Evaluating CEO Share Based Compensation

- The Challenge to value ESOs and its Cost for Investors -

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Abstract

In this thesis we examine how information about the CEO's stock-based compensation is disclosed in the annual reports of public Swedish companies and if this information is good enough to evaluate the shareholders cost of these compensation packages. A thorough survey is conducted and a valuation model for employee stock options is described and exemplified with cases. We conclude that the neither the regulatory framework nor market forces compel companies to disclose sufficient information to accurately evaluate the cost of share based compensation in all companies who use it.

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1. <u>Introduction</u>

Background

Compensation for a CEO of a public company is an important topic from the vantage point of economics and corporate finance. This since companies led by a person other than a controlling owner represents important actors in the economy and their equity capital an important part of savings. Corporate finance theory predicts the possibility of an agency problem here and suggests ways to mitigate it. The size of the "damage" to the owners caused by the CEO's self-interest and the size of the incentive needed to align the CEO's interest with that of the shareholders are empirical questions. The level and structure of the compensation package needed to achieve this are questions which are important for both business practices and for research. CEO compensation is also often the subject of a general public debate that becomes quite emotional. In Sweden, reports about the size and supposed excesses of CEO compensation could be considered a sign of spring[1] but this debate is mirrored in many other countries[2].

One method used by a company's board to solve this problem is to link a part of the CEO's compensation to the performance of the company's stock price. Does this compensation structure mitigate the probable agency problem? That's a difficult question to answer since it is hard to measure a CEO's performance, it's effect on the stock price and how to relate it to his/her compensation and personal wealth. This problem is then compounded by the problem of how to value the compensation package itself. For a shareholder to be able to undertake the cost-benefit analysis of providing equity related compensation he/she must be able to value the cost of it.

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[1] SVT Agenda 20080309
[2] Survy of Executive Pay in the Economist 20070118, "Merkel takes on the fat cats" from Der Spiegel website 20071211, "Social democrats aim at top German pay" WSJ Europe 20080429

Purpose and Research Question

We want to investigate if regulation or market forces make public companies provide enough information to their shareholders for them to value the cost of stock based incentive programs and evaluate them.

Contribution

The thesis will describe in detail what types of incentive programs are used in large Swedish companies and present a flexible and powerful valuation model for executive stock options. The different incentive solutions and how to value them will be illustrated through a number of selected cases.

Disposition/Outline

First a theoretical framework for the agency problem and possible ways to mitigate it will be presented. The framework will also explain which attributes of incentive programs are interesting to model. A valuation model for valuing executive stock options, ESOs, from the owner's perspective will be presented. Selecting the model defines what data is needed. The Swedish regulatory framework will be investigated and described, to see if and how this information has to be disclosed by public companies. A survey of the information in the annual reports of the companies on the Stockhom stock exchange's large cap list will be conducted. This will provide insight into how the regulatory framework is implemented and if market forces motivates companies to further disclosures. Four companies will be selected and their programs analysed to illustrate how the information actually is presented and how sensitive the results are to the different assumptions which have to be made. This will be followed by our analysis, conclusion and discussion.

2. <u>Theoretical Framework</u>

The overall academic field in this thesis is based on agency and option pricing theory. We will in this section explain the background of agency theory, then move on to what implications this has had on the remuneration of CEOs, previous findings and how to value this remuneration.

Agency Theory

Agency theory, or the principal-agent problem, is referring to the moral hazard situation between a principal and an agent. Due to asymmetric information, the principal will not be able to observe and evaluate the agent's actions, but only the outcome of them.[3] The agent is assumed to have superior information about the optimal choice of action for the principal, but might instead follow his/her own agenda. In a scenario like this, agents can get away with reaping perks and benefits for themselves to the expense of the principal. Classical examples of this moral hazard problem are insurances, labour contracting and other kinds of delegation of power[4].

The principal-agent problem is present in companies today, as managers are seldom the owners of the firm they are running. In this case, the owners/shareholders are the principal and the manager/CEO the agent. The agency problem arises because the owners cannot perfectly monitor the actions taken by the manager, only the outcomes of them. For owners it is therefore difficult to evaluate the manager's performance and to know whether the results are due to the manager's competence or luck.[5]

According to Holmström (1979) there are two solutions to this problem. First, the principal can monitor the agent and hence use contracts to penalize unwanted behaviour. This kind of monitoring is in most cases impossible or prohibitively costly. Second, when total monitoring is impossible, incentives, which impose some of the equity related risk on the agent, can be used.

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[3] Holmström (1979)
[4] Holmström (1979)
[5] Grossman & Hart (1983)

Agency Cost

Except managerial luck and external factors, the company's result can be effected by that the agent has another agenda than the principal. The results of this agenda, i.e. the loss in value for the company, are called agency costs. There are several theories about what motivates a manager when making decisions. However, we do not want to get too tangled up in these psychological factors, but focus more on why incentive contracts are considered to be important. According to Jensen & Meckling (1976), it is reasonable to assume that if both the manager and the owner are utility maximizers, the manager won't always act in the interest of the owner. The manager might have several other factors influencing his/her managerial decisions. For example, the manager might reap personal benefits and perks, put in less of a personal work effort etc. In this case the manager takes the whole cost of using more private time for work, but no benefit. The opposite is true for perks. The manager will enjoy the perks without suffering any cost. In addition, personal interests can influence his/her managerial decisions. For example the manager might want to avoid firing staff to sustain his/her popularity. Also, the CEO might want to give priority to suppliers who are friends with him/her, or who offers him/her benefits in their personal life. In addition, there might be investments that the manager wants to pursue, even though they are value destructive. This can be due to that they are so called pet projects for the manager or that the manager is conducting empire building for their personal satisfaction.[6]

As described above, there is a risk that managers act in such a way that they destroy shareholder value. The costs imposed on the principal are however not only related to the direct cost of the agent's decisions, but also costs related to mitigating the agency problem.

Jensen (2000) defines agency cost as the sum of four factors:

- Cost of contract
- Monitoring expenditures (by the principal)
- Bond expenditures (by the agent)
- The residual loss

According to Jensen, agency cost will influence both the agent and the principal negatively; hence there should be incentives for both the manager and the owners to reduce the cost. The cost of imposing contracts is a result of the three latter costs, which were already described in Jensen & Mecklings study in 1976. The monitoring expenses are the costs for the principal to monitor the

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[6] Bebchuk & Fried (2004)

agent in his/her choices, but also to give the agent the right incentives. The principal imposes the cost for the agent, the bond expenditures, in order to guarantee him-/herself from harmful actions of the agent. This is achieved by making the agent to expend resources, which will prevent the agent from taking unwanted actions or make them costly to the agent. The last factor, residual loss, means that even though monitoring and bonding exists there will be some divergence between the agent's action and the action that would maximize the owners' value. Hence, the agency problem cannot be considered to be 100% solved. The non-maximizing actions taken by the agent is therefore referred to as residual loss.

Market Forces

It has been argued that market forces would limit and control the agency problem. According to Jensen (2000), the managerial labour market as well as the capital markets will restrict and lower the agency cost. First, the managerial labour market will punish the CEO for actions which leads to poor performance or additional expenses. The CEO would get negative publicity, potentially get fired, and would then most likely have trouble finding a new, equally attractive, job. Second, the capital market is efficient and investors can easily, and for low cost, transfer capital from one company to another. This will lead to a lower valuation of the company if the management is not acting in a value maximizing way. This could trigger a takeover bid or alternatively pressure from activist investors on the board to implement changes.

However, Bebchuk & Fried (2004) argues that market forces would only limit some of the agency problem. The CEO would not be deterred to exploit opportunities which are significantly redistributive, i.e. when the CEO's gain is not much smaller than the cost to the shareholders[7]. When this is the case, the market would not penalize the CEO by as much as the benefits he gained, and hence he would not be discouraged to reap them. According to Bebchuk & Fried (2004) the extraction of compensation for the CEO is one of the clearest examples of an action which is significantly redistributive, and hence the CEO would not be discouraged by market forces to extract a higher remuneration.

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[7] Bebchuk & Fried (2004)

CEO Remuneration

The remuneration of a CEO is often a package of several different components, which all have a different purpose. The main purpose of the remuneration package itself is to attract and retain top executives and to give the executive the right incentives to perform well. Although no remuneration package among different firms look the same, they generally have the same components: base salary, cash bonus/short term incentive program, long term incentive program, other benefits, severance pay and pension.

Since we in this thesis focus on stock based incentive programs, this part of the remuneration package will be described more in detail in the following section.

Incentive Programs

For a principal, incentive contracts that induce risk sharing are used as an insurance against the agency problem. By imposing incentive contracts, owners wishes to align the agent's interests with their own. Previously, the most common form of incentive given to CEOs was bonus. If the results during the year were satisfying, then the manager could look forward to a large cash bonus. However, according to Bebchuk & Fried (2004) cash bonuses are seldom connected with the manager's performance. This leads to that no matter the company's performance; the manager would still receive a large paycheck by the end of the year. In later years, the most common form of incentive based compensation has become stock option- or restricted stock programs. These are supposed to be more sensitive to the company's performance than bonuses, due to their connection with the company's share price.

Stock holdings and option programs are considered to be among the strongest tools to align manager's incentives with the owners[8]. By using share based incentive programs, the manager's wealth will change in the same direction as the owners. Hall & Liebman (1998) conducted a study on the pay performance sensitivity in US public firms between 1980 and 1994. The result indicates that by using stock and stock option holdings, the CEOs wealth change considerably more in line with the shareholders wealth. This means that the relationship between CEO wealth and company performance increases with the use of share based payments.

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[8] Hall & Liebman (1998)

Two common characteristics of stock options given to CEOs, and employees in general, are that they are non-tradable and forfeited if the employee leaves the firm before the vesting period. These restrictions are due to a couple of fundamental goals of the incentive program. First, if the CEO would be able to sell the stock options, then he would liberate himself from the incentive the options were given to create in the first place. Second, if the options are forfeited if the CEO would leave the firm, then it is easier for the firm to retain the CEO and prevent him from being recruited by other firms in the competitive labour market top management. It will be more difficult and costly for other firms to headhunt a CEO if a large part of his pay from recent years is tied up in options in the company, which would then be forfeited. [9]

Problems with ESOs

A problem with this kind of CEO remuneration is the risk of stock based instruments. It is not a strong assumption that CEO's are risk averse, and therefore they will require a higher pay if the outcome is uncertain, i.e. the risk-adjusted remuneration should be the same[10]. Since the CEO can neither hedge nor sell the options, they will have a lower value for him/her than regularly traded stock options. This is not surprising since this kind of options, due to its restrictions, have a higher risk[11]. Regular valuations with Black & Scholes or a binomial model, which are used on the market, are therefore difficult to conduct. Hall & Murphy (2003) finds that due to risk aversion and lack of diversification, employees value options (at grant date with exercise price equal to market price) at only 50% of the cost to the firm. Therefore, stock options should only be granted if the positive effect of the incentive created is larger than the difference in the cost for the company and the perceived value of the options to the CEO[12].

