

1995

## **The Analysis of Employee Stock Ownership Plans Within Asymmetric Information, Insider Ownership, and Insider Trading Frameworks.**

David Alan Deboeuf  
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# **UMI**

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**THE ANALYSIS OF EMPLOYEE STOCK OWNERSHIP PLANS  
WITHIN ASYMMETRIC INFORMATION, INSIDER OWNERSHIP,  
AND INSIDER TRADING FRAMEWORKS**

**A Dissertation**

**Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy**

**in**

**The Interdepartmental Program in Business Administration**

**by**

**David A. DeBoeuf  
B.S., Illinois State University, 1985  
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August 1995**

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## Abstract

This dissertation examines the effects of employee stock ownership plans (ESOPs) on shareholder wealth, corporate control, and insider trading. In the first of three essays, a revision of the asymmetric information hypothesis is applied to the securities issuance structure of the ESOP to provide an explanation of the ESOP announcement's effect on shareholder wealth. Essay two examines the effects of the firm's (and its state of incorporation's) supermajority provisions, level of pre- and post-announcement managerial voting power, and takeover "attractiveness" on the announcement-day reaction. The final essay examines the managers' insider trading activities around the announcement of the ESOP.

The first essay provides evidence that for announcements made in the absence of takeover activity, the market's reaction to ESOPs partially structured with previously unissued common stock and convertible preferred equity is significantly and positively affected by the presence of a simultaneous repurchase announcement. In contrast, a similar analysis of ESOPs announced *without* a simultaneous repurchase finds an insignificant market reaction to ESOPs structured with common stock and a weakly significant and negative reaction to ESOPs structured with convertible preferred equity. This finding is supportive of the revised asymmetric information hypothesis.

The results of the second essay suggest that the market discriminates between firms that are attractive and unattractive for takeover. A significant negative market reaction is observed when the "attractive" firms announce an ESOP that increases the managers'

voting power from a low to high level of entrenchment. In contrast, insignificant results are found in a similar "low-to-high" examination of unattractive firms.

The final essay examines the managers' insider trading activities around the announcement of the ESOP and argues that these trading activities are related to the structure of the ESOP. Insiders significantly reduce the number, and dollar value, of their shares sold in the months immediately surrounding the announcement of ESOPs structured with repurchased equity. Similar results are noted for the sample of ESOPs that experience a significant positive announcement-day reaction.

## Chapter 1

### An Overview

#### 1.1. Introduction

This dissertation examines the shareholder wealth effects of an announced employee stock ownership plan (ESOP) within three separate frameworks based on a revision of the asymmetric information hypothesis, insider ownership, and insider trading activities. Though an ESOP is regulated by the Employee Retirement Income Security Act of 1974 (ERISA), there are many features that distinguish it from other ERISA-governed pension plans.

First, ESOPs are established as separate legal entities and therefore allowed to borrow from sources outside the firm. Non-ESOP pensions do not have similar borrowing potential and are not a source of financing to the firm. Second, these borrowed funds are used to purchase large blocks of the firm's convertible preferred equity and common stock. In contrast, ERISA limits the investments of a non-ESOP pension plan to a small percentage of the firm's equity. Consequently, a firm's capital structure is effectively, perhaps materially, altered by the establishment of an ESOP.<sup>1</sup> The securities issuance structure of the ESOP and the corresponding information inferred by the market is the subject of the first essay of this dissertation (chapter 3).

Third, because of the potentially large purchase of equity, the ESOP is likely to have a material effect on the voting power structure of the firm, a characteristic of

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<sup>1</sup>In relation to a firm's capital structure, the ESOP trust's debt is typically guaranteed by the firm and therefore recorded as a balance sheet liability. Moreover, the equity securities purchased by the ESOP are frequently used as collateral on the loan.

material concern to managers of firms with a non-zero probability of experiencing a takeover. The second essay (chapter 4) examines the relationship between the market's announcement-day reaction and the change in voting power attributed to the ESOP.

Finally, by assuming that ESOPs increase a firm's managerial voting power, one question that arises is, "Does this change in voting power have an effect on management's personal ownership in the firm?" To address this question, the third essay (chapter 5) analyzes the trading patterns of managers (insiders) in the stock of their firm around the announcement of the ESOP.

## **1.2. The Security Issuance Structure**

The first essay (chapter 3) is based on the fact that during the ESOP formation process, the number of available ESOP structures is large. The ESOP may borrow from the firm or a private institution and use these funds to purchase common stock and convertible preferred shares directly from the firm, privately, or in the open market. An ESOP can therefore be thought of as an alternative source of capital to the firm. Thus, Myers and Majluf's (1984) asymmetric information theory of securities issuance<sup>2</sup> is applicable to the establishment and expansion of an ESOP. Given the variety of ESOP-related security issuances, and assuming that the market believes that the managers have superior knowledge about the firm's future cash flows, the relevant question is whether differing ESOP structures alter the market's perception of the value of the firm.

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<sup>2</sup>Myers and Majluf's asymmetric information argument is that the issuance of equity securities is viewed by the market as negative information. Management's choice of equity implies the stock is overvalued based on the presumed inside information about the true state of the firm. Empirical evidence (Smith, 1986) is consistent with this hypothesis.



With the added assumption that managers act in the best interest of the firm's current shareholders *and* employees, the first essay argues that the market's perception of firm value in response to an ESOP should differ from that formed during the announcement of a comparable non-ESOP equity issue. Unlike their situation in a non-ESOP issue, the firm's employees are directly affected by an ESOP-related security issue. Funding an ESOP with an overpriced security is likely to be detrimental to the employees' and the firm's performance, and thus to the manager's job security. Essay one is, therefore, a modified application of Myers and Majluf's theory on the issuance of securities in an asymmetric information environment.

The results of the examination of ESOPs established and expanded in the 1980-1993 period support an asymmetric information explanation of the market's reaction to ESOPs announced in the *absence* of takeover activity. Moreover, ESOPs structured with repurchased equity appear to have an overriding positive effect on the market's reaction to various ESOP structures. Finally, ESOPs announced in the *presence* of takeover activity have a significant negative effect (on average) on firm value.

### **1.3. Voting Power**

Chapter 4 (essay two) is based on the assumption that the holders of the ESOP shares (i.e., the trustee and employees) will generally vote with management if a hostile takeover arises. Therefore, ESOPs presumably have an effect on managerial voting power and the market for corporate control. The second essay employs three analytical improvements over prior insider ownership/corporate control research to gain additional insight into the relation between ESOPs and corporate control. First, in this analysis

the insider ownership variable of concern will account for the supermajority provisions that differ by the state of incorporation and corporate bylaws. Prior insider ownership research implicitly assumes that a firm with a given level of insider ownership has the same degree of takeover protection (i.e., entrenchment) irrespective of a supermajority provision. Based on the significant negative market reaction to the announcement of a supermajority amendment (e.g., Jarrell and Poulsen, 1987, and Karpoff and Malatesta, 1989), the implicit assumption appears to be inaccurate.

A second improvement over prior corporate control research is to recognize explicitly that the effect of insider ownership on the probability of a takeover, and therefore on the value of the firm, differs by the degree of takeover "attractiveness" that a firm possesses. For example, a firm with an excessively high level of debt, low cash flow, and stagnant growth (i.e., an unattractive firm) is likely to have a very low probability of being taken over regardless of the change in voting ownership caused by the ESOP. Changes in firm value caused by an ESOP-related increase in insider voting power should therefore be smaller for unattractive firms, all else equal. Past insider ownership/corporate control research has implicitly assumed that all firms are equally attractive targets, and therefore that the "probability of takeover" changes as the level of insider voting power changes.

The final difference in approach in the second essay is the incorporation of pre- *and* post-announcement levels of voting power controlled by management. It is hypothesized that firms with a low level of managerial voting power prior to the ESOP will experience a positive (negative) market reaction if the post level of voting power

remains "low" (is changed to "high"). The management entrenchment hypothesis predicts the negative market reaction because management has reached a level of voting power that can eliminate all takeover threats and associated premiums. Conversely, the shareholder interests hypothesis asserts that the positive reaction is expected because management, unable to entrench themselves, will use the added (ESOP) voting power to negotiate a higher premium if a takeover is attempted. In contrast, past ESOP research has predominantly focused on the *pre*-announcement level of insider ownership, resulting in a prediction that firms with a low level of insider ownership prior to the ESOP will experience a positive market reaction, regardless of the post-announcement level of insider power.

The second essay incorporates these three elements into a regression of the firms' cumulative prediction errors onto varying ownership variables to determine whether the hypothesized shareholder interests and management entrenchment effects differ between ESOP firms that are attractive and unattractive for takeover. The regression differentiates firms by their levels of pre- and post-announcement insider ownership, and accounts for the differences in managerial voting power caused by a supermajority provision. The importance of this analysis extends beyond ESOPs, with potential application to the examination of other financial events that affect a firm's value via a change in insider ownership (managerial voting power).

The results of essay two (chapter 4) support the argument that the market discriminates between ESOP firms that are attractive and unattractive for takeover. The findings also support the hypothesis that the post-announcement level of ownership has

a significant effect on the prediction error outcome. That is, for the sample of attractive ESOP firms, the results suggest that the market negatively reacts to ESOPs announced by firms that increase their level of managerial voting power from "low" to "high." Insignificant outcomes are found for a similar low-to-high analysis of unattractive firms.

#### **1.4. Insider Trading Activities**

The final essay (chapter 5) examines the managers' ("insiders'") trading activities in the stock of their firm around the announcement of an ESOP. In addition to examining the trades that affect the managers' personal wealth in an environment of (assumed) asymmetric information and SEC regulation, the insiders' trading activities can also be used as a proxy for the firm's private information. In this sense, further evidence is provided relevant to the asymmetric information hypotheses noted in the first essay.

The examination of insider trading activities around the ESOP announcement is also connected to the analyses outlined in the second essay. This association is based on the notion that an increase in voting power from the ESOP formation allows management to reduce its level of personal (cash-flow) ownership in the firm without reducing the effective level of entrenchment. Furthermore, differing insider trading activities are predicted for managers of attractive and unattractive firms. To be specific, the managers of unattractive firms are hypothesized to have a smaller concern for their level of voting ownership and therefore have an opportunity to participate in a larger

sell-off of personal shares without a material increase in the probability of a takeover or a decrease in job security.

Finally, assuming that the managers are relatively aware of the market's forthcoming reaction to the ESOP announcement, the analysis of their trading activities indicates whether they are engaging in personal wealth maximization. For example, a significant insider net sell-off is expected prior to the announcement of an ESOP associated with a negative market reaction. The sell-off is therefore made at a price that is subsequently revealed to the market to be excessive, and the insider has avoided a decrease in personal wealth. This analysis also provides cursory evidence about the SEC trading penalties' effects on insider trading.<sup>3</sup> A more sanguine argument consistent with this prediction is provided by John and Mishra's (1990) signalling model, which suggests that the insiders' trading activities and the firm's announcement act as a joint signal to the market. Regardless, the point to be made is that there is a hypothesized correlation between the insider trading activities and the direction of the stock price reaction.

The findings detailed in chapter 5 show that for ESOPs structured with repurchased equity, the net number (and net dollar value) of shares sold by the firms' managers is significantly lower during the immediate months surrounding the announcement. Similar results are found for ESOP firms that experienced a significant positive prediction error.

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<sup>3</sup>The purpose of the analysis is to test for an association between the insiders' trading activities and the market's reaction to the ESOP announcement. It is not meant to test for (or imply) an unethical/illegal insider trading activity.

The next chapter provides background information and a review of the literature that addresses the areas often cited as the reasons for establishing an ESOP: 1) tax benefits; 2) employee motivation; and 3) corporate control implications. A fourth explanation in the literature, but not discussed here, is the establishment of an ESOP in conjunction with a leveraged buyout (LBO) of the firm.<sup>4</sup>

The structure and format of each of the three essays (chapters 3, 4, and 5) is identical. That is, each chapter starts with an introduction and literature review specific to the essay under analysis. Testable hypotheses, data description and methods of analysis, results, and conclusions are the four sections to follow within each of the three chapters. Finally, chapter 6 contains an integrated set of conclusions from this analysis of ESOPs in asymmetric information, insider ownership, and insider trading frameworks.

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<sup>4</sup>For ESOP LBOs, management borrows (via the ESOP) to repurchase the firm's outstanding equity. The leveraged ESOP's 50 percent interest income exclusion, and the LBO's effectiveness as a takeover deterrent, made the ESOP LBO strategy popular in the mid-to-late 1980s. A detailed description and analysis of ESOP LBOs is provided in Chang (1990).

## Chapter 2

### Background and Literature Review

#### 2.1. Introduction

An employee stock ownership plan (ESOP) is a tax-qualified, defined contribution pension plan<sup>5</sup> established as a separate legal entity to be managed by a hired trustee. Similar to most pension plans, ESOPs are subject to the regulations outlined in the Employee Retirement Income Security Act of 1974 (ERISA). Unlike most plans, which are required to have their pension fund investments "prudently" managed (i.e., diversified), the employee stock ownership trust (ESOT)<sup>6</sup> is typically arranged to purchase a large block of the sponsoring company's equity.<sup>7</sup> Initially the stock is held in an "unallocated" suspense account, but over time the shares are allocated to the individual employee accounts<sup>8</sup> maintained within the trust. The voting rights attached to the shares held in the suspense account and individual employee accounts are controlled by the trustee and employees, respectively. Furthermore, common and

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<sup>5</sup>The plan is "tax qualified" because a distribution to an employee's ESOP account is tax deferred until withdrawn. Furthermore, it is a "defined contribution" plan because the firm is required to provide predetermined contributions to the trust, as opposed to a defined benefit plan where the required benefits paid to the employees on retirement are predetermined.

<sup>6</sup>This review does not distinguish between "ESOP", the acronym used as a general description of the employee benefit plan, and "ESOT", a specific definition of the legally created trust established to purchase the firm's equity and maintain the employees' pension accounts. Common procedure in the literature is to refer to both as "ESOP."

<sup>7</sup>ERISA requires that a minimum of 50 percent of the ESOP firm's assets must be invested in the firm's equity.

<sup>8</sup>As an ESOP's debt is paid off (from company contributions and dividends), a comparable dollar value of shares is allocated to the individual employees' ESOP accounts. Upon leaving the company, the employees are given the vested portion of their "allocated" accounts or allowed to sell the equity back to the firm at the fair market value.

convertible preferred stocks are the only employer securities qualified for the ESOP-related tax benefits. Finally, for convertible preferred shares to be qualified, the firm's common stock must have a tradeable market.

In sum, because of its separate legal status, an ESOP is allowed to incur debt to purchase the firm's convertible preferred and common equity in the open market, privately, or directly from the company. To aid in the understanding of the variety of ESOP structures available to management, several *Nexis Newswire* press releases are summarized below:

Standard Motor Products, Inc., January 9, 1989: "Standard Motor Products said its board of directors authorized the establishment of an employee stock ownership plan. The company also said it believes that when the plan is funded, the plan will buy about one million shares of Standard's outstanding common stock in the open market."

Proctor & Gamble Company, January 11, 1989: "The Proctor & Gamble Company today announced the creation of a leveraged ESOP within its existing profit sharing plans. Concurrently, it announced an expanded common stock repurchase program. The LESOP trust intends to borrow up to \$1.0 billion for a period of 15 years, with the loan being guaranteed by the company. The proceeds from the loan will be used to purchase a new issue of convertible preferred stock from the company. In a related matter, the board of directors has authorized the company to use the eventual proceeds from the issuance of the convertible preferred stock to repurchase up to 12 million shares of its common stock to more than offset the dilution effect of the newly issued convertible preferred stock."

Longs Drug Stores, March 8, 1989: "Robert M. Long, president and CEO, announced that Longs had sold 696,864 shares of its common stock to the ESOP. Long stated that the ESOP now owns 14.30 percent of the Longs outstanding shares."

Diamond Shamrock R & M, Inc., April 21, 1989: "The Diamond Shamrock board of directors today announced that it has expanded its employee stock program with the establishment of a new employee stock ownership plan (ESOP) which purchased approximately 1.4 million shares of common stock from the company for \$30 million. The company also announced that it will expand its share repurchase



program to reduce the number of outstanding shares to a level in line with the pre-expanded ESOP amount of 24 million common shares."

As a prelude to the asymmetric information analysis in chapter 3, the structure of the four ESOPs described above are categorized as follows:

Standard Motor: Repurchase.

Proctor & Gamble: Repurchase, leveraged ESOP, convertible preferred.

Longs Drug Stores: Previously unissued common stock.

Diamond Shamrock: Previously unissued common stock, repurchase.

Several theories on the establishment of ESOPs have been forwarded over the years. The remainder of this chapter will review three of the more common hypothesized motives for a firm to institute an employee stock ownership plan: 1) ESOP-related tax benefits; 2) employee motivation; and 3) corporate control.

## **2.2. ESOP-related Tax Benefits**

After the ERISA "acknowledgement"<sup>9</sup> of ESOPs in 1974, the importance of an employee stock ownership plan was further enhanced with the creation of an ESOP-related one percent investment tax credit by the Tax Reduction Act of 1975, and an additional increase of one-half percent in 1976 for matched employee contributions. Despite the subsequent structural changes and ultimate elimination of the credits in December of 1986, significant legislative benefits were added in 1984 and 1986. The Deficit Reduction Act of 1984, which took full effect at the beginning of 1985, allows corporations to deduct the dividends that are passed through to the owners (employees)

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<sup>9</sup>The Employment Retirement Income Security Act of 1974 included specific ESOP provisions, boosting their acceptability. Few ESOPs existed prior to the 1974 Act.

of the allocated ESOP shares. These "passed through" dividends, however, become taxable income to the employees when received. The ESOP-dividend tax benefit was expanded by the Tax Reform Act of 1986 to allow for the deduction of dividends received by the unallocated ESOP shares and used to reduce the outstanding debt.

The 1984 tax reform also provided a significant incentive (to establish an ESOP) in the form of a 50 percent income exclusion on the interest earned by a lending institution from an ESOP-related loan.<sup>10</sup> Part of this benefit typically flowed through to the ESOP in the form of a lower debt rate than that of an equivalent risk, non-ESOP loan. Four years later, Congress, in an attempt to meet its goal of reducing the deficit, enacted guidelines to restrict the 50 percent interest exclusion to a minority of firms with significant ESOP ownership. The interest exclusion amendments (restrictions) generally apply to ESOP-related loans made subsequent to July 10, 1989.

An incorporation of these tax provisions formed the basis of Chen and Kessinger (1985), with its description of establishing a leveraged ESOP to effectively issue a "tax deductible equity." That is, they argue that for ESOPs purchasing common stock with bank loan funds, the firm will enjoy the benefits of debt and equity. The tax deductible company contributions to the ESOP,<sup>11</sup> used to repay the loan, translate into a reduction of taxable income that equals or exceeds the sum of the interest *and* principal payments, a tax benefit superior to that of ordinary debt. Furthermore, the potential inclusion of

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<sup>10</sup>Per Beatty (1995), "This exclusion was provided to banks for any loan made after July 18, 1984, and to insurance and investment companies for loans made after October 22, 1986."

<sup>11</sup>The tax deductibility of ESOP contributions used to repay the loan principal is limited to 25% of the employees' total compensation. No limit exists for company contributions applied to the payment of the ESOP loan's interest.

dividends as a taxable expense further converts the common stock into a debt-like instrument, but without the threat of bankruptcy proceedings if the dividends are reduced or eliminated.

Despite the enticing tax benefits, most ESOP studies have yet to support a significant ESOP tax effect. For example, Chaplinsky and Niehaus (1990) note that since company contributions are deductible as a business expense under all employee benefit plans, the deduction of interest and principal payments on a leveraged ESOP are not a unique tax benefit. If the intent of management is to establish an ESOP solely for the benefit of the employees, their assertion is true. If management is also interested in the funds received from an equity issuance, however, the tax deductible payments must be considered an added benefit to the ESOP issuance process.

Regardless, Chaplinsky and Niehaus' assumption leads to their conclusion that the ESOP-dividend policy and present value of the 50 percent "interest subsidy" (for leveraged ESOPs) are the only two determinants of the ESOP-related tax benefit. Moreover, based on their examination of 76 surveys returned by leveraged-ESOP firms, 20 plans (26.3 percent) do not repay their ESOP loan with dividends paid on unallocated ESOP shares and 57 plans (75 percent) allow the dividends paid on allocated shares to accrue within the employees' accounts. In other words, a large percentage of firms are forgoing the available tax benefits. Though the latter policy is probably employed to defer the personal taxes required on dividends paid directly to the employees (as a benefit to the employees), the results are used by the authors to support their argument that "ESOP plans do not appear to be operated to achieve the maximum

corporate tax benefits." One cannot infer, however, that the tax benefits are irrelevant merely because the maximum level of tax benefit is not pursued by the firm. In other words, maximum tax benefits do not necessarily correlate to optimal firm values. This is particularly true for firms establishing a leveraged ESOP to obtain funds at a cheaper cost of capital because of the 50 percent interest subsidy.

Consistent with Chaplinsky and Niehaus is Scholes and Wolfson (1990), who assert that the costs associated with maintaining the trust may offset the potential tax benefits of the ESOP. Combining the "cost" argument with the fact that some of the benefits are not unique to an employee stock ownership pension plan, the authors conclude that the tax provisions are not the primary reason for creating an ESOP. The authors further suggest that the anti-takeover aspects of the ESOP (as discussed in section 2.4) are the motivating force behind their establishment, not the "incentives" (section 2.3) they provide to the employees nor the tax benefits obtained by the firm.

The findings of Dhillon and Ramirez (1994) support the arguments of Scholes and Wolfson and Chaplinsky and Niehaus with their multiple regression results that demonstrate an insignificant relationship between the ESOP announcement's prediction error and the firm's marginal tax rate in the year prior to the ESOP. Though Dhillon and Ramirez argue that firms with a high tax rate should experience a larger tax benefit, and therefore a larger positive prediction error, their "tax benefit" proxy does not specifically account for the 50 percent interest subsidy attached to leveraged ESOPs established between 1984 and 1989. In other words, the authors implicitly assume that all ESOPs have homogeneous tax benefits. This is implied via the structure of their

regression which suggests that the prior year's marginal tax rate, not the ESOP structure (i.e., the presence or absence of the 50 percent subsidy), is the determinant of the market's "tax effect" reaction.

In contrast to the above, Beatty (1995) specifically accounts for each firm's ESOP-related tax benefit. For the 122 ESOP announcements analyzed, Beatty calculates a net tax benefit by accounting for the interest savings from a 50 percent interest income exclusion (for leveraged ESOPs) and the value of the dividend tax deduction. Other factors such as a firm's net operating loss carryforward and its marginal tax rates also affect the net tax benefit calculation. By regressing the firms' two-day cumulative prediction errors onto a set of explanatory variables, including the net tax benefit, the results suggest that the market's reaction to the ESOP announcement is positively affected by the size of the net tax benefit.

In addition, Chang and Mayers (1992) claim that their results are consistent with the presence of an ESOP-related tax benefit. Cross-sectional analysis shows that the change in shareholder wealth is positively affected by the size of the ESOP. They suggest that this is consistent with the contention that an ESOP's tax benefit enhances firm value. They also contend, however, that the results support the argument that ESOPs increase the employees' motivation, and therefore enhance firm value.

### **2.3. Employee Motivation**

A common explanation for the establishment of an ESOP is the alignment of interests of the employee-owner with those of the outside shareholders. That is, many claim that ownership enhances a worker's commitment to his/her job, thus increasing

the overall work performance and firm value. Furthermore, the presence of an ESOP is believed to reduce employee turnover<sup>12</sup> and an associated cost of hiring/training new employees. An increase in employee ownership may also improve the level of cooperation between the employees and management, an additional effect believed to improve the overall performance of the firm.

On the other hand, despite the potentially large block of ownership purchased by the ESOP, the individual allocation of shares to the employees may be minimal. Furthermore, an increase in an individual's effort may not have a noticeable impact on the share price movement. Given these scenarios, the potential for a "free-rider" problem may offset any motivational increases in productivity.

Support for an ESOP's enhancement of employee motivation is provided by a study performed by the National Center for Employee Ownership that documented the attitudes of 2,700 employees from 37 ESOP firms. The findings demonstrate a strong direct relationship between the level of employee ownership and commitment, satisfaction, and employee effort.

Though not necessarily a direct measure of an ESOP's effect on employee motivation (and, correspondingly, the motivation's effect on firm value), the examination of a firm's operational performance subsequent to an ESOP has been analyzed by many. For example, Livingston and Henry (1980) compare several profitability ratios of ESOP firms to those of a control group of non-ESOP firms.

