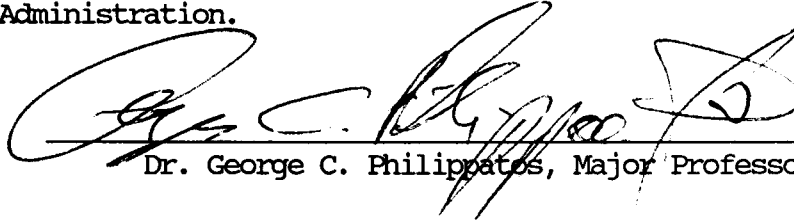
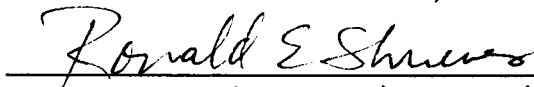


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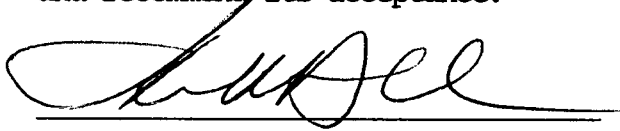


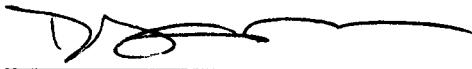
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Accepted for the Council:



Associate Vice Chancelor

Employee Stock Ownership Plans and Corporate Structure

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

by Roger Wilburn Clark

December, 1992

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DEDICATION

This dissertation is dedicated to my wife
Eleanor Clark
and my daughter
Jennifer Clark
who have stood by me to make my dream possible.

Acknowledgments

I would like to thank my major professors, Dr. Ronald E. Shrieves and Dr. George C. Philippatos for their guidance and patience over the past few years. I would also like to thank the other committee members, Dr. Douglass Izard, Dr. Harold A. Black and Dr. Phillip Daves for their comments and assistance over the past few years.

Abstract

Employee Stock Ownership Plans (ESOPs) have been around for many decades. They have enjoyed an increase in popularity with the 1974 Tax Act. Financial economists have questioned the rationale behind ESOPs, due to their effect on risk sharing among employees and owners. An employee always has an employment risk, or risk of losing his or her position with the company. With an ESOP the question arises as to why employees, with their very employment at risk in their company, would seek to further increase this risk by purchasing stock in the same company. This research attempts to answer this question by testing three hypotheses. The first is that under informational asymmetry the company is using employees to signal the market of a positive change in its future prospects and gain equity capital. The second is that ESOPs are being used as an instrument, or "devil's pact" between management and labor, to gain access to excess perquisite consumption for management and employees. The third is that under the concept of employee-management incentive alignment the company may be using the ESOP to help increase productivity. Under all three scenarios the terms of the ESOP may be structured to adequately compensate employees for the adverse risk effects entailed in ESOPs.

This study finds that ESOPs that were established to help stop a hostile takeover of the company lent support to the devil's pact hypothesis. ESOPs that were formed in which the employees conceded certain benefits or wages lent support to both the market signaling and the devil's pact hypothesis. "Pure" type ESOPs in which no wage concessions were given and which were not founded for anti-takeover purposes lent support to the market signaling and the employee-management incentive alignment hypothesis.

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I Introduction

Employee Stock Ownership Plans (ESOPs) have grown significantly in popularity over the past few years, with total assets increasing from \$18.6 billion in 1983 to \$90 billion in 1989. This tremendous growth has raised two questions. The first issue centers around risk aversion on the part of the employee. By the very definition of employment an employee faces reduction or termination of employment if a company does poorly. Shareholders of a company also face a reduction in the value of their stock if the company does poorly. Under these circumstances the question arises as to why an employee, with his very employment at risk in the company, would want to buy stock in the same company. The second is why a company would wish to sell stock to company employees. Answers to these questions may be found in the investigation of three financial theories.

The concept of informational asymmetry within the market has given rise to several theories, commonly classified as "market signaling" theories. Myers and Majluf [28] note that in a market where company management has better information than the public or shareholders on the true value of the company stocks, equity will only be issued when the shares are overpriced in the market. The public will then interpret this issuance as a signal of overpriced shares and the stock price will drop. In testing this theory, studies by Finnerty [16], Givoly and Palmer [17] and Keown and Pinkerton [22] have noted

that when stock is purchased by corporate insiders who presumably know the true state of the company the value of the company stock will increase.

Should the company employees be considered "insiders" in this sense the company may have found a way to raise equity capital without sending an adverse signal to the market. The issuance of the ESOP equity would then involve no adverse changes to the market returns. Company employees would have daily access to the inner workings of the physical plant and any rumors about the future growth prospects of the company. They could be in an excellent position to evaluate morale of both fellow employees and management along with having some knowledge of the company's growth prospects.

The researchers into insider trading have also noted that when there is insider trading without a subsequent positive public announcement as to the company the stock will return to its original level. For the ESOP issuance to be a valid positive signal to the market and a valid measure of employee expectations there should also be other information or events of a positive nature that will support this positive signal. All positive events should ultimately be reflected in the firm's financial statements.

The second theory behind an ESOP issuance is in the area of agency costs. Jensen and Meckling [20] have assumed that management is composed of utility maximizers. As long as management is combined with ownership, the amount of perqui-

sites of office management consumes to maximize personal utility is an immaterial personal preference. The owner/manager "pays" for these perquisites in the form of a reduced return on his investment. When ownership is separated from management it is in management's interests to consume as many perquisites at shareholder expense as possible. Shareholders will be left with the bare minimum of company profits that will keep them from voting management out of office. Fama [14] has stated that the financial market will stop this expropriation as the shareholders will eventually oust any management that attempts to take excess perquisites. These theories are not necessarily in opposition. A combination of these theories would result in the theory that management would consume "perks" to the point they would be able to defeat a shareholder challenge to their rule. The probability of defeating a challenge would be increased in proportion to their control of voting shares. If a "devil's pact" could be struck in which employees give control of their stock to management in return for a share of excess perquisite consumption, management could enjoy greater perquisites than without the pact. Employees would receive increases in wages or employment security as their share of the bargain.

