

Industrial and Financial Economics
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Shareholder Reactions to the Introduction of
Stock-Option Programs in Swedish Companies

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Abstract

The background of this research comes from the large debate that has been going on over stock-option programs during the past years and the insignificant amount of research on the issue in Sweden. In light of that corporations adhere to shareholder maximization, we identified several obstacles in achieving this objective in the conflicts of interests, the aversion to risk, and the means of motivation. One of solutions to solve those obstacles is through combining residual returns with residual control, which is also one of the underlying theories of stock-option programs. Because of that the underlying theories of stock option-programs support shareholder maximization, the purpose of the paper was to show that stockholders are positively affected by the introduction of incentive-based contracts.

The overall results of the study showed that the shareholders, on average, perceived the information about introductions of stock option programs as negative. The underlying reason for the results may be seen in the risk for increased salary costs, the implication in measuring performance, the problems with executives who stress a low dividend policy, the commitment implications or in some underlying psychological reasons. Although that the purpose of the paper was to show, given the underlying theories, that shareholders should react positively to the introduction of stock-option programs in companies, our study stressed evidence of the opposite.

Key words: Stock-Option Programs, Market Efficiency, and Compensation.

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1. INTRODUCTION

Over the past ten years, interest in stock option programs in Sweden has increased (Engman, 1997). Once relegated to the relative anonymity of business periodicals, stock option programs have become a highly debated issue among politicians (Salomonsson, 2000) and routinely featured in front-page headlines, cover stories, and television shows.

During the same time, we can see that companies have increased their focus on shareholder value maximization¹. With a focus on shareholder value maximization, companies need to solve the possible obstacles that can hinder such an objective. One of the most natural and workable solutions is to establish goal-oriented incentive programs, which are more commonly called stock option programs. Therefore, in situations where shareholder value corresponds correctly to the performance and the value of a company, stock-option programs could be introduced and could serve as attractive compensation.

In light of the change towards knowledge-intensive companies in highly industrial nations, an incentive program, not only for high executives but also for a broader range of employees, is often considered by management and investors to be the preferable solution for enhancing corporate value maximization. Therefore, in order to analyze if stock-option programs increase shareholder value, we will measure how shareholders perceive new information about stock-option programs through an event study.

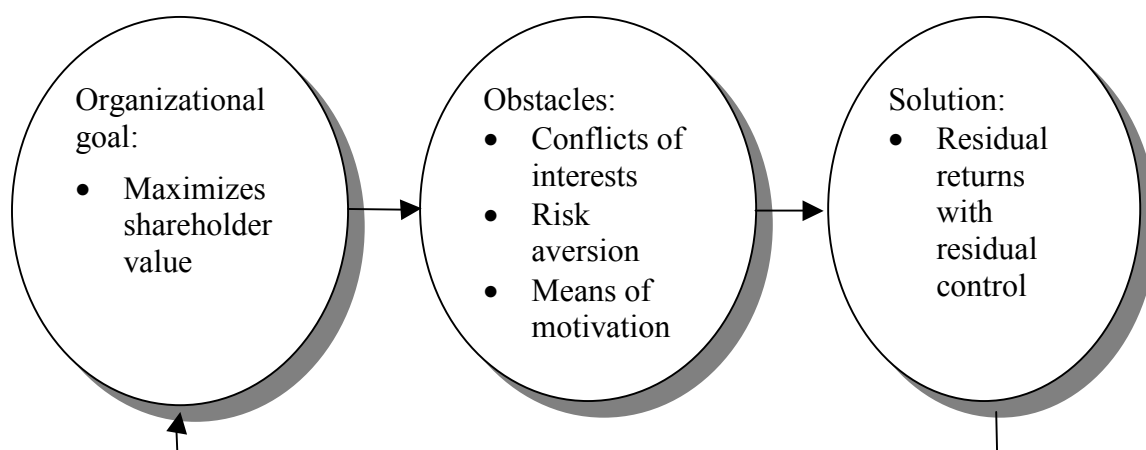
¹ The increased focus on shareholder value maximization is best explained by the many mergers and acquisitions that have taken place over the past ten years, which have often been triggered by a depressed stock price, and the increased flow of capital into the stock market through retirement savings.

1.1 Problem Discussion

This research is situated within the significant debate that has taken place over stock-option programs during the last couple of years and the moderate amount of research on the subject in Sweden. Once an issue mostly for business periodicals, stock option pay has become an issue of interest and is routinely featured in the media. The general public in combination with the popular press has often argued the insanity of large stock option programs because of their perceived unfairness and social irresponsibly. People with option contracts, in contrast, have often tried to avoid the debate; when they do comment, they argue that the stock option program gives them internationally comparable compensation for the personal risk they undertake for their employer (Engman, 1997). Although the debate regarding stock option programs has emerged in the Swedish media over the past years, most research on the issue consists almost exclusively of studies on companies from the U.S. The reason behind the limited research conducted on the subject can mostly be explained by the newness of the topic and by Sweden's somewhat relaxed disclosure requirements². Based upon the background of this paper, the next sections will examine the issues involved in incentive-based contracts. The objective of these sections is to better define the problem of the study and also to identify the focus of the research. Figure 1.1 shows how we structure the problem discussion. We will start the discussion by identifying the goals' of organizations from a corporate point of view and also defining the correct way of measuring shareholder value. The second issue of the problem discussion is to define the obstacles in achieving the set goals of the organizations. This section is divided into three subsections: possible conflicts of interests within corporations; averse risk taking; and means of motivation. In the third section, we investigate how to solve the obstacles in achieving the set goals of the organizations through combining residual returns with residual control. Finally, we will address the theoretical results of the study. All these sections in combination with previous research will lead into the section that defines the purpose of the study.

² The actual structure of an incentive contract in Sweden does not need to be disclosed. However, the people who have the contracts and also the amounts have to be disclosed.

Figure 1.1: Structure of the Problem Discussion.



1.1.1 Organizational Goal

The goal of any economic organization, including the economic system as a whole, is to satisfy the wants and needs of individual human beings (Milgrom & Roberts, 1992). This approach does not imply an exclusive concern with materialistic achievement. For instance, if military dominance or national prestige is a priority, then an economy that serves these goals could be performing well by our standards. For purposes of our discussion, however, we assume that people are primarily concerned with economic goods and services. In the following problem discussion, we will stress the objective of shareholder maximization and how to arrive at the correct shareholder value.

Shareholder Maximization

The goal of any corporation, excluding non-profit corporations, is to maximize its shareholders' value. To explain the objectives of corporations, we will use a simple example. Imagine a small company with few employees where the owner is also the president. In that case, the owner has full insight in the operation and the ability to run the company in any preferable way, as long as the company follows laws and regulations. Then, if the owner's main objective is to maximize wealth, maximizing the value of the company is synonymous with maximizing the owner's utility. This simple example in which the owner also runs the company illuminates why the main objective of the company is

value maximization. This corporate structure has historically been the most common and explains why people assumed value maximization.

In the early 1930s, Berle and Means, in their groundbreaking research, changed how we view the role of the owners. They argued that in the modern corporation ownership and control would be separated (Fitzroy, Acs & Gerlowski, 1998). In other words, the modern company would not be run by the owners but rather by an elected professional group. Therefore, the control transferred from the owners to the people running the company. The possible change of control is one of the greatest obstacles because such a change could shift the focus away from shareholder value maximizations to issues such as profits and social responsibilities.

Often, maximization of accounting profits is regarded as the proper objective of the firm and its shareholders (Van Horne, 1986). However, this belief is not as inclusive a goal as that of maximizing shareholder wealth. For one thing, total profits are not as important as earnings per share. A firm could always raise total profits by issuing stock and using the proceeds to invest in short-term treasury bills. Maximization of earnings per share is not a fully appropriate objective, partly because it does not specify the timing or duration of expected returns. Another shortcoming of the objective of maximizing earnings per share is that it does not consider the risk or uncertainty of the prospective earnings stream and any dividend the company might pay. Some investment projects are far more risky than others. As a result, the prospective stream of earnings would be more uncertain if these projects were undertaken. In addition, a company will be more or less risky depending upon the amount of debt in relation to equity in its capital structure. This financial risk is another uncertainty for investors when they judge the firm in the market place. Finally, an earnings-per-share objective does not take into account any dividend the company might pay. Because of an objective of maximizing earnings per share may not be the same as maximizing market price per share. The market price of a firm's stock represents the value that market participants place on the firm, which is shareholder value.

Because the principle of shareholder value maximization provides a rational guide for running a business and for the efficient allocation of resources in society, it is often assumed by management and investors to be the main objective of corporations. However, despite the importance of shareholder value maximization, management should not ignore social responsibilities, such as protecting consumers, paying fair wages, maintaining fair hiring practices and safe working conditions, supporting education, and becoming actively involved in environmental issues like clean air and water. Many people feel that a firm has no choice but to act in socially responsible ways; they argue that shareholder wealth and, perhaps, the corporation's very existence depend upon its being socially responsible (Zadek, 1998). Because the issues of social responsibility are not always clearly defined, companies can have difficulty obtaining a consistent objective of value maximization.

Social responsibility creates certain problems for the firm because it falls unevenly on different corporations and sometimes conflicts with the objective of wealth maximization. Certain social actions, from a long-range point of view, unmistakably are in the best interests of stockholders and should be undertaken. Other actions, less clear, may be detrimental both to profits and shareholder wealth in the long run. From the standpoint of society, this decline may produce a conflict. A socially desirable goal may be possible only through inefficient allocation of resources. As that inefficiency hampers growth of the economy, people will find their economic desires unfilled. In an era of unfilled desires and scarcity, the allocation process is extremely important. Despite the possible difficulties with social responsibility, value maximization should always be the main focus of corporations.

Since the principle of maximizing shareholder wealth signals a rational guide for operating a business and for the efficient allocation of resources in society, we use this assumed objective to consider how financial decisions should be made from a corporate point of view. This decision-making process is also especially significant in our event study because it signals investors' perceptions of corporate decisions. Therefore, companies that adhere to stock option programs must always make decisions based upon the objective of value maximization because it indicates how well the company operates and also how

well the stock-option holders will be compensated. For the most part, publicly traded companies in Sweden stress the objective of value maximization, which gives a solid ground for the introduction of stock option programs. Another important aspect of the value maximization principle is to arrive at the correct shareholder value when introducing stock-option programs.

