

Special Stock Option Watch

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Stock Options, Incentive Compatible Remuneration and Corporate Governance

During the dotcom boom stock option plans became an increasingly popular form of incentive compatible remuneration for company employees. In particular, frequent use was made of stock options as a component of the compensation offered to managers of companies operating in the “new economy”.

The idea behind stock option plans is in fact extremely simple – the management participates directly in the success of the company via the market price of the company’s shares and therefore has an added incentive to improve the company’s profit performance. At first glance, stock options would appear to offer an ideal compensation instrument as the incentive element they incorporate promises to solve one of the central problems of company management. Potential conflicts of interest between management and owners can be defused and the importance of corporate governance significantly reduced.

However, a closer look reveals a number of problems. In reality, stock options seldom appear to solve incentive problems. In many cases, the practical terms of stock option plans not only counteract their envisaged incentive effect, they can in fact prove counterproductive and work against the interests of owners. Accounting practices, for example, can be misused to systematically conceal the true costs confronting the company and thus reduce shareholder value.

Stock Option Watch is a new six-monthly ZEW publication which focuses on current problems associated with stock option plans and explores potential solutions. The publication will contain articles by reputable theorists and contributors with first-hand practical experience which will extend and deepen discussion of issues relating to stock options.

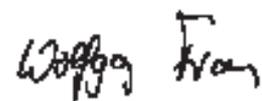
The first issue includes an article by Ulrich Hocker (Deutsche Schutzvereinigung für Wertpapierbesitz e.V./German Shareholder Protection Association, DSW) which focuses on making stock option terms more transparent and includes proposals for improving the contractual framework of stock option plans. The article by Prof. Dr. Günter Franke (University of Konstanz) discusses the incentive problems which may be associated with various designs of stock option plans and offers some apt suggestions of his own aimed at avoiding typical problems.

Dr. Adam-Müller (Lancaster University) shows how US managers have managed to evade the incentive intentions of stock option plans and outlines potential counteractive measures. The contribution offered by Markus Zeimes (German Accounting Standards Committee (DRSC)) summarises the latest proposals made by the International Accounting Standards Board (IASB) regarding methods of accounting for stock options which are transparent and reflect the true costs of such plans. The contribution by Erik Lüders (ZEW and University of Konstanz) and Dr. Michael Schröder (ZEW) starts by reviewing the use made to date of stock option plans in German public limited companies, and reveals which companies make use of this instrument of remuneration, whether stock options are reserved for management or made available to broader groups of employees, and what accounting rules are used to disclose the costs.

As well as providing ongoing and more extensive statistical information about the popularity of stock option plans, future editions of Stock Option Watch will also focus on the problems associated with the use of stock option plans, in particular, in relation to corporate governance.

I would be delighted if Stock Option Watch manages to satisfy the interest of a broad professional reading public and is able to convey ideas for the solution of the theoretical and practical issues relating to the use of stock option plans in companies. Stock Option Watch can be contacted via Erik Lüders or Dr. Michael Schröder either of whom would be glad to receive your comments on this first issue and the concept presented here. They would also be very pleased to receive suggestions and contributions for future issues from our readers.

I hope you enjoy reading this issue.



Prof. Dr. Wolfgang Franz, ZEW President

Stock Option Programmes Need to Be More Transparent and Performance-Oriented

A new element has been added to the at times heated and polemic public debate on the amount of money earned by the executives of German public limited companies – some companies appear to be exploiting the generally low share prices during the current season of annual general meetings to launch especially generous stock option programmes. Specifically critical are the, in many instances, very low hurdles to exercising options, whereby both absolute exercise criteria relating to the current share price and index-related requirements have been watered down.

While it is true that performance-oriented components have long played an established role in the remuneration paid to boards and company executives

been created by the “German Corporate Governance Code” adopted by a German Government Commission under the chairmanship of Prof. Dr. Gerhard Cromme. The Commission has subsequently elevated the disclosure of the salaries received by individual board members from that of a suggestion, included in the code, to the status of a recommendation. Companies are thus required by the Act on Transparency and Publicity to explain in detail the reasons for deviating from this requirement.