One theory on the value of ESOPs comes from the debates on the legislation that allowed tax incentives for the establishment of the ESOPs. In the hearings and floor debate on the bill producing the federal tax incentives for ESOPs

several references were made to the concept that an employee's ownership in his company would bring his interests in the company's success in line with that of the owner's interests. Much has been written on the "incentive alignment" of management and shareholders through stock option plans. The ESOP would be attempting an employee-management incentive alignment of all employees (including management) with the shareholders. Given their employment risk, the ESOP employees under this theory should be expected to achieve higher productivity using the same physical plant as before the ESOP along with reduction in perk consumption.

A. Overview of ESOPs

In 1974 Congress passed enabling legislation that provided tax incentives for employers setting up Employee Stock Ownership Plans (ESOPs) for their employees. Up to 25% of each employee's salary may be contributed to the ESOP, but in practice the contribution almost never exceeds 10% of the employee's salary. The company cannot discriminate with regard to the employee's position within the company. At least half the ESOP assets must be invested in the company's own stock, although in practice this investment in the company's stock usually approaches 100% [34]. The market value of the shares outstanding determines the valuation of the company stock to be placed in the ESOP. In general, the company instituting the ESOP may value the ESOP stock as of

the date that the plan is instituted or as an average of the stock price for the preceding three months [7]. The employee is not taxed on the company contributions to the plan until the assets are sold but cannot sell his or her ESOP assets during the period of his or her employment with the company. At age 55, at the employee's option, ESOP assets may be diversified to the point where his portion of the plan holds as little as 25% of company stock.

A review of the "practical" literature pertaining to ESOPs reveals that ESOPs are generally instituted by the company's management in publicly traded firms and by the company ownership in closely held firms. In the former case a number of reasons for instituting ESOPs have been given with the most common being to increase productivity (employee-management incentive alignment), as an anti-takeover defense of the firm, and as an aid to management in a leveraged buyout of the firm. The reason given for an ESOP in the latter case is for the owners to liquidate or diversify their holdings. The literature has generally not mentioned shareholder or employee opposition to the ESOP except in some few cases where shareholders opposed the issuance of an ESOP upon the announcement of a hostile tender offer.

II ESOPs and Corporate Control

A number of issues have been raised regarding ESOPs and the risk of an employee purchasing stock in the company of his employment. This chapter discusses three of these issues and the variables used to test them. The first section of this chapter considers the added risk of the stock in the employees' portfolio. The second section explains the use of the ESOP as a signal to the market of undervalued stock. The third section considers the possible use of the ESOP as a tool of management and employees to expropriate wealth from the company shareholders. The fourth section considers possible ESOP related incentives for changing the companies' market risk after the adoption of the ESOP.

A. Risk and human capital

Assuming a competitive market for labor, the individual employee's compensation will be the prevailing market wage. This will be:

$$\text{Wage} = \text{Cash Wages} + \text{Benefits}$$

Employment with a company involves risk. This can be salary risk, which is the risk of increases or decreases in compensation based on such factors as inflation, performance within the company, or the fortunes of the company. The employee also has employment risk that involves the cost of cessation of wages and finding new employment should the

worker be fired or laid off. This risk also varies with the fortunes of the company. Hirshleifer [19] has noted that individuals will hold differing portfolios of assets depending upon the risk of their nonmarketable assets such as human capital. Mayers [25] has further stated that the price of the asset will be determined by the market independent of any individual's nonmarketable assets. The price any individual investor is willing to pay for the assets in the portfolio will be based on the covariance of the assets with both the market and his nonmarketable assets, such as human capital.

The traditional Capital Asset Pricing Model (CAPM) states that the expected return on an asset in a portfolio will be:

$$E(R_j) = R_f + \{[E(R_m) - R_f] / \sigma_m^2\} * \text{Cov}(R_j, R_m)$$

where

$E(R_j)$ = the expected end of period random variable yield on the j th asset

R_f = the risk free rate

$E(R_m) - R_f$ = risk premium on the market portfolio

The CAPM contemplates a setting in which there are no nonmarketable assets and in which shareholders will be unconstrained in their portfolio selection. Mayers [25] [10] has derived the following form of the CAPM, adding nonmarketable assets with risky dollar rates of return, R_h :

$$E(R_j) = \alpha + \lambda [V_m \text{Cov}(R_j, R_m) + \text{Cov}(R_j, R_h)]$$

Where

α = intercept, or risk free rate

V_m = Current market value of all marketable assets

$\lambda = [E(R_m) - R_f] / [V_m \sigma_m^2 + \text{Cov}(R_m, R_h)]$ = the market price per unit of risk where the risk contains not only the market variance, σ_m^2 , but also the covariance between the rate of return on marketable assets (R_m) and the aggregate dollar return on nonmarketable assets (R_h).

In this model the price and amount of risk depend on the properties of each asset, the portfolio of all aggregated nonmarketable assets and the portfolio of all marketable assets. Individuals will hold different portfolios because their nonmarketable assets will have different amounts of risk. Marketable assets will be used to adjust the individual's portfolio to his individual risk preferences. The individual purchases these assets with his remaining wages after the purchase of consumables. The variance of the employee's portfolio (V_i) will be:

$$V_i = \sum_{j=1}^n \sum_{k=1}^n X_{ij} X_{ik} \sigma_{j_k} + \sigma^2 (R_i^h) + 2 \sum_{j=1}^n X_{ij} \text{COV}(R_i^h, R_j)$$

Where

X_{ij} = Fraction of total amount of firm j held by investor i .

R_j = Random total dollar cash flow paid to owner of firm j at the end of the period.