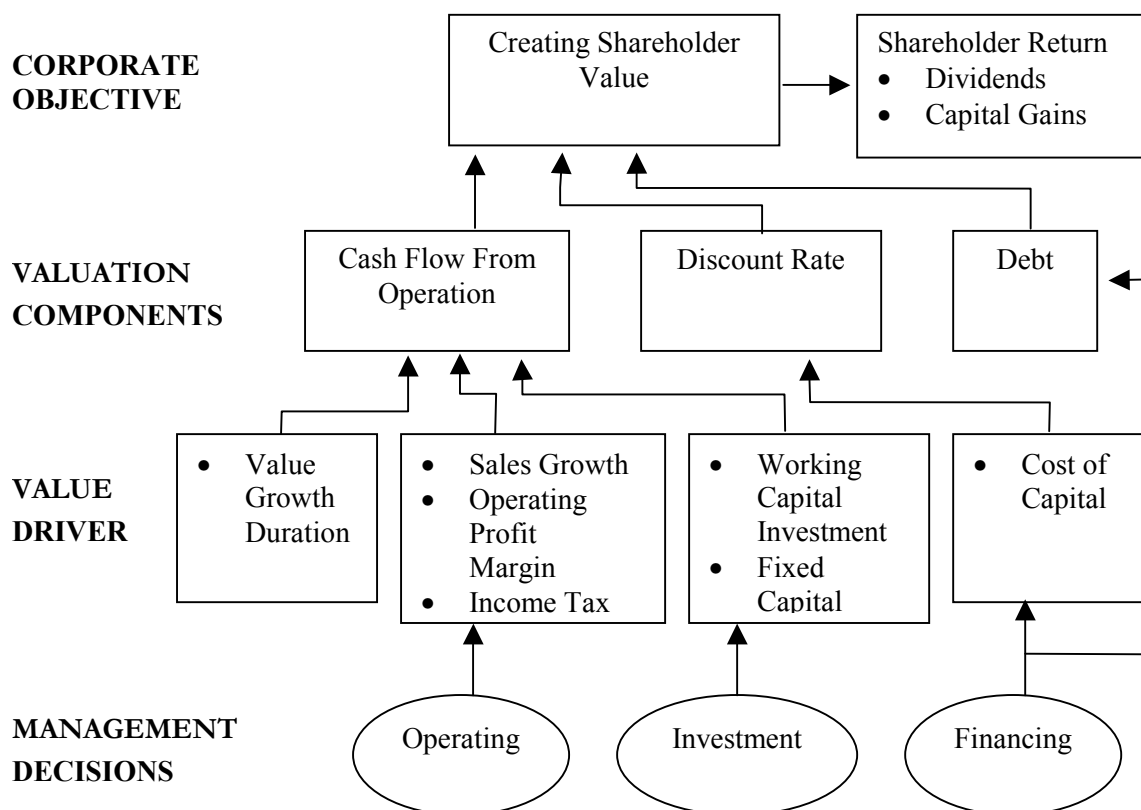
Shareholder Value

Again, most mission statements of corporations argue that the primary responsibility of management is to maximize shareholders' total return through dividends and increases in the market price of the company's share. While the principle that the fundamental objective of the business corporation is to increase the value of its shareholders' investment is widely accepted, however, disagreement exists about what shareholder value really is.

Simply speaking, shareholder value is the estimation of the economic value of an investment by discounting forecasted cash flow by the cost of capital. These cash flows, in turn, serve as the foundation for shareholder returns from dividends and share price estimation.

The shareholder value network summarizes how companies create shareholder value, which is depicted in figure 1.2. The network depicts the essential link between the corporate objective of creating shareholder value and the basic valuation parameters or value drivers-sales growth rate, operating profit margin, income tax rate, working capital investment, fixed capital investment, cost of capital, and value growth duration.

Figure 1.2: Shareholder Value Network.



Source: Creating Shareholder Value, Rappaport (1986).

As shown in figure 1.2, the first valuation component of shareholder value is cash flow from operation, which arrives by operating and investment value drivers in combination with the value growth duration. The second component, the discount rate, is based on an estimate of cost of capital. To obtain shareholder value, the final valuation component, debt, is deducted from corporate value. Shareholder value creation, in turn, serves as the foundation for providing shareholder returns from dividend and capital gains.

The issues of shareholder maximization and value are easily definable if the objectives, within corporations, are clear and operational for the parties involved. However, the problem with this statement is that corporations consist of human beings, who all can have different objectives and preferences. In light of the many different interests a company must satisfy, conflicts may easily arise in corporations, which will be discussed in the next section of the paper. Shareholder value is also important in the creation of stock-option programs. In

other words, stock-option programs will not be beneficial as incentives if disagreements exist about shareholder value. Therefore, in situations where shareholder value corresponds correctly to the performance and the value of a company, stock-option programs could be introduced and could serve as attractive compensation.

1.1.2 Obstacles with Shareholder Value Maximization

Although that the principle of shareholder value maximization provides a rational guide for running a corporation, we identified several obstacles with this objective. Some of these obstacles are corporate conflicts of interests, peoples' aversion to risk, and means of motivation. While the shareholder maximization objective has additional obstacles, we focus on the ones most significant for our study.

Corporate Conflicts of Interests

Conflicts of interest within corporations can exist on all corporate levels and can create difficulties for the shareholder maximization objective. From a strict shareholder perspective, people within organizations need to set their personal interests aside and adhere to the main objectives of the company; however, conflicts of interests will always arise. Nevertheless, several independent control mechanisms in a corporation can assure the owner's interests in value maximization. The modern corporation, in which the owners elect the board of directors and then the board of directors assign a chief operational executive (CEO), assumes representative control of decisions. The board of directors, chosen by the owners and expected to work in their interests, have the authority to control and to supervise decisions. Therefore, as long as the board of directors works in the interests of the owners, the role of the owners is secured, given that the workers within the organization work towards the same corporate goals as well. Although this assumption in theory seems beneficial to the owners, in many cases, the workers may have objectives other than the ones of the owners, and these competitive objectives can also generate conflicts of interests.

Conflicts of interest within corporations can arise in many situations and take many different shapes, depending on the person who is the agent³ and the principal⁴. For instance, within a company the board and directors can be both the principal and the agents at the same time. For instance, the board of directors is the agent from a shareholder perspective but the principal from the perspective of the employees of the firm. Management's role within the company works much the same as for the board of directors, given that people on the board are not involved in operational management. In other words, managers play the role of the principal for the company's employees but the agent for the board of directors.

The objectives of management may, in some situations, differ from those of the company's shareholders. Managers, like other people, act in their own self-interest; in a world in which the stockholders have imperfect control over their agents, these managers may not always engage in transactions solely in the best interests of the owners. The managers might have their own objectives, and they may benefit by sacrificing the shareholders' principals. The problem is exacerbated in large corporations where it is difficult to identify the interests of a diverse set of stockholders ranging from institutional investors to individuals with smallholdings. However, at least four major factors might induce management to adopt shareholder orientation (Rappaport, 1998):

1. A relatively large ownership position.
2. Compensation tied to shareholder return performance.
3. Threat of takeover by another organization.
4. Competitive labor markets for corporate executives.

For the same reason that managers and owners can have different objectives, managers' and workers' objectives can differ as well. For instance, management might be concerned with the overall goal of the company, but workers might see job security as the main objective. Managers rely on many incentives to induce workers towards shareholder orientation, such as better working conditions and larger salaries, but the main objective should be that

³ Someone who enters into a contract to perform a task for someone else.

⁴ The person who makes the contract.

workers earn a part of the residual return, which we develop in depth later in the paper.

Through the introduction of stock-option programs, the principal agent problem could diminish, which is often considered one of the main arguments for stock-option programs: stock-option programs often serve the purpose of the coherent corporate goal of value maximization (Milgrom & Roberts, 1992). In other words, the shareholders should benefit from the introduction of stock-option programs since the principal agent problem is improved. Given the stated assumption, will our event study support this argument?

Averse Risk Taking

Firms need to encourage managers to base investment decisions upon the highest possible expected return. Large public corporations, with their many shareholders, can often spread their risk so widely that they ought to be virtually risk neutral⁵. Then, assuming they can raise any needed investment funds, they should be willing to make large investments and risk large losses if the expected returns on the investment including the possible gains and losses are positive. Some companies have managed to encourage risk taking on a major scale. Nevertheless, observers of the business world often comment critically on the reluctance of managers in some companies to undertake profitable projects where large losses are possible (Bodie, Kane, & Marcus, 1995). Assuming reluctance in undertaking profits where large losses could be at stake, why should managers exhibit risk aversion in the investment decisions they take on behalf of their firms? After all, the stockholders' money is being put at risk, not their own, and the managers ought to be approximately risk neutral. Thus, shareholders should want decisions to be based solely on expected returns. If managers disregard profitable but risky investments, then the interests of the stockholders are not being served and economic efficiency is not being realized.

⁵ Strictly speaking, this applies to "unsystematic risks" that are idiosyncratic to the firm itself and can be effectively diversified away by stockholders adjusting their portfolios of investments. Companies need not to be risk neutral in the sense in their evaluation of the risk of economic downturn, oil price increase, or other risks that have an economy-wide character.

Firms have a variety of devices for encouraging risk taking. Generally the policy is, give as much insurance as possible: reward people for success, and try not to have them bear the costs of failures. Giving stock options to managers has this effect because successes are rewarded and there is no direct cost for failures. The asymmetry in financial payoffs helps to offset the greater weight that risk-averse managers give to the decrease in the value of their human capital that follows a failure than they give to the increase that follows success and that thus leads them not to want to take risks.

To encourage managers to take risks, companies should reward success and try not to have the managers bear the costs of failure. Not surprisingly, most organizations reward successful managers with money; however, stock-option programs can motivate positive risk taking because the programs pay benefits for successful managerial behavior. In addition, stock-option programs insulate managers from overwhelming personal risk because the programs do not penalize for the stock's poor financial performance. In theory, stock-option programs will induce managerial risk neutrality and shareholder maximization, however, will this theoretical statement be supported by our event study?

Means of Motivation

Compensation has many roles in the organization, and one of its most important aspects is to provide proper and effective motivation. A question of significant debate in the theory of motivation is whether money motivates. Many motivational and organizational theories have analyzed this question, see table 1.

Table 1: Theoretical Aspects on Money as means of Motivation.

Theory	Aspects on money and motivation
Scientific Management (Taylor)	Workers will strive to create economic betterments.
Human Relations (Mayo)	Social needs are of most importance.
Herzberg	Money is not a motivator but merely a mean of social health.

Source: Steers & Porter (1975)

The theories within this subject do not clearly say that money is the best way to motivate greater performance; in fact, the theories argue that other factors are more important than money for motivation. These factors could be social needs, the working environment, the working hours, and so forth. Despite the theories, money is still considered by companies to be the most important way to reward and motivate for several reasons. Steers and Porter (1975) stress two reasons why money is the primary means of motivating employees. First, money is flexible to work with in comparison to social instruments. Second, the boss, the person who structures the payment system is most often motivated by money, and therefore perceives money as the best instrument for rewarding high achievement. Additionally, Milgrom and Roberts (1992) argue the superiority of money as a mean of motivation much because it is easy to implement and monitor.

The purpose for stock-option programs in companies is primarily to increase motivation among workers. In introducing stock-option programs, companies need to understand the importance of money as a mean of motivation: money is both flexible and easy to implement and to monitor. Because stock-option programs have the potential for large financial payoffs, these programs can motivate employees and can provide companies with same flexibility and ease as money can. Again, will this from the shareholders point of view be supported by our event study?

1.1.3 Residual Return and Residual Control

Based upon the previous discussion, we argue that tying residual returns and control is the solution to the following corporate challenges:

- Organizations must choose between the goal of maximizing profits or maximize shareholder value;
- Organizations must accurately calculate shareholder value;
- Organizations must be able to resolve conflicts of interests so that all the their employees are working towards the same goal.

- Organizations must encourage positive risk taking while they minimize personal risk to managers; and
- Organizations must employ the most effective means of motivation for their employees.

In light of the many obstacles with the shareholder maximization objective, theory provides what seems to be a natural solution to the many problems. Tying together residual returns⁶ and residual control⁷ is the key to the incentive effects of ownership. These effects are very powerful because the decision maker bears the full financial impact of his or her choices. Suppose a transaction involves several people supplying labor, physical inputs, and so on. If some of the parties involved receive fixed amounts of value specified by a contract and there is only one residual claimant⁸, then maximizing the total value received by the residual claimant is just the same as maximizing the total value received by all parties. If the residual claimant also has the residual control, then just by pursuing his or her own interests and maximizing his or her returns, the claimant will be led to make the efficient decisions. When it is possible for a single individual both to have the residual control and to receive the residual returns, the residual decisions will tend to be efficient ones. In contrast, if only one part of the costs or benefits of a decision accrue to the party making the decision, then that individual will find it in his or her interest to ignore some of these effects, frequently leading to inefficient decisions.

The strategy of tying residual returns and control has compelled many companies to experiment with formalized individual or group performance pay for a variety of different employees. The most widespread use of formula-based incentive pay is probably for managers. Often in this system, a manager receives a bonus that is a straightforward percentage of sales or profit in the manager's unit, but sometimes incentive based programs can be much more complicated.

⁶ The amount of money that is left over after everyone else has been paid.

⁷ The right to make any decisions concerning the assets' use that are not explicitly controlled by law or assigned to another by contract.

