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BROAD-BASED EMPLOYEE STOCK OPTIONS IN THE U.S.: COMPANY PERFORMANCE AND CHARACTERISTICS

ABSTRACT

While stock options have traditionally been reserved to top management employees, in recent years there has been strong growth of plans making stock options available to a broader group of employees. This paper analyses data on 490 companies with broad-based stock option plans, matched to data from Compustat in order to compare their characteristics and performance to that of other public companies. Major findings are that 1) companies with broad-based plans have higher levels of productivity, Tobin's Q, and employment and sales growth than otherwise-similar firms, 2) average compensation levels are higher among such companies both before and after the introduction of broad-based plans, indicating that stock options appear to come on top of other compensation, and 3) increases in average productivity appear to counterbalance the dilution effect so that average total shareholder returns are unaffected by the introduction of broad-based stock option plans.

Over the last ten years a quiet shift has been taking place toward supplementing fixed wages and benefits with greater equity stakes in companies. While the shift originally began with the rapid growth of stock option grants to executives, companies are moving portions of remuneration for broader groups of employees into stock options. Many press reports indicate that a tight labor market is making recruiters "frantic" and has led to a widened use of options beneath the executive levels (e.g., Richtel, 1999) It is estimated that as of February of 2000 there were over 3,000 active broad-based stock option plans, in which a majority of the full-time employees of a corporation receive stock options over a reasonable period of time. This contrasts with plans where employees are merely eligible for options but do not actually get them. The value of the assets in these plans is hard to set but it is estimated to be several hundred billions of dollars. Based on a review of several recent data sources, the National Center for Employee Ownership estimates that 7-10 million employee participants actually receive stock options. Thus, the broad-based stock option phenomenon may surpass the 7.7 million employees in ESOPs and stock bonus plans (National Center for Employee Ownership, 2000).

A survey in 1995 by the Association of Quality and Participation found 13% of Fortune 1000 companies offer stock options to 60% or greater of their employees. Indeed, at one extreme of this phenomenon, a 1998 survey of the top 250 corporations in the U.S. found that fifteen companies have set aside over 25% of their weighted average shares outstanding for equity incentives for upper management and employees. These include such household names as Merrill Lynch, Microsoft, Delta Air Lines whose pilots are partially paid through stock options, Apple and Dell Computer, the Travelers Group, and Best Buy (Weeden, Carberry and Rodrick 1998: 185). This study finds that the average percent of total shares outstanding allocated for compensation has increased from the 0.3%-0.5% range in the 1960s to 2% on average in 1998. The reasons listed in this study include a combination of a corporate commitment to management ownership, a growing practice of extending stock participation

lower and more broadly in corporate ranks, and the widespread use of equity as a recruitment and retention tool to hold employees with critical knowledge in a competitive labor market. In a separate survey, 83% of mutual fund managers said they were favorably influenced, at least sometimes, when a company grants stock options to rank and file employees (Pearl Meyer, 1998: 5).

The purpose of this paper is to shed light on the relationship between company performance and the adoption and existence of broad-based stock option plans. A detailed empirical analysis is conducted, comparing the economic and financial performance of companies that grant broad-based stock options to the performance of companies that do not use stock options in their compensation package.

Theoretical Issues

Agency theory predicts that incentive conflicts arise because the interests of senior managers are not aligned with the interests of shareholders. In order to bring the interests of the two parties into closer alignment owners incur cost in the form of incentive contracts (Jensen and Meckling, 1976). The notion that broad-based stock options might increase firm performance is based on extending the rationale of incentive contact theory to employees beyond the executive suite.

According to Eisenhardt (1988), agency theory presents a theoretical framework for

thinking about which compensation plan to use in different organisational settings.[1] Factors which need to be taken into consideration when determining the most efficient payment contract include: the possibility of self-interested misbehavior or moral hazard, the difficulty and cost of monitoring, the effects on effort associated with paying on the basis of performance, and the risk tolerance of the agent.

[1] For a review of the how this theory is developed and applied in the "new economics of personnel," see the October 1987 issue of the *Journal of Labor Economics*.

One mechanism used to bring the interests of these two parties into closer alignment is the allocation of stock to agents. The use of broad-based stock options is meant to provide these same incentive effects, not only for executives, but also for all employees.

Other theoretical considerations include the lowering of information costs because managers' and employees' interests are more closely aligned. This recognises that employees have access to information that may be valuable to management. The presence of a group incentive scheme may result in employees having the necessary incentive to communicate, or act on their superior information. The majority of the research associated with information sharing has been evaluating top-down information sharing (Kleiner and Bouillon, 1988; Morishima, 1988). While Kleiner and Bouillon did not find a positive effect of information-sharing on performance measures, Morishima found that there was a positive association with information-sharing and profitability and productivity. Another issue, according to Conte and Svejnar (1990), is that more productive employees may sort to firms where more compensation is placed at risk. Additionally, the argument from efficiency wage theory may apply: due to the higher wage rate, employees who work for firms which pay above the market rate may be less likely to quit and more likely to exert maximum effort.

Attempting to extrapolate theoretical considerations from executive share schemes to broad-based schemes may not be an accurate comparison because the incentive effects of broad-based stock options would be more prone to the incentive diluting effects of the free-rider or 1/n problem. Another consideration is that if workers are in a flat (or negative) real fixed wage environment, any gains associated with broad-based stock option plans may be perceived as an annual cost-of-living adjustment. The provision of such plans can be seen as compensating employees for taking on the risk of working in a flat fixed wage environment and may not result in an incentive effect. From this perspective, one would not expect that such plans would automatically result in noteworthy firm

performance impacts. Their purpose may be to attract and retain employees in a tight labor market and not to create a framework for a high performance workplace. Profit sharing theory suggests a more positive prediction. Several microeconomic studies have found that profit-sharing companies are more productive than firms without profit sharing although researchers have noted that it is hard to distinguish the effects of profit sharing from those of other human resource practices (Weitzman and Kruse 1990; Kruse 1993.) In summary, our theoretical review would tend to support a positive performance effect associated with the introduction of broad-based stock options, however there are contextual factors at both the firm and individual level that may influence the outcomes.[2]

Literature Review on Stock Options Programs

Incidence of Broad Based Stock Options

The available evidence provides support that broad-based stock options are increasing at a substantial rate. The most recent government study was conducted by the U.S. Federal Reserve. It surveyed 415 companies in varied industries and found that about a third had broad-based programs and 37% had broadened the participation in the last 2 years. This study concluded that, "Over the past few years, stock option grants to employees have become an increasingly common method of compensation" (Lebow, Sheiner, Slifman, and Starr-McCluer, 1999: 11; see also Fenn and Liang 1999). The Center for Effective Organizations of the University of Southern California studied 279 Fortune 1000 firms in 1993 and 212 Fortune 1000 firms in 1996 and found that the percent offering