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<sup>12</sup>As noted in Chang and Mayers (1992), legislation requires that the vesting of ESOP shares must occur within seven years of participation if an incremental yearly vesting (percentage) is applied. If there are no yearly percentage increases, the full vesting must occur within five years. The incentive to become fully vested is hypothesized to reduce employee turnover.

Their results infer that the ESOP firms had significantly lower profits despite an insignificant difference in several risk-related figures (e.g., liquidity, leverage, and variability). The authors conclude that "the costs of the plan outweigh the financial benefit to the firm." Similar inferences were produced in the 1987 report by the General Accounting Office (GAO) which documented the results of several studies that analyzed the performance effects of ESOPs established prior to 1981. The GAO report notes that the majority of studies were unable to support a belief that ESOPs have a significant effect on firm performance, as measured by various profitability, productivity, and growth statistics.

In contrast to the GAO findings, Rosen (1990) finds that ESOPs have a positive influence on the income growth of the firm. To be specific, Rosen compared the growth patterns (of 45 ESOP firms) of the five-year periods before and after the creation of the ESOP. After adjusting each time-frame for the performance levels of the firms' competitors, the results lead the author to conclude that "the ESOP firms grew 3-4 percent faster (depending on the measure used) than they would have without an ESOP." It was further noted that the majority of this increase came from the companies that had a higher degree of employee input and participation in the decision-making process.

Finally, a more recent "ESOP-productivity" study was performed by Mikkelsen and Partch (1993). Though the authors' analysis is an attempt to determine the relation between the change in managerial voting power (and their personal equity ownership) and the firm's operating performance, they find that the sampled firms experience a

subsequent below-normal operating income. Other recent studies (e.g., Chang and Mayers, 1992, and Beatty, 1995), through their regression of prediction errors onto proxies for employee incentive, have found mixed results in support of the contention that ESOPs enhance firm value with the increased motivation of employees. In sum, the diverse results found in the "motivational" studies are probably attributed to the extreme difficulty of determining an accurate measure of ESOP-related employee incentives.

#### **2.4. ESOPs and Corporate Control**

Recent ESOP literature has predominantly concentrated on the corporate control aspects affected by the creation of an ESOP. As argued by Gordon and Pound (1990) in their analysis of ESOPs established in the presence and absence of takeover activity, because the employees typically dislike the option of their firm being taken over (in fear of a subsequent layoff), all ESOP shares allocated to their account will be voted in opposition of a takeover (in favor of management). Furthermore, because many ESOP trusts are required to vote the unallocated shares in the same proportion as the allocated shares, it is assumed that the unallocated ESOP shares will also vote against a proposed takeover attempt that is opposed by management. For those trustees not required to vote "proportionally", it is assumed that they too will vote with management, a material source of their income. In sum, it is assumed that ESOPs effectively increase the percentage of votes controlled by management.

Supporters of the management entrenchment hypothesis would state that the assumed increase in the managers' voting power has a negative impact on firm value



because the outsider's ownership influence and the probability of takeover are reduced. The negative impact is supposedly caused by the allowance of an increase in managerial perquisite consumption without retribution. In other words, an enlarged conflict of interest between management and the shareholders is one effect of an increase in the voting power of management.<sup>13</sup> In contrast, the shareholder interests hypothesis predicts an increase in firm value when the managerial voting power is enhanced. This effect is predicted because the additional votes from the ESOP will be used by management to ensure a maximum takeover premium if a buyout ensues.

This "vote with management" assumption is particularly important to the significant percentage of ESOP firms incorporated in Delaware, a state which initiated a supermajority ("freeze-out") provision in December, 1987. The law effectively states that unless 85 percent of a firm's nonaligned (i.e., non-insider) shares approve a potential takeover, the bidding firm is prohibited from engaging in any business combination with the target firm for a three-year period. Furthermore, ESOP shares are defined by Delaware law as "nonaligned", despite their often assumed voting allegiance to management.

A final important "control" event is the January 9, 1989 Delaware Court decision which upheld the increase in ownership (to 14 percent) by Polaroid's ESOP despite the presence of takeover rumors (the ESOP was announced prior to the formal bid). Given

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<sup>13</sup>This should not be confused with the arguments of Jensen and Meckling (1976), who contend that an increase in a manager's personal (cash-flow) ownership aligns the interests of management and the shareholders. ESOPs increase managerial voting power, not cash-flow ownership.

that 85 percent of the firm's nonaligned shares must vote in favor of a takeover, Polaroid was able to effectively block a takeover attempt by Shamrock Holdings.

The ESOP literature reports fairly consistent results for the market's reaction to an ESOP announced while a firm is subject to a takeover. For example, Gordon and Pound (1990) and Chang and Mayers (1992) find a significant negative market reaction to the announcement of an ESOP in the presence of a takeover threat. Furthermore, Beatty's (1995) cross-sectional analysis documents a decrease in shareholder wealth for ESOPs announced in the presence of takeover activity.

In addition to the testing noted above, Gordon and Pound split their "takeover" group into pre- and post-Polaroid samples, and find a significant negative effect for both groupings. This latter finding, however, is in conflict with Dhillon and Ramirez (1994), who document a significant positive (significant negative) effect associated with the pre- (post-) Polaroid time-period. This also differs with Chaplinsky and Niehaus (1994), who find an insignificant positive prediction error in the post-Polaroid time-period. Dhillon and Ramirez suggest that the conflicting results are caused by sample-size differences. Nevertheless, the Polaroid decision is still considered a relevant event because it establishes the court's allowance of an ESOP as a legitimate takeover defense.

Additional corporate control evidence is provided by Gordon and Pound, who document a negative wealth effect for announcements of ESOPs in which the level of ESOP votes and insider ownership shares is subsequently sufficient to veto a takeover proposal. "Sufficiency" was subjectively determined to be the level of ownership that

exceeds 95 percent of the votes necessary to prevent a takeover. The connection between the veto power and the negative prediction error is weakened, however, by the small sample size of ten. Similar to Gordon and Pound, Beatty (1995) uses a "95 percent" veto cut-off when she regresses the ESOP firm's prediction errors onto several variables, including an indicator variable used to account for firms that obtain veto power with the establishment of the ESOP. In contrast to Gordon and Pound's results, an insignificant effect was associated with the "control change" variable.

Two closely related examinations of ESOPs and their effect on corporate control were presented by Chang and Mayers (1992) and Mikkelsen and Partch (1993). Chang and Mayers contend that firms with a high level of managerial (insider) ownership may establish an ESOP, in conjunction with a percentage sell-off of the manager's cash-flow equity, in order to maintain a level of entrenchment yet reduce the firm-specific risk assumed by management. Support for their argument is a significant correlation between the reduction in the percentage of insider ownership surrounding the announcement and the percentage increase in the number of ESOP shares. A detailed discussion of their inferences and the associated shortcomings is provided in chapter 5.

Chang and Mayers further assert that because of this ESOP establishment/insider sell-off relationship, the market interprets the ESOP announcement as a negative signal for firms with a high level of insider ownership. The negative effect is predicted because the market infers that there will be a reduction in the insider ownership of cash-flow claims without a corresponding loss of voting power. This combination leads to a reduction in the alignment of interests (between management and the shareholders)

and an increase in the managers' incentive to expand their consumption of perquisites. In effect, an increase in agency costs without a corresponding decrease in entrenchment costs produce an overall negative effect. Despite the logic, Chang and Mayers' empirical support for such a contention is relatively weak, as discussed in chapter 5.

### **2.5. Summary**

Three reasons frequently given for the creation of an ESOP are to take advantage of special tax benefits, to motivate employees, and to secure management's control of the firm. Empirical studies report mixed support for the first two, suggesting that these benefits, if real, are offset by other costs associated with the ESOP. Empirical research into management's self-interests and the establishment of an ESOP is more consistent, particularly with respect to ESOPs that seemingly entrench management. In this light, the three essays of this dissertation pursue different aspects of the relations between management's own interests and the establishment of an ESOP.

## Chapter 3

### Essay One: Asymmetric Information

#### 3.1. Introduction

Though asymmetric information is a common theory used to explain the market's reaction to a security issuance announcement, this explanation has only been lightly applied to the shareholder wealth effects associated with the announcement of an ESOP and the underlying security issue. Such is the purpose of this chapter. To be specific, this essay asserts that for most ESOP announcements, the *type* of security and *source* of funds used by the employee stock ownership trust to purchase the security, and the corresponding asymmetric information implications, are the dominant factors influencing the market's reaction to an ESOP announcement. Furthermore, for ESOP formations involving a cash inflow to the corporation, the *use* of the funds received from the ESOP will also affect the market's reaction. This is particularly true for ESOP firms that simultaneously announce that the funds will be used to repurchase a block of the firm's common stock.

In sum, the market is not truly reacting to the ESOP announcement, per se, but to the underlying structure (i.e., the type/source/use) of its formation. Furthermore, because ESOP-related security transactions affect the firm's employees in a more direct manner than comparable non-ESOP transactions, the market's perception of firm value will differ between the two. This latter contention is the foundation of a revised interpretation of the asymmetric information hypothesis and its explanation of the market's reaction to the securities issuance structure of an announced ESOP.

Prior to the specifics, a brief explanation of the traditional asymmetric information argument, and a proposed revision to it, will be discussed. A description of the data, method of analysis, and results follow the traditional and revised asymmetric information sections. Concluding remarks are provided at the end of this chapter.

### **3.1.1. The Traditional Asymmetric Information Argument**

The asymmetric information hypothesis, and several closely associated signalling models, can be attributed to the problems (outlined in Akerlof, 1970) caused by a difference in information possessed by buyers (investors) and sellers (management). To be specific, the often referred to "lemons problem" occurs when the seller possesses private information about the product being sold (the firm's common stock). Because the buyer is not privy to this critical information, he or she is unable to differentiate between the quality of products that outwardly appear to be equal. Without differentiation, a pooling process occurs, and the buyer's offer price becomes an average of the visibly similar products. Since sellers will receive an average price for their product regardless of the quality, profit is maximized by producing a low-quality, low-cost product. Therefore, without the buyer's ability to differentiate the quality (and, therefore, "true" price) of a product, the motivation to sell a high-quality product is eliminated.

Signalling models address this problem by suggesting that firms with high-quality products are able to garner a higher price through a process that signals the true value of the product. The signal creates a separating equilibrium and allows the buyers to differentiate between low- and high-quality products. A similar argument is made that

managers will signal that their firm's stock price is undervalued when the market is unaware of the positive private information the managers possess. This latter contention is the foundation of this essay.

The process of overcoming the lemons problem via signalling is modelled by many (e.g., Spence, 1973, Leland and Pyle, 1977, Ross, 1977, Bhattacharya, 1979, Miller and Rock, 1985, and Myers and Majluf, 1984). The core of the asymmetric information hypothesis is the assumption that managers are sole possessors of detailed information about the firm's future cash flows and, therefore, the true firm value. The market, aware of this private information process, attempts to infer a firm's true value from the decisions made (and publicly announced) by management. For example, Ross (1977) asserts that a firm that announces an increase in leverage implies to the market that managers possess private information about favorable future cash flows. In other words, the increase in leverage implies that management believes the firm has ample cash flows to cover the increase in debt-related obligations. Thus, an implied cash-flow increase causes the market to revalue the firm upward.

A second example of how a firm's private information is released to the market is provided by the dividend models of Bhattacharya (1979) and Miller and Rock (1985). Similar to the arguments in Ross, optimistic future cash flows are implied when a firm announces an increase in its dividend payout. The increased payout signals to the market that future cash flows are sufficient to meet the firm's future dividend (and debt) obligations. Once again, the positive inference leads to an upward revaluation of the firm. It should also be noted that Miller and Rock's cash-flow model suggests that all

security issuances are taken as a negative signal that the firm's cash flows are insufficient to cover future dividend and debt obligations.

Because this essay examines the "structure" of the ESOP, it focuses on the value of a firm inferred by the market by the type of security issue offered by the firm. A Myers and Majluf (1984) approach is, therefore, applied to the ESOP analyses. Like most signalling models, Myers and Majluf's model assumes that managers know the true value of their firm because they are privy to a more accurate (and larger) set of information about the firm's future cash flows. Though their model addresses the potentially conflicting signals of an announced new project and the related financing, the model can be interpreted as suggesting that there exists a private information process that guides the security offering decisions of the firm. It is further assumed that the market is aware of this process, and uses the manager's decision to infer the true value of the firm. The authors also contend that the inference is guided by the market's acknowledgement of the fact that when a firm needs capital (to fund a project), the manager's concern for the *existing* shareholders will determine the type of security issued by the firm.

One application of this theory is the belief that firms with negative private information prefer to obtain funds through the issuance of common stock. It is further assumed that the issuance of an overvalued equity is transacted to benefit the firm's existing shareholders. Aware of this process, the market infers from the issuance announcement that the equity is overpriced and therefore adjusts the stock's price downward. Empirical support is provided by the market's significant negative average



reaction to the announcement of seasoned common stock issuances (Asquith and Mullins, 1986, Masulis and Korwar, 1986, and Mikkelsen and Partch, 1986).

In contrast, Chang and Mayers (1992) find a significant positive mean excess return (of 0.94 percent) for the announcement of new common shares purchased by the ESOP. Their analysis, however, fails to separately examine ESOPs established in the presence and absence of takeover activity, and also ignores the effects of simultaneous security transactions and "source of fund" factors.<sup>14</sup> A separate analysis of ESOPs announced in the *presence* of takeover activity is necessary because the "asymmetric" signal is eliminated by the market's belief that managerial entrenchment is the purpose of the ESOP (to be discussed in the second essay). It is further argued that the effects of simultaneous security transactions must also be accounted for. For example, despite the notable differences, the following ESOP announcements would all be categorized by Chang and Mayers as a previously unissued common stock transaction:

- 1) The ESOP uses pension plan surplus funds (*source*) to purchase newly issued common stock (*type*) and convertible preferred shares (*type*) from the firm.
- 2) The ESOP purchases newly issued common stock (*type*) from the firm with the funds from a bank loan (*source*) (defined as a leveraged ESOP) that is guaranteed by the firm.

The firm also announces that it will repurchase shares on the open market (*use*) to offset the dilution.

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<sup>14</sup>Based on a Leland and Pyle (1977) argument, failure to account for simultaneous transactions is particularly important when the presence of repurchased equity is considered. Leland and Pyle contend that managers privy to positive firm-specific information do not want to dilute their percentage of cash-flow ownership. A simultaneous repurchase of equity prevents such a dilution and, therefore, implies positive information about the true value of the firm. Conversely, an ESOP structured with common stock and no simultaneous repurchase lacks this positive implication.

3) The ESOP purchases common stock (*type*) from the firm in conjunction with the establishment of a loan from the firm (*source*). Furthermore, the ESOP was established in the presence of takeover activity.

To demonstrate the potential magnitude of this problem, a comparable non-ESOP analysis would categorize both equity-for-debt exchanges and seasoned common stock offerings as "previously unissued" events. A pooling of these distinct events is more than likely unacceptable in financial research. Regardless, a result that is probably related to this pooled classification is that even though the ESOP/common stock findings are statistically significant and positive, only 48 percent of Chang and Mayers' previously unissued sample exhibits a positive prediction error. Therefore, as noted in the introduction of this section, one purpose of this analysis is to account for these categorical differences with a "type/source/use" examination.

A Myers and Majluf interpretation has also been applied to non-ESOP repurchases of common stock, bank loans, and convertible preferred issue announcements. For example, a repurchase of common stock announcement implies to the market that management believes the security is sufficiently underpriced, thus inducing the market to adjust the price of the equity upward. This prediction is supported by Dann (1981) and Vermaelen (1981) for open market repurchases and tender offer repurchases (significant excess returns of approximately 3 percent and 15 percent, respectively). The larger positive reactions to the tender offer repurchases are hypothesized by Vermaelen to be caused by the sizable premium offered and the typically larger number of shares repurchased in a tender offer.

In the analysis of ESOP-related repurchases, Chang and Mayers find a significant positive effect for open market repurchases and tender offer repurchases (1.17 percent and 3.5 percent mean excess returns, respectively). In addition, they find an insignificant -0.30 percent reaction to the announcement of firms repurchasing equity from a target shareholder (non-takeover related). Similar to the problems in the ESOP/common stock analysis noted above, the effects of additional securities and sources of funds that may be associated with an ESOP "repurchase" announcement are not separated by the authors. Moreover, they do not separately examine the market's reaction to ESOP repurchases announced in the presence and absence of takeover activity. One potentially related effect is Chang and Mayers' finding that only 56 percent of the sample of open market repurchases had a positive prediction error, a statistically insignificant result.

With its establishment, an ESOP commonly incurs private debt (typically a bank loan) as the source of funds used to purchase the common or convertible equity. Leveraged ESOPs were particularly popular after the 1984 Deficit Reduction Act, which allowed for the deduction of 50 percent of the interest income received by the lender. The favorable tax treatment often resulted in a loan at a rate below prime.

For non-ESOP bank loan announcements, the asymmetric information hypothesis asserts that managers possess positive information that can not be directly disclosed to the public market. One version of this hypothesis asserts that direct disclosure would not be credible. Alternatively, Campbell (1979) assumes that managers possess positive private information that would be highly beneficial to the firm's competitors. A public

revelation of the information would therefore be harmful to shareholder wealth. As suggested by Campbell, Diamond (1984), and Ramakrishnan and Thakor (1984), a private information processor (e.g., a bank) is necessary to determine the correct cost of capital without a public release of the valuable private information. The market infers from the private debt announcement that the equity is underpriced and reacts accordingly. The significant positive market responses to bank loan announcements found in James (1987), Lummer and McConnell (1989), and Slovin, Johnson, and Glascock (1992) support these contentions.

With respect to ESOPs and private debt, Chang and Mayers report that their 151 leveraged and 125 non-leveraged ESOPs produce significant positive average excess returns of 0.80 percent and 0.65 percent, respectively. Given that the results are not significantly different from each other despite the tax benefit differences, and the fact that only 54 percent and 50 percent of the samples had a positive prediction error, the exclusion of the additional simultaneous transactions (i.e., absence/presence of takeover, "type", and "use") in Chang and Mayers' analysis is noteworthy.

Finally, for non-ESOP convertible preferred issues, the asymmetric information hypothesis argues that the market infers that the degree of negative private information is insufficient to cause management to issue common stock. On the other hand, the market also infers that the managers do not possess a level of positive private information necessary to induce a bank loan agreement. Therefore, a market reaction between that of a bank loan and common stock announcement is predicted (Smith, 1986). One could further argue that the effect is more likely to be negative because the

non-zero probability of a subsequent common stock conversion implies an overpriced equity. Linn and Pinegar's (1988) significant finding of a -1.4 percent average excess return to the announcement of a non-ESOP convertible preferred stock issue is consistent with these asymmetric information predictions.

For ESOP-related convertible preferred announcements, Chang and Mayers' findings of an insignificant -0.32 percent average prediction error do not refute the asymmetric information hypothesis. Once again, the presence/absence of a takeover and "source/type/use" classifications are not separated and therefore may underlie the insignificant result.

It should finally be noted that Beatty (1995) briefly mentions that her results support an ESOP/asymmetric information connection. Beatty regresses the cumulative prediction errors of 122 ESOP firms onto numerous variables, including two independent variables that account for the size (calculated as a percentage of shares outstanding) of the newly issued common stock and convertible preferred equity, if any.<sup>15</sup> Beatty asserts that the significant negative coefficients attached to these variables support the asymmetric information hypothesis. The results, however, appear to be in conflict with a similar regression performed by Chang and Mayers, who document an insignificant coefficient attached to their convertible preferred explanatory variable. Though an independent variable for common stock is excluded from their sample, Chang and Mayers' event study analysis produces significant positive (insignificant) results for the sample of ESOPs structured with common stock

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<sup>15</sup>It should also be noted that Beatty does not control for the role of repurchased equity. ESOPs structured with repurchased equity account for 56 percent of her sample, however.

(convertible preferred equity). In terms of Beatty's argument, these results do not support the traditional asymmetric information hypothesis on securities issuances.

In brief, the predictions of the traditional version of the asymmetric information hypothesis are not well met in studies of ESOPs. In contrast to the predicted negative reaction, the market's response to ESOP-related issuances of common stock is positive. ESOP repurchases generate a smaller positive response than non-ESOP repurchases. And the use of private debt to leverage an ESOP is associated with a positive response as predicted. The relevance of this latter consistency is weakened, however, by the comparable positive reaction to ESOPs structured *without* private debt. Finally, the choice of convertible preferred stock for the ESOP generates a non-significant market response, not the negative reaction predicted and observed elsewhere. Thus, the magnitude and direction of the market's response to an ESOP transaction often times differ from those predicted by the asymmetric information hypothesis. A further stratification of the ESOP structure is examined to explain these differences.

### **3.1.2. The Revised Asymmetric Information Hypothesis**

The revised interpretation is based on two theories. The first theory, as outlined in section 2.3, states that ESOPs are established to align the interests of the employees with those of the shareholders (i.e., established to motivate the employees). The second theory asserts that a firm's securities issuance decision is used by the market to infer the true value of the firm (Myers and Majluf, 1984).

The Myers and Majluf adverse selection model is founded on the assumptions that managers have superior information and that their decisions are made in a manner that

benefits the firm's existing shareholders. In comparison to this ("traditional") asymmetric information hypothesis, the revised hypothesis contends that the manager's decisions are not only made on behalf of the existing shareholders, but the employees and managers as well. For typical (i.e., non-ESOP) security issuance announcements, the predicted traditional asymmetric information results are unchanged by this expanded assumption. That is, the manager's concern for the welfare of the employees does not affect the predicted market reaction because equity is not specifically distributed to the employees. Conversely, for security issuance announcements that involve a substantial distribution (or contingent distribution [e.g., executive options]) of shares to the managers, employees, or a representative trust, the predicted results are altered by the revised hypothesis.

In comparison to the Myers and Majluf predictions, the revised hypothesis asserts that managers will not issue an overpriced security when the purchasers are the employees of the firm. The foundation of this assertion is the fact that the equity distribution to the employees is typically meant to "motivate the work-force." Given the many available forms of an employee benefit, compensating the workers with an overvalued equity runs counter to the overall objective of the equity distribution. That is, given the additional assumption that the welfare of the employees affects a subset of managerial decisions, it is logical to infer that the establishment of a firm's equity-based compensation plan does not involve an overvalued security.

Applying the revised hypothesis to an equity-based compensation plan is consistent with the Leland and Pyle (1977) argument, in that a positive signal should be inferred

by the market because the employees are incurring additional firm-specific risk (typically) without additional compensation. Assuming the employees/managers are rational, the market concludes that the managers possess a sufficient degree of positive private information to offset the added risk the ESOP imposes on their employees. If the additional risk were not offset, the motivational effect would be diminished and the firm's performance would therefore be adversely affected. Thus, the revised hypothesis is consistent with an extension of Leland and Pyle because it states that the changes in the employees' firm-specific risk, in addition to the managers' firm-specific risk (as they argue), are recognized by the market.

Research supportive of the revised asymmetric information argument is provided by Bhagat, Brickley, and Lease (1985), who find a significant positive excess return associated with the announcement of a stock purchase plan and an insignificant market reaction to the announcement of an IRS 423 plan. These are plans in which the firm's managers and employees are given the option to purchase the stock of their employer, often at a discount (for IRS 423 plans) or with the aid of a company loan (for stock purchase plans). The authors conclude from the insignificant reaction (to the IRS 423 announcement) that the plan is simply meant to raise capital for the firm. If true, one would expect that the affect on shareholder wealth should be comparable to that of a seasoned equity offering. Based on the differences in the market's reaction, the results are consistent with the revised asymmetric information assumption that the market believes that management does not want to compensate their employees with an overpriced security.



To summarize, the revised hypothesis states that the market's reaction to an ESOP announcement is partially guided by the private information implied by the type of security purchased by the ESOP. In addition, the market assumes that the manager's security issuance decision is made with the employees' (and manager's) welfare in mind. Therefore, unlike a Myers and Majluf prediction of a negative market reaction, a common stock ESOP announcement is predicted to produce a non-negative shareholder wealth effect. This is due to the belief that in order to maintain or improve the level of employee motivation, management does not want to compensate the workforce with an overpriced security.