Disclosure of management salaries

On the part of the legislator the issue of transparency requirements for top managers of listed companies has also

tion (DSW). The disquieting results of this study have been used to develop a three-phase model which increases the responsibilities of the Supervisory Board and enhances transparency thanks to improved interactions between compensation committees, supervisory boards and annual general meetings.

The task of the compensation committee, for example, will be to develop and resolve general compensation principles for the board and its members. A detailed breakdown of remuneration will not only include fixed and variable remuneration elements but will also outline other related elements, performance goals, and the extent of later pension rights.

The appropriateness of remuneration decisions and pay levels will be subject to regular review, particularly when directors’ contracts are up for extension or for renewal. Particular attention should be paid in this context to the performance goals agreed for the relevant period of time and to what extent these goals have really been adhered to. An upper limit (cap) should be introduced for the maximum possible variable remuneration element or for stock option programmes.

Stock option programmes should be linked to objectively verifiable performance goals which encompass both medium and long-term components. Above all, it is crucial that stock option programmes incorporate both absolute and relative success criteria, otherwise there is a danger that baseless windfall profits could be generated without achieving the envisaged incentives to boost the value of the company. If use is made solely of relative parameters, falling stock market values could also lead to a positive stock option price which cannot possibly be in the interest of shareholders.

Monitoring performance

The committee should also monitor the performance of stock option programmes. Prior to the exercise period of stock options, monitoring should cover the price paid, the exercise price and



in Germany, stock option programmes more or less ticked along under their own steam during the stock market euphoria of the 1990s. However, the degree to which executives really profit from the sustained success and growing value of companies – in terms defined by the concept of shareholder value – remains something of a mystery for shareholders.

One essential prerequisite for increasing transparency in this area has now

been expected. The German Federal Justice Minister, Brigitte Zypries, recently even called for a statutory duty to disclose the individual salaries of managers and a legal ceiling on the level of profit-related forms of remuneration.

The work which companies still need to do in order to achieve the desired level of openness was also recently exemplified by a study performed last year by the German Shareholder Protection Associa-

date, the market price at the end of the business year and mid-year highs and lows. In the case of stock options which have reached their maturity date, the relation between the market and exercise price must be disclosed.

The compensation committee must inform the company supervisory board about the remuneration structure and the results of the committee's work at least once a year. The report should cover both appropriateness and commen-

surability, future remuneration policies, and the underlying parameters and related performance tests. This will enable shareholders to be provided with better information – initially in the annual report, and subsequently at the annual general meeting.

As already recommended by the Baums Commission, the board's report to the shareholders' meeting should be accompanied by details regarding the overall value or range of fluctuation of

stock options. In order to increase transparency and make shareholders aware of future risks, the German Shareholder Protection Association (DSW) argues that the costs of stock option programmes should be disclosed as expense in companies' statements of income at the value applying at the time the options are granted – an aspect which is very likely to be included in new International Accounting Standards.

Ulrich Hocker

Guidelines for Stock Option Programmes

In Germany, too, shareholder value has gained ground as a guideline for the management of stock corporations, regardless of criticism voiced about the concept that has intensified recently. This concept gave rise to management compensation models that are more in line with shareholders' interests. A well-known instrument in this context is granting stock options to management. The intended effect is for management to pursue policies aimed at increasing the share price. Indirect compensation in the form of stock options is valuable to young companies in particular as they find it difficult to pay high salaries.

To date no performance evaluation

The experience gathered so far from stock option programmes does not allow a clear conclusion as to whether the aims pursued are attained. An underlying assumption of stock option programmes is that the share price reliably reflects a corporation's prospects of success. Given the share price bubble which began expanding in the 1990s and burst at the beginning of the new century, this seems doubtful. Moreover, the past years have clearly shown that the development of a company's share price is very much driven by the development of the figures in the income statement. If these figures are not reliable the share price can hardly reflect the "real" earnings position of the corporation.

Accounting scandals that were uncovered in the past years were probably

also driven by stock option programmes. Executives with large option holdings have a considerable interest in exercising the options at a high profit. This requires a high share price. To this end, managers can, on the one hand, improve the company's results by pursuing a good business policy, and on the other hand, manipulate accounting figures and thus artificially inflate the company's results.

