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Investor and Worker Response to Corporate Downsizing of ESOP Companies: Wealth Effects, Productivity, and Performance

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Investor and Worker Response to Corporate Downsizing of ESOP Companies:

Wealth Effects, Productivity, and Performance

by

Jeanean J. Davis-Street

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
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Dedication

This dissertation is dedicated first and foremost to my Lord and Savior, Jesus Christ, without Whom none of this would be possible. I also dedicate it to my family, including my sister, Lorenda Petersen; my brothers, Ricky Washington, James Davis and Bruce Davis; and my mother, Roberta Davis, who encouraged me in all my educational pursuits but did not live to see me complete my highest educational attainment, the Doctor of Philosophy Degree. Last, and most especially, I dedicate this dissertation to my husband, Artis C. Street and to my children, Kira and Akin, whose love, patience and support inspired me to continue even through nine moves, three homes and four different states. I truly appreciate everything you are to me.

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ABSTRACT

Finance, economic and management literature document the reduced agency problems, increased productivity, and greater financial benefits that accrue to firms that adopt Employee Stock Ownership Plans, (ESOPs). The literature also documents the increased agency problems, decreased employee productivity, and poor operating performance that usually accompany corporate downsizing activity. To date, none of the studies have examined the effect that downsizing decisions have on companies with existing ESOP plans; this dissertation fills that empirical void. In this study, two essays are presented that examine the effect of corporate downsizing on ESOP versus non-ESOP firms.

In the first essay, I investigate the short-term wealth effects of the downsizing announcement using event study methodology. I find that there is no significant change in the wealth effects for ESOP firms (they are positive, yet small), whereas non-ESOP firms have significantly negative abnormal returns. There is, however, a significant difference in the abnormal returns of ESOP versus non-ESOP firms, where ESOPs have significantly higher abnormal returns. Finally, with respect to wealth effects, I find that downsizing interacts negatively with managerial ownership and with employee ownership, but there is a positive interaction between the ownership of managers and employees.

In the second essay, I examine the long-term employee productivity and financial performance of the downsized firms, as measured by Total Factor Productivity (TFP) and Tobin's Q, respectively. I find that neither the percentage of employee ownership nor the level of downsizing has an impact on the productivity of the downsizing ESOP firm. However, the level of downsizing exerts a significantly positive impact on the productivity of non-ESOP firms.

With respect to financial performance, the existence of an ESOP plan has a significantly negative influence on the Tobin's Q of the downsizing firm. Furthermore, the level of downsizing has a significantly negative impact on non-ESOP firms, whereas the financial performance of ESOP firms appear to be unaffected by the level of downsizing. For Tobin's Q, there is evidence of interaction between employee and managerial ownership for ESOP firms. There is also interaction between managerial ownership and downsizing for the TFP and Tobin's Q of non-ESOP firms.

Chapter One

Introduction

Within any corporation, there exists a nexus of contracts that is structured to encourage value-maximizing behavior by the stakeholders, thereby ensuring the long-term survival of the corporation. This combination of contracts includes those “agreements” between managers and owners (i.e., shareholders) and between managers and workers. Absent any transaction/agency costs, when these three stakeholders work in conjunction to maximize the value of the firm, the contractual relationship that exists has reached its ideal.

Jensen and Meckling (1976) abstract from this ideal world and instead analyze the firm within the context of property rights, agency theory, and finance theory to construct a theory of the firm that recognizes and incorporates the imperfections inherent in a market economy. One particular market imperfection that Jensen and Meckling expound on is the agency problem that occurs when a principal delegates some decision-making authority to an agent who, in turn, fails to act in the best interest of the principal. This divergence from the principal’s interest by the agent leads to a decrease in firm value.¹

In an effort to minimize the loss generated by the agency problem, the three corporate players—investors, managers, and employees—are motivated to create employment compensation contracts that will more closely align the incentives of the agent with those of the principal(s).² One such incentive-aligning contract exists in the form of an Employee Stock Ownership Plan (ESOP). Under an ESOP plan, a percentage of the firm’s outstanding shares are set aside and allocated to each individual employee’s retirement account, based on their annual compensation. As a result, employees who were once simply agents of the firm are now partial owners (i.e. principals) with an incentive to

¹ Jensen and Meckling (1976) define the decrease in firm value as an agency cost.

² Generally, both upper management and external shareholders act as principals. Upper managers are principals in the sense that they have the power to fire workers and they have stock or stock options as a component of their compensation. However, they also act as agents to external shareholders, who are the “ultimate” principal with the power to dismiss the manager.

exert more effort toward maximizing the value of the firm and shirk less, thereby reducing agency problems/costs. Indeed, empirical studies show that employees of ESOP companies exhibit greater job satisfaction (Klein and Hall, 1988), have a decreased rate of employee turnover (National Center for Employee Ownership, 2001) and have higher productivity (Kumbhaker and Dunbar, 1993) when compared to non-ESOP firms. In addition, ESOP firms encourage greater cooperation between managers and employees in production decisions (Quarrey and Rosen, 1986), which leads to improved operating performance (Pugh, Oswald and Jahera, 2000).

These characteristics of the ESOP firm are the direct result of employee stock ownership, which provides employees with a two-pronged benefit—increased wealth and firm ownership. The increased wealth provided by ESOPs comes from having part of employee compensation tied to the stock’s performance; as employee productivity and efficiency increase, the value of the firm increases which leads to greater wealth in the ESOP retirement benefits (National Center for Employee Ownership, 2001). The second benefit of ESOPs, firm ownership, allows employees to have greater access to internal financial information (Weitzman and Kruse, 1990), gives them some input on labor decisions (Rosen, Klein and Young, 1986), and allows them to vote on all corporate governance issues (National Center for Employee Ownership, 2001). Thus, when the financial rewards and ownership rights of ESOP plans are combined, they provide powerful incentives for employees to maximize the value of the firm.

The incentive-aligning benefits of ESOPs might be especially apparent during “good” economic times. In periods of economic and/or corporate growth, the firm prospers and its stock value rises. The workers’ employment is relatively secure because successful performance provides greater financial resources that can be reinvested in the hiring and paying of employees (Gerhart and Trevor, 1996).³ With high product demand and successful performance, employees have less likelihood of job loss and can focus on improving productivity and operating performance in an effort to further increase their future wealth via the ESOP. The net result is that ESOP participants act more like

³ Labor is a derived demand, which means that change in the demand for labor is a function of change in the demand for the product.

principals in “good” times (Iqbal and Hamid, 2000) and their incentives are more closely aligned with those of managers and external investors.

However, ESOPs might not always result in incentive alignment between employees and external shareholders, especially during periods of declining corporate performance or decreasing demand. During these times, the objectives of the stakeholders could be at odds. For example, risk-averse ESOP employees—whose human capital is closely tied to the firm via the salary/wage and ESOP retirement benefits they receive—might derive greater utility from ensuring their continued employment despite the need for downsizing. Alternatively, external shareholders—who typically hold a well-diversified portfolio and are more risk-neutral—might prefer the firm to initiate immediate, cost-reducing layoffs. Meanwhile, the manager—who serves as both agent (to investors) and principal (to ESOP employees)—must determine a downsizing level that increases firm value without negatively affecting productivity and future corporate performance. These inherent risk-bearing differences between employees, managers and external investors, coupled with their complex agency relationship, causes incentive alignment in ESOP firms to be ambiguous in an environment of downsizing.

So how, then, do downsizing decisions manifest themselves within an ESOP firm? One possibility is that ESOPs have a positive impact on the downsizing firm. Research has documented the higher level of communication and cooperation between managers and employees of the firm (Rosen, Klein and Young, (1986)). External investors might believe that this cooperative atmosphere alleviates some of the natural friction that exists between management and labor during a climate of layoffs. Furthermore, external investors might feel that the internal shareholders (ESOP employees and managers) have cooperated to set the optimal level of downsizing for the firm. If so, then there is a “bright side” to ESOPs that make them an effective tool in addressing an agency problem.

However, there is an alternative scenario; ESOPs might distort the incentives of employee-owners and managers, particularly during periods of corporate downsizing. Employees might be inclined to use their ESOP-acquired “ownership” powers to entrench themselves within the firm by influencing management to reduce the level of downsizing or

avoid downsizing altogether, even when downsizing is necessary. Thus, the very benefits that ESOPs convey to employee-owners might be used to thwart the manager's downsizing objectives, even if downsizing is in the best interest of the firm. If external investors believe that ESOPs foster employee entrenchment and that the downsizing level is sub-optimal, then ESOPs are less effective in dealing with the agency problem (and could actually exacerbate it), thereby exposing a potential "dark side" to employee stock ownership.

The question of which side—"bright" or "dark"—is observed during downsizing events is an empirical question that has not been addressed by the literature. This question is especially interesting given the widely held belief that firm ownership by managers and employees should help to reduce agency problems. However, while previous researchers have documented the negative effects of downsizing, none has controlled for the existence of ESOPs, which is the primary vehicle for employee ownership. Thus, there is ambiguity as to whether ESOPs alleviate agency problems when employees, the very beneficiaries of the plan, are threatened with job loss. Furthermore, there is ambiguity as to whether the incentives of internal shareholders are aligned with those of the external investors during a climate of downsizing. It is this uncertainty that calls into question the long-term effectiveness of ESOPs, thereby setting the stage for the analysis contained in this study.

Given that the main objectives of ESOPs (which seek employment longevity and lead to greater corporate loyalty) are exactly opposite to downsizing (which seeks employee reductions and leads to a sense of betrayal), this study will determine if downsizing decisions impact ESOP firms differently than non-ESOP firms by addressing three important questions. First: For a given ESOP firm, are the wealth effects associated with the downsizing announcement different from those of non-ESOPs? If so, what does this difference indicate about the external shareholders' reaction to downsizing? Second: Do downsizing decisions encourage the remaining ESOP employees to exert more or less effort toward value maximization ex post? And, how does the productivity of an ESOP firm compare to non-ESOP firms in both the pre- and post-downsizing period? Third: How does the operating performance of ESOP firms compare to the performance of non-

ESOP firms? This paper addresses these questions by analyzing and documenting, within two essays, the effects that downsizing have on ESOP firms versus non-ESOP firms.

The first essay is found in Chapter 2 and begins with a brief introduction and summary of the relevant literature on the wealth effects of downsizing and ESOPs, respectively. After proposing several hypotheses related to the stock price reaction of downsizing, event study methodology is used to examine the short-term wealth effects that downsizing decisions have on ESOP versus non-ESOP firms. Also, a cross-sectional analysis of the cumulative average abnormal returns (CAARs) is performed to identify the possible sources of the differences between the two types of firms.

I find that ESOP firms have small, marginally significant positive abnormal returns whereas non-ESOP firms have large and highly significant negative abnormal returns. In addition, abnormal returns for non-ESOP firms are negatively influenced by the level of downsizing whereas the abnormal returns of ESOP companies are positively influenced by the level of downsizing. There is also evidence that the percentage of institutional ownership, firm size, and union representation positively impact abnormal returns for both firm types. Finally, there is significant interaction between managerial ownership and downsizing that negatively impacts wealth effects. For low and high levels of employee ownership, there is significant interaction between ESOPs and downsizing that negatively influences wealth effects, whereas firms with medium levels of employee ownership have significant interaction between ESOPs and managerial ownership that positively influences wealth effects. These results suggest that ESOPs generally have a positive effect on the firm, even in a climate of downsizing. The benefits of an ESOP are even more pronounced when managers and institutional investors own a percentage of the firm that is commensurate with employee-owners.

Chapter 3 contains the second essay, which begins with a brief introduction and literature review of the productivity and performance effects already documented for downsizing and ESOPs, respectively. Chapter 3 proposes several hypotheses related to the effect that existing ESOP plans might have on downsizing firms. This chapter also examines the pre- and post-downsizing period to determine: (1) whether there are

productivity differences between ESOP and non-ESOP firms, as measured by Total Factor Productivity (TFP) and (2) whether there are operating performance differences between ESOP and non-ESOP firms, as measured by Tobin's Q-ratio.

I find that downsizing has a positive impact on the productivity of non-ESOP firms but has no impact on the productivity of ESOP firms. Additionally, the percentage of employee ownership does not influence productivity. With respect to financial performance, downsizing has a negative influence on the Tobin's Q of non-ESOP firms but does not appear to impact the Q-measure of ESOP firms. However, when productivity (as measured by TFP) is included as an explanatory variable in the regression equations for Tobin's Q, productivity affects performance negatively. This result is counter-intuitive and necessitates further investigation into the link between productivity and performance—an investigation that will be conducted in a future study.

Finally Chapter 4 discusses the implications and contributions of this dissertation. Given that ESOPs are adopted for the express purpose of aligning the incentives of managers and workers while simultaneously encouraging corporate loyalty, improving employee productivity, and increasing operating performance, this study finds that “normal” labor decisions such as downsizing (which are somewhat antithetical to ESOPs) do not negate the purported benefits of employee stock ownership. Instead, the ESOP firm exhibits low productivity and financial performance until downsizing activity shakes up the firm and “forces” the firm to improve its financial performance.

Conditional on the firm's decision to implement downsizing, this study analyzes the responses of both the external investors and employees of ESOP versus non-ESOP firms to determine whether the existence of an ESOP helps to alleviate agency problems that typically accompany downsizing decisions. The implications of this study will help managers of ESOP firms determine whether the stated objectives of employee ownership are being met. In other words: Do ESOPs encourage employee-owners to act more like agents or principals in an environment of layoffs?

Chapter Two

Essay 1: Wealth Effects of Downsizing

Introduction

According to Jensen and Meckling (1976), external shareholders have long sought incentive-compatible compensation plans that motivate risk- and effort-averse employees to become more productive. They argue that the best compensation plans should simultaneously overcome the employee's inherent disutility for exerting effort, encourage long-term, strategic thinking, and maximize the value of the firm. In short, the compensation plan should reduce the agency problem between shareholders and employees.

One such plan that arguably accomplishes these objectives is the Employee Stock Ownership Plan (ESOP). ESOPs are defined contribution plans in which the company purchases a percentage of its outstanding shares to be held in trust until the shares are allocated over time to each individual employee's retirement account. Developed by Louis Kelso in the 1950's and codified by the Employment Retirement Income Security Act of 1974 (ERISA), ESOPs are designed to align the interests of workers with owners by giving employees ownership stakes in firms. Studies show that ESOP employees demonstrate greater corporate loyalty (Klein, 1987), exert greater effort (Kumbhaker and Dunbar, 1993), closely monitor co-workers (Fitzroy and Kraft, 1987), participate in more of the firm's strategic decision-making (Rooney, 1992), and accumulate more retirement wealth (National Center for Employee Ownership, 2001) than employees of non-ESOP firms. In addition, ESOP firms report decreased turnover (Perun, 2000), increased employee satisfaction (Klein and Hall, 1988), higher productivity (Kumbhaker and Dunbar, 1993), and improved operating performance (Pugh, Oswald and Jahera, 2000). All of these findings suggest that there is a "bright side" to ESOPs consistent with Jensen and Meckling's hypothesis that employee ownership reduces the agency problems between managers/shareholders and employees while increasing the value of the firm.

These benefits of ESOPs, when coupled with the tax incentives of ERISA, explain the growth of ESOP plans, especially within public firms where ESOP participants typically own between 5-10 percent of the firm, with some public firms having up to 30 percent employee ownership.⁴ In public ESOP firms, employees who were once simply agents of the external shareholders are now, to a limited degree, internal shareholders of the company. As such, they have acquired many of the rights and responsibilities that ownership entails. For example, employee-owners have greater access to high-level financial information that can be quickly disseminated to co-workers of the firm via the improved level of communication often found in ESOP firms (Weitzman and Kruse, 1990). In addition, employee-owners have more active roles in determining labor decisions of firms because of their cooperative relationship with management (Rosen, Klein and Young, 1986). Finally, employee-owners are able to exercise their voting powers in all corporate governance issues (National Center for Employee Ownership, 2001), and might therefore have some sway over management.⁵ This combination of powers—greater access to/dissemination of information, more input in labor decisions, and voting rights—is typical of the ownership powers that employees of public ESOP companies enjoy, even for small percentages of employee ownership.

As the percentage of employee ownership increases, employees gain an even greater voice and level of influence within the firm. More importantly, as partial owners, they might also have some decision-making power in labor issues, including the hiring and firing of personnel (Rosen, Klein and Young, 1986). If management believes that employee-owners can exercise “hiring and firing” decisions over them as well, then managers might be reluctant to antagonize workers in ESOP firms by significantly altering the workforce. Thus an important question arises: Do the benefits of ESOPs continue long after the initial adoption of the plan, or does the ESOP mutate into a tool that employees

⁴ Following the passage of ERISA, the number of ESOP plans has grown from 1,600 plans serving 248,000 participants in 1975 to 11,500 plans serving 8,500,000 participants in 2000. Of those plans, approximately 1,200 are in public companies representing over 5,000,000 participants. *Statistical Profile of Employee Ownership*. National Center for Employee Ownership, June 14, 2001. www.nceo.org/library/eo_stat.html

⁵ Depending on the governance rules established during the initial set-up, employees have the ability to direct the ESOP trustee in all voting matters, thus giving employees a voice in corporate decisions.

use to further their own employment interests (via employee entrenchment) at the expense of the firm's value?

Employee entrenchment occurs when workers are able to ensure their continued employment even when layoffs or dismissals are justified, as would be the case during periods of decreasing product demand or poor operating performance. Although the firm's financial health might be maximized by the elimination of jobs, the employee-owner's job security is threatened by the need for downsizing and they might prefer that no (or a minimal level of) downsizing takes place. Given their preference for a lower level of downsizing, ESOP employees might use their increased ownership "power" to influence managers to decrease the level of downsizing. If employees successfully persuade managers to downsize at a less-than-optimal level or not at all, then employee-owners have become entrenched in the firm. Thus, the ESOP might have become an instrument by which employee-owners wield authority over management instead of an incentive-alignment tool, thereby exposing the "dark side" of ESOPs.

Because there is a "bright side" and "dark side" to ESOPs, it is important to understand which side manifests itself during a climate of downsizing. The "bright side" of ESOPs has already been documented for the firm, but most of the research touting ESOPs has been based on the years immediately following the adoption of an ESOP plan.⁶ Whether the positive benefits of ESOPs continue over the long run or during a climate of downsizing is another matter.

During downsizing events, external investors might feel that ESOPs address the information asymmetry that usually exists between managers and employees so that employees are better informed about the true financial health of the firm. Because of the greater level of information exchange, better-informed ESOP employees might understand and accept the need for layoffs that benefit the firm. Thus, evidence of the positive effects of ESOPs could manifest itself in the form of positive wealth effects, which might reflect external investors' belief that ESOP employees work in conjunction with management to

⁶ Most researchers have examined ESOPs two to five years after the plan adoption year. Few researchers have looked at the impact of ESOPs on the wealth effects, productivity and performance of the firm after that period, and none has examined the effect of ESOPs on downsizing firms.

set the optimal downsizing level. Or it might be evidenced by higher levels of productivity and/or corporate performance, ex post, despite the negative impacts that downsizing usually exerts. If any of these outcomes occur during downsizing events, it could be an indication that the “bright side” of ESOPs overcomes the negative effect of corporate layoffs.

Alternatively, the “dark side” of ESOPs, if it exists, is manifested within the firm when employee-owners use the very “powers” that ESOPs provide to intimidate and ensnare management. If managers, wary of the influence of empowered employee-owners, collude with them to ensure their mutual employment, even in the case of decreasing product demand and firm performance, then the internal owners (managers and employees) are expropriating value from external investors. Indeed, Gamble (2000) finds that with higher percentages of employee ownership, management views employees as “friendly votes.” At the margin, “ensnared” managers are unlikely to make decisions that alienate a potential base of support.

This possible collusion between employees and managers can be an undesirable side effect of ESOPs unanticipated by external investors. When it is combined with the empowerment of self-interested, risk-averse employees, then it brings into question the long-term ability of ESOPs to control the agency problem and maximize the value of the firm. Prior to the firm’s adoption of an ESOP, employees are simply agents of the firm with little or no power. However, the existence of ESOPs within the firm means that external investors must deal with employees who are empowered as co-owners and whose interests are more often aligned with managers in matters related to employment security. Thus ESOPs might have created a more virulent form of the agency problem, especially when poor economic conditions and operating performance require employee downsizing. Within ESOP firms, external investors might find themselves battling the combined strength of managers and employees, who might have acquired powers that allow them to better maximize their own utility at the expense of external shareholders. The possible conflict between internal investors (managers/employees) and external investors provides the motivation for this study.

Using downsizing as the catalyst to which the market reacts, this paper examines the wealth effects that accompany downsizing announcements to determine if external investors interpret the layoff decisions of ESOP firms differently from non-ESOP firms. If external investors believe that the ESOP is beneficial to the downsizing firm, then the stock price reaction will be positive (or less negative than non-ESOP firms). It could be an indication that external investors believe that ESOP participants act more like principals than agents and the ESOP is effective at controlling the agency problem, even in a climate of downsizing. In other words, external investors might believe that employee-owners do not intimidate the manager into reducing the level of downsizing because it is in the best interests of the firm, despite the employee-owners' potential loss of jobs.

Alternatively, if external investors believe that ESOPs are detrimental to a downsizing firm, the wealth effects could be negative (or more negative than non-ESOP firms). It might be an indication that external investors believe that ESOP participants act more like agents than principals, and the ESOP, though effective in the past, might no longer alleviate the agency problem. External investors might feel that the ESOP has created a corporate culture in which managers and workers (who are both internal investors) have colluded together to ensure their continued employment at the expense of external investors.

If the managers of ESOP firms are able to adjust the level of employment to the value-maximizing level whenever necessary without fear of reprisal from employee-owners and without negatively impacting the stock price of the firm, then ESOPs are an effective tool that can be used to align the incentives of employees, managers, and investors. Conversely, if ESOP participants use their increased decision-making power and greater insider information to capture or collude with managers to secure mutual employment, then ESOPs could help internal workers and managers become entrenched, thereby expropriating firm value from the external investors, which would be evidenced by negative stock price reactions.

From these possible reactions by external investors come two testable questions: (1) Are there wealth effects associated with downsizing, and, if so, are they different for

ESOP versus non-ESOP firms? (2) If there is a difference in wealth effects, can the difference be explained by the level of downsizing, the existence of the ESOP, the level of internal (employees and managers) ownership, and/or any interaction between these three factors? These questions are addressed in this study. The answers to these questions provide insight into the labor relations, agency problems, asymmetric information, and corporate governance issues of ESOP firms.

In addressing the first of the two testable questions, I find that there are wealth effects associated with downsizing and that they differ for ESOP versus non-ESOP companies. The decision to downsize an ESOP company results in small, yet insignificantly positive abnormal returns, whereas non-ESOP downsizing companies have a large and significantly negative abnormal return.

With regard to the second testable question, I find that the wealth effects of non-ESOP firms are influenced by downsizing (-), institutional ownership (+), reason for downsizing (+ or – depending on reason), and firm size (+). On the other hand, factors that impact the wealth effects of ESOP companies include downsizing (+), ESOP age (+), firm size (+), unionization (+), and reason for downsizing (mainly +). Further, I find evidence of significant interaction between ESOPs and downsizing (-), between managerial ownership and downsizing (-), and between managerial ownership and employee ownership (+).

The remainder of the paper is organized as follows: Section II.2 discusses the relevant literature on the wealth effects of downsizing. In Section II.3, the hypotheses are developed using extant literature on ESOPs and their effects on the firm. The event-study methodology and a description of the data are outlined in Section II.4. Section II.5 contains the regression results and analysis followed by Section II.6, which concludes and discusses the implications of the results.

Related Literature

A. Downsizing Literature

Downsizing activity occurs within the firm for a variety of reasons. Describing the decade of the 1990s, Jensen (1993) predicts that firms will undergo major shifts in their production processes as technology and new labor techniques transform manufacturing and service industries into more efficient workplaces. This shift in processes is precipitated by increased computer usage, relatively lower energy costs and growing global markets. According to Jensen, a necessary side effect of change is a decrease in employment as employees with twentieth century skills are replaced with twenty-first century technology. The resulting increase in downsizing activity during the decade of the 1990s is a testament to the accuracy of Jensen's prediction.

The downsizing activity that took place during the 1990s was different in the sense that no sector of the workforce or category of industry was immune: managers were as likely to be laid off as auto workers and the pharmaceutical industry had as many layoffs as the construction industry (Gardner, 1993.) Just as Jensen predicted, the 1990s were a period of industrial revolution as companies folded and workers became displaced from many job sectors.

Despite the increased incidence of downsizing, very few researchers have analyzed employee downsizing. Specifically, downsizing and the factors that lead managers to institute layoffs have not been thoroughly examined in the literature. Most research looks at the manager's decision to downsize, *ex post* instead of examining the *ex ante* factors that lead to layoff decisions. For example, Downs (1995) outlines three major reasons that firms downsize: (1) to generate positive stock price reactions; (2) to purge those employees perceived as being unproductive; and (3) to frighten the remaining employees into working harder. While these reasons are intuitive, there are no empirical studies testing their validity as downsizing reasons.

Hallock (1998) also provides a possible reason for the increase in downsizing. He documents the increased executive pay in the year following downsizing activity. If CEOs engage in downsizing with the expectation of receiving higher pay in subsequent years, it would explain the increased incidence of downsizing despite the negative wealth effects that accompany such announcements. However, after controlling for firm-specific characteristics, he finds that the CEO pay premium disappears. In fact, he finds that there is actually a small yet significant negative reaction. However, he does not determine if the decision to *not* downsize has an equally adverse effect on the manager's wealth. Thus the results might be subject to truncation or self-selectivity bias.⁷

McCune, Beatty and Montagno (1988) also examine downsizing, but they focus on alternatives to layoffs such as forced retirement, attrition, reduced hours, and wage cuts. They find that managers implement few alternatives to downsizing and instead use layoffs more often. They also determine that seniority, unionization and training costs are factors in downsizing activity—that is, employees with seniority, union representation, or high skill/ability are less likely to be laid off.⁸

Ex post, there are many factors that influence investors' reaction to a corporation's downsizing decisions, and a number of previous studies have examined how those factors impact the stock price reaction. Factors such as size of layoff, duration of layoff, whether the layoff is anticipated or unanticipated, reasons for layoff, industry type, and the business cycle have been suggested by Elayan, Swales, Marin and Scott (1998), among others. They find that the market generally reacts negatively to downsizing announcements as investors revise their expectations downward. Specifically, layoffs that are instituted for cost-cutting reasons, which are large in scale, which are permanent, or which are unexpected have a stronger negative announcement effect. In addition, firms that operate

⁷ By their very nature, event studies have an inherent self-selectivity bias. However, this research is explicitly defined as a conditional study—that is, conditional on the downsizing decision, is there a difference between the wealth effects of ESOP versus non-ESOP firms? A future study will examine the downsizing decision using two-stage least squares regression in which the downsizing decision is first modeled using logit or probit analysis and the results are then used in a standard OLS regression.