[2] More study is needed on the annualized values of stock option grants in broad-based plans over longer periods in order to more precisely pinpoint the effect on fixed wages. In its small study of 20 large public companies with broad-based plans, Hewitt Associates found that the annualized values of options granted as a percent of total compensation (using a slightly modified Black-Scholes formula) ranged from 4.8% to 7.5% at the mean and 2.1% to 2.6% at the median for employees making between $30,000 and $60,000. Annual periodic grants ranged from $1134 to $1196 for these pay ranges, one-time grants were $1220. Performance related grants were higher at $1194-3939 at the median and $4159-$8010. at the mean (Hewitt Associates 1997: 17-18).

such plans to all employees remained at 10%, but the percent offering broad plans to more than 20% of employees went up from 30% to 51% (Lawler, Mohrman, and Ledford 1998: 34). In addition a study of the largest 1250 global corporations conducted by Arthur Anderson found 33% offered such programs to all employees and 11% planned to add them in the future (Weeden, Carberry, and Rodrick, 1998: 199).

Unfortunately, many of these studies have not distinguished between plans that make employees eligible for stock options versus those that actually make real grants to a broad group of employees. Indeed, many studies do not clearly define what the term "offer" means. Some companies have "offered" options to a broad group of employees as a propaganda device or as a mechanism to satisfy previous stock exchange rules that exempted them from shareholder approval if they had broad-based plans. However, the William M. Mercer studies of the proxies of the 350 largest public corporations do make this distinction and provide some longitudinal perspective. They find a substantial increase in the percent of companies actually granting stock options to all employees from 5.7% of the group in 1993 to 10.3% in 1997. And they note that the percent of firms merely "offering" such plans to a broad-group of employees is much higher (Mercer, 1997; Weeden, Carberry, and Rodrick 1998: 199). The National Center for Employee Ownership estimates that while only one million employees were eligible for stock options in 1992, 7 to 10 million have been granted stock options at the end of the decade. The Department of Labor's Bureau of Labor Statistics has been skeptical of the Federal Reserve's estimates and has announced that it will resolve the question of incidence with a national probability sample in the year 2000 (Uchitelle 1999).

While it is tempting to ascribe the rising incidence of these plans to economic performance, the recent U.S. Federal Reserve study underlines the widely-held view that one reason such plans may be popular is because currently generally accepted accounting principles allow firms to record the

expense for these options as zero.[3] While this favorable method of accounting has been controversial with the Financial Accounting Standards Board, institutional investors, and some shareholders, corporations have engaged in repeated successful struggles with these groups in the 1990s to retain the favorable practice.[4]

Impact of Broad Based Stock Options on Firm Performance

The impact of these plans on firm performance has been mainly examined in relation to their potential impact on outside shareholders and some insights about the general performance of companies that choose to offer such plans and management's opinions about them. In the late nineties, the percent of potential dilution[5] ranges from 5.5% at the median to 17.4% with the higher estimates consistently coming from high technology company surveys, although a recent study found the average dilution to be 12.6% with a third of the companies above 15% (Weeden, Carberry, and Rodrick 1998). Another recent study of the 200 largest industrial and service corporations put the average at about 13.2% (Pearl Meyer, 1998). Given that most institutional investors object to dilution potential above 10%, it is clear that broad-based stock options could potentially represent a significant drain on total shareholder return. In addition, a number of studies suggest that broad-based stock option plans would have a

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[3] This is because they "measure the value of an option by its intrinsic value—that is, the difference between the market price on the grant date and the exercise price. When firms grant options with a fixed exercise price equal to or greater than the market price at the grant date, the intrinsic value of the option, and thus the recorded expense is zero" (see Lebow, Sheiner, Slifman, and McCluer, 1999: 4-5).

[4] As a compromise, since 1997, the Financial Accounting Standard Board Statement Number 123 required that companies now report, in an appendix to the financial statements in their annual reports, the pro forma effect on net income and earnings per share *had* the firm been required to take an accounting charge for the fair market value of all stock options on the date of grant.

[5] Whether a firm chooses to issue new shares or buy back existing shares the firm is incurring an economic cost through granting stock options to employees. In either case total shareholder value is reduced.

substantial impact on company earnings if the companies were required to charge the current value of their stock option grants as an expense (Weeden, Carberry, and Rodrick, 1998). A key question about the dilution issue is whether broad-based stock option plans' dilution effect is greater than gains to firm performance due to the incentive effects (see Watson Wyatt Worldwide, 1998). We know of no study that has addressed this issue.

The 1998 U.S. Federal Reserve Board study found that 44.1% of the fast growing companies offered broad-based stock options while only 32% of the moderate growth or no- growth firms offered such programs (Lebow, Sheiner, Slifman, and McCluer 1999: 11). A study by the Center for Effective Organizations evaluated management's views of the effectiveness of stock option programs in 1993 and 1996. It found that they were rated second only to profit- sharing plans in 1993 and above profit-sharing plans in 1996 in management's opinions about their performance impacts (Lawler, Mohrman, and Ledford 1998: 96.). While the 1998 U.S. Federal Reserve Board study did not attempt to quantify these economic performance effects, the Board economists did ask compensation professionals at the firms which they surveyed to opine on this issue. The Federal Reserve study concluded:

> Many of the firms we spoke with said that one reason for moving toward variable-pay plans was the hope that, by giving employees more of a stake in the firms' fortunes, employees would have more incentive to suggest productivity-enhancing changes … In some cases, firms seemed clearly to believe that these incentives to promote cost-consciousness on the part of employees were bearing fruit. Some firms suggested that productivity was improving; but the extent to which the improvement was due to the variable compensation schemes was hard to determine. None of the representatives we spoke with said that they think variable pay has harmed productivity (Lebow, Sheiner, Slifman, and McCluer 1999: 11, 13, 25).

Senior Management Stock Options

The main conclusions on senior management stock options come from two large studies (Jensen and Murphy, 1990; Hall and Liebman, 1998). Briefly, the results show that the sensitivity of firm performance to CEO stock options has dramatically increased in the last decade. They conclude that

the dramatic rise in CEO compensation has been driven by increases in annual stock option grants which have produced a large buildup in total CEO holdings of stock options. The authors of these studies conclude that no matter which measure is used, there has been a dramatic increase in responsiveness of CEO pay to firm performance during the last 15 years, largely as a result of stock options.