Stock option programmes make profit manipulation attractive to managers. And manipulation becomes even more tempting when the "true" results of the

company fluctuate strongly over time if the strike prices at which the options may be exercised do not reflect these fluctuations. In a phase of poor results and consequently without the possibility of exercising the options at a profit, it pays for management to manipulate the balance sheet in order to present even worse results. Thus, managers create hidden reserves which enable them at a later point in time to artificially improve the good results in more successful years. The inflated profit growth rates can push up the share price quite a bit, enabling managers to make a high profit when exercis-



ing the options. It is possible to restrict such pro-cyclical manipulative behaviour by adjusting the strike prices of the options to the expected earnings levels.

Stocks instead of stock options

One alternative would be to award shares to managers instead of options. Stock programmes provide less of the described incentives for profit manipulations because shares are always “in the money”. This means that even when the share prices are relatively low the manager still makes a profit when selling them. Each price advance is to the manager’s advantage. Therefore, the incentive provided by stock programmes remains intact even with low share prices.

This is different when implementing stock option programmes. If a profitable exercise of the options is highly improbable, the options no longer provide any significant incentive. Managers then demand new options, arguing that the incentive should be recreated. However, meeting this demand subsequently leads to an undermining of the concept of stock option programmes. The intended incentive will lose its impact if such corrections are made at a later stage as this would mean that even poor performance is rewarded. This is why companies should give more thought to the idea of replacing stock option programmes with stock programmes in order to create appropriate performance incentives.

In view of the partly erratic share price movements people have started to advocate bonus systems for managers bas-

ed on the long-term corporate profits. One argument is that in the long run profit manipulations tend to balance out. It is controversial, however, whether the long-term corporate profit is more apt to demonstrate management’s performance than the long-term development of the share price.

Whatever the profit-sharing plan for management – reliable accounting is always a prerequisite. This is why the issue of which rules should apply for preparing financial statements has once more moved into the focus of public attention. The completeness of financial statements is a substantial element of accounting, i.e. revenue and expense must be fully accounted for. In addition, the items of the income statement should be comprehensible to the reader. This requires a transparent representation. Various guidelines are therefore indispensable when offering stock option programmes.

The rule of transparency also to apply to stock option programmes

First, transparency must be ensured even prior to the adoption of such programmes at the general meeting of shareholders. This requires a detailed description of such a programme’s design elements including the performance goals in the invitation to the general meeting as well as information on the associated compensation expense. Otherwise, shareholders would not be able to assess the costs of the stock option programme. Even if it is difficult in some re-

spects to evaluate long-term stock options whose exercise can be tied to attaining certain benchmarks, this does not justify the failure to provide an indication of value. Just as the assets and liabilities of companies are necessarily evaluated in a standardised form, thus making the evaluation vulnerable, a standardised evaluation of stock options is equally possible. Thus far, such indications of value have not been stated in invitations to general meetings of shareholders where a resolution on stock option programmes was on the agenda. This is a clear breach of the rule of transparency.

Second, it should go without saying that the costs of stock option programmes need to be recognised as a part of personnel expense in the corporation’s income statement since these costs are borne by the shareholders. Otherwise, corporations would have an incentive to raise their profits by granting stock options and thus reducing compensation in cash which needs to be included in personnel expense. Finally, the rule of transparency also requires that the remuneration package for management be reported, taking account of any stock options.

Third, systematic stock option reporting seems highly desirable. Besides enhancing the transparency of option programmes it also raises awareness among shareholders’ and the public. Thus the extent to which such reporting contributes to corporate governance cannot be overestimated.

Prof. Dr. Günter Franke

When Do Stock Option Plans Have no Effect?

The aim of stock option plans is to tie managerial compensation to the company’s market value. Stock option plans are complex instruments, as they have the advantage of providing a high level of flexibility but also the disadvantage of allowing considerable scope for manipulation by management.

In the following we will take a brief look at some studies on US companies that show how these instruments were used to the detriment of shareholders

and how stock option plans thus went to waste.