⁸ Though there are alternatives to downsizing, this study does not include them in the sample. Firms that instituted reduced work hours or temporary workers are excluded. Some downsizing firms (~30) incorporated attrition or retirements into their announced downsizing levels, but amounts were trivial and incapable of being separated out.

in labor-intensive industries are more adversely affected by layoff announcements relative to firms that rely more on physical capital.

In a study closely related to Elayan et al., Worrel, Davidson and Sharma (1991) also report a negative stock price reaction following downsizing announcements. They find that investors react negatively to downsizing announcements attributable to financial reasons and that large or permanent layoffs have a stronger negative response.

Other factors that have been examined by researchers include declining demand and number of previous downsizing events. Lin and Rozeff (1993) find support for their decreased-demand hypothesis in explaining the negative stock price reactions that accompany downsizing decisions. Additionally, Ursel (1995) finds that investors react more negatively to the first layoff announcement of a firm than to subsequent announcements.

Other studies find evidence of mixed wealth effects. For example, Palmon, Sun and Tang (1997) examine the wealth effects of downsizing firms based on the reason for downsizing. They report that "declining demand" reasons lead to negative returns while "efficiency improvement" reasons yield positive returns. Similarly, Scott and Ueng (1996) find positive abnormal returns for downsizing firms, but only if a positive reason for layoff is given (such as "restructuring to improve efficiency"). Surprisingly, healthy firms that announce layoffs have negative returns, yet, if they provide a positive reason for downsizing, then investors react positively.

The research most closely related to this study is Chen, Mehrotra, Sivakumar and Yu, (2001), who also examine the wealth effects, productivity, and performance of downsizing firms. Using data from 1990-1995, they find that layoffs produce significantly negative stock price reactions. They also find that three years after downsizing, firms experience improved profit margins and increased labor productivity. Where my research differs from Chen, et al. is in its examination of ESOP companies, which will highlight any indication of an agency problem (i.e. employee entrenchment) that might exist between external and internal shareholders.

The characteristic common to all of the downsizing research is the negative wealth effect that often accompanies downsizing. This common result raises an interesting question: if firms downsize out of necessity (eg. declining demand, low profitability), why are abnormal returns invariably negative? One reason might be that the level of downsizing does not coincide with external investors' expectations (Jensen, 1993). If the downsizing level is greater than expected, investors might believe that the firm's financial situation is worse than they originally thought. As investors update their beliefs, they might value the stock at a lower price.

Another possible reason for negative stock price reactions could be that the firm is in a declining industry (Jensen, 1993). For example, during the 1990s, there was a systematic decline in the defense industry following the end of the cold war. Defense contractors were forced to lay off workers in order to maintain profitability. Despite the labor cost savings that resulted from downsizing, firms in the defense industry still had negative earnings.

Economic recessions might also lead to negative abnormal returns for downsizing firms (Jensen, 1993). When the market is in an extended downturn, layoffs might exacerbate the poor economic conditions of the firm. Each of these reasons are possible explanations for negative wealth effects, however downsizing reasons are not the focus of this research. Instead, this study examines the wealth effects ESOP versus non-ESOP firms, *conditional* on the downsizing decision.

B. ESOP Literature

Extant literature on ESOPs invariably omits any discussion on the impact that downsizing has on the firm. In fact, this study is one of the first to empirically examine the role of downsizing within ESOP firms. Despite the dearth of research, it is still a productive exercise to look at the impact that ESOPs have on the wealth effects of the firm. Chang (1990) looks at the wealth effects of ESOPs that were adopted from 1976-1987. He finds that the ESOP is a wealth-increasing event when it is adopted as a

leveraged buyout (LBO) or wage concessions. If the ESOP is used as a takeover defense, he finds that the wealth effects are significantly negative. For a sample of “pure” ESOPs, in which no LBO, wage concessions, or takeovers are present, ESOP adoption produces positive wealth effects consistent with tax benefits or incentive alignment. The implication from his result is that ESOPs, by themselves, are beneficial to the firm. However, they can be easily manipulated by managers to entrench themselves within the firm. This entrenchment might also extend to employees if managers and workers collude to ensure their mutual employment during a climate of downsizing.

Chang and Mayers (1992) examine the wealth effects associated with ESOP adoption when managers and directors control various percentages of the firm. When managers and directors control between 10 and 20 percent of the firm, shareholders reap large abnormal returns from ESOP adoption. The wealth effects decrease but are still positive when managers and directors control less than 10 percent. When they control 40 percent or more, there are significantly negative abnormal returns from ESOP adoption. This result suggests that external investors want to ensure that internal investors (managers, directors, and employees) do not acquire too much control via the ESOP.

The above studies only examine the announcement-day effects of ESOPs. Faleye, Mehrotra and Morck (2005) extend the analysis of wealth effects beyond the adoption period and empirically examine the long-term impact of employee-ownership. They find that labor-controlled firms deviate from value maximization. In addition, they grow more slowly and invest in fewer capital projects relative to other firms. As a result, shareholder wealth is reduced for labor-controlled firms.

The above studies have examined various aspects of downsizing decisions and ESOP adoptions, yet none has specifically differentiated stock price reactions for firms that have existing ESOP plans, as this research does. By examining the wealth effects associated with downsizing ESOP and non-ESOP firms, this research differs from previous studies in that it addresses the effectiveness of employee stock ownership in controlling agency problems between employees, managers, and external investors during a period of downsizing. Specifically this research determines that the level of downsizing,

the existence of an ESOP and the percentage of internal ownership (both managerial and employee) are also factors that influence the wealth effects of downsizing. If these factors (and their interaction with each other) significantly impact the wealth effects of downsizing for an ESOP firm, then it could be an indication of external investors' perception of the impact employee ownership has on the firm. If they believe that employee-owners influence the downsizing decision, then investors might value ESOP firms differently than non-ESOP firms. This paper explores whether ESOPs lead to incentive alignment versus employee entrenchment, in the long run, by proposing and testing the hypotheses outlined in the next section.

Hypotheses

Downsizing carries with it a connotation of either positive or negative information. From a positive viewpoint, downsizing can be seen as a mechanism for improving productivity, increasing capital- relative to labor-productive resources, or reducing a bloated workforce. Alternatively, the information could be viewed negatively if downsizing is interpreted as admitting to loss of market share, as a harbinger of obsolescence and need for exit, or as a quick-fix for poor performance and low profitability. This ambiguity in the informational content of downsizing causes the wealth effects of a downsizing announcement by a firm (Firm *i*) to be unpredictable, regardless the of ESOP status.

When the existence of an ESOP plan is incorporated into the analysis, then the wealth effects of a downsizing announcement become even more ambiguous. If a firm has an ESOP plan, then rational, external investors have an additional layer of information that can be analyzed in either a positive or negative way. From a positive perspective, investors might feel that the employee-owners have better inside information and, as principals, have worked with management to establish the correct level of downsizing. Alternatively, investors might feel that the employee-owners have used their ownership powers to manipulate the level of downsizing to some sub-optimal level to minimize the number of layoffs and maintain their job security. Both of these beliefs are rational and possible, yet they might yield two very different stock price reactions for downsizing ESOP firms.

Whatever their belief concerning the informational content of the downsizing announcement, investors respond to the downsizing decisions of both types of firms— ESOP and non-ESOP. Extant literature has documented that investors generally view layoff decisions negatively (Elayan et al. (1998), Worrell et al. (1991), Chen et al. (2001)). However, it is not known whether this is also the case for ESOP firms, because there is very little research related to the correlation between downsizing and ESOPs that helps untangle the wealth effects inherent in both of these labor-related decisions. Notwithstanding the paucity in research, one can intuitively see that the characteristics that

ESOPs encourage (presumably long-term value maximization, reward for increased productivity, and/or employment longevity) run counter to the premise of downsizing, which generally seeks short-term value maximization, discipline for poor productivity, and/or reductions in labor.

Because the impact of ESOPs has not been previously addressed in the downsizing literature, this paper will first determine if there are wealth effects at all. Thus, the first hypothesis is simply a test of the status quo that there are no wealth effects associated with downsizing.

Hypothesis 1: Regardless of ESOP status, there are no wealth effects associated with downsizing.

The results from testing Hypothesis 1 serve as a basis of comparison with other studies that examine the wealth effects of downsizing. This hypothesis makes no assumptions regarding the direction or magnitude of abnormal returns and ESOP firms are not distinguished from non-ESOP firm. Thus, a finding of no wealth effects should not cause concern because it could simply be the case that the stock price reaction of ESOP firms is directly opposite to that of non-ESOP firms, thereby yielding an insignificant result overall. Of course, a finding of negative wealth effects is consistent with other downsizing studies.⁹

Regardless of the outcome from Hypothesis 1, subsequent tests are conducted to further examine the impact of ESOPs on downsizing firms. Specifically, the difference in wealth effects between ESOP and non-ESOP firms is examined to determine whether external investors react differently to the downsizing decisions of the two firm types. Assuming that investors use information from the downsizing announcement to update their beliefs about the firm, any change in the price of the company's stock after the announcement should indicate how external investors view the layoff decision (Fama,

⁹ Although there is a possibility of finding positive wealth effects (as would be the case when firms ascribe "positive reasons" to their need for downsizing), the likelihood of doing so is fairly low in a cross-sectional examination. In any case, the reason for downsizing will be controlled for via a regression equation.

Fisher, Jensen and Roll (1969)).¹⁰ A positive stock price reaction might indicate that external investors believe that downsizing maximizes the value of the firm, *ceteris paribus*. Alternatively, a negative stock price reaction might indicate that external investors are averse to some aspect of the downsizing decision (i.e. the reason, level, or timing of downsizing) and therefore value the firm less. Both of these possible reactions could occur for downsizing ESOP and non-ESOP firms. However, for ESOP firms, there might be an additional factor that impacts the external investor's valuation of the downsizing decision—empowered employee-owners.

With the existence of employee-owners within the firm, external investors of ESOP firms must also consider the possibility that employees have influence in labor-related issues (Rosen, Klein and Young (1986)).¹¹ ESOP firms develop a corporate culture in which employees have greater employment longevity and are less likely to leave the firm (Klein (1987) and Klein and Hall (1988)). There is also a greater degree of cooperation and communication between employees and managers (USGAO Study, 1987; Quarrey and Rosen, 1986).¹² Finally, employee-owners have greater decision-making power as a result of the ESOP (National Center for Employee Ownership, 2001).¹³ The combination of these three factors—the employee-owners' increased tenure, their cooperative relationship with management, and their greater decision-making power—might provide the employees of ESOP firms with power to influence labor-related decisions.

Any influence that employee-owners have could be due to the unique position that they occupy within the ESOP firm: employee-owners have a dual role as both agent (an employee subject to unemployment from downsizing) and as principal (a shareholder with voting rights that could influence downsizing decisions). This duality of roles might cause an internal conflict within employees as they weigh the potential loss of salary/wage

¹⁰ ESOP participants cannot sell their shares on the market unless they are already retired or are fired; as a result, the wealth effects measure only the external investors' reaction to the downsizing announcement

¹¹ They find that managers believe ESOP participants have influence on several managerial decisions, including "hiring, firing and personnel decisions".

¹² Quarry and Rosen (1986) find that ESOP firms sometimes have Employee Participation (EP) programs, in which management and workers come together to devise new strategies.

¹³ Depending on the governance rules established during the initial set-up, employees have the ability to direct the ESOP trustee in all voting matters, thus giving employees a voice in corporate decisions.

income from downsizing against the increased value in the ESOP that accrues to a firm that downsizes to the optimal level. Their dual roles can be analyzed from two extremes: the employee-as-agent and the employee-as-principal.

The risk-averse, employee-as-agent might prefer the current, “certain” wealth from salary/wage income to the future, “uncertain” retirement income promised by the ESOP, in which case the prospect of downsizing is unpalatable.¹⁴ By its very definition, employee downsizing results in workforce reductions that often lead to a decrease in employee income (Gibbons and Katz, 1991; Gardner, 1993) and loss of employee morale in the remaining employees (Brockner, 1988). These negative effects of downsizing are completely opposite to the goals of ESOP plans, which are designed to increase employment longevity, employee income, and corporate loyalty (National Center for Employee Ownership, 2001). As the primary target of layoffs, the employee-as-agent is completely averse to any downsizing and prefers no downsizing at all.

On the other hand, the employee-as-principal, whose interests are fully aligned with the owners, recognizes that maintaining the same level of employment will further reduce the value of the firm and could ultimately threaten the firm’s survival, which leads to the loss of both salary/wage and the ESOP. If the optimal level of downsizing is undertaken, the value of the firm and shareholder’s wealth will be maximized, as will the value of the ESOP. Consequently, the employee-as-principal would prefer the optimal level of downsizing.

These two extremes characterize the environment faced by ESOP participants when the firm needs to downsize its workforce. The reality might be that employee-owners, in a game-theoretic compromise, prefer a downsizing level somewhere in between the two extremes: the employee-preferred downsizing level is greater than zero in order to ensure the firm’s survival, but less than the optimal level that maximizes the value of the firm. This lower level of downsizing is preferred because: (1) it reduces each individual employee’s probability of job loss; (2) it marginally improves the performance of the firm

¹⁴ ESOP participants are able to receive the value of their ESOP shares if laid off, but only the portion that is fully vested. Usually distribution must begin no later than the sixth plan year following the year of separation from service, thus adding another delay in benefits if laid off (Rodrick and Rosen (1996)).

by cutting some of the labor costs, though not by the optimal amount; and (3) it still allows future growth of the ESOP's value, although perhaps at a lower level than if the firm had laid off the "correct" number of workers.¹⁵

If external investors suspect employee-owners of influencing the level of downsizing to maximize their own utility, then they might react differently to the downsizing decisions of ESOP versus non-ESOP firms, *ceteris paribus*. To compare the wealth effects of downsizing, Hypothesis 2 tests the assumption of no difference between the two types of firms.

Hypothesis 2: There is no difference between the wealth effects associated with downsizing ESOP firms versus downsizing non-ESOP firms.

This hypothesis simply proposes that the market does not distinguish between the downsizing decisions of ESOP and non-ESOP firms. By incorporating employee-ownership into the analysis of downsizing, Hypothesis 2 is used to measure external investors' perception of the downsizing decision. As will be detailed in Section II.5, there is a measurable and significant difference between the wealth effects of the two types of firms.

After determining the difference in the wealth effects of downsizing ESOP versus non-ESOP firms, it is necessary to examine what factors impact ESOP firms differently. This paper proposes two factors that might cause the wealth effects for ESOP firms to differ from the wealth effects of non-ESOP firms—the level of internal (employee and managerial) firm ownership and the level of downsizing.

The first factor—level of internal ownership—provide a direct measure of the potential agency problem that exists between the internal and external investors of an ESOP firm. Within ESOP firms, there is often a high level of employee-management interaction and cooperation; the very characteristic that ESOPs are designed to encourage. However, during periods of economic downturns or poor financial performance, that

¹⁵ A future study will examine characteristics of downsized ESOP participants (e.g. vested versus un-vested, senior versus junior

cooperation could mutate into a conspiracy whereby employees and managers collude to maintain their job security. Indeed, Gamble (2000) finds that with higher percentages of employee ownership, management tends to make decisions that are less risky and serve to entrench the manager. Managers of ESOP firms also view employees as friendly votes in matters related to corporate control. Thus, the “ensnared” managers of ESOP firms are unlikely to institute major downsizing activities that could alienate a potential base of support.¹⁶

The second factor—level of downsizing—is closely tied to the level of internal ownership. Workers who were once simply agents of the external shareholders are now, to a limited degree, internal shareholders of the company with many of the voting rights and responsibilities that ownership entails. When faced with a challenge to their employment longevity and income, “empowered” ESOP employees might focus more on securing their salary/wage through continued employment and use their ownership power to create an environment in which downsizing is unlikely or is instituted at a lower-than-optimal level. In a climate of corporate downsizing, the long-term strategic thinking that ESOPs are designed to encourage might be supplanted by short-term job-preservation instincts if employees act to reduce the level of downsizing. This potential for a lower level of downsizing represents a divergence from the optimal level of downsizing and might indicate employee entrenchment. When a sub-optimal level of downsizing is instituted, it could reduce the value of the firm, thereby expropriating value from external investors to internal workers.

The impact of these two factors on the wealth effects will be examined by testing Hypotheses 3 through 6, respectively. Hypothesis 3 looks at the role of internal ownership in determining stock price reactions while Hypotheses 4-6 examine whether there is interaction between employee-owners, managers, and/or the level of downsizing that influences wealth effects. If both the “ensnared” manager and “empowered” employees of

employees, etc.)

¹⁶ The possibility of managerial entrenchment necessitates an examination of how employee-percentage owned affects productivity and performance. This is covered in the second essay.

the ESOP firm act to restrict downsizing activity, then ESOP firms might choose a sub-optimal level of downsizing that could lead to lower wealth effects for ESOP firms when compared to non-ESOP firms.¹⁷ Alternatively, if the internal owners (agents) of the firm are perceived as working in the best interests of the corporation, then the wealth effects will be greater, *ceteris paribus*. The hypotheses are:

Hypothesis 3: The percentage of employee ownership has no influence on the wealth effect of ESOP companies versus non-ESOP companies.

Hypothesis 4: There is no interaction between the level of downsizing and the level of managerial ownership that influences the wealth effects of ESOP companies versus non-ESOP companies.

Hypothesis 5: There is no interaction between the level of downsizing and the level of employee ownership that influences the wealth effects of ESOP companies.

Hypothesis 6: There is no interaction between the level of employee ownership and the level of managerial ownership that influences the wealth effects of ESOP companies.

Hypothesis 3 examines how the magnitude of employee ownership impacts the wealth effects of the downsizing company. As the level of employee ownership increases, employees should ideally become more like principles and seek to maximize the value of the firm, even during a climate of downsizing. If such is the case, there should be a positive impact. Alternatively, if employees of ESOP firms exploit their ownership powers to their own advantage, there might be a perception of employee entrenchment that could manifest itself in negative wealth effects.

¹⁷ Just as Kraft (1991) found that profit-sharing firms have a lower number of employee dismissals, there is also a possibility that ESOP plans lead to a decreased level of downsizing.

Hypotheses 4-6 look at possible interaction between employees, managers and the level of downsizing. Hypothesis 4 examines whether there is interaction between managerial ownership and the level of downsizing that influences the wealth effect of the downsizing firm. If external shareholders believe that managers make value-maximizing downsizing decisions regardless of the ESOP status of the firm, then the interaction parameter estimate will be positive. Thus, for a given level of managerial ownership, higher levels of downsizing will result in more positive wealth effects.

Hypothesis 5 examines the possibility that the presence of employee-owners influence the level of downsizing, which in turn influences the wealth effects of the downsizing firm. If employee-owners value their salary/wage income more than firm ownership, they might try to use their ownership “powers” to reduce the percentage of workers laid off so that ESOP firms have lower downsizing levels than non-ESOP firms, *ceteris paribus*. External investors, noting the relatively low downsizing level when comparing it to industry competitors, might respond negatively to small layoffs within ESOP firms if they believe employees are entrenched in the firm.¹⁸

Hypothesis 6 examines the possibility of collusion between managers and employee-owners against external investors. If external investors feel that the “insiders” of ESOP firms (i.e. managers and employees) have worked together to alter the optimal level of downsizing, then ESOP firms might be valued lower than non-ESOP firms, *ceteris paribus*. Alternatively, if external investors feel that stock ownership encourages both managers and employees to act more like principals and to set the “correct” downsizing level, then ESOP firms might be valued higher or the same as non-ESOP firms.

Based on the results from testing these hypotheses, the comparison of wealth effects between ESOP and non-ESOP firms provides insight into the agency problems that are associated with downsizing decisions. If external investors believe that there is collusion between employee-owners and managers, then higher levels of internal ownership (i.e. ESOP and managerial ownership) could increase the agency problem and

¹⁸ Normally, large layoffs cause negative abnormal returns. But if large layoffs are positive here, it could mean that external investors more strongly approve of the larger layoff because they believe the firm is too “bloated” with workers.

lead to a more negative stock price reaction for downsizing announcements. Alternatively, if external investors believe that internal investors act more like principals to maximize the value of the firm even in the face of potential job loss, then the agency problem has been reduced and downsizing decisions should be accompanied by more positive stock price reactions.

Methodology and Data

To test for the wealth effects of downsizing announcements, standard market model event-study methodology is used (Fama et al, (1969) and Brown and Warner, (1985)). The standard market model is a statistical model that relates a security's return to the return on a market portfolio such as the CRSP Value Weighted Index or the CRSP Equal Weighted Index. The model has a linear specification and assumes that the asset returns are independent and identically distributed with a jointly, multivariate normal distribution through time (MacKinlay, 1997).

The market model is a preferred methodology because it removes the portion of the stock's return that is related to the variation in the market, thereby reducing the variance of the abnormal return estimates. As a result, the model is better able to detect event effects related to downsizing. The estimation equation is given below:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad (1)$$

where R_{it} is the rate of return on common stock for Firm i on Day t , R_{mt} is the rate of return on an equally- or value-weighted portfolio and ε_{it} is a random term assumed to be i.i.d $\sim N(0, \sigma^2)$.

The parameter estimates from the market model, a_i and b_i , are then used to calculate announcement period abnormal returns for each company. Abnormal returns are defined as the difference between actual returns and predicted returns:

$$AR_{it} = R_{it} - a_i - b_i R_{mt} \quad (2)$$

The average abnormal return is simply the sample mean, defined below:

$$AAR_t = \sum_{i=1}^N AR_{it} / N \quad (3)$$

Finally, the average abnormal returns are summed across time for the two-day event period, $t = -1, 0$ to yield cumulative average abnormal returns, $CAAR_t$

$$CAAR_t = \sum_{i=1}^N AAR_{it} \quad (4)$$

Although standard event-study methodology is a time-honored technique for gauging the wealth effects associated with various events, it does have inherent limitations. One limitation is the first order, serial dependence in the abnormal returns. Another problem is the unknown value for the variance of the abnormal returns. To adjust for these violations in statistical assumptions, corrections must be made. To correct the problem of serial dependence, the length of the estimation window must be sufficiently large (greater than 100 days) to take advantage of asymptotic properties; for this study, the market model uses data from a 255 trading-day estimation period ending 46 trading days before the event date. To address the problem of unknown variance, the sample variance from the market model regression will be substituted. One further modification is to standardize each abnormal return using an estimator of its standard deviation. According to Patell (1976), this standardization leads to more powerful tests.

After the CAARs are estimated, they are first tested for significance, regardless of ESOP status. Next, they are tested for differences between ESOP and non-ESOP firms. Finally, the CAARs act as the dependent variable and are regressed against the independent variables believed to impact the abnormal returns using Weighted Least Squares (WLS) regression, where the weight is the variance of the abnormal return.

The data used to conduct the OLS regression are composed of downsizing events for a testing period which covers the 10-year span from 1990-1999.¹⁹ A downsizing firm is defined as a company that announces a decision to lay off a portion of its workforce; an ESOP firm is defined as a company that has an employee stock ownership plan in place that adheres to the requirements established under ERISA of 1974. To isolate the effect of the announcement, the downsizing firm should have no previous layoffs at least three years prior to the “current” announcement and no subsequent layoffs for at least three years after the “current” announcement.²⁰ Finally, no other announcement can be made in

¹⁹ The time period was chosen to incorporate and/or reduce any distortions that would accompany the 1986 change in tax laws.

²⁰ Because layoff decisions can be made more than once during the life cycle of a corporation, a company cannot be excluded from research consideration for having multiple layoff instances as long as those instances are sufficiently spaced apart. Three-year spans were chosen to ensure that the fiscal year end data on *Compustat* did not overlap with any other downsizing activity for the same firm.

conjunction with the downsizing decision, as this might cloud the effects of the layoff itself.

In addition to the above requirements, the company must make its downsizing announcement through some verifiable public medium (e.g. *Wall Street Journal*) and the financial/accounting information of the company must be available on COMPUSTAT for the entire testing period. To analyze the stock price reaction, stock price information for the downsizing companies must be available on CRSP for at least three years before the announcement date. Table 1 provides the descriptions of variables that are used to examine the effects of ESOPs and downsizing on shareholder's wealth.

These variables capture firm-specific attributes of the downsizing firm. However, because downsizing can be cyclical to some degree and companies within an industry face similar market challenges, the market conditions must be extracted from firm-specific data to capture the response to layoffs. The 2-digit industry code is used to classify firms into industries.²¹ The descriptive statistics and frequency tables are shown in Table 2 and Table 3, respectively.

As depicted in Table 2, the cumulative average abnormal return, CAAR, for all firms (N=718), is negative (-0.01752).²² However, ESOP firms have positive average abnormal return (0.00042) whereas non-ESOP firms have a negative average abnormal return (-0.02380). The table also shows that non-ESOP firms have a significantly higher level of downsizing, DS, (11.61 percent) as compared to ESOP firms (6.97 percent). With respect to firm size, MKTVL, downsizing ESOP firms have an average market value of \$9.9 billion with an average of 2.16 segments, SEGS, per firm whereas downsizing non-ESOP firms tend to be smaller with an average market value of \$3.1 billion and an average of 1.50 segments per firm. Finally, the managerial ownership, MGR_OWN, is greater for non-ESOP firms (13.18 percent) versus ESOP firms (4.63 percent); institutional ownership, INST_OWN, is also greater (18.71 percent for non-ESOP firms versus 11.84 percent for ESOP firms). However, for ESOP firms, when employee ownership, ESOP,

²¹ Table 28 in the Appendix lists the 2-digit industry codes of firms included in the sample. Table 29 shows the yearly breakdown of downsizing firms included in the sample.

²² Test statistics are shown only for the difference in means column.

(8.06 percent) is added to managerial ownership (4.63 percent), there is no significant difference between the total percentage of internal ownerships for ESOP firms (12.69 percent) versus that of non-ESOP firms (13.18 percent). These descriptive statistics are comparable to extant research (Elayan et al., (1998); Worrell et al., (1991); Lin and Rozeff, (1987)), which finds a negative abnormal return for downsizing firms.