Also in contrast with Myers and Majluf is the contention that a convertible preferred ESOP announcement implies a level of negative asymmetric information because the managers are unwilling to fund the ESOP with the firm's (overpriced) common stock. Therefore, the revised hypothesis predicts that an ESOP structured with convertible preferred stock should produce a larger negative market reaction than a common stock ESOP, a prediction exactly opposite to that of the traditional asymmetric information argument. Finally, the revised hypothesis predicts a positive reaction to "repurchased" and "leveraged" ESOPs, based on arguments comparable to the traditional asymmetric information contentions.

### **3.2. ESOP/Asymmetric Information Hypotheses**

Because prior research does not stratify ESOPs by the presence/absence of a takeover and the "source/type/use" structure of the ESOP, its findings can not be used to support a revised asymmetric information explanation of the market's reaction. In

other words, some prior results may be diluted by the failure to segregate the presence/absence of takeover activity, while other findings are statistically significant solely because of the presence of additional structural elements (e.g., repurchases, leverage, etc.). For example, the pooling of takeover and non-takeover ESOPs structured with repurchased equity may have a smaller documented reaction than the effects noted from separate analyses of "repurchased" ESOPs announced in the presence and absence of takeover activity. In other words, the announcement of an ESOP structured with repurchased equity will have a significant positive (negative) market reaction in the absence (presence) of takeover activity, two results that counteract each other when analyzed on an aggregate basis.

A second example is Chang and Mayers' results suggesting that ESOPs structured with previously unissued common stock have a significant positive effect on shareholder wealth. Though they argue that the results are consistent with a private equity issue (despite the absence of an external monitor), the revised hypothesis asserts that the positive results are driven by a sample in which a high percentage of the ESOP/common stock structures include a repurchase of equity announcement. Given the above, the purpose of the following analysis is to provide support for the revised asymmetric information explanation of the market's reaction to an ESOP announcement by examining the various "presence/absence of takeover" and "type/source/use" combinations. The specific hypotheses (expressed as expected results) are as follows:

- 1) Firms that announce an ESOP structured with repurchased equity (in the absence of takeover activity) will experience positive gains in shareholder wealth.

2) ESOPs structured with private debt (i.e., leveraged ESOPs) will also infer positive private information to the market, thus causing the firms' values to be revalued upwards.

The first two contentions are consistent with the asymmetric information hypothesis, which states that the market infers that management believes that their firm's equity is undervalued. The undervalued inference results in an increase in shareholder wealth on the day of the announcement.

3) A non-negative market reaction is predicted for firms that announce an ESOP structured with common stock (in the absence of takeover).

4) The effect on firm value from an announcement that the ESOP will purchase convertible preferred equity will be more negative than that of an ESOP/common stock effect.

Hypotheses 3) and 4), the result of a revised asymmetric information argument, are exactly opposite to the predictions made by the traditional asymmetric information hypothesis. The reversal is predicted because of the belief that ESOPs are meant to motivate the employees. Since funding the ESOP trust with an overpriced common stock is counter to this objective, the market will not infer negative private information when the common stock ESOP is announced. A more negative reaction is expected for ESOPs structured with convertible preferred equity because it implies to the market that management did not want to sell the ESOP an overpriced common stock.

The fifth hypothesis predicts that the information inferred by the securities issuance structure is overshadowed by the presence of takeover activity and anti-takeover (entrenchment) implications of the ESOP. To be specific:

5) ESOPs announced in the presence of takeover activity, regardless of structure, infer to the market that management intends to fight the takeover. This, in combination with the effectiveness of an ESOP as a deterrent,<sup>16</sup> causes a downward revaluation of the firm.

### **3.2.1. Firm Size, ESOP Size, and Asymmetric Information Hypotheses**

This section will outline the hypothesized effects that firm size and ESOP size have on the level of asymmetric information implied by the announcement. In regards to firm size, many believe that large firms have an increased number of external monitors analyzing the value of the firm. It is also assumed that an enlarged number of monitors translates into a smaller degree of asymmetric information and, therefore, a smaller price reaction when an action of management (e.g., ESOP establishment) is announced. Atiase (1985) similarly argues for a connection between firm size and the degree of private information possessed by the firm. Atiase asserts that due to the inherent structure of gathering and processing information about a firm, an effect exists (similar to an economy of scale effect) where the gathering/processing of "large firm" information has a lower average cost than that of a small firm. In other words, it is more expensive (less profitable) to monitor/analyze the activities of a smaller firm. This correlates to a lower number of external monitors, a higher degree of asymmetric

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<sup>16</sup>Chaplinsky and Niehaus (1994) document that 20 of the 42 (48 percent) "takeover" ESOPs they reviewed experienced a change in management. In comparison, 102 of 120 (85 percent) non-ESOP targets were successfully taken over. The difference in percentages is statistically significant at the one percent level. See chapter 4, essay 2, for additional ESOP anti-takeover (entrenchment) and corporate control implications.

information, and therefore a larger market reaction when a small firm announcement is made.

In support of these contentions, Pugh and Jahera (1990), in their attempt to explain the magnitude of the market's reaction to tender offer announcements, find that the excess returns are inversely related to firm size. This evidence supports the belief that a smaller degree of information is conveyed by actions taken by larger firms. Similarly, Lakonishok and Vermaelen (1990) calculate the excess returns of large and small firms for the two years following a tender offer announcement. Support for the assertion that small-firm announcements provide a stronger signal of firm value is provided by their findings of statistically significant (insignificant) positive returns for the small (large) firms.

Slovin, Johnson, and Glascock (1992) also support the firm size/market reaction arguments. By separating their sample into small and large firms, the authors demonstrate that the share value of small firms is significantly enhanced when new and renewal bank loans are announced. Conversely, the large-firm effects are insignificant for the new and renewal announcements.

In contrast to the empirical research noted above, the "firm size"/ESOP analyses will be structured differently. To be specific, it is argued that the *magnitude* of the market's reaction and the size of the ESOP firm are negatively related. Magnitude is stressed because prior ESOP studies have shown that certain ESOP stratifications produce significant positive cumulative prediction errors (e.g., ESOPs structured with repurchased equity), while others create significant and negative market reactions (e.g.,

ESOPs announced in the presence of takeover activity). To correct for a potential pooling effect, the magnitude (i.e., absolute value) of the market's reaction, not the cumulative prediction errors (CPEs), is regressed onto a firm-size variable. Consistent with the asymmetric information argument, an inverse relationship is predicted.

If the absolute value contention is neglected, the predicted positive and negative market reactions will offset each other when the relation between the size of the firm and its cumulative prediction errors is examined. Chang and Mayers (1992) fall into this trap when they regress the ESOP firms' CPEs onto four slightly altered sets of twenty-plus explanatory variables, each including the log of equity capitalization as a proxy for firm size. Though the significant negative association between the proxy and the prediction error is supportive of the firm-size effect for *positive* prediction errors (i.e., small firms have larger positive prediction errors), the regression analysis falls short when intuitively applied to negative prediction errors. To be specific, the asymmetric information application of the firm-size effect further predicts that the magnitude of the negative prediction errors is larger for small firms, an expectation in conflict with Chang and Mayers' regression results. Their findings suggest that large negative CPEs are associated with large firms, not small firms (that possess a hypothesized high level of asymmetric information). Therefore, to correct for this problem, the absolute value of the CPE should be used in such regressions.

It is further suggested that the degree of the asymmetric information implied by a firm's announcement is affected by the size of the security issue (calculated as a percentage of total market value). For example, Ross (1977) suggests that a sizeable

increase in leverage implies a substantial increase in future cash flows because considerable cash flows are necessary to pay for the increase in debt obligations. In contrast, a Miller and Rock (1985) interpretation suggests that a larger security issuance implies that management believes the firm has insufficient future earnings to cover future dividend distributions and debt obligations. Though the direction of Ross' and Miller and Rock's predicted effects on shareholder value is in conflict, both predictions argue for a positive relation between the size of the issue and the magnitude of the market's announcement-day reaction.

Empirical support for the positive relation between the security issuance size and the effect on firm value is extensive. For example, Masulis (1980) and Vermaelen (1981) find a direct relationship between the size of a tender offer repurchase and the magnitude of the positive excess return. In addition, Dann (1981) and Vermaelen (1981) contend that because tender offer repurchases typically involve a higher percentage of the firm's outstanding equity than that of an open market repurchase, a significantly larger excess return is documented for the tender offers. In connection with the asymmetric information hypothesis, the results suggest that a greater commitment of repurchased equity provides a stronger positive inference of future price performance. A final example is provided by the results noted in Mikkelsen and Partch (1986). Their examination of seasoned equity offerings finds that the announcement-day decrease in shareholder wealth has a direct relationship with the size of the issue. That is, they note that the larger the size of the offering, the greater the negative cumulative excess return.

In sum, it is predicted that the *magnitude* of private information inferred by the ESOP-related security issue and the size of the ESOP are positively related. Once again, because of the various factors that produce positive and negative prediction errors, the magnitude (i.e., absolute value) of the price reaction must be used, not the cumulative prediction error. Finally, (as will be noted in section 3.3.3) the ESOP size and firm size factors are analyzed in unison to determine their relationship with the magnitude of the stock price reaction. The final two ESOP/asymmetric information hypotheses are specified as follows:

- 6) A significant negative relationship between firm size and the absolute value of the cumulative excess return is predicted.
- 7) A significant positive relationship between ESOP size and the absolute value of the cumulative excess return is predicted.

### **3.3. Data and Method of Analysis**

#### **3.3.1. Data Description**

The sample consists of 204 NYSE/AMEX and 115 Nasdaq<sup>17</sup> ESOPs announced between January 1, 1980 and December 31, 1993. An initial sample of 458 firms was gathered from a *Nexis Newswire* search of ESOP-related press releases. To reduce contamination, firms with a simultaneous non-ESOP announcement (e.g., dividend change, quarterly earnings, and shareholder rights announcements) were excluded from the sample. To further detect contamination, a firm-specific search of the *Wall Street*

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<sup>17</sup>NYSE = New York Stock Exchange; AMEX = American Stock Exchange; and Nasdaq = National Association of Securities Dealers Automated Quotation system.



*Journal Index (WSJI)* was performed to locate significant events around the ESOP announcement. Firms with material announcements in the three-day period surrounding the ESOP event were deleted from the initial sample. Finally, firms with an inadequate number of CRSP (Center for Research in Security Prices) daily returns were deleted from the initial sample.

To determine whether takeover activity is present, the WSJI was reviewed for takeover-related articles printed within the one-year period prior to the ESOP announcement.<sup>18</sup> In addition, a *Nexis Newswire* press release search by firm name and keywords "takeover" and "buyout" was performed to detect takeover activity in the year preceding the announcement. Finally, the press release announcements were reviewed to determine the securities issuance structures of the ESOPs.

Descriptive statistics on ESOP-size and firm-size (Table 1), the distribution of ESOP structures by year (Tables 2 and 3), and the distribution of ESOPs by SIC code (Table 4) are provided for informative purposes. The more notable values of Table 1 are found by comparing the sample of 60 takeover-related ESOPs to the 255 non-takeover firms. In particular, the dollar value and percentage size of the ESOP appear to be larger for firms announcing ESOPs in the presence of takeover activity.<sup>19</sup> These results are, therefore, consistent with the argument that the managers of "takeover" firms are more concerned with increasing their level of entrenchment.

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<sup>18</sup>Basing the takeover stratification on a review of the one-year period prior to the ESOP announcement is consistent with the methods employed by Chang and Mayers (1992).

<sup>19</sup>The mean (median) dollar value of the ESOP is \$114,083,000 (\$38,720,000) for takeover ESOPs, and \$68,424,000 (\$10,000,000) for non-takeover ESOPs. Similar results are found for "ESOP-size", a variable equal to the ESOP's value divided by firm value. For the ESOP dollar value variable, there is a .078 (.018) probability that the means (medians) differ by chance, based on the difference-of-means t-test (Wilcoxon rank-sum test). For ESOP size, the corresponding difference-of-means probabilities are .603 (.286).

**Table 1**  
**Sample statistics for all firms announcing the establishment of an ESOP between 1980 and 1993.**

		<b>Mkt Value<sup>1</sup></b>		<b>ESOP Value</b>		<b>ESOP Size<sup>2</sup></b>	
	<b>N</b>	<b>Mean</b>	<b>Median</b>	<b>Mean</b>	<b>Median</b>	<b>Mean</b>	<b>Median</b>
<b>Total</b>	<b>315<sup>3</sup></b>	<b>1515320</b>	<b>185666</b>	<b>76867</b>	<b>12900</b>	<b>.087</b>	<b>.056</b>
<b>Tkvr</b>	<b>60</b>	<b>1420666</b>	<b>217713</b>	<b>114083</b>	<b>38720</b>	<b>.094</b>	<b>.064</b>
<b>Non-tkvr = NT</b>	<b>255</b>	<b>1537591</b>	<b>170713</b>	<b>68424</b>	<b>10000</b>	<b>.085</b>	<b>.052</b>
<b>Repurch (NT)</b>	<b>181</b>	<b>1570561</b>	<b>196781</b>	<b>72107</b>	<b>9500</b>	<b>.066</b>	<b>.049</b>
<b>Non-Rep (NT)</b>	<b>74</b>	<b>1456949</b>	<b>129792</b>	<b>60407</b>	<b>11429</b>	<b>.127</b>	<b>.066</b>
<b>CS</b>	<b>85</b>	<b>2084084</b>	<b>279562</b>	<b>85997</b>	<b>18000</b>	<b>.097</b>	<b>.059</b>
<b>CS Rep (NT)</b>	<b>39</b>	<b>2877657</b>	<b>360101</b>	<b>107878</b>	<b>32220</b>	<b>.085</b>	<b>.073</b>
<b>CS Non-Rep (NT)</b>	<b>46</b>	<b>1411273</b>	<b>222128</b>	<b>67764</b>	<b>14500</b>	<b>.106</b>	<b>.055</b>
<b>CPS</b>	<b>33</b>	<b>3639194</b>	<b>1481175</b>	<b>204204</b>	<b>125000</b>	<b>.100</b>	<b>.081</b>
<b>CPS Rep (NT)</b>	<b>25</b>	<b>3222292</b>	<b>1449471</b>	<b>183225</b>	<b>140000</b>	<b>.096</b>	<b>.084</b>
<b>CPS Non-Rep (NT)</b>	<b>8</b>	<b>4942014</b>	<b>3444356</b>	<b>112164</b>	<b>75000</b>	<b>.116</b>	<b>.055</b>
<b>LE</b>	<b>94</b>	<b>2662349</b>	<b>468898</b>	<b>120528</b>	<b>33075</b>	<b>.090</b>	<b>.066</b>
<b>LE Rep (NT)</b>	<b>65</b>	<b>2408275</b>	<b>579231</b>	<b>222264</b>	<b>31100</b>	<b>.077</b>	<b>.059</b>
<b>LE Non-Rep (NT)</b>	<b>29</b>	<b>3231825</b>	<b>354660</b>	<b>122530</b>	<b>44000</b>	<b>.116</b>	<b>.074</b>

**1** Market value of Firm (\$000s) = Number of shares outstanding multiplied by the price per share (per CRSP data) on the day of the announcement.

**2** ESOP Size = ESOP value (\$000s) (per press release) divided by the market value of the firm.

**3** Four of the 319 firms in the overall sample were deleted because of insufficient market value data.

**Tkvr** = Takeover.

**NT** = Non-takeover = ESOPs announced in the absence of takeover activity.

**Rep** = **Repurch** = ESOPs structured with repurchased equity.

**CS** = ESOPs structured with previously unissued common stock.

**CPS** = ESOPs structured with convertible preferred equity.

**LE** = Leveraged ESOPs.

Table 2  
Distribution of ESOPs, and their structures, by year.

Year	Total	Tkvr	Non-tkvr	CS	CPS	Repurch	LE
1980	6	0	6	1	0	4	1
1981	2	0	2	0	0	2	0
1982	4	1	3	2	0	3	0
1983	2	0	2	1	0	0	0
1984	18	0	18	4	0	15	1
1985	22	5	17	9	0	14	5
1986	6	1	5	0	0	4	1
1987	41	14	27	13	1	29	15
1988	43	12	31	18	2	26	21
1989	95	24	71	35	37	66	51
1990	58	2	56	18	10	38	20
1991	10	1	9	1	2	9	3
1992	5	0	5	2	0	3	0
1993	7	0	7	3	0	6	2
Total	319	60	259	107	52	219	120
% of Total	100	18.8	81.2	33.5	16.3	68.7	37.6

**Tkvr** = ESOPs announced in the presence of takeover activity.

**Non-tkvr** = ESOPs announced in the absence of takeover activity.

**CS** = ESOPs structured with previously unissued common stock.

**CPS** = ESOPs structured with convertible preferred stock.

**Repurch** = ESOPs structured with repurchased equity.

**LE** = Leveraged ESOPs.

Table 3  
Distribution of non-takeover ESOP structures by year.

Year	Total	Repurch	CS	CPS	LE
1980	6	4	1	0	1
1981	2	2	0	0	0
1982	3	2	1	0	0
1983	2	0	1	0	0
1984	18	15	4	0	1
1985	17	10	8	0	5
1986	5	4	0	0	0
1987	27	21	7	0	8
1988	31	21	11	0	14
1989	71	52	28	23	40
1990	56	37	18	9	20
1991	9	8	1	1	3
1992	5	3	2	0	0
1993	7	6	3	0	2
Total	259	185	85	33	94

**Repurch** = ESOPs structured with repurchased equity.

**CS** = ESOPs structured with previously unissued common stock.

**CPS** = ESOPs structured with convertible preferred equity.

**LE** = Leveraged ESOPs.

Table 4  
Distribution of ESOP sample by Standard Industrial Classification (SIC) code.

SIC <sup>1</sup>	Tkvr	Non-Tkvr	Repurch	CS	CPS	LE	Total	% of Total
1000	2	7	3	5	2	3	9	2.8
2000	18	32	37	22	15	27	50	15.7
3000	17	81	69	26	16	29	98	30.7
4000	4	27	20	16	2	16	31	9.7
5000	3	19	14	8	6	9	22	6.9
6000	12	72	61	21	10	30	84	26.3
7000	4	13	9	8	1	5	17	5.3
8000	0	8	6	1	0	1	8	2.5
9000	0	0	0	0	0	0	0	0
Total	60	259	219	107	52	120	319	100

**Tkvr** = ESOPs announced in the presence of takeover activity.

**Repurch** = ESOPs structured with repurchased equity.

**CS** = ESOPs structured with common stock.

**CPS** = ESOPs structured with convertible preferred equity.

**LE** = Leveraged ESOPs.

<sup>1</sup> Source: CRSP.

Tables 2 and 3 indicate that employee stock ownership plans cluster in the 1987-1990 period, with 74.3 percent of the ESOP sample being initiated in these years. Moreover, 107 of the 120 (89.2 percent) ESOPs structured with leverage (Table 2) were initiated in this period. Increased takeover activity, the acknowledgement of ESOPs as a takeover deterrent, and the ESOP-related tax benefits are the often cited reasons for the ESOP's popularity in this period. Table 2 also exhibits that 47 of 52 (90.4 percent) convertible preferred ESOPs were established in the 1989-1990 period. Explanation of this "convertible preferred" observation is unknown. Finally, Table 4 reveals that 30.7 percent and 26.3 percent of the ESOP sample are firms in the Manufacturing Industries (SIC = 3000) and Finance, Insurance, and Real Estate (SIC = 6000) businesses, respectively. Given the sizable number of firms with SICs of 3000 and 6000, ESOP concentration in these categories is not irregular.

### **3.3.2. Method of Analysis (Revised Asymmetric Information)**

Based on Brown and Warner (1985), a standard event study is used to calculate the market model prediction errors. For the 120-day estimation period ( $t=-135, -16$ ; where  $t=0$  represents the press release date), individual daily returns are regressed onto the corresponding equal-weighted daily market index returns<sup>20</sup> to calculate the least-squares market model parameters. The formal model is defined as:

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + \epsilon_{j,t} \quad (1)$$

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<sup>20</sup>Daily returns are provided by the CRSP files.

where:

$R_{j,t}$  = rate of return for security j on day t,

$R_{m,t}$  = rate of return for the market index on day t,

$\epsilon_{j,t}$  = error term for security j on day t,

$\alpha_j$  = intercept,

$\beta_j$  = slope, or security j's sensitivity to  $R_{m,t}$ .

Each firm's market model parameter estimates ( $\hat{\alpha}$  and  $\hat{\beta}$ ) are then used in conjunction with the daily event window ( $t = -15, +15$ ) market returns to calculate each firm's daily expected return. For each day in the event window, an individual firm's prediction error is calculated as the difference between the firm's actual and expected daily return. Therefore, firm j's daily prediction error is calculated as:

$$PE_{j,t} = R_{j,t} - (\hat{\alpha}_j + \hat{\beta}_j R_{m,t}) \quad (2)$$

where:

$PE_{j,t}$  = firm j's prediction error on day t,

$\hat{\alpha}_j$  = intercept estimate,

$\hat{\beta}_j$  = slope estimate,

The average prediction error (APE) for all firms on day t is:

$$APE_t = \frac{1}{N} \sum_{j=1}^N PE_{j,t} \quad (3)$$

where N is the number of firms in the sample.

The average two-day cumulative prediction error (CPE) is the sum of the daily average prediction errors:

$$CPE = \sum_{t=0}^{+1} APE_t \quad (4)$$

Finally, to test whether a sample's CPE is significantly different from zero, the test statistic divides the CPE by the square root of the product of the estimation-period variance and two, which is the number of days in the CPE event-window (0, +1). Also note that the resulting test statistic requires the assumption that the estimation-period residuals are uncorrelated across securities.

### 3.3.3. Method of Analysis (Firm Size/ESOP Size)

The degree of asymmetric information released by an announcement, as proxied by the magnitude of the prediction error, is hypothesized to be affected by the size of the ESOP and size of the firm. As discussed in section 3.2.1, it is argued that ESOP-size and the absolute value of the prediction error are directly related, while firm-size and prediction error magnitude are inversely related. These effects are tested by regressing the absolute value of each firm's two-day (0, +1) prediction error onto firm-size and ESOP-size explanatory variables.

The sample examined in this analysis is identical to the "asymmetric information" sample described in section 3.3.1. The calculation of prediction errors is also identical to that of a previous section (3.3.2). The calculation of the ESOP-size variable (ES<sub>*j*</sub>) is the dollar value of the ESOP (as reported in the press release announcement) divided



by the market value of the firm's equity (from CRSP). The firm-size effect ( $FS_j$ ) is proxied by partitioning the ESOP sample into large and small firms, based on a comparison of their equity's market value to the median market value of all (NYSE/AMEX and Nasdaq) CRSP firms. Because the ESOP-size and firm-size hypotheses relate to the *magnitude* of the market's reaction, the absolute value of each firm's two-day (0, +1) prediction error is regressed onto the firm-size and ESOP-size variables.

To test the hypothesis that ESOP size and the magnitude of the market's reaction are directly related, the regression includes the ESOP-size independent variable defined above. It is further argued that the degree of information inferred to the market is affected by the size of the firm. In this analysis, the ESOP firms are compared to the median size of all CRSP firms and categorized as "large" or "small." An indicator variable ( $FS_j$ ) is used to document the specific category with a value of one (zero) assigned to firms with market values less than (greater than or equal to) the median value.<sup>21</sup> The indicator variable is also multiplied by the ESOP-size variable to proxy the ESOP-size/firm-size interaction effect. Therefore, the asymmetric information "size effect" model is defined as:

$$|PE_j| = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j \quad (5)$$

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<sup>21</sup>Because theory provides no proper cut-off in size-related studies, a second commonly used cut-off method is employed in this analysis. In addition to the "median" method described above, the size analysis examines the upper (i.e., large firms) and lower thirds of the ESOP sample, as defined by their market value. By excluding the middle third from the sample, the firm-size examination focuses on the small-firm and large-firm extremes.

where:

$|PE_j|$  = absolute value of firm j's two-day (0, +1) prediction error.

$ES_j$  = size of firm j's ESOP (as a percentage of firm j's market value of equity).

$FS_j$  = indicator variable (0 = large firm; 1 = small firm).

$e_j$  = error term.

A significant and positive  $\beta_1$  supports the hypothesis that firms announcing the establishment or expansion of a *large* ESOP infer to the market a significant degree of (positive or negative, depending on the ESOP structure) information about the true value of the firm. In contrast, small ESOPs reveal a low level of private information. Furthermore, a significant and positive  $\beta_2$  is supportive of the hypothesis that small-firm announcements have a larger impact on firm value because the firms possess, and the announcements release, a higher degree of asymmetric information.