Timing is important

When using stock option plans, the date at which they are granted is an important issue. This issue is at the centre of a study conducted by Yermack (Yermack, D., 1997, Good Timing: CEO Stock Option Awards and Company News Announcements. *Journal of Finance* 52,

449-476). Yermack shows that there is a positive correlation between the introduction of stock option plans and an improved performance of the respective company’s share price. One possible interpretation is that the incentives which are altered by stock option plans are indeed the cause for the performance improvement. However, another argument can also be made: Managers usually have a strong impact on the composition of their own remuneration.

Hence, they have the possibility to press for the award of stock options whenever a particularly good performance of the share price can be expected anyway, e.g. due to the impending publication of positive company news. Yermack's findings provide evidence for the second argument: he shows that corporate news are far more often positive news when management is awarded stock options shortly before. Publishing positive news leads to a positive performance of the share price which increases the stock options' value and thus the managers' wealth. This means that a stock option plan does not lead to an improvement of the expected future performance due to enhanced incentives and a correspondingly higher management performance, but instead it rewards past performance. A related study conducted by Chauvin and Shenoy (Chauvin, K.W.; Shenoy, C., 2001, Stock Price Decreases Prior to Executive Stock Option Grants. *Journal of Corporate Finance* 7, 53-76) led to closely related findings. It is clear, therefore, that stock option plans are not always a reward for future share price performance.

On the contrary, they provide remuneration for the performance that has already been delivered, provided that managers are able to control their own compensation or the flow of information from the company to the capital market. Stock option plans do not create any incentive effect – they only re-

ward past performance. And thus they have no effect.

Hedging stock price risk

Incentive effects are also destroyed when management directly or indirectly rid itself of the stock price risks associated with stock option plans. This is why managers are not allowed to resell stock options immediately as this would enable them to exchange a future, uncertain cashflow for a risk-free payment today. There are ways, however, to circumvent this rule by using financial derivatives. The study of Bettis, Bizjak and Lemmon (Bettis, J.C.; Bizjak, J.M.; Lemmon, M.L., 2001, Managerial Ownership, Incentive Contracting, and the Use of Zero-Cost Collars and Equity Swaps by Corporate Insiders. *Journal of Financial and Quantitative Analysis* 36, 343-370) examines the use of so-called zero cost collars. These are exotic options that managers can use to hedge the value of their stock options against stock price declines. It is not necessary to inform the capital market about the use of these financial derivatives promptly as managers hardly need to fear that a violation of the duty to inform will be punished. This is why they are an apt instrument for management to eliminate its compensation risks as discreetly as possible. Bettis, Bizjak and Lemmon show that the volumes of zero cost collar transactions are significantly larger than those of transactions in shares for which the capital market has a much sharper eye. Moreover, these financial derivatives are used particularly often after a share price increase and prior to

restructuring activities. Here, too, stock option plans go to waste because they do not create any incentive effect but are neutralised by financial derivatives.

The studies suggest that the use of stock option plans in the United States led to questionable conduct by managers in quite a few cases. To a large extent, this can be attributed to the fact that the capital market in general and shareholders in particular learn of managers' actions only insufficiently and with considerable delay. Managers interpret this as an opportunity they can use to their own advantage.

Preserve the incentive effects

It follows that it will not be sufficient to provide better ex ante information to shareholders about the costs of stock option plans when the shareholders are asked for their approval of said plans, and to report expenditure for stock option plans ex post in financial statements which contain more in-depth information. This would only ensure that the costs associated with stock option plans become more transparent. Rather, shareholders and boards should also ensure that the incentive effects provided by stock option plans are preserved. It is therefore imperative to prevent management from evading the incentive effects by skillfully circumventing the rules. To this end, close monitoring is required and – if possible – immediate information of the capital market about the management's private financial transactions. Deficiencies in monitoring and information provision do not only exist in the United States but also in Germany where they are even more pronounced. This lack of information also explains why there are no equivalent empirical studies on German companies. Should it be impossible to overcome this lack of transparency, shareholders will be right to remain suspicious of stock option plans. The flexibility of stock option plans in creating incentives can only be used in a fruitful way if stock option plans are monitored much more closely so as to ensure that management cannot evade the incentive intentions. If shareholders and boards fail to achieve this, stock option plans will only generate costs but not incentives for improved long-term company performance.