⁸ The one who is entitled to receive any net income that the firm produces.

Among regular employees, a pay-for-skills program is a form of incentive pay that rewards and motivates employees' investments in skill acquisition and development rather than their direct on-the-job performance. In these programs, an employee's pay depends not on his or her particular job assignment, but instead on the skills he or she has acquired and his or her mastery. On the one hand, such schemes encourage human capital investments, and they facilitate valuable flexibility in workforce assignments. On the other hand, they may require paying people for skills that they may rarely use.

Another frequently used program is a pay-for-performance scheme, which gives the employee who develops successful new products a percentage of the resulting sales revenues. Such plans directly reward and encourage creativity and innovation, and they also help motivate researchers to be concerned with the ease with which their products can be manufactured and sold. They are especially attractive in the high-tech industries because they help retain engineers and scientists who otherwise would be lured away to new, start-up firms, where they can have more independence and a significant ownership stake (Södersten, 2000). Sometimes, when companies are using different incentive programs for different stakeholders, it can be hard to motivate the managers, stockholders and the other employees to work in the same direction. One solution to this problem can be to induce a stock-option program that includes almost everyone in the company. This kind of incentive program then makes the company goal into everyone's goal, shareholder value maximization.

In light of introducing incentive-based programs in companies, stock option programs will be seen as beneficial since they connect residual returns to residual control. This is explained by that the stock option holders' result is tied to the overall performance of the company and at the same time bears some of the financial impact of his or her decisions.

1.2 Previous Research

In regards of the moderate amount of research conducted on stock-option programs in Sweden, in the U.S., where the debate for incentive contracts first took off, there has been an explosion in the academic research on executive

compensation over the past ten years. However, only a handful of studies of incentive based contracts were published prior to 1980, including pioneering works by Roberts (1956), Baumol (1959) and Lewellen & Huntsman (1970). Most early studies focused on whether pay was more closely tied to company size or company profits, the answer proving to be both relatively uninteresting and hopelessly lost in multicollinearity problems (Ciscel & Carroll, 1980; Rosen, 1992). The more recent studies have focused on whether there is a relationship between pay and performance (Coughlan & Schmidt, 1985; Murphy, 1985, 1986; Jensen & Murphy 1990; Abowd, 1990; Leonard, 1990; Hill & Stevens, 1999). Others examined whether CEOs are terminated following poor performance (Weisbach, 1988; Warner, Watts & Wruck, 1988) and whether CEOs are rewarded for performance measured relative to the market or industry (Antle & Smith, 1986; Gibbons & Murphy, 1990).

Although that the more recent studies conducted on incentive-based programs focused primarily on pay and performance, our study is the first one of its kind that we found to analyze how the shareholders perceive the introduction of stock-option programs. Therefore, our study will bring a new perspective on how to analyze stock-option programs to one of the Nordic countries. The studies given in table 1.2 are presented to give the reader a broader perspective on the subject and as well as to compare it to our study.

Table 1.2 Previous Research

Author	Results
Hill & Stevens (January 1999)	Hill & Stevens examined CEO compensation, stock ownership, and corporate returns for 161 firms from 1991-1996. The results indicated that the pay of CEOs of firms that have no better than average returns is not significantly different than the CEOs of firms with better than average returns. The results also indicated that while short-term incentives and firm ownership are positively related to stock returns, CEOs salaries are negatively related to stock returns.
Murphy (1999)	Murphy described management bonus contracts and the role of performance standards. The data support the theoretical predictions that companies using budget-based and other internally determined performance standards have less-variable bonus payouts, and are more likely to smooth earnings from year to year, than companies using externally determined standards.

Spagnolo (May 1998)	This article showed that as long as the stock market has perfect foresight, some dividends are distributed, and incentives are paid more than once or are deferred, stock related compensation packages are strong incentives for managers to support tacit collusive agreements in repeated oligopolies.
Jennergren (1996)	This project identified features of personnel stock options that make them different from ordinary options and warrants. For instance, an executive stock option may become prematurely terminated, because the executive resigns from her/his job. Personnel stock options, therefore, have stochastic lives. This project also studies more general option contracts with stochastic lives.
Murphy & Jensen (April 1990)	Their estimates of the pay-performance relation for CEOs indicate that CEO wealth changes \$3.25 for every \$1000 change in shareholder wealth and they also show that the incentives generated by stock ownership are larger relative to pay.
Warner & Watts (October 1988)	This paper studied the association between a firm's stock returns and subsequent top management changes. Consistent with internal monitoring of management, there is an inverse relation between the probability of a management change and a firm's share performance. This relation can result from monitoring by the board, other top managers, or block holders. However, no average stock price reaction is detected at announcement of a top management change.
Weisbach (1988)	The author examined the relation between the monitoring of CEOs by inside and outside directors and CEO resignations. CEO resignations are predicted using stock returns and earnings changes as measures of prior performance. There is a stronger association between prior performance and the probability of a resignation for companies with outsider-dominated boards than for companies with insider-dominated boards. Unexpected stock returns on days when resignations are announced are consistent with the view that directors increase firm value by removing bad management.

1.3 Theoretical Results of the Study

In spite of the research on stock-option-contracts over the past ten years, we have not found any academic research on how shareholders are affected by the introduction of incentive-based contracts, which is also one of the underlying reasons for conducting this study. Therefore, the objective of this research is to analyze how stockowners perceive announcements of incentive-based contracts in companies. The research will be based on an event study to test the study empirically.

We believe that incentive-based contracts signal value enhancements for shareholders because the obstacles with corporate conflicts, risk aversion, and means of motivation are improved, which ought to be proved by the event study. Tying together residual returns and residual control is the key to the incentive effects of ownership. These effects are very powerful because the decision-maker bears the full financial impact of his or her decisions. Therefore, if the residual claimant also has the residual control, then just by pursuing his or her own interest and maximizing his or her own returns, the claimant ought to make efficient decisions, which also should lead to stockholder maximization in a corporate context. Further, tying together residual returns and residual control for a larger number of people within the organization should also improve stockholder maximization because more people bear the costs and benefits of a decision. All the issues addressed in this section, in that incentive-based contracts signal value enhancements for the shareholders, constitute the ground for the purpose of the study, which is identified in the following section.

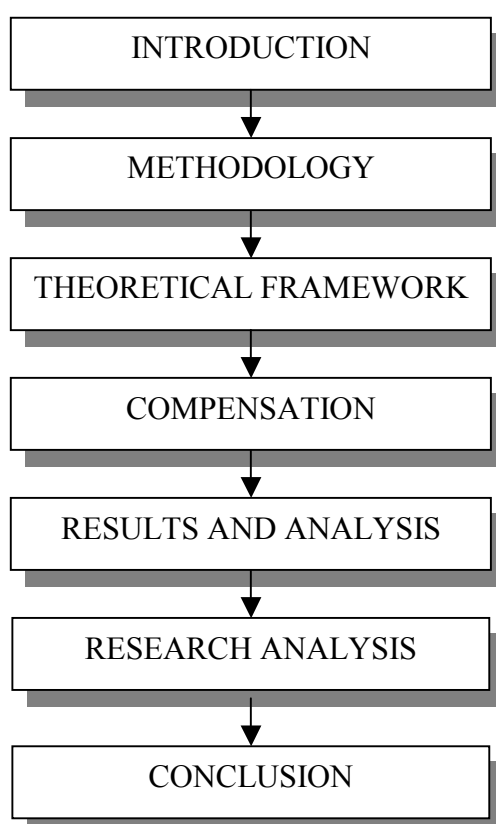
1.4 Purpose

Based upon the problem discussion, the purpose of this paper is as follows:

To show that stockholders are positively affected by the introduction of incentive-based contracts in Sweden.

The outline of the thesis is shown in figure 1.3. The first section of the thesis gives an introduction to the subject. Secondly, we show the methodology used for the study. In section three, we identify the theoretical framework that underlies the study. In the fourth section, we give a general description of compensation programs. The results and the analysis are given in section five. In section six, we focus on the research analysis. Finally, in section seven a conclusion is given.

Figure 1.3: Outline of Master Thesis.



1.6 Summary

The background of this research is situated in the significant debate that has taken place over stock-option programs over the past years and the insignificant amount of research on the issue in Sweden. In light of that corporations adhere to shareholder maximization, we have identified several obstacles in achieving this objective in the conflicts of interests, the aversion to risk, and the means of motivation. One of the solutions to solving those obstacles is through combining residual returns with residual control, which is the underlying theory to stock-option programs. In contrary to the more previous research on stock-option programs that focused on pay and performance, our event study will analyze the introduction of stock-option programs from the shareholders point of view.

2. METHODOLOGY

This part of the paper gives the method for the analysis, which includes the statistical frameworks and the procedure of the investigation. This section gives a comprehensive picture of the methods in the study and also shows how we solve the problem of shareholders' perception on the introduction of stock-option programs.

2.1 Statistical Methods

In light of the attempts to solve the problem of the paper, this section will focus on our different statistical methods applied to the study.

2.1.1 Model to Estimate the Cumulative Average Abnormal Return

To investigate our problem, we chose a statistical investigation, an event study, which focuses on the average abnormal deviation from the stock prices pattern around the time of the announcement of the stock option program. Then, to determine if the deviation was significant or just a coincidence, we tried to estimate the deviation.

We employed standard event study methodologies and used them frequently to analyze stock price behavior around the announcement of different kinds of press releases. The hypothesis about semi-strong market efficiency can indirectly be tested through identifying a particular "event" and then calculating the price reaction, when the new information reaches the market. Market efficiency means that the information is immediately and totally reflected in the stock price, which means that no abnormal price movements will be seen before or after the "event". Event studies are not primarily used to test market efficiency, but rather to examine how markets evaluate new information. This methodology also rests on the hypothesis that the market efficiency hypothesis is true, which is based upon the market model, see formula 2.1.

Formula 2.1

$$R_{jt} = \alpha_j + \beta_j * R_{mt} + \varepsilon_t$$

Where:

R_{jt} = Return on asset j at time t

R_{mt} = Return on the market at time t

ε_t = Random term at time t

α_j = The lines intercept with Y-axis

β_j = Systematic risk

Both α_j and β_j are company specific parameters, but in combination with R_{mt} the expression becomes a market specific factor that shows how a single stock return is affected by a certain change of the market return. The primary interest for us is the random term ε_t and after a reorganization of formula 2.1, we got the following expression:

Formula 2.2

$$AR = \varepsilon_t = R_{jt} - (\alpha_j + \beta_j * R_{mt})$$

AR is abbreviation of the normal return. After the calculation of AR, we calculated the AAR, which is the average abnormal return, by first calculating the abnormal return for every different stock and then calculating the average from them, which is done by the following formula:

Formula 2.3

$$AAR_t = (1/n) * \text{Sum } AR_{jt}$$

The parameter n stands for the number of companies in the investigation. This formula is an expression independent of respective company stock value, because it is an unweighted average. We did not include a weighted average formula because the importance for us was the deviation and not the company size.

When AAR is calculated, the CAAR can be calculated by taking the sum of the AAR from t equal 0 and then continue on until the CAAR is calculated for the whole time period that is of interest to the study.

Formula 2.4

$$CAAR_t = \text{Sum } AAR_t$$

Then, the calculated CAAR will be compared to the dilution effect⁹ from the introduction of the incentive-based contracts. If the CAAR is greater than the Dilution effect, the investors will perceive these option-contracts positively.

2.1.2 Test of Significance

The deviation, mentioned above, might only be a result of coincidence. To test for coincidences, we use a significance test in the shape of hypothesis tests. Testing hypotheses requires the following steps (Hill, Griffiths & Judge, 1997):

1. Formulate the hypothesis;
2. Choose a test statistic;
3. Calculate the chosen test statistic; and
4. Draw a conclusion.