Table 3 shows the frequency distribution of the qualitative variables. For downsizing reason, the most prevalent reason cited is to cut expenses; the least cited reason is to improve technology. With respect to merger/acquisition activity, a larger percentage of non-ESOP firms (15.86 percent) had merger activity within a 2-year span of the downsizing announcement when compared to ESOP firms (9.89 percent). Finally, a larger percentage of ESOP firms (26.37 percent) were unionized versus non-ESOP firms (18.84 percent).

In Table 4, the downsizing firms are divided into quintiles based on the CAARs. The highest quintile (Q5) is compared to the lowest quintile (Q1) for all downsizing firms (N = 718) as well as for the sub-groups: non-ESOPs (N = 536) and ESOPs (N = 182). The quintile analysis shows that non-ESOP firms have more variability in their abnormal returns with an average range of -0.1439 in the lowest quintile to 0.0853 in the highest quintile. ESOPs, on the other hand, have a smaller range of abnormal returns from -0.1019 in the lowest quintile to 0.0649 in the highest quintile.

This higher degree of variability in the CAARs of non-ESOP firms might indicate that more information is conveyed to investors of non-ESOP firms during downsizing activity, as external investors adjust their beliefs about the prospects of the firm. The lower degree of variability in abnormal returns for ESOP firms might be due to a higher level of communication between internal and external shareholders so that some of the downsizing information is already encapsulated in the stock price prior to the announcement. In other words, ESOPs might play a role in reducing asymmetry problems between internal and external shareholders, which means that the “bright side” of ESOPs is present during downsizing events. The ambiguity over which “side” is dominant necessitates the regression analysis that is conducted in the next section.

Regression Equations and Results

To test Hypothesis 1 for the existence of wealth effects regardless of ESOP status, the first regression equation uses the following specification:

$$\begin{aligned} CAAR_{it} = & \alpha_0 + \beta_1 DS_{it} + \beta_2 MGR_OWN_{it} + \beta_3 INST_OWN_{it} + \beta_4 LNMV_{it} \\ & \beta_5 HERF_{it} + \beta_6 SEGS_{it} + \beta_7 UNION_{it} + \beta_8 MERGE_{it} + \\ & \beta_9 CP_{it} + \beta_{10} IT_{it} + \beta_{11} CX_{it} + \beta_{12} DD_{it} + \beta_{13} IP_{it} + \beta_{14} RE_{it} + \varepsilon_{it} \end{aligned} \quad (5)$$

where $CAAR_{it}$ is the cumulative average abnormal return over the 2-day period, $t = 0$ to $t = 1$.²³ The quantitative variables of interest include DS_{it} , the percentage of the workforce that will be laid off per the downsizing announcement; MGR_OWN_{it} , which measures the managerial ownership of the firm; and $INST_OWN_{it}$, which measures the institutional ownership of the firm. Quantitative control variables are also included, such as $LNMV$, $HERF$, and $SEGS$. $LNMV_{it}$ is calculated as the natural log of the firm's market value, $HERF_{it}$ measures the degree of industry concentration and competitiveness, and $SEGS_{it}$ is a measure of the firm's diversification.

Finally, the qualitative variables are added to the model and they include $UNION_{it}$, which measures the impact of unionization on the downsizing firm; and $MERGE_{it}$, which examines the effect of merger/acquisition activity that occurs within two years of the downsizing announcement. The last six qualitative variables measure the reason for downsizing as determined by the announcement. The reasons include close plant (CP_{it}), improve technology (IT_{it}), cut expenses (CX_{it}) declining demand (DD_{it}), improve technology (IP_{it}), and restructuring/reorganizing (RE_{it}). Those downsizing firms that do not give a reason are classified as NA, which serves as the base level of the qualitative variable for downsizing reason. Note that the ESOP variable is not included because this

²³ I also examined the 3-day time period $t = -1$ to $t = 1$; there was no evidence of abnormal returns for that time period. This may be an indication that there was very little information leakage prior to the downsizing announcement.

equation is testing for the wealth effects of downsizing, regardless of ESOP status. (For ease of exposition, the subscripts will be omitted from this point forward.)²⁴

Table 5 reports the least-squares estimates of Equation (5). Based on the multiple regression results, there is evidence that downsizing decisions lead to negative CAARs and as the level of downsizing increases, abnormal returns become even more negative. Furthermore, the existence of institutional owners exerts a positive impact on the wealth effects of the downsizing firm, as do the size of the firm and the presence of a union. Finally, with respect to downsizing reasons, declining demand has a significantly negative influence on the wealth effects of the firm whereas improving technology, cutting expenses and restructuring all lead to positive abnormal returns. These findings are consistent with extant research (Elayan et al., (1998); Worrel et al., (1991)) that shows negative wealth effects for downsizing firms and bolster the contention that downsizing generally has a negative impact on the firm.

Although the results are consistent with other researchers, the difference in this study centers on the inclusion of employee ownership as an explanatory factor in the wealth effects of downsizing. Specifically, this study examines the role that employee ownership has on the firm, as perceived by external investors and if those investors value downsizing decisions differently for ESOP versus non-ESOP firms. After measuring the wealth effects associated with downsizing for firms in general, the following regression equation will be used to test Hypothesis 2 for differences in the wealth effects of ESOP versus non-ESOP firms:

$$\begin{aligned}
 CAAR_{it} = & \alpha_0 + \beta_1 DS_{it} + \beta_2 ESOP_{it} + \beta_3 MGR_OWN_{it} + \beta_4 INST_OWN_{it} + \beta_5 LNMV_{it} \\
 & \beta_6 HERF_{it} + \beta_7 SEGS_{it} + \beta_8 UNION_{it} + \beta_9 MERGE_{it} + \\
 & \beta_{10} CP_{it} + \beta_{11} IT_{it} + \beta_{12} CX_{it} + \beta_{13} DD_{it} + \beta_{14} IP_{it} + \beta_{15} RE_{it} + \epsilon_{it}
 \end{aligned} \tag{6}$$

The variables in Equation (6) are the same as described in Equation (5), with the exception of ESOP, which enters Equation (6) as a dummy variable equal to 1 if the firm

²⁴ I assume that if firms give no reason for downsizing, it is perceived negatively by investors. Otherwise, managers would give positive

has an ESOP and 0 otherwise. This specification measures whether the mere existence of an ESOP within the firm affects the abnormal returns.

In addition to testing for the straightforward effects of ESOP via the ESOP dummy variable, it is necessary to examine how the percentage of employee-ownership impacts the wealth effects of the downsizing firm. By examining how wealth effects change as the percentage of the ESOP increases, this study provides greater insight into external investors' perceptions of the influence that employee ownership has on downsizing firms. Table 6 shows the regression results for both specifications of Equation (6); ESOP as a qualitative variable and as the numerical percentage of employee ownership.

Note that with the inclusion of the ESOP dummy variable, the parameter estimates are not much different than those from the estimation of Equation (5). However, with the inclusion of the ESOP dummy, the "Improve Technology" reason for downsizing becomes less significant. Of interest in this equation is the sign on the ESOP parameter estimate; it is positive when ESOP is included as a dummy variable and when it is expressed as the percentage of employee ownership. This indicates that downsizing firms with an ESOP plan in place will experience more positive (or less negative) wealth effects than non-ESOP firms; that is, the abnormal returns of an ESOP firm are an average of 1.12 percent higher than the abnormal returns of non-ESOP firms.

Analyzing the effect that ESOPs have on abnormal returns, it is evident that ESOPs have some impact on the wealth effects of the firm.²⁵ As the percentage of employee ownership increase, the wealth effects of the firm increase by 9.32 percent. However, the level of significance is somewhat low; ESOP is only significant at the 15 percent level using a two-tailed test.

With respect to the other control variables included in the regression, institutional ownership, market value of the firm and unionization lead to positive abnormal returns for downsizing firms. As for the reason for downsizing, cutting expenses and restructuring

reasons.

²⁵ From this point forward, all analysis on employee ownership is based on the quantitative measure of ESOP instead of the qualitative ESOP dummy variable

have a positive effect whereas declining demand causes negative wealth effects. Again, these results are consistent with extant research.

Regression results show that ESOPs slightly affect abnormal returns. It is now time to address the possibility that there might be interaction between employee-owners and managerial owners that also impacts the wealth effects of the firm. Hypotheses 4-6 test for interaction between ESOPs, downsizing and/or managerial ownership.

To test Hypotheses 4-6, the following equation is estimated:

$$\begin{aligned}
 CAAR_{it} = & \alpha_0 + \beta_1 DS_{it} + \beta_2 ESOP_{it} + \beta_3 MGR_OWN_{it} + \beta_4 INST_OWN_{it} + \beta_5 LNMV_{it} + \\
 & \beta_6 EAGE_{it} + \beta_7 ESOP_{it} * DS_{it} + \beta_8 MO_{it} * DS_{it} + \beta_9 ESOP_{it} * MO_{it} + \\
 & \beta_{10} HERF_{it} + \beta_{11} SEGS_{it} + \beta_{12} UNION_{it} + \beta_{13} MERGE_{it} + \\
 & \beta_{14} CP_{it} + \beta_{15} IT_{it} + \beta_{16} CX_{it} + \beta_{17} DD_{it} + \beta_{18} IP_{it} + \beta_{19} RE_{it} + \\
 & \beta_{20} DS_{it}^2 + \beta_{21} ESOP_{it}^2 + \beta_{22} MO_{it}^2 + \beta_{23} EAGE_{it}^2 + \varepsilon_i
 \end{aligned} \tag{7}$$

The main variables of interest in this equation are DS, ESOP, MGR_OWN, ESOP_AGE, ESOP*DS, MO*DS and ESOP*MO.²⁶ They capture, either directly or through interaction, the effect that employee stock ownership has on the downsizing firm. The first two variables (DS and ESOP) along with the interaction variable (ESOP*DS), measures the impact that downsizing and employee ownership have on the wealth effects of the firm. The interaction term ESOP*DS will be evaluated for various levels of ownership—that is, less than 5, between 5 and 10 percent and greater than 10 percent levels of ownership. If the interaction variable is significant, then it could be an indication of how external shareholders perceive the impact of employee-owners on the level of downsizing.

To capture the possibility of collusion, the variables MGR_OWN, MO*DS and ESOP*MO are included. Based on Hallock's (1998) research that managers receive monetary benefits from downsizing, the MO*DS variable should capture interaction between the level of managerial ownership and the level of downsizing. In addition,

²⁶ "MO" stands for Managerial Ownership

Gamble's (2000) research documenting the non-pecuniary benefits that accrue to managers of ESOP firms necessitates the inclusion of the interaction term, ESOP*MO. The sign on the interaction terms indicate whether external investors believe collusion exists between employees and managers that positively or negatively impacts wealth effects.

EAGE serves as a proxy for the degree of sophistication or learning curve that employee-owners have acquired. Firms that have older ESOP plans might also have employees with longer employment tenure, greater influence over managers, more knowledge of corporate information, and greater awareness of the powers afforded by the ESOP. Thus, firms with older ESOP plans could have a greater incidence of employee entrenchment, which will be valued negatively by external investors.

Variables are added to control for firm-specific attributes that might cloud the effect of ESOPs. They include INST_OWN, HERF, SEGS, LNMV, and the reasons for downsizing. The Herfindahl index, as measured by HERF, captures the level of competitiveness in a particular industry and proxies for the firm's market power. For highly competitive industries, layoffs could occur at a higher rate as companies alter their variable costs (i.e. labor) to maintain profitability and maximize firm value.

As described earlier, the downsizing reasons are used to distinguish between "positive" reasons (IP=Improve Productivity, IT=Improve Technology, CX=Cut Expenses, RE=Restructuring) and "negative" reasons (DD=Declining Demand, CP=Close Plant). Based on the research of Palmon et al., (1997) and Chen et al., (2001), these variables are included to control for downsizing reasons given by management.

SEGS is used to measure the extent to which corporate diversification (i.e. conglomerates) affects the wealth effects of downsizing firms. Chen et al. (2001) and Scott and Ueng (1996) find that downsizing decisions that narrow the focus of the firm have more favorable (i.e. less negative) wealth effects.

The variable, LNMV, controls for the size of the firm. Larger firms might be better able to withstand market downturns. Thus, they could have lower levels of downsizing, *ceteris paribus*, than smaller firms which might lead to less negative wealth effects.

Finally, to control for curvilinear effects, squared terms are included in the equation for DS^2 , $ESOP^2$, MO^2 and $EAGE^2$. By including second-order variables, the model is better able to capture decreasing or increasing marginal effects of downsizing, employee ownership, managerial ownership, and the age of the ESOP.

These variables, when included in the regression equation used to analyze the wealth effects of downsizing, provide insight into the question of how employee stock ownership impacts the downsizing decisions of the firm. The significance of these variables in explaining the variation in the stock price reaction of downsizing firms contribute to a better understanding of the agency problems that exist within the firm.

The results from estimating Equation (7) on the full sample (N=718) of downsizing firms are shown in Table 7. Two different models are analyzed; the full model includes both interaction and curvilinear effects whereas the reduced model has only the interaction effect. In the full model, the squared terms are highly insignificant and could distort the estimation for the other variables. After the squared terms are excluded, there is evidence of a significantly negative downsizing effect ($DS = -0.11009$; t-statistic = -2.87). In addition, institutional ownership, market value, unionization, technology improvements, reduction of expenses, and corporate restructuring all have a significantly positive impact on wealth effects, whereas declining demand has a negative effect.

While Table 7 details the negative impact of downsizing (in the reduced model), the parameter estimates on the ESOP-related variables and their interaction are not as significant, with the exception of $ESOP*MO$. The parameter estimate for this interaction variable is significantly positive ($ESOP*MO = 1.01860$; t-statistic = 1.86), causing Hypothesis 6 to be rejected in favor of the alternative hypothesis that there is interaction between employee- and managerial-ownership that positively influences abnormal returns. However, the lack of significance on the other ESOP-related variables could be due to the use of the full sample in estimating Equation (7) without controlling for different characteristics of the data set. Thus, it is necessary to re-estimate Equation (7) on several different sub-samples of the data.²⁷

²⁷ None of the squared terms in Equation (7) is significant for the sub-samples of the data and therefore, are not included in the results.

The data are divided based on the following criteria: (1) level of downsizing; (2) age of ESOP plan; (3) Tobin's Q; and (4) ESOP status. For the first criteria, level of downsizing, the data are divided into two groups: low downsizing level ($DS < 5$ percent) and high downsizing level ($DS > 5$ percent). The results from the regression are shown in Table 8.

There are 281 low-downsizing firms and 437 high-downsizing firms; however since the regression results for low-downsizing are not very significant, I will focus on firms with high levels of downsizing. Table 8 shows that firms with high levels of downsizing have more negative wealth effects ($DS = -0.16405$; $t\text{-statistic} = -3.07$). This result is consistent with existing research, as is the negative impact of declining demand ($DD = -0.04097$; $t\text{-statistic} = -2.75$). The positive impact of firm size, institutional owners, unionization, and restructuring have also been documented in the literature (Palmon et al., (1997); Lin and Rozeff, (1987)).

As for the ESOP-related variables, ESOP has a negative effect on abnormal returns when downsizing levels are high ($ESOP = -0.36046$; $t\text{-statistic} = -1.56$), but the result is only significant at the 15 percent level. There is also evidence that employee-ownership interacts with managerial ownership to positively impact wealth effects ($ESOP*MO = 2.81756$; $t\text{-statistic} = 2.84$). Thus when the interaction effect is analyzed in conjunction with the straight effects of ESOP, the net result is positive impact on abnormal returns. In other words, the "bright side" of ESOPs is manifested in high downsizing levels as employees and managers work together to improve shareholder wealth.

Table 9 shows the regression results estimating Equation (7) for the 182 ESOP-only firms that are divided based on the age of the ESOP (EAGE). Firms with ESOP plans older than 10 years ($EAGE > 10$) are defined as older ESOP plans; newer plans have been in existence for less than 10 years ($EAGE < 10$) prior to the event date. These criteria yielded 82 older plans and 100 newer plans.

The results in Table 9 show that ESOP participants negatively interact with downsizing decisions, regardless of plan age— $ESOP*DS$ is equal to -2.53 and -3.51 for

older and newer plans, respectively and is significant at the 1 percent level. However, firms with older plans have significantly positive interaction between managerial ownership and downsizing ($MO*DS = 5.60895$; $t\text{-statistic} = 3.88$) whereas firms with newer plans have significantly negative interaction between managerial ownership and downsizing ($MO*DS = -3.97967$; $t\text{-statistic} = -3.20$). This result could mean that employees of both older and newer ESOP plans have some degree of entrenchment or resistance to downsizing but firms with newer plans are perceived more negatively by external investors than firms with older plans. In other words, firms with older ESOP plans have higher abnormal returns, thus indicating that managers' incentives are more aligned with external investors.

In Table 10, the data are divided into two groups based on Tobin's Q. Because some observations have missing values on *Compustat*, only 418 downsizing firm are included in the regression. The firms are separated into high Q ($Q > 1.0$) and low Q ($Q < 1.0$) firms.²⁸ This separation yields 165 high-Q and 253 low-Q firms; however the regression results are not very significant for either sub-group. None of the ESOP-related variables is significant in either regression. This result might be due to the fact that downsizing firms typically have low-Q values during the event year so that there is very little difference between the two sub-groups. However, Tobin's Q will be more thoroughly analyzed in the Essay 2, which uses 5-year panel data to assess the impact of downsizing on the long-term financial performance of the firm.

The final sub-sample analysis is based on ESOP status. All 718 downsizing firms are divided into ESOP ($N=182$) and non-ESOP ($N=536$) sub-samples. The results from estimating the full and reduced models on both the ESOP and non-ESOP sub-samples are shown in Table 11.²⁹

Upon examining Table 11, it is clear that the curvilinear variables are not very significant, except for $EAGE^2$ in the full ESOP model.³⁰ As a result, analysis is conducted

²⁸ The data was also divided based on Q levels greater or less than 1.25 and Q levels greater or less than 1.5. The results were the same.

²⁹ Of course, for non-ESOP firms, Equation (7) will not include any of the ESOP-related variables.

³⁰ The positive sign on $EAGE$ means that the age of the ESOP has a positive impact on the wealth effects of the downsizing firm. However, the negative sign on $EAGE^2$ indicates that the effect increases at a decreasing rate.

on only the reduced models for both ESOP and non-ESOP firms. Note that the parameter estimate for downsizing is positive but has only a 15 percent level of significance for ESOP firms (DS = 0.07292; t-statistic = 1.55); however downsizing is significantly negative for non-ESOP firms (DS = -0.10777; t-statistic = -3.01), indicating that external investors view downsizing activity in ESOP firms more favorably than downsizing in non-ESOP firms.

With respect to the other quantitative control variables in the reduced models, institutional ownership loses some of its significance for ESOP models, yet it still has a positive impact on wealth effects for non-ESOP models. This result is comparable to other research (Park and Song, 1995) and is an indication that institutional owners play an important monitoring role. Neither HERF nor SEGS contribute any explanatory power to the model, however, the natural log of the firm's market value (LNMV) has a significantly positive influence on wealth effects for both ESOP and non-ESOP firms. This suggests that external investors respond more positively to the downsizing decisions of larger firms who might be perceived as being bloated with employees.

As for the qualitative variables, UNION is significantly positive for ESOP firms, however it has little explanatory power for non-ESOP firms. MERGE is insignificant for both the ESOP and non-ESOP models. For downsizing reasons, only plant closings (CP), cutting expenses (CX) and restructuring (RE) are significantly positive for ESOP firms while improving technology (IT), cutting expenses (CX), and restructuring (RE) are significantly positive for non-ESOP firms. Declining demand (DD) is significantly negative, but only for non-ESOP firms. Again, these results are in line with what previous researchers have found (Chen et al., (2001); Palmon et al., (1997)).

Of the interaction variables tested in this model, only MO*DS is significantly negative for ESOP firms. Thus, there is evidence to reject Hypothesis 5 for ESOP firms in favor of the alternative that there is interaction between the percentage of managerial ownership and the level of downsizing. In other words, for a given percentage of managerial ownership, as the level of downsizing increases, the wealth effects become even more negative. This finding indicates that external investors view downsizing

decisions more negatively in firms with larger shares of managerial ownership, thereby lending some support to Hallock's (AER, 1998) study, which shows that managers of downsizing firms are more likely to be dismissed from the company following a layoff.

As for the other interaction variables in this model, ESOP*DS and ESOP*MO (which are used to test Hypothesis 4 and Hypothesis 6, respectively), they become significant when the ESOP firms are analyzed for various levels of employee ownership. Specifically, the 182 ESOP firms are divided into three sub-groups where the percentage held in the ESOP is less than 5% (N=73 firms), between 5% and 10% (N=60 firms) and greater than 10% (N=49 firms). The summary statistics and frequency tables for the three levels of employee ownership are shown in Tables 12, 13, and 14, respectively.

Table 12 shows the differences between ESOP firms with different levels of employee ownership. Firms with less employee ownership tend to be larger (see MKTVAL) and more competitive (see HERF) than firms with greater employee ownership. There is also evidence that, as the level of employee ownership increases from less than 5 percent to greater than 10 percent, managerial ownership (MGR_OWN) and institutional ownership (INST_OWN) have a U-shape, whereas diversification (SEGS) has an inverted U-shape. This indicates that medium levels of employee ownership have the potential to dominate managerial and institutional ownership in diversified firms and might therefore have a louder voice in the corporate governance of the firm. With respect to the variables of interest in this study, note that the abnormal returns (CAARs) increase from negative to positive returns as the percentage of employee ownership increases. This suggests that firms with higher levels of employee ownership have positive wealth effects which could mean that there is better incentive alignment between employee-owners and investors.

Table 13 compares the difference in means of the quantitative variables for the different levels of employee ownership. There is significant difference between the ESOP levels for all three sub-samples. Furthermore, there is significant difference between low- and medium-ESOPs for downsizing, managerial ownership, and institutional ownership indicating that low-ESOP firms have higher levels than medium-ESOP firms for these

quantitative variables. As for low- versus high-ESOP levels, low-ESOP firms have significantly higher levels of downsizing. There are very few differences between medium-versus high-ESOP levels of ownership.

Table 14 depicts the frequency of the qualitative variables. No discernable patterns are evident in the qualitative variables, with the exception of unionization. Unionization is much more prevalent in ESOP firms with low ($ESOP < 5\%$) and high ($ESOP > 10\%$) employee ownership, but it is almost equally divided in firms with medium ($5\% \leq ESOP \leq 10\%$) employee ownership. This increased prevalence of unionization in medium-ESOP firms coupled with the fact that medium-ESOP employees hold a larger percentage of the firm than institutions and managers may indicate that employees in medium-ESOP firms wield considerable power.

To test Hypotheses 4-6 for ESOP firms only, Equation (7) is analyzed for the three different levels of employee ownership.³¹ The results from estimating Equation (7) for each ESOP level are shown in Table 15. For low-ESOP firms, downsizing ($DS = .25811$; $t\text{-statistic} = 2.03$) and ESOPs ($ESOP = 0.90416$; $t\text{-statistic} = 1.64$) have a positive effect on abnormal returns, yet there is negative interaction between employee ownership and downsizing ($ESOP * DS = -7.42621$; $t\text{-statistic} = -1.78$). This suggests that for a given level of ESOP, as downsizing increases, there is a negative effect on abnormal returns.

For medium-ESOP firms, there is evidence of positive interaction between managers and employee-owners ($ESOP * MO = 17.44354$; $t\text{-statistic} = 2.90$). However, the positive interaction is mitigated by the fact that ESOPs ($ESOP = -6.42544$; $t\text{-statistic} = -2.40$) and managerial ownership ($MGR_OWN = -1.29385$; $t\text{-statistic} = -2.58$) individually have a negative impact. In other words, for a given level of employee ownership, wealth effects increase as the managerial ownership increases. The net positive interaction between ESOPs and managerial ownership suggests that external investors believe managers—perhaps in conjunction with institutional investors ($INST_OWN = 0.06660$; $t\text{-statistic} = 2.49$)—keep medium-ESOP employees in check.

³¹ For each level of ownership the full model, including interaction and squared terms, was estimated. However, because not all squared terms were significant, I re-estimated the regression equation for each level of ESOP, including only those squared terms that were significant. The final results are shown in Table 15.

As for high-ESOP firms, few of the independent variables are significant, with the exception of unionization ($UNION = 0.04952$; $t\text{-statistic} = 2.75$) and the interaction between employee ownership and downsizing ($ESOP*DS = -4.47433$; $t\text{-statistic} = -2.00$). The significance of these two variables might indicate that there is entrenchment within high-ESOP firms, as perceived by investors; however that potential entrenchment does not translate into lower wealth effects. If external investors believe the downsizing level is incorrect, the downsizing announcement should yield negative returns, however the opposite reaction occurs; high-ESOP firms have a low level of downsizing as well as positive abnormal returns.

The results from the preceding analysis provide a complex picture of the wealth effects associated with downsizing. On one hand, ESOP firms have significantly less negative abnormal returns than non-ESOP firms and in some cases actually have positive abnormal returns. However, there does seem to be evidence of entrenchment, particularly for medium- and high-ESOP firms.

Despite the finding of significantly positive interaction between managerial ownership and downsizing for ESOP firms in general, there is no evidence of significant interaction within the different levels of ESOP. Perhaps the separation of the ESOP firms into three groups reduces the explanatory power of the interaction variable, $MO*DS$. Nevertheless, there is sufficient evidence to reject each of the interaction hypotheses, whether for ESOP firms in general or for different levels of ESOP percentages.

Summary and Conclusion

Finance, economic, and management literature documents the negative wealth effects that often accompany downsizing decisions. However, previous research has failed to take into consideration the impact that employee ownership has on the abnormal returns of downsizing firms. This study fills that empirical void. Given that Employee Stock Ownership Plans (ESOPs) are used to improve the agency relationship between employees, managers, and shareholders, and that downsizing decisions are often at odds with the objectives of ESOPs, a relevant question concerning the role of employee-ownership arises when ESOP firms engage in downsizing activity. More specifically: Is there evidence that ESOP firms have different wealth effects associated with downsizing decisions than non-ESOP firms?