Some researchers argue that the use of incentive programs depends on the firms' volatility. A firm with a high volatility should consider using base salary, as this encourages the CEO to make the company's profits more stable. On the other hand, if the company is stable and have a rather slow growth, then it might be preferable to pay the CEO with options. This in order to give the CEO incentives to undertake riskier projects, which might break the deadlock for the company[13]. Also to consider when creating remuneration packages, is of course the CEO's risk aversion. If

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[9] Hall & Murphy (2003)
[10] Sappington (1991)
[11] Hall & Murphy (2003)
[12] Murphy (1999) Handbook of Labor Economics
[13] Hall & Murphy (2003)

he/she is very risk averse, then stock based incentive programs risks to be too expensive and the use of base salary is preferable[14].

The Alternative

A form of incentive program that is gaining in popularity is different forms of restricted stocks. The spectrum ranges from instruments that are like ordinary shares that the CEO is prohibited to sell to complex programs with several layers of options. The programs at the complex end of the spectrum are highly company specific so it's hard to generalize their characteristics. The share-like kind of incentive program has several advantages over the use of options. First, the incentive from these restricted stock are more stable than the option. Whether the stock price increases or decreases, the restricted stock change with the same amount in value. However, for the stock option it is different due to its connection with its strike price. For example if the option is out-of-the-money, i.e. the share price is below the option's exercise price, the incentives created by the options are weak. This since the options might turn out useless despite an improvement of firm performance. Second, if options are out-of-the-money, they provide little incentive for CEOs to stay at their current employer. Other firms may then out-compete the firm and provide more profitable remuneration for the CEO. This is not the case for the simple restricted stocks, since they never become worthless, unless the company goes bankrupt. Third, executive option holdings may increase the manager's incentive to undertake risky projects and investments. This since there is no downside in pay for the CEO if options already are out-of-the money. The whole risk of these projects and investments would be on the shareholders and the creditors. If the CEO would hold in-the-money-options (stock price above the options strike price) or restricted stocks, then he would be less willing to take on this risk since it will affect his own remuneration. Fourth, options loose in value when companies pay out dividends. A CEO that holds executive stock options would gain by trying to keep dividend payout as small as possible, even if this is against shareholder interest. However, if the CEO would have restricted stocks instead, his/her interest would be more in line with shareholders since the gain from restricted stocks are mirroring the ones from real, on the market, stocks.[15]

There exists however some critique to the use of restricted stocks. Bebchuk & Fried (2004) argues that a restricted share is nothing else than a stock option with strike price of zero. The restricted stock would never be worthless, but on the other hand never effectively punish the

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[14] Bång (2007)
[15] Hall & Murphy (2003)

CEO for poor performance. The downside is only the fall in the stock price, but with a strike price of zero, the CEO will most likely still earn a large amount without an extraordinary effort.

Previous Findings and Discussion of CEO Remuneration Disclosure

Although widespread criticism of the openness and visibility of stock option programs, few researchers have given guidelines of how the disclosure should be improved. More focus has instead been on how incentive programs itself can be developed, with ideas such as for example indexed strike price[16].

The disclosure has improved in recent years, as stock options has become more and more commonly used as a part of the remuneration, but it is still lacking some elements to make it totally visible for outside investors. Bång (2007) researched 20 Swedish companies and found several weaknesses in the disclosure of the CEO's stock options. In Sweden, companies are supposed to disclose the present value of the options given during the year. The calculations of the programs are often made by an outside consultant within the area. The companies often refer to this valuation as being made based on the Black & Scholes formula. However, in the disclosure, very few companies present which assumptions and parameters that has been used in order to perform this calculation. Hence, investors cannot make an own judgement if these assumptions are reasonable, also to replicate the valuation process gets very difficult. The two parameters that are the most complex and cause the largest problems are the stocks volatility and future dividends[17]. In Bång's study from 2007, only 1 out of 20 companies disclose these parameters. Furthermore, as we mentioned earlier, the restrictions on stock options leads to forfeiture and early exercise which lowers their cost to the company. Using the Black & Scholes equation, which is valid for tradable European options, to value this type of option will over-value it. A downward adjustment is then often made, usually 30%, but equally often without any explanation or reasoning why[18].

To be able to improve the disclosure, it should be clear to investors how the valuations of the incentive program have been done. If the Black & Scholes formula, the binomial model or any other model is used to value the incentive program, then all parameters and assumptions should be disclosed. If this is the case, then investors themselves can evaluate the options given and see

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[16] see for example Abowd & Kaplan (1999)
[17] Bång (2007)
[18] Bång (2007)

if they find the remuneration to be fair and reasonable. Also, if investors themselves should be able to calculate the strength of the CEO's incentives, and how his wealth moves with the stock price (pay performance sensitivity), then companies must disclose options from previous years. This is often made, but as a lump sum with many different outstanding option programs that has different strike prices and exercise dates. Therefore it would also improve the disclosure if companies presented the CEO's holding specified for each incentive program.[19]

Bebchuk & Fried (2004) however, gives another view of how firms can improve their disclosure. They mean that even though disclosure rules have improved in later years, there is still a large difference between disclosure and transparency. It is their view that the goal of the disclosure of CEO remuneration isn't for some experts to understand the real cost of the program in order to adjust the stock price to its fair value, but instead to give the whole range of shareholders a foundation to examine if CEO remuneration is correct and fair. First, companies should place a present value on all of its expenses, such as for example pensions, post retirement perks and deferred compensation. Second, firms should disclose the value of the exercised option for the CEO. Further, also disclose what fraction of the increase in option value that was merely driven by the general market and industry movements, as well as which fraction that was driven by the company's performance that was better than industry peers. Third, companies should disclose the unloading of CEO's option and shares, which was received from an incentive program. Some of this information might be available to researcher and very interested investors, but it is still difficult for the broad public to access this information. Also, in Sweden it is only regular call options and stock holdings that are registered at the Swedish Financial Supervisory Authority. Employee options and restricted stocks are non-tradable and therefore not disclosed in their database, neither are any holdings for CEOs at foreign registered companies.

Valuation Models for ESOs

Executive stock options often, as mentioned above, have several features that distinguish them from normal, American or European, traded options. These features change their value and cost. As valuation models for ESOs are still a relatively young field, unfortunately no standard model exists yet[20]. Therefore we will discuss more in depth the reasons why an ESO have a different cost from a "normal" option with the same maturity, strike price, and volatility, and then we will discuss the different approaches to value them and which one of those we think is appropriate.

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[19] Bång (2007)
[20] Carpenter, Stanton, and Wallace (2006)

Employment and vesting period

An ESO is often tied to the employment, i.e. if the CEO leaves the company an un-exercised option will be voided. The option often has a period before it can be exercised - the vesting period. If the CEO for whatever reason leaves the company the unvested options would be worthless. It seems reasonable that a tanking share price would increase the risk that the CEO would be fired or that a stellar share performance could result in him/her being headhunted to another firm[21]. If employment and share price are assumed/tested to be independent this obviously lowers the value of the option. If they are strongly connected it would be a more complicated situation.

Unhedgeable

The CEO is prohibited from exiting the option position before the end of the vesting period and is not allowed to hedge it. This increases the idiosyncratic risk of his/her option position. Depending on the CEO's other wealth, his/her total portfolio could also be rather unbalanced with respect to the company. This in turn affects the utility the CEO gets from the options, which means that the CEO will often choose to exercise the options early. To complicate this problem further it's not necessary to exercise all options from the same grant at the same time. This effect has been found empirically. In a study the average exercise time for American employee stock options with ten years maturity on non-dividend pay stock was close to six years, not until maturity as option price theory for ordinary options predict[22]. This lowers the cost of the ESO compared to a "normal" option since it is optimal to hold the option until maturity if the underlying stock is non-dividend paying.

A valuation model should be able to handle these effects if they are significant enough.[23] As mentioned above there is no standard model to value different ESOs. One factor which makes the models hard to evaluate is the lack of price data. Three different distinct approaches can be taken.

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[21] Jennergren and Näslund (1993)
[22] Bettis, Bijak, and Lemmon (2005)
[23] Carpenter, Stanton, and Wallace (2006)

Utility-based models – modelling early exercise as an endogenous event

This category of models takes as their starting point the individual's utility function. People are assumed to be risk-averse which means that they prefer x amount of cash to x=E[X]. Each person's tolerance of risk is modelled in the utility function by a factor[24]. How large this factor is for a specific person is obviously difficult to estimate. The models take into account the person's total portfolio which can be modelled as a risk-free asset or a combination of the market portfolio and a risk-free asset. The easiest way to illustrate how the utility approach differs from the risk-neutral approach is to think of a binomial tree model. In a node of a binomial tree model of an American option on a dividend paying stock the decision to be made is if the value of exercising the option before the dividend payout is greater than the expected value of the two connected nodes at the next step. In a utility based model the utility of the total portfolio if the option is exercised now is compared to the expected value of the utility of the total portfolios with the options in the next step. Either an analytical or a numerical solution to the resulting equations can be sought. The strength of the utility based approach is that it tries to model explicitly as many aspects of the valuation problem as possible. This means that they can be used to simulate different aspects to see if the same pattern emerges as from empirical data e.g. early exercise. The drawback is that a lot of parameters are needed which are very difficult to estimate. This leads to a certain level of arbitrariness.[25]

Risk-neutral valuation with exogenous events

The exogenous approach was used by Jennergren and Näslund (1993) to model the possibility of forfeiture or early exercise because the CEO left his/her job. They showed that a risk-neutral valuation framework could be combined with an independent probability of a termination event. This means that an estimate of the probability of a CEO quitting or being fired in a time span is needed. This probability is independent of the stock price to simplify the model. They presented both an analytical solution and how to use this approach in numerical situations. Carpenter (1998) extended this approach by making the termination event a general forfeiture/early exercise event. This means the CEO's tendency for early exercise of the options while still keeping his/her position was combined with the forced exercise of options following termination into one event with one probability. This gives a model where voluntary early exercise is not ignored but its modelling doesn't result in added complexity. Carpenter uses a large sample of ESOs and another utility based model to calibrate the event probability and also concludes that the

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[24] Varian (1992)
[25] Detemple and Sundaresan (1999) and Carpenter, Stanton, and Wallace (2006)

estimates calculated with the exogenous model is as good as those arrived by using the utility model. Bettis, Bijak, and Lemmon (2005) did find better results with a utility based pricing model using a different sample.

Adapt the Black-Scholes' model – adjusts value by ad-hoc changes in arguments or discount

The third option is to use a modified Black & Scholes-model. This can be done by either modifying the arguments, e.g. FASB permits using expected time to exercise rather than time to maturity when calculating ESO cost in the US, or just arbitrarily discount the calculated cost by an empirically motivated factor. The drawbacks of this approach are obvious but it's a very transparent process which minimizes the possibility of manipulation.