Statistical hypothesis testing implies that with the help of a random sample, one can judge the hypothesis about the total population. In all hypothesis testing, one must formulate a null hypothesis (H_0) and an alternative one (H_1). The null hypothesis will be accepted or rejected. A random sample will never reveal the full picture of the population. Therefore, a risk will always exist that a decision

⁹ When companies issue new stocks option programs, the number of stocks increases and leads to dilution. Dilution means that the substance value and profits are to be divided among more shares (Karlsson, 1999). Aktiespararna, a Swedish organization that operates to serve the shareholders, wants to protect existing shareholders, and is therefore skeptical of dilution. They stress a maximum of 5 percent dilution (Forsberg, 2000). Again, when the number of shares in a company increases, financial key ratios that are calculated per share will decrease, which causes the profit opportunities to decrease for the existing shareholders. With the decrease in shareholder profits in mind, we must know the size of the dilution effects on the event day. This is explained by the fact that the dilution in itself causes a negative return.

based upon incomplete information will be wrong. All kinds of hypotheses have two kinds of risks:

- The risk to reject the null hypothesis when it is true; and
- The risk to accept the null hypothesis when it is wrong.

In all kinds of hypothesis testing, one must determine how big this risk will be to reject the null hypothesis. The risk is usually called the tests significance. This risk should naturally be small but is impossible to eliminate. Common values are 1 and 5 percent. When the level of significance decreases from 5 to 1 percent the risk to reject the null hypothesis, when it is true, decreases but at the same time the risk to accept the null hypothesis when it is false increases. Our event study will be based upon a significance level of 95 percent and we want to test the hypothesis where:

- $H_0: AAR_t = 0$
- $H_1: AAR_t > 0$

This hypothesis condition means that we want to see if, on average, any abnormal return exists when the company introduces compensation programs. If the average abnormal return equals zero, the incentive based programs stress no added value for the shareholders. Conversely, if the average abnormal return is greater than zero, the incentive based programs stress added value for the shareholders. The current test statistic could therefore be expressed in the following way:

$$n = (AAR_t - 0) / (\sigma/n)^{0,5}$$

In this case σ is equal to the standard deviation of the average abnormal return. The sample size is above 30 (46 observations), and we could therefore adduce the central limit theorem, which says that (Hill, Griffiths & Judge, 1997):

“If $X_1, X_2 \dots X_n$ is a random sample of size n taken from a population with a mean μ and finite variance σ^2 , and if X is the sample mean, then the limiting form of the distribution of

$$Z = (X - \mu) / (\sigma / n)^{0,5}$$

as n goes to the infinite, is the standard normal distribution. When n is above 30, one can say that Z is approximately the standard normal distribution.”

This theorem implies that if the Z calculated becomes greater than the critical value, which depends on the chosen significance level, the null hypothesis can be rejected.

2.2 Procedure of the Investigation

This part of the paper explains the procedures of the analysis. Again, the main objective of the analysis is to investigate the impact of stock-option programs on companies' stock prices. This section will through a step-by-step examination guide the reader of the procedures of the analysis closely.

Step 1.

First, we gathered press releases from the databases BIT and HUGIN about compensation programs. To get the press releases, we used different kinds of search words, such as compensation, compensation programs, stock options, and incitements. For the importance of the study, if the press release contained other non-specific information about option programs, such as profits releases and other news, we excluded it from the study. These restrictions made it difficult to get a large sample, but we succeeded in finding 46 “pure” releases.

Step 2.

After we gathered the pure press releases, we tried to find the information that could answer the following questions:

- When the news of the stock-option programs first reached the market?
- Who are the stock options meant for?

- What kind of company is it?
- How big is the effect of the dilution?

Details of this information are found in Appendix 2.

Step 3.

To proceed with the event study and calculate the AAR and CAAR, we also need the information about the index for the overall stock market. The index we used is the AFGX, which can be retrieved at www.afv.se. Regardless of the index, a correlation between the individual company's stock price movements and the index movements will always pose problems. However, in the optimal situation, where the correlation is either 1 or -1 , this problem will not exist.

Step 4.

The next step in the event study is to decide how large the so-called window¹⁰ and the control period¹¹ should be. We have chosen a window that consists of 10 days before and 20 days after the event and a control period from $t = -250$ to $t = -51$. This means that the control period starts 250 days before the information of the new incentive-based program has reached the market. Though no definition rules exist for choosing a window, the window should be large enough to show the whole period in which the information has been totally reflected in the stock price. This time frame assumes an efficient market where information is reflected at once. After we decided on how large the window and the control period should be, we could make the calculations about the specific α and β for every single company by using linear regression in Excel, where the data for the index was the independent variable and the data for the specific company the dependent variable.

Step 5.

Finally, when we got both α and β , we calculated the abnormal return and the average abnormal return during the so-called window period. After we had gathered this information, we could compare it to the dilution effect from the

¹⁰ The window is the time period before and after the specific event that is investigated.

¹¹ The control period is the time period where α and β have been calculated.

introduction of the stock option contract and then see how the stockowners reacted to the introduction of stock options.

2.3 Summary

In this section of the paper, we presented the methodology used for the study. The direction of our study is quantitative because it includes an event study and is mostly based upon statistical material. The statistical material about stock-option programs is retrieved from the databases BIT and HUGIN. With the material from the databases we could calculate the average abnormal and the cumulative average abnormal return. The reason for calculating the average abnormal and the cumulative average abnormal return is to compare the results to the dilution effect of the introduced stock-option programs. If the cumulative average abnormal return exceeds the dilution effect, then the shareholders will perceive stock-option programs positively and vice versa.

3. THEORETICAL FRAMEWORK

This chapter focuses on the theoretical framework applied to the study. The first section identifies an important assumption of the theory of market efficiency, which underlies the event study. Section two identifies the theory of the principal-agent problem, which is to be solved by the stock-option programs. While there are other possible theories to be addressed, we focus on the ones most connected to our study. Finally, we summarize our findings.

3.1 Market Efficiency

Market efficiency means that the market price of a security shows the market's consensus estimate of the value of that security. If the market is efficient, it inherits all information available to a stock in its price (Ross, Westerfield & Jaffe, 1999). For the event study, we assume that the market responds immediately to all available information. In actuality, certain information may affect stock prices more quickly than other information. To handle differential response rates, researchers separate information into different types. The most common classification system speaks of three types: information on past prices, publicly available information and all information. These three information sets on prices are examined below¹².

- *Weak-form efficiency*. No investor can make excess return by developing trading rules on historical price or return information;
- *Semi-strong-form efficiency*. No investor can earn excess returns from trading rules based on any publicly available information; and
- *Strong-form efficiency*. No investor can earn excess returns using any information whether publicly available or not.

Therefore, in an efficient market investors who decide to hold a security are doing so because the current available information leads them to think that the security is worth at least as much as its current market value. Those who do not

¹² For an excellent review on the three types of efficiency, see Fama (1970)

purchase the stock, in contrast, believe that their information indicates a lower appraisal of the current stock value.

An efficient financial market exists when security prices reflect all available public information about the economy, financial markets, and the specific company involved (Copeland & Weston, 1992). The implication is that market prices of individual securities adjust very quickly to new information. As a result, security prices are said to fluctuate randomly about their intrinsic¹³ values. New information can effect a change in the intrinsic value of a security, but subsequent security price movement will follow what is known as a “random walk” (no predetermined pattern of the price of a stock).¹⁴ The random walk assumption simply means that one cannot use past security prices to predict future price in such a way as to profit on it on average. Moreover, close attention to news releases will not be beneficial because before an investor is able to take action, adjustments have already been made according to market efficiency.

For the most part, evidence suggests that the market prices for stocks, in particular those on large and sophisticated stock exchanges, such as the New York Stock Exchange, are reasonably efficient (Van Horne, 1986). However, our study will put some light on the Swedish market. In light of efficient markets, stock prices appear to be a good indication of all available information. When market participants perceive opportunities, they will start taking positions; and in doing so, they drive price changes about a security’s intrinsic value to a random walk. However, about the only way an investor can on an average make profits is to have information that is not available to the public.

James H. Lorie, Peter Dodd, & Mary T. Hamilton (1998) as well as several others, stress that the efficient market theory presents a strange paradox. In general terms, the hypothesis states that stock markets are efficient only if

¹³ Intrinsic value is the value of an asset that, in the mind of a particular investor, is justified by the facts (Weston and Brigham, 1978).

¹⁴ A random walk means that no difference exists between the distribution of returns conditional on a given information structure and the unconditional distribution of returns. For a formal presentation of this condition, see Eugene F. Fama (1970).

many investors disagree on its efficiency and behave according to that belief. Moreover, the theory demands that on a regular basis many participants, all in an attempt to earn an above average return, receive and analyze the public information on the company or companies that they follow. Therefore, if this considerable effort given to information collection eroded, that is, if all the participants behaved in a manner aligned with the market efficient theory, the financial market would become less efficient.

Despite the paradox stressed by Lorie, Dodd & Hamilton, as well as several others, we assume market efficiency for the analysis. Market efficiency is of great importance for our analysis because it immediately signals investors' perception on news, which is what the event study is based on. In other words, if the market is efficient, our study will show the shareholder reactions of the introduction of stock-option programs in companies.

3.2 Principal Agent Theory

The principle agent theory stresses how problems can arise in corporations where the principal and the agent have different objectives for a task. From a strict corporate value maximization aspect, the sole role of the company is to create value for its owners. In this simple perspective, the corporation is operating as a single separated unit, run by an entrepreneur or a board of directors, towards well-defined goals. However, the reality is much more blurry than that because of the many different interests involved within corporations, which is stressed by the principal agent theory.

To start off this discussion about the principle agent theory, we need to establish why corporations exist. Also, outside the firm, price movements direct production, which is coordinated through a series of exchange transactions on the market. Within a firm, these market transactions are eliminated, and in place of a complicated market structure where exchange transactions are substituted by a coordinator, who directs production. Because production is regulated by price movements, some might wonder if production could carry on without any organization at all. Coase, in 1937, argued that firms will exist and arise as long as transaction costs within the firm are less than those of an

exchange in the open market. Further, the rationale why organizational costs would be less within companies than in an exchange of the open market is a product of information symmetry (Milgrom & Roberts, 1992). Finally, in a complicated market structure of corporations, the need for control and coordination tools is often imperative for success. The most common tool for control and coordination can be found in contracting. These contracts can be explicit or implicit, and long or short term. The agents have different objectives and are equipped with capital, knowledge, or information. Although the agents have different objectives, they are rational in the sense that they choose the best alternatives available. Therefore, agents will go into contracts to better their positions. The agents will contribute their capital, knowledge or information in return for some other source of demand.

Jensen & Meckling (1976) defined the agent-relation as a contract under which a person (principal) contracts another person (agent) for the purpose of performing a task, in which the principal delegates authority to the agent. Principal-agent-problems can arise if principal and the agent have different objectives for a task. Then, if the principal wants to assurance that the agent does what is contractually demanded, the principal needs to arrange for monitoring or verification. However, sometimes it might be difficult to monitor and verify an agent's action, when the agent has few incentives and when the demanded assignment is non-specific.

Principal-agent-problems are quite common and arise in almost all organizations and at all levels (Jensen & Meckling, 1976). Further, employees at the top of the corporate hierarchy face decisions that could have a major impact on the organization as a whole. Therefore, from a principal-agent-problem point of view, controlling a company's executives is the most important task of the shareholders. Although in that the executives or the board of directors are the most important to control, we include all personnel in our study who have stock option programs; combining pay and performance ought to reduce the principal-agent-problem and improve shareholder wealth. Jensen & Meckling (1976), Haugen & Senbet (1981), and Beck & Zorn (1982) have

empirically shown that agency costs¹⁵ are reduced through combining pay with company stock price performance. However, will our event study support the empirical results that combining pay with company stock price improves corporate performance?

