the second case, vesting, exercise, and sale all take place after five years. In this case, we observe the effects attributable to tax privileges concerning the tax base (such as in Switzerland, Austria, and the United Kingdom). In the third and fourth case, the underlying stock is not sold immediately at exercise but afterwards. The results reflect the differing taxation of capital gains with personal income tax or capital gains tax (as in the United Kingdom or the United States). In the third case, the option is exercised after five years, and the stock is sold five years after exercise. In the fourth case, the option is exercised after nine years and the stock held one further year. In the United Kingdom and the United States, tax privileges for capital gains relate to the time the stock was held.

Compensation costs with varying employer-provided stock options and a disposable income after taxes of Euro 100,000



Note: Case 1: Cash compensation instead of stock option; Case 2: Vesting, exercise, and sale after five years; Case 3: Vesting and exercise after five years, sale after ten years; Case 4: Vesting after five years, exercise after nine years, and sale after ten years. Source: ZEW.

### Case 1: Cash compensation

In the standard case without stock options the compensation costs span a range of 151,900 euros in Switzerland to 195,900 euros in Germany. In between those extremes we find the United States (164,000 euros), the United Kingdom (167,200 euros), the Netherlands (174,900 euros), and Austria (173,650 euros). The variation in the timing of vesting, exercise and sale show the influence of the state specific tax and social security regulations. In Germany

tion costs amounts to 5.7 percent. In Austria, the taxable value is reduced to 50 percent of the fair value if the options are exercised after five years. As a result, compensation costs decrease by 7.3 percent.

The United Kingdom and the United States both have a long tradition of compensating employees with stock options. We find a strong dependency of the compensation costs on the time of exercise and the period of time for which the stock is held following exercise. The highest reduction in compensation costs

The reduction of compensation costs in the United States is lower as employer-provided stock options has been subject to social insurance since 2003, even if they are tax privileged. If stock options are exercised after five years and the stock is sold immediately (case two) the compensation costs even increase a little due to the progressive income tax rate. Because of the increase in value of the stock option the tax base widens compared to the standard case without stock options. In this special case, the employee's income moves into the next higher income tax bracket and the average statutory tax rate increases. As a result, the costs themselves increase, too. If the stock is held for five years (case three) the compensation costs decline by 4.5 percent, if it is held for one year, compensation costs decline by 2.0 percent.

### Compensation cost highest in Germany

The comparison of the results between the countries analysed show that companies in Switzerland always bear the lowest compensation costs, companies in the Netherlands always bear the second highest and companies in Germany the highest compensation costs. Companies based in the other three countries, Austria, United Kingdom, and the United States, change ranks among each other when varying the time of exercise and sale. In the first case without stock options, the United States ranks second ceding this place to the United Kingdom in the case of employer-provided stock options. If the stock is sold immediately after exercise, the United States even drops to fourth place behind Austria.

The results show clearly that employer-provided stock options influence the amount of compensation costs in some countries. Stock options can bring about an enormous reduction in compensation costs in some cases. Even taking into account the employee's risk aversion the employer is able to grant a higher total income after taxes and charges without having higher personnel costs compared to full cash compensation.

*Christina Elschner,  
Robert Schwager*



and in the Netherlands, there are no tax privileges for employer-provided stock options at all. Thus, the amount of compensation costs stays constant over all variations. Stock options are taxed at the date of vesting, respectively the date of exercise, and are subject to payment of full social insurance contributions. In Switzerland, tax privilege takes the form of a lump sum reduction in the option's value at the date of grant. With a vesting time of five years the reduction amounts to 25 percent of the fair value. In the canton of Zurich, this privilege only applies to social security contributions. The compensation costs fall by 5.2 percent to 143,950 euros in the second case. If the privilege also refers to personal income tax, as is the case in the other cantons of Switzerland, the reduction in compensa-

tion occurs in the United Kingdom at 11 percent. The reduction from the first to the second case demonstrates the basic advantage of stock options – they are not subject to social security contributions. Compensation costs fall by 4.9 percent. The capital gain out of the sale of the stock is subject to capital gains tax at statutory tax rates of between ten and forty percent. If the stock is held for more than two years after exercise (case three), the taxable gain is reduced by means of taper relief to half of the actual capital gain and the compensation costs decrease by 11.6 percent. In the fourth case, the reduction is only 9.3 percent as the interval between exercise of the option and sale of the stock only amounts to one year and taper relief is reduced to 25 percent.