R_i^h = The investor's one period random dollar return on nonmarketable assets.

$$\sigma_{jk} = \text{Var} (R_j) \text{ for } j=k, \text{Cov} (R_j, R_k) \text{ for } j \neq k$$

With the amount of disposable income after consumption now reduced by the ESOP, the employee will have less opportunity to diversify his or her nonmarketable asset risk through purchases of other assets. Employees as stockholders under the ESOP will therefore differ from non-employee stockholders in two important aspects. The first is the risk the employee places on the company stock. The second is in the possible distribution of company returns. The size of the ESOP amount (approximately 10% of the employees' wages) will make it difficult for an employee at the lower end of the wage scale to diversify away this risk. The assets held in the ESOP are not consumable for several years and not allocable to purchasing other assets more suitable to the employee's risk preferences. He will therefore not value the assets in the ESOP in the same manner as non-employee shareholders. The employee, then, will attach some premium to the company specific risk. Risk is thought of as being positive and negative. In a strong form efficient market with all investors knowing all relevant information on the company, the stock will be priced correctly. A company employee will not be willing to pay full value for the stock in his company given the company specific risk.

In a semi-strong efficient market some "insiders" may know more about the state of the company than the general public. Should the employees be considered insiders their

risk premium for stock in their own company may differ from the premium given to it by the market. Knowledge of favorable company prospects may indicate underpriced shares while knowledge of unfavorable prospects would indicate overpriced shares.

B. Informational asymmetry and market signaling

The ESOP usually involves the issuance of new or company treasury stock (although it also can be from stock repurchases). Myers and Majluf [28] note that with informational asymmetry and management knowing the true value of shares while the public does not, stock will generally be issued when it is overpriced in the market. We would therefore expect the market to interpret issuance as a signal of overpriced stock and see a consequent drop in stock prices. The ESOPs are not, however, sold to the public but to the firm's employees who may have "insider information" about the state of the company and the risk of their investment. Should a semi-strong market efficiency model be assumed there will be some persons who will have greater information concerning the company than the trading public. If this is favorable information, then risk should largely be alleviated. For these "insiders" the stock would be underpriced at the market. For them purchasing shares at the market price would be purchasing at a discount to actual value. The acceptance of the ESOP by the company employees may then result in a positive signal to the market.

This signaling effect would be a variant of the "insider trading" theory. Empirical studies by Finnerty [16], Givoly and Palmer [17] and Keown and Pinkerton [22] have noted that when there is heavy buying of a stock by company insiders the stock price tends to rise thereafter. Much of the rise in price occurred as a result of trading by outsiders before the announcement of any major news event affecting the price of the stock. The implication here is that much of the trading is due to the outside investors' belief in the superior knowledge possessed by the insiders as to the state of the company. Many of the same factors that could influence an outside investor watching insider trading may also be present in an ESOP announcement. An employee's acceptance of an ESOP without additional compensation from the employer for the added risk of purchasing stock in his company of employment would be a reflection of the employee's confidence in the future growth of the company. Given the employees' risk aversion we would expect this to be a positive market signal. The price should rise to the extent the market interprets this as such.

With leveraged ESOPs there is also a review of the financial status of the firm by a financial institution. This also should be a positive signal to the market. The costs of this "certification" by the financial institution would be considerably less than the issuance of debt as bonds or a regular borrowing from a bank. There are no underwriting

costs and the financial institution now receives a deduction of 50% of the interest income from ESOP loans. This is passed on in part by the financial institution to the company guaranteeing the loan [9].

Testing of this issue will involve testing of market returns of the individual companies against a matched pair data set of non-ESOP companies. Any valid market signal should also be reflected on the companies' financial statements. There should then be some positive changes in the companies' sales, employment and gross profits.

C. Agency problems and ESOPs

Financial literature has historically confined agency problems found in separation of ownership from control of a firm to the problems of shareholders versus management. Little or no attention has been given to salaried employees on the lower tiers of the corporate hierarchy.

1. Higher level employees

Jensen and Meckling [20] begin their hypothesis with the entrepreneur as manager and sole risk bearer within the firm. They note that as management is gradually separated from ownership the managers will have greater incentive to consume perquisites on the job, as shareholders now bear part of these costs in terms of reduced profits. They propose such monitors as independent boards of directors to oversee management performance in a manner similar to the way management observes

its lower level employees. Jensen and Meckling assert a convergence of interest hypothesis. As management's percentage of ownership in the firm increases their interests will become more aligned with "outside" shareholders.

Fama [14] introduces the idea that the capital markets will act as monitors of perk consumption by management. The company stock's value will be lowered by the market if management consumes so much as to reduce significantly company profits. The clear implication here is that when the stock price sinks low enough someone will buy a majority of the shares, throw out the old management and replace them with a new and more profit-oriented management. Management will be further disciplined by managerial labor markets both within and without the company to see that no excess perks are consumed. The implications of Fama's hypothesis are exactly the opposite of Jensen and Meckling's. With efficient capital and labor markets, strict separation of ownership from control would not be a problem.

If management had an ownership interest in the firm in the form of stock, the capital market monitoring of the company would be impaired and a successful tender offer would be more difficult to initiate. Harris and Raviv [18] investigated this issue and concluded that because the probability of a takeover attempt decreased as management ownership increased, management ownership usually exerted a negative pull on company returns while the takeover premium in a successful

tender offer would increase.

Morck, Schleifer and Vishny [27] examined Jensen and Meckling's convergence of interests hypothesis that larger percentages of ownership by management are associated with increased market value of the firm. The study measured Tobin's Q (firm market value/replacement cost of property, plant, equipment and inventory) relative to the management's percentage of ownership in the firm.¹ Overall there was a strong positive relationship to the Q (i.e., firm market value was higher in relationship to the replacement cost of property, plant and equipment and inventory) when management ownership was at the 0-5% level, a moderate negative relationship to the Q with ownership at the 5-25% level and a very slight positive relationship with management ownership above 25%.

2. Lower level employees

Few researchers have investigated the role of agency costs as it relates to lower level employees. Demsetz [11] notes that lower level employees on fixed wages have a greater

¹ The numerator for the Q was the firm's market value which was estimated as the sum of the actual market value of the common stock plus the estimated values of the preferred stock and debt taken from the Compustat tapes. The market value of the preferred stock was found by dividing the preferred stock dividend figure by Moody's preferred dividend rate for median risk companies. The market value of the firm debt was its short term liabilities net of its short term assets plus estimates of long term debt from NBER's R&D master file. The denominator of Q was the replacement cost of the firm's plant and inventories taken from Griliche's R&D master file.

incentive to underperform as they receive no additional compensation for superior performance. His remedy was increased monitoring by management.