Using downsizing as the catalyst to which the market reacts, this paper examines the wealth effects that accompany downsizing announcements to determine whether external investors interpret layoff decisions of ESOP firms differently from non-ESOP firms. When comparing the difference in means between ESOP and non-ESOP firms, there is a significant difference between the two types of firms for all quantitative variables except HERF. Thus, for the CAARs estimate, ESOP firms are significantly less negative than non-ESOP firms. There is also evidence that the level of downsizing for non-ESOP firms is significantly higher than ESOP firms. This result is the first indication that the employee-owners of ESOP firms could be entrenched. This lower level of downsizing coupled with a significantly negative parameter estimates for the ESOP variable would be an indication that the “dark side” of ESOPs exists.

I find that when downsizing firms are not separated based on ESOP status, there is a significantly negative wealth effect, which is consistent with extant research (Chen et al., (2001); Park and Song, (1995)). However, when ESOP is included there is some evidence that ESOPs have a significant positive impact on the abnormal returns, but it is only for newer ESOP plans that are less than ten years old. Even when the data are divided into sub-groups based on downsizing level, ESOP age, and Tobin’s Q, the ESOP variable

contributes very little to the analysis of wealth effects.

When the entire data sample is divided into ESOP and non-ESOP firms, there is evidence that downsizing leads to small, marginally significant (at the 15 percent level) positive wealth effects for ESOP firms, yet non-ESOP firms have larger, highly significant negative wealth effects. Because the negative abnormal returns associated with non-ESOP companies outweigh the positive abnormal returns of ESOP firms, the negative wealth effects often documented in existing research is easily explained.

With respect to the interaction between ESOPs, managerial ownership and/or downsizing, there is evidence of negative interaction between managerial ownership and downsizing for ESOP firms, but not for non-ESOP firms. Additionally, when ESOP firms are divided by levels of employee ownership into low ($ESOP < 5$ percent), medium ($5 \text{ percent} \leq ESOP \leq 10 \text{ percent}$) and high ($ESOP > 10 \text{ percent}$) ESOP levels, there is evidence of negative interaction between ESOP and downsizing, but only for low and high ESOP levels. There is also evidence of positive interaction between ESOP and managerial ownership, but only for medium ESOP levels.

The other explanatory variables that impact the wealth effects of the firm include the age of the ESOP. As the age of the ESOP increases, it exerts a positive influence on the wealth effects of the firm. Additionally, greater institutional ownership and firm size lead to positive abnormal returns for the downsizing firm.

These findings of significant interaction for various levels of employee ownership show that external investors are highly aware of the role that employee-owners play in the downsizing decisions of the firm and that they use this knowledge when evaluating the downsizing decisions. And since ESOP participants are prevented from selling their shares until after retirement or dismissal, the stock price reaction provides clearer insight into external investors' reaction to downsizing. For the most part, external investors view employee ownership positively, yet there is some indication that external investors believe employee-owners are entrenched in the firm, especially for high levels of employee ownership.

The implication for investors is that the “bright side” of employee ownership marginally overcomes the “dark side” so that downsizing decisions do not hurt the ESOP firms as much as non-ESOP firms. When institutional shareholders are added to the equation, they increase the wealth effects of downsizing firms even more, especially for medium-ESOP firms where institutional investors serve as a monitoring force.

However, this study is limited by its conditional nature—that is, it examines wealth effects *conditional* on the firm’s downsizing decision. To make causal statements regarding the impact that downsizing decisions have on the wealth effects, an extension of this research will examine the downsizing decision itself; specifically, what factors are used by managers in making the decision to lay off a portion of the workforce. By performing a two-stage regression that uses a logistical equation to model the manager’s downsizing decision, the potential selectivity bias is mitigated and the event study results will be more robust.

Another extension will be to examine if there is a difference between employee stock ownership via a 401(k) plan versus stock ownership in an ESOP. Like ESOPs, participants in a 401(k) plan also have voting rights. However, there is no centralized organization through which employees can network with each other and with management. There is also no board representation by employees with 401(k) stock ownership. Thus, their level of influence could be less than that of ESOP employees. If downsizing decisions differ for the two types of employee owners, it will provide additional insight into the agency problem and corporate governance issues of ESOP firms.

Table 1. Description of Variables Used in Wealth Effects Regression

This table presents information on the independent variables used in the regression equations. It describes how each variable is calculated and the reason for inclusion.

Variables, X_i	Description of Variable	Reason for Inclusion
CAAR	Cumulative Average Abnormal Return	Dependent variable for regressions.
DS	Percentage of workers laid off. Equals number of employees laid off divided by the total workforce.	Measures the impact that downsizing has on the firm. (Chen et al., 2001; Elayan et al., 1998; Kraft, 1991)
ESOP	Percentage of the firm held by employees in qualified ESOP plan;	Measures the impact of employee ownership on wealth effects. (Klein, 1987; Klein and Hall, 1988)
MGR_OWN	Percentage of the firm held by upper management. Calculated as shares held plus value of fully exercised options.	Measures the impact of managerial ownership on wealth effects . (Gamble, 2000; Hallock, 1998)
INST_OWN	Percentage of the firm held by institutional investors	Measures the impact of institutional ownership on wealth effects.
EAGE	Dummy variable; 0 for non-ESOP firms; t+1 for each year the ESOP has been in existence.	Measures ESOP age; proxy for ESOP participants' level of organization. (Kumbhaker and Dunbar, 1993)
HERF	Squared sum of the market share of each firm, i , within 2-digit industry, j .	Controls for market leader effect and level of competition. (Chen et al, 2001)
SEGS	Number of Business Segments	Controls for level of diversification. (Scott and Ueng, 1996)
MKTVAL	Firm's Market Value; the natural log of market value used in regression.	Controls for firm size. (Jones and Kato, 1995)
DS_REAS	Dummy variables; equals 1 for each respective reason, 0 if no reason given.	Control for positive/negative reason for downsizing. (Palmon, et al, 1997)
UNION	Dummy Variable; equals 1 if firm is unionized, 0 otherwise	Controls for unionization.
MERGE	Dummy Variable; equals 1 if firm had merger within 2 year span, 0 otherwise	Controls for Merger/Acquisition activity.
ESOP*DS	ESOP percentage multiplied by level of downsizing.	Measures interaction between ESOP and downsizing. Proxy for agency problem. (Kraft, 1991)
MO*DS	Managerial ownership multiplied by level of downsizing.	Measures interaction between manager ownership and downsizing. Proxy for agency problem. (Kraft, 1991)
ESOP*MO	ESOP percentage multiplied by managerial ownership.	Measures collusion between employees and managers. Proxy for agency problem. (Gamble, 2000)

Table 2. Summary Statistics: Means (Standard Deviations)

This table presents descriptive statistics on the 718 downsizing firms from 1990-1999 included in the final sample. The “Difference in Means” column tests the null hypothesis that ESOP firms are equal to non-ESOP firms for each independent variable shown.

Variables	All	Non-ESOPs	ESOPs	Difference in Means	
CAAR	-0.01766 (0.08661)	-0.02380 (0.09521)	0.00042 (0.04980)	-0.02422 (0.00553)	***
DS	0.10432 (0.11827)	0.11609 (0.12360)	0.06968 (0.09294)	0.04641 (0.00872)	***
ESOP	N/A	N/A	0.08063 (0.07660)	N/A	N/A
EAGE	N/A	N/A	12.73077 (9.26223)	N/A	N/A
MGR_OWN	0.11015 (0.17024)	0.13183 (0.18527)	0.04629 (0.08863)	0.08554 (0.01035)	***
INST_OWN	0.16566 (0.18583)	0.18171 (0.19364)	0.11841 (0.15147)	0.06330 (0.01400)	***
SEGS	1.66435 (1.34554)	1.49627 (1.12573)	2.15934 (1.75955)	-0.66307 (0.13919)	***
HERF	0.08102 (0.07838)	0.08296 (0.07488)	0.07532 (0.08787)	0.00764 (0.00727)	
MKTVAL (\$, Millions)	4,849.21 (10,936.40)	3,133.82 (7,932.30)	9,902.37 (15,929.50)	-6,768.55 (1,229.48)	***
Number of Observations	718	536	182		

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 3. Frequency Table for Qualitative Variables

This table presents information on the frequency distribution of downsizing reasons, merger activity and unionization among the final sample of 718 downsizing firms for the period 1990-1999. Relative frequencies are shown for all firms, for ESOP firms, and for non-ESOP firms.

Dummy Variables	Levels	All Firms	Relative Frequency (%)	ESOP Firms	Relative Frequency (%)	Non-ESOP Firms	Relative Frequency (%)
DS_REA S	CP = Close Plant	114	15.9	22	12.2	92	17.2
	IT = Improve Technology	10	1.4	5	2.7	5	0.9
	CX = Cut Expenses	135	18.8	38	20.9	97	18.1
	DD = Declining Demand	104	14.5	23	23.6	81	15.1
	IP = Improve Productivity	21	2.9	8	4.4	13	2.4
	RE = Restructuring	109	15.2	31	17.0	78	14.6
	NA = No Reason Given	225	<u>31.3</u>	55	<u>30.2</u>	170	<u>31.7</u>
			100.0		100.0		100.0
MERGE	N	615	85.7	164	90.1	451	84.1
	Y	103	<u>14.3</u>	18	<u>9.9</u>	85	<u>15.9</u>
			100.0		100.0		100.0
UNION	N	569	79.2	134	73.6	435	81.2
	Y	149	<u>20.8</u>	48	<u>26.4</u>	101	<u>18.8</u>
			100.0		100.0		100.0
	Number of Observations	718		182		536	

Table 4. Quintile Analysis of CAARS

Panel A shows the final sample of 718 downsizing firms for the period 1990-1999 divided into quintiles based on the cumulative average abnormal returns, CAARs. In Panel B, the quintiles are tested for difference in means for Quintile 1 versus Quintile 5 for all firms (N = 718), non-ESOP firms (N = 536) and ESOP firms (N = 182). Standard errors for the means tests are shown (in parentheses) for each category.

Panel A Quintile	All Firms (N = 718)		Non-ESOP Firms (N = 536)		ESOP Firms (N = 182)				
	# Firms	CAAR	St. Dev.	# Firms	CAAR	St. Dev.	# Firms	CAAR	St. Dev.
Q1	143	-0.1404	0.0867	131	-0.1439	0.0874	12	-0.1019	0.0701
Q2	144	-0.0351	0.0118	109	-0.0363	0.0119	35	-0.0315	0.0106
Q3	144	-0.0065	0.0055	91	-0.0067	0.0058	53	-0.0062	0.0051
Q4	144	0.0126	0.0080	93	0.0119	0.0081	51	0.0141	0.0074
Q5	143	0.0809	0.0618	112	0.0853	0.0635	31	0.0649	0.0531
Total	718			536			182		

Panel B	All Firms (N = 718)		Non-ESOP Firms (N = 536)		ESOP Firms (N = 182)	
	Difference in Means: Q1 versus Q5	Standard Error	Difference in Means: Q1 versus Q5	Standard Error	Difference in Means: Q1 versus Q5	Standard Error
	0.2213	(0.0040)	0.2292	(0.0097)	0.1668	(0.0224)
	***		***		***	
	*** Significant at the 0.01 level					
	** Significant at the 0.05 level					
	* Significant at the 0.10 level					

Table 5. Regression Estimates for Equation (5)

This table contains multiple regression estimates for firms that announced layoffs in the period 1990-1999. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variable Name	Parameter Estimate	t-statistic	
Intercept	-0.14773	(-4.07)	***
DS	-0.08868	(-3.04)	***
MGR_OWN	0.01534	(0.78)	
INST_OWN	0.03002	(1.74)	*
LNMV	0.00625	(3.75)	***
HERF	0.05592	(-1.40)	
SEGS	-0.00081	(-0.32)	
UNION	0.01588	(2.02)	**
MERGE	0.00732	(0.82)	
CP	0.00743	(0.76)	
IT	0.04456	(1.65)	*
CX	0.02253	(2.48)	**
DD	-0.02321	(-2.33)	**
IP	-0.00040	(-0.02)	
RE	0.02474	(2.54)	**
$R^2 = 0.0962$	F-Value = 5.35***		

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 6. Regression Estimates for Equation (6)

This table contains multiple regression estimates for firms that announced layoffs in the period 1990-1999. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Qualitative ESOP Variable			Quantitative ESOP Variable			
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		
Intercept	-0.14016	(-3.83)	***	-0.14476	(-3.99)	***	
DS	-0.08753	(-3.01)	***	-0.08616	(-2.96)	***	
ESOP	0.01123	(1.43)		0.09317	(1.51)		
MGR_OWN	0.01875	(0.95)		0.01771	(0.90)		
INST_OWN	0.03268	(1.89)	*	0.03179	(1.84)	*	
LNMV	0.00572	(3.35)	***	0.00599	(3.58)	***	
HERF	-0.05434	(-1.36)		-0.05511	(-1.38)		
SEGS	-0.00118	(-0.46)		-0.00098	(-0.39)		
UNION	0.01534	(1.95)	**	0.01542	(1.97)	**	
MERGE	0.00824	(0.92)		0.00795	(0.89)		
CP	0.00828	(0.85)		0.00747	(0.77)		
IT	0.04284	(1.59)		0.04295	(1.59)		
CX	0.02208	(2.43)	**	0.02136	(2.35)	**	
DD	-0.02276	(-2.29)	**	-0.02326	(-2.34)	**	
IP	-0.00148	(-0.08)		-0.00145	(-0.08)		
RE	0.02429	(2.50)	**	0.02471	(2.54)	**	
R ² = 0.0989			F-Value = 5.13***	R ² = 0.0992			F-Value = 5.15***
*** Significant at the 0.01 level							
** Significant at the 0.05 level							
* Significant at the 0.10 level							

Table 7. Regression Estimates for Equation (7)

This table contains multiple regression estimates for firms that announced layoffs in the period 1990-1999. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Full Model			Reduced Model			
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		
Intercept	-0.14814	(-3.76)	***	-0.13844	(-3.77)	***	
DS	-0.04003	(-0.61)		-0.11009	(-2.87)	***	
ESOP	0.03457	(0.17)		-0.04143	(-0.43)		
EAGE	0.00061	(0.43)		0.00025	(0.45)		
MGR_OWN	-0.04486	(-0.74)		-0.00462	(-0.16)		
INST_OWN	0.03624	(2.05)	**	0.03217	(1.86)	*	
LNMV	0.00603	(3.40)	***	0.00578	(3.41)	***	
HERF	-0.04834	(-1.36)		-0.05411	(-1.35)		
SEGS	-0.00086	(-0.33)		-0.00098	(-0.38)		
UNION	0.01575	(1.99)	**	0.01586	(2.02)	**	
MERGE	0.00855	(0.95)		0.00771	(0.86)		
CP	0.00948	(0.97)		0.00918	(0.94)		
IT	0.04868	(1.78)	*	0.04653	(1.72)	*	
CX	0.02209	(2.41)	**	0.02256	(2.47)	**	
DD	-0.02079	(-2.06)	**	-0.02175	(-2.18)	**	
IP	0.00016	(0.01)		-0.02175	(-0.01)		
RE	0.02408	(2.45)	**	0.02462	(2.51)	**	
ESOP*DS	0.50506	(0.55)		0.77080	(0.87)		
MO*DS	0.17502	(1.06)		0.13013	(0.81)		
ESOP*MO	1.14150	(2.02)	**	1.01860	(1.86)	*	
DS ²	-0.12458	(-1.30)					
ESOP ²	-0.30153	(-0.46)					
EAGE ²	-0.00001	(-0.37)					
MO ²	0.05338	(0.67)					
R ² = 0.0989			F-Value = 5.13***	R ² = 0.0992			F-Value = 5.15***
*** Significant at the 0.01 level							
** Significant at the 0.05 level							
* Significant at the 0.10 level							

Table 8. Regression Estimates of Equation (7): Low versus High Downsizing Level

This table contains multiple regression estimates for the final sample of 718 firms that announced layoffs in the period 1990-1999. The sample is divided based on downsizing level. High downsizing levels are for downsizing (DS) greater than 5 percent (438 firms); low downsizing levels are for DS less than 5 percent (281 firms). The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Low Downsizing Level (281 Firms)			High Downsizing Level (437 Firms)		
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic	
Intercept	-0.16417	(-3.35)	***	-0.12385	(-2.39)	**
DS	0.17981	(0.60)		-0.16405	(-3.07)	***
ESOP	0.15028	(1.24)		-0.36046	(-1.56)	
EAGE	-0.00006	(-0.13)		0.00019	(0.16)	
MGR_OWN	0.05284	(1.05)		-0.04502	(-1.02)	
INST_OWN	0.00327	(-0.16)		0.04719	(1.92)	*
LNMV	0.00701	(3.27)	***	0.00550	(2.22)	***
HERF	-0.01633	(-0.40)		-0.11107	(-1.71)	
SEGS	-0.00256	(-1.13)		0.00280	(0.54)	
UNION	0.00822	(1.06)		0.02538	(1.92)	*
MERGE	0.00157	(-0.15)		0.01618	(1.21)	
CP	0.00084	(-0.08)		0.01294	(0.86)	
IT	0.04983	(2.02)	**	0.02478	(0.51)	
CX	0.00654	(0.60)		0.02876	(2.17)	**
DD	-0.00197	(-0.18)		-0.04097	(-2.75)	***
IP	0.01141	(-0.56)		0.00802	(0.27)	
RE	0.01293	(1.12)		0.02623	(1.87)	*
ESOP*DS	-1.42456	(-0.35)		1.64544	(1.16)	
MO*DS	-1.53977	(-0.84)		0.28289	(1.29)	
ESOP*MO	-0.35735	(-0.66)		2.81756	(2.84)	***
$R^2 = 0.0878$ F-Value = 1.32			$R^2 = 0.1400$ F-Value = 3.57***			

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 9. Regression Estimates of Equation (7): Older versus Newer ESOP Plans

This table contains multiple regression estimates for the final sample of 182 ESOP firms that announced layoffs in the period 1990-1999. The sample is divided based on age of the ESOP plan. Older ESOP plans are for ESOP age (EAGE) greater than 10 years; newer ESOP plans are for EAGE less than 10. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Older ESOP Plans (82)		Newer ESOP Plans (100)				
	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic			
Intercept	0.01379	(0.12)	-0.19901	(-3.54)	***		
DS	0.02372	(0.31)	0.31764	(3.19)	***		
ESOP	0.01543	(0.15)	0.19553	(1.84)	*		
EAGE	-0.00013	(-0.17)	0.00163	(1.09)			
MGR_OWN	-0.09940	(-0.68)	0.28352	(2.31)	**		
INST_OWN	-0.06014	(-1.38)	0.02120	(0.78)			
LNMV	-0.00119	(-0.24)	0.00714	(2.94)	***		
HERF	-0.00304	(-0.06)	-0.01850	(-0.25)			
SEGS	0.00079	(0.23)	-0.00340	(-1.01)			
UNION	0.02221	(1.54)	0.01583	(1.77)	*		
MERGE	0.00189	(0.10)	0.02316	(1.42)			
CP	0.03434	(1.53)	0.02011	(1.47)			
IT	0.02568	(0.80)	0.01649	(0.59)			
CX	0.03278	(1.90)	0.01177	(1.05)	*		
DD	0.00307	(0.16)	-0.00354	(-0.25)			
IP	0.02164	(0.85)	-0.00248	(-0.11)			
RE	0.02550	(1.39)	0.01285	(1.06)			
ESOP*DS	-2.52905	(-2.59)	-3.51074	(-2.11)	**		
MO*DS	5.60895	(3.88)	-3.97967	(-3.20)	***		
ESOP*MO	0.15577	(0.23)	1.12084	(1.34)			
$R^2 = 0.4063$		F-Value = 2.23***		$R^2 = 0.4259$		F-Value = 3.12***	

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 10. Regression Estimates of Equation (7): High Q versus Low Q Firms

This table contains multiple regression estimates for the final sample of 418 firms that announced layoffs in the period 1990-1999. Of the 718 total firms in the original sample, only 418 firms had complete information for calculating Tobin's Q based on *Compustat* and *CRSP* data availability. The sample is divided based on Tobin's Q. High Q firms are those with Tobin's Q (Q) greater than 1; low Q firms are those with Q less than 1. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	High Q Firms (165)		Low Q Firms (253)		
	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic	
Intercept	-0.09955	(-0.86)	-0.27198	(-3.97)	***
DS	-0.09271	(-0.96)	-0.05743	(-0.56)	
ESOP	-0.09946	(-0.33)	0.01365	(0.09)	
EAGE	0.00026	(0.16)	-0.00018	(-0.17)	
MGR_OWN	0.09986	(1.36)	0.07838	(1.35)	
INST_OWN	-0.01873	(-0.41)	0.05377	(1.65)	*
LNMV	0.00396	(0.75)	0.01314	(3.72)	***
Q	-0.00399	(-0.55)	-0.03437	(-1.39)	
HERF	-0.02324	(-0.26)	-0.01774	(-0.26)	
SEGS	0.00234	(0.42)	-0.00122	(-0.26)	
UNION	0.01531	(0.77)	0.00905	(0.69)	
MERGE	0.02321	(1.21)	-0.02434	(-1.20)	
CP	0.01526	(0.66)	-0.00644	(-0.37)	
IT	0.06940	(1.39)	-0.01628	(-0.19)	
CX	0.02091	(0.87)	0.03067	(1.94)	*
DD	-0.06808	(-2.84)	-0.01076	(-0.65)	***
IP	-0.00449	(-0.11)	0.01560	(0.43)	
RE	0.02516	(1.07)	0.00781	(0.44)	
ESOP*DS	1.76492	(0.42)	1.19444	(0.78)	
MO*DS	0.13105	(0.25)	-0.22312	(-0.59)	
ESOP*MO	-0.31580	(-0.29)	-0.31162	(-0.11)	
$R^2 = 0.1560$		F-Value = 1.33	$R^2 = 0.1287$		F-Value = 1.72**

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 11. Regression Estimates of Equation (7) for ESOP versus Non-ESOP Firms

This table contains regression estimates for firms that announced layoffs in the period 1990-1999. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test null hypotheses that the independent variable is equal to 0.

Variables	Full Model (ESOP)		Reduced Model (ESOP)		Full Model (Non-ESOP)		Reduced Model (Non-ESOP)	
	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic
Intercept	-0.14588	(-3.29) ***	-0.13851	(-3.27) ***	-0.15557	(-3.17) ***	-0.13612	(-2.98) ***
DS	0.11529	(1.30)	0.07292	(1.55)	-0.01333	(-0.17)	-0.10777	(-3.01) ***
ESOP	0.10504	(0.90)	0.07373	(1.35)				
EAGE	0.00163	(1.71) *	0.00001	(0.04)				
MGR_OWN	-0.03338	(-0.29)	0.06416	(0.85)	0.00764	(0.12)	0.01543	(0.68)
INST_OWN	0.03814	(1.84) *	0.03107	(1.57)	0.03980	(1.87) *	0.03883	(1.84) *
LNMV	0.00521	(2.70) ***	0.00545	(2.87) ***	0.00637	(2.88) ***	0.00574	(2.69) ***
HERF	0.01699	(0.50)	0.00557	(0.17)	-0.07667	(-1.42)	0.07960	(-1.48)
SEGS	-0.00214	(-1.10)	-0.00240	(-1.25)	0.00000	(0.00)	-0.00030	(-0.08)
UNION	0.01604	(2.43) **	0.01709	(2.61) ***	0.01575	(1.21)	0.01178	(1.13)
MERGE	0.01266	(1.22)	0.01368	(1.36)	0.00291	(0.26)	0.00292	(0.27)
CP	0.01754	(1.76) *	0.01885	(1.89) *	0.00488	(0.40)	0.00495	(0.41)
IT	0.01565	(0.88)	0.01846	(1.04)	0.08378	(1.99) **	0.07857	(1.88) *
CX	0.01730	(2.09) **	0.01604	(1.98) **	0.02327	(1.98) **	0.02398	(2.04) **
DD	0.00044	(0.04)	-0.00218	(-0.22)	-0.02911	(-2.31) **	-0.02872	(-2.29) **
IP	0.00250	(0.17)	0.00276	(0.19)	0.00125	(0.05)	0.00059	(0.02)
RE	0.01677	(1.87) **	0.01718	(1.98) **	0.02485	(1.96) *	0.02536	(2.00) **
ESOP*DS	-0.67735	(-1.12)	-0.49260	(-0.87)				
MO*DS	-1.37514	(-1.66) *	-1.37023	(-1.70) *	39.09704	(0.79)	43.73512	(0.88)
ESOP*MO	0.00541	(0.01)	-0.08842	(0.23)				
DS ²	-0.05667	(-0.52)						
ESOP ²	-0.11245	(-0.33)						
EAGE ²	-0.00004	(-1.84) *						
MO ²	0.20923	(1.09)			0.01126	(0.12)		
R ² =0.2247		F-Value=1.97***	R ² =0.203		F-Value=2.15***	R ² =0.100		F-Value=3.40***
***Significant at the 0.01 level			***Significant at the 0.05 level			***Significant at the 0.10 level		
			**Significant at the 0.05 level			*Significant at the 0.10 level		

Table 12. Summary Statistics: Means (Standard Deviations) for Various ESOP Levels

This table shows descriptive statistics for the independent variables used in the regression equations. The sample consists of 182 downsizing ESOP companies from 1990-1999. The ESOP firms are divided into three levels: Low Employee Ownership (ESOP < 5 percent); Medium Employee Ownership (5 percent < ESOP < 10 percent) and High Employee Ownership (ESOP > 10 percent). Three-way testing for difference in means is shown in Table 13.

Variables	Low Employee Ownership	Medium Employee Ownership	High Employee Ownership
CAAR	-0.0006 (0.0377)	-0.0004 (0.0389)	0.0029 (0.0731)
DS	0.0886 (0.1234)	0.0558 (0.0152)	0.0585 (0.0663)
ESOP	0.0202 (0.0137)	0.0738 (0.0152)	0.1790 (0.0780)
EAGE	11.4932 (8.64761)	12.5167 (9.5872)	14.8367 (9.5620)
MGR_OWN	0.0554 (0.0981)	0.0319 (0.0450)	0.0504 (0.1109)
INST_OWN	0.1412 (0.1727)	0.0895 (0.1372)	0.1199 (0.1296)
SEGS	2.0548 (1.9068)	2.5333 (1.8546)	1.8571 (1.3070)
HERF	0.07413 (0.10695)	0.0726 (0.0718)	0.0804 (0.0747)
MKTVAL (\$, Millions)	11,334.1640 (14,244.5600)	9,775.2010 (14,405.5060)	7,925.0030 (19,755.4970)
Number of Observations	73	60	49

Table 13. Difference in Means Testing (Standard Errors) for Various ESOP Levels

This table shows three-way testing (low versus medium, medium versus high and low versus high) for difference in means. The sample consists of 182 downsizing ESOP companies from 1990-1999. The ESOP firms are divided into three levels: Low Employee Ownership (ESOP < 5 percent); Medium Employee Ownership (5 percent < ESOP < 10 percent) and High Employee Ownership (ESOP > 10 percent). The Mean Difference columns test the null hypothesis of no difference in mean for the various levels of employee ownership for each independent variable shown.