To determine the validity of the "magnitude" ("absolute value") contentions discussed in section 3.2.1, a regression similar to equation 5 is performed. The only difference is the firms' prediction errors, not absolute value of the prediction errors, are used as the dependent variable. Insignificant coefficients are predicted for this latter regression. In formal terms:

$$PE_j = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j \quad (6)$$

where:

$PE_j$  = firm j's two-day (0, +1) prediction error.

$ES_j$  = size of firm j's ESOP (as a percentage of firm j's market value of equity).

$FS_j$  = indicator variable (0 = large firm; 1 = small firm).

$e_j$  = error term.

### **3.4. Results (Revised Asymmetric Information)**

Based on an initial examination of ESOP structures comparable to those analyzed by Chang and Mayers (1992), the majority of results (documented in Table 5) corroborate their findings (discussed in section 3.1.1.). The only difference between the two sets of results pertains to the ESOP category of previously unissued common stocks. Chang and Mayers note a significant excess return of 0.94 percent, while the Table 5 results display an insignificant prediction error of -0.01 percent. The difference is probably caused by the fact that a larger percentage of the Table 5 sample was taken from a time-period (i.e., post-1987) where the use of ESOPs as an anti-takeover device was more definitively acknowledged by the market. A less positive reaction is therefore predicted (all else equal).

Regardless, the significant 1.01 percent CPE for the total ESOP sample suggests that, in general, an ESOP has a positive effect on shareholder wealth. This is consistent with the "tax benefit", "motivation", and "shareholder interests" hypotheses described in sections 2.2, 2.3, and 2.4, respectively. Furthermore, the significant positive CPEs of 1.57 percent and 0.72 percent for ESOPs structured with repurchased equity and leverage (respectively) are supportive of the traditional asymmetric information hypothesis. The insignificant market reaction to ESOPs structured with previously unissued common stock, however, is not consistent with the traditional asymmetric information argument. Finally, ESOPs announced in the presence of

**Table 5**  
Two-day (0, +1) average cumulative prediction errors for the total sample, and various subsamples, of ESOPs announced during the 1980-1993 period.

	N	Ave. CPE (%)	Z-stat <sup>1</sup>	T-stat	Range of CPE (%)	Percent Positive
<b>Total</b>	319	1.01	5.809***	4.978***	-34.23 to 33.33	60.1***
<b>Takeover=(T)</b>	60	-2.74	-6.395***	-5.979***	-34.23 to 9.57	23.3***
<b>Nontakeover=(NT)</b>	259	1.89	9.525***	8.263***	-9.46 to 33.33	68.7***
<b>Repurch (NT + T)<sup>2</sup></b>	245	1.57	7.677***	6.741***	-34.23 to 33.33	68.1***
<b>LE (NT + T)</b>	120	0.72	3.498***	2.619***	-22.30 to 12.66	61.7**
<b>CS (NT + T)</b>	107	-0.01	0.828	-0.076	-22.30 to 33.33	45.8
<b>CPS (NT + T)</b>	52	-0.18	-0.142	-0.504	-10.00 to 9.41	53.8

\*\*\* = Significant at the 1 percent level.

\*\* = Significant at the 5 percent level.

**Note:** Significance of the "Percent Positive" column (i.e., significantly different from 50%) is determined by the Wilcoxon signed-rank test.

**1** The z-statistic is based on standardized daily prediction errors.

**2** Includes all forms of repurchases (i.e., open market, tender offer, and targeted repurchases).

**LE** = Leveraged ESOP.

**CS** = ESOPs structured with previously unissued common stock.

**CPS** = ESOPs structured with convertible preferred stock.

**NT** = ESOPs announced in the absence of takeover activity.

**T** = ESOPs announced in the presence of takeover activity.

takeover activity exhibit a significant and negative CPE of -2.74 percent. This suggests that the entrenchment effects of the ESOP dominate any securities issuance asymmetric information effects that may exist.

In contrast to the Chang and Mayers examination, the sample is stratified by the ESOP's "source/type/use" structure and presence/absence of takeover activity.<sup>22</sup> The results of the additional stratification appear to clarify the findings of past ESOP research and provide support for the revised asymmetric information hypothesis. In particular, the presence of takeover activity and the addition of a simultaneous repurchase announcement appear to have overriding negative and positive effect on the market's reaction, respectively.

The overriding negative effect is evident from the significant negative (positive) shareholder wealth effects associated with ESOPs announced in the presence (absence) of takeover activity (Table 5). This suggests that the market views the additional ESOP voting power as a legitimate takeover defense. These results are consistent with Chang and Mayers (1992), Gordon and Pound (1990), and Beatty (1995).

In regards to the overriding positive effect of a simultaneous repurchase announcement (in the absence of takeover activity), Table 6 shows that ESOPs structured with common stock (convertible preferred stock) *and* a simultaneous non-target repurchase announcement have a significant two-day average CPE of 2.09 percent (1.74 percent). In comparison, common stock (convertible preferred) ESOPs structured *without* a repurchase produce an insignificant -0.01 percent (weakly

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<sup>22</sup>Because the analysis of the "presence of takeover" category involves a small sample size, these additional classifications (noted in Table 6) are only examined for the "absence" category.

Table 6

Two-day (0,+1) average cumulative prediction errors (CPEs) for the various nontakeover subsamples of ESOPs announced during the 1980-1993 period.

	N	Ave CPE (%)	Z-stat <sup>1</sup>	T-stat	Range of CPE (%)	Percent Positive
<b>Repurch</b>	185	2.59	11.040***	9.870***	-9.46 to 33.33	76.7***
<b>Target Rep</b>	25	0.38	0.869	0.410	-8.18 to 11.29	56.0
<b>Non-Rep</b>	74	0.12	0.358	0.267	-8.18 to 19.25	48.6
<b>LE</b>	94	1.69	6.316***	5.739***	-7.25 to 12.67	73.4***
<b>Repurch</b>	65	2.56	7.586***	6.811***	-3.80 to 12.67	81.5***
<b>Non-Rep</b>	29	-0.02	0.014	-0.541	-7.25 to 3.23	55.1
<b>CS</b>	85	0.94	3.026***	2.469**	-7.58 to 33.33	56.5
<b>Repurch</b>	39	2.09	3.978***	3.931***	-6.37 to 33.33	66.7**
<b>Non-Rep</b>	46	-0.01	0.451	-0.070	-7.60 to 13.1	47.8
<b>CS (w/out Rep or LE)</b>	27	-0.01	0.548	-0.027	-7.60 to 13.1	40.7*
<b>CPS</b>	33	0.94	2.722***	2.428**	-5.59 to 9.40	69.7**
<b>Repurch</b>	25	1.74	4.087***	4.011***	-1.70 to 9.40	80.0***
<b>Non-Rep</b>	8	-1.54	-1.696*	-1.800	-5.59 to 0.71	37.5
<b>CPS (w/out Rep or LE)</b>	2	-2.74	-0.672	-0.969	-5.59 to 0.13	50.0
<b>LE &amp; Rep (w/out CS &amp; CPS)</b>	27	3.72	6.299***	5.409***	-2.39 to 12.66	88.9***

\*\*\* = Significance at the 1 percent level.

\*\* = Significance at the 5 percent level.

\* = Significance at the 10 percent level.

Note: Significance of the "Percent Positive" column (i.e., significantly different from 50%) is determined by the Wilcoxon signed-rank test.

1 The z-stat is based on standardized daily prediction errors.

Rep = Repurch = ESOPs structured with a simultaneous repurchase announcement.

LE = Leveraged ESOP.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

significant -1.54 percent) prediction error. In other words, the results of the additional stratification suggest that Chang and Mayers' significant positive (insignificant negative) prediction errors attached to ESOP/common stock (convertible preferred) announcements are driven by the presence of a simultaneous repurchase announcement.

In terms of the asymmetric information hypothesis, the repurchase announcement implies to the market that the managers believe that the stock is underpriced. Furthermore, the insignificant market reaction to "common stock" ESOPs structured without repurchased equity supports the revised asymmetric information hypothesis. In other words, because management does not want to compensate their employees with an overpriced security, a non-negative market reaction is expected. The larger negative reaction to the "convertible preferred" ESOPs announced without a simultaneous repurchase also supports the revised asymmetric information hypothesis. For convertibles, the market infers that management did not want to compensate their employees with the overpriced common stock. The market, therefore, adjusts the stock of the price downward.

Similar findings, and support for the revised hypothesis, are noted for leveraged ESOPs in which a significant 2.56 percent (insignificant -0.02 percent) prediction error is found when the event is announced with (without) a simultaneous repurchase of outstanding common stock. In fact, the overall sample of ESOPs established in the absence of takeover activity has a significant positive (insignificant negative) average CPE of 2.59 percent (0.12 percent) when the ESOP is structured with (without) a non-target repurchase. One may therefore infer that the results documented in Table 5,

which are consistent with those of Chang and Mayers (1992), appear to be highly affected by the presence of a simultaneous repurchase announcement. That is, it appears that the significance of the positive reactions associated with the announcements of non-takeover ESOPs, common stock ESOPs, and leveraged ESOPs is mainly caused by the dominating effect of the ESOPs structured with repurchased equity. The same can be said for the insignificance of the convertible preferred ESOPs.

Three final stratifications, though relatively small in sample, also support the contentions of the asymmetric information hypothesis. Documented in Table 6 is a significant positive reaction of 3.72 percent for the 27 leveraged ESOPs constructed with repurchased equity and no previously unissued common stock or convertible preferred shares. Having the largest average CPE of all documented classifications provides additional support to the hypothesis' separate predictions of a positive market reaction to repurchased equity and private loan announcements. Finally, the separate analyses of ESOPs structured with common stock and convertible preferred stock (and no repurchases nor leverage) produce average CPEs of -0.01 percent and -2.74 percent, respectively. Though the small sample sizes of twenty-seven and two weaken the implications, the smaller insignificant prediction error of the common stock grouping is further support of the revised asymmetric information hypothesis.

#### **3.4.1. Results (Firm Size/ESOP Size)**

In addition to determining the firm-size classification ( $FS_i$ ) by comparing each firm's market value to the median of all CRSP market values, a separate classification is based on an examination of the lower and upper thirds of the ESOP sample. The



results of the "median" firm-size cut-off and "extreme thirds" cut-off are documented in Tables 7 and 8, respectively. Model (1) of each table regresses the absolute value ("magnitude") of the two-day (0,+1) prediction error onto the size variables, while regression (2) uses the signed prediction error as the dependent variable.

The size results documented in Table 8 generally support the "magnitude", ESOP-size, and firm-size hypotheses outlined in section 3.2.1. With respect to magnitude, the insignificance of the F statistic for the signed prediction error model (regression (2), p-value = .154), in contrast to the significant F value for the "magnitude" model (regression (1)), supports the argument that because the negative and positive ESOP-related market reactions offset each other, the absolute value of the prediction error should be used in the size analyses.

For the testing of ESOP-size, the significant positive  $\beta_3$  coefficient (Table 8, regression (2); p-value=.0093) implies that for small firms, the market reaction increases with the size of the ESOP. Thus, the positive  $\beta_3$  is consistent with prior non-ESOP size hypotheses (e.g., Ross, 1977, and Miller and Rock, 1985). In contrast, the insignificant  $\beta_1$  suggests that the market reaction for larger firms is unaffected by the size of the ESOP. Furthermore, the significant positive  $\beta_2$  coefficient (p-value = .0037) is consistent with the position that small firms possess a larger degree of asymmetric information than large firms, as argued and reported in previous non-ESOP research (e.g., Atiase, 1985, Dann, 1981, and Vermaelen, 1981).

In contrast to the  $ES_j * FS_j$  results documented in Table 8, and based on the median cut-off examination, where mid-size firms are included in the examination, the results

Table 7

OLS regression results relating the firm-size (based on a comparison of market values with the CRSP median) and ESOP-size effects to the absolute value of the two-day announcement prediction errors.

MODEL:

$$1) |PE_j| = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j$$

$$2) PE_j = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j$$

	(1)	(1)	(2)	(2)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0256	.0001	.0067	.2107
ES <sub>j</sub>	.0244	.4971	-.0484	.2836
FS <sub>j</sub>	.0236	.0026	.0177	.0706
ES <sub>j</sub> *FS <sub>j</sub>	-.0095	.8551	.0416	.5225

(1) = |PE| Model: (F Value = 5.21, P-Value = .002; R<sup>2</sup> = .056)

(2) = PE Model: (F Value = 2.91, P-Value = .035; R<sup>2</sup> = .032)

Table 8

OLS regression results relating the firm-size (based on the upper and lower thirds of the ESOP sample) and ESOP-size effects to the absolute value of the two-day announcement prediction errors.

MODEL:

$$1) |PE_j| = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j$$

$$2) PE_j = \beta_0 + \beta_1 * ES_j + \beta_2 * FS_j + \beta_3 * (ES_j * FS_j) + e_j$$

	(1)	(1)	(2)	(2)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0244	.0001	.0117	.0456
ES <sub>j</sub>	-.0399	.2495	-.0789	.0710
FS <sub>j</sub>	.0101	.0037	.0006	.8883
ES <sub>j</sub> *FS <sub>j</sub>	.1076	.0093	.1155	.0265

(1) = |PE| Model: (F Value = 4.96, P-Value = .002; R<sup>2</sup> = .054)

(2) = PE Model: (F Value = 1.77, P-Value = .154; R<sup>2</sup> = .019)

of Table 7 do not support the firm-size/ESOP-size interaction hypotheses. In particular, the  $\beta_3$  coefficient of regression (1) exhibits an insignificant p-value of .8551. The regression (1) results of Tables 7 and 8 therefore suggest that classifying mid-size firms into small- and large-firm categories dilutes the ESOP-size effects argued for in this analysis.

### 3.5. Conclusion

Prior research has led us to believe that ESOPs structured with previously unissued common stock have a significant positive effect on shareholder wealth, while those structured with convertible preferred equity have an insignificant effect. Based on additional stratifications of the ESOP structure, the results noted in this essay suggest that the findings are strongly affected by two factors, the presence of takeover activity and the simultaneous announcement of repurchased equity.

Consistent with previous literature, the results show that ESOPs announced in the presence of takeover activity exhibit a significant and negative market reaction. This finding is supportive of the managerial entrenchment effect (section 2.4). In contrast, ESOP structures announced in the absence of takeover activity tend to have a non-negative effect on shareholder wealth. More specifically, for ESOPs structured with previously unissued common stock, the dominating effect of a simultaneous repurchase announcement is evidenced by a significant positive cumulative prediction error for ESOPs structured with repurchased equity and an insignificant CPE for those without repurchased equity. Similar evidence is noted for ESOPs structured with convertible preferred equity. That is, "convertible preferred" ESOPs structured without (with) a

simultaneous repurchase announcement have a weakly significant negative (positive) effect on shareholder wealth.

Though the positive outcomes associated with ESOPs structured with repurchased equity are supportive of the traditional asymmetric information hypothesis, the finding that common stock ESOPs announced without repurchased equity have a less negative effect on shareholder wealth than convertible preferred ESOP announcements is exactly opposite to prior non-ESOP securities issuance results. This finding is, however, supportive of a revised asymmetric information hypothesis that contends that managers are concerned with the welfare of their employees when structuring the ESOP.<sup>23</sup>

In other words, the results are consistent with the contention that because management does not want to issue an overvalued equity to the employees, ESOPs structured with common stock will have a non-negative effect on shareholder wealth. Furthermore, because ESOPs structured with convertible preferred equity imply that management did not want to issue (overpriced) common stock to the employees, a negative reaction is expected. Asymmetric information, a popular theory used to explain the market's reaction to securities issuances, is (in this revised form) therefore applicable to, and supported by, the securities issuance structure of an employee stock ownership plan. Finally, the argument that small firms, and large ESOPs, possess a higher level of asymmetric information is also supported by the results of this essay.

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<sup>23</sup>This concern is consistent with the assumption that ESOPs are created to motivate the employees.

## Chapter 4

### Essay Two: Insider Ownership

#### 4.1. Introduction

Given the assumption that the ESOP-controlled equity will vote with management if a hostile takeover is attempted, the purpose of this essay is to examine an ESOP's effect on shareholder wealth in relation to the assumed increase in managerial voting power. Because ESOPs do not directly affect the cash-flow level of insider (managerial) ownership, yet are assumed to increase the voting power of management, ESOPs allow for *more direct* tests of the corporate control/insider ownership hypotheses.<sup>24</sup> "More direct" is documented because the Leland and Pyle (1977) signalling hypothesis and Jensen and Meckling (1976) alignment of interests hypothesis do not apply to events such as ESOPs that change the firm's voting structure without affecting the manager's cash-flow ownership, the variable of concern in both studies.

Specifically, Leland and Pyle suggest that the level of a manager's cash-flow ownership and the value of the firm are positively related. The authors argue that in order to preserve their personal wealth, managers do not want a high degree of ownership if their firm is overvalued. Conversely, a high level of personal ownership suggests that the managers are optimistic about the firm's future cash flows. Similarly,

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<sup>24</sup>The market for corporate control is hypothesized to (informally) exist for corporations/managers interested in the right to manage corporate assets. Often times, this involves taking over firms that are inefficiently run by another set of managers (Manne, 1965, and Jensen and Ruback, 1983). One strategy used to prevent such a buyout, and therefore allow the inefficient managers to maintain corporate control, is to increase the managerial ownership (voting power) to a level sufficient to veto all takeovers. Consistent with this scenario, this essay analyzes the connection between an ESOP's effect on managerial voting power and the change in shareholder wealth.

Jensen and Meckling contend that a high level of cash-flow insider ownership enhances the value of the firm because it aligns the interests of the managers with those of the shareholders. The "alignment of interests" increases firm value because it reduces the managers' incentives to "shirk" their duties and consume excessive perquisites. The point to be made, however, is that cash-flow ownership, not voting power, is the variable of concern in Leland and Pyle and Jensen and Meckling. Thus, their theories can not be applied to the analysis of ESOPs because the managers' cash-flow ownership is unchanged by an increase in ESOP ownership.<sup>25</sup> The ESOP, however, does increase the voting power controlled by management. How this change in voting power affects the value of the firm is the question addressed in this essay.

More specifically, the theoretical ownership-related effects pertinent to a change in voting power, and therefore ESOPs, are related to the "shareholder interests" and "managerial entrenchment" hypotheses. The shareholder interests hypothesis argues for an increase in firm value with the establishment of an ESOP because the additional voting power will be used by management to increase the premium of an attempted takeover. Absent a block of insider ownership, it is assumed that the diverse shareholder ownership is initially unable to form a cartel to procure an adequate takeover premium. The shareholder interests hypothesis suggests that an increase in managerial voting power allows management to act as a substitute for the cartel and

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<sup>25</sup>The exception to this statement is if the ESOP is structured without repurchased equity. The new shares would then dilute the managers' cash-flow ownership percentage. In contrast, the use of a repurchase would in whole or part preserve the managers' ownership percentage, depending on the size of the repurchase relative to the ESOP. Thus, consistent with essay one, this repurchase effect on managerial ownership is a further positive signal to the market.

negotiate a higher takeover bid for the shareholders. The resulting effect is a rise in firm value when managerial voting power is increased.

The managerial entrenchment hypothesis contends that the value of the firm is harmed by an ESOP because the increase in voting power will be used by management to prevent subsequent hostile takeover attempts, regardless of the offered premium and welfare of the shareholders. In particular, managers who reach a level of voting power sufficient to prevent all takeover threats are able to increase their perquisite consumption without retribution. For obvious reasons, the entrenchment effect is particularly harmful to firms with an inefficient set of managers. Nevertheless, the hypothesized outcome from the increase in managerial voting power is a decrease in firm value.

The shareholder interests and managerial entrenchment hypotheses are closely related to Stulz's (1988) valuation model,<sup>26</sup> which incorporates the probability of a successful takeover and magnitude of the takeover premium offered to the firm. Stulz argues that firm value is enhanced by an increase in takeover premium, an effect that increases with the rise in managerial voting power. In contrast, an increase in

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<sup>26</sup>The outcomes predicted by the shareholder interests and managerial entrenchment hypotheses are also consistent with the contentions of Harris and Raviv (1988). In their model, the level of managerial ownership is related to three "value affecting" outcomes associated with the market for corporate control. Within the group of firms that are takeover targets, the subset of firms with a low level of insider ownership (IO) is likely to be successfully taken over. For firms with medium levels of IO, a proxy fight is probable and the success of the takeover is indeterminable. Finally, for firms with high IO, management is firmly entrenched and, therefore, able to fight off the takeover. Harris and Raviv further contend that the level of insider ownership is determined by management via the decision-making process of maximizing the sum of their perquisites and equity value. Nevertheless, the model predicts a(n) decrease (increase) in firm value when high (low) IO firms increase their level of insider ownership. Because the Stulz and Harris and Raviv predictions are similar, the remainder of this essay will focus on Stulz's (1988) model.

managerial voting power reduces the probability of a successful takeover, thus decreasing the value of the firm. Due to the divergent effects, firm value is maximized at a level of insider ownership where the benefit of the increase in premium equals the cost of the decrease in the probability of a takeover. Detailed discussions of Stulz's model are provided in sections 4.1.1 and 4.1.2.

The second essay analyzes the ESOP's interaction with these ownership and takeover-valuation effects. Unlike prior insider ownership/takeover-valuation examinations, it is argued that because some firms are highly unlikely to ever become a takeover candidate (due to factors such as the firm's financial structure and size), an inclusion of these firms in the analysis serves only to dilute the overall results. The following examination, therefore, tests for the ownership effects of an ESOP on two separate groupings, firms "attractive"<sup>27</sup> for takeover and firms in which a takeover bid is highly unlikely (i.e., "unattractive" firms).

The framework of the second essay is founded on two propositions: 1) the effects attributed to the "shareholder interests" and "entrenchment" hypotheses are noteworthy only for firms with a sufficient level of takeover attractiveness; and 2) the takeover-related effects will differ for attractive firms that fall into one of three "pre- versus post-" announcement levels of managerial voting power.<sup>28</sup> To be specific, it is argued that "attractive" firms with a low level of voting power prior to the ESOP will have a negative (positive) market reaction if the post-level of voting power is determined by

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<sup>27</sup>The attractive category consists of ESOP firms that exhibit financial characteristics similar to those of non-ESOP firms that received a hostile bid in the 1987-1993 period (sections 4.1.3 and 4.3.1).

<sup>28</sup>Managerial voting power is defined as the sum of the insider and ESOP ownerships.



the market to be "high" ("low").<sup>29</sup> In terms of Stulz, the negative (positive) reaction is predicted because the cost of the decrease in takeover probability exceeds (is less than) the benefit of the increase in takeover premium associated with the rise in aligned ownership. Finally, firms with a high pre-announcement level of insider voting power will experience reactions that differ from those of firms with a low pre-announcement level of voting power. In fact, it will be argued that these firms with a high pre-announcement level should be categorized as "unattractive for takeover" because the probability of receiving a hostile takeover offer is constantly low (due to entrenchment), regardless of the change in managerial voting power.

#### **4.1.1. Stulz (1988)**

Stulz's (1988) theoretical model demonstrates that the percentage of votes controlled by management has a significant effect on firm value because it directly affects the likelihood of a takeover attempt and magnitude of the associated takeover premium. As the control percentage is increased, the benefit (i.e., increase in firm value) of an enlarged takeover premium and the cost of a decrease in takeover probability affect the value of the firm. The model further contends that firm value initially rises as the control percentage increases because the "takeover premium" benefit exceeds the "probability" cost. As the control percentage continues to rise, the cost will eventually exceed the benefit, and firm value will drop.

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<sup>29</sup>"High" is defined as the level of insider votes sufficient to prevent a hostile takeover (based on the state of incorporation and corporate bylaw supermajority provisions) and "post" refers to the time-period subsequent to the ESOP announcement.

Because ESOPs are assumed to increase the percentage of votes controlled by management, Stulz's model suggests that the establishment of an ESOP will alter the value of the firm. In other words, the probability of a firm being successfully taken over and the magnitude of the takeover premium are affected by the announced ESOP. For example, Stulz's model predicts that a firm with a low percentage of insider ownership will have a positive market reaction to the announcement of an ESOP funded with voting equity. This overall effect is believed to occur because the benefit of an increased takeover premium will exceed the cost of the reduced probability of a successful takeover. The model also predicts that a firm with a high percentage of insider ownership will experience a negative wealth effect when an announced ESOP is funded with shares of voting equity. The negative reaction is predicted because the cost of a reduced probability of takeover exceeds the gain from an increase in the required takeover premium.