Executive stock option studies have also reached a number of secondary conclusions that may be relevant to our study. Miller and Scholes (1981) have reported that stock option plans may be an attractive part of compensation packages because of tax benefits. Because of the very favorable accounting treatment of broad-based stock option plans, this suggests that the role these incentives play merit closer scrutiny. In another era, tax law changes were in large part responsible for the postwar growth of stock options. Agrawal and Mandelker (1987) found that firms undertaking variance-increasing (decreasing) investments have management compensation contracts with a larger (smaller) common stock and option component. This was consistent with the views of other scholars (Defusco, Johnson, and Zorn 1990) and more recent studies (Guay 1999). This suggests that executive options may encourage entrepreneurial behavior.

The Impact of Options on Compensation

The full meaning of broad-based stock options for companies and employees cannot be properly estimated in a vacuum without understanding the trends in fixed compensation. Between 1982 and 1994, Hall and Liebman (1998) demonstrate that the total mean real growth of CEO compensation (salary + bonus + the value of stock option grants) was 175% or about 8.8% per year over the period. The median growth rates were 120% and 6.8%. The comparable mean real growth rate for all wage and salary workers based on the Employment Cost Index was almost flat over the entire 1982-1994 period at 7.2% or about 0.6% per year from $30,400 in 1982 to $32,600 in 1994. They calculate that

most of the real increase in CEO compensation was due to stock options and stock ownership (Hall and Liebman 1998: 665, Table III).

The 1998 National Center for Employee Ownership survey reports that 81% of those firms which issue stock options to non-managers grant them either annually or regularly. The frequencies are similar across different industry groups and annualized grants represented meaningful proportions of fixed pay (Weeden, Carberry, and Rodrick 1998: 9, 20). Thus, the available evidence suggests that broad-based stock option programs may serve as a supplement to wages and thereby may increase total compensation.

Description of the Data-set

We use a new dataset on stock-option plans in U.S. companies, provided by the National Center for Employee Ownership (NCEO). Using its own resources and knowledge of the field, as well as information from consultants, the NCEO identified a total of 1360 companies suspected of sponsoring some form of broad-based stock option plans. A survey was mailed to each of these companies in early 1998. In total, 141 responses were received, yielding a response rate of 10.4%. Ninety-one percent of the companies in the sample were public; 28% were manufacturers of electronic and measurement equipment, 23.3% were from other manufacturing sectors, 22.5% were providers of business/other services, 10% were communication and transportation companies, 9.3% were finance/real estate companies, and 6.2% belonged to the retail sector. Among the companies surveyed by the NCEO, non-management employees were granted 45% of all outstanding stock options. This figure was 29% for companies over 10,000 employees and 45% for biotechnology and computer programming companies. While the NCEO has written about the characteristics of the plans of these survey companies, no economic performance research has been conducted on this sample until now (Weeden, Carberry, and Rodrick 1998).

One hundred and five of the 141 responses could be matched to Compustat and contained enough information to be included in this study; among which 73 make stock option grants to more than fifty percent of non-management employees. These are called surveyed stock option firms in the tables, and are sometimes broken into a "50%+ coverage of non-management" and a "<50% coverage of non-management group" (although all companies include more that senior executives in the stock option plans). Subsequent to the survey, the NCEO worked with consultants to identify a group of 385 companies that have broad-based stock option plans. These firms were part of the 1360 firms that received the survey and had not responded to the survey. Information on the plans of these companies was contained in newspaper, magazine, and press release reports in the national media. In the tables, these companies are called "Unknown coverage of non-management" since detailed data on the plans was not available as with the surveyed firms, and they are included with the surveyed companies to comprise "All Stock Option Companies".

We used Standard & Poor's 1998 CompuStat file (full coverage) to construct three comparison groups. Firms that reported a positive number of employees in either 1996 or 1997 were included. We wanted to compare the performance of the surveyed broad-based stock-option companies to other broad-based stock option companies that did not respond to the survey; to companies similar in size and industry that do not sponsor stock option plans; and to the overall population of firms in the economy. The first comparison group includes 385 broad-based stock-option companies that did not respond to the survey. A second comparison group was constructed by matching every broad-based stock-option company (both surveyed and non-surveyed) with the next largest and next smallest (in terms of total employment) non-stock option company within the same 2-digit industry. The average performance of the two matched companies was then used for comparison. In the tables this group is referred to as the "Paired" companies. The third comparison group is all companies in CompuStat that

have not been identified as having broad-based stock option plans. Comparisons are made using four performance measures--Productivity, Total Shareholder Return, Tobin's q, and Return on Assets--and the average labor cost measure. Variables are defined in Table 1.

Tables 2-4 provide descriptive statistics and simple comparisons for the survey-based sample and comparison groups in 1997. Table 2 indicates that broad-based stock option companies, including both survey respondents and non-respondents, are on average larger than other public companies, both in terms of sales and employment. Stock option companies have higher average sales and capital intensity than their pairs (while average employment is similar, reflecting the fact that pairing was done on employment). They are more likely than all other public companies to be in manufacturing and service industries.

Table 3 indicates that all stock option companies also exhibited significantly higher productivity, ROA, Tobin's q, and total shareholder returns in 1997 compared to the full set of companies (adjusted to give lower weight to outliers using robust estimation techniques). In addition they experienced higher levels of growth on all of these measures except for total shareholder return, and on sales and employment over the 1992-1997 period. Surveyed broad-based stock-option companies had higher productivity, Tobin's q, and total shareholder return in 1997 compared to all non-stock option companies, but they lagged in terms of ROA. They also experienced higher levels of growth over the 1992-1997 period for productivity, sales, and employment. The paired data comparisons show a similar picture: stock option companies had higher productivity and Tobin's q than their peers, but lagged their peers in ROA and total shareholder return. All stock option companies also had higher levels of growth in productivity, sales, and employment than their peers over the 1992-1997 period although they lagged in annual growth in Tobin's q and total shareholder return over this period.