Variables	Mean Difference: Low versus Medium		Mean Difference: Medium versus High		Mean Difference: Low versus High	
CAAR	-0.0002 (0.0051)		0.0025 (0.0105)		0.0023 (0.0105)	
DS	-0.0328 (0.0079)	***	0.0027 (0.0095)		-0.0301 (0.0096)	***
ESOP	0.0536 (0.0020)	***	0.1052 (0.0111)	***	0.1588 (0.0111)	***
EAGE	1.0235 (1.2434)		2.3201 (1.3753)	*	3.3436 (1.3711)	**
MGR_OWN	-0.0234 (0.0060)	***	0.0184 (0.0159)		-0.0050 (0.0159)	
INST_OWN	-0.0516 (0.0179)	***	0.0303 (0.0187)		-0.0213 (0.0187)	
SEGS	0.4785 (0.2409)	**	-0.6762 (0.1893)	***	-0.1977 (0.1885)	
HERF	-0.0015 (0.0094)		0.0078 (0.0107)		0.0063 (0.0108)	
MKTVAL (\$, Millions)	-1,558.9630 (1,869.9520)		-1,850.1980 (2,832.4080)		-3,409.1610 (2,828.9520)	

*** Significant at the 0.01 level

** Significant at the 0.05 level

* Significant at the 0.10 level

Table 14. Frequency Table of Qualitative Variables for Various ESOP Levels

This table presents information on the distribution of downsizing reasons, merger activity and unionization among the final sample of 182 downsizing ESOP firms. Relative frequencies are shown for the different levels of employee ownership. Low employee ownership is for ESOP firms in which employees hold less than 5 percent. Medium employee ownership is for ESOP firms in which employees hold between 5 and 10 percent. High employee ownership is for ESOP firms in which employees more than 10 percent.

Dummy Variables	Levels	Low Employee Ownership	Relative Frequency (%)	Medium Employee Ownership	Relative Frequency (%)	High Employee Ownership	Relative Frequency (%)
DS_REAS	CP = Close Plant	7	9.6	10	16.7	5	10.2
	IT = Improve Technology	1	1.4	3	5.0	1	2.0
	CX = Cut Expenses	14	19.2	10	16.7	14	28.6
	DD = Declining Demand	7	9.6	8	13.3	8	16.3
	IP = Improve Productivity	3	4.1	2	3.3	3	6.1
	RE = Restructuring	16	21.9	10	16.7	5	10.2
	NA = No Reason Given	25	34.2	17	28.3	13	26.6
			100.0		100.0		100.0
MERGE	N	64	87.7	55	91.7	45	91.8
	Y	9	12.3	5	8.3	4	8.2
			100.0		100.0		100.0
UNION	N	61	83.6	33	55.0	40	81.6
	Y	12	16.4	27	45.0	9	18.4
			100.0		100.0		100.0
Number of Observations		73		60		49	

Table 15. Regression Estimates of Equation (7) for Various ESOP Levels

This table shows multiple regression estimates for ESOP firms with less than 5% (N=73), between 5%-10% (N=56) and greater than 10% (N=48) employee ownership. The time period is 1990-1999. The dependent variable is the 2-day abnormal return, CAAR. Abnormal return is calculated using the value-weighted CRSP index over the 2-day period, $t = -1, 0$. Days are measured relative to the *Wall Street Journal* announcement date, $t = 0$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	ESOP Less than 5%		ESOP between 5%-10%		ESOP Greater than 10%	
	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic	Parameter Estimate	t-statistic
Intercept	-0.18880	(-2.48) **	0.07551	(0.68)	-0.05705	(-0.56)
DS	0.25811	(2.03) **	0.59765	(1.79) *	0.42446	(1.25)
ESOP	0.90416	(1.64) *	-6.42544	(-2.40) **	0.21193	(1.47)
EAGE	0.00233	(1.62)	0.00315	(2.41) **	-0.00056	(-0.86)
MGR_OWN	-0.23808	(-0.99)	-1.29385	(-2.58) **	1.09096	(1.45)
INST_OWN	0.04696	(1.67) *	0.06660	(2.49) **	-0.11662	(-1.70) *
LNMV	0.00674	(2.06) **	0.00558	(2.26) **	0.00155	(0.35)
HERF	0.09206	(1.86) *	-0.02304	(-0.48)	0.05757	(0.65)
SEGS	-0.00203	(-0.63)	-0.00180	(-0.83)	-0.00899	(-1.64)
UNION	-0.00218	(-0.18)	0.00926	(1.23)	0.04952	(2.75) **
MERGE	0.01773	(1.24)	-0.00399	(-0.33)	0.00617	(0.20)
CP	-0.00251	(-0.15)	0.03488	(3.37) ***	0.03792	(1.50)
IT	-0.00572	(-0.14)	0.00919	(0.62)	0.02253	(0.53)
CX	0.00334	(0.26)	0.01337	(1.06)	0.02953	(1.57)
DD	0.01269	(0.68)	0.00041	(0.04)	-0.00049	(-0.02)
IP	-0.01480	(-0.65)	0.00230	(1.27)	0.00485	(0.14)
RE	0.00597	(0.48)	0.03199	(3.00) ***	-0.00932	(-0.32)
ESOP*DS	-7.42621	(-1.78) *	-7.01934	(-1.50)	-4.47433	(-2.00) *
MO*DS	-1.44749	(-1.52)	-1.33491	(-0.64)	4.47259	(1.31)
ESOP*MO	0.09882	(0.02)	17.44354	(2.90) ***	-2.49419	(-1.19)
DS ²					-1.08789	(-1.96) *
ESOP ²			42.48906	(2.47) **		
EAGE ²	-0.00007	(-1.97) *	-0.00009	(-2.48) **		
MO ²	0.61363	(1.72) *				
	R ² = 0.3974	F-Value = 1.60*	R ² = 0.6958	F-Value = 3.70***	R ² = 0.7492	F-Value = 4.03***
	***Significant at the 0.01 level		**Significant at the 0.05 level		*Significant at the 0.10 level	

Chapter Three

Essay 2: Productivity and Performance Effects of Downsizing

Introduction

Economic and finance theories postulate that the firm is actually a nexus of contracts between the shareholders, managers, and employees of the firm. Within this nexus of contracts, the responsibilities of the manager to the shareholders and of the employees to the manager are explicitly defined via employment compensation contracts. In general, the principals (shareholders) delegate decision-making authority to appointed agents (board of directors and managers) who, in turn, engage more agents (employees) to produce goods and services. For their efforts, the manager and employees receive compensation that should ideally maximize their utility, while shareholders receive a normal rate of return on their investment. Game theory suggests that, absent any market imperfections, these corporate players have a cooperative strategy that, in equilibrium, will settle on the optimal choice of employee productivity, production output, and corporate returns.

However, imperfections do exist within the market that often result in a deviation from the optimal choice of productivity, output, and corporate returns. Two such market imperfections are asymmetric information, where only the employees know their own level of self-motivation and productive talents (Spence, 1973), and agency problems where employees, who have an inherent disutility for exerting effort, engage in shirking behavior (Jensen and Meckling, 1976). The combination of these (and other) market imperfections often leads to corporate decisions in which productivity, output, and/or corporate returns are no longer maximized.

To counteract the reality of imperfect markets and their detrimental effect on the value of the firm, shareholders are motivated to devise a compensation contract that will provide employees with an incentive to exert a higher level of effort. While there are many incentive contracts that provide direct remuneration for increased productivity (e.g. profit

sharing, efficiency wages), Jensen and Meckling (1976) suggest that the ideal incentive contract should include an element of firm ownership. By incorporating firm ownership into the incentive contract, Jensen and Meckling propose that employees turned owners will decrease shirking behavior and increase their individual and collective productivity to receive a portion of the residual income that normally accrues to external shareholders/upper management.

One such contract that incorporates firm ownership is the Employee Stock Ownership Plan (ESOP). Under an ESOP plan, a percentage of the firm's outstanding shares are set aside and allocated to each individual employee's retirement account based on his or her annual compensation. By establishing an ESOP plan, the managers/investors of the firm make a conscious commitment to focus on job security and firm ownership as motivating forces for increased productivity and greater financial performance. Consequently, employees who were once simply agents of the firm are now partial owners (i.e., principals) with an incentive to exert more effort and shirk less, thereby reducing agency costs, increasing productivity, and maximizing the value of the firm. Indeed empirical studies show that ESOP companies have higher employee productivity (Kumbhaker and Dunbar, 1993; Jones and Kato, 1995) and improved operating performance (Pugh, Oswald and Jahera, 2000) when compared to non-ESOP firms.

Yet the benefits of ESOP plans are not restricted to the increased productivity and financial performance of the firm. Perhaps just as important is the corporate culture that ESOP plans engender. Within ESOP firms, employee-owners work together with managers to reduce production costs, improve the efficiency of the firm, and formulate solutions that increase firm value. In fact, empirical studies show that ESOP employees exhibit greater job satisfaction (Klein and Hall, 1988), demonstrate greater corporate loyalty (Klein, 1987), and have a decreased rate of employee turnover (Perun, 2000). In addition, ESOP employees closely monitor co-workers (Fitzroy and Kraft, 1987) and participate in more of the firm's strategic decision-making (Rooney, 1992). These intangible consequences of ESOPs embodied within the corporate culture of the firm provide employees with both extrinsic benefits (e.g., financial rewards and firm

ownership), as well as intrinsic benefits (e.g., job satisfaction, corporate loyalty, and employment tenure) that help reduce the agency problem between employees and shareholders.

However, the agency problems that ESOPs successfully address might resurface over time as ESOP employees acquire a higher percentage of the firm and greater input into the firm's decisionmaking. Given their dual role as both shareholders (principals) and employees (agents), employee-owners could use their increased power to entrench themselves within the firm. This potentially negative outcome exposes the "dark side" of ESOPs and brings into question the ability of ESOP firms to withstand market challenges (such as decreased demand) that require employee layoffs.

As ESOP companies go through natural business cycles and corporate life cycles, the long-term thinking that ESOPs are designed to encourage runs headlong into the volatility that accompanies corporate profitability, shifts in product demand, and changing competitive environments. And because downsizing is often a natural response to these occurrences, ESOP firms might need to make labor decisions that run counter to the objectives of employee ownership. Specifically, firms must weigh the necessity of downsizing against the "promise" of job security implied by the ESOP. Thus, in some respects, the decision to downsize is one that pits the manager against the employees of the company.

However, because ESOP employees are also shareholders of the firm, they have a degree of power not held by regular employees in non-ESOP firms. Given their employee-owner status, they could respond as either a principal or an agent to the downsizing decision. If ESOP employees act more like principals, then they might be more accepting of downsizing decisions that maximize the value of the firm. They might be less likely to entrench themselves in the firm and instead, are willing to downsize at the optimal level despite their potential job loss. Furthermore, after downsizing, the productivity levels of these "principal-acting" employees could remain high, which leads to better financial performance. Thus, in this scenario, managers are able to engage in downsizing activity without negatively impacting the productivity and financial performance of the firm,

because the incentives of employee-owners are fully aligned with those of shareholders and the ESOP has reduced the agency problems of the firm. This scenario delineates the “bright side” of ESOPs.

Alternatively, ESOP employees might act more like agents who attempt to entrench themselves within the firm when faced with the prospect of downsizing. If the benefits of ESOPs, such as longer employee tenure and corporate loyalty, are threatened by the premise of downsizing, which seeks reductions in labor and leads to employee distrust, then employee-owners might create a corporate culture that “ensnares” management and discourages them from engaging in layoffs (Gamble, 2000). As a result, ESOPs could cause the unintended and undesirable effect of limiting downsizing activity within the ESOP firm, even when downsizing is necessary. If entrenched employees and “ensnared” managers collude to set a sub-optimal downsizing level, then the productivity and financial performance of the firm will suffer. This potential “dark side” of ESOPs provides the basis for the analysis contained in this paper.

Assuming that downsizing is the value-maximizing decision for the firm, this paper will determine if the productivity and financial performance of ESOP firms differ from that of non-ESOP firms after downsizing. If ESOP firms exhibit better productivity and financial performance after downsizing, *ceteris paribus*, then it might be an indication that ESOP firms are better able to recover from the negative effects of downsizing and that the presence of employee-owners is beneficial to the firm. Alternatively, if ESOP firms have lower productivity and/or financial performance after downsizing, *ceteris paribus*, then it might mean that downsizing decisions more negatively affect ESOP firms and the ESOP is detrimental to the firm when downsizing is necessary.

In this study, I find that productivity increases for downsizing firms, in general, but when the sample is divided into ESOP versus non-ESOP companies, the non-ESOP firms show significantly greater improvement in productivity. ESOP firms have a small increase in productivity, however the increase is much lower than it is for non-ESOPs and it begins to sink back to pre-downsizing levels within two years. Further, the productivity of ESOP firms is less than that of non-ESOP firms in both the pre- and post-downsizing period,

which could be an indication that the employees of the ESOP firms are entrenched. Finally, I show that there is positive interaction between managerial ownership and downsizing that increases the productivity of the firm, but only for non-ESOPs.

With respect to financial performance, I find that downsizing has a negative effect on the firm, in general, yet the performance improves markedly during the post-downsizing period. The improvement is much greater for non-ESOP firms than for ESOP firms. In addition, I find that ESOP firms have lower Q-measures in both the pre- and post-downsizing period when compared to non-ESOPs. Finally, I show that there is positive interaction between the level of managerial ownership and the level of employee ownership for ESOP companies that increases the financial performance of the firms. However the increase in financial performance for ESOP companies is still lower than the increase for non-ESOPs.

The remainder of the paper is organized as follows: Section II.2 discusses the relevant literature on the effect that downsizing has on the productivity and financial performance of the firm. In Section II.3, hypotheses are developed that examine the productivity and financial performance of ESOP versus non-ESOP firms before and after downsizing. The methodologies for testing both the productivity and performance of the downsizing firm are outlined in Section II.4 along with a description of the data and regression variables. In Section II.5, regression equations used to measure the change in productivity and performance are provided as well as the results from estimation. Finally, Section II.6 contains the summary and conclusions from the study.

Related Literature

A. Downsizing Literature

The ability to alter employment levels has long been a tool utilized by corporate managers. In the short run, labor is the most adjustable factor of production, therefore it provides flexibility for managing the production costs of the firm. By decreasing the number of workers, the firm is able to realize labor cost savings that allow it to withstand periods of decreased demand or to improve profitability (Jensen, 1993). In addition, layoffs (or the credible threat of layoffs) also serve as an incentive for workers to improve productivity (Stiglitz and Weiss, 1983; Shapiro and Stiglitz, 1984; Kraft, 1991). Thus, downsizing decisions fulfill many objectives for the firm—from increasing corporate returns to motivating unproductive workers.

However, layoff decisions do not go forth without very human consequences. When the managers of a firm decide to downsize to generate labor cost savings or improve productivity, they often do so regardless of the personal effect that downsizing has on the employee. Thus, an unanticipated result might be that risk-averse workers respond negatively to the decreased job security and potential loss of income from unemployment. Indeed, studies show that lower-level managers/workers experience feelings of guilt and anger as well as a decrease in morale and corporate loyalty after downsizing (Brockner, 1988). Furthermore, after workers are laid off, the remaining workers experience longer work hours and increased levels of stress (Fisher, 1992). Employees become more risk-averse in making company decisions, they sometimes cheat on company reports to make their performance look better, or they might even sue the company (Boroughs, 1992).

Given the negative employee response to layoffs, downsizing could adversely affect the productivity and financial performance of the firm, thereby negating the labor cost savings and incentive effects from downsizing. This negative response might be even more pronounced in ESOP firms, where employees have a more cooperative relationship

with management and where they often feel a sense of entitlement to job security (Mallory, 1991). However, ESOP firms are not immune to the vagaries of economic business cycles. They, too, need to alter their workforce on occasion. When that need arises, the job security of employee-owners is just as threatened and uncertain as the job security of employees in non-ESOP firms.

Although the employees of ESOP and non-ESOP firms face similar threats to employment in a climate of downsizing, the employee's response might differ between the two firm types. However, extant research has only examined the productivity and financial performance effects on downsizing firms, in general, without controlling for the ESOP status of the firm. For example, Cappelli (2000) finds that productivity (as measured by sales/employee) decreases after downsizing, especially for firms that are operating at or above capacity. However, he does not distinguish between firms that have employee stock ownership plans and those that do not.

In another study, Kraft (1991) examines the incentive effects of dismissals, efficiency wages, piece-rates, and profit sharing on the productivity of workers. He finds that dismissals have an effect on productivity that is non-linear; that is, productivity first increases and then decreases as employees become more fearful of their own potential job loss. In addition, he finds that dismissals (or at least the credible threat of dismissals) serve a dual purpose. They reduce losses caused by employees whose marginal productivity is below the wage rate, and they effectively motivate the remaining workers to be more productive.

From a financial performance perspective, DeMeuse, Vanderheiden, and Bergmann (1994), examine the profit margins, ROA, and ROE of companies that announced downsizing decisions from 1987-1991. Contrary to expectations, they find that financial performance, as measured by these indicators, worsened in the two years following downsizing. Similarly, Cascio, Young, and Morris (1997) examine ROA and ROE for downsizing firms two years after the announcement for the period 1980 to 1994. They report that firms that engage in pure employment downsizing do not realize significantly higher returns.

Downs (1995) looks at the effect of downsizing on employees. He finds that there is a decrease in the morale of employees and remaining workers are less inclined to exert effort within the workplace. If these results are widespread within the firm then future firm performance could suffer following downsizing activity.

In another study that examines the productivity and performance effects of downsizing, Sutton and D'Aunno (1989) note that layoffs lead to: (1) Restrictions in information processing; i.e. no innovation, less teamwork; (2) constriction of control; i.e. more micro-managing, less decentralization; and (3) conservation of resources; i.e. less risk-taking, fewer R&D investments. These actions serve to reduce the productivity and financial performance of the firm.³²

B. ESOP Literature

ESOP literature is part of a larger genre of research that looks at the corporate governance of a firm. Jensen and Meckling (1979) look at several different organizational forms ranging from purely labor-controlled firms (i.e. Soviet firm) to pure-rental and cooperatives to partnerships and private corporations. They argue that the structure of property and contracting rights under which the firm operates has a significant influence over production opportunity set of the firm.

For the labor-managed firm, several problems exist within the market economy that makes it more difficult for labor-managed firms to operate efficiently. The first problem is the control problem, where the one-vote-per-employee rule ensures that everyone gets the same benefit regardless of contribution. Another problem is definition of net revenues, where workers have an incentive convert firm wealth into personal wealth. The final problem is the savings-investment problem, where workers prefer to invest in consumer durable assets (eg. housing, cars, jewelry) instead of productive assets. As a result, Jensen and Meckling posit that labor-managed firms such as ESOPs will never achieve efficiency in a free market because of

³² Note that these effects are in direct contrast to the objectives of ESOPs.

the control problem (worker versus worker), the definition of net revenues (the worker versus the state), and the savings-investment problem (worker versus self).

Olubunmi, Mehotra, and Morck (2005) also examine labor-controlled publicly traded firms. Using regression analysis, they find that these firms deviate more from value maximization than other firms. Moreover, labor-controlled firms tend to restrict research and development, invest less in capital assets and grow more slowly than their non-labor counterparts. Finally, Olubunmi et al. find that both the labor and total factor productivity of labor-controlled firms are lower.

With respect to existing ESOP literature, previous researchers have examined the effect that employee ownership has on the productivity and performance of the firm. However, these studies are limited by the fact that they focus on the time period immediately following adoption of the ESOP. Depending on the reason for ESOP adoption, the productivity and performance benefits of employee ownership might be short-lived. Beatty (1992) confirms the temporary nature of ESOP-induced performance when she finds that companies who adopted ESOPs to reduce the likelihood of hostile takeovers had decreased financial performance.

Similarly, Conte and Svejnar (1988) use OLS and instrumental variables to simultaneously measure the impact of employee ownership on the productivity of the firm. They find that moderate amounts of employee ownership affect productivity negatively, even when controlling for worker participation in management, profit sharing, and unionization.

These findings by previous researchers highlight the effect that downsizing has on the firm's productivity and financial performance. However, none of the previous studies examines the impact that an existing ESOP has on a downsizing firm. Nor do they examine the relationship between productivity (as measured by TFP) and performance (as measured by Tobin's Q). It is intuitive to assume that high productivity leads to better financial performance, but the opposite might be true. In other words, maintaining a high level of productivity may be expensive as the firm invests more in those capital assets (computer technology, updated equipment) that improve productivity. As more resources are invested in assets, Tobin's Q may decrease, especially during periods of economic recession when stock market values are

decreasing. Since the calculation of Tobin's Q is a ratio of market value of equity and debt to the book value of assets, higher productivity might automatically lead to lower Q values.³³

Given this potentially negative correlation between TFP and Tobin's Q, the effect of downsizing on the productivity and financial performance becomes even more ambiguous. The absence of research on the interaction between ESOPs and downsizing leaves a crucial question unanswered: Does employee ownership reduce or exacerbate the negative impact of downsizing on the firm? Although extant research into the effect of downsizing on productivity and financial performance invariably omits any reference to employee stock ownership, the existing research on downsizing can still be used as a starting point for analysis. To that end, this paper will compare the productivity and financial performances of ESOP versus non-ESOP firms that have engaged in downsizing activity to determine whether layoffs affect the firms differently.

³³ During recessionary periods like that which characterized a portion of the 1990s, Tobin's Q ratio is understandably low since the numerator (market value of equity) is decreasing. If firms are also increasing their computer/technology capital stock (which also occurred during the 1990s) then total assets are increasing, as well. This increase in assets cause the denominator of the Q ratio to increase, thereby putting even more downward pressure on the Q value of the firm.

Hypotheses

The productivity and financial performance effects of downsizing continue long after the announcement effect has worn off. Depending on the degree of incentive alignment between shareholders, managers, and employees, the long-term productivity and performance effects might be positive or negative. Downsizing could force less productive workers to exert more effort, thereby increasing the productivity and financial performance of the firm. Alternatively, downsizing might cause employees to experience lower morale so that they have less desire to exert greater effort; if such is the case, productivity falls and the financial performance of the firm is reduced. Moreover, if employee stock ownership is present within the firm, an entirely new source of variation in employee reaction must be analyzed. This difference in possible reactions highlights the need for further research on the effect of downsizing and its interaction with employee stock ownership plans. More specifically, such research will help show how ESOP firms compare to non-ESOP firms in terms of productivity and financial performance before and after the downsizing announcement.

Researchers have already documented the generally negative effects of downsizing, including increased agency problems (Sutton and D'Aunno, 1989), lower employee productivity (Capelli, 2000) and poor financial performance (Cascio et al., 1997). These effects are in direct contrast to the reduced agency problems ((Klein (1987), Kumbhaker and Dunbar (1993); Fitzroy and Kraft (1987)), higher employee productivity (Beatty (1995), Jones and Kato (1995)), and better financial performance (USGAO study of ESOPs (1987); Quarry and Rosen (1987)) that researchers have documented in ESOP firms. To date, however, there has been no research on the impact that downsizing has on firms with existing ESOP plans in place. This study will fill that empirical void.

Given the diametrical effects that ESOPs and downsizing have on the firm, an interesting question arises when both of these labor decisions occur within the same firm—that is, how downsizing decisions affect ESOP firms. By incorporating employee stock ownership into the analysis of corporate downsizing decisions, this study examines the impact of layoffs on productivity and financial performance; it also provides a quasi-

test of Jensen and Meckling's hypothesis that agency problems are reduced when firm ownership is bestowed on the agent (employee).

To better understand the impact of downsizing on the two types of firms, it is helpful to look at the inter-firm comparisons (ESOP versus non-ESOP) as well as the intra-firm comparisons (pre- versus post-downsizing for each firm type, respectively). The first hypothesis will examine the productivity and financial performance of the firm *before* the downsizing announcement. Assuming that two firms within the same industry face a similar decrease in demand for their product, then, *ceteris paribus*, an ESOP firm should downsize at about the same level as a non-ESOP firm. However, the employee-owners of ESOP firms might use their ownership power to thwart or delay downsizing, which could cause the ESOP firms to wait too long to downsize and incur even greater financial distress. If there is a difference in the timing of downsizing announcement, it might be an indication of agency problems. The hypothesis related to this test is as follows:

Hypothesis 1: There is no difference between the productivity/performance of ESOP versus non-ESOP companies before downsizing, *ceteris paribus*.

The remaining hypotheses examine the changes in productivity and performance conditional on the downsizing decision. In other words, given that downsizing has occurred, how does it affect employee productivity and financial performance of the firm? To begin analyzing the effect that downsizing has on the productivity and financial performance of the firm, the second hypothesis simply examines the status quo that downsizing has no effect on the productivity or financial performance of the firm:

Hypothesis 2: Given the downsizing decision, there is no change in the the productivity/financial performance of the firm, regardless of ESOP status.

The results from testing Hypothesis 2 will serve as a basis of comparison with other studies that examine the productivity and financial performance of downsizing firms.

This hypothesis makes no assumptions regarding the value or the magnitude of productivity/financial performance changes, and ESOP firms are not distinguished from non-ESOP firms. Regardless of the outcome from testing Hypothesis 2, subsequent tests will be conducted to further examine the impact of ESOPs on downsizing firms. Specifically, various characteristics of the firm and its downsizing decision will be examined to determine if they cause differences in the productivity/financial performance of ESOP versus non-ESOP firms.

The first characteristic to be examined is the existence of the Employee Stock Ownership Plan itself. For firms with older ESOP plans or with high levels of employee ownership, the ESOP participants have acquired a higher degree of knowledge or sophistication regarding their powers as shareholders (Klein, 1987). If ESOP firms are better able to overcome the negative impact of downsizing by outperforming the post-downsizing productivity/performance of non-ESOP firms, *ceteris paribus*, then it could be an indication that employee-owners do not lower their productivity in response to layoffs. In other words, there is a “bright side” to ESOPs that causes employees to act more like principals than agents and Jensen and Meckling’s hypothesis that firm ownership reduces the agency problem is correct.