3.3 Summary

In this part of the thesis, we identified the underlying theories for our study: the Market Efficiency theory and the Principal Agent theory. We assume that the market responds immediately to all available information, which implies market efficiency. Therefore, market efficiency is of great importance for our analysis because it immediately signals investors' perception on news, which is what the event study is based on. Further, research by Beck & Zorn (1982) and others support that by combining pay and performance will reduce the principal-agent-problem and improve shareholder wealth. Given that we assume market efficiency and that stock-option programs reduce the principal-agent-problem, will our event study support these arguments?

¹⁵ Agency costs are the costs of conflicts of interests among shareholders, bondholders and managers. Agency costs are the costs of resolving these conflicts. They include the costs of providing managers with an incentive to maximize shareholder wealth and then monitoring their behavior and the costs of protecting bondholders from shareholders (Buckley, Ross, Westerfield, Jaffe, 1998)

4. COMPENSATION

In this part of the paper, we will examine different compensation programs. The main focus will be on incentive-based pay programs, which mostly includes stock options, and are more commonly called employee stock-option programs (ESO). The reason for including this part of the paper into the study is to present the various details about compensation programs. We will start out the discussion by examining compensation programs as a whole. In this section, we will also differentiate between the different compensation programs to show other ways of compensations to stock-option programs. Finally, we will summarize the section.

4.1 Compensation Programs

Currently companies develop employee stock-option programs for many different reasons. Some companies have read some of the studies that show that employee stock ownership improves stock performance for the firm (Murphy, 2000). Others want to retain their employees and are trying to compete with other companies who are providing options. A few provide stock options because they believe employees should own part of the company.

However, unless companies provide good communications about the ESO, they will not meet their goals. ESOs may be the most complex employee benefit provided on a broad basis today. Handled well, a stock option program may allow an employee to retire a millionaire. Handled poorly, a stock option program may cause that same millionaire to become angry with the corporation and leave, taking important talent and knowledge to competitors. If the ESO is going to be successful, we believe that the communication program has to meet two criteria. First, the communications program has to have a clearly stated goal, and secondly, the employees have to be able to obtain information about the ESOs in many different ways and at many different times.

The communications program should help achieve the corporate goal of the ESO. If the ESO is intended to retain employees, the communications program

will emphasize the long-term benefits of holding the stock. If the ESO is intended to make employees think like owners, the communications program should focus on what makes the stock price increase in value. Focusing on the goals of the ESO will allow the company both to measure the success of the communications program and to explain to investors why the ESO was instituted.

However, the communications cannot focus only on the goals of the ESO. Employees also need practical information about how to execute their stock options as well as financial planning and tax information to develop the strategies to manage their stock options. Therefore, when a corporation is developing the communications program, it should cover three vital areas of information (Murphy, 2000):

1. The value and the goal of the ESO.
2. The process of exercising options and selling stock.
3. The financial planning and tax information necessary to understand the options.

ESO communications programs must be maintained on an ongoing basis. The company should provide written information at least annually to remind employees about the options and their value. Some companies even provide option summaries quarterly so that the employees can better plan their option strategies. Electronic information provides great opportunities for ongoing communications: in the best situation, the company allows access 24 hours per day, 7 days a week. Annual seminars can allow employees to refresh their understanding of options and provide new employees with plan information.

Overall, the best communications program provides employees with information about the value and goal of the ESO program, the process of exercising options and selling stock, and the financial planning necessary to understand and make the most of the options.

Although many ESO programs are heterogeneous across firms and industries, most executive pay packages contain four basic components: a base salary, an

annual bonus tied to accounting performance, stock options, and long-term incentive plans (Milgrom & Roberts, 1992). In addition, executives often participate in broad based employee benefit plans and also receive special benefits such as lifetime insurance. Following is a brief description of some of these plans. Since stock-option programs are the main focus of the paper, we exclude it in this brief introduction but will discuss stock-option programs in more detail in the next section of the paper.

Salary

- Salary is an amount paid over the course of the year and fixed in advance. Salary may be adjusted regularly based on the length of service, competitive conditions, the cost of living, performance, or other considerations.

Salary Bonus

- A salary bonus is a nominally variable amount often paid as a lump sum, at the discretion of the firm's directors or other. A bonus may be tied to performance, either implicitly or through an explicit formula. If so, performance is usually measured on a short-term basis, such as the previous year's accounting profits or earnings growth, or to the extent to which these exceed targets.

Restricted Stock Awards

- Restricted stock awards are shares that are given to the executives or sold at a deep discount. The ability of the executive to sell this stock is restricted, at least until certain conditions are met (for example, meeting certain growth or profit goals or the executive's retirement). The number of shares awarded may depend on past performance.

Phantom Stock Plans

- A phantom stock plan is a unit that corresponds to common stock but carries no ownership claims. Phantom stocks entitle the executive to receive the

share price appreciation and dividend that would have been received on actual stock.

Stock Appreciation Rights

- Stock appreciation right is a right to collect the amount of any share price appreciation on a specified amount of common stock over time.

4.2 Stock-Option Programs

One part of the ESO that we are going to focus on is the stock options. These stock-option contracts give the recipient the right to buy stocks in the firm at a prespecified price during a specific period of time. The price is usually at or above the current price of the stock when the options are awarded, and the time period is usually several years. No actual cash is received until the recipient actually buys the stock. Then, the compensation is the difference between the market price of the stock and the exercise price.

The parameters of an option contract make possible a multitude of design possibilities: for example, exercise prices could be indexed to the industry, options could be forfeited unless a performance trigger is reached, or option terms could match the expected executive horizons. One characteristic that makes stock options an interesting part of the ESO is that the option only rewards stock-price appreciation and not total shareholder return, since the latter includes dividends. Then, companies can offer dividend protection for executive stock options. These dividend protections can be accomplished in a variety of ways; the most common approach is to pay the executive accumulated dividends upon exercise of the underlying options.

As we have mentioned earlier, stock options provide a direct link between rewards and share-price appreciation, since the payout from exercising options increases dollar for dollar with increases in the stock price. For several reasons, the incentives from stock options do not mimic the incentives from stock ownership. First, since options reward only stock-price appreciation and not total shareholder returns (which include dividends), executives holding options

have incentives to avoid dividends and to favor share repurchases. Second, since the value of options increases with stock-price volatility, executives with options have incentives to engage in riskier investments. Finally, options lose incentive value once the stock price falls sufficiently below the exercise price that the executive perceives little chance of exercising.

Usually applications of stock options in both research and practice require placing a value on the options as of the grant day (Murphy, 1986). When constructing such a value, companies and recipients must distinguish between two often confused but fundamentally different valuation concepts. One is the cost to the company for granting the option and the other is the value to a recipient for receiving the option. The company's "opportunity cost" of an option grant, ignoring the incentive effect, is appropriately measured, as the amount an outside investor would pay for the option. An outside investor is usually free to trade or sell the option, and can also take actions, such as short-selling the underlying stock and hedging away the risk of the option.

In contrast, company executives, cannot trade or sell their options and are also forbidden from hedging the risk by short-selling company stock, especially in the U.S. In addition, while outside investors tend to be well diversified (holding small amounts of stock in many companies), company executives are inherently undiversified, with their physical as well as human capital invested disproportionately in their company. For these reasons, company executives will generally place a much lower value on company stock options than would outside investors. However, to the extent that company executives have superior information regarding company prospects and can "time" their option grants accordingly, executives may actually value options higher than would outside investors.

So far, the best-known and most widely used method for calculating the company's cost of granting a stock option is the Black-Scholes formula, see appendix 1 (Hull, 2000). Black and Scholes show that, since investors can hedge, options can be valued as if the investors are risk-neutral and all assets appreciate at the risk-free rate. Under the assumption of risk neutrality, option values can be estimated by calculating the expected value of the option upon

exercise, and then discount this expected value on the grant date using the risk-free rate. This risk-neutrality assumption forms the basis of modern option-pricing theory and is central to all option-pricing models and methodologies, including the binomial model, arbitrage pricing models, and Monte Carlo methodologies.

In spite of its prevalence in practice, the Black-Scholes formula has many drawbacks in calculating the cost of an executive stock option. One example is that the Black-Scholes formula assumes that options can only be exercised at the expiration date, but executive options can be exercised immediately upon vesting, which typically occurs relatively early in the option's term. The opportunity to exercise early has ambiguous implications for the cost of granting options. On one hand, the right to exercise early increases the amount an outside investor would pay for the option, and hence increases the option's cost. On the other hand, risk-averse undiversified executives tend to exercise much earlier than would a rational outside investor, and these early exercise decisions reduce the company's cost of granting options.

4.3 Summary

This section of the paper has given a general discussion on the details of compensation programs. We gave a brief discussion on compensation programs but the main focus was put on stock-options. Stock-option contracts are instruments that give the recipient the right to buy stocks in a firm at a prespecified price during a specific period of time. One characteristic that makes stock options an interesting part of the compensation programs is that the option only rewards stock-price appreciation and not total shareholder return, which also improves the problem with risk aversion.

5. RESULTS AND ANALYSIS OF THE EVENT STUDY

In this section, we show and analyze the results from the event study. The results are divided up into different parts depending on the objective of the analysis. We analyze both the total sample and certain sub areas, which is done to better understand the outcome of the analysis.

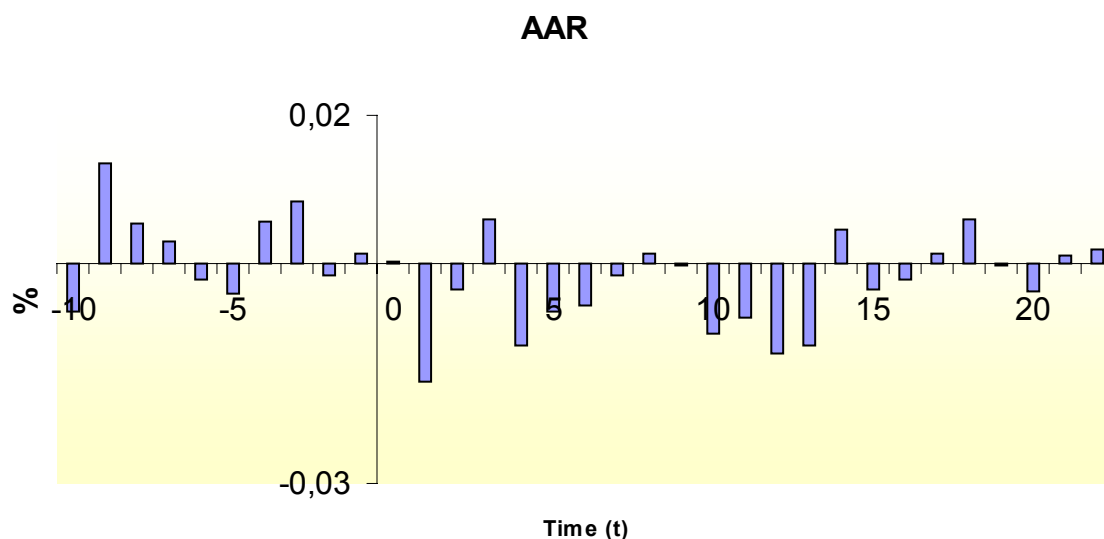
5.1 Results of the Event Study

This section shows the results of the event study. We begin the section by first showing the outcome of the total sample, and then in the following section, we divide the total sample into sub samples to narrow the results down in more detail.

5.1.1 Total Sample

Figure 5.1 shows the average abnormal return around the event day for the 46 companies involved in the study. As previously mentioned, the event day is the zero on the x-axis, and the event window goes from 10 days before to 20 days after the announcement of the new stock option contracts for the companies included in the study. As figure 5.1 shows, the days before the announcement reveals positive signals about the companies on an average. This phenomenon may occur because some information about the option programs has leaked out to the investors, who are trading on insider information. These investors (insiders) believe that option programs will increase value for the shareholders and therefore start taking long positions.

Figure 5.1 Average abnormal returns around the event day.