Axel F. A. Adam-Müller



IASB-Draft Regarding Methods of Accounting for Stock Options and Similar Forms of Compensation

For some years now the question as to whether and how remuneration of employees with real stock options should be reflected in the annual financial statement has been a controversial and much discussed issue. The discussion is mainly about the following two core problems:

- Should the grant of stock options to employees be recognised as an expense in the income statement?
- If so, when and how should the personnel expenditure be determined?

With its draft standard (Exposure Draft) ED 2 Share-Based Payment, the International Accounting Standards Board (IASB) has submitted a proposal for a solution that largely follows a German draft regulation.

According to the IASB's proposal all transactions in which an entity receives goods or services as consideration for shares or payments based on the price of the entity's shares should be recorded in the annual financial statements. If the company receives goods these must be capitalised and will afterwards represent depreciation expense. When it is not possible to capitalise the services received (e.g. work of employees) the services should be recognised as an expense in

the income statement according to the services rendered.

A company may grant stock options to its employees and third parties as a consideration for goods or services received. It is required to make an entry in the amount of the goods or services received that increases equity capital accordingly. Depending on which value is easier to determine, the fair value of either the services received or the equity titles awarded is applied in order to identify the value of the transaction. For the purposes of staff remuneration it is assumed that this is the aggregate value of the stock options at the time of the grant as determined by means of option pricing models.

Accounting for stock options on an accrual basis

As stock options awarded to employees are normally granted as a consideration for a future performance the IASB further proposes a regulation that details how the aggregate value of the stock options as determined at the time of the grant is to be accounted for in the financial statement on an accrual basis, in accordance with the performance expected from the employees in the future. Accord-

ing to the IASB's proposal, stock options also need to be recognised as an expense when the options lose their value due to a price collapse and cannot be exercised, and they will still be recognised as an expense even if a corporation terminates a stock option plan. If a company changes the terms of a stock option programme during its duration, for instance by adjusting the exercise price of the options, this will also affect future personnel expenditure.

Instead of stock options, a corporation may also grant compensation in cash based on the share price (stock appreciation rights). Thus the future services rendered by its employees create obligations that need to be shown as a liability on the balance sheet. If the services are rendered over a longer period of time, the liability needs to be set up pro rata temporis. The aggregate value of future services rendered by employees shall be initially determined by means of option pricing models at the point in time when the compensation in cash is granted. On each balance sheet date an adjustment affecting net income is required to adjust the liability to the fair value.

Recognising stock options for employees as an expense

The standard is to apply to business years beginning after 31st December 2003. For stock option programmes or cash compensation models that were granted after 7th November 2002 (date of the draft's publication) and are still subject to a blocking period at the time of the adoption of the standard, the provisions of the standard shall be applied retrospectively as of the business year beginning after 31st December 2003.

The IASB gave a clear signal with its Draft Standard ED 2 Share-Based Payment. In future, corporations shall recognise stock options for employees as expenses. The IASB does not envisage any exceptions to this rule. Hopefully, the US accounting standards (US-GAAP) will also follow this proposal.

Markus Zeimes



Stock Options as a Form of Compensation in Germany: Some Facts

It has been found that in the United States the stock and option programmes accounted for a 45 percent share in CEO incomes. According to the National Center for Employee Ownership the number of employees receiving stock options increased from a total of one million to up to ten million between 1991 and 1999. But also German companies increasingly use stock options as a compensation for executives and other employees. There is a large variety of arguments for and against the use of stock options as a compensation for managers and other employees. However, many studies criticise especially the lack of transparency with such stock option programmes; in particular, many companies do not account for their option programmes in a satisfactory way.

Current accounting rules often do not require a charge to earnings for certain stock option plans. This enables companies to hide the labor cost associated with these stock option programs. In a survey (Hess, D. and Lüders, E., 2001, Mitarbeiteroptionen steigern den ausgewiesenen Gewinn: Eine Studie des NASDAQ 100, Finanzbetrieb, Beilage Kapitalmarktorientierte Rechnungslegung, Heft 1, 12-17 (Employee stock options

increase reported earnings: a survey of NASDAQ 100 companies)) analysing the 100 NASDAQ 100 companies, it was shown that earnings after tax in the financial year 1999 would have been lower by 21.9 percent on average if the total cost of stock option programmes had been recognised in the income statement. While regulations in the United States are relatively strict and corporations are obliged to disclose stock-based compensation expense at least in the notes to their financial statements, Germany has softer regulations and consequently information for investors often is difficult to access and not sufficient.