In addition to the ESOP-related research discussed in the following section (4.1.2.), several empirical studies examine the insider ownership/firm value relationship. For example, Wruck (1989) examines the relation between the level of insider ownership and the market's reaction to a private equity announcement. In addition, Demsetz and Lehn (1985), McConnell and Servaes (1990), and Morck, Shleifer, and Vishny (1988a) (MSV) analyze the relation between corporate performance and insider ownership. Wruck and MSV find positive (negative) effects for firms with insider ownership percentages below 5 percent (between 5 and 25 percent). Though the insider ownership percentages are lower than hypothesized, these results are consistent with the arguments

of Stulz. McConnell and Servaes' results suggest that a firm's value is maximized with a far greater percentage of insider ownership (approximately 37 percent for their analysis of 1986 firms), and Demsetz and Lehn note that insider ownership has no relationship with the firm's accounting rate of return. In sum, no definitive relation between firm value and the level of insider ownership is provided by their results.

Moreover, a "chicken and the egg" problem arises in their studies. The authors imply that it is the level of insider ownership that affects the value of the firm. Given their analysis of firm value and insider ownership focuses on a single point in time, it is equally acceptable to say that it is the value of the firm that is affecting the level of insider ownership. In other words, it is possible that the managers determine their level of ownership based on the value of the firm, as suggested by Leland and Pyle (1977).

#### **4.1.2. Revising the Interpretations of Stulz**

Chang and Mayers (1992) and Dhillon and Ramirez (1994) are among those that have performed empirical tests in which the level of insider ownership (IO) *prior* to an ownership-increasing event (e.g., an ESOP announcement) is the key explanatory variable. Thus, it appears that many interpret Stulz's model as a prediction that for firms with a low (high) level of *pre*-announcement insider ownership, the magnitude of the insider ownership increase and the size of the positive (negative) market reaction are directly related. They further imply that this expectation will hold irrespective of the level of post-announcement insider ownership. Essay two contends that the levels of pre- *and* post-insider ownership are the critical explanatory variables related to the ownership/corporate control effects. For example, if an event transforms a "low IO"

firm into a "high IO" firm, a negative market reaction is predicted because the cost of the reduced probability of a takeover will now exceed the benefit of a rise in the takeover premium. This is counter to most studies that predict a positive reaction because of the initially low level of insider ownership.

A second contrast to the typical Stulz interpretations is the contention that firms with a high level of insider ownership throughout the event analysis (i.e., pre- and post-) will be unaffected by the insider ownership/corporate control effects related to a change in voting power. This argument is based on the notion that the market has already accounted for the entrenchment effect that existed prior to the voting power increase. In other words, a "high-IO" firm that announces an ownership-increasing event will be insignificantly affected by the entrenchment effect because the firm is effectively "unattractive" for takeover. A typical Stulz interpretation would predict a negative market reaction when insider ownership is increased by firms with an initially high level of voting power.

In contrast to the format of this essay's insider ownership examination, the structure of the ESOP ownership analyses performed by Chang and Mayers and Dhillon and Ramirez does not directly account for the post-announcement ownership levels. Regardless, Chang and Mayers claim to support Stulz's model with their regression of ESOP announcement prediction errors onto a set of interaction variables composed of the magnitude of the ESOP and an indicator variable with a value (of zero or one) based on the level of insider ownership *prior* to the ESOP. The "magnitude" is defined

as the size of the ESOP,<sup>30</sup> and the indicator variable corresponds to one of five pre-IO levels (below 10%, 10%-20%, 20%-30%, 30%-40%, and above 40%). Weakly consistent with Stulz is their finding that all coefficients attached to the four interaction variables with IOs below 40 percent were positive, while the "above 40 percent" coefficient was negative.

The support is "weakly consistent" because, of the five separate regressions performed on their data, only the "10%-20%" coefficient was significantly positive. Furthermore, only one of the five regressions had a significant negative (at the 10 percent level) "above 40%" coefficient. For clarity, one interpretation of their results is that for firms with a pre-IO between 10 and 20 percent, as the size of the ESOP increases, the magnitude of the positive market reaction (on the day of the ESOP announcement) also rises. Moreover, for firms with managerial ownership in excess of 40 percent, the size of the ESOP and the magnitude of the decrease in shareholder wealth move in the same direction. It should be remembered, however, that the 10 percent incremental cut-offs (for the indicator variables) are purely subjective and the results are relatively weak. Essay two improves on this process by employing a more objective cut-off measure, accounting for the pre- and post-announcement levels of managerial power, and differentiating between ESOP firms that are attractive and unattractive for takeover.

Irrespective of the Chang and Mayers results, this essay asserts that the firm's post-announcement ownership level (i.e., pre-IO plus ESOP ownership) must also be

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<sup>30</sup>Calculated as a percentage of shares outstanding.

specifically accounted for in the ESOP/Insider Ownership research. To point out the importance of this accountability, consider the results predicted by Chang and Mayers' regression for a firm with a pre-IO level of 10 percent and a 3 percent ESOP, and a firm with a pre-IO level of 17 percent and a 10 percent ESOP. Given the larger ESOP size and a pre-IO between 10 and 20 percent, the "17%" firm is predicted to have a significantly larger positive effect on shareholder wealth, regardless of the post-announcement level of insider ownership. In contrast to the regression's predictions, given that very few tender offer takeovers transpire when the level of insider ownership exceeds 20 percent (per Bradley and Kim, 1985), essay two predicts a negative market reaction for the "17% pre-IO" firm when an ESOP is announced. Despite the low level of pre-announcement insider ownership, this result is expected because the takeover probability is greatly reduced.

A similar analysis is performed by Dhillon and Ramirez (1994) who regress the firms' prediction errors onto two "pre-IO"/"ESOP magnitude" interaction variables. Their pre-IO indicator variables (with values of 0 or 1) account for the insider ownership levels above and below 15 percent. The results demonstrate that the "below" ("above") coefficient was insignificantly positive (significantly negative). Thus, for firms with a pre-announcement IO level in excess of 15 percent, the size of the ESOP and the effect on firm value are inversely related. In addition to the "pre- versus post-" IO problems (as described above), the Dhillon and Ramirez (DR) and Chang and Mayers (CM) results appear to conflict. That is, the CM (DR) regression produces a(n) significant (insignificant) positive coefficient for low levels of pre-IO, and an

insignificant (significant) negative coefficient for high levels of pre-announcement IO. Taken as a whole, the conflicting results and unfocused method of past ESOP/IO research demonstrate the importance of an examination that accounts for the interactions between the pre- *and* post-levels of voting power and the corporate control effects of attractive/unattractive firms.

#### **4.1.3. Takeover Attractiveness**

Stulz also suggests that the "attractiveness" of a firm as a takeover target affects the premium and probability of takeover and, therefore, the predicted value of the firm. This essay asserts that the probability of takeover attached to a highly unattractive firm is unaffected by an increase in insider or ESOP ownership because its pre- and post-announcement values are constantly close to zero. The zero probability is based on the argument that no bidder considers them a valid target. On the other hand, an attractive firm will have a takeover premium and probability that are highly dependent on the levels of insider and ESOP ownership. Given these differences, it is argued that past insider ownership studies have produced diluted results because the attractive and unattractive firms are pooled together. Furthermore, the resulting averages camouflage the hypothesized significant ownership effects attached to the attractive firms.

The arguments noted above, however, assume that the market is able to differentiate between firms that are attractive and unattractive for takeover. Prior empirical research suggests that there are differences between firms targeted for takeover and firms absent of takeover activity. Wansley, Roenfeldt, and Cooley (1983) perform a discriminant analysis on merged and randomly selected non-merged firms.

The findings outline a financial profile in which the "merged firms generally have smaller price-earnings ratios, use less debt, are smaller, grow more rapidly, and have less market value of equity in relation to book value of assets" than the non-merged firms.

Similarly, Morck, Shleifer, and Vishny (1988b) compare firms subject to hostile takeovers, corporations involved in friendly mergers, and nontarget firms. The findings suggest that, relative to the nontarget firms, the "takeover" firms are significantly smaller in size. In addition, the firms that experience a hostile takeover typically have a lower percentage, and dollar value, of equity owned by top management. Based on the assumption that markets are relatively efficient, one can further assume that investors are aware of, and account for, the differences between firms that are attractive and unattractive for takeover.

#### **4.1.4. Determination of the "High"/"Low" Levels of Voting Power**

Because this essay is concerned with the *voting power* of management, the level of insider ownership must be adjusted for the differences in the percentage of votes necessary to prevent a takeover. These differences are attributed to a firm's, and its state of incorporation's, supermajority provisions. In other words, due to the varying state laws and corporate bylaws addressing the ownership approval of hostile takeovers, determination of a "high" and "low" level of insider ownership is somewhat ambiguous. For example, state law requires that a minimum of 15 percent of a firm's nonaligned (i.e., non-insider) shares vote against a hostile takeover in order to effectively deter the takeover of firms incorporated in Delaware. In comparison, California-based firms



need a minimum of 50 percent of the aggregate votes to prevent a takeover. Furthermore, several corporations have supermajority provisions requiring that 67 to 90 percent of the outstanding votes be cast in favor of the takeover. Without such approval, the takeover is defeated.

Despite the supermajority differences across states and corporate bylaws, past insider ownership/corporate control research has treated these voting provisions as if they were identical for all firms. For example, prior research would consider two firms with 15 percent insider ownership as having identical corporate control/insider ownership effects regardless of the presence of differing state of incorporation or corporate bylaw supermajority provisions.

In support of these contentions, previous literature suggests that the market accounts for the effects related to an announced change in the firm's, and its state of incorporation's, supermajority provisions. Karpoff and Malatesta (1989) examine the announcement-day price effects of firms incorporated in states announcing a supermajority (control share acquisition) law. As a demonstration of the implied importance of this supermajority adjustment, 15 states have adopted a control share acquisition law between 1982 and 1987. For the firms incorporated in a "supermajority" state, the authors find a significant negative announcement-day effect on shareholder wealth. This supports the contention that the voting power of management is effectively increased to a level approaching entrenchment. More important, it suggests that the state of incorporation's supermajority provisions should be accounted for when examining the effect of voting power on the value of the firm.

Similarly, previous empirical studies support the contention that insider ownership research should account for the firm-specific supermajority provisions. In particular, Jarrell and Poulsen (1987) examine the stock price reaction to the announcement of several firm-specific anti-takeover provisions, including the supermajority amendment. Once again, the significant negative market reaction to the announcement suggests that the voting power of management is effectively increased to a level approaching entrenchment. It also supports the argument that corporate control and insider ownership analyses should adjust for the presence of a firm's supermajority provision. The specifics regarding how a firm's insider ownership is adjusted for these supermajority provisions are discussed in section 4.3.2.

#### **4.2. ESOP/Insider Ownership Hypotheses**

Similar to previous literature, the general purpose of essay two is to examine the effect of ESOPs on a firm's managerial voting power and, in turn, on the value of the firm. Unlike prior analyses, however, this study uses a measure of managerial voting power that accounts for the state of incorporation and firm-specific supermajority provisions. The importance of this measure is implied by the significant and negative shareholder wealth effects associated with firms incorporated in a state that announced a supermajority provision (Karpoff and Malatesta, 1989) and firms that announced a firm-specific supermajority amendment (Jarrell and Poulsen, 1987). The negative results presumably reflect the market's belief that the managers' voting power is enhanced to a level that approaches entrenchment.

A second material difference between this and previous studies is the classification of the ESOP sample into firms that are "attractive" and "unattractive" for takeover. Because prior analyses (e.g., Wansley, Roenfeldt, and Cooley, 1983, and Morck, Shleifer, and Vishny, 1988b) suggest that there are characteristic differences between target and nontarget firms, and given the fact that the shareholder interests, managerial entrenchment, and Stulz-related hypotheses are takeover-related, a stratification by takeover attractiveness appears warranted. Without a separate analysis of attractive and unattractive firms, it is hypothesized that the insignificant unattractive effects dilute the significant insider ownership effects associated with ESOP firms that are attractive for takeover.

A final difference between the essay two analyses and prior ESOP research is the inclusion of pre- *and* post-announcement managerial voting power variables. By accounting for the degree of managerial voting power *subsequent* to the ESOP announcement, a correct interpretation of Stulz's (1988) valuation model is possible. Previous empirical research (e.g., Chang and Mayers, 1992, and Dhillon and Ramirez, 1994) implicitly focuses on the firm's probability of takeover and associated takeover premium that exists *prior* to the ESOP announcement. Conversely, this essay accounts for the differences in the level of the managerial voting power between the pre- and post-announcement periods. To be specific, the analyses classify the pre- and post-levels of voting power as "low" or "high", depending on the percentage of votes necessary to veto a takeover and the percentage of votes controlled by management. For example, firms with a percentage of insider-controlled votes in excess of the

percentage required to veto a takeover are classified as having a high level of managerial voting power.

By combining the three analytical improvements noted above, the following hypotheses are tested in essay two:

- 8) The market will react negatively to the announcement of an ESOP that increases a firm's managerial voting power from "low" to "high."
- 9) A positive market reaction is predicted for ESOPs announced by firms with a "low" pre- and post-announcement level of managerial voting power.
- 10) The effects predicted in 8) and 9) are only significant for firms that are attractive for takeover.

The negative reaction predicted in (8) is consistent with the managerial entrenchment hypothesis and a Stulz interpretation that contends that the cost of the decrease in the probability of takeover exceeds the benefit of an increase in the magnitude of the takeover premium. The positive effect predicted in (9) supports the shareholder interests hypothesis and the argument that the cost of a decrease in takeover probability is less than the benefit of an increase in takeover premium. Finally, hypothesis (10) states that the effects predicted in (8) and (9) are only significant for ESOP firms that are attractive for takeover. Because the shareholder interests, managerial entrenchment, and Stulz-related hypotheses are predominantly based on the effects of takeover activity, it is argued that the unattractive firms are not affected by a change in managerial voting power.

#### **4.2.1. Blockholder/Institutional Ownership Hypotheses**

The efficient-monitoring hypothesis predicts that firm value and institutional ownership are positively related as a result of the high-quality, low-cost monitoring of

the firm provided by institutional owners (Pound, 1988). McConnell and Servaes (1990) support this contention with their regression results that note a significant relationship between the percentage of institutional ownership and Tobin's  $q$ , a firm-value proxy. The increase in managerial voting power (from the ESOP creation), and its effect on the institutional owners' monitoring effectiveness, are also examined in this essay. To be specific, it is hypothesized that the increase in managerial voting power negates the effectiveness of the outsiders' (i.e., blockholders' and institutional owners') monitoring. It is further argued that the magnitude of the negative outcome (from the decrease in monitoring effectiveness) is a function of the level of outside ownership and the ESOP's contribution to the voting power of management.

Brickley, Lease, and Smith's (1994) analysis of the voting process of management-sponsored anti-takeover amendments examines several hypotheses, two of particular relevance to this study. First, the blockholder-participation hypothesis asserts that "blockholders [and institutional owners] are more active in the voting process than non-blockholders." Second, the blockholder opposition hypothesis states that "blockholders (including financial institutions) are more likely than non-blockholders to oppose managers on value-reducing proposals." Evidence from their analysis is consistent with both hypotheses. One interpretation of these findings is that institutional owners and blockholders perform a value-enhancing monitoring service to the shareholders of the corporation. In other words, because management is aware of the institutional owners' and blockholders' active participation, a reduction in agency costs ensues.

In relation to managerial voting power, however, if management has reached a level of entrenchment, the monitoring effect is eliminated because the institutional investors and blockholders have no power, regardless of their participation and opposition. With this in mind, the purpose of the following analysis is to determine whether the market accounts for the hypothesized loss in value caused by an increase in managerial voting power (from the ESOP) and associated decrease in effective monitoring.

With respect to ESOPs, Chang and Mayers (1992) alternatively argue that institutional blockholdings act as a complement to, or substitute for, the votes controlled by management. Their explanations are limited and vague, however, and their testing is unfocused. Of the twenty-plus coefficients produced in the Chang and Mayers regressions, seven represent the effects attributed to various ownership categories. That is, the ownership percentages of institutions, institutional blockholders (where blockholder is defined as an investor with an ownership level in excess of 5 percent), employee benefit plan blockholders, officer blockholders, outside director blockholders, outside blockholders, and the CEO are used as separate explanatory variables.

Several points should be noted. First, the sum of the CEO, officer blockholder, and outside director ownership percentages should have a high correlation with Chang and Mayers' insider ownership (IO) interaction variables (described in section 4.1.2), thus allowing for a collinearity problem in the regression. Second, the two ownership coefficients that are significant among the seven analyzed by Chang and Mayers appear to be in conflict. That is, the significant positive and negative coefficients of the

"institutional holding" and "institutional blockholding" percentages (respectively) provide an element of confusion with their opposite signs.<sup>31</sup>

Finally, the overall format of Chang and Mayers' institutional and blockholder ownership variables does not appear to accurately test the ownerships' relationship with the market's reaction to an ESOP announcement. For example, why is an inverse relation (or any relation) expected between the prediction error and the ownership level of the institutional blockholder when an ESOP is announced? In contrast, this essay suggests that firms with high levels of institutional/blockholder ownership experience a negative announcement effect *if* the insider's voting power has reached a level of entrenchment that negates the positive monitoring effects of the blockholder. Such a hypothesis is not empirically tested by Chang and Mayers. Their results merely suggest that regardless of the level of managerial voting power, the prediction errors and blockholder percentages are negatively related.

In sum, this essay contends that ESOP firms with a low pre- and post- (low pre- and high post-) level of managerial voting power will experience a non-negative (negative) effect because the benefit of the increased takeover premium exceeds (is less than) the cost of a reduced takeover probability *and* monitoring effect. Though the direction of these effects is predicted irrespective of the level of institutional ownership, it is further hypothesized that the negative effect will rise with the size of the blockholder/institutional ownership percentage because of an increasing reduction in

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<sup>31</sup>With little explanation, the authors suggest that "complementarity" and "substitute for managerial vote control" effects are the cause. Why two similar proxies for the effects of institutional ownership produce differing results is puzzling, however.

monitoring value when management becomes entrenched. In other words, an examination of the monitoring effects (in relation to an ESOP announcement) must also incorporate the pre- and post-levels of managerial voting power.

To perform the examination, the ESOP sample is first split into firms with high and low levels of institutional/blockholder (outside) ownership. The classification of "high" and "low" levels of outside ownership is determined by comparing the outside ownership percentage of a firm to the median of the sample.<sup>32</sup> A significantly larger negative effect is predicted for firms with a high level of outside ownership that announce ESOPs that change the level of insider ownership from "low" to "high."

In other words, prior to the ESOP announcement, a firm with a high level of outside ownership is hypothesized to have a larger takeover premium than a firm with a low level of outside ownership, all else equal. The larger premium is a result of the assumption that the institutions are more informed and, therefore, less likely to accept a takeover bid unless an adequate premium is offered. Furthermore, the benefit of this increased premium (and increase in monitoring) is effectively negated when the firm has an entrenched level of insider ownership. Therefore, a significant negative effect is predicted when an ESOP changes a firm with a high level of outside ownership into a "low-to-high IO" entity. The blockholder/institutional ownership hypothesis is formally listed as follows:

11) Firms with a "high" level of outside ownership will experience a significantly larger negative effect (relative to "low" firms) when an announced ESOP increases the managers' voting power from "low" to "high."

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<sup>32</sup>Because CD-Disclosure (the source of this data) is unavailable prior to 1987, the following analysis is performed on ESOPs established or expanded after January 1, 1987.



### 4.3. Data and Method of Analysis

#### 4.3.1. Attractive versus Unattractive Firms

The method of analysis employed to support the contentions of Stulz is a regression of the firms' cumulative prediction errors onto varying ownership variables. Because the regression is to be performed separately on ESOPs classified as attractive and unattractive for takeover, the first step of this examination is to categorize the ESOPs by takeover attractiveness. In order to perform such a task, a financial profile of non-ESOP firms targeted for takeover in the 1987-1993 period is constructed in a manner similar to that performed by Wansley, Roenfeldt, and Cooley (1983) (WRC). In their examination, a discriminant analysis of merged and randomly selected firms (i.e., the control group) is used to determine a financial profile of each group.

In a similar manner, this essay uses a set of eleven financial calculations to separate the ESOP firms into attractive and unattractive groupings. One difference between WRC's and essay two's analysis is the fact that the latter only examines firms subject to a hostile takeover. This is due to the corporate control, entrenchment, and ESOP/Insider Ownership valuation effects being particularly associated with firms experiencing a hostile takeover.

The initial sample of 154 hostile takeover firms<sup>33</sup> is identified from a search of the 1987-1993 *Nexis Newswire* press releases. Comparable to WRC's examination, an equal number of control group (non-merged) firms is randomly selected from a listing

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<sup>33</sup>Identical to Morck, Shleifer, Vishny (1988b) (MSV), a hostile takeover is defined as one in which "the initial bid for the target was neither negotiated with its board prior to being made nor accepted by the board as made." Unlike MSV, however, essay two examines all hostile takeovers, regardless of the bidder's success or failure.

of CRSP firms. Unlike WRC's procedures, control group firms that had a takeover-related press release announced during the 1987-1993 period are eliminated from the sample to increase the likelihood that the control firms are not "attractive for takeover."

To determine the characteristics that differentiate the two groups, a discriminant analysis is performed on the 11 variables calculated for the combined sample of takeover and control group firms.<sup>34</sup> The following is a list of the variables used in the discriminant analysis. Variables one through five (six through nine) are comparable to the significant variables use in WRC's (Morck, Shleifer, and Vishny's) examination. Finally, the hypothesized relationship between each variable of interest and the level of attractiveness is documented in parentheses.<sup>35</sup>

- 1) The natural logarithm of net sales (inverse).
- 2) The book value of long-term debt divided by equity (inverse).
- 3) The price-earnings ratio (inverse).
- 4) The market value of equity divided by total assets (inverse).
- 5) The compound growth in net sales; equal to the geometric average growth rate for the three years prior to the takeover attempt (direct).
- 6) The percentage of common stock owned by the top two officers (inverse).
- 7) The percentage of common stock owned by all insiders (inverse).

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<sup>34</sup>The firm's year-end data for the period prior to the takeover (or control firm selection) date are used to calculate the necessary financial variables. CD Disclosure is the source of the financial data and ownership information. Of the 154 takeover firms initially located, 52 were eliminated due to insufficient information (Final sample: 102 takeover and 104 control group firms).

<sup>35</sup>The purpose of this analysis is to discriminate between the takeover and nontakeover firms. That is, the direction of the relationship is not specifically critical, but merely included for informational purposes.

- 8) The dollar value of equity ownership of the top two officers (inverse).
- 9) The log of the firm's total market value (inverse).
- 10) The quick ratio (i.e., acid test) (direct).
- 11) The times interest earned ratio (direct).

For descriptive purposes, Table 9 documents the mean value, and difference-of-means t-test p-values, of the 11 variables calculated for the takeover and control group firms. Consistent with intuition and WRC's/MSV's results, (in comparison to the control group firms) the takeover firms have a significantly larger earnings per share and significantly smaller percentage of insider ownership. Inconsistent with WRC, however, are results that the takeover firms have a larger market value and a larger level of prior year sales. These latter findings suggest that sizable firms are no longer immune to the takeover process.

Linear discriminant analysis is performed on the 11 calculations, resulting in a correct classification of 85.3 percent (87 of 102) of the takeover firms and 50.0 percent (52 of 104) of the control group firms. The calibration information produced by the discriminant analysis is stored and applied to the (1987-1993) sample of ESOP firms to classify them as "attractive" (i.e., firms that exhibit characteristics similar to the group of takeover firms) and "unattractive." Of the 180 ESOP firms examined, the linear discriminant analysis classified 108 as attractive. In support of this analysis, it should be noted that all ESOPs announced in the presence of takeover activity (essay one) are classified by the discriminant analysis as attractive for takeover.

#### **4.3.2. "High"/"Low" Levels of Managerial Voting Power**

As previously described in section 4.1.4, the determination of low and high levels of managerial voting power must account for a firm's, and its state of incorporation's,

Table 9

Descriptive statistics (i.e., mean values) and difference-of-means t-test p-values for the 102 takeover firms and 104 control group firms.