Interestingly, the time period after the event day shows an opposite pattern with mostly negative abnormal return. In other words, investors receive the new information negatively and start taking short positions. The question is, why do investors perceive the information negatively when it should be perceived positively, according to theory? Another important aspect to stress is that the negative abnormal returns for the event days: one, four, and ten are significantly different from zero. This means that there actually exist negative occurrences on those days with a probability of 95 percent. Table 5.1 shows the significances for the days around the event day.

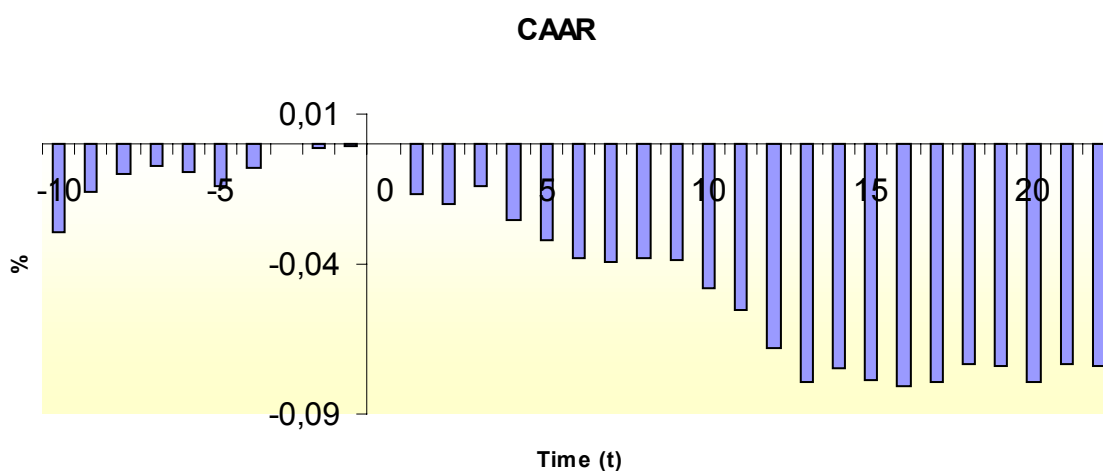
Table 5.1 t-values for the Days Around the Event Day

Day	t	Day	t	Day	t	Day	t
-10	-1,10	-3	1,30	4	-2,04	11	-1,36
-9	1,79	-2	-0,33	5	-1,39	12	-2,26
-8	0,65	-1	0,18	6	-1,03	13	-2,41
-7	0,36	0	0,02	7	-0,23	14	0,45
-6	-0,26	1	-2,35	8	0,20	15	-0,52
-5	-0,84	2	-0,47	9	-0,06	16	-0,31
-4	0,87	3	0,61	10	-2,16	17	0,24

Figure 5.2, shows the cumulative average abnormal return, which stresses an even clearer picture on the negative trend after the event day. An important aspect shown is the delayed market reaction to the news. In light of market efficiency, an instant reaction should have been the case after that the news has

reached the market. The delayed reaction continues for almost ten days after the event day until it is totally reflected in the stock prices and is then down by approximately seven percent. The seven percent, negative abnormal return, has to be compared to the average dilution of 3.4 percent from the issuing of more stocks. Clearly, this indicates that the shareholder, on an average, perceives the information about introductions of stock option programs as negative.

Figure 5.2 Cumulative Average Abnormal Returns Around the Event Day.



5.1.2 Sub Samples

In this part of the results examination, we are trying to find out which factor or factors might explain the outcome of the event study. The factors we decided to focus on were obtained through the press releases. These factors were:

- The dilution effect;
- The recipients' role in companies; and
- The recipients' sector of business.

Despite of the fact that the sizes of the sub samples are relatively small, we find it interesting to show the results for the sub groups due to the fact that they will shed some light on the overall question of stock-option programs.

Dilution Effect

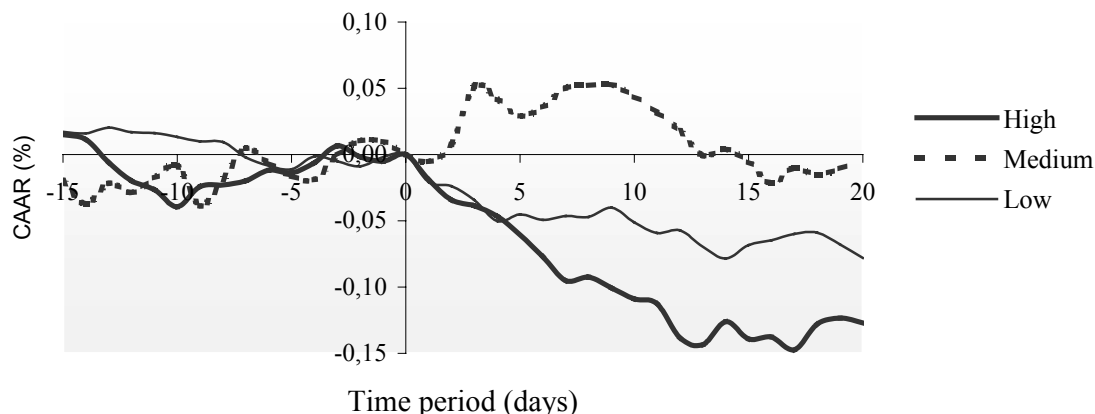
The first factor that we examined was the dilution effect. Since the total sample of companies was relatively small, we decided to divide the sample into three approximately equally large groups. Table 5.1 shows the different groups. The different groups are: option contracts with a dilution effect smaller than two percent (Low), option contracts with a dilution effect between two and four percent (Medium) and, option contracts with a dilution effect greater than four percent (High).

Table 5.2: Average dilution effects for the three sub groups.

	Average (%)	Number (n)
Low	1.1	17
Medium	2.9	12
High	6.1	17

In order to compare the different groups, we calculated CAAR for each of them. The results of the CAAR calculations are shown in figure 5.3. When comparing the dilution effects in table 5.2 to the CAAR calculations in figure 5.3, we see that the results deviate from each other. For instance, the low group, with a dilution effect of 1.1 percent, should also have a decrease in the CAAR by 1.1 percent. However, as shown in figure 5.3, the CAAR for the low group has approximately gone down by five percent, which is roughly four percent more than the dilution effect. The result for the high group is similar to the low groups, which also stress a negative average abnormal return. As we can see in the figure 5.3, the contracts with a medium dilution effect are the most successful ones from the shareholders' perspective because they show a positive average abnormal return even when the dilution effect is included.

Figure 5.3: The CAAR for the Three Sub Groups.



The total information for all the companies about their dilution effects can be found in appendix 2.

Recipient’s Role in Companies

The next factor that we analyzed more closely was the recipient’s role in the specific company. Even in this case, we divided the total sample into three different groups: option contracts that are targeted for key personnel¹⁶ only, option contracts that include all personnel in the company, and option contracts that are only meant for the management.

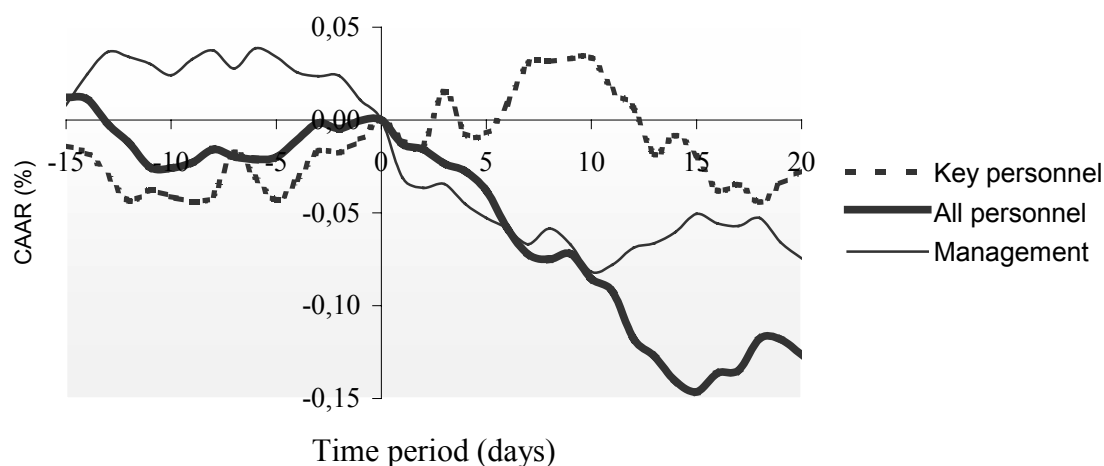
Table 5.3 Average Dilution Effects for the Three Sub Groups.

	Average (%)	Number (n)
Key personnel	3.5	14
All personnel	4.2	21
Management	2.0	11

As we can see in figure 5.4, the group that had the most positive outcome was the one for key personnel, which actually showed a positive outcome even when the dilution effect was included. In the case when everyone in the company gets a share of the option contract the negative percentage change is around 12 percent and for the management group around 5 percent.

¹⁶ Key personnel are people within a company that the company considers important.

Figure 5.4: The CAAR for the Three Sub Groups.



The total information for all the companies about their dilution effects can be found in appendix 2.

Recipient's Sector of Business

The last factor that we decided to investigate was if companies within different business industries react in the same way to the announcement of new stock-option contracts. We divided the total sample into two groups: one with companies within the IT-business and one for the rest. The reason for dividing the sample in such a way is that most IT-companies use stock-option contracts to attract and to keep qualified personnel rather than paying upfront high salaries (Jonsson, 2000).

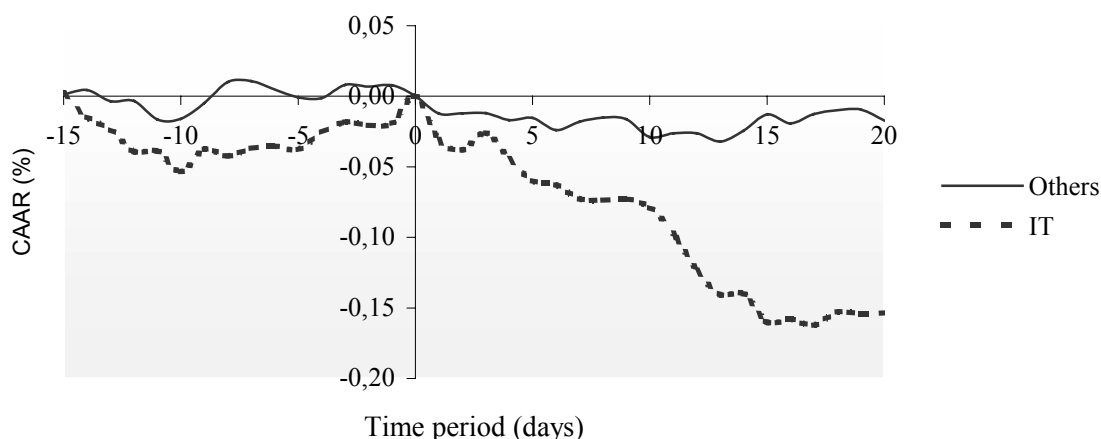
Table 5.4: Average dilution effect for the three sub groups.

	Average (%)	Number (n)
IT-Business	4.6	22
Others	2.3	24

As we can see from the figure 5.5, companies outside the IT-business drop almost immediately to the new level, which corresponds to the dilution effect of 2.3 percent and then stays around this new level. The IT-business, on the other hand, drops for almost fifteen days until it reaches an approximate

negative 15 percent level. If we then compare the negative 15 percent level for the IT-business to the average dilution of 4.6 percent, there is a negative return of roughly 10 percent for the shareholders.

Figure 5.5 The CAAR for the three sub groups



The total information for all the companies about their dilution effects can be found in appendix 2.

In conclusion, we can see that the investors reacted most positively to stock option contracts for none IT-Businesses, with a dilution effect around two to four percent, and for key personnel within the firm.

5.2 Analysis of the Event Study

This section shows the analysis of the event study. We begin the section by first analyzing the outcome of the total sample, and then in the following section, we divide the total sample into sub samples to narrow the results down in more detail.