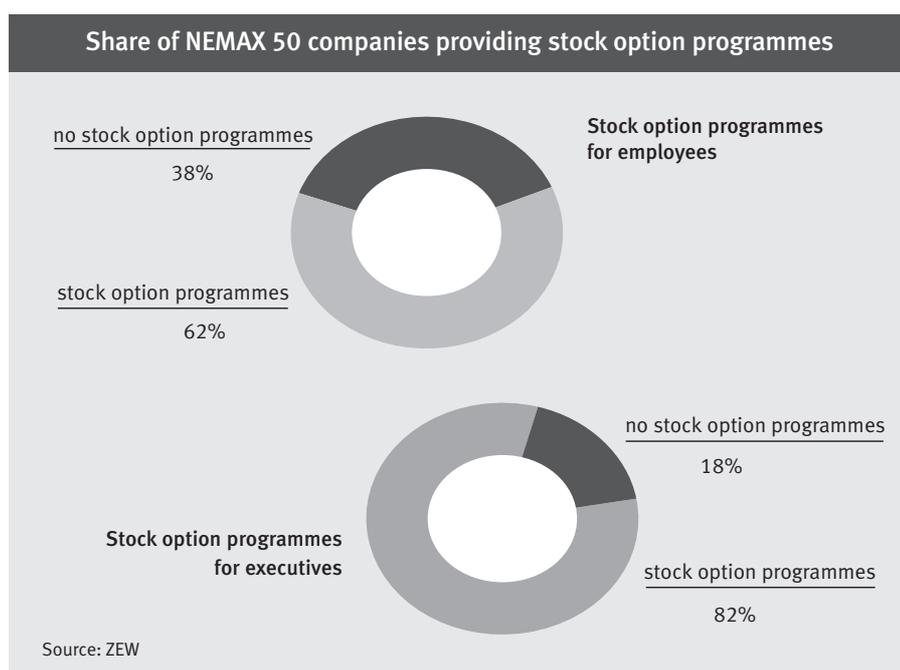
The ZEW has gathered extensive data on stock option programmes in corporations that belonged to the DAX 30 in spring 2002 and for the former NEMAX 50 companies. This data base is to be continuously updated, and it includes all companies that were listed in the respective index in spring 2002.



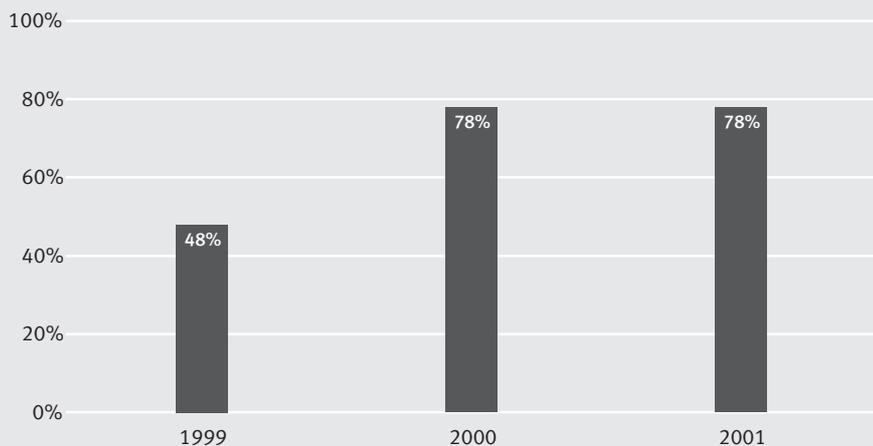
Staff option programmes on the Neuer Markt

For the financial year 2001, 39 NEMAX 50 companies said that they granted options to their executives. Employee stock option programmes are implemented less frequently, but especially at the Neuer Markt they are a frequently used instrument: For the financial year 2001, 33 NEMAX 50 companies said that they granted options to their executives. When looking at all companies that have been listed on the Neuer Markt since 1997 and for which sufficient information was available (for 33 companies it was not possible to gather the necessary data), we can see that more than 80 percent of the companies awarded stock options to their executives and slightly more than 60 percent granted stock options to their employees.