<b>VARIABLE</b>	<b>TAKEOVER GROUP 1987-93</b>	<b>CONTROL GROUP 1987-93</b>	<b>T-TEST P-VALUE (diff.-of-means)</b>
Total Assets	3,629,398,000	5,144,622,000	.362
EPS	2.489	0.761	.046
Log (sales)	13.48	12.55	.001
PE	31.53	-14.48 <sup>1</sup>	.085
Mkt Val of Eqty	1,724,993,000	1,291,212,000	.343
Eqty/Assets	.823	.931	.693
Sales Growth	2.60	1.02	.410
Top Off. IO %	.019	.089	.001
Insider %	.087	.233	.001
Top Off. \$ IO	8,344,000	24,334,000	.146
Log Mkt Value	12.95	11.93	.001
Quick Ratio	1.356	1.524	.628
TIE	6.903	5.642	.502
Dbt/Eqty Ratio	.535	.813	.333

<sup>1</sup> Because a small negative EPS (the denominator of the PE ratio) produces an extremely large and negative PE ratio, the mean of the PEs may be an inappropriate measure to examine via the difference-of-means t-test. Thus, a non-parametric Wilcoxon rank-sum test is performed to test for a difference in median values. A .601 p-value suggests that the PE variable is not significantly different between the two groups.

supermajority provisions. To adjust for the differences in provisions, the following study employs an ownership ratio in which the denominator equals the percentage of votes necessary to prevent a takeover. Based on a comparison of the state of incorporation and corporate bylaw supermajority provisions, the smallest percentage required to prevent a takeover is used as the denominator. If no supermajority provision exists, the denominator is .50 (i.e., 50 percent), the percentage of votes necessary for management to prevent a hostile takeover. The numerator of the ratio is equal to the actual percentage of votes controlled by management.

Also note that because the 15 percent Delaware rule applies to non-management ownership, the numerator is adjusted to only include the shares owned by non-management investors who typically vote with management (e.g., shares owned by an employee stock benefit plan). The denominator is equal to the product of 15 percent and the percentage of the firm's nonaligned ownership.

In terms of a typical interpretation of Stulz's model, a firm with a pre-announcement insider ownership (pre-IO) ratio close to zero should have a positive reaction to the announcement of an event that increases the level of insider ownership. A typical Stulz interpretation also predicts that a pre-IO ratio in excess of one should lead to a negative reaction to such an event. In contrast, an application of essay two's "pre versus post" hypothesis predicts that a firm with a pre-IO ratio close to zero and a post-IO ratio in excess of one will experience a negative market reaction. Furthermore, it is hypothesized that the value of a firm with a pre- and post-IO ratio

in excess of one will not be affected by the ESOP-related change in voting power because management was firmly entrenched prior to the announcement.

The final stage of the low/high determination involves a comparison of the ESOP firm's IO ratio to the 1987-1993 takeover firms' IO ratios (analyzed in the "attractive versus unattractive" examination [section 4.3.1.]) to determine a proper low/high cut-off measure. Of the 102 non-ESOP takeover firms, only two had an IO ratio greater than .70. In addition, the five largest IO ratios were .889, .762, .694, .677, and .675. This suggests that managers of firms with IO ratios in the .70 to .80 range are firmly entrenched. To verify the accuracy of this range, IO ratio cut-offs of .60, .70, .80, and .90 are separately applied to the four regressions (described in section 4.3.3) employed to determine an ESOP's effect on managerial voting power and shareholder wealth. The first regression uses an IO cut-off of .60. Therefore, if an ESOP firm has a pre-announcement IO ratio below .60, it is (implicitly) classified as a "low" pre-IO firm. If the additional ESOP shares change the post-announcement IO ratio to a value in excess of .60, it is classified as a "high" post-IO firm. Overall, the firm is classified as a low-high firm.

In order to determine the IO ratio, three pieces of information are gathered: 1) the state of incorporation's supermajority provisions; 2) the firm-specific supermajority bylaws (if any); and 3) the ownership structure of the firm. The state of incorporation is recorded from CD Disclosure, and the states' supermajority provisions (if any) are provided in the details of the Investor Responsibility Research Center's (IRRC's) analysis of anti-takeover statutes. IRRC data is also used as the source of firm-specific

supermajority provisions. Finally, the firms' ownership structures (i.e., management, board of directors, blockholders, and institutional ownerships) is gathered from CD-Disclosure, a compact disc data storage of corporate information of public companies filing with the SEC. Because CD-Disclosure, the source of a majority of the data used in this essay, is available only for the years 1987-1993, this insider ownership examination is restricted to the 1987-1993 time-frame.

#### 4.3.3. Method of Analysis (ESOPs and Insider Ownership)

In addition to the pre- and post-insider ownership percentages, the magnitude of the change in ownership (i.e., the size of the ESOP) should affect the size of the price reaction. For example, Stulz's model would predict that for low-IO firms, the positive market reaction increases as the magnitude of the change in IO rises. To account for this factor, the difference between the "before" and "after" insider ownership ratios is calculated (hereafter defined as  $\Delta$ ).

To summarize the empirical structure, a standard event study procedure is employed to calculate the prediction errors of the ESOP announcements (section 3.3.2). Once obtained, the two-day (0, +1) cumulative prediction errors (CPEs) become the dependent variable of the following regression<sup>36</sup> (separately performed on "attractive" and "unattractive" firms):

$$CPE_i = \beta_1 + \beta_2 \Delta_i + \beta_3 * D + \beta_4 (\Delta_i * D) + e_i \quad (7)$$

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<sup>36</sup>To test for non-constant error variances of unknown form, White's (1980) direct test for heteroskedasticity is employed.

where  $N$  is the number of firms in the regression,  $\Delta$  is the percentage increase in the managerial ownership ratio (previously described), and  $D$  is an indicator variable equal to unity if insiders subsequently have the necessary votes to prevent a potential takeover (zero otherwise). In effect, an interaction variable ( $\Delta_i * D$ ) is used to test for a difference in slopes between low-low firms ( $D=0$ ) and low-high firms ( $D=1$ ).<sup>37</sup> The value of  $D$  is based on a comparison of the ESOP firm's IO ratio to the "cut-off" measure of the non-ESOP takeover firms' IO ratio, as described in the previous section. Cut-off measures used in the four regressions are .60, .70, .80, and .90. With respect to the hypotheses, it is predicted that the low-high (and attractive) firms will experience a significant negative reaction that increases with the size of the ESOP (i.e.,  $\beta_4 < 0$ ).

Furthermore, attractive firms with an insufficient level of "veto" votes (i.e., low-low firms) should receive an increase in shareholder wealth that grows with the size of the ESOP (i.e.,  $\beta_2 > 0$ ). Thus, the dummy variable interaction (i.e.,  $\Delta_i * D$ ) accounts for the hypothesized change in the sign of the slope from positive to negative as the IO ratio switches from "low" to "high." This change will theoretically occur when the insider ownership percentage reaches a point where the benefit of an increase in the takeover premium no longer exceeds the cost of a decrease in takeover probability. In sum, a significant positive  $\beta_2$ , in combination with a significant negative  $\beta_4$ , will support the hypothesis that the post-insider ownership affects the level of shareholder wealth when an ESOP is announced.

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<sup>37</sup>The null hypothesis for the difference in slopes is  $H_0: \beta_4 = 0$ , and the null hypothesis for the difference in intercepts is  $H_0: \beta_3 = 0$ .



Though these predictions are consistent with the managerial entrenchment and shareholder interests hypotheses, it is further argued that they are results specifically related to "attractive" firms. That is, because these hypotheses pertain to the firm's takeover probability and premium, an unattractive firm should have a value that is unaffected by the two takeover variables and any changes in ownership that affect these variables. In order to test this contention, a similar regression is run on the category of unattractive ESOP firms. Based on the argument that the shareholder interests and managerial entrenchment effects are lacking, the difference in slopes between unattractive low-low and low-high firms should be insignificant (i.e.,  $\beta_4$  is insignificantly different from zero). Recall that a significant difference is predicted for a similar regression of attractive firms.

#### **4.3.4. Method of Analysis (Blockholder and Institutional Ownership)**

The purpose of the following analysis is to test for an ESOP's effect on the outcomes predicted by the efficient-monitoring hypothesis (section 4.2.1). This hypothesis contends that firm value is enhanced by the presence of blockholder and institutional ("outside") ownerships because of the low-cost, high-quality monitoring services they provide. It can also be argued that the magnitude of this monitoring effect and the level of outside ownership are positively related. The final contention is that a firm with an entrenched set of managers will have insignificant monitoring effects because the voting power of the outside shareholders is negated by the voting power of management. Given the assumed increase in managerial voting power from the establishment of an ESOP, it is hypothesized that firms with a high level of outside

ownership will experience a significant drop in firm value (relative to firms with a low level of outside ownership) when an ESOP is announced. The drop is caused by a substantial decrease in the blockholders' and institutional owners' monitoring effectiveness.

To test this hypothesis, the insider ownership ratio regression (section 4.3.3, equation 7) is separately performed on firms with low and high levels of outside ownership. The hypothesized outcome is a  $\beta_4$  coefficient that is significantly more negative for firms with a high level of outside ownership than for firms with a low level of outside ownership. A second sub-category of regressions is performed by splitting the high and low "outside ownership" categories into attractive and unattractive stratifications. It is hypothesized that the preceding predictions are only significant for the attractive firms. That is, it is further predicted that the  $\beta_4$  coefficient is significantly different only for the sample of attractive firms.

#### **4.4. Results**

In general, the results support half of Stulz's (1988) model and the entrenchment hypothesis. The portion of Stulz's model supported by the findings is the contention that for attractive firms with an initially "low" level of managerial voting power, a significant negative effect is predicted for ESOPs that increase the voting power to a "high" level of voting power. That is, the results support the argument that a negative market reaction is expected for announced ESOPs that increase the managers' voting power to a level of entrenchment.

In contrast, no support is given to the shareholder interests hypothesis or the part of Stulz's model that predicts a positive market reaction for ESOP firms with a low level of pre- and post-announcement managerial voting power. Thus, the results do not support Stulz's argument that the benefit of an increase in takeover premium (from the ESOP-related increase in voting power) is greater than the cost of the decrease in the probability of a takeover.

Tables 10 through 13 each present the results for the original sets of three regressions, and differ by the cut-off point of the IO-ratio. Each table contains the results from the overall regression of 180 firms, the regression of the 108 attractive firms, and the regression of the 72 unattractive firms. Because a significant positive intercept is observed in all 12 regressions (suggesting that a significant explanatory variable is omitted), and based on the significant positive "repurchased equity" findings noted throughout essay one, Tables 14 through 17 include a repurchased equity indicator variable. Aside from shifting the significant positive effect from the intercept to the indicator variable and increasing the explanatory power of the regression (as measured by  $R^2$ ), the results of Tables 14 through 17 are comparable to those of Tables 10 through 13.

The most notable results come from the regressions of attractive firms that use a low-high IO cut-off measure of .70 and .80 (Tables 11, 12, 15, and 16; equation 2).<sup>38</sup> In particular, a significant negative effect is noted for attractive firms that announce an ESOP that increases the level of managerial voting power from "low" to "high" (per

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<sup>38</sup>Recall (from section 4.3.2) that the analysis of non-ESOP hostile takeover firms suggests that managers are firmly entrenched with IO ratios in the .70 to .80 range.

Table 10

OLS regression results explaining the ESOP two-day announcement prediction errors (.60 cut-off).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.024	.000	.019	.003	.047	.015
$\Delta_i$	-.055	.157	-.039	.243	.028	.854
D	-.019	.069	-.030	.142	-.043	.052
$\Delta_i * D$	.046	.271	.034	.407	-.043	.895

(1) = Total sample (180 firms) (F Value = 2.19, P-Value = .0907;  $R^2$  = .036)

(2) = Attractive (108 firms) (F Value = 3.01, P-Value = .0334;  $R^2$  = .080)

(3) = Unattractive (72 firms) (F Value = 1.53, P-Value = .2155;  $R^2$  = .063)

Table 11

OLS regression results explaining the ESOP two-day announcement prediction errors (.70 cut-off).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.021	.002	.018	.004	.029	.070
$\Delta_i$	-.037	.298	-.034	.282	.030	.803
D	-.014	.169	-.049	.015	-.021	.281
$\Delta_i * D$	.026	.512	.047	.241	-.028	.821

(1) = Total sample (180 firms) (F Value = 1.73, P-Value = .1619;  $R^2$  = .029)

(2) = Attractive (108 firms) (F Value = 4.37, P-Value = .0061;  $R^2$  = .111)

(3) = Unattractive (72 firms) (F Value = 0.61, P-Value = .6089;  $R^2$  = .026)

Table 12

OLS regression results explaining the ESOP two-day announcement prediction errors (.80 cut-off).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.021	.002	.017	.004	.029	.056
$\Delta_i$	-.036	.221	-.029	.271	-.038	.622
D	-.015	.173	-.057	.016	-.023	.249
$\Delta_i * D$	.025	.463	.049	.184	.045	.589

(1) = Total sample (180 firms) (F Value = 1.70, P-Value = .1678;  $R^2$  = .028)

(2) = Attractive (108 firms) (F Value = 4.26, P-Value = .0070;  $R^2$  = .107)

(3) = Unattractive (72 firms) (F Value = 0.48, P-Value = .6944;  $R^2$  = .022)

Table 13

OLS regression results explaining the ESOP two-day announcement prediction errors (.90 cut-off).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.022	.001	.019	.002	.031	.046
$\Delta_i$	-.057	.038	-.053	.032	-.041	.607
D	-.014	.201	-.016	.504	-.026	.206
$\Delta_i * D$	.048	.138	.038	.284	.054	.525

(1) = Total sample (180 firms) (F Value = 1.88, P-Value = .1348;  $R^2$  = .031)

(2) = Attractive (108 firms) (F Value = 2.52, P-Value = .0614;  $R^2$  = .065)

(3) = Unattractive (72 firms) (F Value = 0.56, P-Value = .6466;  $R^2$  = .026)

Table 14

OLS regression results explaining the ESOP two-day announcement prediction errors (.60 cut-off) (Includes a repurchased equity indicator variable).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + \beta_5 * \text{REP} + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.004	.592	-.004	.641	.027	.193
$\Delta_i$	-.053	.157	-.039	.208	.090	.556
D	-.018	.084	-.028	.142	-.045	.034
$\Delta_i * D$	.045	.269	.029	.451	-.074	.633
REP	.028	.000	.032	.000	.034	.024

(1) = Total sample (180 firms) (F Value = 5.52, P-Value = .0003;  $R^2$  = .112)

(2) = Attractive (108 firms) (F Value = 7.41, P-Value = .0001;  $R^2$  = .223)

(3) = Unattractive (72 firms) (F Value = 2.56, P-Value = .0466;  $R^2$  = .132)

Table 15

OLS regression results explaining the ESOP two-day announcement prediction errors (.70 cut-off) (Includes a repurchased equity indicator variable).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + \beta_5 * \text{REP} + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.001	.876	-.002	.718	.001	.683
$\Delta_i$	-.038	.276	-.037	.216	.055	.642
D	-.012	.236	-.047	.012	-.019	.305
$\Delta_i * D$	.026	.496	.045	.218	-.046	.704
REP	.028	.000	.030	.000	.032	.028

(1) = Total sample (180 firms) (F Value = 5.08, P-Value = .0007;  $R^2$  = .104)

(2) = Attractive (108 firms) (F Value = 7.89, P-Value = .0001;  $R^2$  = .234)

(3) = Unattractive (72 firms) (F Value = 1.75, P-Value = .1489;  $R^2$  = .096)

Table 16

OLS regression results explaining the ESOP two-day announcement prediction errors (.80 cut-off) (Includes a repurchased equity indicator variable).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + \beta_5 * \text{REP} + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.001	.914	-.002	.726	.007	.698
$\Delta_i$	-.039	.161	-.032	.194	-.045	.548
D	-.011	.302	-.053	.017	-.020	.313
$\Delta_i * D$	.027	.392	.047	.175	.060	.458
REP	.028	.000	.028	.000	.033	.035

(1) = Total sample (180 firms) (F Value = 5.00, P-Value = .0008;  $R^2 = .102$ )

(2) = Attractive (108 firms) (F Value = 7.31, P-Value = .0001;  $R^2 = .216$ )

(3) = Unattractive (72 firms) (F Value = 1.54, P-Value = .2015;  $R^2 = .088$ )

Table 17

OLS regression results explaining the ESOP two-day announcement prediction errors (.90 cut-off) (Includes a repurchased equity indicator variable).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + \beta_5 * \text{REP} + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.001	.845	-.001	.817	.008	.671
$\Delta_i$	-.055	.037	-.050	.032	-.047	.541
D	-.008	.429	-.016	.461	-.020	.311
$\Delta_i * D$	.044	.151	.034	.301	.066	.433
REP	.029	.000	.029	.000	.032	.043

(1) = Total sample (180 firms) (F Value = 5.27, P-Value = .0005;  $R^2 = .107$ )

(2) = Attractive (108 firms) (F Value = 5.86, P-Value = .0003;  $R^2 = .177$ )

(3) = Unattractive (72 firms) (F Value = 1.51, P-Value = .2119;  $R^2 = .089$ )

This is supportive of the parameter estimate of the indicator variable, D). That is, the parameter estimates (p-values) of -.049 (.015), -.057 (.016), -.047 (.012), and -.053 (.017) from Tables 11, 12, 15, and 16, respectively, support the argument that the market reacts negatively to an announced ESOP if it increases the managerial voting power to a level of entrenchment. In contrast, similar significant effects are non-existent for the sample of unattractive firms. Therefore, in addition to supporting the managerial entrenchment, and "low-high" voting power, hypotheses, these results are consistent with the argument that the market discriminates between firms that are attractive and unattractive for takeover.

Finally, consistent with the findings of essay one, a significant positive effect is noted for ESOPs structured with repurchased equity (Tables 14-17, variable REP). This is supportive of an asymmetric information argument that the market infers positive news from the repurchased equity announcement because it suggests that management believes the equity is undervalued.

#### **4.4.1. Results (Blockholder/Institutional Ownership)**

The majority of institutional/blockholder ("outsider") ownership results are unsupportive of the general contention that an ESOP-related increase in managerial voting power affects firm value by decreasing the outsiders' monitoring effectiveness. It is hypothesized that firms with a high level of outside ownership experience an increase in shareholder wealth from the blockholder participation and blockholder opposition effects (section 4.2.1). It is further argued that these positive effects are negated by an entrenched set of managers. Based on the analysis and comparison of



ESOP firms with low and high levels of outside ownership (external monitoring), the results are predominantly insignificant.

Tables 18, 20, 22, and 24 provide the regression results for ESOP firms with a high level of outside ownership and a low-high "entrenchment" cut-off of .60, .70, .80, and .90, respectively. A similar format is used for firms with a low level of outside ownership in Tables 19, 21, 23, and 25. It is specifically argued that the indicator variable's (D) and interaction variable's ( $\Delta \cdot D$ ) effects are significant and negative for firms with a *high* level of outside ownership. The negative reactions are expected because the positive monitoring effects are negated by firms with a managerial voting power that reaches a level of entrenchment. Conversely, insignificant effects are predicted for ESOP firms with low outside ownership. Aside from a handful of coefficients exhibiting a significant relationship with the firms' two-day (0,+1) prediction errors, the results are unsupportive of the blockholder/institutional ownership hypotheses.

In addition to the possibility that no outside ownership effect exists, the insignificant effects could be attributed to two additional factors. First, the method used to separate the firms into low and high outside ownership categories is inadequate. In other words, the process of comparing each firm's level of outside ownership to that of the sample firms' median (to determine "low" or "high" outside ownership) could be greatly improved if the median of *all* NYSE/AMEX/Nasdaq firms was used as the low/high benchmark. Unfortunately, time and data constraints do not allow for such a procedure. Second, the further stratification of the 117 attractive and 72 unattractive

Table 18

OLS regression results relating the level of institutional/blockholder (outside) ownership to the ESOP two-day announcement prediction errors (.60 cut-off) (High external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0195	.0038	.0212	.0084	.0073	.7323
$\Delta_i$	-.0736	.0403	-.0787	.0501	-.1119	.3876
D	-.0207	.0976	-.0259	.2451	-.0090	.7337
$\Delta_i * D$	.0613	.1208	.0685	.1439	.1064	.4349

(1) = Total sample (86 firms) (F Value = 2.53, P-Value = .0625;  $R^2$  = .084)

(2) = Attractive (65 firms) (F Value = 2.58, P-Value = .0613;  $R^2$  = .112)

(3) = Unattractive (21 firms) (F Value = 0.39, P-Value = .7641;  $R^2$  = .064)

Table 19

OLS regression results relating the level of outside ownership to the ESOP two-day announcement prediction errors (.60 cut-off) (Low external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0276	.0459	.0135	.2244	.0644	.1306
$\Delta_i$	-.0074	.9280	.0374	.5449	.0757	.8744
D	-.0213	.2330	-.0671	.3945	-.0574	.1982
$\Delta_i * D$	.0108	.9003	.0183	.9004	-.0645	.8931

(1) = Total sample (93 firms) (F Value = 0.90, P-Value = .4454;  $R^2$  = .029)

(2) = Attractive (42 firms) (F Value = 1.42, P-Value = .2532;  $R^2$  = .101)

(3) = Unattractive (51 firms) (F Value = 1.68, P-Value = .1849;  $R^2$  = .097)

Table 20

OLS regression results relating the level of outside ownership to the ESOP two-day announcement prediction errors (.70 cut-off) (High external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0153	.0264	.0192	.0133	.0022	.9016
$\Delta_i$	-.0459	.1573	-.0623	.0837	-.0097	.9145
D	-.0133	.3063	-.0275	.2290	.0043	.8632
$\Delta_i * D$	.0272	.4580	.0539	.2173	-.0184	.8557

(1) = Total sample (86 firms) (F Value = 2.15, P-Value = .1008;  $R^2$  = .073)

(2) = Attractive (65 firms) (F Value = 2.42, P-Value = .0744;  $R^2$  = .106)

(3) = Unattractive (21 firms) (F Value = 0.15, P-Value = .9313;  $R^2$  = .025)

Table 21

OLS regression results relating the level of outside ownership to the ESOP two-day announcement prediction errors (.70 cut-off) (Low external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0244	.0564	.0134	.2229	.0285	.3525
$\Delta_i$	.0068	.9313	.0374	.5437	.3521	.4078
D	-.0184	.2983	-.1202	.0198	-.0181	.5922
$\Delta_i * D$	-.0028	.9729	.1025	.3549	-.3431	.4213

(1) = Total sample (93 firms) (F Value = 0.78, P-Value = .5108;  $R^2$  = .025)

(2) = Attractive (42 firms) (F Value = 3.80, P-Value = .0176;  $R^2$  = .226)

(3) = Unattractive (51 firms) (F Value = 1.04, P-Value = .3854;  $R^2$  = .063)

Table 22

OLS regression results relating the outside ownership to the ESOP two-day announcement prediction errors (.80 cut-off) (High external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0144	.0285	.0171	.0208	.0066	.6918
$\Delta_i$	-.0350	.2008	-.0465	.1363	-.0055	.9306
D	-.0191	.1816	-.0348	.2067	-.0030	.9065
$\Delta_i * D$	.0200	.5410	.0455	.2754	-.0410	.6408

(1) = Total sample (86 firms) (F Value = 2.45, P-Value = .0693;  $R^2$  = .082)

(2) = Attractive (65 firms) (F Value = 2.35, P-Value = .0807;  $R^2$  = .102)

(3) = Unattractive (21 firms) (F Value = 0.36, P-Value = .7800;  $R^2$  = .064)

Table 23

OLS regression results relating the level of outside ownership to the ESOP two-day announcement prediction errors (.80 cut-off) (Low external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0261	.0253	.0159	.1239	.0455	.0645
$\Delta_i$	-.0242	.6863	.0061	.9004	-.0766	.6586
D	-.0198	.2570	-.1209	.0274	-.0359	.2168
$\Delta_i * D$	.0292	.6606	.1107	.2530	.0894	.6140

(1) = Total sample (93 firms) (F Value = 0.56, P-Value = .6425;  $R^2$  = .018)

(2) = Attractive (42 firms) (F Value = 2.77, P-Value = .0540;  $R^2$  = .172)

(3) = Unattractive (51 firms) (F Value = 0.58, P-Value = .6343;  $R^2$  = .037)

Table 24

OLS regression results relating the level of outside ownership to the ESOP two-day announcement prediction errors (.90 cut-off) (High external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0169	.0092	.0204	.0044	.0066	.6918
$\Delta_i$	-.0581	.0208	-.0736	.0080	-.0055	.9306
D	-.0160	.2762	.0101	.7899	-.0030	.9065
$\Delta_i * D$	.0446	.1485	.0393	.3601	-.0411	.6408

(1) = Total sample (86 firms) (F Value = 2.53, P-Value = .0625;  $R^2$  = .084)

(2) = Attractive (65 firms) (F Value = 3.03, P-Value = .0358;  $R^2$  = .128)

(3) = Unattractive (21 firms) (F Value = 0.36, P-Value = .7800;  $R^2$  = .0638)

Table 25

OLS regression results relating the outside ownership to the ESOP two-day announcement prediction errors (.90 cut-off) (Low external monitoring).

$$\text{MODEL: } \text{CPE}_i = \beta_1 + \beta_2 * \Delta_i + \beta_3 * D + \beta_4 (\Delta * D) + e_i$$

	(1)	(1)	(2)	(2)	(3)	(3)
Variables	Parameter Estimate	P-Value	Parameter Estimate	P-Value	Parameter Estimate	P-Value
Intercept	.0261	.0240	.0142	.1904	.0465	.0572
$\Delta_i$	-.0348	.5608	-.0009	.9861	-.0792	.6534
D	-.0179	.3133	-.0149	.6974	-.0383	.1953
$\Delta_i * D$	.0396	.5519	-.0219	.7813	.1009	.5770

(1) = Total sample (93 firms) (F Value = 0.41, P-Value = .7456;  $R^2$  = .013)

(2) = Attractive (42 firms) (F Value = 0.72, P-Value = .5428;  $R^2$  = .048)

(3) = Unattractive (51 firms) (F Value = 0.62, P-Value = .6076;  $R^2$  = .042)

firms by their level of outside ownership reduces the size of the sub-samples to the extent that it is difficult to observe a relationship between outside ownership and an ESOP's effect on managerial voting power.