Bhagat, Brickley and Lease [3] note that the decision of top managers will more likely affect stock prices than lower level employee decisions or activities. Stock ownership will presumably motivate key employees more than subordinate personnel. When lower level employees are shareholders a "cheap rider" problem exists. Each employee will hope the firm makes higher profits to increase the stock price but has limited incentive to participate personally because of the small marginal effect the individual employee contributes to share value. Their study tested the market response to (non ESOP) stock purchase plans targeted to top management and lower level employees. The results of that study showed a significantly positive market reaction to stock purchase plans targeted to top management. There was only a slight positive market reaction to stock purchase plans directed to lower level employees. The implications here are that equity ownership is more likely to control agency problems between top management and shareholders. When lower level employees hold stock this conflict will not be abated.

Taking this a step further, in an ESOP we would have employees holding collectively a significant percentage of outstanding shares, and each having only a marginal incentive toward superior performance. Management, wishing to entrench

itself from the takeover market, may be tempted to make a "devils pact" with employees. In exchange for votes the management could agree to perks for employees. For example, reduced layoffs or reductions in unneeded personnel or pay cuts. From this we would expect a significant negative market reaction to ESOP plans that are founded for anti-takeover purposes.

To the extent Jensen and Meckling's convergence of interest hypothesis applies, we should see positive reactions to ESOP announcements. This positive reaction should be more pronounced in pure ESOPs and wage concession ESOPs in which employees give up a portion of their fixed salaries to obtain the ESOP stock.

Finally, it should be noted that much of the preceding assumes that employees of companies announcing ESOPs are being compensated at the competitive wage scale for the industry. Should employees be compensated on a higher scale than the industry norm the company will be incurring excess agency costs. Fama [14] has noted that this may cause the stock price to dip and someone to buy the company and reduce these costs (wages). In this case the ESOP may be an instrument for the employees to protect excess wages. This issue will be tested by examination of the company returns around the announcement date along with changes in wages and the volatility of employment.

D. ESOPs and systematic risk

It is an axiom of the CAPM that no company diversification per se will be rewarded by the market (Levy and Sarnat [24]). Stockholders can individually replicate any diversification actions the company may undertake and at less cost. Several researchers (Amihud and Lev [2], Donaldson and Lorsch [12], Morck, Schleifer and Vishny [26]) have shown that management may wish to diversify the company to diversify away their human capital risk or to improve job security despite evidence showing that diversification efforts by the company produce negative returns. Here the employee shareholders may be better aligned with management than nonemployee shareholders.

This reasoning also may extend to new projects taken on by the company. The nonemployee shareholders will only lose their investment in the stock if the company goes bankrupt. The employee shareholders stand to lose their employment and their investment in the event of a company bankruptcy. We would then expect them to be more conservative than nonemployee shareholders in considering new company projects.

If the company substitutes the ESOP plan for a defined benefit plan we also may see a corresponding drop in the CAPM beta. Black [4] has argued that a decrease in the contributions to a defined benefit plan will in effect lower the company's leverage as it lowers its fixed obligations. When the company's obligations are based on the value of the wages

at any time, the amount contributed will vary with company employment. This should decrease in times of recession, when money is more expensive.

For either or both of the above reasons the adoption of an ESOP may be a signal to the market of a decline in the systematic risk of the stock.

Testing of this issue will be centered on the company returns using the market model over a period of months before and after the announcement of the ESOP. Changes in the ESOP companies intercept and market risk will be compared to the data set of matched non-ESOP companies.

D. Summary

This chapter has outlined three theories, all of them related to the concept of the increased risk to an employee purchasing stock in the company of his employment. The first of these is market signaling, or the use of company employees as "insiders" to signal the market of positive information about the company. This will be tested using company returns, changes in employment, sales and gross profits. The second is the "devils pact" or agency costs issue. Here changes in volatility of employment, wages and company returns will be tested. The final issue is changes in company market risk. Here changes in volatility of company market returns will be tested.

III Background and History of ESOPs

In 1974 Congress passed the Employment Retirement and Security Act (ERISA). This act gave several tax incentives to employers providing ESOPs to their employees, provided they met certain requirements under the act. For purposes of this paper the most important of these were that the ESOP must not discriminate with regard to the employees' position within the company. The ESOP usually receives no more than 10% of each employees' salary per employee. At least half the ESOP assets must be invested in the firm's own stock.

If the company meets these requirements it may set up an Employee Stock Ownership Trust (ESOT), appoint a trustee, and have the ESOT borrow money from a financial institution. The ESOT uses this money to purchase company shares either on the open market or from the company itself. The company then makes contributions to the trust to repay the loan with the entire amount of the contributions being deductible. This effectively makes both principal and interest on the loan deductible as opposed to the ordinary case in which only interest is deductible. The purpose of this provision was to provide a new form of corporate financing and simplify the transfer of part of the ownership of the company to the employees. While the deductibility of principal on the loan was initially thought to be one of the greatest innovations of the ESOP it was shown quite early that this could be done out-

side the ESOP framework by setting up a trust, giving the employees a 10% raise, and requiring them to use the money to buy the stock of the company [33].

ESOPs that have borrowed money to purchase stock and have this form of repayment are called leveraged ESOPs. ESOPs that meet the requirements for leveragability but are financed by direct employer contributions of cash or stock are called leveragable ESOPs. Those without leveraging provisions are called nonleveraged ESOPs.

The Tax Reduction Act of 1975 introduced the TRASOP (Tax Reduction Act Stock Ownership Plan). This plan allowed employers to take a direct tax credit for contributions to the ESOP up to 1% of their investment in property, plant and equipment and .5% for matching employee contributions to the plan besides the benefits mentioned above. In 1983 Congress introduced the Payroll Stock Ownership Plan (PAYSOP). This changed the credit to .5% of covered payroll instead of property, plant and equipment.