Because Table 3 uses robust estimation that adjusts for outliers, its figures for Tobin's q and

total shareholder returns do not reflect true market means. Since total shareholder return data are critical in determining whether broad-based plans disadvantaged shareholders over the period studied, Table 4 present unadjusted data for each year in the 1992-97 period, including annual means and medians and the cumulative total shareholder return. The cumulative return figures indicate the overall gain for shareholders for the average company over the 1992-1997 period (as opposed to the average gain from investing in a portfolio of companies over that period). For example, the average individual shareholder investing $1000 in a non-stock option company at the beginning of 1992 would have a gain of 193.1% or an additional $1931 for a total of $2931 at the end of 1997, while the average individual shareholder investing $1000 in a stock option company would have a return of 303.2% for a sum of $4032 at the end of 1997. While most of the comparisons do not indicate a statistically significant difference between stock option and all non-stock option companies, there is a significant positive difference in two years (1994 and 1995) and in the cumulative return of 303.2% versus 193.1%. Thus, *over the 1992-1997 period* the average stock option firm did not disadvantage outside shareholders relative to standard market returns.

Regression Specifications

The performance of broad-based stock option (SO) companies is assessed using multiple regression techniques. Both the magnitude of the coefficients and the regression fit may be strongly influenced by extreme values. To check and adjust for the influence of outliers we ran the regressions in four ways: robust regression (assigning lower weights to extreme values); median regression (minimizing the sum of absolute residuals rather than of squared residuals); OLS regression with the upper and lower 1% values trimmed; and OLS regression with the full dataset. The results did not vary substantially among these techniques; here we report results that use robust regression.[6]

[6] Tables with these results can be provided by contacting the authors.

The first model is a cross-sectional regression on performance levels in 1997, controlling for labor and capital stocks, and industry effects. The specification is:

(1) $Perf = a + b1*SO + b2*PAIR + b3* \ln(L) + b4* \ln(K) + b5*(\text{industry dummies}) + e$

where Perf = ln(output/employee), total shareholder return, return on assets, or Tobin's Q
SO = dummy for broad-based stock option plan in 1997
PAIR = dummy for paired NSO control company in 1997
ln(L) = ln(number of employees) in 1997
ln(K) = ln(capital intensity) in 1997
e = error term assumed normally distributed i.i.d.
a, b_i = coefficients

Where productivity is the dependent variable, this represents the Cobb-Douglas production function equation. In a related specification, the SO dummy variable is replaced by three dummy variables, representing (1) whether more than 50% of non-management employees are covered by stock options, (2) whether fewer than 50% of non-management employees are covered by stock options in a stock option company, and (3) whether coverage of non-management employees is not known, because the stock option company was not a survey respondent.

For a finer test of the relationship of SO to performance, a separate specification is run on differences in levels between the SO companies and their pairs. The specification is modeled as:

(2) $(Perf_{SO} - Perf_{NSO}) = a + b_1*(\ln(L)_{SO} - \ln(L)_{NSO}) + b_2*(\ln(K)_{SO} - \ln(K)_{NSO}) + (e_{SO} - e_{NSO})$

In this model the SO subscript refers to a stock option firm, the NSO subscript refers to a same-industry paired firm without a stock option plan, and the intercept represents the estimated difference in performance between pairs after controlling for differences in labor and capital stocks (all other variables are as defined above).

Results for specifications (1) and (2) are reported in Table 5.

Cross-sectional regressions are strongly subject to omitted variable bias, where the variables of interest are correlated with omitted variables in the error term, and the estimated coefficients are biased. Such a bias can easily occur in the current study if, for example, SO firms are more likely to have high-quality management, and the SO coefficient is biased upward as a partial proxy for high-quality management. A solution is to remove any constant omitted variables through pre/post comparisons. Plan adoption dates were not available for most of the stock option companies in our data set. However, almost all broad-based plans were started in the 1990s. Therefore, one potentially useful way to examine pre- and post-adoption performance across firms is to compare mid-80s performance with mid-90s performance.[7] Obviously, this does not establish causality, since the performance may have changed just prior to adoption, but it does provide a useful picture of whether these firms are doing better or worse following adoption, which can be investigated more fully with the smaller sample with better adoption year data. The specification, run on firms that reported data in all years in the 1985-87 and 1995-97 periods, allows for differing effects of labor and capital stock in the two periods:

(3) $Perf = a + b_1*\ln(L) + b_2*\ln(K) + b_3*[\ln(L)*(95\text{-}97 \text{ period dummy})] + b_4*[\ln(K)*(95\text{-}97 \text{ period dummy})] + [SO*(85\text{-}87 \text{ period dummy})] + [SO*(95\text{-}97 \text{ period dummy})] + [PAIR*(85\text{-}87 \text{ period dummy})] + [PAIR*(95\text{-}97 \text{ period dummy})] + \text{industry dummies} + \text{year dummies}$

A similar regression was run on the paired comparisons:

(4) $(Perf_{SO} - Perf_{NSO}) = a + b_1*(\ln(L)_{SO} - \ln(L)_{NSO}) + b_2*(\ln(K)_{SO} - \ln(K)_{NSO}) + b_3*(95\text{-}97 \text{ period dummy}) + (e_{SO} - e_{NSO})$

In specification (4) the 1985-87 difference between stock option and non-stock option companies is measured by the coefficient a, and the 1995-97 difference is measured by $a + b_3$. Results from specifications (3) and (4) are reported in Tables 6 and 7 (where Table 7 uses the annual change in

[7] Eighty four percent of our survey sample did not adopt SO until after 1987, so that this comparison approximates a before and after analysis for the entire SO sample.

variables between year t-1 and t, rather than the level in year t).

Finally, a more precise pre/post comparison can be done be comparing performance levels before and after the year of adoption. For such a comparison, specification (1) was run on the full sample without the SO and PAIR variables, and the performance residual was calculated for each company for each year. For each stock option company with at least two pre-adoption and two post-adoption observations, the residuals were averaged for the pre-adoption period and for the post-adoption period. These average residuals, and the average difference between the pre- and post-adoption average residuals, are reported at the bottoms of Tables 6 and 7. While this first-differencing technique represents a fairly tight comparison of relative performance before and after adoption of stock option plans, it is limited by the small number of stock option companies with a sufficient number of pre- and post-adoption observations (ranging between 12 and 16 companies). The consistency between these results and those using specifications (3) and (4), however, lend greater credibility to the findings.

To evaluate the relationship of stock option plans to levels and changes in employee compensation, the natural logarithm of labor expenses per employee is used as the dependent variables in specifications (1) and (3), with results reported in Table 8. (There were too few companies reporting labor expenses for meaningful paired comparisons using specifications (2) and (4).)

Regression Results: Overall Performance Levels and Growth

In order to evaluate the performance characteristics of stock option firms four performance measures are used. Tables 5-7 include regressions predicting productivity, return on assets, Tobin's q, and total shareholder return, while Table 8 details the compensation characteristics of stock option and non-stock option firms.