#### **4.5. Conclusion**

Regardless of the results, this essay is important because of the three analytical improvements it provides to the insider ownership/corporate control research. First, it contends that the results of this area of research are only pertinent to firms that possess qualities that make them "attractive" for takeover. Including "unattractive" firms (e.g., firms that are too large or unprofitable) into the analysis serves only to dilute the overall effects. The findings of essay two support this argument with the significant effects for attractive firms announcing an ESOP, and insignificant results for unattractive ones.

Essay two also improves upon prior studies by specifically accounting for the effects of a firm's, and its state of incorporation's, supermajority provisions on the voting power of management. Prior research considers firms with equal percentages of insider ownership to have an equal level of managerial voting power. Essay two contends that firms with supermajority provisions will have a stronger degree of managerial voting power because of the smaller percentage of votes necessary to prevent a takeover. Thus, instead of using the percentage of insider ownership as the measure of managerial voting power (as does all prior research), essay two employs an insider ownership ratio in which the denominator is the percentage of votes necessary to prevent a takeover and the numerator is the percentage of votes controlled by

management. Though the results of essay two can not be specifically applied to support the value of this ratio (in terms of finance research), the intuitive application is obvious.

The third improvement over prior research is the incorporation of a firm's pre- *and* post-announcement level of managerial voting power. In contrast, prior research typically concentrates on the pre-announcement level of ownership. The post-announcement level is critical, however, because it is the dominant factor in the determination as to whether managers have the necessary votes to entrench themselves. The difference in the predicted effects is particularly evident for firms with an initially low level of managerial voting power that is increased (by the ESOP) to a level of entrenchment. Prior research typically predicts a positive effect because it focuses on the "low" pre-announcement level of voting power. Conversely, essay two predicts a negative market reaction because the post-announcement level of managerial voting power is sufficient to veto all hostile takeover attempts. The results support this latter contention with the significant negative effect found for attractive firms announcing an ESOP that increases the level of managerial voting power (as proxied by the insider ownership ratio) from low to high. Furthermore, in support of the contention that the market discriminates between firms that are attractive and unattractive for takeover, insignificant results were noted for the "low-high" unattractive firms.

## Chapter 5

### Essay Three: Insider Trading

#### 5.1. Introduction

Essay three examines the trading activities of managers ("insiders") in the stock of their firm around the announcement of an ESOP. The analysis is partitioned to address two general questions. First, is there a relationship between the structure of the ESOP (and the resulting stock price reaction) and the insiders' trading activities? Second, based on the assumption that ESOPs increase a firm's managerial voting power, does management see this as an opportunity to reduce their personal (cash-flow) ownership, yet still maintain a sufficient level of voting power (entrenchment)?

Given the relatively consistent market reactions to various security-related announcements,<sup>39</sup> managers are afforded the opportunity to exploit their private information by adjusting their insider trading around the announcement. Despite the threat of SEC-imposed penalties, significant insider trading activity prior to securities issuance announcements has been noted in several empirical examinations. For example, Karpoff and Lee (1991) find a significant level of insider sales prior to the announcements of common stock and convertible debt offerings. The initial presumption is that the insiders are reducing their cash-flow ownership prior to the release of negative news to prevent a drop in personal wealth. Similarly, Lee, Mikkelsen, and Partch (1989) find a systematic increase in net insider purchases prior to the announcement of a tender offer repurchase, an announcement typically associated

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<sup>39</sup>For example, the market's reaction to a non-ESOP common stock issuance (repurchase) announcement is typically negative (positive)(Smith, 1986).



with a stock price increase. The findings suggest that managers use private information about the forthcoming announcement to enhance their personal wealth.

In a similar fashion, one purpose of this essay is to focus on the securities issuance structure of the ESOP and analyze the level of insider trading activity in the pre- and post-announcement periods. The preservation and enhancement of insiders' wealth is analyzed by associating their net trading activity with the cumulative prediction errors noted in section 3.4, Tables 5 and 6. Furthermore, assuming that abnormal insider trading activity is a proxy for private information (John and Mishra, 1990), the results are additional evidence of the reasonableness of the asymmetric information arguments discussed in essay one. Supportive examples would be announcements with a significant level of net insider sell-offs prior to ESOPs structured with convertible preferred shares, and net insider purchases prior to announcements of repurchased equity ESOPs. The sell-off (purchase) infers to the market that the stock is overpriced (underpriced), an inference consistent with the asymmetric information arguments.

This essay also examines the interactions between an ESOP's effect on managerial voting power and the insider trading activities surrounding the announcement. It is hypothesized that the ESOP-related effects will differ from those of a comparable non-ESOP securities issuance announcement. For example, a significant insider sell-off and a subsequent non-ESOP issue of common stock<sup>40</sup> will *always* reduce the level of managerial voting power. The reduction is caused by a decrease in shares owned by management and an increase in shares outstanding. Management concerned with their

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<sup>40</sup>This scenario is consistent with the findings of Karpoff and Lee (1991).

level of voting power (for entrenchment purposes) may, therefore, be impelled to reduce the level of personal shares sold to prevent a significant decrease in voting power.

In comparison, given the assumption that the ESOP shares are aligned with management, an insider sell-off and ESOP-related common stock issuance can actually result in an increase in managerial voting power. That is, even though the manager's personal ownership is reduced, the number of shares they control (personal ownership plus ESOP shares) may increase. The additional voting power, therefore, provides management with an opportunity to alter its trading patterns.

In effect, a comparison of ESOP and non-ESOP insider trading activities would provide indirect information about the market for corporate control and insider voting power. An ESOP firms' insiders should have greater flexibility in their trading activity because of the aligned votes provided by the ESOP formation. Because the ESOP firms' managers can maintain or increase their corporate control despite a sell-off of personal shares, the optimal level of managerial shares sold is effectively expanded. In contrast, non-ESOP managers concerned with their level of voting power do not have this additional flexibility and, therefore, must reduce the level of their personal equity sell-off.

Furthermore, the "attractive-firm" theory examined in essay two hypothesizes that the corporate control effects on insider trading differ for attractive and unattractive firms. It is argued that managers of unattractive firms are able to sell a greater percentage of their shares than managers of attractive firms because of their firm's low

takeover probability. An example supportive of the attractive-firm theory is the finding of a(n) significant (insignificant) insider sell-off prior to an ESOP announced by an unattractive (attractive) firm. In other words, despite the opportunity to preserve their wealth, the managers of attractive firms will retain their shares to maintain or increase their level of voting power. It should be noted, however, that these "flexibility" arguments assume that the insiders are relatively undeterred by the SEC insider trading penalties.

#### **5.1.1. Insider Trading and the Structure of ESOPs**

Despite the fact that the Securities and Exchange Act of 1934 considers it illegal to trade on (profit from) private information, previous research has consistently shown that insiders such as officers and directors earn significant returns from the trades in the stock of their firm (e.g., Jaffe, 1974, Finnerty, 1976, and Seyhun, 1986). The findings suggest that there is intensive (abnormal) insider buying activity prior to favorable stock price movements and abnormal selling activity prior to unfavorable price movements.

Evidence associating insider trades with firm-specific press releases is also sizable. Significant profitable insider trading activity is noted prior to earnings announcements (Penman, 1982), securities issuance announcements (Karpoff and Lee, 1991), tender offer repurchase announcements (Lee, Mikkelsen, and Partch, 1989), and LBOs (Harlow and Howe, 1993). Givoly and Palmon (1985) find an insignificant correlation between a firm's insider trades and a subsequent material press release (e.g., earnings

announcements), but note that the stock price tends to increase (decrease) in months subsequent to intensive insider buying (selling) activities.

Though numerous studies support the connection between irregular insider trading activities and firm-specific announcements, the research of interest to essay three relates to the trades made by insiders prior to security-related announcements. In particular, Karpoff and Lee (1991) and Lee, Mikkelsen, and Partch (1989) provide indirect evidence in support of the hypothesis that the securities issuance structure of the ESOP has a material effect on the trades made by management. Providing direct evidence of the association between the ESOP structure and insider trading activities is one purpose of this essay.

Karpoff and Lee examine the volume of insider trades transacted in the months surrounding the announcement of common stock, convertible debt, and straight debt issues. Because insider trading research and the asymmetric information hypothesis commonly assume that management is privy to critical information about the true value of the firm, an integration of these research areas, as they relate to the securities issuance process, is appropriate. For example, Myers and Majluf's (1984) asymmetric information hypothesis contends that a primary offering of common stock implies that management believes that their firm's equity is overvalued, and is the basis of the predicted negative market reaction when the issuance is announced (Asquith and Mullins, 1986, Masulis and Korwar, 1986, and Mikkelsen and Partch, 1986). Assuming that management is privy to the forthcoming announcement and is aware of the typical negative market reaction, and given the assumption that investors (including

insiders) are wealth-maximizing individuals, it is logical to conclude that management may use their inside information to preserve their personal wealth. Thus, it is hypothesized that a "preservation of wealth" objective leads management to sell their equity prior to the (negative) announcement. Karpoff and Lee support this argument with their finding of a significant level of net selling activity prior to the announcements of common stock issuances.

A similar insider trading/asymmetric information association holds for convertible debt offerings. The asymmetric information hypothesis contends that a convertible debt issuance announcement suggests to the market that management possesses private negative information about the underlying equity. The overall effect is a downward revaluation of the firm's equity by the market (Linn and Pinegar, 1985, and Mikkelsen and Partch, 1986). Once again, it is hypothesized that management will attempt to preserve their wealth by selling their personal equity prior to the convertible debt announcement. Karpoff and Lee support this contention with their finding of a significant level of insider equity sell-offs in the months preceding the announcement.

Finally, Lee, Mikkelsen, and Partch's (1989) analysis of insider trading activity around the announcement of a tender offer repurchase also supports the insider trading/asymmetric information connection. The asymmetric information hypothesis suggests that tender offer repurchases are motivated by management's belief that the stock is greatly undervalued. The inference typically results in a significant stock price increase on the day of the announcement (Dann, 1981, and Vermaelen, 1981). In relation to insider trading and the assumption of maximizing an investor's personal

wealth, a significant level of insider equity purchases prior to the announcement is predicted and observed by Lee, Mikkelsen, and Partch.

In sum, there is substantial support for the argument that managers take advantage of their inside information when buying and selling their personal equity holdings in the months surrounding a non-ESOP securities issuance announcement. Given the significance of the ESOP's securities issuance structure on shareholder wealth (essay one), and based on the non-ESOP insider trading research noted above, one purpose of essay three is to directly test for the association between the asymmetric information hypothesis and the level of insider trading around the ESOP announcement.

A second, closely related, purpose is to provide support for the contention that an insider's goal of wealth maximization affects the trading activities around a material (ESOP) announcement. The specific hypothesis associated with this last contention is that managers will have significant net purchases (sell-offs) prior to the announcement of ESOPs associated with significant positive (negative) prediction errors. Such findings are also consistent with John and Mishra (1990), who contend that insider trading and the firm's announcement are used as a joint signal to disseminate information to the market.

### **5.1.2. Takeover Attractiveness, Voting Power, and Insider Trading**

Essay three also examines the effects of a firm's managerial voting power and takeover attractiveness on the insider trades transacted in the immediate months surrounding an ESOP announcement. The connection between ESOPs and changes in managerial voting power surrounding the announcement was first presented by Chang

and Mayers (1992), but analyzed with less statistical rigor than the research conducted here. Chang and Mayers first attempt to explain the negative coefficient of the "ESOP size/insider ownership" interaction variable<sup>41</sup> attached to firms with prior insider ownership in excess of 40 percent. They argue that ESOPs announced by these firms are signals of a subsequent sell-off of insider-owned shares. The sell-off translates into an increase in agency costs caused by the reduced alignment of interests between management and the shareholders. Furthermore, even though managers of the "40+ %" firms are decreasing their personal (cash-flow) ownership, the overall level of managerial voting control (entrenchment) is unaffected because of the increase in management-aligned ESOP shares. Thus, a decrease in the alignment of interests without a lowering of entrenchment results in a decrease in firm value. A similar argument is presented by Mikkelsen and Partch (1993) in their analysis of the post-performance of ESOP firms.

It should also be noted that ESOPs described in this manner are quite similar to dual-class recapitalizations. In particular, Jarrell and Poulsen (1988) analyze the dual-class restructurings of 94 firms (1976-1986) in which shareholders were given the opportunity to receive a newly created, limited voting rights stock in exchange for their "high-vote" shares of equity. Even though the shareholders approved the restructurings, the sample of recapitalization announcements exhibited a significant negative market reaction.<sup>42</sup> The similarity with ESOPs pertains to the fact that the

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<sup>41</sup>Chang and Mayers' regression is described in section 4.1.2.

<sup>42</sup>Partch (1987) finds non-negative price reactions to the 44 recapitalization announcements made between 1962 and 1984.

managers are given the opportunity to increase their high vote/low-cash-flow shares and decrease their ownership of low vote/high-cash-flow equity. ESOPs and dual-class recapitalizations, therefore, allow management the opportunity to retain their voting control, yet reduce their cash-flow ownership. A final similarity is the finding by Jarrell and Poulsen that the negative prediction errors are larger for firms with a high level of insider ownership prior to the announcement. One important difference between the two events, however, is the fact that the high vote/low-cash-flow shares are costly to the insider (i.e., the shares must be purchased or exchanged for value), while ESOP shares effectively increase the insiders' voting power with no direct cost to the managers.

Returning to the Chang and Mayers "40+" contention, general support for their argument involves a pre- and post-ESOP comparison of insider ownership, where ownership is calculated as a percentage of total shares outstanding. For the "40+ percent" category of analyzed ESOPs (sample size = 13), an average decrease in insider ownership of 14.8 percent, and an average increase in ESOP ownership of 11.9 percent, is calculated by the authors. This result suggests that a sizable sell-off of insider shares has occurred. Given the mathematics of the analysis, and the presence of a few extreme percentages, the results are likely to be misleading, however. For example, a firm with a pre-announcement insider ownership (pre-IO) level of 50 percent that established a common stock ESOP of 30 percent<sup>43</sup> would experience a 12 percent drop in insider ownership without the sale of a single insider share. With

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<sup>43</sup>That is, the number of shares outstanding is increased by 30 percent.



respect to the "extreme percentages", four of the 13 firms experience a drop in insider ownership in excess of 30 percent, events that undoubtedly have a significant effect on the overall results.

The termination of a manager may also cause a large decrease in the level of insider ownership. As noted by Mikkelson and Partch, 20 of the 52 (38 percent) ESOP firms examined by the authors replaced their CEO within three years of the announcement. To be relevant to this argument, however, the termination must occur between Chang and Mayers' pre- and post-announcement dates, a plausible event given the fact that their "post" percentage data were gathered from the *second* proxy statement subsequent to the ESOP announcement. To improve on the generalities and potentially incorrect inferences of previous research, this essay performs a direct examination of the actual insider trading activities.

It should finally be noted that Chang and Mayers also analyze the relation between the percentage change in insider ownership (in addition to their 20-plus other explanatory variables) and the announcement's prediction error. For firms with a pre-IO level in excess of 40 percent, they find a weakly significant relationship between the percentage change in insider ownership and the prediction error. Their results suggest that the larger the decrease in insider ownership, the more negative the response to the announced ESOP. This, however, implicitly assumes that the market is aware of the magnitude of the change in insider ownership at the time of the ESOP announcement. Given the three-year period used to calculate the change in insider ownership, this statistical relationship may be spurious. In other words, if the insider sell-off occurs

subsequent to the ESOP announcement (i.e., it is an action unknown to the market at the time of the ESOP announcement), why should there be a relationship between the prediction error and the magnitude of the change in insider ownership?

To test the validity of this critical assumption, this essay examines the relation between the ESOP-related prediction error and the actual level of insider trading activity transacted *prior* to the announcement. In sum, essay three analyses the relationships between insider trading activity, voting power, and a firm's takeover attractiveness by directly examining the trading activities.

## **5.2. Hypotheses**

The first part of this essay three examines the interactions between the securities issuance structure of an ESOP and the insider trades transacted in the immediate months surrounding the announcement. Consistent with the non-ESOP findings of Lee, Mikkelsen, and Partch (1989), the first hypothesis of essay three is as follows:

12) For ESOPs structured with repurchased equity, significant insider purchases are predicted in the period preceding the announcement.

Based on the asymmetric information argument that the market will react positively to the simultaneous repurchase announcement, and given the belief that an insider's goal is to maximize his/her personal wealth, the hypothesis suggests that management will increase its personal ownership prior to the release of the positive information.

In contrast, because the revised asymmetric information hypothesis (section 3.1.2) predicts a significant negative market reaction to ESOPs structured with convertible preferred equity, the goal of wealth maximization implies the following:

13) Insiders will significantly increase the level of personal sales in the period prior to an announced ESOP structured with convertible preferred equity.

In general, the goal of wealth maximization would suggest that insiders will alter their trading patterns around all announcements (e.g., ESOPs) that have a significant effect on firm value. In particular:

14) Insiders will engage in a significant level of net purchases (sales) prior to the announcement of ESOPs associated with significant positive (negative) shareholder wealth effects.

By including the argument that managers of "attractive" firms will want to maintain or increase the level of managerial voting power, it is further argued that the preceding hypotheses only apply to firms that are unattractive for takeover. To be specific:

15) The effects predicted in hypotheses 13) and 14) are only significant for firms that are unattractive for takeover.

Finally, the revised asymmetric information hypothesis contends that ESOPs structured with previously unissued common stock will have a non-negative effect on shareholder wealth. Combined with the contention that managers are concerned with maximizing personal wealth, the following hypothesis is formed:

16) ESOPs structured with previously unissued common stock will have no effect on the trading strategies of insiders in the shares of their firm.

### **5.3. Data and Method of Analysis**

Essay three examines the trading activity of managers in the stock of their firm around the announcement of the establishment and expansion of an ESOP. The initial

sample of ESOP firms analyzed within is identical to the 319 ESOP firms examined in the first essay. Of these, the 65 announced outside the July 1986 - May 1992 period are excluded due to unavailability of insider trading data.

The Securities and Exchange Act of 1934 requires the timely filing of all trading activity by corporate officers, directors, and holders of more than ten percent of a given security (i.e., a blockholder). The trade must be filed before the tenth day of the following month and is documented in the SEC's *Ownership Reporting System (ORS)* data files, the source of this essay's data. In order to concentrate on the managers' (insiders') trading activities, only open market purchases and sales made by the firms' officers and directors are examined in essay three. Trades of outside blockholders and amended, inconsistent, or late filings are excluded from the sample.

In general terms, essay three compares the firms' average insider trading activities in the event-period (bounded by the 24 months surrounding the announcement)<sup>44</sup> to those transacted during the estimation-period (consisting of all months outside the 24-month event-period boundary). The means of three trading activity measures (defined in the following paragraph) are calculated for each event-window and estimation-period, and a two-sample difference-of-means test is used to examine the various hypotheses of abnormal insider trading activity around the ESOP announcement. For example, when analyzing ESOPs structured with convertible preferred stock, a finding that the

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<sup>44</sup>Based on methods similar to Boehmer (1991), essay three examines the average trading activity in the following event windows: (-12 months, 0), (-6 months, 0), and (0, +6 months), where 0 denotes the day of the ESOP announcement and months are measured relative to that day. Because the number of ESOP firms with trading activity in these three event periods may differ, the average estimation-period activity may also differ across event-window periods.

average number of net insider sales in the  $(-6, 0)$  event window is significantly larger than the average number of net sales in the estimation period is supportive of the revised asymmetric information hypothesis.

The three measures of trading activity calculated from the *ORS* data and used in this analysis are: 1) the net number of shares purchased; 2) the net dollar value of shares purchased; and 3) the proportion of trades in the period which are purchases. The third measure ranges from zero to one, with a mean in excess of .5 indicating a period of time in which the number of insider purchases exceeds the number of insider sales. The means of the first two measures range from negative to positive infinity, with negative values indicating a larger number of shares and dollar value of shares, respectively, sold than bought.

To test for significantly different means between the estimation- and event-period measures (i.e., testing for abnormal insider trading around the announcement), a binomial distribution is assumed for the third measure, and a continuous distribution for the first and second. Given the additional assumption that the estimation- and event-period measures are normally distributed, a standard t-test is employed to test the hypothesis that the means of the event- and estimation-period measures are equal. In order to avoid these distributional assumptions, a non-parametric test statistic is also calculated, the Wilcoxon rank-sum test statistic, to test the hypothesis that the estimation- and event-period data are drawn from the same population.

Three sets of tables are constructed to detail the results relevant to: 1) the asymmetric information hypotheses stated in the first essay; 2) the attractive/unattractive

arguments of essay two; and 3) the preservation (or enhancement) of personal wealth (essay three). The information in these tables also provides cursory evidence about the deterrent effects of the SEC insider trading penalties.

The first set of tables (Tables 26-31) analyzes the insider trading activities stratified by ESOP structure (as in essay one). The second set (Tables 32-37) examines the relationship between the trading activities around the ESOP announcement and the sign of the prediction error. And the third set (Tables 38-43) provides the results of insider trades stratified by takeover attractiveness.

In sum, essay three analyzes the ESOP firms' insider trading activities within the type/source/use and presence/absence of takeover frameworks previously described in essay one. In combination with the assumption that ESOPs allow managers to maintain voting control yet reduce their cash-flow ownership, the predicted results are as follows. ESOP announcements that typically produce a positive market reaction (e.g., ESOPs structured with repurchased equity) are associated with abnormal net purchasing activity prior to the ESOP announcement. Conversely, negative ESOP announcements (e.g., ESOP/convertible preferred issues) should be preceded by an abnormal level of insider sales. It is further hypothesized that the sell-off is not significant for firms that are attractive for takeover.

Essay three also examines the trading activity prior to an ESOP established in the presence of a takeover. Though ESOPs announced in the presence of takeover activity typically create a negative market reaction, it seems unlikely that a significant level of net insider sales are transacted around the announcement. The reduced sales are

predicted because management will want to preserve its percentage of "entrenchment" votes. This prediction is also consistent with the "attractive" hypothesis of essay two, which suggests that insider sell-offs are significantly smaller for attractive firms.

Finally, essay three analyzes the relation between the ESOP announcement's prediction error and the magnitude of the insider's net selling activity prior to the announcement. An inverse relationship is supportive of the "preservation of insider wealth" hypothesis and suggests that the SEC trading penalties are somewhat ineffective. For example, it is hypothesized that a significant level of sell-offs are found prior to ESOP announcements that experience a significant negative market reaction. This relationship is also consistent with John and Mishra (1990), who contend that the insider trading and firm announcement are jointly used by the market to infer information in a more efficient manner.