Model selection

Utility based models are good to simulate the possible effects of different factors e.g. total portfolio wealth or risk-averseness, but the need for estimates of risk-averseness and total portfolio introduces too much arbitrariness into the calculation. We will use Carpenter's (1998) exogenous event model to value the different ESOs. This strikes a good balance between the powerful utility models and the transparent and simplified adjusted Black & Scholes' costs. It will adjust the cost to both the remaining length of the vesting period and time to maturity.

Parameters needed – each program

As with the valuation model for normal options the following parameters are needed: time to maturity, stock volatility, risk-free interest rate, dividend yield or a prognosis of dividend payments and strike price. Further the probability for an early exercise event is required. Of these parameters it would be good to find all except the probability for an exercise event in the annual report. Data about the forfeiture and exercise of options would be useful to estimate the probability of an exogenous exercise event.

Parameters needed – cost of CEO's total ESO portfolio

Often new options are issued every year and with several different vesting dates e.g. a third of the options vest each year until all are vested after three years in a five year program. For valuation

purposes each vesting date is like a different option to value. To calculate the cost of the total portfolio held by the CEO the numbers of options in each program are needed.

3. <u>Methodology</u>

In this section we present our research method and approach to the problem. Further we explain our valuation model and justification and limitations of the same. We also state the assumptions and parameters used for our case studies later on in the thesis.

The Binomial Model

We implemented Carpenter's model as a modified binomial model. The modifications are described below.[26]

Dividends

Dividends can be given either as a dividend yield or as a specified cash amount. A dividend yield means the stock price at a specified date is decreased by a certain percentage.

$$S_{t, \text{post-dividend}} = (1\text{-dividend yield}) \cdot S_{t, \text{pre-dividend}}$$

When the dividend is given as cash flows at specified times this is modeled by assuming that the dividend payments before the options maturity date are known, certain, and risk free. The stock price is then separated into two; the known risk free dividend part and the stochastic part.

$$S_t = \Sigma PV(d_\tau) + S_{t, \text{stochastic}}$$

The stochastic part is then used as the stock price in the binomial model. The full price at each time is sum of the stochastic part and the present value (at that time) of the remaining known dividends.

Early Exercise or Forfeiture

In Carpenter's model the effect on the options cost of early exercise or forfeiture is simulate as a random exogenous event[27]. The probability of the event in each time period is given by the exponential distribution since it's a form of arrival. This means the probability is independent in each period. If the event occurs before the vesting period is over the option are valued as zero

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[26] Hull (2005)
[27] Carpenter (1998)

and if the event occurs after the vesting period it's valued as if it has been exercised. The Price effects on a cell from the possibility of a forfeiture/early exercise event is described fully in the figure below.
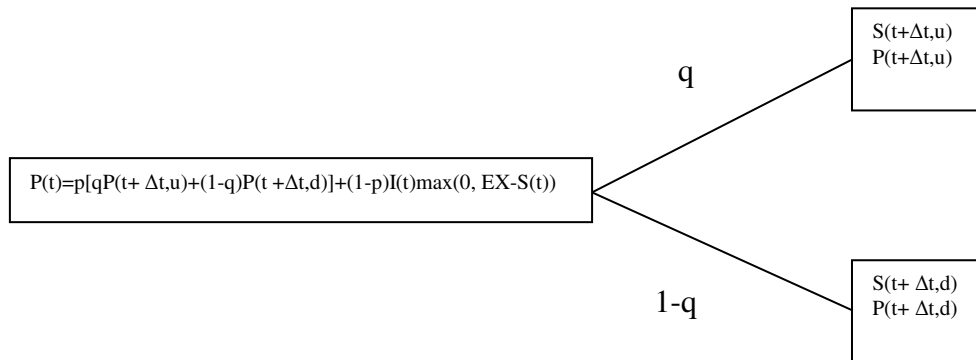
Figure 3.1: Price effects on a cell from the possibility of a forfeiture/early exercise event

Here

$P(t)$ – price of the option at time t

$I(t)$ – a function that is zero before the vesting period is over and one after

Δt – time between each evaluation step

T – time to the forfeiture/early exercise event, random variable exponentially distributed

$p = P(T > \Delta t)$ – probability the CEO remains with the company during the time step

cell value $= p \cdot$(options value with no risk of termination until next step)$+(1-p)$(value of immediate exercise)

A numerical example

Since we use a numerical method to value the different option packages we will present a comprehensive example to illustrate the effect of changes in different parameters. The company has issued an option program each year lasting five years. Each program vests a third of the options each year between year one and year three.

Exercise price: 100

Volatility: 30%

Risk free interest rate: 4%

Dividend yield: 3%

Evaluation date: 20070708

Low stock price today: 67

Medium stock price today: 100

High Stock price today: 200

Using the inputs above results in a cost for each program presented below both when valued using the model with exogenous exercise events and a Black & Scholes valuation using the dividend yield adopted version. The effect of the exogenous event model is mostly notable when there is a vesting period. One reason for high exogenous event model values with short times to maturity is that it only issues dividend at a specific time so it's possible there are none before maturity but the Black & Scholes model use a continuous dividend.

Program	Vesting date	Maturity date	Value(low)	B&S	Value(med)	B&S	Value(high)	B&S
2003	20060330	20080330	0,8	0,7	11,7	10,8	103,1	98,4
2004	20070330	20090330	2,8	2,8	16,2	15,9	103,2	97,2
2005	20070330	20100330	4,4	4,9	18,8	19,3	103,7	96,6
2005	20080330	20100330	4,4	4,9	18,2	19,3	93,4	96,6
2006	20070330	20110330	5,8	6,7	20,6	21,9	104,2	96,1
2006	20080330	20110330	5,7	6,7	20,0	21,9	94,2	96,1
2006	20090330	20110330	5,6	6,7	18,6	21,9	83,1	96,1
2007	20080330	20120330	6,8	8,3	21,3	23,9	94,8	95,6
2007	20090330	20120330	6,6	8,3	19,9	23,9	83,9	95,6
2007	20100330	20120330	6,2	8,3	18,2	23,9	74,0	95,6

Table 3.1: Cost of each option program when today's stock price is either 67, 100, or 200

The calculations are redone with a higher volatility=45% to illustrate what happens. As expected the costs increase.

Program	Vesting date	Maturity date	Value(low)	B&S	Value(med)	B&S	Value(high)	B&S
2003	20060330	20080330	3,0	2,8	16,7	16,0	103,7	99,3
2004	20070330	20090330	7,6	7,3	23,1	23,2	106,1	101,0
2005	20070330	20100330	9,8	10,8	26,9	27,9	108,3	102,8
2005	20080330	20100330	9,7	10,8	26,0	27,9	98,5	102,8
2006	20070330	20110330	11,8	13,6	29,5	31,4	110,0	104,2
2006	20080330	20110330	11,7	13,6	28,5	31,4	100,5	104,2
2006	20090330	20110330	11,2	13,6	26,4	31,4	89,4	104,2
2007	20080330	20120330	13,2	15,9	30,3	34,0	102,0	105,0
2007	20090330	20120330	12,7	15,9	28,3	34,0	91,1	105,0
2007	20100330	20120330	11,8	15,9	25,8	34,0	80,8	105,0

Table 3.2: Cost of each option program when today's stock price is either 67, 100, or 200

The elasticities, the percentage change in the price if the parameter changes one percent, for the risk free rate, dividend yield, volatility, and the intensity of an exogenous exercise event are calculated in different situation and presented in the tables below.

Program	Low $\Delta P_r/P$	Med $\Delta P_r/P$	High $\Delta P_r/P$	Low $\Delta P_{dy}/P$	Med $\Delta P_{dy}/P$	High $\Delta P_{dy}/P$	Low $\Delta P_{vol}/P$	Med $\Delta P_{vol}/P$	High $\Delta P_{vol}/P$	Low $\Delta P_{eee}/P$	Med $\Delta P_{eee}/P$	High $\Delta P_{eee}/P$
03	0,24	0,13	0,03	0	0	0	3,89	0,85	0,00	0,07	0,03	0,00
04	0,29	0,17	0,03	0,17	0,09	0,01	2,79	0,87	0,03	0,13	0,07	0,00
05-V07	0,32	0,19	0,04	0,26	0,14	0,02	2,42	0,87	0,05	0,18	0,10	0,00
05-V08	0,32	0,19	0,06	0,26	0,15	0,07	2,41	0,87	0,07	0,18	0,13	0,09
06-V07	0,33	0,20	0,04	0,27	0,18	0,03	1,92	0,88	0,07	0,23	0,12	0,01
06-V08	0,33	0,21	0,06	0,27	0,19	0,07	1,91	0,87	0,09	0,23	0,16	0,10
06-V09	0,33	0,22	0,09	0,27	0,22	0,12	1,88	0,87	0,11	0,26	0,23	0,20
07-V08	0,34	0,21	0,07	0,31	0,20	0,08	1,85	0,86	0,12	0,27	0,18	0,10
07-V09	0,34	0,22	0,09	0,32	0,22	0,12	1,82	0,85	0,14	0,30	0,25	0,21
07-V10	0,35	0,24	0,11	0,33	0,25	0,16	1,78	0,84	0,16	0,35	0,33	0,31

Table 3.3: Elasticises – interest rate, dividend yield, volatility, and exogenous exercise event

The same elasticises with a higher base volatility of 45%/year.

Program	Low $\Delta P_r/P$	Med $\Delta P_r/P$	High $\Delta P_r/P$	Low $\Delta P_{dy}/P$	Med $\Delta P_{dy}/P$	High $\Delta P_{dy}/P$	Low $\Delta P_{vol}/P$	Med $\Delta P_{vol}/P$	High $\Delta P_{vol}/P$	Low $\Delta P_{eee}/P$	Med $\Delta P_{eee}/P$	High $\Delta P_{eee}/P$
03	0,13	0,08	0,28	0	0	0	2,47	0,89	0,05	0,06	0,03	0,00
04	0,16	0,10	0,34	0,10	0,07	0,02	1,95	0,89	0,13	0,11	0,06	0,01
05-V07	0,17	0,11	0,41	0,15	0,10	0,03	1,74	0,88	0,17	0,15	0,09	0,01
05-V08	0,17	0,12	0,53	0,15	0,11	0,06	1,73	0,88	0,20	0,16	0,13	0,10
06-V07	0,17	0,12	0,43	0,18	0,13	0,04	1,63	0,88	0,20	0,19	0,12	0,02
06-V08	0,17	0,12	0,56	0,18	0,14	0,07	1,61	0,87	0,23	0,20	0,15	0,10
06-V09	0,17	0,13	0,67	0,19	0,15	0,11	1,58	0,87	0,24	0,25	0,23	0,21
07-V08	0,18	0,12	0,56	0,21	0,15	0,08	1,53	0,87	0,24	0,23	0,17	0,11
07-V09	0,18	0,13	0,68	0,22	0,17	0,11	1,50	0,86	0,26	0,27	0,24	0,21
07-V10	0,19	0,14	0,77	0,24	0,19	0,15	1,47	0,85	0,28	0,34	0,33	0,31

Table 3.4: Elasticises – interest rate, dividend yield, volatility, and exogenous exercise event

Reliability and Validity

To evaluate how reliable the model's results were with respect to changes in input it was tested, both the cases and in the stylized numerical example. The numerical example was also compared to the results from using the regular Black & Scholes model to highlight their differences.