Evaluating each of the performance outcomes in turn and starting with productivity levels, in Table 5 we see that stock option firms in 1997 have 27.7% significantly higher productivity than non-

stock option firms and 30.6% significantly higher productivity than their non-stock option pairs, with higher productivity levels among stock option firms with 50%+ coverage of non-management employees than among those with less than 50% coverage. Table 6 shows that relative productivity levels increased after the adoption of broad-based stock option plans, whether using the comparison of all stock option companies from 1985-87 to 1995-97 (indicating 15-17% higher productivity) or the pre/post comparison based on year of adoption (indicating 8-9% higher productivity). Productivity growth among stock option companies was faster than that among non-stock option companies before adoption, according to the results in Table 7, but slowed down after adoption according to three of the four comparisons (comparing row 1 to 2, and 3 to 4, in columns 1 and 2).

Regarding total shareholder return, stock option firms had generally lower levels in 1997 according to the regression results in Table 5 (consistent with the unweighted 1997 mean comparisons in Table 4). They had, however, significant increases in yearly total shareholder returns between the 1985-87 and 1995-97 periods according to the results at the top of Table 6 (consistent with the cumulative return results in Table 4, although the results in Table 7 and at the bottom of Table 6 show no significant changes in levels or yearly changes in total shareholder return). Overall, there is no clear evidence that total shareholder returns were hurt by the adoption of broad-based stock option plans, and some results indicating that returns increased following adoption.

In the case of Tobin's Q, the market value divided by replacement costs, stock option firms perform significantly better than either the sample as a whole or their pairs in 1997, with values that are .61 to .62 higher than that of otherwise-similar firms (Table 5). Tobin's Q levels increased following adoption in three of the four pre/post comparisons (significantly in one comparison) shown in Table 6, with mixed results for comparisons of annual change in Tobin's Q as shown in Table 7 (where the paired results indicate significant decreases in the annual change in Tobin's Q).

Regarding the return on assets variable, Table 5 shows that the performance of all stock option companies does not differ significantly from all non-stock option companies or the pairs, although the ROA is significantly lower for 50%+ coverage firms and significantly higher for the non-survey firms. Each of the pre/post comparisons in Table 6 show higher ROA following adoption of stock option plans (although only the two estimates of 1985-87 to 1995-97 changes are statistically significant), while comparisons of annual change in ROA show no significant pre/post differences in Table 7.

Finally, Table 8 presents the compensation levels and growth data. The compensation levels of the stock option companies in 1997 are 20.1% higher than that of all non-stock option companies, and 7.8% higher than that of the pairs. This latter figure is very close to the estimated pay differential in both the pre-adoption (1985-87) and post-adoption (1995-97) periods, as shown in column 2. The annual growth in compensation between the two periods was not different between the two groups of companies. These results indicate that the stock option companies paid their employees close to 8% more than other firms before they instituted stock options, and maintained their compensation edge after instituting stock options, although they did not significantly *increase* their levels or growth after the introduction of stock options relative to non-stock option companies. These companies were not like little high-tech start-ups that paid employees poor wages and gave them stock options instead. Also, there is no evidence that the stock option companies cut fixed wages and substituted stock options for them. In short, the stock option companies had the same fixed wage increases as other non-stock option companies during this period, and continued to maintain their relative advantage of higher compensation.

In sum, these results provide strong evidence that productivity levels increased following adoption of broad-based stock option plans. They indicate clearly that the total shareholder return of the stock option versus the non-stock option firms was generally the same, although there is some

evidence of significantly positive returns for different groups of stock option companies in different years and all broad-based stock option companies in their cumulative total shareholder returns over the 1992-1997 period. The results for Tobin's q and ROA are not so clear-cut. In principle, our strongest indicator of performance would be the evaluation of *within*-company performance changes after adoption of stock options. Unfortunately, our sample size is limited which mitigates our ability to be completely confident of these results. At a minimum, the evidence presented here indicates that broadly dispersed stock options do not harm company performance relative to non-stock option firms.

Conclusion

The results of our study suggest that the performance of the firms using broad-based stock options appears to counterbalance the dilution that these plans could have caused. The data suggest that productivity increases may be improving firm performance so that the drop that can be reasonably expected in total shareholder return as a result of the issuance of options does not appear to have taken place. Certainly, the U.S. Federal Reserve study quoted earlier suggests that the managers of the companies in their sample did not universally expect improved economic performance. This then raises the question of how the lack of statistically significant differences regarding total shareholder return should be interpreted. Our interpretation is that on balance this is acceptable news for outside shareholders. It suggests that the performance of the firms after the introduction of the stock options essentially paid for the stock options. If these firms installed broad-based stock options in order to attract and retain workers in a tight labor market in order to secure their expectations of continued returns to shareholders, then the broad-based stock options can be viewed as a success. For workers, the evidence indicates that firms that were high compensation firms before the introduction of broad-based stock options continued to maintain their leadership in fixed compensation and did not substitute stock options for fixed pay. However, shareholders would also be pleased to discover that these firms

did not increase their fixed compensation levels or growth rates above those of non-stock option firms; in other words, their high levels of fixed compensation in the mid-eighties were maintained but not expanded. Thus, the firms may have used these programs to modestly restructure their compensation systems and align them tightly with shareholder value, which appears to reflect some general trends in executive compensation. Nevertheless, the questions of precisely *how much* executives should receive when shareholders benefit, *whether* stock option payments to non-managers are fairer to shareholders than executive stock option grants, and *if* non-management employees are actually being treated similarly or differently as executives, have not been addressed in this study.

The overall picture that emerges is that stock option firms are clearly different from other firms in having higher employment, sales, and productivity growth, and higher levels of productivity and market valuation relative to replacement assets. Growth is particularly high among companies adopting stock option plans that cover a majority of non-management employees. These results do provide substantial support for the idea that broad-based stock option plans help productivity and they do strongly indicate that such plans do not hurt firm performance. They suggest that fast-growing companies may find stock option plans to be a useful way of attracting employees and (perhaps) maintaining high growth.

Further research is needed to understand the details of how a performance effect after the introduction of broad-based stock options may translate into an elimination of their dilutive effect. We need to understand whether certain ways of structuring broad-based stock option programs, or combining stock option programs with other human resource management practices such as participation programs or teams, affects the impact of such programs on corporate performance. We also need to better understand why firms adopt this form of compensation, to learn more about employee and company characteristics, and to explore union/nonunion differences and the value of stock options relative to other employee compensation. Given the tremendous growth in broad-based

stock option plans over the 1990's, such research will be important in understanding labor markets and wage structures in the coming decades.