# Facts About Stock Options Accounting for Readers of Financial Statements

## Explanation of important terms

### IFRS:

International Financial Reporting Standards (formerly known as IAS – International Accounting Standards)

### IFRS 2:

Accounting rule for employee stock options in IFRS

### SFAS 123 and APB 25:

Accounting rules for employee stock options in U.S.-GAAP

Accounting for Stock Options has long been the subject of controversial debate among accounting standard-setting bodies. More recently, standards have moved significantly in the direction of adopting common accounting rules. At the heart of this convergence lies a fair value approach, the intention of which is to ensure that financial reporting reflects economic realities. This approach requires that the full fair value of stock options granted at measurement date is recognised as compensation expense spread over the corresponding service period. The recognised compensation expense simultaneously leads to an equal rise in the capital reserve, leaving owner's equity unchanged. This accounting procedure reflects the fact that while, on

the one hand, the granting company receives services from its employees, on the other, these resources are consumed and therefore lead to an expense. The following provides a brief summary of the current rules according to US-GAAP, IAS/IFRS and the German Commercial Code and also addresses aspects relating to the analysis of financial statements and accounting policy for stock options.

## US-GAAP

In the past FASB accepted two models for the measurement of stock-based compensation costs. SFAS 123 now recommends a superior fair value model whilst continuing to permit the use of the alternative APB 25 intrinsic value method. The "fair value" method results in full recognition of the fair value of the option (intrinsic value plus time value) as compensation expense. Under the "intrinsic value" method compensation expense is in general defined as the excess of the fair value of the shares optioned over the amount to be paid by the employee, determined at the grant date (intrinsic value at grant date). The time value of an option is not expensed under this rule. In the standard case of a fixed award where the exercise price of a stock option is known at grant date, only an

existing intrinsic value leads to an expense. Intrinsic values arising during the service/vesting period have no effect on the recognition of compensation expense. Normally compensation will be accrued over the vesting period on a straight-line basis. According to SFAS 123 the use of the APB 25 intrinsic value approach requires the pro forma disclosure of net income and earnings per share as if the fair value approach was being utilised. Fair values have to be measured by a recognised option pricing model (e.g. Black-Scholes) usually at grant date.

If the recommended fair value model is applied, the full fair value at grant date must be accrued as compensation expense on a straight-line basis over the service period and directly affects net income. The full fair value can be shown at grant date as deferred compensation expense as a balance sheet item with a corresponding increase in the capital reserve. The deferred compensation expense is reduced according to the assigned compensation expense over the service period. Changes in the fair value of the options after grant date have no effect on net income. An entity can only employ one set of rules, either the intrinsic value or the fair value approach, for all stock compensation plans in effect.

## IAS/IFRS

Prior to the issue of IFRS 2, there were no clear rules governing the recognition and measurement of stock options. IFRS 2 provides a fair value approach similar to that of SFAS 123. This standard requires stock options to be measured at fair value at grant date. The total fair value must then be expensed over the service period with a corresponding increase in equity.

## German Commercial Code (HGB)

No explicit accounting rules for stock options exist under German Commercial Code. Different proposals for their recog-



dition exist in several German publications. Opinions on this matter differ with arguments for no recognition at all through to recognition along the lines of US-GAAP and IFRS or recognition of a contingent liability pending the final exercise decision of the option holders.



It is not yet clear to what extent the international accounting rules for stock options will influence adjustments to the German Commercial Code and German tax legislation.