Valuation of Companies Compensation Packages

In the light of our survey, we chose four companies listed on the Stockholm stock exchange to conduct a case study. The companies we have chosen for our study are: SEB, Millicom, Swedish Match and Stora Enso. This was not a random selection. When selecting companies for our survey, we looked for companies that would differ from each other, in order to cover most of the spectra. We wanted example of different sectors, types if incentive programs and also where the companies are registered. Another issue for us, when selecting companies, were the good performance of the stock market during recent years. Many companies' stock options were deep in the money, and to value these options would only highlight some of several problems. Based on our survey and information from annual reports, we found these four companies appropriate for our study. Stora Enso and Millicom are registered abroad, SEB and Millicom are shifting to a new incentive programs based on performance shares and Swedish Match and Stora Enso have several options that are not deep-in-the-money.

The case studies are partly descriptive, in order to get an overview of the remuneration packages, but also exploratory as we use Carpenter's model to value the incentive programs. By this we illustrate how to use the model and the different problems that arise from inadequate disclosure.

Incentive programs which, unfortunately, demand an even more powerful model for their valuation are also described.

Valuing each Option Program

As described above in the methodology section Carpenter's modified binomial model, adjusted for the possibility of forfeiture or non-optimal early exercise of the options, have been implemented and used to value the different option programs in the valuation cases. The different input values specific to each option program; time to maturity, vesting period, strike price, dividend structure and volatility were taken from the company's annual report if possible. The current stock prices were taken from the DN and DI websites.

Assumptions and Scenarios

A cost for each option program or sub-program if they still were to vest at different dates was calculated. To try to analyze the sensitivity of the results from the model to different input values a simple scenario system was used. A few different possibilities for an input parameter were given and the option value was calculated for each different value or combination of input parameters.

Dividend Structure

In the model we need to state both the dates and the amounts of the dividend payments. The dividend can be stated as a cash amount or as a dividend yield i.e. a percentage of the stock price. If the company stated its calculated dividend yield then that was used in the model. If not the stated cash amount was used. It's assumed that the dividend date and size of yield or payment is the same each year.

The different dividend scenarios considered here were either a 25% or 50% across the board increase in dividends. Increasing the dividends decreases the costs of an option program.

Forfeiture or Early Exercise Event

Carpenter (1998) calibrated her model to a probability of 11% per year for American executives.. One study estimated executive turnover in the US to 8.9% per year and the probability of a forfeiture/early exercise event should be greater than that[28]. Unfortunately we have no numbers for Swedish companies, so we will use Carpenter's probability.

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[28] Coughlan and Schmidt (1985)

Risk Free Interest Rates

The most accurate approach would be to estimate the risk free future rates for each time step period. To reduce complexity a single interest rate approach for an option program is used instead. When a company provides estimates for the risk free interest rates they usually provide a single rate even if they have several ongoing option programs. We will use the estimate provided by the company but also stress-test it by changing it plus/minus one percentage point.

Volatility

There are several ways to estimate the volatility. Either the historical volatility can be estimated using historical stock prices. Alternatively, an implied volatility can be estimated by taking the market prices for options on the company's stock and calibrating the Black & Scholes model to this value. Here we use the volatility estimate provided by each company in their annual report. To analyze the sensitivity to different volatilities three different volatility scenarios were calculated; the company's estimated volatility from the annual report, a decrease of this to 67% of its original value and an increase of this to 150% of its original value.

Number of Steps

The number of steps used determines the accuracy of the estimate. An increase in the number of steps leads to a more accurate estimation but increase the time it takes to estimate the model. This time constraint has to be taken into account especially since the use of different scenarios means there will be a many evaluations for each option program. We used 26 steps per year.

Valuing the CEO's Total Option Package

If the company discloses the CEO's ownership of options in each program it is straightforward to calculate the total value and delta using the estimates for each program. When they only disclose the CEO's total ownership of options a different approach has to be used. If the company discloses the total distribution of outstanding options we can assume the CEO's option portfolio has the same distribution but we will also illustrate the possible effects of other possible distributions.

4. **Empirical Findings & Results**

Here we present the findings of our research. First we present the accounting standards for Swedish companies and their listing demands on the Stockholm stock exchange. Second we will present the result of our survey of the disclosure in the large cap companies listed on the Stockholm stock exchange. Last we present the four chosen companies for our case study. We will show their level of disclosure of their incentive programs as well conduct a valuation of them using our model presented in the methodology section.

Overview

To answer our research questions we will first describe the disclosure rules for large public Swedish companies and conduct a survey of how the companies on the Stockholm stock exchange large cap list discloses the remuneration of their CEO. The survey will give us an overview if the companies follow the disclosure rules and also if they disclose the additional information we need for our valuation model. The survey will help us to identify interesting cases to value with our model in our Results and Analysis section.

Accounting Standards & Corporate Governance

In Sweden, the rules for corporate governance and accounting standards differ in some aspects from the US. This doesn't mean that we don't have an agency problem in Sweden. A Swedish CEO is not allowed to be a part of the nomination committee, which is to be independent of managers of the firm as well as have a majority of members that are independent of the board[29]. Nor is the CEO allowed to be the chairman of the board, although he is allowed to be a member of it[30]. Also, in Sweden the ownership structure is less dispersed than in the U.S. This is believed, by the constructors of the corporate governance code, to lead to that large owners take a larger responsibility of the board and its actions.

The information presented to the shareholders is regulated by several different guidelines. First, there is the annual reporting law. Second, there is the new international standard, International Financial Reporting Standard (IFRS), which was introduced in 2005 and serves as the new reporting framework for listed companies in most parts of Europe. Third, there are the listing demands from OMX, the Stockholm stock exchange. The listing demands include both a

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[29] Swedish Code of Corporate Governance (Svensk bolagsstyrnings kod)
[30] Svensk Aktiebolagslag

Swedish Corporate Governance Code, as well as the Commerce Stock Exchange Committee's[31] disclosure guidelines.

As the annual reporting law is very general and the IFRS are more focused on accounting and how companies should expense different items, we will not go into details of these regulatory frameworks. Instead, we will in this section go through the guidelines for corporate governance and also the reporting of CEO incentive programs, according to the OMX's listing demands.

Swedish Code of Corporate Governance

The Swedish Code of Corporate Governance is a part of the demands made on companies that seek to be listed on the Stockholm stock exchange. The only exception is given to companies registered abroad, which should follow their home country's code. If no such code exists, the company must adopt to the Swedish code.[32]

In general, the Swedish Code of Corporate Governance seeks to secure the interests of shareholders, especially minority shareholders. The code gives recommendations and guidelines to the boards and its members how to act, and by this tries to secure a good governance structure in Swedish companies.

Regarding the remuneration of the CEO, the governance code gives the following recommendations to be presented and voted upon on the annual meeting:[33]

- There should be a clear relationship between fixed and flexible salary, also between performance and pay
- Main factors for bonuses and incentive programs
- Main facts of non monetary perks, pensions and severance pay
- Which group of managers that are affected by the program

How these issues will be addressed or presented to the wider public are not a part of the guidelines. The guidelines only gives a foundation of what should be voted upon on the annual

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[31] in Swedish: Näringslivets Börskommitté (NBK)
[32] Swedish Code of Corporate Governance
[33] Swedish Code of Corporate Governance

meeting, which doesn't necessary include all the information needed to replicate the valuation done by the company.

Commerce Stock Exchange Committee's Disclosure Guidelines

The Commerce Stock Exchange Committee also gives recommending guidelines for Swedish companies. These guidelines are, as well as the corporate governance code, a part of the listing requirements for the Stockholm stock exchange. These guidelines are however more focused on the transparency of the listed companies' actions and how these should be disclosed in the annual report. In their "Rules Concerning Information About Benefits For Senior Executives" they present guidelines for how companies shall disclose and specify the remuneration of executives in their annual reports.

What should be disclosed in the annual reports are[34]:

- Total amount of remuneration
- All remuneration items which is not of only a minor importance
- Fixed and variable part of remuneration, and how it has been calculated
- Holding and, at allotment, its value of financial instruments or other stock options received during the year in connection with the incentive program
- Holdings of financial instruments or stock options from incentive programs received in previous years
- Pension agreements
- Severance pay

To clarify, the Commerce Stock Exchange Committee gave the following table as an example of how the remuneration could be presented:

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[34] Rules Concerning Information About Benefits For Senior Executives – Commerce Stock Exchange Committee

	Base Salary/ Base Fee	Variable Remuneration	Other Benefits	Pension Cost	Financial Instruments	Other Renumeration	Total
Chairman of the Board	600 000						600 000
Chairman John Doe	150 000					350 000	500 000
CEO	3 000 000	840 000	65 000	1 500 000	120 000		5 525 000
Other Senior Executives (10 Persons)	15 000 000	3 000 000	120 000	5 400 000	800 000		24 320 000
Total	18 750 000	3 840 000	185 000	6 900 000	920 000	350 000	30 945 000

	Option Programs Previous Years	This Year's Option Program							
	Stock Options 2000/2004	Stock Options 2002/2006				Personnel Options 2002/2008			
	Number	Number	Value	Acquisition Price	Benefit	Number	Value	Acquisition Price	Benefit
CEO	10 000	25 000	125 000	125 000	-	15 000	120 000	-	120 000
Other Senior Executives	56 000	150 000	750 000	750 000	-	100 000	800 000	-	800 000
Total	66 000	175 000	875 000	875 000	-	115 000	920 000	-	920 000

Figure 4.1: Example of how CEO remuneration could be presented according to the Commerce Stock Exchange Committee.[35]

Furthermore, regarding the stock options and financial instruments, received from incentive programs, there should be some extra information presented. As mentioned above, the value of the incentive programs should be calculated. However, if the instruments lack real market value, a theoretical value should be calculated and explained instead. Also, the assumptions in this valuation process should be explained.[36] But what that information more specifically should include is not further explained or categorized.

Survey

In order to get an overview of the disclosure of listed companies on the Stockholm stock exchange and their compliance with the listing demands, we conducted a survey. We examined the annual reports from 2006 for all companies listed on the Stockholm stock exchange large cap list. This amounted to a survey of total of 69 companies and their disclosure. Worth to be noted is that 31 out of the examined companies are not using a stock based incentive program, while 38 are. Out of these 38 companies, 22 are using only stock options, 7 only uses alternative stock programs (convertibles or restricted stocks) and 9 companies are using both versions of the incentive programs. The companies that are using both programs are all changing from options to the use of restricted stocks or performance shares. The rationales behind the change are most

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[35] Commerce Stock Exchange Committee, *(Translated from Swedish to English by authors)*
[36] Rules Concerning Information About Benefits For Senior Executives – Commerce Stock Exchange Committee

often not explained in the annual reports, but as described in the theoretical framework, restricted stocks have a couple of advantages (but also possible disadvantages) over stock options.