5.2.1 Total Sample

The results of the total sample stressed a continuous negative trend after the event day when introducing stock-option programs. Clearly, this indicates that the shareholder, on an average, perceive the information about introductions of stock option programs as negative. In the following part of the section, we will give some possible explanations to the outcome of the study.

Risk for Increased Salary Costs

The shareholders may believe that there is a risk for a too large increase in salary costs when introducing stock options. Estimating the consequences and the amounts of option contracts as bonuses is quite difficult. If companies do not protect themselves through derivatives or third-party insurance, the final payout amounts to the option holders can be astronomical, and a contentious subject for the shareholders. The criticism from the shareholders can best be understood from the large increases in the stock markets over the past years. For instance, because of large stock option payouts, Lindex¹⁷ margin in 1997/1998 was down by 9 percent, which naturally put pressure on the company's stock price (Forsberg, 1998); OM's option payout in 1995 caused the yearly results in 1996 and 1997 to drop 31 and 9 percent respectively (Sundewall, 1998). The CEO and founder of OM in 1998 Olof Stenhammar argued that he regretted the decision to give stock options to top management the way OM did in 1995 (Hammar, 1998).

Another implication with stock option programs is that the shareholder may believe that the price, in which the person can exercise the option, is often set too low (Business Week, 1997). In other words, people with a stock option can achieve the set stock price goals with little effort. Aktiespararnas Riksförbund, an organization that serves the stockholders' interests in Sweden, has on two occasions filed complaints to the Aktiemarknadsnämnden, the legal organization of the Swedish stock market, for price discrimination on option prices (Viotti, 1990). Some companies have changed the option price inversely when the stock price development was not satisfactory. The inversely changes

¹⁷ A Swedish company in the clothing retail business

in option contracts has probably irritated the stockholders as well, who at the end always pick up the bill. During 1995, Digital Equipment's CEO, Robert B. Palmer, was given an amount of 300 000 options at an exercise price of \$ 48 per option. When the stock did not perform in accordance to the initial expectations, the exercise price was reduced to \$ 37.75 (Fortune, 1997).

Implication in Measuring Performance

The shareholder may also believe that the option programs do not always measure performance accurately. The reason behind this argument is that the option holders have little influence on several factors such as inflation, exchange rates, political policies, and the economical ups and downs. Akhigbe, Madura & Tucker (1996) have shown that approximately 50 percent of the variance in a company's stock movement depends on industrial factors in combination with trends in the stock market and micro-economic assumptions. They argue that option contracts ought to be tied to a controlled market instrument where the bonus is reflected by the evolution of the industry index. They stress that the reason for using this approach is to stimulate executives during the cycles of the industry.

Executives Stimulates to Keep Low Dividends

The shareholders may think that the executives with stock options will be stimulated to keep dividend payments low because dividend payments decrease the stock market price and also the option price. However, executives may have difficulty disregarding an already predetermined policy, in regard to the size of the dividend payment. Executives must have strong reasons for decreasing the size of the dividend payments, especially when shareholders usually prefer predictability, in relation to the risk of reinvesting (Graham & Dodd, 1951).¹⁸ Lambert, Lanen & Larcker (1989), in an empirical study, argue in connection with the introduction of executives' option programs and the changes of the dividend policy, on the US market, significant reductions in dividend payments with the introduction of stock option programs. These results, in combination

¹⁸ According to Miller & Modigliani (1961) investors on a perfect market, a market without transaction costs, constant production and investment decisions, ought to be indifferent to the size of the payment.

with similar studies by Easterbrook (1984) and Lewellen, Loderer & Martin (1987), indicate that the executives' option programs affect their dividend policies. Even if large dividend payments, in general, were more attractive than smaller ones, decisions on a company's dividend policy should not affect executives' bonus systems.

Unsatisfactory Expectations

One reason for the negative reaction from the stockholders could be that some investors had expected a different stock-option program. To decide if the suggested option programs are regarded as negative, the market must value the news according to previous expectations. For instance, the investors might have expected a totally different option program for the company, and therefore, were disappointed by the one introduced. This does not mean that the introduction of the new option program was regarded as unsatisfactory by the investors but probably not as good as they expected, which in turn brings the stock price down.

Another reason lies in commitment implications. This can be understood by that the investors are familiar with the company's plans to introduce a stock-option program but at the last minute the company decides to rearrange and not fully proceed with the previous plans, which will probably cause confusion among the investors. Therefore, if investors have a positive attitude towards option programs and believe that they enhance shareholder wealth, companies that fail to meet expectations will most likely have negative effects on their stock prices.

Psychological Reasons

There may also be some underlying psychological reasons for the abnormal returns, which are most likely explained by the fact that some Swedish people associate the phrase "stock options" negatively. The debate over option programs has blossomed up in the last couple of years to the point that almost everyone has gotten involved. Politicians, such as, Göran Persson, the prime minister, voiced critically against option programs (Salomonsson, 2000) and Göran Johansson, leader of the Metall union, argued grid and unfairness for

large stock-option programs (Lindström, 2000) and the popular press have all screamed for the abandonment of large option programs, and interestingly, almost not a day goes by without critical voices against option programs. Therefore, we believe that the debate over option programs may cause reluctance among investors to invest.

5.2.2 Sub Samples

In this part of the analysis, we examine the results of the sub samples. The section of the sub sample includes an analysis of the dilution effect, the recipient's role in companies, and the recipients sector of business. Again, despite that the sizes of the sub samples are relatively small, we show the results for the sub groups because it sheds some light on the overall question of stock-option programs

Dilution Effect

As the results of the analysis indicated, a high or a low dilution effect stressed negative abnormal returns while a medium dilution effect showed positive abnormal returns. The reason for the negative abnormal returns may be situated in the investors finding the dilution effect either too small to be an inspiration factor for the employees to work harder or too significant, which may cause them to believe that their authority in the companies will decrease too much. Aktiespararna wants to protect existing shareholders, and is therefore skeptical of dilution. They stress a maximum of five percent of dilution (Forsberg, 2000) because of that the dilution causes the profit opportunities to decrease for the existing shareholders. This rationale may explain the outcome of the high group, however, we do not find any solid explanations for the low and the medium groups results.

Recipients Role in Companies

According to the results of the event study, the group that had the most positive outcome was the one for key personnel, which actually showed a positive outcome. A negative abnormal return was the result when everybody or when the management got stock-option shares. One way to understand the negative

abnormal return, when giving everybody stock-option programs in companies, is that the investors will not perceive that everybody will actually work harder. This might be the same for management, however, as we discussed in the introduction, the current hot debate about stock-option programs is often based upon that the rich people, often people within the top management, are getting richer. This is often not accepted in the society (Mellin, 2000) and could be the answer to why the announcement that management gets stock options was perceived negatively. However, if the ones that possess key knowledge in the company get motivational incentives in the stock option programs to continue their hard work, then, maybe the investors feel satisfied for the moment.

Recipients Sector of Business

As the event study indicated, companies outside the IT-business dropped almost immediately to the new level, which almost equaled the dilution effect. However, in the IT-business the investors perceived the stock options quite negatively.

In some instances, the shareholders may perceive that stock option programs can create difficulties in recruiting and retaining employees, especially in the IT sector. Given that a company's stock is stalling, executives and other option holders might look somewhere else for more profitable opportunities. This problem is intensified where the option contract is a large part of the total compensation. Who cares about the base salary? According to J William Gurley, an Internet analyst at DMG Grenfells argues that IT-executives search companies and stock-option programs after the "home runs" principle and that the loyalty in the Silicon Valley is dead. Gurley (1997) draws parallels between aggressive option programs and high debt consolidation: "When times are good, they are double good, and everyone frolics in above returns...But when times turn bad, the effects on the stock-option culture can be devastating." In an economic boom in the Silicon Valley, stock option contracts consist of approximately 40 percent of an executive's salary.¹⁹ The result of this has led most executives to look for companies with strong stock market developments,

¹⁹ In Sweden, the base salary is typically 80 percent of an executive's total compensation (Bizniz, 1997). Further, companies within the IT-sector are the ones most eager to offer option programs (Giertha, 1998).

while companies with difficulties and slow stock price development have problems in recruiting and retaining skilled executives.

Another explanation for this large drop for the IT-Business could be in the way we are measuring the effects of the new information (market model, formula 2.1) because it may not suit the volatile stock market business. However, it is rather interesting that the drop starts on the announcement day and continues for 12 days while the period before and after does not contain any particular movements.

5.3 Summary

In this section, we showed and analyzed the results from the event study. The overall results of the study showed that the shareholders, on average, perceived the information about introductions of stock option programs as negative. The underlying reason for the results may be seen in the risk for increased salary costs, the implication in measuring performance, the problems with executives who stress a low dividend policy, the commitment implications or in some underlying psychological reasons. However, we identified that the investors reacted most positively to stock option contracts for none IT-Businesses, with a dilution effect around two to four percent, and for key personnel within the firm.

6. RESEARCH ANALYSIS

In the research analysis section, we will examine the issues of the problem discussion, and compare the results with previous research and theories. We also include a critical examination of the outcome in this section, which includes the validity and the reliability of the study. The reason behind the critical examination part is to give the reader an objective picture of the study. At the end, we include a section for further research. Lastly, we summarize the section.

6.1 Results from Shareholder Maximization Point of View

The problem discussion stressed that the goal of any corporation, excluding non-profit corporations, is to maximize its shareholders' value. We identified three obstacles in this shareholder maximization objective in possible conflicts of interests within corporations, managers' aversion to risk, and the optimal means of motivation. We also identified one possible solution to the obstacles in achieving shareholder maximization through combining residual returns with residual control, which constitutes the underlying structure of stock-option contracts. However, through our results from the event study, can we identify that these obstacles were solved with the introduction of stock-option programs in companies?

In light of using an event study to analyze the effects of introducing stock-option programs in companies, it is impossible to identify how the recipients' perceive the option programs. However, we can see how the shareholders perceive the recipients behavior after introduction of the option programs. The overall results of the study showed that the shareholders, on average, perceived the information about introductions of stock option programs as negative. Therefore, based upon the event study, the shareholders do not believe that the obstacles, as a whole, are solved with the use of stock-option programs and that they will not maximize shareholder value.

Despite the overall negative results with the introduction of stock-option programs, it is possible that the shareholders believe that some of the obstacles can be corrected depending on the structure of the option programs. For instance, when giving stock-option programs to key personnel the shareholders reacted positively. This outcome may actually signal that some of the obstacles are solved, however, it is impossible to determine which ones. But when looking at the results from the event study, it is easy to believe that the shareholders find stock options as sufficient means of motivation to keep key personnel.

6.2 Comparing Our Results With Previous Research

This part of the paper compares our results to previous research within the subject of compensation programs and to the underlying theories of study. We divided the section into three parts that include the market efficiency theory, the principal-agent theory, and the previous research about stock-option programs.

6.2.1 Results from a Market Efficiency Point of View

According to theory, market efficiency means that the market price of a security shows the market's consensus estimate of the value of that security. In other words, market efficiency stresses that all past and new information about a company is reflected in the stock price. Van Horne (1986) argues that the market prices for stocks, in particular those on large and sophisticated stock exchanges, such as the New York Stock Exchange, are reasonably efficient. An interesting aspect of our event study is that the information about the introduction of the stock-option programs is not immediately fully reflected in the stock price. It actually takes approximately twelve days until the stock prices reach a new steady level, which indicates that there might be some violations to the Swedish stock markets efficiency.

Indirect tests of the efficient market theory have changed over time because of the introduction of more advanced statistical techniques. The finding now is that weak efficiency is not present in most capital markets (Al-Loughani,

1997). Semi-strong market efficiency, on the other hand, holds quite well and most event studies do not find periods of excess returns after the publication of news (Asquith, 1983). However, our event study indicates that not all the new information is immediately included in the stock prices, and therefore, we could say that there is a chance of excess return. Strong form efficiency was never a real subject of discussion, however, most research shows that investors who trade on inside information can outperform the market (Al-Loughani, 1997).