#### **5.4. Results**

Two separate methods are employed to produce the following results. Tables 29-31, 35-37, and 41-43 are created by examining the firms' individual insider trades as a whole. For example, the mean of all individual insider trades made in the  $(-6, 0)$  event-period, *regardless of firm*, is used in the difference-of-means testing procedures. In contrast, Tables 26-28, 32-34, and 38-40 are the result of first calculating the average value of each firm's insider trading activity, then calculating the mean of all the firms' averages. The purpose of the second method of analysis is to prevent the possibility that the results are dominated by a greater level of trading activity by managers of a small number of firms. Based on this latter contention, the following

Table 26  
Net Number of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)	(-6,0)	(0,+6)
Non-Takeover	-1207 -2071 .159 .044	-978 -2068 .091 .008	-750 -1977 .034 .002
Takeover	-372 -959 .552 .452	-68 -1001 .543 .295	-1410 -896 .750 .894
Non-Tkvr Repurch	-1375 -2497 .159 .021	-1152 -2497 .111 .005	-637 -2336 .005 .002
Non-Tkvr Non-Repurch	-751 -1173 .583 .656	-513 -1181 .376 .490	-1003 -1247 .854 .256
Non-Tkvr CS Repurch	-819 -3456 .023 .038	-1126 -3456 .063 .045	89 -3456 .005 .005
Non-Tkvr CS Non-Repurch	-921 -381 .495 .781	-627 -423 .799 .520	-1873 -509 .497 .263
Non-Tkvr CPS Repurch	-1438 -1301 .798 .628	-1384 -1301 .885 .999	-921 -1301 .449 .151
Non-Tkvr CPS Non-Repurch	-1290 -1371 .967 .798	-1469 -1371 .959 .396	-1740 -1371 .854 .798

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value. The second column is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

**Interpretation:** (first column, first row) During the 12-month period prior to the ESOP announcement, the mean number of shares *sold* by the manager (on a given trade) was 1,207. Compared to the average of 2,071 shares sold by insiders during the estimation period, there is a .159 (.044) probability that the means (medians) differ by chance, based on the difference-of-means t-test (Wilcoxon rank-sum test).



Table 27  
Net Dollar Value of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Non- Takeover	-41265 .118 .030	-65449	-43707 .281 .005	-65438	-29154 .019 .001	-64267
Takeover	-5327 .069 .245	-48395	19209 .198 .209	-47715	-109448 .381 .812	-42383
Non-Tkvr Repurch	-49806 .196 .032	-74893	-54775 .456 .007	-74893	-24474 .005 .002	-72620
Non-Tkvr Non-Repurch	-20541 .229 .352	-43968	-15000 .122 .296	-44397	-39714 .847 .144	-45527
Non-Tkvr CS Repurch	-33719 .099 .046	-96525	-46738 .227 .067	-96525	-13577 .024 .006	-96525
Non-Tkvr CS Non-Repurch	-14579 .832 .538	-17519	-7891 .389 .393	-19228	-49495 .489 .201	-20221
Non-Tkvr CPS Repurch	-66226 .908 .556	-63875	-66956 .892 .341	-63875	-56514 .759 .119	-63875
Non-Tkvr CPS Non-Repurch	-61853 .527 .798	-121026	-68053 .569 .999	-121026	-79348 .661 .798	-121026

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

Table 28  
Percentage of Purchases (Mean of the firms' percentages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Non- Takeover	.489 .957 .878	.492	.482 .883 .746	.489	.549 .221 .189	.487
Takeover	.539 .461 .426	.472	.544 .517 .514	.481	.451 .704 .699	.485
Non-Tkvr Repurch	.461 .553 .736	.430	.456 .652 .987	.430	.501 .254 .462	.432
Non-Tkvr Non-Repurch	.562 .463 .788	.622	.558 .509 .729	.613	.664 .473 .152	.605
Non-Tkvr CS Repurch	.431 .419 .534	.350	.385 .749 .784	.350	.596 .029 .076	.350
Non-Tkvr CS Non-Repurch	.613 .621 .855	.664	.617 .774 .929	.646	.750 .273 .054	.635
Non-Tkvr CPS Repurch	.367 .996 .516	.367	.389 .827 .664	.367	.416 .619 .977	.367
Non-Tkvr CPS Non-Repurch	.322 .381 .639	.463	.354 .499 .684	.466	.360 .552 .563	.463

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

Table 29

Net Number of Shares Purchased.

ESOP STRUCTURE	(-12,0)	(-6,0)	(0,+6)
Non- Takeover	-2145 -3223 .016 .057	-1517 -3217 .001 .018	-732 -2445 .000 .004
Takeover	-1240 -996 .552 .002	-827 -1025 .752 .756	4828 -834 .081 .009
Non-Tkvr Repurch	-2699 -3913 .041 .002	-1810 -3913 .001 .000	-856 -2861 .000 .031
Non-Tkvr Non-Repurch	-850 -1243 .328 .001	-899 -1248 .524 .001	-356 -1296 .050 .056
Non-Tkvr CS Repurch	-1882 -5724 .058 .001	-1680 -5724 .057 .000	-934 -5724 .002 .001
Non-Tkvr CS Non-Repurch	-1805 -592 .239 .079	-1834 -629 .451 .439	-524 -737 .793 .040
Non-Tkvr CPS Repurch	-1273 -1506 .387 .000	-1346 -1506 .627 .003	-1402 -1506 .788 .428
Non-Tkvr CPS Non-Repurch	-2583 -2970 .763 .963	-2886 -2970 .965 .989	-1442 -2970 .134 .158

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

Table 30  
Net Dollar Value of Shares Purchased.

ESOP STRUCTURE	(-12,0)	(-6,0)	(0,+6)
Non- Takeover	-74393 -108793 .009 .020	-66133 -108618 .004 .005	-45304 -99544 .000 .008
Takeover	-53370 -72140 .186 .002	-30760 -71292 .049 .849	-79086 -60623 .842 .004
Non-Tkvr Repurch	-96450 -133234 .037 .001	-87449 -133234 .023 .000	-50074 -121263 .000 .015
Non-Tkvr Non-Repurch	-22903 -38481 .073 .003	-21644 -38855 .091 .001	-30568 -39582 .476 .121
Non-Tkvr CS Repurch	-83230 -197571 .084 .001	-84989 -197571 .110 .000	-26342 -197571 .000 .001
Non-Tkvr CS Non-Repurch	-38258 -23559 .269 .219	-32393 -25156 .676 .432	-37634 -26557 .562 .536
Non-Tkvr CPS Repurch	-72265 -73199 .933 .001	-71944 -73199 .923 .019	-95733 -73199 .309 .504
Non-Tkvr CPS Non-Repurch	-118129 -141410 .701 .759	-137455 -141410 .967 .861	-71225 -141410 .171 .118

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

Table 31

## Percentage of Purchases.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Non- Takeover	.495 .943 .943	.496	.483 .551 .551	.496	.522 .557 .556	.509
Takeover	.311 .000 .000	.454	.463 .964 .963	.461	.562 .029 .030	.468
Non-Tkvr Repurch	.451 .089 .085	.419	.463 .061 .061	.419	.462 .335 .345	.437
Non-Tkvr Non-Repurch	.599 .001 .001	.717	.500 .001 .001	.454	.699 .869 .869	.705
Non-Tkvr CS Repurch	.363 .248 .249	.317	.396 .102 .102	.317	.539 .000 .000	.317
Non-Tkvr CS Non-Repurch	.521 .064 .064	.616	.523 .246 .246	.599	.677 .160 .161	.584
Non-Tkvr CPS Repurch	.522 .001 .001	.424	.534 .005 .005	.424	.419 .914 .914	.424
Non-Tkvr CPS Non-Repurch	.314 .879 .881	.328	.333 .962 .965	.328	.429 .315 .315	.328

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

CS = ESOPs structured with previously unissued common stock.

CPS = ESOPs structured with convertible preferred stock.

Tkvr = ESOPs announced in the presence of takeover activity.

Non-Tkvr = ESOPs announced in the absence of takeover activity.

Table 32

Positive/Negative Prediction Errors: Net Number of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	-723	-2941	-527	-2941	-698	-2941
	.078		.062		.033	
	.087		.025		.049	
Negative PEs	-1133	-2019	-1433	-2019	-1443	-1786
	.615		.764		.888	
	.640		.726		.661	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.

**Interpretation:** (first column, first row) During the 12-month period prior to the ESOP announcement, the average number of shares *sold* by the manager (on a given trade) was 723. Compared to the average of 2,941 shares sold by insiders during the estimation period, there is a .078 (.087) probability that the means (medians) differ by chance, based on the difference-of-means t-test (Wilcoxon rank-sum test).

Table 33

Positive/Negative Prediction Errors: Net Dollar Value of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	-46829	-66447	-41686	-66447	-20396	-66447
	.583		.505		.117	
	.262		.070		.118	
Negative PEs	-26493	-42541	-32324	-45241	-33021	-35569
	.501		.607		.948	
	.686		.941		.964	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.

Table 34

Positive/Negative Prediction Errors: Percentage of Purchases (Mean of the firms' percentages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	.440	.388	.456	.388	.567	.388
	.556		.463		.075	
	.798		.812		.166	
Negative PEs	.504	.541	.591	.541	.552	.545
	.771		.745		.880	
	.959		.475		.999	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.

Table 35

Positive/Negative Prediction Errors: Net Number of Shares Purchased.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	-2310	-4462	-2391	-4462	-1388	-4462
	.026		.086		.000	
	.024		.235		.013	
Negative PEs	-1439	-620	-389	-620	-694	44
	.292		.808		.404	
	.031		.936		.116	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.

Table 36  
Positive/Negative Prediction Errors: Net Dollar Value of Shares Purchased.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	-104799	-179774	-112540	-179774	-40357	-179774
	.014		.052		.000	
	.095		.448		.026	
Negative PEs	-32171	-21306	-16211	-21306	-24868	11663
	.409		.727		.102	
	.089		.782		.317	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.

Table 37  
Positive/Negative Prediction Errors: Percentage of Purchases.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Positive PEs	.409	.350	.356	.350	.454	.350
	.069		.882		.028	
	.069		.882		.028	
Negative PEs	.508	.613	.714	.613	.538	.619
	.151		.304		.339	
	.151		.303		.339	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Positive PE's = all ESOP firms that experienced a prediction error in excess of .03.

Negative PE's = all ESOP firms that experienced a prediction error below -.03.



Table 38

Attractive/Unattractive: Net Number of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)	(-6,0)	(0,+6)
Attractive	-1350 -2338 .218 .105	-1384 -2328 .471 .087	-1221 -2328 .181 .239
Unattractive	-2283 -2233 .975 .948	-1251 -2233 .464 .489	-1759 -1887 .945 .168

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

**Interpretation:** (first column, first row) During the 12-month period prior to the ESOP announcement, the average number of shares *sold* by the manager (on a given trade) was 1,350. Compared to the average of 2,338 shares sold by insiders during the estimation period, there is a .218 (.105) probability that the means (medians) differ by chance, based on the difference-of-means t-test (Wilcoxon rank-sum test).

Table 39

Attractive/Unattractive: Net Dollar Value of Shares Purchased (Mean of the firms' averages).

ESOP STRUCTURE	(-12,0)	(-6,0)	(0,+6)
Attractive	-41100 -80455 .096 .052	-46029 -80280 .467 .070	-50491 -80280 .157 .221
Unattractive	-45941 -49482 .880 .996	-30518 -49482 .354 .483	-42419 -44755 .995 .272

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Table 40

Attractive/Unattractive: Percentage of Purchases (Mean of the firms' percentages).

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Attractive	.497	.437	.502	.407	.477	.434
	.290		.299		.483	
	.364		.397		.917	
Unattractive	.446	.509	.475	.509	.564	.518
	.441		.690		.605	
	.384		.707		.431	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Table 41

Attractive/Unattractive: Net Number of Shares Purchased.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Attractive	-3247	-3385	-2522	-3234	-676	-3234
	.851		.363		.001	
	.090		.777		.010	
Unattractive	-1819	-3655	-1399	-3655	-780	-1582
	.029		.005		.075	
	.743		.974		.003	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Table 42  
Attractive/Unattractive: Net Dollar Value of Shares Purchased.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Attractive	-117809	-141632	-103940	-141042	-61491	-141042
	.001		.179		.000	
	.083		.346		.005	
Unattractive	-43173	-79127	-35569	-79127	-19159	-52214
	.000		.000		.002	
	.606		.921		.013	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

Table 43  
Attractive/Unattractive: Percentage of Purchases.

ESOP STRUCTURE	(-12,0)		(-6,0)		(0,+6)	
Attractive	.312	.371	.368	.371	.455	.371
	.003		.902		.005	
	.003		.902		.005	
Unattractive	.489	.536	.462	.536	.636	.598
	.059		.017		.346	
	.059		.019		.347	

Note: The three rows in the first column (within each box) are the event period's mean, t statistic p-value, and Wilcoxon rank-sum p-value.

The second column within each box is the estimation period's mean.

discussion of results will concentrate on Tables 26-28, 32-34, and 38-40. Furthermore, given the essay's focus on insider ownership (e.g., the net number of insider shares traded) and wealth maximization (e.g., the net dollar value of insider shares traded), the discussion will be further limited to Tables 26, 32, and 38 and Tables 27, 33, and 39, respectively.

In relation to an ESOP's structure and insider trades, the results of Tables 26 and 27 are consistent. Both tables show that non-takeover ESOPs, ESOPs structured with repurchased equity (in the absence of takeover activity), and common stock ESOPs structured with repurchased equity demonstrate a level of insider sales that is significantly lower than average in the twelve months before, and six months after, the announcement.<sup>45</sup> Given the fact that significant insider purchases are conspicuous to the scrutiny of SEC review (for insider trading compliance), a significant reduction in shares sold is a more rational and expected result for the analysis of insider trades around these subsets of ESOP announcements that typically elicit positive market reactions (essay one).

More important, however, is the finding (comparable to essay one's results) that ESOPs structured with repurchased equity have a significant effect on the overall results. That is, it appears that the significant "non-takeover" insider trading results are

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<sup>45</sup>For example, note the "Non-Tkvr/Repurch" non-parametric P-values of .021, .005, and .002 (Table 26) and .032, .007, and .002 (Table 26) for the (-12,0), (-6,0), and (0,+6) periods, respectively. These Table 26 results for the (-12,0) period are interpreted as follows: During the 12-month period prior to the ESOP announcement, the mean number of shares sold by the manager (on a given trade) was 1,375. Compared to the average of 2,497 shares sold by the insiders during the estimation period, there is a .149 (.021) probability that the means (medians) differ by chance, based on the difference-of-means t-test (Wilcoxon rank-sum test).

caused by the sample of ESOPs structured with repurchased equity. This is noted by comparing the significance of the reductions in insider sales for the non-takeover/non-repurchase and non-takeover/repurchase categories. Moreover, the "repurchase" effect is restricted to the category of ESOPs structured with previously unissued common stock. ESOPs structured with convertible preferred stock exhibit insignificant reductions in managerial sell-offs for both repurchase and non-repurchase samples.

In addition to supporting the first essay's results that ESOPs structured with repurchased equity have an overriding positive effect on the market, the results described above are consistent with the asymmetric information arguments (section 3.1.1) and the personal wealth maximization contentions (section 5.1.1). That is, the insiders' reduction in sell-offs prior to the ESOP/repurchased equity announcement is consistent with the asymmetric information argument that the managers believe the equity is underpriced. It is also consistent with the contention that management is maximizing personal wealth by reducing its level of equity sales prior to an announcement that typically enhances shareholder wealth.

In contrast, the insignificant "convertible preferred" findings (of Tables 26 and 27) do not support the hypothesis that an increase in insider sales is expected prior to the predicted significant negative effect on shareholder wealth. The insignificant results for the takeover sample do, however, support the contention that management will not significantly reduce their level of inside ownership even though a material drop in shareholder wealth is expected on the day of the ESOP announcement. This argument

is based on the notion that management will want to preserve their level of votes for entrenchment purposes.

In relation to the maximization of personal wealth arguments, the results of Tables 32 and 33 support the contention that the level of insider sales will decrease prior to the release of significant positive news. The "positive news" is proxied by ESOP announcements that have prediction errors in excess of 3 percent, and the Table 32 findings suggest that managers significantly decrease their level of shares sold around the announcement. Conversely, insider trading is insignificantly affected by ESOP announcements associated with predictions errors below -3 percent (the proxy for negative news). True support for the wealth maximization hypothesis would be a *significant* sell-off of shares prior to the negative announcement and price reaction.

Furthermore, support for the argument that managers are using their insider information to maximize shareholder wealth should actually be judged by the change in the dollar value of shares sold (Table 33), not the number of shares sold (Table 32). In this regard, the evidence is relatively weak. That is, the only support for the wealth maximization hypothesis is the (-6,0) period's significant (p-value of 0.07) reduction in the dollar value of insider sales prior to ESOPs experiencing a prediction error in excess of 3 percent (Table 33).

Support for the unattractive/attractive hypotheses is also weak. Table 39 provides slight evidence that managers of firms that are attractive for takeover will reduce their level of sales to preserve their entrenchment votes. The (-12,0) and (-6,0) non-parametric p-values of .052 and .070 (respectively) weakly suggest that managers are

reducing the dollar value of personal sales prior to ESOP announcements made by firms that are attractive for takeover. Because "entrenchment" pertains to the level of votes (i.e., number of shares owned), not the dollar value of personal equity, the results of Table 38 are a more accurate measure of the attractive/unattractive effects on shareholder wealth. In this case, the .105 and .087 p-values (for the (-12,0) and (-6,0) periods) further weaken the support for the argument that managers of attractive firms will reduce their level of insider sales around the ESOP announcement. (A superior test of this hypothesis would involve the analysis of insider trading activity in the months surrounding the date when management first realized that their firm was attractive for takeover, an extremely difficult time to determine.)

### **5.5. Conclusion**

One purpose of this essay is to extend the "ESOP structure" findings of the first essay into an insider trading framework. This extension includes the asymmetric information hypothesis' key assumption that managers are privy to information pertinent to the true value of the firm. The market attempts to infer this private information from the decisions announced by management, including the securities issuance structure of the ESOP. The final step is the revaluation of the firm after the private information is inferred from the announcement.

By incorporating the assumption that insiders trade to maximize their personal wealth, this essay contends that the managers' trading activities in the stock of their firm are affected by those ESOP structures that significantly affect firm value. In particular, to enhance personal wealth, it is hypothesized that managers will increase

the level of shares purchased prior to an announcement that elicits a significant positive market response. As described in section 5.4, given the scrutiny of the SEC, a more likely reaction (than an increase in the level of shares purchased) is a reduction in the level of shares sold. Consistent with this contention is the finding that insiders significantly reduce the level of personal sales prior to the announcement of ESOPs structured with repurchased equity, a structure shown to have a positive effect on market value (essay one).

Essay three also predicts a larger insider sell-off of shares prior to those ESOP announcements that typically decrease the value of the firm. This prediction is not supported by the results. There is an insignificant effect on insider trades in the period surrounding the announcement of ESOPs structured with convertible preferred equity. Though a similar insignificant effect on insider trading is found for ESOPs announced in the presence of takeover activity, an increase in insider sales is *not* expected (despite the hypothesized significant and negative market reaction; essay one) because management prefers to retain their shares for entrenchment purposes. Though similar predictions are made for the insider trading activities of firms that are attractive for takeover, the findings weakly support the hypothesized attractive/unattractive effects on insider trading.



## Chapter 6

### Summary

#### 6.1. Conclusion

The popularity of employee stock ownership plans in the mid-to-late 1980s is frequently attributed to an ESOP's tax advantage and anti-takeover effectiveness, as discussed in sections 2.2 and 2.4. Though the frequency of ESOP creations has recently dropped with the downturn in takeover activity and the reduction in ESOP tax benefits, ESOPs remain a viable employee benefit plan available to management. Furthermore, given the continuously changing environments affecting the applicable tax laws and market for corporate control, ESOPs may, once again, become a popular employee benefit plan. Thus, a further examination of ESOPs is warranted to understand the past, and assist in the future, ESOP-related managerial decisions.

Regardless of the benefit of an increased understanding of ESOPs, this examination adds to the finance literature in several ways. First, additional support is provided for the asymmetric information hypothesis as it relates to the securities issuance structure of the ESOP. Consistent with the asymmetric information argument is the significant positive (weakly significant and negative) effect on shareholder wealth associated with the announcement of an ESOP structured with repurchased equity (convertible preferred equity). In support of a revised asymmetric information hypothesis, which contends that the actions of management are guided by its concern for the welfare of the firm's shareholders *and* employees, is the finding that ESOPs structured with convertible preferred equity (and no simultaneous repurchase announcement) have a larger negative

effect on firm value than ESOPs structured with previously unissued common stock. This finding is exactly opposite to the arguments and results of previous securities issuance research.

The most notable finding of the ESOP/securities issuance analysis, however, is the overriding positive effect attached to ESOPs structured with repurchased equity. The results suggest that the significant positive effects associated with most ESOP structures are solely caused by the presence of simultaneous repurchase announcement. For example, the findings of essay one show that ESOPs structured with common stock and a simultaneous repurchased equity announcement have a significant and positive effect on shareholder wealth. In contrast, common stock ESOPs structured without repurchased equity experience insignificant wealth effects. Comparable repurchase/non-repurchase results are noted for "non-takeover" ESOPs structured with convertible preferred equity, leveraged ESOPs, and the overall sample of ESOPs.

Similarly, the presence of repurchased equity appears to have a significant effect on the insider trading activities of the firm's managers around the announcement of an ESOP (essay three). In general, no unusual changes in the managers' trading patterns are noted except for the sample of firms announcing an ESOP structured with repurchased equity. To be specific, a significant reduction in the level of insider sales is found for firms with an announced ESOP structured with repurchased equity. Similar structures announced without a simultaneous repurchase announcement have no significant effect on the managers' trading patterns. In sum, the overall results suggest

that the structure of the ESOP (in particular, ESOPs structured with repurchased equity) has a significant effect on firm value and insider trading activity.

In addition to the findings that suggest the importance of the ESOP structure chosen by management, this analysis contributes to the literature with its acknowledgement of a firm's takeover "attractiveness" and supermajority provisions, and their effects on insider ownership and the market for corporate control. Previous insider ownership research implicitly assumes that all firms with an identical percentage of managerial ownership have an equal probability of being taken over (i.e., they are equally "attractive"), regardless of differences in features such as firm-size, leverage, and growth. Furthermore, prior empirical analyses infer that firms with identical insider ownership have equal protection against takeover attempts despite the fact that the firms' takeover veto powers may differ by the state of incorporation, and corporate bylaw, supermajority provisions.

By incorporating these effects into the ESOP/insider ownership analyses, essay two provides insight into an ESOP's effect on managerial voting power and its relation with the change in firm value. In addition, it is shown that these effects differ for ESOP firms that are attractive and unattractive for takeover. In particular, the findings suggest that the market reacts negatively to ESOP announcements that increase the level of managerial voting power to a level of entrenchment when the firm has characteristics that make it "attractive for takeover." Conversely, no significant market reaction is noted for unattractive firms that have a similar increase in managerial voting power.

Thus, the outcome of accounting for the firms' supermajority provisions and takeover attractiveness is the finding that suggests that the market differentiates between

firms that are attractive and unattractive for takeover. In relation to corporate control research, the intuitive appeal, and significant findings, of essay two suggest that the calculation of a firm's managerial voting power should adjust for the differences in supermajority provisions. Essay two also supports the argument that the analyzed firms should be partitioned by their level of takeover attractiveness to prevent dilutive results.

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## Vita

David A. DeBoeuf received Bachelor of Science degrees in accounting and business administration from Illinois State University in 1985. He worked as a public accountant for Norbert Zabinski & Company, CPAs, through 1986, and as an internal auditor for Allstate Insurance Company until December, 1988. During these years, he successfully completed the Certified Public Accountant, Certified Internal Auditor, and Associate in Insurance Accounting and Finance exams. After completing an MBA at Illinois State University in 1989, he worked for General Binding Corporation as a senior auditor until July, 1991. In August, 1991, he entered the doctoral program in Business Administration (Finance) at Louisiana State University. He graduated in the summer of 1995 and accepted a position of Assistant Professor of Finance at Western Illinois University in Macomb, IL, effective August 21, 1995.

## DOCTORAL EXAMINATION AND DISSERTATION REPORT

**Candidate:** David A. DeBoeuf

**Major Field:** Business Administration (Finance)

**Title of Dissertation:** The Analysis of Employee Stock Ownership Plans within Asymmetric Information, Insider Ownership, and Insider Trading Frameworks

**Approved:**

*William N. Lane*

Major Professor and Chairman

*John W. Garbin*

Dean of the Graduate School

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**Date of Examination:**

July 12, 1995