In our survey we attempted to highlight the problematic structure of how to value a CEO's stock option holdings. We already know from figure 4.1 what the disclosure rules are, but wanted to examine not only if companies followed those, but also if they presented the extra information we think is necessary in order to get a full overview and possibility to value the CEO's option holdings. Therefore we examined thoroughly how the incentive programs where valued, how the disclosure were for exercised and forfeited options and also if the assumptions used by the company was stated. According to us, and also researchers such as Bebchuk & Fried, we need this information in order to get a full overview of the CEO's incentive program. This not only for this year's program, but also previous year's, presented separate so that price and assumptions can be isolated to each program.

First, in the left column, we have examined the option granted during the previous year (i.e. 2006) and how this has been disclosed. From the general guidelines we here have the amount of options granted to the CEO, and the information of these options, i.e. strike price and present value. We also examined with what model the companies have used to value the options. In addition, we wanted to see if companies disclosed the result of a CEO's holdings by presenting the exercised and forfeited options. This is not a part of the listing demands on the Stockholm stock exchange, but we consider these parameters essential if we are to evaluate the CEO's incentive programs.

Second, the upper right column focuses on previous year option programs, i.e. programs that are currently running and in which the CEO has holdings. According to the listing demands and disclosure guidelines mentioned earlier, the companies can put previous year's options as a lump sum. However, if we want to evaluate the holdings, we need to be able to see which amount of options the CEO has from each separate program. Also, we need the specifics of these programs with strike prices and maturity date.

Third, in the lower right column we present how many companies that have disclosed their assumptions of Black & Scholes parameters, in order to perform their valuation.

Note, all numbers presented in the figure are a percentage of the companies that use stock options as a part of their incentive program.

Options Granted This Year		Previous Year's Option Grants	
Total	73%	Amount Total Company (#)	77%
To CEO	91%	Value Total Company	19%
Amount (#)	77%	Amount Separate Company	84%
Present Value	68%	Value Separate Company	13%
Strike Price	86%	Amount total CEO (#)	74%
Time to Maturity	91%	Value Total CEO	10%
Purchase Price	50%	Amount Separate CEO (#)	52%
Valued with PV	32%	Value Separate CEO	13%
Valued with B-S	65%	Average Time to Maturity	23%
Valued with Binominal Model	3%	Average Strike Price	23%
Exercised Total Company	65%	Inidvidual Time to Maturity	84%
Exercised Total CEO	29%	Individual Strike Price	84%
Exercised Separate Company	29%		
Exercised Separate CEO	13%		
Forfeited Total Company	61%	**Black-Scholes Parameters**	
Forfeited Total CEO	13%	Volatility	56%
Forfeited Separate Company	32%	Dividend Yield	38%
Forfeited Separate CEO	13%	Risk-free Rate	53%

Table 4.1: Summary of our survey of companies' disclosure

From the summary of our survey, presented in table 4.1, we can clearly see that the disclosure doesn't fully meet our demands. The options granted this year has the best disclosure, which is not unexpected due to the regulations. However, we didn't reach a 100% disclosure. The reason behind this is that some companies use vague definitions of their incentive programs and sometimes make the CEO him-/herself reinvest the bonus in publicly traded options. A certain option price is then hard to disclose.

Looking at the disclosure of forfeited and exercised options, we discover that this differs drastically from report to report. For investors to fully examine the remuneration of the CEO, his/her exercising of options should be disclosed separately in order to evaluate the profit made by the CEO. Only 13% of the companies disclosed this information. With this low number, it is hard for investors to recognize the outcome of the incentive programs and if the amount is a reasonable pay for the CEO's performance during the last years.

Moving on to previous year's holdings, we see that the information again varies quite substantial. The CEO's holdings could, according to the Commerce Stock Exchange Committee's guidelines be lumped together, which 74% of the companies do. 52% of the companies disclose more information, which makes it possible for investors and researchers to conduct a pay-performance sensitivity analysis of the CEO. These two numbers are a overlapping, but 10% of the companies don't disclose total holdings for the CEO at all.

All companies that disclose the options granted this year disclose a calculated present value of the options. 65% of the companies are saying that they have used the Black & Scholes model, while

only one (1) company uses a binomial model. However, to be able to calculate a present value of the options, you need to make some assumptions about the risk-free rate, dividend and the volatility. These assumptions are often referred to as Black & Scholes parameters, as they are used in that model. According to the Commerce Stock Exchange Committee guidelines, all assumptions made should be disclosed. This is however not strictly followed, as can be seen in table 4.1.

Case Study SEB

The start of SEB's incentive program was in 1999, when SEB decided to hand out ESOs to leading employees. The ESOs were handed out every year until 2004. The options had a time to maturity of seven years and a vesting period of three years. In 2005, SEB changed their long term incentive program from personnel options to the use of performance shares.

The performance share program is more complicated than the option programs. Each year the CEO (and other key personnel) is awarded a number of performance shares. After a three year evaluation period they will be exchanged into a number of options. The options have a very low strike price compared to the stock price when issued to ensure that they are in the money. 10 SEK is the strike price for the 2006 program. The amount of options received for each performance share depends to 50% on one relative and to 50% on one absolute measure of performance. The relative measure is the SEB share performance relative to a composite index of two indices of bank shares. To receive the minimum amount, 10%, of the options the share has to perform as the index. The maximum is awarded if the share outperforms the index by at least eight percentage units. The amount of awarded options increases linearly. The absolute performance measure is real growth in earnings per share. Here the minimum performance is a 2% growth in inflation-adjusted earnings and the maximum is reached for a 10% growth in inflation-adjusted earnings. After the evaluation period the participants are encouraged to keep the options by a formula recalculating the number of shares each option can be exchanged for to compensate for dividends. To further explain this complex structure, see the figure below.

Figure 4.2: Summary of SEB's long-term incentive program

These programs are obviously much harder to value than the relatively simple option programs. To do this unfortunately goes beyond the scope of this paper, however the half related to indices could probably be modelled using a binomial tree for each index.

Disclosure

The incentive programs for SEB are disclosed rather thoroughly and look as follows:

Total Long-term incentive programme	Original no of holders[3]	No of issued	No of out-standing 2006	No of out-standing 2005	A-share per option/share	Exercise price	Validity	First date of exercise
1999: Employee stock options	12	953,997		85,000	1.12[1]	82.4[1]	1990–2006	02-02-15
2000: Employee stock options	368	4,816,456	254,554	1,587,397	1	91.5	2000–2007	03-03-01
2001: Employee stock options	874	6,613,791	1,858,166	3,651,776	1	118	2001–2008	04-03-05
2002: Employee stock options	1,029	6,790,613	2,306,220	4,186,738	1	106.2	2002–2009	05-03-07
2003: Employee stock options	792	6,200,000	2,805,569	5,778,883	1	81.3	2003–2010	06-02-27
2004: Employee stock options	799	6,200,000	5,594,680	5,848,112	1	120	2004–2011	07-04-02
2005: Performance shares	537	1,789,100	1,684,534	1,781,400	1	10	2005–2012	2008[2]
2006: Performance shares	513	1,477,327	1,433,145		1	10	2006–2013	2009[2]
Total		34,841,284	15,936,868	22,919,306				

1) After recalculation for SEB's rights issue in 1999.
2) The fifth banking day falling after the Annual accounts for the financial year 2007 and 2008 respectively are made public.
3) In total 1,624 individuals have participated in all programmes.

Figure 4.3: Long-term incentive program outstanding in total[37]

Outstanding number of Employee stock options/Performance shares to the President and the Group Executive Committtee	2006			2005		
	President	GEC[1]	Total	President	GEC[1]	Total
2000: Employee stock options					103,333	103,333
2001: Employee stock options	79,412	124,001	203,413	79,412	222,507	301,919
2002: Employee stock options	191,177	164,720	355,897	191,177	289,485	480,662
2003: Employee stock options	132,353	216,220	348,573	132,353	305,485	437,838
2004: Employee stock options	132,353	322,877	455,230	132,353	379,759	512,112
2005: Performance shares	62,000	161,100	223,100	62,000	185,400	247,400
2006: Performance shares	43,846	157,781	201,627			
Total	641,141	1,146,699	1,787,840	597,295	1,485,969	2,083,264

Figure 4.4: Outstanding employee options/performance shares held by CEO and managers[38]

In figure 4.3 all currently running incentive programs are disclosed. The programs are clearly presented with strike price, time to maturity and amount outstanding. In the following figure, 4.5, we can see the CEO's holding from each of the incentive programs. When clearly presented like this, we do not need to make any assumptions of the fraction of previous holdings. This disclosure is more detailed than the recommendations from the Commerce Stock Exchange Committee, but in line with Bång's recommendations. By presenting previous year's incentive programs in detail, we can evaluate the CEO's holdings with fewer assumptions, hence with more accuracy.

Beside of these tables, SEB also presents Black & Scholes parameters used in order to value the options. They assume to have:

- Volatility: 33%
- Risk-Free Rate: 3,16%
- Dividend Yield: 3,25%

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[37] SEB Annual Report 2006
[38] SEB Annual Report 2006

Since all assumptions are given, an investor can himself/herself decide if these assumptions are reasonable to use in the valuation process.

The option program issued 2004 had a special condition. If and when the stock price was 100SEK above the strike price the program would automatically exercise all options. The stock price at the chosen evaluation date was above this value so the 2004 program had ended.

Using the data from the 2006 Annual report gives the following option programs. The date of maturity is not given exactly but the vesting period and the vesting date was given so it's assumed that the date of maturity is exactly four years after the vesting date. The closing stock price, 227 SEK, on Friday the 6th of July 2007 was used as the current stock price.

Program	Date of Maturity	Vesting Date	Strike Price	Stock price/Strike price
2001	2008-03-05	2004-03-05	118	1,92
2002	2009-03-07	2005-05-07	106,2	2,14
2003	2010-02-27	2006-02-27	81,3	2,79

Table 4.2: Summary of parameters for active option programs issued by SEB

Valuation

Since SEB provides an estimated dividend yield that is used in the valuation model. The day the stocks were traded without dividend, 31st of March, was used as dividend date. This was assumed to be the dividend date in all subsequent years. The CEO is 45 years old and has been in the job since 2005[39]. From this it seems reasonable to conclude that she's not about to retire. This means we assume there is a possibility the CEO will part way with the company before retirement.

Volatility	Dividend yield	Interest rates
33%	3,25%	2,16%
22,1%	4,06%	3,16%
49,5%	4,88%	4,16%

Table 4.3: Summary of different parameter scenarios used in stress testing the valuation

The modelled cost and the highest and lowest combinations from the combination of scenarios given above in table 4.3 for each program are presented in the table below.