Alternatively, if ESOP firms fare worse than non-ESOP firms in terms of productivity and performance or if the increase in productivity/performance is not as great as that of non-ESOPs, then the ESOP might have exacerbated the agency problem when downsizing decisions are necessary; thereby exposing the “dark side” of employee ownership. ESOP participants might try to reduce the ability of managers to alter the workforce to a more value-maximizing level, thus causing the productivity/financial performance of the firm to decrease. If this is the case, then ESOPs have a negative impact on the firm, especially during periods of poor performance.

Given both the “bright” and “dark” side of ESOPs, the long term impact of downsizing is uncertain for firms with employee stock ownership plans. Different characteristics of the downsizing decision and/or ESOP firm could cause the productivity and performance of the firm to either increase or decrease. For example, the level of

downsizing itself might cause the productivity/performance of the firm to change. If the level is high, employee-owners could experience a greater decrease in morale, even though the high downsizing level might be necessary to maximize the value of the firm.

Alternatively, for low levels of downsizing, employees might be motivated to increase their productivity, which in turn will increase the financial performance of the firm (Kraft, 1991; Shapiro and Stiglitz, 1984). The following hypothesis is used to examine the post-downsizing productivity/performance of ESOP versus non-ESOP firms:

Hypothesis 3: Given the downsizing decision, the percentage of employee ownership has no influence on the productivity/performance of ESOP versus non-ESOP companies, *ceteris paribus*.

The results from testing Hypothesis 3 will provide insight into the role that ESOPs have on the downsizing firm. More importantly, this test will directly determine how productivity and performance change as the level of employee ownership changes. However, the percentage of employee ownership alone might not explain the post-downsizing changes in the firm. There could be employee entrenchment within the downsizing ESOP firm that negatively impacts the productivity and performance of the company.

An indication that ESOP firms have employee entrenchment might be the interaction between the level of downsizing and the percentage of employee ownership. Assuming that ESOP and non-ESOP firms of similar size within the same industry face a similar decrease in demand for their product, then *ceteris paribus*, the ESOP firm should downsize at about the same level as the non-ESOP firm. However, *ex-ante*, the employee-owners of ESOP firms who wish to maintain their job security could use their ownership powers to reduce the level of downsizing. If the level of downsizing is lower for ESOP firms than non-ESOP firms, *ceteris paribus*, then employee-owners might be entrenched in the firm. The consequence of this entrenchment could mean that neither productivity nor performance increases significantly after downsizing.

Alternatively, if downsizing levels at ESOP firms are commensurate with non-ESOP firms, then it might indicate that employee-owners are not entrenched in the firm and managers are able to downsize at levels that maximize the value of the firm. All things equal, the downsizing levels of ESOP firms will be as high as that of non-ESOP firms when there is no entrenchment. However, higher downsizing levels often lead to employee discontent, which directly impacts the productivity of the firm. Thus financial performance might increase as a result of the labor cost savings, but productivity could decrease due to lower employee-owner morale. Hypothesis 4 is used to examine the relationship between employee ownership and downsizing and the impact on the firm's productivity and financial performance:

Hypothesis 4: Given the downsizing decision, there is no interaction between the level of downsizing and the level of employee ownership that influences the productivity/performance of ESOP companies.

The results from testing Hypothesis 4 examine only one set of internal owners in the firm: employees. The other group of internal owners who can also influence the productivity and performance of the firm is the firm's managers. Managers influence post-downsizing productivity and performance through their choice of downsizing level. Their choice of downsizing might be based on their ownership percentage of the firm; the larger the managers' share of the firm, the more likely they are to set a downsizing level that maximizes the value of the firm, *ceteris paribus*. However, larger downsizing levels typically lead to greater discontent in the remaining workers, which in turn leads to lower productivity despite higher financial performance, *ex post*. If managers are more concerned with receiving a better return on their share of the firm, they will downsize at appropriate levels which could lead to greater financial returns.³⁴

³⁴ Greater financial returns are the result of higher labor savings.

On the other hand, managers that institute lower levels of downsizing could see an increase in productivity as workers exert more effort to avoid job loss.³⁵ This increase in productivity should translate into slightly better financial performance. However the increase in performance might not be as great as for higher levels of downsizing because labor costs are still relatively high. If managers are more concerned with improving productivity without alienating employees, then they might downsize at lower levels that increase productivity yet minimally improve financial performance. The hypothesis to test the interaction effect that managerial ownership and downsizing have on the firm is:

Hypothesis 5: There is no interaction between the level of downsizing and the level of managerial ownership that influences the productivity/performance of ESOP companies versus non-ESOP companies.

Hypothesis 4 and Hypothesis 5 both examine the individual effect that internal owners, namely employees and managers, have on the productivity and performance of the downsizing firm. Yet, the reality might be that employee- and managerial-owners do not operate independently of each other. If the employee-owners of ESOP firms have “captured” management, then these “ensnared” managers are unwilling to institute high levels of downsizing, even when it is necessary, because to do so would alienate possible allies who could support the manager’s job tenure. Moreover, for higher levels of employee- and managerial-ownership, these internal corporate players become insulated from the consequences of decisions that do not necessarily maximize firm value. Thus, positive interaction between these two variables could be an indication that employees and managers work together to improve the productivity/performance of the downsizing firm. Alternatively, a negative relationship means that for a given level of managerial ownership, the productivity/performance of the firm decreases as the level of employee ownership increases. Hypothesis 6 is used to test for collusion between employees and management:

³⁵ With low levels of downsizing, the probability of job loss is lower for each employee. Thus, workers feel they have a chance to retain their employment and might work harder to increase their individual probability of remaining employed.

Hypothesis 6: There is no interaction between the level of employee ownership and the level of managerial ownership that influences the productivity/performance of ESOP companies.

All of the above hypotheses test the impact that downsizing has on the productivity and performance of the two types of firms. In conducting these tests, the research will determine whether ESOP firms have different productivity changes after downsizing, when compared to non-ESOP firms. All things equal, if ESOP firms perform better than non-ESOP firms after downsizing, then perhaps the beneficial characteristics of the ESOP are able to overcome the negative effects of downsizing. Alternatively, if ESOP firms fare worse than non-ESOP firms in terms of productivity and performance, then employee ownership, rather than addressing the agency problem within the firm, might actually exacerbate it, especially during periods of downsizing.

Methodology and Data

There is no question that downsizing activity affects the value of the firm. There is, however, ambiguity in the direction and magnitude of the effect, especially when ESOPs are present within the downsizing firm. This paper measures and documents the differences in productivity and financial performance that accompany downsizing decisions by comparing the inter-firm (ESOP versus non-ESOP) as well as intra-firm (pre-downsizing versus post-downsizing) changes that result from downsizing. To conduct these tests, the methodology for this study involves three stages. First, the productivity measures are calculated by extracting Total Factor Productivity (TFP) residuals. Second, Tobin's Q-ratios are calculated for all firms as a proxy for performance. Finally, the TFP residuals and Q-ratios calculated in the first two stages serve as dependent variables that are regressed against ESOPs, downsizing, and other explanatory variables that influence the productivity and performance of downsizing firms.

In the first stage, the productivity is calculated using Total Factor Productivity (TFP). TFP is a method of estimating productivity growth within a firm, industry, or country whereby a production function is used to extract the value that labor, capital, and materials/energy contribute to output. The residual from this estimation (also known as TFP residual) is interpreted as the relative productivity rank of a plant within its industry (Schoar, 2002). When it is regressed against other explanatory variables, the resulting parameter estimates measure how these other "factors" contribute to the productivity of the firm. The factors of interest in this research include ESOP, the level of downsizing, and the amount of managerial ownership.

In general, the specification of the TFP model begins with a modified Cobb-Douglas function as follows:

$$\ln(Y_{ijt}) = a_{jt} + b_{jt} \ln(K_{ijt}) + c_{jt} \ln(L_{ijt}) + d_{jt} \ln(M_{ijt}) + \varepsilon_{ijt} \quad (8)$$

where Y , K , L , and M are the production output (as measured by sales), capital, labor, and materials/energy, respectively, indexed by individual plants i , in industries j for each year t . This specification allows for different factor intensities in different industries, as defined by the 2-digit industry codes.³⁶

When Y_{ijt} is differentiated with respect to time, we get an approximation of technical change which measures any kind of shift in the production function (Solow, 1957). Given that two firms within the same industry have equal labor, capital, and materials, their productivity should be the same, *ceteris paribus*. Any difference in the productivity might be caused by firm-specific attributes and will be reflected in the residual term, whether it is positive or negative. This residual error term, ε_{ijt} , from Equation (3) measures the contribution to output that is not captured by capital, labor, or materials, but is instead related to other factors. This research proposes that the ESOP, the level of downsizing, and the percentage of managerial ownership are three of the more influential factors.

In the second stage of analysis, Tobin's Q ratio will be calculated for each firm. Defined as the ratio of the firm's market value to replacement cost of assets, Tobin's Q ratio measures the valuation premium of the firm. If the Q ratio is greater than one, it indicates that the market value of the firm is greater than the cost of replacing its assets. Thus, firms with relatively high Q ratios are believed to have more growth opportunities and generally have better financial performance.

By using the Q ratio, the performance measure is not subject to the inherent industry distortions that accompany other measures of performance, such as return on assets (ROA) and return on equity (ROE). These measures are heavily influenced by industry practices, tax laws, and accounting conventions (Wernerfelt and Montgomery, 1988). Conversely, in theory the Q ratio, removes these biases because it is based on a capital market measure of firm rents. After controlling for other factors that influence the

³⁶ Materials are only used when estimating the production function of manufacturing or production firms. It is not used for service industries.

Q ratio (e.g. firm size and degree of leverage), we will be able to specifically test the effect of downsizing and ESOPs on firm performance.³⁷

After calculating the TFP residuals for productivity and the Tobin's Q ratio measures for financial performance, the final stage of analysis will involve regressing these values against firm-specific explanatory variables to determine if those variables influence the productivity and performance of downsizing firms. Due to the nature of this study, panel data analysis will be used to control for time-constant unobserved influences on the dependent variable. Panel data analysis is preferable to standard OLS procedures because panel data provide flexibility in aggregating information to compare results either across time, across different firms, or within the same firm. In addition, because the assumptions for standard OLS estimation (e.g. omitted variables, serial correlation, and homoskedasticity) might be violated in this study, panel data allow the researcher to make assumptions about the unobserved effects that transform the regression equation to one that has consistent estimators.

The data sets are created by analyzing the same cross-sectional units, (in this case, downsizing ESOP and non-ESOP firms), over a period of five years: two years before downsizing, the year downsizing occurs, and two years after downsizing. By organizing the panel data in this fashion, the research is able to control the unobserved effect, thus resulting in a cross-sectional regression. The specific panel data method that is utilized in this study is random-effects estimation using pooled generalized least squares techniques (GLS) on unbalanced panels. The equation is as follows:

$$y_{it} = \beta_0 + \beta_1 X_{jit1} + \beta_2 X_{jit2} + \dots + \beta_k X_{jitk} + a_i + u_{jit}, t = (-2, -1, 0, 1, 2) \quad (9)$$

where y_{it} is the dependent variable (in this case, TFP and Tobin's Q, respectively); β_0 is the intercept; X_{jitk} is the k th explanatory variable for the i th firm in the j th industry at time period, t for all k, i, j ; a_i is the unobserved effect; and u_{jit} is the residual error term.

³⁷ Because ESOP plans are usually leveraged transactions, there could be interaction between ESOPs and debt level. This possibility will be considered when testing the model.

The inclusion of an intercept term allows the researcher to assume that a_i has zero mean. In other words, we assume that the unobserved effect in Equation (9) is uncorrelated with each of the explanatory variables in all time periods:

$$Cov(X_{jit}, a_i) = 0, t = (-2, -1, 0, 1, 2) \quad (10)$$

Given this assumption, Equation (9) becomes a random-effects model.

The main advantage of using the random-effects model is that it allows fixed independent variables (such as unionization or ESOP percentage) that do not change over time to remain in the model and to contribute their explanatory power. Unfortunately, random-effects estimation also has its drawbacks, including serial correlation. To correct for this problem, Equation (9) is transformed by subtracting a fraction of the time averages from the corresponding variable as follows:

$$y_{it} - \overline{\lambda y_i} = \beta_0(1 - \lambda) + \beta_1(X_{jit1} - \overline{X_{ji1}}) + \beta_2(X_{jit2} - \lambda \overline{X_{ji2}}) + \dots \\ + \beta_k(X_{jitk} - \overline{X_{jik}}) + (v_{jit} - \lambda \overline{v_{ji}}) \quad (11)$$

where

$$\lambda = 1 - \left[\sigma_u^2 / (\sigma_u^2 + T\sigma_a^2) \right]^{1/2},$$

and $v_{jit} = a_i + u_{it}$, with the overbars denoting time averages.

Equation (11) represents the quasi-demeaned data on each variable. This equation is known as the random-effects transformation of the panel data. Note that a fraction, λ , of the unobserved effect, a_i , remains in the model. This specification allows us to measure the relative importance of unobserved variables in the model. If λ is close to zero, then the random-effects model is very similar to the pooled OLS estimates; that is, the unobserved effects are relatively unimportant. Alternatively, as λ approaches unity, then the random effects model is almost identical to the fixed-effects model, which indicates that unobserved effects are correlated with the explanatory variables and should therefore be subtracted out.

One additional problem often arises with panel data methods. Given the nature of this research, there is a possibility that downsizing firms in distress will be merged, taken over, or dissolved. To address this, unbalanced panels are used to allow for attrition. Unbalanced panels occur when observations drop out of the regression due to missing data. Although it is important to uncover the cause of attrition and to ensure that it is uncorrelated with the error term, estimation can still take place.³⁸

Panel data, while difficult to obtain, provides many advantages over regular data sets or pooled cross sections. The first advantage, discussed earlier, is that it allows control over unobserved characteristics of the firm. Another advantage is that it enables the researcher to study the results of decision making—in this case, downsizing decisions. But perhaps the most important benefit of panel data analysis is that it allows the researcher to assign causality links to the empirical results, thereby giving conclusive statements more power. Panel data analysis permits the following comparisons:

Intra-Group Comparisons

Pre-Downsizing ESOP versus Post-Downsizing ESOP

Pre-Downsizing Non-ESOP versus Post Downsizing Non-ESOP

Inter-Group Comparisons

Pre-Downsizing ESOP versus Pre-Downsizing Non-ESOP

Post-Downsizing ESOP versus Post-Downsizing Non-ESOP

By conducting these two-way comparisons, this study provides greater insight into the effect that a downsizing decision has on the firm's productivity and performance.

The panel data set is constructed from downsizing announcements made in the *Wall Street Journal* during the ten-year span from 1990-1999.³⁹ A downsizing firm is defined as a company that announces a decision to lay off a portion of its workforce; an

³⁸ The original data set from the wealth effects study in essay 1 is used here. However, due to attrition and/or lack of data for all years, approximately 300 firms were excluded, leaving 416 firms (non-ESOP=312; ESOP=104). Despite the diminished number of firms, there are still enough observations to comply with assumptions for a large sample size.

³⁹ The time period was chosen to incorporate and/or reduce any distortions that would accompany the 1986 change in tax laws.

ESOP firm is defined as a company that has an employee stock ownership plan in place that adheres to the requirements established under ERISA of 1974. Data on ESOP firms are cross-referenced with downsizing data to identify downsizing ESOP firms.

To isolate the effect of the announcement, the downsizing firm should have no previous layoffs at least three years prior to the “current” announcement and no subsequent layoffs for at least three years after the “current” announcement.⁴⁰ Finally, no other announcement (e.g. bankruptcy) can be made in conjunction with the downsizing decision, as this might cloud the effects of the layoff itself.⁴¹

The panel data set used in this study consists of productivity and financial performance measures calculated for two years before, the year of, and two years following the downsizing announcement. In addition, firm specific explanatory variables, including ESOP, downsizing level, and internal ownership are calculated for the same time periods. These explanatory variables are then regressed against the TFP residual and Q ratio to measure the effect that ESOP has on the productivity and performance of the downsizing firm. Table 16 provides a list and description of the accounting measures used to examine the effects of ESOP and downsizing on the productivity and financial performance of the downsizing firm.

These variables capture firm-specific attributes of the downsizing firm. However, because downsizing can be cyclical to some degree and because companies within an industry face similar market challenges, the market conditions must be extracted from firm-specific data to capture only the firm’s response to layoffs. The 2-digit industry code will be used to separate between industries. The descriptive statistics and frequency tables are shown in Table 17 and Table 18, respectively. Table 19 details the TFP measures for the downsizing firms for the time period $t = -2$ to $t = 2$, where $t = -2$ represents firm data two years before downsizing and $t = 2$ represents firm data two years after downsizing. Similar information is shown for Tobin’s Q in Table 20.

⁴⁰ Since layoff decisions can be made more than once during the life cycle of a corporation, a company cannot be excluded from research consideration for having multiple layoff instances as long as those instances are sufficiently spaced apart.

⁴¹ Because downsizing announcements are often accompanied by plant closings or occur as the result of mergers, these reasons for downsizing will not be excluded. Instead, they will be identified via a dummy variable.

As evidenced by the summary statistics in Table 17, ESOP firms are significantly different from non-ESOP firms for all variables except HERF, which measures the degree of competition in the particular industry. Non-ESOP firms have higher levels of downsizing, higher percentages of managerial ownership, and higher percentages of institutional ownership than ESOP firms, and the difference is significant at the 1 percent level. On the other hand, ESOP firms tend to be more diversified and have higher market values than non-ESOPs.

With respect to the qualitative variables outlined in Table 18, ESOPs are more likely to downsize due to restructuring whereas non-ESOPs are more likely to close the plant. For both firm types, merger activity is rare; however unionization is more prevalent in ESOP firms than in non-ESOP firms.

Tables 19 and 20 depict the summary statistics of all five time periods (two years before downsizing, the year of downsizing, and two years after downsizing) for TFP and Q, respectively. In the two years before downsizing occurs, non-ESOP firms have low but positive levels of productivity whereas ESOP firms have negative productivity. During the event year two years later, the productivity for both firm types has improved, but non-ESOP firms experience a higher level of improvement. Note that for all firms, regardless of ESOP status, productivity is significantly positive after downsizing, (time $t = 0$ to $t = 2$). However, non-ESOP firms demonstrate greater improvement in productivity over the 5-year span, going from a TFP of 0.0653 at time $t = -2$ to a TFP of 0.1439 at time $t = 2$. For the same 5-year span, ESOP firms go from a TFP of -0.0082 at time $t = -2$ to a TFP of 0.0313 at time $t = 2$. These results suggest that ESOP firms are less productive than non-ESOPs in both the pre- and post-downsizing period. More importantly, ESOP firms never attain the level of productivity that non-ESOPs have. This is the first indication that ESOPs distort the incentives of employee-owners.

With respect to the Q ratio, there is a significant difference between ESOP and non-ESOP firms only for time periods $t = -2$, $t = -1$ and $t = 1$. In addition, note what happens to Q in the pre- versus post-downsizing period; from time $t = -2$ to $t = 0$, the financial performance of the firm is decreasing for both firm types whereas in time $t = 0$ to

$t = 2$, the performance in increasing. This decrease and increase is much more pronounced for non-ESOP firms than for ESOP firms, which tend to remain much lower than non-ESOPs. This result suggests that non-ESOP firms have better performance than ESOP firms in all time periods. However, non-ESOPs fail to attain the pre-downsizing level of performance whereas downsizing causes ESOP to perform even more the the pre-downsizing level of performance. In other words, downsizing has a better impact on the performance of ESOP firms.

Table 21 shows the difference in TFP means and Q means across various time periods. The time period from $t = -2$ to $t = 0$ captures the pre-downsizing productivity/performance while the time period $t = 0$ to $t = 2$ examine the post-downsizing period. The time period $t = -2$ to $t = 2$ compares the productivity and performance of the firm for two years before downsizing to two years after downsizing. This table shows that there is significant improvement in productivity for firms in general and for non-ESOP firms, in particular, for all time periods, but ESOP firms are slow to show improvement during the two years after downsizing. However, they do show overall improvement when comparing $t = -2$ to $t = 2$.

As for the comparisons across time periods for Q, there is evidence that firms, in general and non-ESOP firms, in particular, experience significantly negative financial performance when comparing time periods $t = -2$ to $t = 0$ and $t = -2$ to $t = 2$. However, ESOP firms only show negative performance for time $t = -2$ to $t = 0$; for time period $t = -2$ to $t = 2$, ESOP firms outperform non-ESOPs.

The results from the difference of means tests provide insight into the effect that employee stock ownership has on downsizing firms. The results provide preliminary evidence to reject both Hypothesis 1, that there in no difference in the pre- downsizing productivity/performance of the firms and Hypothesis 2, that there is no change in the productivity/performance of the firm, in general, given the downsizing decision. Despite the preliminary verification of productivity/performance effects of downsizing, regression analysis of TFP and Q will provide even greater insight that can be used to make causal statements.

Regression Equation and Results

As described earlier, the regression analysis is done in three stages. In the first stage, Total Factor Productivity (TFP) residuals are calculated. In the second stage, Tobin's Q is determined for each downsizing firm. (Both TFP and Q are calculated for the 5-year span covering two years before downsizing, the year of downsizing, and two years after downsizing.) Finally, the third stage involves regressing TFP and Q against the main variables of interest (DS, ESOP, MGR Own, and the interaction between them) as well as other explanatory control variables.

The first step in calculating the TFP residual is to estimate the production function. Using a modified Cobb-Douglas production function, the values for SALES, CAPITAL, LABOR, and MATERIAL are determined for each downsizing firm and used in the following equation:

$$\ln(\text{SALES}_{ij}) = A_{ij} + \ln(\text{CAPITAL}_{ij}) + \ln(\text{LABOR}_{ij}) + \ln(\text{MATERIAL}_{ij}) + e_i \quad (12)$$

where SALES, CAPITAL, LABOR, and MATERIAL are as described earlier, A_{ij} is a constant technology-efficiency parameter for each industry represented in the sample, and e_i is the (TFP) residual and measures the difference between actual value-added and predicted value-added.

Although the TFP method of measuring productivity is different from the methodology used by other researchers, it provides a more complete examination of how other factors (e.g., ESOPs and downsizing) impact productivity. Similar to the event-study methodology, which analyses "abnormal returns" using firm-specific attributes, TFP examines the effect of firm-specific factors that contribute to productivity.

After the TFP residual is determined, the next stage of the regression analysis is to determine the Tobin's Q ratios for each of the downsizing firms. Tobin's Q is a capital market measure of the firm's rents that is equal to the sum of the market value of equity, the liquidation value of preferred stock, the book value of long-term debt, and the book value of short-term debt. This sum is then divided by the book value of total assets. If Q

values are greater than 1, then the firms are believed to have better performance in both the current and future time periods.

Once both the TFP and Q values are determined, the following regressions will be conducted to measure the effect of ESOPs on productivity (TFP) and performance (Q):

$$\begin{aligned}
 TFP_{it} = & \alpha_0 + \beta_1 DS_{it} + \beta_2 ESOP_{it} + \beta_3 MGR_OWN_{it} + \beta_4 INST_OWN_{it} + \beta_5 LNMV_{it} + \\
 & \beta_6 EAGE_{it} + \beta_7 ESOP_{it} * DS_{it} + \beta_8 MO_{it} * DS_{it} + \beta_9 ESOP_{it} * MO_{it} + \\
 & \beta_{10} HERF_{it} + \beta_{11} SEGS_{it} + \beta_{12} UNION_{it} + \beta_{13} MERGE_{it} + \\
 & \beta_{14} CP_{it} + \beta_{15} IT_{it} + \beta_{16} CX_{it} + \beta_{17} DD_{it} + \beta_{18} IP_{it} + \beta_{19} RE_{it} + \\
 & \beta_{20} DS_{it}^2 + \beta_{21} ESOP_{it}^2 + \beta_{22} MO_{it}^2 + \beta_{23} EAGE_{it}^2 + \epsilon_i
 \end{aligned} \tag{13}$$

$$\begin{aligned}
 Q_{it} = & \alpha_0 + \beta_1 DS_{it} + \beta_2 ESOP_{it} + \beta_3 MGR_OWN_{it} + \beta_4 INST_OWN_{it} + \beta_5 TFP_{it} + \\
 & \beta_6 EAGE_{it} + \beta_7 ESOP_{it} * DS_{it} + \beta_8 MO_{it} * DS_{it} + \beta_9 ESOP_{it} * MO_{it} + \\
 & \beta_{10} HERF_{it} + \beta_{11} SEGS_{it} + \beta_{12} UNION_{it} + \beta_{13} MERGE_{it} + \\
 & \beta_{14} CP_{it} + \beta_{15} IT_{it} + \beta_{16} CX_{it} + \beta_{17} DD_{it} + \beta_{18} IP_{it} + \beta_{19} RE_{it} + \\
 & \beta_{20} DS_{it}^2 + \beta_{21} ESOP_{it}^2 + \beta_{22} MO_{it}^2 + \beta_{23} EAGE_{it}^2 + \epsilon_i
 \end{aligned} \tag{14}$$

The main variables of interest in this equation are DS, ESOP, MGR_OWN, ESOP_AGE, ESOP*DS, MO*DS and ESOP*MO.⁴² These variables capture, either directly or through interaction, the effect that a employee stock ownership has on the downsizing firm. The first two variables (DS and ESOP) along with the interaction variable (ESOP*DS) measure the impact that downsizing and employee ownership have on the productivity and performance of the firm. The interaction term ESOP*DS serves as an indicator of potential interaction between employee-owners and the level of downsizing that influences the productivity and performance of the firm. To capture the possibility of collusion, the variables MGR_OWN, MO*DS and ESOP*MO are included (Gamble, (2000); Hallock,

⁴² “MO” stands for Managerial Ownership

(1998)).⁴³ The sign on the interaction terms indicate whether there is positive or negative collusion between employees and managers that impacts productivity and performance.

EAGE serves as a proxy for the degree of sophistication or learning curve that employee-owners have acquired. Firms that have older ESOP plans might also have employees with longer employment tenure, greater influence over managers, more knowledge of corporate information, and greater awareness of the powers afforded by the ESOP. Thus, firms with older ESOP plans might have greater incidences of employee entrenchment, which manifests itself in the form of lower productivity and performance.