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Table 1

Variable Definitions

Variable	Definition
Broad-based stock ownership > 50%	Firms where fifty percent or greater of non-management employees have been granted the right to purchase shares after a required vesting period (dummy variable)
Ln (Employment)	Natural logarithm of total company employment (continuous)
Ln (Sales)	Natural logarithm of total company sales, adjusted for inflation with GDP deflator (continuous)
Ln (Capital Intensity)	Total property, plant, and equipment divided by total employment, with book values adjusted to current market value using GDP deflator and estimate of age of capital stock (continuous)
Ln (Productivity)	Natural logarithm of output per worker (total sales adjusted for inventory changes and inflation divided by the number of employees) (continuous)
Return on assets	[(Income minus adjusted depreciation) x 100]/(market value of capital stock + current assets – current assets – current liabilities) (continuous)
Tobin's q	(Market value + preferred stock + long term debt)/ (capital stock+current assets–current liabilities) (continuous)
Total shareholder return	(Stock price + adjusted dividend)[t]/stock price[t-1] (adjusted for stock splits)(continuous)
Ln(labor costs per employee)	Natural logarithm of total labor expenses divided by number of employees
Industry controls	2-digit industry codes (dummy variables)

TABLE 2: Descriptive Statistics, 1997 levels

	Full set of companies, 1997				Paired differences, 1997^ (mean of SO minus non-SO paired values)	
	All non-SO cos. (1)	Stock option cos. (2)	All surveyed stock option cos. (3)	Surveyed SO cos. w > 50% (4)	All paired cos. (5)	Paired cos w > 50% (6)
Sample size	7165	490	105	73	490	73
Sales (000,000's)	1151.26 (5716.137)	3562.746 (8929.085)***	2769.606 (10474.95)***	2731.662 (11960.170)**	784.19 (4674.435)***	879.592 (4675.732)
Employees (000's)	5.654 (27.916)	14.451 (33.497)***	11.888 (37.701)**	10.053 (38.186)	-0.364 (16.068)	-1.641 (13.345)
Capital Intensity (total assets/ee)(000's)	264.338 (2800.588)	110.557 (304.687)	161.843 (448.753)	156.061 (436.980)	-12.717 (699.928)	-189.801 (1717.53)
Ln (Sales)	4.532 (2.427)	6.23 (2.196)***	5.359 (2.390)***	4.959 (2.521)	0.361 (0.902)***	0.074 (1.104)
Ln (Employees)	-0.598 (2.253)	0.868 (2.012)***	0.171 (2.120)***	-0.261 (2.117)	0.001 (0.187)	-0.012 (0.622)
Ln (Capital Intensity)	3.625 (1.577)	3.769 (1.612)*	3.811 (1.306)	3.912 (1.256)	0.122 (1.252)**	0.025 -1.435
Industry						
Agriculture	0.35%	0.48%	1.12%	0.25%	0.26%	0.28%
Mining/construction	5.56%	0.97%	2.33%	0.79%	1.04%	0.84%
Manufacturing	47.87%	57.39%	60.24%	57.9%	58.66%	58.94%
Communications	9.81%	8.47%	8.01%	8.42%	7.23%	7.54%
Wholesale	4.94%	2.9%	0.56%	3.16%	3.1%	3.35%
Retail	8.52%	4.6%	6.98%	3.68%	4.91%	3.91%
Finance, real estate	4.84%	1.69%	7.63%	1.32%	1.3%	0.82%
Service	18.12%	23.49%	13.13%	24.47%	23.51%	24.3%

Notes: Standard deviations in parentheses.
* Significantly different from all non-SO companies (cols. 2-4) or from zero (cols. 5-6) at p<.10 **p<.05
***p<.01

^ The actual number of companies is close to three times larger than the number of paired differences. The non-SO company's value was subtracted from the SO company's value to create a single paired difference value. Where there was more than one paired company, the values were averaged before being subtracted from the SO value.

TABLE 3: Simple performance comparisons

	Full set of companies, 1997				Paired data, 1997^ (mean of SO minus non-SO paired values)	
	All non-SO cos. (1)	Stock option cos. (2)	All surveyed stock option cos. (3)	Surveyed SO cos. w > 50% (4)	All paired cos. (5)	Paired cos w > 50% (6)
Levels in 1997						
Productivity--ln(sales/ee)	5.07 (0.01)	5.38 (0.03)***	5.23 (0.09)***	5.27 (0.11)***	0.37 (0.36)***	0.21 (0.13)*
ROA	10.02 (0.30)	16.5 (1.06)***	8.08 (2.92)***	0.63 (4.58)	0.44 (2.37)	-7.57 (5.37)
Tobin's Q	2.44 (0.03)	3.67 (0.13)***	3.21 (0.21)***	3.35 (0.28)***	0.51 (0.16)***	-0.28 (0.38)
TSR	6.72 (0.67)	12.11 (2.39)***	9.51 (5.19)*	-0.09 (6.67)	-7.18 (2.97)**	-12.28 (7.59)
Sample size	6618	471	104	67	462	67
Average annual change 1992 - 97						
Productivity	0.03 (0.00)	0.04 (0.003)***	0.04 (0.01)***	0.04 (0.01)***	0.02 (0.01)***	0.03 (0.018)
ROA	-0.13 (0.06)	0.85 (0.23)***	0.58 (0.62)	0.45 (1.08)	0.20 (0.35)	-0.06 (1.59)
Tobin's Q	0.01 (0.01)	0.10 (0.03)***	0.02 (0.07)	-0.07 (0.12)	-1.78 (0.07)***	-2.28 (0.26)***
TSR	-1.55 (0.40)	-3.55 (1.52)**	-4.18 (3.61)	-7.94 (5.53)	-6.16 (1.69)***	-9.80 (5.83)*
Ln (Sales)	0.12 (0.001)	0.18 (0.01)***	0.19 (0.01)***	0.24 (0.02)***	0.06 (0.01)***	0.12 (0.02)***
Ln (Employment)	0.05 (0.001)	0.11 (0.00)***	0.12 (0.01)***	0.16 (0.01)***	0.04 (0.01)***	0.07 (0.02)***
Sample size	34183	2438	504	316	2328	299

Notes: Standard errors in parentheses.

* Significantly different from all non-SO companies (cols. 2-4) or from zero (cols. 5-6) at p<.10 **p<.05 ***p<.01

Figures represent robust means that minimize influence of outliers.