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[39] SEB Annual Report 2006

Program	Cost	Delta	ScenMin Cost	ScenMax Value	Max/Min	Min delta	Max delta	Max/min
2001	111,7	1,0	110,8	113,9	103%	0,97	1,00	104%
2002	123,5	1,0	122,4	127,4	105%	0,95	1,00	106%
2003	147,6	1,0	146,9	150,1	103%	0,97	1,00	104%

Table 4.4: Summary of valuation results for each active SEB option program

As seen above in table 4.4 SEB discloses the CEO's holding in each incentive program. Using this and the costs from the model gives an approximate interval for the total cost and delta of the options portfolio

Cost=111,7·79412+123,5·191177+147,6·132353=52.005KSEK

Min cost=110,8·79412+122,4·191177+146,9·132353=51.640KSEK

Max cost=113,9·79412+127,4·191177+150,1·132353=53.273KSEK (+3% from scenario min cost)

Min delta=0,97*79412+0,95*191177+0,97*132353=385.702

Max delta=1,0*79412+1,0*191177+1,0*132353=402.915 (+4% from min value)

Of course the scenario calculations are more to illustrate the uncertainty than to suggest true boundaries. The high degree of certainty in the total portfolio cost is the result of SEB's disclosure of the CEO's position in each option program. So it seems that valuing the CEO's options portfolio can be done here quite accurately. Unfortunately the new performance share program, about 100.000 performance shares, is not included.

Case Study Millicom

Millicom's bonus and shared-based compensation are based on what Millicom refers to as "actual performance" and includes both individual and group performance. Up until May 2006 Millicom used stock options as their major economic incentive to its employees. However, that changed as Millicom instead started to use "performance shares". The performance shares will vest after a three year period, called a performance cycle. Millicom will use four separate evaluation categories; Millicom's share price to peer groups, EBITDA margin, revenue growth and profit margin. The performance in each category will result in a percentage points of stocks per performance share e.g. upon evaluation the past three year performance results in 10% in the peer group category, 12% in the EBITDA margin, 7% revenue growth and 20% in the profit

margin category. Add these four percentage point numbers together for the total percentage points of shares per performance shares, here 49%, multiply this with the total number of performance shares received to find out the employee's total allocation of shares. It is unclear if the shares will be restricted for a period after the final allocation.[40] This program is obviously quite different from a normal option program and its evaluation unfortunately falls outside the scoop of this thesis.

Disclosure

Compared to SEB's disclosure, which is considered to be good, Millicom's is considerably poorer. Due to the change of incentive program, Millicom has not handed out any stock options during the year, and the restricted stock program is still being finalized to be able to start in 2007 (even though the CEO already has received some). Since Millicom's active option programs were issued before this year the regulatory framework is less strict concerning disclosure. However, for us to be able to calculate the CEO's ownership of stock options, the information is not sufficient and we have to make several assumptions in order to value the programs.

The disclosure of the programs is as follows:

	Options outstanding		Options exercisable	
Range of exercise price $	Weighted average exercise price	Number outstanding at December 31, 2006	Weighted average exercise price	Number outstanding at December 31, 2006
3.32–3.75	3.37	320,206	3.37	320,206
9.00	9.00	95,392	9.00	95,392
16.78–20.56	20.27	1,030,729	20.04	573,929
25.05–29.75	25.99	500,654	26.27	384,945
31.88–35.91	32.88	433,324	32.88	433,324
3.32–35.91	21.04	2,380,305	20.91	1,807,796

Figure 4.5: Outstanding options in different price ranges[41]

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[40] Millicom Annual Report 2006
[41] Millicom Annual Report 2006

22. SHARE CAPITAL CONTINUED

Share options outstanding at the end of the year have the following expiry date and exercise prices:

Date issued	Number of options outstanding as at December 31, 2006	Exercise price $	Terms of option
May 1994, May 1995, May 1996, May 1997, January 1998, May 1998, August 1999, May 2000, December 2001, December 2002, May 2003 and May 2004	1,247,314	3.32 – 35.91	Exercisable over a three-year period in equal installments. Options have an indefinite life.
May 2005	183,334	20.56	Exercisable over a three-year period in equal installments. Options have a twenty-year life.
December 2001, December 2002, May 2003 and May 2004	435,590	3.32 – 25.05	Exercisable over a three-year period in equal installments. Options expire after six years from date of grant.
May 2005	414,067	20.56	Exercisable over a five-year period (one-fifth vested after one year, two-fifths vested after two years, three-fifths vested after three years, four-fifths vested after four years, 100% vested after five years). Options expire after six years from date of grant.
July 2005 and May 2006	100,000	20.56	Exercisable over a five-year period (one-third vested after three years, two-thirds vested after four years, 100% vested after five years). Options expire after six years from date of grant.

Figure 4.6: Outstanding options and their expiry date and strike price[42]

	2006		2005		2004	
	Average exercise price in $ per share	Number of options	Average exercise price in $ per share	Number of options	Average exercise price in $ per share	Number of options
Outstanding at beginning of year	15.96	3,812,387	15.56	4,127,547	13.26	4,520,808
Granted	20.56	50,000	20.56	740,740	25.05	540,015
Forfeited (i)	28.53	85,539	26.09	(571,381)	23.68	(264,236)
Exercised	9.08	(1,567,621)	7.39	(484,519)	4.29	(669,040)
Outstanding at end of year	21.04	2,380,305	15.96	3,812,387	15.56	4,127,547
Exercisable at end of year	20.91	1,807,796	15.40	2,321,646	18.56	2,451,508

Figure 4.7: Outstanding options and transactions during the year[43]

From the descriptions of the programs we know that options with an indefinite or a 20 year life are for directors. This means the CEO's options come from the option programs in the last three rows in figure 4.6. It's not clear if the CEO received options from both of the 2005 programs or if all his options came from just one program and if so, which one. Hopefully the difference in value between the two won't be great. The exercise prices for the option programs presented on the last two rows in figure 4.6 are known. For the four programs; December 2001, December 2002, May 2003 and May 2004, the exercise price is only given as a wide interval. It's stated in the text that the exercise price is either the market price or above it at the date of issuance. Assuming this means the market price on at least one trading day in the same month we can at least get a floor for their respective exercise prices[44]. With the interval for strike prices and the interval for actual daily stock prices for those months an allowed strike price interval for each program can

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[42] Millicom Annual Report 2006
[43] Millicom Annual Report 2006
[44] Daily Stock prices from Thompson Datastream

be deduced.[45] It seems reasonable to assume that the option program issued in May 2004 is the one with a strike price of $25,05 but it's not certain. Either the December 2002 or the May 2003 program should have a strike price of 3,32.

Program	December 2001	December 2002	May 2003	May 2004
Lowest share price	$7,51	$1,12	$2,38	$20,52
Average share price	$8,65	$1,35	$3,90	$22,39
Highest	$9,14	$1,72	$5,02	$24,98
Lowest allowed strike price	$7,51	$3,32	$3,32	$20,52
Highest allowed strike price	$25,05	$25,05	$25,05	$25,05

Table 4.5: Summary of what is known about the strike prices for Millicom's active option program

We do not know how many options from each program does the CEO owns, since his holdings in each individual program is not disclosed[46]. Two thirds of the options from the 2004 programs and perhaps a fifth of the options from the 2005 program have been vested and could therefore already been exercised. The information about the CEO's option portfolio is summarized in the table below.

Program	Issued 2004	Issued 2005	Total
# of options	50.000	75.000	791.664
#minimum left	16.667	60.000	-

Table 4.6: Summary of what is known about the CEO's ownership of different option programs

In order for us to make any sense of this, we need to know the CEO's stock option holdings. The total number of options is given to us in the annual report, but not which options that is from a certain program. Due to this, it is hard to value the CEO's options. Also, when we see the number of options changing from year to year, we can't tell if the options have been exercised or forfeited. There is information (in 2006 annual report) of received options from two previous years that helps a little and guides us for the rest of our assumptions. Also, Millicom presents two Black & Scholes parameters for the last couple of years, they assume:

- Risk-Free Rate: 3,74% (2006), 3,74% (2005), 2,16% and 4,12% (2004)

- Volatility: 46,5% (2006), 46,5% (2005), 47,1% (2004)

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[45] Millicom Annual Report 2006
[46] Millicom Annual Report 2006

We interpret this to mean that for the 2005 program(s) we should use a risk-free interest rate of 3.74% and a volatility of 46.5% and for the earlier programs we should use 4.12% and 47.1% respectively.

The amount of options given to the CEO has changed during the two previous years disclosed. In 2005 the CEO received 75.000 options with strike price equal to stock price (at grant date) plus a mark-up of 15%. In 2004 the number of received options was instead 50.000, with a strike price with mark-up of 10%.[47]

Except an uneven distribution to the CEO, the annual report gives some information of the function of the options. The options were conditional for personnel to complete one to five years service, which is the vesting period. The options were then exercisable from year one to five from grant. The option life is six years for employees but twenty for directors, this was decided in 2005 since prior that director's options had an indefinite life.[48]

Valuation

To make the best valuation possible of the CEO's option portfolio and the portfolio delta the price and delta for each option program is presented below.

Program	Cost	Delta
200505-v06	79,6	0,99
200505-v07	79,6	0,99
200505-v08	72,0	0,99
200505-v09	64,7	0,99
200505-v10	58,0	0,99
200507-v06	79,6	0,99
200507-v07	79,4	0,99
200507-v08	71,4	0,99
2001 low EX	90,1	1,00
2001 high EX	73,0	1,00
2002 low EX	94,4	1,00

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[47] Millicom Annual Report 2006
[48] Millicom Annual Report 2006

2002 high EX	73,9	1,00	
2003 low EX	94,4	1,00	
2003 high EX	74,3	1,00	
2004 low EX	79,1	1,00	
2004 high EX	75,3	0,99	

Table 4.7: Results from the valuation of Millicom's different option programs

The lack of information about the strike price for the 2001-2004 option programs causes uncertainty about their value. Lo(west) ex(ercise price) means the lowest possible exercise price has been used to calculate the value and hi(ghest) ex(ercise price). Combining this with what's known about the composition of the CEO's total option portfolio and it becomes hard to estimate its total value. Below are two examples of portfolios which are in accordance with what is known about the programs and the structure of the total portfolio.

Program	Cost per option	#	Total cost per program
200505-v08	$72,0	20.000	$1.439.590
200505-v09	$64,7	20.000	$1.293.000
200505-v10	$58,0	20.000	$1.160.328
2001 low ex price	$90,1	238.332	$21.484.564
2002 low ex price	$94,4	238.332	$22.490.397
2003 low ex price	$94,4	238.332	$22.500.765
2004 high ex price	$75,3	16.667	$1.254.195
Total portfolio		791.664	$71.622.839

Table 4.8: Example of a possible composition of Millicom's CEO's option portfolio

Program	Cost per option	#	Total cost per program
2005-v08	$72,0	20.000	$1.439.590
2005-v09	$64,7	20.000	$1.293.000
2005-v10	$58,0	20.000	$1.116.328
2001 high EX price	$73,0	438.332	$31.984.321
2002 low EX price	$94,4	38.332	$3.617.226
2003 high EX price	$74,3	238.332	$17.707.473
2004 high EX price	$75,3	16.667	$1.254.195
Total portfolio		791.664	$58.456.133

Table 4.9: Example of a possible composition of Millicom's CEO's option portfolio

The first portfolio is 22% more costly than the second. Of course they are a bit stylized but the way Millicom chooses to disclose their different option programs results in this confusion. They disclose a lot of numbers but one could hope for a bit more certainty.