### Earnings management possibilities and financial statement analysis

It is important for the readers of financial statements to realise that companies are entitled to exercise a great deal of discretion in how they recognise stock options in their financial statements. This is especially evident when analysing financial statements prepared in accordance with the German Commercial Code which does not as yet stipulate any clear rules regarding stock option accounting. Under US-GAAP, the application of APB 25 – which most companies have adopted for stock option reporting purposes – in general leads to higher net income. Stock option plans are often designed as fixed awards where options have no intrinsic value at the measurement date. However this frees the income statement from any stock option expenses. In recent months, however, a number of well known companies have switched to full recognition of compensation costs in their income statements

in line with SFAS 123. Standard setters have reinforced this trend by simplifying the transition from APB 25 to SFAS 123. A new draft has also been announced which mainly aims to harmonise US-GAAP with IAS/IFRS. SFAS 123 and IFRS 2 allow for earnings management as

well, however, especially in determining fair value. Compared to financial options, the time to expiration is not precisely determinable at the measurement date, which provides room for subjective assessments by company management. However, both standards provide for the required disclosure of a wide range of details about the stock option plans in the notes to the financial statements.

From a financial analyst's point of view the fair value of options and other equity-based compensation should be regarded as an expense to the issuer. This makes the analysis of statements prepared under German Commercial Code a delicate process, since they neither require the recognition of stock option plans as expenses nor do they require detailed disclosures in the notes. In contrast, adjustments to financial statements are possible if companies opt for APB 25 under US-GAAP. If analysts are interested in historical comparisons, old statements prepared according to IAS/IFRS before the introduction of IFRS 2 must be adjusted as well, given that companies did not recognise the fair value but disclosed relevant details.

More precisely, the following adjustments should be made: reported income should be substituted by after tax pro

forma income. The difference between both forms of income goes back to a change in the compensation expenses and the associated tax effects. As referred to above, the treatment in Germany of stock option plans on the corporate tax return is – similar to the treatment under German Commercial Code – not yet definitely regulated. Assuming that the whole fair value can be deducted for tax purposes, the change in the pre-tax compensation expense can be calculated as follows:

$$\Delta \text{ Compensation expenses} = \frac{(\text{net income} - \text{pro forma net income})}{(1 - \text{corporate tax rate})}$$

As far as the balance sheet is concerned, only a few minor modifications need to be made. On the liability side analysts must adjust retained earnings downward by the difference between reported and pro forma income. This is offset by an increase in the paid-in capital in the amount of the gross compensation expense difference. To finally balance the balance sheet an additional deferred tax asset (respectively a reduction in an existing deferred tax liability) must be included. Assuming that the pro forma net income typically falls short of the reported income, the result is a slight increase in the shareholders' equity account after the adjustments.

When comparing IFRS 2 statements with SFAS 123 statements, analysts must consider that US-GAAP probably show a higher equity and higher total assets. This difference is dissolved over the servicing period. A necessary adjustment here is the cancellation of the prepaid item on the asset side of the balance sheet as well as a reduction of the same amount in the equity account.

Regardless of which accounting system is examined, analysts must make sure that for the calculation of per-share ratios the number of shares outstanding is adjusted to reflect any dilution from the exercise of the options. This is done by including into the calculation any shares that would be issued in case of the immediate exercise of all stock options, which are currently at-the-money or in-the-money (fully diluted per share ratios).

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# Expensing Stock Option Plans: Valuation and Shareholders' Wealth

This paper examines the problem of expensing administrators' stock options plans as now required by the Canadian Institute of Chartered Accountants' Handbook, Section 3870, (hereafter, CICA's rule 3870), and their impact on shareholders' wealth.

## Black-Scholes model as benchmark

Assuming that, contrary to current practice, firms under different circumstances should use different models, six alternative option valuation models that could be used to calculate the fair value of the options at the time they are granted are implemented and compared:

- Black-Scholes model (1973);
- Merton's jump model (1976);
- Stochastic volatility model with and without mean reversal (Cox & Ross (1976) and Hull & White (1987));
- Deterministic volatility model (Hull & White (1979));
- Binomial model (Cox, Ross & Rubinstein (1979));
- Compound option model (Geske (1979)).

The popular Black-Scholes model serves as a benchmark.