6.2.2 Results from a Principal-Agent Theory Point of View

The principal agent theory stresses how problems can arise in corporations where the principal and the agent have different objectives for a task. Because employees have no contingent claims on the value of the company, their objectives may be different from those of the shareholders, which can lead to moral hazards²⁰. For instance, expensive office buildings, company jets, and fancy dinners on the company may maximize employees' utility; however, these expenses are most likely not in the interests of the shareholders. According to Jensen and Meckling (1976), Haugen & Senbet (1981), and Beck & Zorn (1982) they have empirically shown that agency costs are reduced through combining pay with company stock price performance. In other words, the principal agent problem can be improved through the use of stock-option programs.

Interestingly, just by looking at the overall result from our event study it does not support the argument that the principal agent problem is resolved through the use of stock options. There are several scholars that actually explain why stock-option programs do not always improve the principal agent problem. Aggarwal and Samwick (1999) argue that the option holders often do not receive the utility that exceeds their individual reservation utilities in order to be willing to produce. Laffont and Tirole (1994) stress that the incentive contracts must be compatible. Incentive compatibility implies that the

²⁰ Moral hazard is a form of post-contractual opportunism that arises because actions that have efficiency consequences are not freely observable and so the person taking them may choose to pursue his or her private interests at others' expense.

performance measure must be something the option holder can affect, and that is always not the case. Because of the difficulties in structuring optimal option programs, we see it as a possible solution for the negative results. However, it is impossible to stress that the principal agent problem is not resolved with the introduction of stock option programs much because of the many other possible explanations for the outcome.

6.2.3 Results from Compensation Programs Point of View

In spite of that most recent research conducted on incentive-based programs focused primarily on pay and company performance, our study analyzed how the shareholders interpreted the introduction of stock-option programs. Our result indicated an inverse relation between introducing stock-option programs and company stock price performance.

Most research stresses that there is no direct evidence that option programs create, on average, increased shareholder wealth. Hill and Stevens (1999) examined CEO compensation, stock ownership, and corporate returns for 161 firms from 1991-1996 from an average return perspective. The study indicated that the pay of CEOs of firms that have no better than average returns is not significantly different from CEOs of firm with better than average returns. Therefore, their study stressed that option programs do not create, on average, increased shareholder wealth. Murphy (1999) argues also that there is little direct evidence to that higher pay-performance sensitivity will lead to a higher stock-price performance. However, exceptions to the argument that there is no relationship between pay and company performance are included in studies by Masson (1971) and Abowd (1990), who offer evidence suggesting that stock-based incentives improve subsequent stock-price performance. In conclusion, most previous research stresses that there is little direct evidence that stock-based incentives improve stock-price performance. However, our study actually shows an average negative abnormal return to the introduction of stock-option programs, which is somewhat ground breaking in the research field of stock options.

6.3 Critical Examination

The critical examination of the analysis is of most importance for the validity and reliability of the results of the analysis. This part of the paper critically examines the outcome of the analysis to stress that we are not taking the results for granted but also analyzing them.

6.3.1 Validity

Validity addresses whether or not the developed framework is a relevant representation of reality and if it measures what it is supposed to measure (Wiedersheim-Paul & Eriksson, 1991). In light of the event study, several questions remain about the market model used to estimate the expected returns. Thus, the model is quite commonly used. In regards of that the market model uses A and B, estimated from the control period, we can assume that these parameters are not constant over time, which is a weakness in our so-called window.

6.3.2 Reliability

The reliability of a study depends on how reliable the measurements are (Wiedersheim-Paul & Eriksson, 1991).

The fact that we are using quantitative and not qualitative data during our analysis contributes to a higher probability that the same results will be attained in other independent studies. The sample data used is built upon secondary sources. Therefore, the reliability is consequently dependent on those sources. The quality of the data used is from BIT, Hugin and Affärsdata, and ought to be satisfactory.

A possible problem with the study is the number of press releases achieved, which is 46 in the event study. With this small number of press release, we still believe we can draw some reliable conclusions from such few observations. We have achieved significant values in our study, which in our case stress negative abnormal returns, but few because the connection between option programs and

companies' stock prices are vague or do not exist, and because the sample data is small.

The use of a t-test assumes the population to be normally distributed. Daily stock market returns have shown to be normally distributed, however, with thick tails of deviations; thus they deviate from normal distributed returns (Fama, 1976). This can be a possible source of difficulty. The following factors are even greater reasons for the significant results.

The different option programs were shaped differently. Some option programs may contribute to a positive market reaction and stock price development, while others can lead to a negative reaction. Option holders may also be affected differently depending on the size of the personal wealth that is represented by the option programs. The differences may contribute to a higher standard deviation in the result, which can lead to a lower significance.

There is a risk that the press releases used in the study, about the information of the option programs, would contain old information. In other words, the market is already informed about the so-called news. Therefore, the market participants could have already incorporated the expectations about the option programs. This can be understood by an increased usage of option programs. Thus, the market does not fully react to the decision about the introductions.

6.4 Suggestions for Further Research

Someone interested in the subjects could use our study as a base and then collect more data. Because of the explosion in introductions of option programs over the last years, in the near future a much greater sample could possibly be collected. Therefore, a greater sample would increase the validity and make the study even more interesting.

Another interesting suggestion for further research is to distinguish between the different option programs; the way option programs are structured plays an important role for the shareholders. It would also be interesting to examine how

large a part of an option holder's wealth is affected by the option program, given that various incentives contracts affect people differently.

Finally, one could examine changes in payout policies and deferments of negative information during the exercise period. In addition, we suggest a descriptive examination of stocks, futures and other derivatives as bonus systems for executives. This study could be necessary in respect to the validity of option programs as means of compensations.

6.5 Summary

In this section of the paper, we examined the issues of the problem discussion, compared the results with previous research and theories, and critically examined the outcome of the study. The overall result showed that the shareholders, on average, perceived the information about introductions of stock option programs as negative. Therefore, based upon the event study, the shareholders do not believe that the obstacles, as a whole, are solved with stock-option programs and that they will not maximize shareholder value. However, most previous research stresses that there is little direct evidence that stock-based incentives improve stock-price performance, which is not in agreement with our results.

7. CONCLUSION

This research is the outcome of the significant debate that has taken place over stock-option programs during the last couple of years and the moderate amount of research on the subject in Sweden. Because of that the underlying theories of stock option-programs support shareholder maximization, the purpose of the paper was to show that stockholders are positively affected by the introduction of incentive-based contracts. In order to analyze if stock-option programs increase shareholder value, we measured how shareholders perceive new information about stock-option programs through an event study. The overall results of the study are as follows:

- Shareholders, on average, perceived the information about introductions of stock option programs as negative. The underlying reason for the results may be seen in the risk for increased salary costs, the implication in measuring performance, the problems with executives who stress a low dividend policy, the commitment implications or in some underlying psychological reasons.
- In light of a high or a low dilution effect, the shareholders perceived them as negative while a medium dilution effect was received as positive.
- The shareholders reacted most positively when stock options were given to key personnel. However, when everybody or when the management got stock-options they reacted more negatively.
- When giving stock options to employees in the IT business the shareholders reacted quite negatively. Thus, the shareholders reacted indifferently to the introduction of stock-option programs in none IT companies because of that the reaction followed the dilution effect.

Again, most previous research argues that there is little direct support for that stock-based incentives improve stock-price performance. However, our study

actually shows an average negative abnormal return to the introduction of stock-option programs, which adds some new light to the research field of stock options. Although the purpose of the paper was to show, given the underlying theories, that shareholders should react positively to the introduction of stock-option programs in companies, our study stressed evidence of the opposite.

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Appendix I: Black and Scholes option pricing model.

Following assumptions need to be satisfied:

- Constant risk free rate
- Efficient information flow
- Continuing trading flow with the option
- No positions with the option without ownership
- No transactions costs or taxes
- No dividend paid out during the life of the option
- No arbitrage opportunities
- Return on the stock is continuous and normally distributed with a constant standard deviation

The price on a European option is as follows (Hull, 2000):

$$C = SN(d_1) - Ke^{-rt}(d_2)$$

$$d_1 = \frac{\ln(s/k) + (r + 0.5\sigma^2)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sqrt{t}$$

$N(x)$ = Value of the standardized normal distribution function for x.

$\ln(x)$ = Natural logarithm for x.

S = Current stock price.

K = Exercise price.

t = Time.

r = Interest rate.

σ^2 = Variance

$N(d_1)$ = Delta of the option.

Appendix II: Company data for the event study

Company	Date	Dilution	Concerned	Business
AssiDomän	29/10-1999	1.60 %	Management	Engineering company
Atlas Copco	27/4-2000	2.20 %	Key persons	Engineering company
Biacore	26/7-1999	3.50 %	Management	Engineering company
Boss Media	12/4-2000	4.70 %	All personnel	IT company
Bure	19/1-2000	1.20 %	All personnel	Investment trust company
Castellum	10/6-1999	1.50 %	Management	Real-estate company
Connova	18/5-1999	4.70 %	All personnel	IT company
Decim	14/12-1999	3.20 %	Key persons	Engineering company
Digital Vision	14/3-2000	3.60 %	All personnel	IT company
Effnet Group	9/6-2000	4.00 %	All personnel	IT company
Ericsson	5/10-1999	0.70 %	All personnel	Engineering company
Fingerprint	26/5-2000	4.70 %	All personnel	Engineering company
Framfab	27/3-2000	2.20 %	Key persons	IT company
Frontec	19/5-1999	1.70 %	Key persons	IT company
Frontec	16/5-2000	1.70 %	Key persons	IT company
FS-banken	2/3-2000	2.90 %	Key persons	Bank and Insurance company
HiQ	25/4-2000	5.00 %	Key persons	IT company
IBS	17/3-2000	13.00 %	Key persons	IT company
Industrivärden	8/3-1999	2.50 %	All personnel	Investment trust company
Information Highway	6/6-2000	8.80 %	All personnel	IT company
Intentia	30/3-2000	6.70 %	All personnel	IT company
J & W	24/3-2000	6.00 %	All personnel	Technical consulting company
Kipling Holding	3/5-2000	2.50 %	Key persons	IT company

Linné Group	9/11-1999	5.20 %	All personnel	IT company
Mandator	31/5-2000	5.10 %	All personnel	IT company
MTV	11/1-2000	2.00 %	Key persons	Television company
NCC	17/12-1998	0.90 %	Management	Constructing company
Net Insight	23/3-2000	5.00 %	All personnel	IT company
Nocom	22/11-1999	5.20 %	Management	IT company
OM	12/11-1998	0.60 %	Management	Financial Institution
Poolia	9/3-2000	0.30 %	All personnel	Recruiting company
ProAct	13/3-2000	3.40 %	Key persons	IT company
ReadSoft	27/3-2000	1.80 %	Key persons	IT company
Resco	31/3-2000	10.20 %	All personnel	IT company
RKS	2/5-2000	5.20 %	Management	Knowledge consulting company
SAPA	3/3-2000	1.10 %	Management	Engineering company
Scandiacon	3/5-2000	5.50 %	Key persons	Technical consulting company
Scandic	8/6-2000	2.80 %	All personnel	Hotel business company
Sigma	14/4-1999	1.80 %	All personnel	IT company
Skandia	7/3-2000	4.50 %	All personnel	Insurance company
Softronic	21/5-1999	4.80 %	All personnel	IT company
STORA	20/8-1999	1.20 %	Key persons	Engineering company
Swedish Match	7/4-1998	0.80 %	Management	Tobacco company
Swedish Match	26/3-1999	0.90 %	Management	Tobacco company
Trio	21/6-2000	0.60 %	All personnel	IT company
Volvo	12/1-2000	0.50 %	Management	Engineering company