^ The actual number of companies is close to three times larger than the number of paired differences. The non-SO company's value was subtracted from the SO company's value to create a single paired difference value. Where there was more than one paired company, the values were averaged before being subtracted from the SO value.

TABLE 4: Total Shareholder Returns, 1992-1997

Year	All Non-SO cos. (1)		Compustat 500 (2)		All Stock Option (3)			Stock Option > 50% (4)			Stock Option < 50% (5)	
	Mean	Median	Mean	Median	Mean		Median	Mean		Median	Mean	Median
All cos. reporting in given year:												
1992	33.7%	10.1%	17.0%	10.3%	29.7%		15.3%	9.7%		-4.7%	25.1%	7.7%
1993	33.0%	11.7%	47.1%	15.6%	31.9%		20.0%	32.6%		29.8%	4.3%	6.1%
1994	-4.5%	-9.3%	2.5%	1.7%	10.0%	***	5.0%	16.1%	*	-0.7%	4.6%	9.8%
1995	31.8%	16.3%	33.9%	30.2%	51.4%	***	38.3%	72.9%	***	44.4%	42.7%	45.6%
1996	35.4%	8.7%	24.6%	20.9%	19.9%		14.2%	9.0%		5.9%	23.3%	13.1%
1997	31.7%	9.7%	28.8%	27.8%	16.4%		13.3%	5.9%		-7.1%	25.5%	21.9%
Cos. reporting in every year:												
1992	34.9%	11.1%	17.2%	10.3%	29.7%		15.3%	9.7%		-4.7%	25.1%	6.3%
1993	35.8%	12.8%	47.7%	15.1%	32.1%		19.6%	34.1%		25.7%	4.2%	5.8%
1994	-1.7%	-7.1%	3.0%	1.8%	10.9%	***	5.8%	23.4%	*	0.1%	4.4%	7.2%
1995	33.4%	19.3%	34.0%	30.9%	45.7%	**	37.2%	67.2%	**	57.1%	46.3%	44.3%
1996	23.2%	11.6%	24.0%	20.5%	20.2%		14.2%	11.7%		11.9%	24.9%	14.8%
1997	46.3%	17.4%	29.3%	29.3%	21.3%		20.9%	9.2%		-5.5%	30.5%	30.8%
Avg. individual company:												
cumulative return^	193.1%	81.8%	275.0%	151.7%	303.2%	***	163.9%	232.5%		108.9%	318.9%	128.0%
yearly return^	19.6%	10.5%	24.6%	16.6%	26.2%	***	24.0%	22.2%		13.1%	27.0%	14.7%

* Significantly different from non-SO companies at p<.10 ** p<.05 *** p<.01

^ Average cumulative and yearly returns are calculated just for those companies that reported data in each year from 1992 to 1997
These represent the average of individual company returns, not the portfolio returns.

Note: These results give equal weight to each company's data, in contrast to the regression results in Tables 3-6 which use robust regression to minimize the influence of outlying values.

TABLE 5: Stock Options Plans and 1997 Performance Levels

Dependent variables:	Ln(output/employee)		Tobin's Q		Return on Assets	
Sample:	Full set	Paired	Full set	Paired	Full set	Paired
Independent variables	(1)	(2)	(5)	(6)	(7)	(8)
Stock option co.	0.277***	0.306***	0.61***	0.62***	1.14	0.87
	(8.97)	(8.61)	(6.33)	(3.75)	(0.99)	(0.61)
Paired co.	0.002		0.01		1.41	
	(0.07)		(0.64)		(1.46)	
Ln(total employment)	-0.316***	-0.603***	0.36***	1.44*	5.52***	8.39
	(41.39)	(3.20)	(15.15)	(1.67)	(19.74)	(1.13)
Ln(net assets)	0.30***	0.261***	-0.29***	-0.38***	-1.15***	-1.98
	(46.13)	(9.12)	(14.21)	(2.72)	(4.87)	(1.66)
2-digit industry dummies	Yes		Yes		Yes	
n	6630	444	6379	434	6716	443
50%+ coverage of non-mgt.	0.22***	0.213**	0.53**	-0.163	-6.6**	-6.2*
	(2.96)	(2.35)	(2.32)	(0.20)	(2.40)	(1.73)
<50% coverage of non-mgt.	0.118	0.061	0.20	0.213	0.71	-0.18
	(0.17)	(0.48)	(0.63)	(0.36)	(0.19)	(0.01)
Unknown coverage of non-mgt.	0.301***	0.344**	0.68***	0.824***	2.49**	1.91
	(8.71)	(8.53)	(6.33)	(4.37)	(1.93)	(1.20)
Paired co.	0.003		0.01		1.47	
	(0.11)		(0.09)		(1.52)	
Ln(total employment)	-0.316***	-0.635***	0.37***	1.24	5.5***	7.05
	(41.36)	(3.35)	(15.16)	(1.40)	(19.66)	(0.94)
Ln(net assets)	0.297 ***	0.262 ***	-0.29***	-0.37***	-1.15***	-1.76
	(46.10)	(9.13)	(14.26)	(2.67)	(4.88)	(1.47)
2-digit industry dummies	Yes		Yes		Yes	
n	6630	444	6379	434	6716	443

Based on robust regressions that minimize influence of outliers.
T-statistics in parentheses. * p<.10 **p<.05 ***p<.01

TABLE 6: Stock Options Plans and Pre-post Change in Performance Levels

	Dependent variables:	Ln(output/employee)		Tobin's Q		Return on Assets	
	Sample:	Full	Paired	Full	Paired	Full	Paired
	Independent variables	(1)	(2)	(5)	(6)	(7)	(8)
	All companies w/data in both periods^						
	Stock option companies						
1	1985-87	0.093***	0.054*	0.312**	0.269***	0.540	0.354
		(4.35)	(1.81)	(6.80)	(3.28)	(0.87)	(0.41)
2	1995-97	0.294***	0.222***	0.659**	0.299***	4.319**	2.40***
		(13.56)	(7.33)	(14.18)	(3.59)	(6.88)	(2.75)
	Paired companies						
3	1985-87	-0.005		-0.037		0.467	
		(0.30)		(0.98)		(0.94)	
4	1995-97	0.048***		0.094**		1.723**	
		(2.76)		(2.47)		(3.43)	
	Change from 1985-87 to 1995-97						
5	Stock option co.	0.201***		0.347**		3.779**	
		(6.82)		(5.53)		(4.43)	
6	Paired co.	0.053**		0.131**		1.256*	
		(2.24)		(2.54)		(1.84)	
7	Difference	0.148***	0.168***	0.216**	0.030	2.523**	2.048*
		(4.22)	(3.96)	(2.85)	(0.26)	(2.48)	(1.68)
	Total observations	12870	768	11088	630	13032	774
	Number of stock option companies represented	165	128	153	105	166	129
	Number of paired companies represented	1980	128	1695	105	2006	129
	Within-company change following adoption of non-management stock option plans^^						
8	Pre-adoption	0.063*	-0.082	0.458	0.378*	3.604**	1.912
		(1.75)	(1.53)	(2.94)	(1.69)	(2.26)	(0.96)
9	Post-adoption	0.14***	0.009	0.782	0.359	4.611*	2.483
		(3.85)	(0.14)	(3.00)	(1.16)	(1.82)	(0.79)
10	Difference	0.077**	0.091*	0.325	-0.019	1.007	0.57
		(2.53)	(1.65)	(1.91)	(0.06)	(0.60)	(0.20)
	Total observations	238	186	216	161	238	188
	Number of stock option companies represented	16	13	16	12	16	13
	Number of paired companies represented		13		12		13