The six models are implemented on the assumption that the options are issued at the money and that dividends are either zero, constant or increase or decrease at a constant rate of 5 percent per year. Initially the calculations also assume that the vesting period is over, and that the expected maturity of the options coincide with their exercise date. This last assumption allows us to ignore at first the problems associated with the early exercise of the options or their cancellation if the administrator were to leave the company. Different assumptions as regards the volatility path of the underlying security are also imbedded in the models implemented. The analyst can thus choose from all these assumptions the combination that best repre-

sents the characteristics of his firm, when evaluating the cost of the compensation plan.

While the Black-Scholes and Binomial models give, as expected, the same option values, the stochastic volatility model, with and without mean reversal, provides estimates that are generally lower. Furthermore, without a constraint on the floor value of the underlying security, this model could yield "irrational values" (i.e. option values greater than those of the underlying security) that be-

However, for a given jump, the discrepancy decreases as the volatility of the underlying security increases. This feature of the model may be relevant for companies that are highly risky. By contrast, option values obtained from the compound option model are higher than those of the benchmark only in the absence of dividends. They are lower when dividends are constant or increasing unless the ratio of the firm's loans to volatility is high and the maturity of the option is quite long.



come more frequent as the maturity and the volatility jointly increase. It can also be noted that the value of the option is generally lower with mean reversal than without it, except when the volatility of the volatility is relatively high, the option maturity is quite long and the correlation between the volatility and the price of the underlying security is positive.

In comparison, Merton's jump model always yields higher option values than the benchmark, and the discrepancy between the two sets of results increases with the magnitude of the jumps.

As regards the deterministic volatility model, it provides estimates within the range of those obtained from the benchmark whether volatility is increasing or decreasing. Thus, when volatility decreases at a constant instantaneous rate of 0.1 percent, option values are lower than those obtained from the benchmark by 25 percent with a standard deviation of 7 percent, whereas when it increases at a rate of 0.1 percent, the evaluations are 34 percent higher than those of the benchmark with a standard deviation of 11 percent. The ability to

control the rate of change of the volatility of the underlying security is one of the attractive features of this model, particularly in view of the fact that the maturity of options awarded to administrators is usually long term. Overall, this model appears to be the most flexible and the easiest approach to calculating the fair value of this type of options. It also offers accurate, coherent and consistent evaluations over different estimation periods. The model can also be easily modified to accommodate the assumption of early exercise, when the price of the underlying security reaches  $M$  times the exercise price within a certain period of time. CICA's rule 3870 (par.A.10) explicitly recognizes such a possibility. It turns out that option values under these conditions are higher by between 0.50 US Dollars and 1.25 US Dollars than in the absence of the possibility of early exercise.

### Attractiveness of Stock option plans rises with riskiness

The simulations reveal that stock option plans become more attractive the higher the riskiness of the corporation. However, they incite their beneficiaries to recommend lower dividend ratios and investments that increase the volatility of future cash flows. The analysis also shows that the accounting method recommended by the CICA in expensing this type of options implies a decrease in both the marginal and the average cost of the plan as the option maturity lengthens. As the average cost is linearly imputed to the financial results of the

vesting period, boards of directors should prefer to lengthen the maturity of options already granted to administrators, rather than issue new ones, should they become out-of-the-money at maturity and a replacement is considered. In the same vein, in Canada, the new CICA norm should also lead to the elimination of some accounting arbitrage possibilities and facilitate fiscal arbitrages. More specifically, it should facilitate the substitution of lump sum payments for the exercise of these options.

Finally, the analysis suggests that the much debated dilution effect should be added, not subtracted, to the cost of the plan ex-ante, when the granting of stock options to administrators is under study. It should however be ignored ex-post after the options are awarded, since the price of the underlying security normally reflects this information. It should also be noted in this regard, that the announcement of a stock option plan has two opposite effects on the price of the underlying security: increased productivity of the administrator on the one hand, and cost of the plan on the other. The resulting net effect on the price of the underlying security cannot therefore constitute an appropriate estimate of the cost of the plan.

In terms of corporate governance, our analysis suggests that many plans may be designed in such a way that they maximize rather than minimize agency costs.

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### Special Stock Option Watch

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