Variables are added to control for firm-specific attributes that might cloud the effect of ESOPs. They include INST_OWN, HERF, SEGS, LNMV, and the reasons for downsizing. Institutional Ownership (INST_OWN) measures the percentage of the downsizing firm held by institutional owners. As large block holders of the firm's shares, institutions hold great sway over managerial decisions and often hold a seat on the board of directors. They are more likely to call for downsizing when the firm is performing poorly than widely dispersed shareholders who typically hold a very small percentage of the firm.

The Herfindahl index, as measured by HERF, captures the level of competitiveness in a particular industry and proxies for the firm's market power. For highly competitive industries, layoffs often occur at higher rates as companies alter their variable costs (i.e. labor) to maintain profitability and maximize firm value.

SEGS is used to measure the extent to which corporate diversification (i.e., conglomerates) impacts the productivity/performance of downsizing firms. The variable, LNMV, controls for the size of the firm. Larger firms usually are better able to withstand market downturns. Thus, they might have lower levels of downsizing, *ceteris paribus*, than smaller firms, which could lead to less negative productivity and performance effects.

The downsizing reasons are used to distinguish between "positive" reasons (IP = Improve Productivity, IT = Improve Technology, CX = Cut Expenses, RE =

⁴³ Gamble (2000) argues that managers of ESOP firms might collude with employee-owners to ensure their mutual job security. Hallock (1998) finds that CEOs receive monetary benefits in the year following downsizing activity.

Restructuring) and “negative” reasons (DD = Declining Demand, CP = Close Plant). Based on the research of Palmon et al., (1997) and Chen et al., (2001), these variables are included to control for the downsizing reasons given by management.

Finally, to control for curvilinear effects, squared terms are included in the equation for DS^2 , $ESOP^2$, MO^2 and $EAGE^2$. By including second-order variables, the model is better able to capture decreasing or increasing marginal effects of downsizing, employee ownership, managerial ownership, and the age of the ESOP.

Each of these variables, when included in the regression equation used to analyze the productivity and performance effects of downsizing, should provide insight into the question of how employee stock ownership impacts the downsizing decisions of the firm. The significance of these variables in explaining the variation in the productivity and performance of downsizing firms contribute to a better understanding of the agency problems that exist within the firm. The results from estimating Equations (13) and (14) on the full sample (N=416) of downsizing firms are shown in Tables 22 and 23, respectively.⁴⁴ Two different models are analyzed for each dependent variable; the pre-downsizing model analyzes TFP and Q for time $t = -2$ to $t = 0$ whereas the post-downsizing model looks at time period $t = 0$ to $t = 2$.

In examining Table 22, although ESOP did not have a significant effect on productivity for firms in general, notice that the DS variable has a significantly positive parameter estimate ($DS = 0.8325$), indicating that prior to the downsizing event, the “expectation” of downsizing has a positive impact on productivity.⁴⁵ In other words, regardless of the ESOP status, employees become more productive prior to downsizing, perhaps in an effort to avoid job loss.⁴⁶ However, following the downsizing announcement, downsizing has a negative effect ($DS = -0.5983$) on the firm’s productivity and many of the other variables become less significant, *ex post*. Also note that managerial ownership has a negative influence on productivity before downsizing, whereas firm size,

⁴⁴ When reporting the regression results, the curvilinear effects (i.e. squared terms) are often excused because they are rarely significant. In those instances where they are significant, they are included in the table.

⁴⁵ Downsizing activity within an industry usually affects a significant proportion of the firms within that industry.

⁴⁶ Stiglitz and Weiss (1983) argue that layoffs act as an incentive to increase worker productivity.

institutional ownership and decreasing competitiveness (as measured by HERF) have a positive impact on productivity. Note further that firms that stated “improved productivity” as their reason for downsizing experienced significantly positive improvements in TFP. Finally, there is evidence of a curvilinear effect for downsizing ($DS^2 = -1.4791$) and managerial ownership ($MO^2 = 1.9656$) and there is evidence of positive interaction between managerial ownership and the level of downsizing ($MO*DS = 3.5870$). These results for productivity suggest that downsizing is more effective than ESOPs in motivating employees to increase productivity; however post-downsizing productivity is negatively affected by layoffs.

With respect to Tobin’s Q, downsizing has a negative impact in both the pre- and post-downsizing period as does the percentage of employee ownership. The negative sign on ESOP in the pre-downsizing period could be an indication that ESOP firms delay downsizing decisions for too long, and therefore are more likely to have greater financial distress before downsizing. Rational external investors, who perhaps expected the manager to make downsizing decisions earlier, note the delay and value the firm lower. This devaluing of the firm causes the Q ratio to be lower.

In addition to the negative impact of downsizing and employee ownership, unionization has a negative effect on performance whereas merger activity and managerial ownership exert a positive influence on financial performance in the pre-downsizing period. This could mean that the existence of unions causes performance to decrease as firms try to negotiate contracts that often increase labor costs. There is also evidence that Tobin’s Q is negatively affected by productivity in both the pre- and post-downsizing period. This result could be due to the fact that firms are increasing their investment in technology-based capital stock (i.e. computers, updated equipment/technology) as they were inclined to do during the 1990s (Jensen, 1993), thereby increasing the denominator of the Q calculation and decreasing the value of Tobin’s Q.⁴⁷ Finally, there is evidence of negative interaction between managerial ownership and downsizing in the pre-downsizing

⁴⁷ Tobin’s Q is essentially equal to the market value of the firm divided by total assets. If total assets are increasing, there is a corresponding decrease in Tobin’s Q, *ceteris paribus*.

period whereas there is positive interaction between ESOPs and managerial ownership in both the pre- and post-downsizing periods.

These results, while significant, offer a very complex view of the relationship between external shareholders, managers and employees/employee-owners. It is unclear whether employee ownership benefits the firm, as indicated by the significantly positive coefficient on the interaction variable $MO*DS$, or if ESOPs hurts the downsizing firm, as evidenced by the significantly negative parameter estimate on the ESOP variable.

To better understand the dynamics between these stakeholders, Equations (13) and (14) are also analyzed individually (instead of grouped by pre- and post- downsizing periods) for all five time periods ($t = -2, -1, 0, 1, 2$) included in the panel data. This regression is analyzed for all downsizing firms ($N = 416$) as well as for the firms separated by ESOP status (non-ESOPs = 312 and ESOPs = 104) for TFP and Tobin's Q. In addition, quintile analysis is done for all firms, in general, as well as for ESOP versus non-ESOP firms. The regression results for TFP and Q are shown in Tables 24 and 25, respectively; the quintile results are shown in Tables 26 and 27.⁴⁸

In Table 24, the regression results for all firms for $t = -2$ to $t = 2$ are similar to the pre-downsizing results for TFP in Table 22. However, when the data set is separated by ESOP status, it becomes clear that most of the significance for downsizing firms, in general, is due to non-ESOP companies. With the exception of institutional ownership, unionization, and reorganization, ESOP firms demonstrate less significant results than non-ESOPs. In particular, the level of downsizing, managerial ownership, firm size, competitiveness, and diversification all impact the productivity of non-ESOPs. More importantly, there is evidence that the level of managerial ownership interacts positively with the level of downsizing. This is a clear indication that managers set downsizing levels to improve productivity.

As for ESOP firms, there is no evidence that employee ownership plays a role in determining the productivity of the firm, ex post. In addition, there is evidence that

⁴⁸ Quintile analysis was also done for Return on Assets (ROA); the results were substantially similar to the analysis on Q and so they are not included here.

institutional ownership and unionization positively affect productivity. None of the other explanatory variables significantly impacts the productivity of ESOP firms, with the exception of “Restructuring” (positive effect) and ESOP² (negative effect).

Table 25 depicts the regression results for Tobin’s Q. Again, the significant result in the all-firms model is mainly due to the presence of non-ESOP firms. In the all-firms model, the level of downsizing, employee ownership, and interaction between managerial ownership and downsizing have negative impacts whereas merger activity, technology improvements, restructuring, and the interaction between managers and employees have positive effects. When these results are compared to ESOP versus non-ESOP firms, employee ownership, institutional ownership, merger activity, and manager-employee interaction are significant for ESOPs. These findings could be an indication that employee ownership and institutional ownership are at odds with the objectives of achieving high Q firms.⁴⁹

Further insight is obtained from the quintile analysis of ESOP versus non-ESOP firms. The TFP quintiles in Table 26 for each time period show that the TFP of ESOP firms never sinks quite as low as that of non-ESOPs, but neither does it ascend as high as the productivity of non-ESOPs. Rather, the productivity of ESOP companies tends to hover in the middle. This “mediocre” productivity level might be an indicator of employee entrenchment.

Examining the Q quintiles in Table 27 shows an even more striking difference between ESOP and non-ESOPs. ESOP firms always average higher than non-ESOP in the lower quintiles (Q1-Q2) for each time period. However, in the upper quintiles (Q3-Q5), non-ESOP firms outrank them handily. Again, the “satisficing” behavior that ESOP firms demonstrated in both productivity and performance could indicate that agency problems are present within the ESOP firm and exist in a more virulent form due to the ownership powers that ESOP participants enjoy.

⁴⁹ Institutional investors (such as insurance companies or other institutions that prefer steady cash inflow) often prefer “cash cow”-type companies that typically have low Q values.

Summary and Conclusion

This study examines how public companies that are partially owned by their employees through ESOP plans, respond to corporate downsizing two years after downsizing occurs. Further, it examines how that response compares to firms that have no ESOP plan in existence. Given the increase in employee ownership and the corresponding increase in downsizing activity, this is a timely opportunity to compare how two different labor-related events are manifested within the market in general, and the firm in particular.

Using means testing, panel data regression, and quintile analysis to compare the productivity and financial performance of ESOP versus non-ESOP companies in the pre- and post-downsizing period, several conclusions can be drawn. First, with respect to productivity, the results of the test indicate that ESOPs have very little impact on the productivity of the firm before or after downsizing, and there is no interaction between employee ownership, managerial ownership, or downsizing level.

However, the results of the tests indicate that there is a change in the productivity of a downsizing firm in general. Prior to downsizing, ESOP and non-ESOP firms have similar levels of productivity. The data show that there is improvement in productivity in the two years following downsizing (time $t = 0$ to 2) as well as over the entire 5-year span (time $t = -2$ to 2) for firms in general. When the sample is separated by ESOP status, there is no indication that ESOP firms improve productivity after downsizing events (time $t = 0$ to 2); it is only in the pre-downsizing time period (time $t = -2$ to 0) and over the entire 5-year span (time $t = -2$ to 2) that we see improvement in productivity.⁵⁰ These results suggest that the primary objective of employee-ownership (i.e. increased productivity) has suffered since the adoption of the ESOP plan. Moreover, ESOP firms tend to lag behind non-ESOPs in terms of productivity and performance.⁵¹ In other words, with respect to productivity and performance, the “dark side” of ESOPs prevails.

⁵⁰ These findings come from the means testing in Table 16. The regression results (Table 19) show slight evidence that ESOPs do affect the productivity of the firm, though the ESOP coefficient is positive with only a 15% level of significance.

⁵¹ Although ESOPs perform worse than non-ESOPs, there is no evidence that they experience greater financial distress.

So, although downsizing increases the productivity of the firm in general, it is a much more effective tool for motivating employees of non-ESOP firms. In fact, almost all of the control variables (downsizing, managerial ownership, firm size, competitiveness, and diversification) impact the productivity of non-ESOP firms more than the productivity of ESOP firms. The productivity of ESOP firms is mainly affected by institutional ownership, unionization, and restructuring, all of which have positive influences on productivity. Finally, there is evidence of interaction, but only for non-ESOPs and only between managerial ownership and downsizing, which impact productivity negatively.

With respect to financial performance, the difference between an ESOP and non-ESOP firm is more pronounced. The results show that non-ESOP firms perform significantly better than ESOPs in the pre-downsizing period. Despite the lower Q measures for ESOPs, there is no indication that ESOP firms wait too long to downsize, nor do they appear to experience more financial distress.

After downsizing, both firm types show a significant change in financial performance. However, ESOPs and non-ESOPs have opposite changes in their financial performances; ESOP companies generally experience an increase in performance whereas non-ESOPs show a decrease. Examining ESOP firms in particular, the data show that both employee ownership and institutional ownership have significantly negative effects for ESOP firms. In other words, as the percentage of employee ownership or institutional ownership increases, it has a detrimental effect on the financial performance of the firm.

With respect to interaction, there is significant interaction between managers and employee-owners within ESOP firms that positively impacts the performance. But examination of the summary statistics shows that the increase in Q for ESOPs is much lower than the increase for non-ESOPs. There is also evidence of interaction between the level of managerial ownership and downsizing that negatively influences the financial performance, but only for non-ESOP firms. These results indicate that although ESOPs have a significantly lower level of downsizing, it does not translate into increased productivity or performance.

These results establish the need for additional research into the effect that ESOPs have on productivity. Future research will examine whether ESOP firms engage in more or less research and development and how they compare with non-ESOPs in terms of capital improvements. If ESOP firms value labor more than capital, they might be disinclined to invest in technology that reduces the need for more workers. Thus ESOP firms might have higher labor cost and lower capital investment, *ceteris paribus*, than non-ESOP firms (Jensen and Meckling (1979) and Faleye et al., (2005)).

Another possible extension of the research will examine the link between productivity and performance. Conventional wisdom assumes that higher productivity leads to better financial performance; however the results from this study contradict that assumption. Here, as productivity increases, the financial performance of the firm (as measured by Tobin's Q) actually decreases. This unusual result may be due to the time period under examination; the decade of the 1990s had a deep recessionary period (1990-1992) and a booming expansionary period (1998-1999). However, during both periods, downsizing activity remained high even as productivity increased throughout the decade, fueled in part by technology growth. Thus, the 1990s saw systematic downsizing activity, first due to recession then due to replacement of labor with capital. By examining the relationship between firm performance and productivity from 1990-1999, regardless of downsizing activity, the results from this research can be put into proper perspective to understand why increases in productivity might lead to decreases in financial performance.

The implications from the wealth effects essay and the productivity/performance study provide an interesting picture of the impact that employee ownership has on the downsizing firm. These implications are discussed in the next chapter and should be of interest to managers of ESOP firms as they reassess the cost and benefit of stock ownership plans.

Table 16. Description of variables used in Productivity/Performance equations.

This table presents information on the independent variables used in the regression equations. It describes how each variable is calculated and the reason for inclusion.

Variables	Description of Variable	Reason for Inclusion
TFP	Residual from Cobb-Douglas production function.	Serves as dependent variable for the regression equations. (Lichtenberg and Seigel, 1987)
Q	Tobin's Q; ratio of firm's capital market value to replacement cost of assets	Serves as dependent variable for the regression equations.
DS	Percentage of workers laid off. Calculated as number of employees laid off divided by workforce of company	Measures the level of downsizing. (Chen et al., 2001; Elayan et al., 1998; Kraft, 1991)
ESOP	Percentage of the firm held by employees in a qualified ESOP plan	Measure level of employee-ownership. (Klein, 1987)
MGR_OWN	Percentage of firm held by upper management.	Measures level of managerial ownership. (Hallock, 1998)
INST_OWN	Percentage of the firm held by institutional investors	Measures impact of institutional ownership
EAGE	Dummy variable; 0 for non-ESOP firms; t+1 for each year the ESOP has been in existence.	Proxy for employee-owner sophistication and organization. (Kumbhaker and Dunbar, 1993)
HERF	Inverse of number of competitors worldwide, measure of competition.	Controls for market leader effect. (Chen et al, 2001)
SEGS	Dummy variable; Equals 1 if conglomerate; 0 otherwise	Controls for diversification. (Scott and Ueng, 1996)
MKTVAL	Firm's Market Value; natural log of market value used in regression	Controls for firm size. (Jones and Kato, 1995)
DS_REASON	Dummy variable; equals 1 if firm gives "efficiency-improving" reason for downsizing, 0 otherwise.	Controls for positive/negative downsizing reason. (Palmon, et al, 1997; Chen et al, 2001)
UNION	Dummy variable; Equals 1 if unionized; 0 otherwise	Controls for unionization. (Brown and Medoff, 1978)
MERGE	Dummy Variable; equals 1 if firm had merger with 2 year span; 0 otherwise.	Controls for Merger/Acquisition activity.
ESOP*DS	Interaction between ESOP and level of downsizing.	Measures interaction between ESOP and downsizing. Proxy for agency problem. (Kraft, 1991)
MO*DS	Managerial ownership multiplied by level of downsizing.	Measures interaction between manager ownership and downsizing. Proxy for agency problem. (Kraft, 1991)
ESOP*MO	Interaction between employee ownership (ESOP) and managerial ownership (MGR_OWN).	Measures collusion between employee and manager. Proxy for agency problem. (Gamble, 2000)

Table 17. Summary Statistics: Means (Standard Deviations)

This table shows descriptive statistics for the final sample of 416 firms that downsized during the period 1990-1999. The “Difference in Means” column tests the null hypothesis of no difference between ESOP versus non-ESOP firms for each independent variable.

Time Period	All Firms	Non-ESOP Firms	ESOP Firms	Difference in Means	
DS	0.0905 (0.1089)	0.1003 (0.1166)	0.0610 (0.0745)	0.0493 (0.0098)	***
ESOP	N/A	N/A	0.0813 (0.0810)	N/A	
EAGE	N/A	N/A	12.4423 (8.3408)	N/A	
MGR_OWN	0.0900 (0.1331)	0.1083 (0.1448)	0.0398 (0.0678)	0.0685 (0.0106)	***
INST_OWN	0.1532 (0.1685)	0.1680 (0.1748)	0.1087 (0.1393)	0.0593 (0.0169)	***
SEGS	1.5029 (1.4226)	1.5737 (1.1735)	2.4904 (1.8328)	-0.9167 (0.1916)	***
HERF	0.0812 (0.0814)	0.0849 (0.0780)	0.0701 (0.0904)	0.0148 (0.0099)	
MKTVAL (Millions, \$)	5,079.121 (10,071.590)	3,492.348 (8,269.140)	9,839.440 (13,104.600)	-6,347.092 (1,367.630)	***
Number of Observations	416	312	104		
Standard deviations shown (in parentheses)					
*** Significant at the 0.01 level					
** Significant at the 0.05 level					
* Significant at the 0.10 level					

Table 18. Frequency Table for Qualitative Variables

This table presents information on the distribution of downsizing reasons, merger activity and unionization among the final sample of 416 downsizing firms. Relative frequencies are shown as percentages.

Dummy Variables	Levels	All Firms	Relative (%)	ESOP Firms	Relative (%)	Non-ESOP Firms	Relative (%)
DS_REAS	CP = Close Plant	70	16.8	57	18.2	13	12.5
	IT = Improve Technology	5	1.2	2	0.6	3	2.9
	CX = Cut Expenses	69	16.6	52	16.7	17	16.3
	DD = Declining Demand	66	15.9	51	16.3	15	14.4
	IP = Improve Productivity	13	3.0	8	2.7	5	4.8
	RE = Restructuring	62	15.0	43	13.8	19	18.3
	NA = No Reason Given	131	31.5	99	31.7	32	30.8
			100.0		100.0		100.0
MERGE	N	362	87.0	264	84.6	98	94.2
	Y	54	13.0	48	15.4	6	5.8
			100.0		100.0		100.0
UNION	N	323	77.6	248	79.5	75	72.1
	Y	93	22.3	64	20.5	29	27.9
			100.0		100.0		100.0
	Number of Observations	416		312		104	

Table 19. Summary Statistics: Means (Standard Errors) of TFP for Various Time Periods

This table compares the total factor productivity (TFP) for ESOP versus non-ESOP firms during the respective time periods. The time periods cover the 5-year span from two years before downsizing (t = -2) to two years after downsizing (t = 2), with time t = 0 representing the event year that downsizing occurred. The “Difference in Means” column tests the null hypothesis that the mean TFP of ESOP firms is equal to the mean TFP of non-ESOP firms during the respective time periods.

Time Period	All Firms		Non-ESOP Firms		ESOP Firms		Difference in Means	
t = -2	0.0470 (0.0296)		0.0653 (0.0374)	*	-0.0082 (0.0378)		0.0735 (0.0532)	
t = -1	0.0434 (0.0273)		0.0538 (0.0338)		0.0121 (0.0409)		0.0417 (0.0531)	
t = 0	0.0915 (0.0259)	***	0.1132 (0.0317)	***	0.0266 (0.0408)		0.0866 (0.0517)	*
t = 1	0.1066 (0.0260)	***	0.1265 (0.0321)	***	0.0468 (0.0395)		0.0797 (0.0509)	
t = 2	0.1157 (0.0259)	***	0.1439 (0.0308)	***	0.0313 (0.0458)		0.1126 (0.0552)	**
Number of Observations	416		312		104			

Standard errors shown (in parentheses)

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 20. Summary Statistics: Means (Standard Errors) of Q for Various Time Periods

This table compares the Tobin's Q for ESOP versus non-ESOP firms during the respective time periods. The time periods cover the 5-year span from two years before downsizing ($t = -2$) to two years after downsizing ($t = 2$), with time $t = 0$ representing the event year that downsizing occurred. The "Difference in Means" column tests the null hypothesis that the mean Q of ESOP firms is equal to the mean Q of non-ESOP firms during the respective time periods.

Time Period	All Firms		Non-ESOP Firms		ESOP Firms		Difference in Means	
t = -2	1.4704 (0.0778)	***	1.5939 (0.0997)	***	1.0997 (0.0752)	***	0.4942 (0.1249)	***
t = -1	1.2912 (0.0614)	***	1.3630 (0.0761)	***	1.0757 (0.0882)	***	0.2873 (0.1165)	**
t = 0	1.1082 (0.0476)	***	1.1123 (0.0538)	***	1.0961 (0.1009)	***	0.0162 (0.1144)	
t = 1	1.3922 (0.1197)	***	1.4748 (0.1557)	***	1.1443 (0.1014)	***	0.3305 (0.1858)	*
t = 2	1.2809 (0.0799)	***	1.3052 (0.0990)	***	1.2079 (0.1184)	***	0.0973 (0.1543)	
Number of Observations	416		312		104			
Standard errors shown (in parentheses)								
*** Significant at the 0.01 level								
** Significant at the 0.05 level								
* Significant at the 0.10 level								

Table 21. Difference in TFP and Q Means Across Different Time Periods

This table compares the total factor productivity (TFP) and Tobin's Q for ESOP versus non-ESOP firms across different time periods. The time periods cover: (1) the pre-downsizing period (t = -2 to 0); (2) the post-downsizing period (t = 0 to 2); and (3) the 5-year span from two years before downsizing (t = -2) to two years after downsizing (t = 2), with time t = 0 representing the event year that downsizing occurred. The "Difference in TFP" section tests the null hypothesis that the mean TFP of ESOP firms is equal to the mean TFP of non-ESOP firms during the respective time periods. The "Difference in Q" section tests the null hypothesis that the mean Q of ESOP firms is equal to the mean Q of non-ESOP firms during the respective time periods.