Under the 1984 Deficit Reduction Act (DEFRA) dividends paid directly in cash to the ESOP employees were fully deductible to the employer. This made it theoretically possible for the ESOP firm to be completely free of the Federal Corporate Tax system. Further, DEFRA allowed the financial institutions lending to ESOPs a 50% exclusion of the interest received on these loans.

The Tax Reform Act of 1986 repealed tax credit ESOPs

effective the last of the year and allowed the exclusion of dividends paid to ESOTs used to pay down the ESOT loan.

A. The ESOP contrasted with defined benefit pension plans

The ESOP is a defined contribution plan as opposed to a defined benefit plan. In a defined benefit plan such as a pension plan the firm has a fixed commitment to pay a certain amount to the beneficiaries at a date in the future and needs to fund the plan with present contributions. Should the pension fund do well the need for funding will gradually diminish. If the fund's fortunes follow the economy we should see relatively little need for funding in good times when money is relatively cheap for the company and increased pension costs when times are bad. Black [4] has argued that this will increase the leverage of the company and thus its volatility. Another problem with pension plans is that often they become overfunded, which increases the companies' vulnerability to a takeover attempt. Pontiff [29] has noted that companies with overfunded pensions have a greater than normal incidence of pension plan terminations by the new management on a takeover than ones that have not been taken over. These excess asset reversions to the company account for a significant percentage of the bid premium of the acquiring company. The very nature of the ESOP assets precludes the consideration of this as an asset in a takeover. Scholes and Wolfson (1990) [34] have proposed in their paper

on ESOPs that Employee Pension Plans will be dominant over ESOP plans. The only reason for the employer adopting the ESOP would be as a takeover defense.

An ESOP, in contrast, in which the employer contributes cash to buy stock will have increased costs when times are "good" with high labor expenses and less cost in "bad" times when labor expenses are less. Any leveraging done in the ESOP context would imply that the company has purchased assets with a positive net present value with the proceeds of the loan.

B. Accounting for ESOPS on the balance sheet

The American Institute of Certified Public Accountants (AICPA) has issued a statement of position (SOP) 76-3 that dictates a fairly conservative handling of ESOPs on the balance sheet. When the ESOT borrows money guaranteed by the company the debt is shown as a liability of the corporation. Shareholders' equity will be decreased by the amount of the debt, which goes into a deferred compensation account. As the ESOT pays off the loan cash is debited and long term debt is credited. Retained earnings is credited and deferred compensation is debited. This has the effect of having the ESOP not show up in any way as an asset on the balance sheet while at the same time showing the full effects of the ESOP on the financial statements.

C. The Growth of ESOPs

In 1986 the Government Accounting Office [38] reported that 746 ESOPs were established between 1916 and 1974. After the passage of ERISA in 1974, 285 ESOPs were established that year. The number of ESOPs climbed steadily until 1975 when 723 TRASOPs were established in that year alone. The initial ESOPs were mainly established in small, closely held corporations (overall, 76% of the ESOPs were in private corporations as of 1983). Most tax credit ESOPs were in publicly traded corporations while most leveraged or leveragable ESOPs were in private corporations. The publicly held tax credit ESOPs held most of the ESOP assets (83%) owing to their relative size but had the least amount per employee (\$2952) as compared with leveraged or leveragable plans in non-public firms (\$5000-\$8600) [38]. As of 1983 total assets in all types of ESOPs was \$18.6 billion. The amount of assets in all types of ESOPs as of the end of 1990 is estimated to be \$60 billion [32]. Despite the termination of the TRASOPs in 1976 the number and amount of ESOPs has continued to grow. The type of ESOP also appears to be shifting. According to the National Center for Employee Ownership [9] the number of ESOPs in publicly traded companies continues to grow with the emphasis now on leveraged ESOPs. Leveraged ESOPs grew from less than \$1.2 billion in 1986 to \$5.5 billion in 1987, \$6.5 billion in 1988 and an estimated \$24 billion for the year 1989. Of the companies tested in this paper almost all are leveraged ESOPs.

IV Literature Review

ESOPs are only one of several types of employee incentive plans that involve stock ownership of the employer's firm by the employees. The main distinctions of ESOPs are their tax features, the nondiscrimination features and the requirement that the employees cannot sell their stock during their period of employment.

Bhagat, Brickley and Lease (1985) [3] examined market reactions to stock purchase plans and IRC Sec. 423 plans. The Sec. 423 plans are similar to ESOPs in that they cannot discriminate against lower level employees but do not have tax advantages. The stock purchase plans were mainly for highly paid officers and employees of the company.

The authors noted two reasons for instituting the stock purchase plan that could potentially affect the market returns. One frequently stated reason for the stock purchase plan is the incentive effect it will have on employees. Employees who are responsible for the company's success now have an opportunity to acquire a proprietary interest in the company and thus create a greater interest in and concern for the welfare of the company. Another effect would be a signaling effect that the stock purchase plan is the result of an evaluation by management that the firm has an improved outlook. The reasons for the Sec. 423 plan affecting the market were essentially the same but not as strong as the lower level employees would not have as much individual

responsibility in running the company.

The study analyzes the two-day announcement period returns of 19 firms that started employee stock purchase plans and 69 firms that started § 423 plans. The announcement date was the date of the proxy mailing and the day thereafter. These returns were compared to 75 nonoverlapping returns for days -170 through -21. This comparison showed an abnormal return of 1.81% ($t = 3.43$) compared to .19% for the comparison period for the complete sample. This was consistent with both the incentive alignment theory and the signaling effect. When the researchers broke the plans out into categories favoring high ranking company officers (the stock purchase plans) and plans primarily favoring lower grade employees (the § 423 plans) they found that plans favoring company officers had a significant positive abnormal return while plans aimed at regular employees had an insignificant negative abnormal return. The authors noted that this may show evidence of a "free rider" problem that could exist among lower level employees. While they may collectively hope to increase stock prices each may have a limited incentive to participate personally because of their small marginal effect on share values as individuals.

The study further tested for evidence of any abnormal performance that would be consistent with the signaling effect hypothesis. This testing involved determining the significance of the cumulative abnormal return over a seven and a

half month period preceding the stock ownership plan for 19 of the firms. None was found. This was more in line with the hypothesis that the plans were adopted for the incentive effect on the employees. One criticism of this study is that the authors used the proxy mailing date as the announcement date of the plan. It could have been that the company announced the plan in a press release several days or weeks previously.