In contrast to the companies traded on the NASDAQ, the NEMAX companies were able to choose between US accounting standards (US GAAP) and international accounting rules (IAS). This enabled them to be even less transparent in reporting option programmes. Thus it was possible to estimate the fair value of stock options only for slightly more than 60 percent of the NEMAX 50 firms who offered staff option programmes for the financial year 2001. When considering the value of the stock options granted by those NEMAX 50 companies where it



Share of NEMAX 50 companies with stock option programmes for executives



Source: ZEW

was possible to determine the value of the awarded stock options and who reported positive earnings, one sees that the earnings reported for the financial year 2001 would have been lower by around 25 percent if the stock option programmes had been recognised in the income statement. For the financial year 2000, the reduction in earnings would have amounted to 12 percent.

Economically incorrect accounting thus can considerably distort reported earnings. The regulations heretofore in force in Germany do not seem to be sufficient to guarantee a clear and transpa-

rent representation of stock option programmes which in the meantime have become widespread. The draft proposed by the International Accounting Standard Boards (IASB) regarding methods of accounting for stock options and similar forms of compensation (see the article published by Markus Zeimes on page VI of the present issue of the ZEW Stock Option Watch) reflects the importance of such programmes. The proposed rules are likely to lead to more transparency with regard to companies' labour costs.

Erik Lüders and Dr. Michael Schröder

The Authors

Dr. Axel F. A. Adam-Müller

Mr. Adam-Müller is Lecturer in Finance at the Department of Accounting and Finance at Lancaster University, UK.

Prof. Dr. Günter Franke

Mr. Franke is Head of the Center of Finance and Econometrics at the University of Konstanz, holder of the Chair for International Finance Management at the University of Konstanz, and research professor at the ZEW.

Ulrich Hocker

Mr. Hocker is chief manager of the German Shareholder Protection Association (Deutsche Schutzvereinigung für Wertpapierbesitz (DSW) e.V.), Düsseldorf.

Erik Lüders

Mr. Lüders is a member of the ZEW research department International Finance, Financial Management and Macroeconomics and collaborator at the Center of Finance and Econometrics at the University of Konstanz.

Dr. Michael Schröder

Mr. Schröder is Head of the ZEW research department International Finance, Financial Management and Macroeconomics.

Markus Zeimes

Mr. Zeimes is a qualified auditor and tax consultant. He is manager at KPMG Deutsche Treuhand-Gesellschaft AG and he performed this function at KPMG in London from 2000 to 2002. Since February 2002, Markus Zeimes has been Technical Director of the German Accounting Standards Committee (Deutsche Rechnungslegungs Standards Committee e.V.) where he is especially involved in international accounting issues.

Literature

- Core, J. und W. Guay, 2001. Stock Option Plans for Non-Executive Employees, *Journal of Financial Economics* 61, 253-287.
- Guay, W., S.P. Kothari und R. Sloan, 2003. Accounting for Employee Stock Options, will be published in: *American Economic Review, Papers and Proceedings*.
- Hess, D. und E. Lüders, 2001. Accounting for stock-based compensation: an extended clean surplus relation, ZEW Discussion Paper No. 01-42, Mannheim.
- Meulbroek, Lisa, 2001. The Efficiency of Equity-Linked Compensation: Understanding the Full Cost of Awarding Executive Stock Options, *Financial Management* 30, 5-30.
- Murphy, K., 1999. Executive Compensation, *Handbook of Labor Economics*, 3, North Holland.

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Responsible for the content: Erik Lüders (University of Konstanz and ZEW), Phone +49/7531/88-2541, Email erik.lueders@uni-konstanz.de; Dr. Michael Schröder (ZEW), Phone +49/621/1235-140, Email schroeder@zew.de

Zentrum für Europäische Wirtschaftsforschung GmbH (ZEW) Mannheim

L 7, 1 · D-68161 Mannheim · P.O. Box 10 34 43 · D-68034 Mannheim · Phone +49/621/1235-01 · Fax +49/621/1235-224 · Internet: www.zew.de