Difference in TFP									
	<u>All</u>			<u>Non-ESOP Firms</u>			<u>ESOP Firms</u>		
<u>Time t=</u>	<u>Firms</u>								
-2 to 0	0.0445	(23.08)	***	0.0479	(17.26)	***	0.0348	(6.38)	***
0 to 2	0.0242	(13.48)	***	0.0307	(12.27)	***	0.0047	(0.78)	
-2 to 2	0.0687	(35.69)	***	0.0786	(28.66)	***	0.0395	(6.78)	***
Difference in Q									
	<u>All</u>			<u>Non-ESOP Firms</u>			<u>ESOP Firms</u>		
<u>Time t=</u>	<u>Firms</u>								
-2 to 0	-0.3622	(-81.00)	***	-0.4816	(-75.09)	***	-0.0036	(-0.29)	
0 to 2	0.1727	(37.87)	***	0.1929	(30.24)	***	0.1118	(7.33)	***
-2 to 2	-0.1895	(-34.66)	***	-0.2887	(-36.29)	***	0.1082	(7.87)	***
t-statistics shown (in parentheses)									
*** Significant at the 0.01 level									
** Significant at the 0.05 level									
* Significant at the 0.10 level									

Table 22. Pre-Downsizing and Post-Downsizing Regressions for TFP

This table contains multiple regression estimates based on 5-year panel data for firms that announced layoffs in the period 1990-1999. The dependent variable is TFP. Pre-downsizing measures from $t=-2$ to $t=0$; post-downsizing measures $t=0$ to $t=2$. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Pre-Downsizing TFP			Post-Downsizing TFP			
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		
Intercept	-0.5103	(-1.96)	*	0.0193	(0.10)		
DS	0.8325	(3.66)	***	-0.5983	(-3.79)	***	
ESOP	-0.6139	(-1.02)		-0.0137	(-0.02)		
EAGE	0.0006	(-0.12)		-0.0031	(-0.73)		
MGR_OWN	-1.2188	(-2.47)	**	0.0720	(0.37)		
INST_OWN	0.3236	(2.05)	**	0.3041	(2.09)	**	
LNMV	0.0245	(2.03)	**	0.0021	(0.23)		
HERF	0.9539	(2.80)	***	0.8723	(2.63)	***	
SEGS	-0.0153	(-0.76)		-0.0270	(-1.44)		
UNION	0.0204	(0.32)		-0.0161	(-0.27)		
MERGE	0.0239	(0.31)		-0.0415	(-0.58)		
CP	-0.0792	(-1.00)		-0.0629	(-0.85)		
IT	0.3048	(1.26)		0.1466	(0.65)		
CX	-0.0291	(-0.38)		-0.0196	(-0.27)		
DD	0.0094	(0.13)		-0.0337	(-0.48)		
IP	0.2585	(1.71)	*	0.4248	(3.02)	***	
RE	0.0374	(0.47)		0.0484	(0.65)		
ESOP*DS	1.2709	(0.38)		-0.7890	(-0.26)		
MO*DS	3.5870	(4.47)	***	0.2791	(0.42)		
ESOP*MO	3.5700	(0.79)		-0.2909	(-0.07)		
DS ²	-1.4791	(-3.75)	***				
MO ²	1.9659	(2.37)	**				
F = 15.62			***	F = 15.24			***

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 23. Pre-Downsizing and Post-Downsizing Regressions for Q

This table contains multiple regression estimates based on 5-year panel data for firms that announced layoffs in the period 1990-1999. The dependent variable is Tobin's Q. Pre-downsizing measures from t=-2 to t=0; post-downsizing measures t=0 to t=2. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	Pre-Downsizing Q			Post-Downsizing Q			
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		
Intercept	1.2609	(6.45)	***	1.2239	(4.22)	***	
DS	-2.0854	(-2.78)	***	-2.0997	(-2.03)	**	
ESOP	-3.0874	(-2.47)	**	-3.4279	(-2.09)	**	
EAGE	-0.0021	(-0.18)		0.0011	(0.10)		
MGR_OWN	1.4660	(3.38)	***	0.6071	(1.07)		
INST_OWN	-0.3542	(-1.10)		-0.3350	(-0.81)		
TFP	-0.1361	(-1.85)	*	-0.2055	(-1.76)	*	
HERF	0.3019	(-0.34)		-0.4928	(-0.36)		
SEGS	0.0317	(0.77)		0.0414	(0.78)		
UNION	-0.2670	(-1.98)	**	-0.2446	(-1.40)		
MERGE	0.3945	(2.51)	**	0.2331	(1.16)		
CP	-0.0672	(-0.41)		0.1363	(0.63)		
IT	0.5685	(1.15)		1.3511	(2.15)	**	
CX	-0.071	(-0.11)		0.0619	(0.30)		
DD	0.0695	(0.43)		0.0730	(0.35)		
IP	0.3041	(0.99)		0.7575	(1.93)	*	
RE	0.1726	(1.04)		0.4679	(2.20)	**	
ESOP*DS	13.9650	(1.39)		7.6662	(0.45)		
MO*DS	-12.0146	(-4.91)	***	-2.8951	(-0.71)		
ESOP*MO	16.0086	(1.73)	*	28.1443	(2.37)	**	
DS ²	4.8464	(3.88)	***	2.0645	(1.08)		
F = 1.56			**	F = 2.39			***

*** Significant at the 0.01 level
 ** Significant at the 0.05 level
 * Significant at the 0.10 level

Table 24. Regression Estimates for Equation (13) Dependent Variable: TFP

This table contains multiple regression estimates for the 416 firms contained in the final sample based on 5-year panel data for firms that announced layoffs in the period 1990-1999. There are 312 non-ESOP and 104 ESOP firms. The dependent variable is TFP. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	All Firms			Non-ESOP Firms			ESOP Firms		
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		Parameter Estimate	t-statistic	
Intercept	0.4263	(2.23)	***	0.4951	(2.22)	**	0.3593	(0.90)	
DS	0.5622	(2.23)	**	0.6069	(2.09)	**	0.4314	(0.65)	
ESOP	-0.0191	(-0.01)					1.5245	(1.36)	
EAGE	0.0023	(0.24)							
MGR_OWN	-1.2373	(-2.67)	***	-1.5590	(-3.01)	***	-0.0948	(-0.07)	
INST_OWN	0.3154	(2.09)	**	0.2137	(1.23)		0.4512	(1.69)	*
LNMV	-0.0193	(-2.27)	**	-0.0167	(-1.72)	*	-0.0253	(-1.46)	
HERF	0.8706	(2.63)	***	1.1722	(2.32)	**	-0.1290	(-0.29)	
SEGS	-0.0098	(-0.52)		-0.0510	(-1.91)	*	0.0111	(0.54)	
UNION	0.0079	(0.13)		-0.0496	(-0.64)		0.1565	(1.99)	**
MERGE	0.0188	(0.26)		0.0596	(0.73)		-0.2310	(-1.58)	
CP	-0.0727	(-0.97)		-0.0943	(-1.06)		0.1126	(0.97)	
IT	0.2639	(1.15)		0.2788	(0.75)		0.2422	(1.21)	
CX	-0.0264	(-0.36)		-0.0404	(-0.46)		0.1117	(1.15)	
DD	0.0055	(0.08)		-0.0459	(-0.51)		-0.0054	(-0.06)	
IP	0.3422	(2.39)	**	0.4761	(2.56)	**	0.1049	(0.67)	
RE	0.0423	(0.56)		-0.0546	(-0.58)		0.1797	(1.85)	*
ESOP*DS	-0.1708	(-0.05)					-0.3374	(-0.08)	
MO*DS	2.8891	(3.52)	***	2.9453	(3.33)	***	0.2662	(0.05)	
ESOP*MO	4.1993	(0.98)					-0.2104	(-0.03)	
DS ²	-1.8792	(-4.46)	***	-1.9321	(-4.21)	***	-1.6262	(-0.77)	
ESOP ²	-1.6538	(-0.40)					-6.9622	(-2.01)	**
EAGE ²	-0.0002	(-0.55)							
MO ²	2.0176	(2.59)	***	2.2898	(2.67)	***	3.5029	(0.58)	
	F = 11.11	***		F = 11.29	***		F = 5.429	***	

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

Table 25. Regression Estimates for Equation (14) Dependent Variable: Q

This table contains multiple regression estimates for the 416 firms contained in the final sample based on 5-year panel data for firms that announced layoffs in the period 1990-1999. There are 312 non-ESOP and 104 ESOP firms. The dependent variable is Tobin's Q. The t-statistics (in parentheses) test the null hypothesis that the independent variable is equal to 0.

Variables	All Firms			Non-ESOP Firms			ESOP Firms		
	Parameter Estimate	t-statistic		Parameter Estimate	t-statistic		Parameter Estimate	t-statistic	
Intercept	1.2780	(4.90)	***	1.0890	(3.32)	***	1.1952	(5.31)	***
DS	-2.2772	(-2.40)	**	-2.2467	(-1.90)	*	-0.41227	(-0.56)	
ESOP	-6.0311	(-1.84)	*				-3.3688	(-2.49)	**
EAGE	0.0176	(0.67)							
MGR_OWN	1.3287	(1.18)		1.1357	(2.19)	**	-0.2587	(-0.13)	
INST_OWN	-0.4296	(-1.18)		-0.0490	(-0.12)		-1.4991	(-2.18)	**
TFP	-0.2061	(-2.59)	***	-0.2227	(-2.31)	**	0.0257	(0.32)	
HERF	-0.4914	(-0.40)		-0.4709	(-0.26)		-0.1512	(-0.15)	
SEGS	0.0281	(0.62)		0.0771	(1.21)		0.0893	(1.73)	
UNION	-0.2439	(-1.63)		-0.2577	(-1.34)		-0.1178	(-0.57)	
MERGE	0.3058	(1.77)	*	0.2511	(1.28)		1.0438	(2.58)	**
CP	0.0678	(0.37)		0.0447	(0.20)		-0.1303	(-0.43)	
IT	1.0655	(1.98)	*	2.9302	(3.40)	***	-0.4181	(-0.77)	
CX	0.0191	(0.11)		0.0263	(0.13)		0.3303	(1.24)	
DD	0.0805	(0.47)		0.1148	(0.53)		0.0241	(0.13)	
IP	0.5572	(1.66)	*	0.6753	(1.53)		-0.0365	(-0.08)	
RE	0.3776	(2.08)	**	0.4588	(2.03)	**	0.1810	(0.69)	
ESOP*DS	11.9800	(0.83)					6.2289	(0.86)	
MO*DS	-7.4076	(-2.10)	**	-7.0726	(-1.74)	*	-14.1742	(-1.51)	
ESOP*MO	21.2938	(2.05)	**				23.1924	(2.03)	**
DS ²	3.6047	(2.13)	**	3.5345	(1.78)	*			
ESOP ²	8.5264	(0.86)							
EAGE ²	-0.0045	(-0.53)							
MO ²	-0.6810	(-0.33)							
	F = 2.627	***		F = 2.158	***		F = 10.89	***	

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

Table 26. Quintile Analysis for TFP

The final sample of 416 firms that downsized from 1990-1999 is divided into quintiles for time periods $t = -2$ (two years before downsizing) to $t = 2$ (two years after downsizing), where $t = 0$ is the event year. Quintiles are sorted based on total factor productivity (TFP). The mean and standard deviation for each quintile is given.

Variables	Quintile	All Firms (N = 416)		Non-ESOP Firms (N = 312)		ESOP Firms (N = 104)				
		# Firms	TFP Mean	St. Dev.	# Firms	TFP Mean	St. Dev.	# Firms	TFP Mean	St. Dev.
Time $t = -2$	Q1	83	-0.713	0.561	67	-0.750	0.613	16	-0.557	0.192
	Q2	83	-0.204	0.068	52	-0.212	0.069	31	-0.190	0.065
	Q3	84	0.011	0.073	61	0.010	0.067	23	0.015	0.089
	Q4	83	0.285	0.095	59	0.302	0.094	24	0.243	0.082
	Q5	83	0.856	0.384	73	0.867	0.396	10	0.778	0.281
Time $t = -1$	Q1	83	-0.674	0.492	67	-0.701	0.534	16	-0.557	0.224
	Q2	83	-0.205	0.065	53	-0.205	0.067	30	-0.204	0.061
	Q3	84	0.024	0.068	59	0.029	0.067	25	0.011	0.072
	Q4	83	0.271	0.087	65	0.271	0.091	18	0.268	0.072
	Q5	83	0.801	0.315	68	0.813	0.324	15	0.745	0.270
Time $t = 0$	Q1	83	-0.562	0.439	57	-0.627	0.508	26	-0.419	0.147
	Q2	83	-0.157	0.057	64	-0.156	0.058	19	-0.162	0.051
	Q3	84	0.044	0.063	53	0.049	0.065	31	0.035	0.061
	Q4	83	0.292	0.083	71	0.297	0.082	12	0.261	0.084
	Q5	83	0.841	0.318	67	0.856	0.320	16	0.782	0.313
Time $t = 1$	Q1	83	-0.554	0.404	62	-0.594	0.450	21	-0.438	0.175
	Q2	83	-0.142	0.059	57	-0.142	0.059	26	-0.141	0.061
	Q3	84	0.061	0.061	60	0.065	0.061	24	0.051	0.061
	Q4	83	0.307	0.078	65	0.317	0.077	18	0.272	0.072
	Q5	83	0.861	0.354	68	0.881	0.367	15	0.773	0.285
Time $t = 2$	Q1	83	-0.546	0.316	61	-0.561	0.346	22	-0.503	0.209
	Q2	83	-0.141	0.063	56	-0.137	0.059	27	-0.151	0.071
	Q3	84	0.062	0.061	63	0.069	0.060	21	0.041	0.062
	Q4	83	0.309	0.083	61	0.318	0.090	22	0.284	0.071
	Q5	83	0.895	0.361	71	0.888	0.337	12	0.940	0.500

Table 27. Quintile Analysis for Tobin's Q

The final sample of 416 firms that downsized from 1990-1999 is divided into quintiles for time periods $t = -2$ (two years before downsizing) to $t = 2$ (two years after downsizing), where $t = 0$ is the event year. Quintiles are sorted based on Tobin's Q. The mean and standard deviation for each quintile is given.

Variables	Quintile	All Firms (N = 416)		Non-ESOP Firms (N = 312)		ESOP Firms (N = 104)				
		# Firms	Q Mean	St. Dev.	# Firms	Q Mean	St. Dev.	# Firms	Q Mean	St. Dev.
Time t = -2	Q1	83	0.356	0.179	60	0.349	0.186	23	0.376	0.164
	Q2	83	0.736	0.087	62	0.733	0.085	21	0.746	0.091
	Q3	84	1.023	0.103	52	1.032	0.100	32	1.009	0.107
	Q4	83	1.532	0.216	65	1.515	0.221	18	1.593	0.191
	Q5	83	3.710	2.356	73	3.819	2.476	10	2.910	0.858
Time t = -1	Q1	83	0.332	0.156	58	0.315	0.161	25	0.371	0.137
	Q2	83	0.678	0.074	65	0.682	0.073	18	0.664	0.079
	Q3	84	0.927	0.074	57	0.928	0.075	27	0.935	0.071
	Q4	83	1.356	0.192	62	1.362	0.188	21	1.337	0.207
	Q5	83	3.167	1.690	70	3.222	1.747	13	2.871	1.367
Time t = 0	Q1	83	0.283	0.152	66	0.267	0.155	17	0.344	0.127
	Q2	83	0.608	0.069	60	0.612	0.065	23	0.597	0.079
	Q3	84	0.852	0.079	63	0.854	0.078	21	0.847	0.084
	Q4	83	1.197	0.135	59	1.218	0.132	24	1.146	0.134
	Q5	83	2.603	1.194	64	2.609	1.037	19	2.585	1.656
Time t = 1	Q1	83	0.258	0.161	68	0.242	0.166	15	0.330	0.109
	Q2	83	0.618	0.076	63	0.627	0.070	20	0.587	0.087
	Q3	84	0.844	0.080	56	0.829	0.079	28	0.872	0.077
	Q4	83	1.298	0.191	59	1.321	0.194	24	1.241	0.174
	Q5	83	3.951	4.606	66	4.240	5.069	17	2.829	1.626
Time t = 2	Q1	83	0.226	0.190	67	0.206	0.190	16	0.309	0.168
	Q2	83	0.617	0.078	65	0.617	0.077	18	0.618	0.081
	Q3	84	0.879	0.084	62	0.882	0.083	22	0.872	0.088
	Q4	83	1.287	0.189	53	1.306	0.194	30	1.255	0.177
	Q5	83	3.399	2.661	65	3.530	2.801	18	2.929	2.077

Chapter Four

Implications of Study

Introduction

Rarely do economic conditions provide opportunities to analyze two diametrically opposed influences on corporate employees. However, the increase in ESOP firms coupled with the widespread use of downsizing, presents just such an opportunity. Individually, both ESOPs and downsizing have a impacts on wealth effects, productivity, and corporate performance. However the combination of these labor influences results in unexpected reactions from the market and from the workers. As one of the first papers to examine the relationship between ESOPs and downsizing, this study contributes significantly to both the ESOP and downsizing literature. More importantly, it provides a quasi-test of Jensen and Meckling's (1976) hypothesis that employee stock ownership alleviates the agency problems within the firm. If the market believes downsizing is "necessary", comparing the downsizing decisions of ESOP companies with non-ESOP companies (*ceteris paribus*) provides insight into the question of whether ESOPs resolve or exacerbate some of the agency problems.⁵²

As documented earlier in the paper, ESOPs generally produce positive wealth effects, productivity gains, and financial performance whereas downsizing yields just the opposite effect—that is, stock price reactions are generally negative, employee morale and productivity decrease, and financial performance suffers following layoffs. By examining employee and shareholder reactions for pre- and post-downsizing periods, this study yields implications in the following areas: agency theory, asymmetric information, and corporate governance. Each of these areas will be discussed in turn.

⁵² One example of an industry that has had "necessary" downsizing is the defense industry during the late 80's and early 90's. With the end of the Cold War, many defense contractors were overstaffed and therefore, had to downsize in order to avoid bankruptcy.

Agency Theory

This dissertation presented two labor issues—ESOPs and downsizing—that have been used to resolve agency problems that exist between employees, managers, and investors. Unfortunately, the solutions might present agency problems of their own, especially when used in conjunction. This study examines the interaction effects that exist between ESOPs and downsizing to determine if downsizing is more or less effective in the presence of ESOPs.

Three possible indications of agency problems for ESOP firms are: (1) ESOP firms delay downsizing for too long; (2) ESOP firms downsize at a lower, perhaps “incorrect” level; and (3) ESOP firms experience a smaller increase (or a decrease) in productivity as a result of downsizing. Each of these possibilities is examined in this study, and if downsizing ESOP firms experience any or all of these outcomes then it might be an indication that agency problems are exacerbated by employee stock ownership.

I find that ESOP firms exhibit two of the three indications. While there is no evidence that ESOP firms delay downsizing decisions, they do tend to lay off fewer workers and the downsizing events do not translate into highly improved productivity or financial performance when compared to non-ESOP firm in the pre- and post-downsizing periods. In other words, the “dark side” of ESOPs prevails during downsizing events.

Non-ESOP firms, on the other hand, showed a pronounced contrast to ESOP firms. They had larger layoffs that resulted in marked improvement in productivity from time $t=0$ to $t=2$. In addition, they had greater increases in Tobin’s Q. However, the post-downsizing performance did not quite reach the level of pre-downsizing performance for non-ESOPs as it did for ESOP companies. Still, the results show that downsizing is a better motivator for non-ESOP firms than for ESOP companies.

These findings indicate that managers of ESOP firms need to examine the productivity of their firms in comparison with non-ESOP firms. If ESOP firms tend to have more employees than non-ESOPs, *ceteris paribus*, then perhaps the corporate culture of the ESOP firm is one that encourages increases in labor-related factors of

production instead of capital-related factors of production. One response to the potential for employee entrenchment might be to increase the level of employee ownership. Recall that in the wealth effects study, only firms with employee ownership greater than 10 percent experienced positive abnormal returns.

Alternatively, ESOP managers might want to issue stock options in conjunction with outright stock ownership. The combination of these two instruments could encourage employees to look at current wealth as well as future growth of the firm. Growth in current wealth is encapsulated in the value of the ESOP shares allocated to the employee whereas future wealth is encapsulated in the options and their potential for increased value. In either case, more research needs to be conducted on the productive choices of ESOP versus non-ESOP firms in order to draw more conclusive arguments.

One possible extension of this research might be to examine how downsizing decisions are made, ex ante and what factors are considered by management in setting the downsizing level. If the existence of the ESOP has no effect the manager's downsizing decision, then managers make decisions independent of employee-owners. If the effect is negative, it might indicate that the manager is "captured" by employee-owners and there is employee entrenchment. Alternatively, if ESOPs exert a positive influence on the the decision, it might indicate that there is incentive alignment between employees, managers and shareholders.

Asymmetric Information

Economic and finance theory postulates that the firm is actually a nexus of contracts between the shareholders, managers, and employees of the firm. Within this nexus of contracts, the responsibilities of the manager to the shareholders and of the employee to the manager are explicitly defined via employment compensation contracts. In general, the principals (shareholders) delegate decision-making authority to appointed agents (board of directors and managers) who, in turn, engage more agents (employees) to produce goods and services. Whenever one party in the contractual relationship has more information than the other party, asymmetric information exists. Such a relationship exists automatically within the corporate setting because of the delegation of authority.

Because the internal shareholders (managers and employees) of ESOP firms have more information about the firm, they are better able and better situated to expropriate wealth from external shareholders (regular investors and institutional investors). Although this study does not explicitly test for the effects of asymmetric information, there is an implicit recognition of information asymmetry in the formulation of the hypotheses. However, an analysis of the coefficients on the various stock ownership variables (ESOP, MGR_OWN and INST_OWN) does provide insight into the effect of information asymmetry.

In the wealth effects study, while managerial ownership is not very significant, institutional owners play an important role in evaluating the downsizing decisions of companies in general, and ESOP firms in particular. For both firm types, abnormal returns increase as the percentage of institutional ownership increases, which suggests that block investors closely watch the labor decisions of firms in their portfolio and generally agree with downsizing decisions. When ESOP firms are examined in detail, the results show that institutional investors react differently to downsizing decisions based on the level of employee ownership of the firm, with low- and medium-ESOP firms having a positive response from institutional investors and high ESOP ownership firms showing a negative response. The implications from this result show that investors rely on institutional owners

to prevent internal stakeholders (managers and employee-owners) from expropriating shareholder wealth from external investors.

With respect to productivity and financial performance, the results show that downsizing can also be used to address the information asymmetry that exists between managers and employees. Prior to the downsizing announcement, both productivity and performance are decreasing, which might be an indication that employees are operating below their productive capabilities. After downsizing, the level of productivity and financial performance increases for both firm types. However non-ESOPs have better improvement in their productivity and performance than ESOP firms.

Despite the results from the study, this research only superficially examines the impact of information asymmetry. A specific test for the effects of asymmetry requires a different type of regression analysis; most likely two-stage least squares regression. In conducting this type of analysis, the endogeneity of the downsizing decision can be explicitly modeled using instrumental variables and logit analysis. Again this potential analysis will be conducted at a later date.

Corporate Governance

Corporate governance has long been an area of contention between internal managerial shareholders and external institutional investors who both usually serve on the board of directors. When risk-averse employee-owners are added to the decision-making process, corporate governance becomes even more indeterminate. A question arises as to which corporate player exerts more influence in labor decisions—managers, investors, or employees. More importantly, the possibility of collusion between managers and employee-owners exposes a potential dark-side to employee stock ownership. If internal owners use their ownership powers to entrench themselves in the firm, then corporate governance becomes an area that must be closely monitored to ensure that firm value is maximized.

There are two main implications for corporate governance that flow from this analysis. The first implication is that the external and institutional investors of ESOP firms must ensure that the incentives of the internal shareholders do not become distorted as a result of the ESOP. External shareholders can accomplish this objective by keeping the level of employee ownership very small (less than 5 percent); at this level, employees have a limited voice in decision-making. Conversely, the same objective can be accomplished by increasing the level of employee ownership to very high levels (greater than 10 percent); at this level, a significant portion of the employees' future wealth is tied to the firm's performance. As the results of this study show, when employees own 5-10 percent of the firm, they have little incentive to maximize the value of the firm and might be more inclined to entrench themselves within the firm.

Another implication from the study is that institutional investors should hold a greater percentage of the firm than the percentage held by employees and managers combined. By doing so, institutional investors play an important monitoring role that prevents internal shareholders from expropriating firm value for themselves via entrenchment. This is seen in ESOP firms with less than 5 percent employee ownership; for these firms, the existence of employee ownership impacts abnormal returns positively.

A possible extension of this research includes an examination of the the composition of the board of directors differ for ESOP versus non-ESOP firms. If ESOP boards tend to be more centralized with firm ownership concentrated in a few hands, then ESOP firms should perform well in terms of financial growth because no one voice dominates the board. Alternatively, if ESOP boards consist of only a few large block-shareholders with the remaining shares widely dispersed, then the voice of managers and/or employee-owners might overwhelm the board and result in decreased corporate performance.

Regardless of the direction of future research, the employee-ownership and downsizing genres provide many opportunities, particularly in the arena of public policy. ESOPs are one of the few employee-ownership programs formally codified by the government in ERISA 1974. In addition, the government provides tax incentives to firms that adopt ESOPs. However, if the objectives of ESOPs are easily distorted by normal labor decisions like downsizing, then it is necessary to re-evaluate the efficacy of ESOPs especially when alternative employee-ownership programs exist in the form of stock purchase plans, stock options, and 401(k).

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Appendices

Appendix A: Tables for Wealth Effect of Downsizing

Table 28. Downsizing Firms, by 2-Digit SIC Code

This table lists the 2-Digit SIC code for the 718 firms included in the original data set. Firms are categorized by ESOP status. These codes were used to separate industries when conducting regression and panel-data analysis.

SIC Code		All Firms (N=718)	Non-ESOP Firms (N=536)	ESOP Firms (N=182)
01	Food and Kindred Products	2	2	0
07	Agricultural Services	1	0	1
10	Metal Mining	7	7	0
12	Coal Mining	2	1	1
13	Oil and Gas Extraction	14	9	5
15	General Building Contractors	2	1	1
16	Heavy Construction, ex. Building	2	2	0
17	Special Trade Contractors	1	1	0
20	Food and Kindred Products	21	14	7
22	Textile Mill Products	7	6	1
23	Apparel/Other Textile Products	8	8	0
24	Lumber and Wood Products	1	0	1
25	Furniture and Fixtures	4	3	1
26	Paper and Allied Products	14	9	5
27	Printing and Publishing	17	15	2
28	Chemical and Allied Products	61	43	18
29	Petroleum and Coal Products	12	3	9
30	Rubber and Plastic Products	11	9	2
31	Leather and Leather Goods	2	2	0
32	Stone, Clay and Glass Products	3	3	0
33	Primary Metal Industries	16	11	5
34	Fabricated Metal Products	12	8	4
35	Industrial Machinery and Equipment	90	78	12
36	Electronic/Electric Equipment	67	61	6
37	Transportation Equipment	30	16	14
38	Instruments/Related Products	45	37	8
39	Miscellaneous Mfg Industries	12	10	2
40	Railroad Transportation	5	2	3
41	Local/Interurban Passenger Transit	1	0	1
42	Trucking and Warehousing	3	1	2
45	Transportation by Air	11	7	4
48	Communication	24	10	14
49	Electric, Gas and Sanitary Services	28	14	14
50	Wholesale Trade-Durable Goods	7	7	0

Appendix A: Continued

Table 28. Downsizing Firms, by 2-Digit SIC Code (Cont.)

This table lists the 2-Digit SIC code for the 718 firms included in the original data set. Firms are categorized by ESOP status. These codes were used to separate industries when conducting regression and panel-data analysis.

SIC Code		All Firms (N=718)	Non-ESOP Firms (N=536)	ESOP Firms (N=182)
51	Wholesale Trade-Nondurable Good	8	6	2
52	Building Material/Garden Supplies	11	5	6
54	Food Stores	1	1	0
56	Automotive Dealers/Service Station	4	4	0
57	Home Furnishing Stores	4	4	0
58	Eating/Drinking Establishments	1	0	1
59	Miscellaneous Retail	13	10	3
60	Depository Institutions	26	14	12
61	Non-Depository Institutions	5	3	2
62	Security and Commodity Brokers	8	3	5
63	Insurance Carriers	13	11	2
64	Insurance Agents/Brokers/Service	1	0	1
67	Holding/Investment Offices	3	3	0
73	Business Services	55	54	1
75	Auto Repair/Services/Parking	1	1	0
78	Motion Pictures	5	4	1
79	Amusement and Recreation Services	1	1	0
80	Health Services	5	5	0
87	Engineering and Management Svcs	4	3	1
99	Miscellaneous	5	3	2

Appendix A: Continued

Table 29. Downsizing Firms, by Year

This table shows the number of firms included in the final sample for each year. For 1990-1997, data sets are compiled using the *Wall Street Journal Index*. For 1998-1999, data sets are compiled using *Human Resources Live* (<http://www.hrlive.com>)

Year	All Firms (N=718)	Non-ESOP Firms (N=536)	ESOP Firms (N=182)
1990	47	30	17
1991	53	34	19
1992	41	28	13
1993	53	38	15
1994	62	35	27
1995	60	37	23
1996	64	53	11
1997	21	17	4
1998	192	164	28
1999	125	100	25

About the Author

Jeanean J. Davis-Street is a native of Florida. She attended Florida State University for her undergraduate degree before enrolling directly in the doctoral program at the University of South Florida. Her primary research interests focus on agency theory, game theory, and corporate governance.

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