Chang (1990) [8] conducted a similar survey of firms with ESOPs. He used announcement dates found in the Dow Jones News retrieval service. He further divided the ESOPs into four types, leveraged buyouts, plans where employees gave wage concessions, pure employee benefit plans and ESOPs used as a takeover defense. He found significant abnormal returns of 11.5% ($t = 19.1$), 4.2% ($t = 3.9$), 2.4% ($t = 7.1$), and -2.34% ($t = -4.06$) respectively, for the four ESOP types.

The General Accounting Office (1987) [37] also conducted a study of the relationship between profitability and productivity and the presence of an ESOP in a firm. Using data from the I.R.S. the GAO compared the companies' performance in the two years before the ESOP plan was formed, the year of formation of the ESOP and the three year period afterward. Profitability was measured by the after tax return on assets adjusted by subtracting the interest rate tax shield. The sample consisted of 414 firms establishing ESOPs for the years 1976-1979. The study used analysis of covariance (ANCOVA) and

multivariate analysis of variance (MANOVA) techniques to study profitability and MANOVA techniques to study productivity. They found that profitability improved significantly only in the second year after formation of the ESOP by using ANCOVA techniques. They found no evidence of an improvement in profitability using MANOVA. No evidence of an improvement in productivity was found. The study also used a written survey mailed to the firms to further test improvements in productivity. The survey had an 80% response rate. Here they found significant increases in productivity the higher the degree of employee participation in decision making in the firm.

Bruner and Brownlee (1990) [7] have conducted a case study of the use of an ESOP in the Polaroid company as an anti-takeover defense. Here they found that shareholders were made better off by using the ESOP when accompanied by wage concessions by the employees and a stock buyback program. The wage concessions were apparently made possible by the employees' fear of losing their jobs on the entry of new management.

One factor controlling the perk consumption of employees has been the possibility of a takeover if the perk consumption drives down the stock price. As the percent of stock owned by the employees rises the probability of a successful tender offer diminishes. Employees may therefore consume a higher level of perks than non-employee shareholders would wish.

V Data and Methodology

A. Data

The data set of companies announcing an ESOP plan comes from the list of companies announcing a new ESOP plan or an addition to an existing plan on the Dow Jones News Wire during the years 1974-1989. This is an on-line news service that generally announces news stories the day before they appear in the Wall Street Journal. The percentage of company ownership by the ESOP was taken from the news story or calculated from the dollar amount of the ESOP plan divided by the market value of the shares outstanding. The data were further limited by the criterion that the companies' number of employees must be listed on the Compustat tapes for the years before and after the ESOP announcement (the number of employees is not a required item to be stated in the company year-end reports but is generally given by the companies). The reason for this limitation was that employment and changes in employment were major variables of interest in several tests.

The Wall Street Journal and other news reports were consulted to classify each ESOP by type. Several differing reasons for adoption of ESOPs have been noted. This study uses the classifications used in Chang's study of ESOPs and market returns [6]. The ESOPs were classified into three groups:

1. Anti-takeover ESOPs, where the stated reason for the

ESOP was to defend against takeovers, or the stock was "in play" before the ESOP announcement. The Wall Street Journal was consulted for a period of six months before the ESOP announcement. A company was classified as issuing the ESOP for purposes of stopping a possible takeover if there were articles in the Journal speculating on a takeover, rumors of a possible takeover, a large outside shareholder purchasing a large block of the stock or the announcement of a hostile tender offer within the preceding six months.

2. Wage concession ESOPs, where the employees give up certain compensation benefits for the ESOP. The announcement of the ESOP and the articles immediately before and after the ESOP announcement were read to ascertain if any wages or benefits were given up by the employees in exchange for the ESOP. In general, the concessions consisted of the termination of a defined benefit plan and the substitution of the ESOP. In several of the wage concession companies an ESOP was substituted for a pension plan.

3. Pure ESOPs, where the ESOP plan was established with no apparent relinquishment of other employee benefits.

The announcement date of the ESOP, the percent of the company to be owned by the ESOP and any unusual or confounding events for six months before and after the announcement (such as selloffs, spinoffs, etc.) were then recorded. The final set

of ESOP companies consisted of 116 companies. The breakdown of companies by type is shown in Table 1.

ESOP Type: ²	Number of ESOP Companies
Pure	67
Wage concession	19
Anti-takeover	30
Total	116

Table 1 ESOP categories tested.

Daily returns and outstanding volume and price data were taken from the Center for Research in Security Prices (CRSP) tapes.

B. Methodology

The characteristics of companies issuing ESOPs and the effects of the ESOPs on the companies and their employees were studied using comparisons of the ESOP companies and matched non-ESOP companies. Both levels of and changes in characteristics for ESOP and non-ESOP companies were compared using data from the company income statements and balance sheets as well as the company market returns.

1. Formation of portfolios

In testing stock returns a potential problem exists as to

²See methodology for definition of ESOP types

the proper choice of the benchmark portfolio. Roll (1978) has noted the sensitivity of stock returns to the benchmark portfolio. Previous studies have shown certain systematic factors at work in company returns not accounted for in the market model. Specifically, Keim [15] has noted a firm size effect in the market in which small firms tend to produce high excess returns given their market risk levels.

This proposal addresses these problems by using the matched pair portfolios with matches based on industry, asset size (book), and sales, in addition to the value weighted CRSP index. The matched pair measurement should compensate for any small firm effect by matching ESOP company returns with returns from non ESOP companies of approximately equal size.

In forming the matched pair portfolio each ESOP company was matched as nearly as possible by the SIC code and by sales (book), and total assets (book). Generally, the criteria for the matched pairs were that they fall within plus or minus 40% total assets and sales. Matching by ratios such as debt to total assets was also considered but rejected because of a diminished sample population and the possibility of sampling bias³.