Case Study Swedish Match

The stock option program is given to group management and allocates stock options on the Swedish listed stocks. The options have a five year term and can be redeemed during year four and five. The allotment of options is maximized in relation to the annual fixed salary. The option allotment is maximized to 65% of the annual salary, so the bonus and option program cannot exceed the fixed salary. The allotment of options is based on two equally weighted criteria. The first is the group's earnings per share, while the second is return on adjusted operating capital.[49]

Disclosure

The disclosure of CEO remuneration and option holdings looks as follows:

Remuneration and other benefits to Group management during 2006							
TSEK		Fixed Salary	Variable Salary	Options	Other Benefits	Pension costs	Total
President	2006	5,900	0	616	121	2,126	8,763
	2005	5,005	1,028	700	121	1,991	10,104
Other members of the Group management	2006	14 762	2,864	1,848	1,222	5,177	25,873
	2005	18,677	4,670	2,450	1,482	5,809	33,098
Total	2006	20,662	2,864	2,464	1,343	7,303	34,635
	2005	24,342	6,305	3,150	1,603	7,800	43,200

Figure 4.8: Remuneration packages for the senior management at Swedish match[50]

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[49] Swedish Match Annual Report 2006
[50] Swedish Match Annual Report 2006

Number and weighted average of exercise prices for shares under options

	2006		2005	
	Weighted average exercise price	Number of options	Weighted average exercise price	Number of options
Outstanding at beginning of period	77.93	4,896,514	69.87	4,848,549
Granted during period	127.10	523,817	99.75	661,871
Exercised during period	67.50	1,393,004	37.78	613,902
Expired during period	–	–	34.70	4
Outstanding at period-end	87.93	4,027,327	77.93	4,896,514
Exercisable at period-end	74.97	1,976,380	70.32	1,940,894

The average share price for share options exercised in 2006 was SEK 106.21 (84.40).

The options outstanding at December 31, 2006 are specified in the table below:

Exercise period	Exercise price	Number of underlying shares	Exercised options	Net outstanding options
2005-03-15—2007-03-15	77.50	1,518,770	970,880	547,890
2006-03-01—2008-02-28	74.00	1,428,490	–	1,428,490
2007-03-01—2009-02-27	84.80	865,259	–	865,259
2008-03-03—2010-03-01	99.75	661,871	–	661,871
2009-03-02—2011-02-28	127.10	523,817	–	523,817
		4,998,207	970,880	4,027,327

Figure 4.9: Option programs at Swedish match[51]

As can be seen in the figures, the CEO's remuneration for this year is clearly disclosed and the present value of this year's options is given. However, we don't know how the CEO's total holdings look like, only the total amount of options 61.872 . It is stated in the annual report that Swedish Match value each 2006 option to 13,2 SEK. Combining that with the value of the CEO's allotment 2006, 616.000, gives an approximate amount of 2006 options of 46.670 . In the presentation of managers it is disclosed that the CEO owns 61.872 call options, which doesn't help us much in our attempt to value his/her option holdings. We are however given some information of the outstanding options, as well as the total number of outstanding options in each program.

In addition to this, Swedish Match discloses their assumptions in their own valuation process:

- Volatility: 22% (based on historical values)
- Risk-free rate: 3,12%

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[51] Swedish Match Annual Report 2006

Swedish Match also writes that they have made an assumption about the dividend; however they fail to disclose what the assumptions are. Instead we use the actual cash dividend of 2,5SEK and dividend date, 24th of April[52]. It is assumed that the size and date of the dividend payment will be the same during subsequent years. Swedish Match's CEO is 56 years old, he has been CEO since 2004 and part of the management team since 1998. Since he has been with the company such a long we assume has taken part in all active option programs. His pension plan starts to pay out when he's 62 years old. This means he's not about to retire right now and therefore there is still the possibility that he will quit/be fired. The current stock price used is 127,25 SEK, which was the closing price on the 6th of July 2007. The standard assumptions of firing risk are used. Below is a summary of the different scenarios.

Volatility	Dividend	Interest rates
22%	2,5 SEK	3%
14,7%	3,13 SEK	4%
33%	3,75 SEK	5%

Table 4.10: Valuation scenarios for stress testing Swedish Match option programs

Below are the minimum and maximum values for each program for all combinations of input values.

Program	Cost	Delta	ScenMin Cost	ScenMax Value	Max/Min	Min delta	Max delta	Max/min
2003	54,9	1,00	54,3	55,5	102%	0,98	1,00	102%
2004	45,2	0,96	44,0	48,4	110%	0,90	1,00	111%
2005	32,1	0,84	27,5	38,7	141%	0,78	0,94	120%
2006	18,6	0,63	10,4	27,7	265%	0,56	0,68	122%

Table 4.11: Results from valuing Swedish Match different option programs

Using the approximate amount of 2006 options and assuming the CEO has the same distribution of the other options in his portfolio as the total outstanding results in the following portfolio

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[52] Dividend size and date from Swedish Match 2006 Annual report and www.privataaffarer.se

Program	Total # outstanding per program	CEO's portfolio
2003	1.428.490	7.347
2004	865.259	4.450
2005	661.871	3.404
Total	2.955.620	15.202

Table 4.12: Assumptions about the CEO's option portfolio

Using these values gives the following minimum and maximum for the total portfolio's cost and delta

Cost=7347*54,9+4450*45,2+3404*32,1+44670*18,6=1.545KSEK

Min cost=7347*54,3+4450*44,0+3404*27,5+44670*10,4=1.104KSEK

Max cost=7347*55,5+4450*48,4+3404*38,7+44670*27,7=1.991KSEK (+80% above min)

Min delta=7347*0.98+4450*0,90+3404*0,78+44670*0,56=38.923

Max delta=7347*1,0+4450*1,0+3404*0,94+44670*0,68=45.392 (+17% above min)

If an equal amount of options for each option program between 2003 and 2005 the results change to this:

Cost=5067*54,9+5067*45,2+5067*32,1+44670*18,6=1.501KSEK

Min cost=5067*54,3+5067*44,0+5067*27,5+44670*10,4=1.104KSEK

Max cost=5067*55,5+5067*48,4+5067*38,7+44670*27,7=1.958KSEK (+77% above min)

Min delta=5067*0,98+5067*0,90+5068*0,78+44670*0,56=38.536

Max delta=5067*1,0+5067*1,0+5068*0,94+44670*0,68=45.294 (+18% above min)

Here the uncertainties are quite larger, especially in cost.

Case Study Stora Enso

Stora Enso has used stock option programs since 1999 as an integrated part of the remuneration package. The goal of this program was to ensure key personnel's long term engagement in the company. The program is design in such a way so the personnel are granted synthetic options with a strike price of 10% higher than current stock price at the date of grant. Furthermore, the options have a time to maturity of seven years.

In 2004, Stora Enso decided to add two stock based incentive programs. This was to done in order to complement and also in time replace the stock option program. The reason for this is stated in the annual report to be the current trend in the market to shift from stock options to other stock based systems. The two new stock programs are the performance share plan and the restricted share plan. The latter is focused on key personnel and managers and leads to a yearly allotment.

The yearly allotment of restricted stocks is not to be considered as a benefit, according to the annual report. The restricted stocks are unusable until they are vested. The final number is decided by the board after the three year vesting period. Fulfilments of the decided performance measures are then to be met in order to receive the full allotment. During 2004-2006 the performance measures were if the turnover of working capital exceeded the cost of total capital (before stock allotment). [53]

As we mentioned for the other companies, it is very difficult to value these kinds of incentive programs and are outside of the scope of our thesis.

Disclosure

As mentioned earlier, the options have a time to maturity of seven years and are granted with a mark-up price of 10%. The disclosure of the option program and the CEO's holdings are shown below:

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[53] Stora Enso Annual Report 2006

Executive Remuneration: CEO			
	Year Ended 31 December		
EUR thousand	2004	2005	2006
Remuneration			
Annual salary	1 102.8	*976.4	*1 104.9
Benefits	64.1	119.8	98.2
Bonus (variable salary)	253.9	*164.4	*77.9
Options & share awards	-	46.0	259.1
	1 420.8	1 306.6	1 540.1
Pension Costs			
Finnish TEL scheme	161.9	104.4	-8.2
Stora Enso voluntary plan	332.9	267.3	-
International pension plan	-	393.4	302.4
	494.8	765.1	294.2
Total Compensation	1 915.6	2 071.7	1 834.3

*) If the CEO had not participated in the International Pension Plan described below, the corresponding figures for 2006 would have been: Annual salary EUR 1 240.3 (1 165.4), Bonus EUR 213.2 (368.8), Benefits EUR 98.2 (119.8), Options and share awards EUR 259.1 (EUR 46.0; Total EUR 1 810.8 (1 700.0).

Figure 4.10: Remuneration packages for the senior management at Stora Enso[54]

Executive Management Group (EMG)	A Shares Held	R Shares Held	Synthetic Options 2000–2005	Synthetic Options 2006	Committee Memberships [1] Chairman
Jukka Härmälä, CEO	-	13 188	560 000	60 000	-
Christer Ågren	-	5 328	97 500	22 500	Sustainability
Jussi Huttunen	-	2 434	165 000	22 500	Sustainability
Kai Korhonen	-	2 435	135 000	22 500	Sustainability, R&D
Pekka Laaksonen	15 500	-	180 000	22 500	Sustainability
Bernd Rettig	-	2 963	225 000	22 500	R&D
Hannu Ryöpponen, CFO	-	16 175	20 000	30 000	Investment [1]
Elisabet Salander Björklund	-	1 968	85 000	22 500	R&D, Sustainability [1]
Total	15 500	44 491	1 467 500	225 000	
Total, Serving Officers	21 090	89 178	1 467 500	225 000	

Details of officers who stood down during the year are not shown above

Figre 4.11: Senior managements stock ownership in Stora Enso[55]

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[54] Stora Enso Annual Report 2006
[55] Stora Enso Annual Report 2006