* p<.10 ** p<.05 *** p<.01

^ Based on robust regressions run on all companies with complete data for the 1985-87 and 1995-97 periods. Controls include ln(employment) and ln(assets) interacted with each period, plus year dummies and 2-digit industry dummies.

^^ Based on residuals from robust regressions of performance variables on ln(employment), ln(net assets), and 2-digit industry variables run separately for each year. Reported results are based on stock option companies with at least two pre-adoption observations and two post-adoption observations. Observations were weighted using robust regression weights and number of observations per company so that the weighted number of pre-adoption observations equals the weighted number of post-adoption observations for each company, to provide a balanced pre/post comparison.

TABLE 7: Stock Options Plans and Pre-post Annual Growth in Performance

Dependent variables:	Ln(output/employee)		Tobin's Q		Return on Assets	
Sample:	Full	Paired	Full	Paired	Full	Paired
Independent variables	(1)	(2)	(5)	(6)	(7)	(8)
All companies w/data in both periods^						
Stock option co.						
1 1985-87	0.022**	0.017**	0.075**	-0.483***	0.583*	-0.087
	(3.18)	(2.12)	(3.52)	(5.38)	(1.82)	(0.18)
2 1995-97	0.01	0.022***	0.173**	-1.672***	0.799**	0.52
	(1.46)	(2.70)	(8.14)	(18.66)	(2.49)	(1.07)
Paired co.						
3 1985-87	0.004		0.014		-0.034	
	(0.77)		(0.75)		(0.13)	
4 1995-97	0.001		0.072**		0.419	
	(0.25)		(4.01)		(1.60)	
Change from 1985-87 to 1995-97						
5 Stock option co.	-0.012		0.098**		0.216	
	(1.24)		(3.38)		(0.49)	
6 Paired co.	-0.003		0.058**		0.453	
	(0.37)		(2.39)		(1.26)	
7 Difference	-0.009	0.005	0.04	-1.189***	-0.237	0.60
	(0.77)	(0.41)	(1.11)	(9.34)	(0.44)	(0.88)
Total observations	11478	696	9648	588	11532	696
Number of stock option companies represented	152	116	144	98	152	116
Number of paired companies represented	1761	116	1464	98	1770	116
Within-company change following adoption of non-management stock option plans^^						
8 Pre-adoption	0.029***	0.029	0.028	-0.937	0.381	-0.953
	(2.71)	(2.06)	(0.52)	(6.55)***	(0.66)	(1.26)
9 Post-adoption	-0.023*	-0.014	0.174	-2.288	0.638	-1.612
	(1.88)	(0.78)	(1.29)	(5.84)***	(0.50)	(0.77)
10 Difference	-0.052***	-0.043**	0.148	-1.350***	0.257	-0.659
	(3.25)	(1.97)	(1.24)	(4.00)	(0.21)	(0.34)
Total observations	210	174	187	147	209	171
Number of stock option companies represented	15	13	15	12	15	13
Number of control companies represented		13		12		13

* p<.10 ** p<.05 *** p<.01

^ Based on robust regressions run on all companies with complete data for the 1985-87 and 1995-97 periods. Controls include ln(employment) and ln(assets interacted with each period, plus year dummies and 2-digit industry dummies.

^^ Based on residuals from robust regressions of performance variables on ln(employment), ln(net assets), and 2-digit industry variables run separately for each year. Reported results are based on stock option companies with at least two pre- adoption observations and two post-adoption observations. Observations were weighted using robust regression weights and number of observations per company so that the weighted number of pre-adoption observations equals the weighted number of post-adoption observations for each company, to provide a balanced pre/post comparison.

TABLE 8: Compensation Levels and Growth

Dependent variable: ln(labor costs per employee)

	Compensation levels, 1997		Compensation levels, 1985-87 and 1995-97		Annual growth, 1985-87 and 1995-97		Descriptive Statistics for ln(labor costs) Levels and Growth	
Sample:	All cos.		All cos. w/complete data for 85-87 and 95-97		All cos. w/complete data for 85-87 and 95-97		All cos. w/complete data for 85-87-95-97	
Independent variables	(1)		(2)		(3)		(4)	
Stock option co.								
1997	0.201***	(2.57)					3.90	
1985-87			0.078*	(1.73)	-0.017	(1.28)		3.45
1995-97			0.077*	(1.72)	-0.01	(0.75)		3.95
Paired co.								
1997	0.123**	(2.40)					3.69	
1985-87			-0.002	(0.08)	-0.006	(0.69)		3.42
1995-97			0.013	(0.44)	-0.015	(1.60)		3.92
Difference between 1985-87 and 1995-97								
Stock option co.			-0.001	(0.00)	0.007	(0.40)		
Paired co.			0.015	(0.40)	-0.009	(0.70)		
Difference	0.078	(0.90)	-0.016	(0.24)	0.016	(0.77)		
Total observations	697		1236		1044		581	
# of stock option companies represented			13		12		31	39
# of paired companies represented			193		162		85	99
50%+ coverage of non-mgt.	0.172	(0.87)						
<50% coverage of non-mgt.	0.260	(1.31)						
Unknown coverage of non-mgt.	0.195**	(2.10)						
Paired cos.	0.124**	(2.40)						
n	696							
# of stock option companies represented								

*p<.10 **p<.05 ***p<.01

^ Based on robust regression run on all companies with complete data for 1985-87 and 1995-97 periods.

Controls include ln(employment) and ln(assets) interacted with each period, plus year dummies and 2-digit industry dummies.