These samples were then matched with the CRSP and Compustat

³ A preliminary examination of the matches using ratios cut the number of possible matches in half with many companies receiving no matches in the data set. There is also the possibility of a sample bias introduced by using ratios as many of the ESOPs are leveraged ESOPs which in itself will affect the company ratios.

tapes and the daily CRSP stock returns and needed Compustat data were examined. The companies were then classified according to ESOP type and comparisons made with the matched pairs⁴.

This paper tests three theories of motivations for formation of ESOPs. The three categories of ESOPs tested and the most probable theory motivating their formation are presented in table 2.

	DEVIL'S PACT	MARKET SIGNAL- ING	EMPLOYEE-MAN- AGEMENT INTER- EST ALIGNMENT
PURE	POSSIBLE	PROBABLE	POSSIBLE
WAGE CONCES- SION	UNLIKELY	POSSIBLE	PROBABLE
ANTI- TAKEOVER	PROBABLE	UNLIKELY	UNLIKELY

Table 2 ESOP categories and theories of formation.

2. Testing data for normality

Tests were performed to ascertain the reliability of the various parametric tests to be performed. When the tests detected non-normal data various non-parametric tests were

⁴Another method of matching would be matching the ESOP company with a company that has experienced similar growth in the variables tested during the period preceeding the ESOP announcement. This was not done for reasons of data limitation and the nature of the theories tested in this paper. In many cases the number of possible matches based on SIC code and assets was extremely limited. Also, the theories tested in this paper, such as market signaling and to a lesser extent, the devil's pact, do not state the ESOP is a cause of changes in the company but instead the result of changes already taking place in the company.

performed in addition to the parametric tests.

The company returns from the CRSP tapes were first tested for normality by examination of the mean, median, skewness and kurtosis. Testing for normality was conducted for the individual ESOP stock returns and all matched pair companies.

3. Testing differences between ESOP and non-ESOP companies

One objective of this study is to determine if there are any fundamental differences between the ESOP companies and their matched non-ESOP counterparts in the period before and after the ESOP announcement. In testing the differences between the ESOP sample and the matched non-ESOP companies the assumption of independence fails by the very definition of the two groups. Therefore, a paired-difference T test was performed using data on employment, sales, wages, and gross profit from the Compustat tapes.

For each company the annual data for each of the four years preceding the announcement of the ESOP was collected. The following variable was then calculated for the comparison of ESOP and non-ESOP firms:

$$(X_{ti}^E - X_{ti}^M) = \Delta X_{ti} \quad (2)$$

Where

X_{ti}^E = The variable of interest for company i , announcing the ESOP at time t . The variables of interest in this paper are either levels of or annual changes in employment (Emp), wages (Wage), sales (sales) and cost of

goods sold (COGS).

X_{ti}^M = The variable of interest for the matched non-ESOP company, i , at time t .

$i = 1, \dots, n$ indexes the number of ESOP and matched non-ESOP companies in the sample; $n=116$.

$t = -4, \dots, -1$ = years relative to the ESOP announcement.

In addition to testing the absolute level of differences in variables this study will also test the annual percentage changes in the variables of interest by use of the following equation:

$$(X_{ti}^E/X_{(t-1)i}^E) - (X_{ti}^M/X_{(t-1)i}^M) = gX_{ti} \quad (3)$$

For each category of ESOPs, the four annual observations were pooled over the companies in that category, and T-tests were performed on the means of the variable for the periods before and after the ESOP announcements. Therefore, the test of whether there was a difference between ESOP and non-ESOP companies before the ESOP can be formally stated as:

$$H_0 : gX = 0, \text{ where } gX = (1/nt) (\sum gX_{ti})$$

This hypothesis was tested for each of the three ESOP categories. This same variable was computed for the three year period after the ESOP announcement (depending on data availability). Most of the ESOPs in the data set were formed since 1988. The lack of data for the fourth year caused the limitation of testing to the three year period after the ESOP announcement. Because the data on the Compustat tapes

generally reflected the variables at the end of the year, the announcement year was taken as the first reporting date after the announcement of the ESOP, appropriately adjusted for fiscal year end.

4. Testing Changes in Wages

The objective of these tests is to find the changes in wage expense for the company with the ESOP as compared to the matched non-ESOP company. In performing this test one problem is that there is no comprehensive data base for wage expenses per se for the companies. The disclosure of wage expenses for employees is not mandated by generally accepted accounting principles and is strictly voluntary for the companies on their annual reports. Wage expenses are found in less than half of the companies on the Compustat tapes. The area in which employment data is very spotty is the industrial sector (SIC codes 2000 - 3000) where wages are often placed in Cost of Goods Sold. A proxy for wages has been developed using cost of goods sold (COGS), sales, and data from the census bureau giving the breakdown of labor and supplies in COGS by four-digit SIC code.

In constructing this proxy for wages the following assumptions have been made:

1. Goods sold are homogeneous within the particular industry or SIC code with their price being determined by the market.
2. The breakdown between wages and materials in COGS will

be approximately the same for both the ESOP company and the matched pair in the year before the formation of the ESOP. This breakdown can be approximated by the industry average for that SIC code.

3. There is a proportional relationship between materials and such items as shipping charges, maintenance and repairs, heat, light and power that are also in COGS. This would also be in accordance with the AICPA professional standard AC §1026.21 in which it is stated that certain costs such as machine hours etc. that can attach directly to goods sold in the accounting period should be placed in COGS.