Option Programme	Year of Issue	Strike Price Base Period in the Year	Strike Price	Number of Staff	Number of Options Issued	Number of Options Cancelled	Number of Options Exercised	Number of Options Outstanding	Exercise Period
2006 Synthetic	2006	3 Feb 10 Feb	EUR 12.46	744	2 161 000	5 875	na	2 155 125	1 Mar 2009 28 Feb 2013
2005 Synthetic	2005	4 Feb 11 Feb	EUR 12.20	1 024	3 075 125	96 375	na	2 978 750	1 Mar 2008 28 Feb 2012
2004 Synthetic	2004	5 Feb 12 Feb	EUR 11.15	1 033	4 682 800	164 000	na	4 518 800	1 Mar 2007 28 Feb 2011
2003 Synthetic	2003	31 Jan 7 Feb	EUR 10.00	1 016	6 069 150	223 400	1 295 850	4 549 900	8 Feb 2006 7 Feb 2010
2002 Synthetic	2002	31 Jan 7 Feb	EUR 15.50	957	5 902 000	407 500	-	5 494 500	8 Feb 2005 7 Feb 2009
2001 Synthetic	2001	8 Feb 14 Feb	EUR 11.70	481	4 215 000	367 500	418 000	3 429 500	1 Apr 2004 31 Mar 2008
2000 Synthetic	2000	18 Mar 24 Mar	EUR 12.25	221	2 797 500	280 000	264 000	2 253 500	1 Apr 2003 31 Mar 2007
1999 Synthetic	1999	1 May 31 July	EUR 11.75	200	2 790 650	1 160 350	1 630 300	-	15 Jul 2002 15 Jul 2006
North America Stock options	2000	na	USD 5.97 EUR 5.91	839	5 680 000	124 568	4 997 548	557 884	11 Sep 2000 4 Feb 2010

Figure 4.12: Active option programs at Stora Enso[56]

As can be seen in figure 4.12 above, all option programs are disclosed separately with all the essential information. But unfortunately, Stora Enso doesn't disclose any detailed information of the CEO's holdings. He has been the CEO since 1998, so it seems highly likely that he has received options from all active programs. His options from 2000-2005 are lumped together and hence, we cannot fully value his holdings without making assumptions about the number of options remaining in each program. The options issued in 2000 have expired when we do our valuation. This further diminishes what we know about the CEO's total portfolio of Stora Enso options. He is to retire during 2007. We therefore assume that the value of his options shouldn't be discounted for the risk of leaving his job.

Extra information to ease the valuation process has been given:

- Stock price on grant date: 11,95 EUR (11,57)
- Volatility: 19,0% (22,8)
- Dividend: 0,45 EUR (0,45)
- Risk-free rate: 3,41% (3,42)

The current stock price used was €14,18 from 6th July 2007.

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[56] Stora Enso Annual Report 2006

Valuation

Again we use the different scenarios

Volatility	Dividend	Interest rates
19%	€ 0.5	2.41%
12.7%	€ 0.6	3.41%
28.5%	€ 0.7	4.41%

Table 4.12: Summery of scenarios used for stress-testing the valuation

The different option programs are valued using all combinations of the above inputs. The minimum and maximum values for option value and delta are displayed in the table below.

Program	Cost	Delta	ScenMin Cost	ScenMax Value	Max/Min	Min delta	Max delta	Max/min
2001	2,9	0,93	2,7	3,1	116%	0,85	0,99	117%
2002	0,6	0,32	0,2	1,3	699%	0,17	0,43	251%
2003	4,5	0,96	4,4	4,9	112%	0,89	1,00	113%
2004	3,6	0,87	3,2	4,3	132%	0,80	0,99	123%
2005	2,7	0,77	2,1	3,6	174%	0,72	0,93	129%
2006	2,4	0,74	1,5	3,4	219%	0,69	0,82	119%

Table 4.13: Summary of the results from valuing each option program

The CEO's individual holdings for each program between 2001 and 2005 are unknown. Since the program issued in 2000 has expired the total amount of options held by the CEO is also unknown. We will value his total portfolio of Stora Enso options using two different assumptions. In the first scenario we assume the CEO's portfolio has the same relative composition as the total outstanding portfolio. In the second scenario we assume his portfolio had equal weights of 2000-2005 options and this imply the number of options that has expired. We calculate the minimum and maximum cost and delta for the total portfolio using both the weights of the total outstanding portfolio and an equal weighted portfolio.

Program	2001	2002	2003	2004	2005	Total
Total #	3.430.000	5.495.000	4.550.000	4.519.000	2.979.000	20.971.000
CEO's #	83.000	132.000	110.000	109.000	72.000	505.000

Table 4.14: Assumptions about the CEO's portfolio of Stora Enso options

Cost=83.000*2,9+132.000*0,6+110.000*4,5+109.000*3,6+72.000*2,7+60000*2,4=

=€1.543.000

Min cost=83.000*2,7+132.000*0,2+110.000*4,4+109.000*3,2+72.000*2,1+60000*1,5=

= €1.322.000

Max cost=83.000*3,1+132.000*1,3+110.000*4,9+109.000*4,3+72.000*3,6+60000*3,4=

=€1.897.000 (+44% from min)

Min delta=83.000*0,85+132.000*0,17+110.000*0,89+109.000*0,80+72.000*0,72+60000*0,69=

=371.000

Max delta=83.000*0,99+132.000*0,43+110.000*1,0+109.000*0,99+72.000*0,93+60000*0,82=

=472.000 (+27% from min)

If instead an equally weighted portfolio is assumed.

Cost=93.333*2,9+93.333*0,6+93.333*4,5+93.333*3,6+93.333*2,7+60000*2,4=

=€1.479.000

Min cost=93.333*2,7+93.333*0,2+93.333*4,4+93.333*3,2+93.333*2,1+60000*1,5=

=€1.27.000

Max cost=93.333*3,1+93.333*1,3+93.333*4,9+93.333*4,3+93.333*3,6+60000*3,4=

=€1.809.000 (+42% from min)

Min delta=93.333*0,85+93.333*0,17+93.333*0,89+93.333*0,80+93.333*0,72+60000*0,69=

=362.000

Max delta=93.333*0,99+93.333*0,43+93.333*1,0+93.333*0,99+93.333*0,93+60000*0,82=

=454.000 (+26% from min)

When the stock price is close to strike price the uncertainty due to the assumptions are quite large. Stora Enso has begun shifting to a stock based program were the criteria for the final allotment of shares are opaque. After the final allotment of shares they are straightforward to value but during the evaluation phase it's difficult or impossible.

5. <u>Conclusion</u>

As discussed in this thesis, the exercise or forfeiture of non-tradable options and other security contracts doesn't have to be reported for insiders or employees in Sweden. Without this data we believe it's not possible to calibrate employee option valuation models to Swedish conditions, nor to test if this is necessary. This means that either calibrations from for instance the US have to be used or a valuation model without the need for these parameters.

The survey showed that stock-based remuneration was rather common, 55% of surveyed companies are using it as a part of the total remuneration package to the CEO. Evaluating this type of remuneration should therefore be of interest. To value one option program the following parameters are needed; time to maturity, strike price, dividend policy for the life time of the program. As can be seen in our survey a large majority, 80+% of the companies, disclosed individual time to maturities and strike prices. That a long term plan for the dividend policy is not disclosed is not something which should surprise anyone since it's natural for dividend policies to change over these, 5-6 years, time horizons.

Even though the companies disclose information that enables us to model an estimated cost for a program, few companies disclose enough information about the CEO's total holdings. Since the CEO's option portfolio with the number of options in each program is not disclosed separately we can't make a reliable estimate for the CEO's total portfolio. Neither is it possible to extract this information from previous annual reports as exercise and forfeiture of options are not adequately disclosed.

The information about equity related compensation is disclosed in a non-standardized way. This makes it harder to use but could be reasonable especially if the program is more complex as illustrated by SEB's and Millicom's new performance programs. This means that even though there is perhaps enough data to do more detailed studies of CEO compensation in Swedish companies, it will take a lot of work to extract it. Perhaps it would be in the companies' best interest to make the data more easily available. Conclusive proof that incentive programs work would hopefully increase their legitimacy but since this hasn't been the main focus of this thesis it is not something we can recommend or dismiss.

We have too little data to say that there is a trend towards more complex and opaque incentive programs as the ones used by SEB and Millicom. But we note that they us many of the same

evaluation measures which have been criticised when used in the short-term cash incentive programs.

Limitations

The ESO-valuation model would be improved with even better estimates of parameter; e.g. interest yield curves and variable volatility. How much more accurate this would make the valuation model is difficult to know since we have no way of testing its accuracy. As mentioned above it can be difficult to find Swedish data to calibrate and test the validity and accuracy of different ESO-valuation models. It would, of course, be very desirable to do this.

6. <u>Discussion</u>

We limited our thesis to evaluate the possibility for the shareholder's to value the cost of the equity based incentive programs provided to the CEO using public information. If a shareholder is not able to calculate this cost accurately enough it will become very difficult for him/her to evaluate the use of this type of incentive programs. It might therefore also be interesting to consider why companies do not provide a better disclosure of the CEO remuneration package for investors.

Researchers such as Bebchuk & Fried (2004) questions the way incentive programs are created and argue that the pay arrangements itself are a part of the agency problem. This agency problem is created due to the fact that the bargaining of the CEO's remuneration isn't conducted at arm's-length. Researchers commonly assume that boards try to seek the best possible deal for shareholders, which Bebchuk & Fried (2004) oppose. This is a problem since current corporate governance law is created under the same assumption[57]. If bargaining is not at arm's-length, then the CEO can influence his/her own remuneration and by this avoid contracts that restrict his/her managerial choices. Since the CEO most likely would like to work as little as possible and at the same time receive as large remuneration as possible, it is a great violation if CEOs themselves are allowed to set their own salary. Shareholders then not only risks that the CEO use perks and follow his/her own agenda, but also receives a remuneration that overcompensates the CEO.

Managers' influence over their own pay is dependent on the corporate governance structure of the firm. In a study from 1994, Boyd found that CEOs try to avoid board control in order to maximize the remuneration. As a result of this, he found that firms with weaker corporate governance structure led to a higher CEO remuneration. It is difficult for shareholders to intervene in the remuneration process, since they have a very limited power. Even though they get to vote on stock option programs, these are often programs to the whole firm and not specifically for the CEO's remuneration package. Also, the programs are often packaged in complex ways.[58] According to Bebchuk & Fried (2004), "The devil is in the details", and argue that boards and CEOs are trying to camouflage the real facts of the remuneration package, especially the incentive program. By camouflaging, shareholders perceive the remuneration to be more incentive- and performance based than it in fact is. Also, to minimize the risk of critique,

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[57] Bebchuk & Fried (2004)
[58] Bebchuk & Fried (2004)

the more complicated program the better. By hiding the total remuneration and putting it in packages that are easier to defend against the public, the CEO and board try to limit the criticism.[59]

However, it has even been argued that poor disclosure is in the interests of shareholders. Bång (2007) finds a positive linear relationship between the size of the incentive program and its disclosure. He means that this is in line with that incentive programs are a firm specific secret. If your competitors realize that your CEO has a weak lock in effect, then they might try to recruit him. However, there exists an alternative theory of this linear relationship. There might be more to lose if you have a large incentive program, and to be able to gain legitimacy you need good disclosure[60].

[59] Bebchuk & Fried (2004)
[60] Bång (2007)

7. <u>References</u>

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