4. Taxes, such as payroll taxes, which are included in COGS should be considered as a part of wage expense.

5. Factor costs are the same throughout the industry.

6. Cost of goods sold consists of wages and materials.

7. Materials in cost of goods sold will vary directly with the quantity of goods sold.

8. The cost of materials in COGS will vary directly with changes in the price of the items sold for the industry.

Therefore, for any company, A, at time t the breakdown of COGS will be:

$$(1) \text{COGS}_{At} = \text{Wage Expense}_{At} + \text{Materials}_{At} = W_{At} + M_{At}$$

Sales for company A at time t will be:

$$(2) \text{Sales}_{At} = \text{Price}_{It} * \text{Quantity sold}_{At} = P_{It} * Q_{At}$$

where Price_{It} = the price of the item sold throughout

the industry.

t = the year of the sales

To find wages and materials for time t:

$$(3) \quad W_{At} = \alpha(\text{COGS}_{At})$$

and

$$(4) \quad M_{At} = (1-\alpha)(\text{COGS}_{At})$$

where

α = the percentage of COGS attributed to wage expense by the Census Bureau.

$$(5) \quad M_{At+1} = M_{At} * (Q_{At+1}/Q_{At}) * (P_{It+1}/P_{It}) \\ = (1-\alpha) \text{COGS}_{At} * (Q_{At+1}/Q_{At}) * (P_{It+1}/P_{It})$$

Therefore, to find wages at time t+1 changes in sales will be used as a proxy for changes in quantity sold:

$$(6) \quad W_{At+1} = \text{COGS}_{At+1} - \text{COGS}_{At} (1-\alpha) (\text{Sales}_{At+1}/\text{Sales}_{At})$$

This should show changes in wages and capture any increase from period t to period t+1.

C. Variables of interest

Before any tests were conducted relating to the hypotheses in this paper the data was tested for normality. This data was, in general, highly skewed with kurtosis. This tends to negate the assumption of a normal distribution. While it would have been possible to throw out "outliers" to make a normal distribution the possibility remains that in doing this valuable information on the nature of companies adopting ESOPs may be lost. Therefore the nonparametric Wilcoxon sign rank

and rank sum tests were performed on the data along with the T test. The sign rank test takes as its basis the $X_{ti}^E - X_{ti}^M$ difference score. In this paper the X_{ti}^E variable is the variable of interest for the ESOP company (growth in employment, growth in wages, etc.) while the X_{ti}^M is the same variable for the corresponding matched non-ESOP company. The difference-score absolute magnitudes are then ranked in order of increasing absolute magnitude. These magnitudes are then replaced by the ranks (R_i), with the algebraic sign (S_i) of the difference score transferred to the ranks[6]. The test statistic then calculated is

$$H_t = \sum S_i R_i$$

Should there be no difference between the ESOP companies and their matched non-ESOP counterparts the test statistic, H_t , will fall around the middle of the null randomized distribution and $\text{Probability}(S_t \text{ is } +) = \text{Probability}(S_t \text{ is } -) = .5$. Should there be differences between the ESOP and non-ESOP companies of a consistent direction then H_t would be expected to fall in an appropriately extreme portion of the distribution.

The Wilcoxon rank sum test is a two sample test for identical populations. Here the observations for each population are ranked in increasing order of magnitude in a pooled sample. If there is no difference between the populations, X_{ti}^E and X_{ti}^M , with R_i being the rank of sample X_{ti}^E in size among the $n+m$ pooled observations the test statistic is

$$H_n = \Sigma R_i$$

Should there be a difference between the two populations the test statistic should fall at an appropriate end of the distribution.

1. Testing employment changes

Changes in company employment can be an indicator of several different things. A rise in employment may indicate company growth. A fall in employment may indicate cost cutting measures undertaken by management. Should the hypotheses concerning signaling and agency costs discussed previously in this paper be correct, the companies instituting ESOPs should have employment changes that would vary with the type of ESOP being tested. This paper examines the employment changes of a sample of ESOPs versus matched non-ESOP companies that are categorized by type of ESOP (pure, wage concession or anti-takeover).

One hypothesis tested in this paper is that employees are seeking greater employment security in exchange for purchasing stock in their company of employment. Under the "devil's pact" hypothesis the employees would see a greater employment stability or less employment volatility than in the matched non-ESOP companies. This would be more likely to be found in the anti-takeover ESOP companies than the pure or wage concession ESOP companies. Under the informational asymmetry or market signaling hypothesis the growth in employment should rise as the company begins expansion. If it is assumed that

companies pursue a "last hired first fired" policy toward employees, the employees would have the added security of another tier of workers under them. This growth in employment should be expected in pure and to a lesser extent in wage concession ESOPs. The employee-management incentive alignment theory would not necessarily predict any change in employment. Under this theory gains in profits could come from increased efficiency in the present production process. For both the pure and wage concession ESOP companies the formal null hypothesis is:

$$H_0: gEmp_{ti} \leq 0$$

While the alternative hypothesis will be:

$$H_a: gEmp_{ti} > 0$$

The theories do not necessarily apply in the case of anti-takeover ESOP companies. While it is true that the main reason for this ESOP type is for management and employees to protect perquisites such as high salaries or excess employment there is also the confounding factor of an outside force (the bidding company) acting as an incentive for the ESOP company to trim any "excess fat" such as wages higher than the market or a surplus of employees.

T-tests were computed for the changes in employment growth for the years before and after the ESOP announcement in the manner shown in equation 2.

2. Testing differences in wage levels and wage growth

The examination of employee compensation will take on two forms. The first will be comparison of differences in the absolute wage levels of employees between the ESOP companies and the matched pair, which will be referred to as comparison of wage differences. In comparison of wage differences for any company the following model should apply:

Nominal Compensation = Wages + Benefits.

Paired comparison T-tests of the following were conducted:

$$\text{NominalComp}_{Ei} / \text{Emp}_{Ei} - \text{NominalComp}_{Mi} / \text{Emp}_{Mi} = \Delta \text{Wage}_{ti} \quad (4)$$

The second part of this analysis will be an inquiry into the percentage changes in wages from year to year, also referred to as a comparison of wage changes or wage growth. Here the variable of interest will be computed in the same manner as described above in the methodology section, B.3.

a. Wage levels and employee bargaining power

Much of the practitioner literature on the subject of ESOPs mentions that the plans are often instituted in companies with non-union employees. This suggests that the bargaining power of employees of ESOP companies may be weaker in negotiating with management than employees of other companies. Should this occur we would expect to find a disparity in compensation between ESOP and non-ESOP companies before the introduction of the ESOP. This may be tested by an

examination of the wages per employee for each of the ESOP companies against their matched non-ESOP counterparts for the four years before the ESOP is formed. The null hypothesis will be that the wages of employees of companies adopting ESOPs are at least as high as those of employees of companies not adopting ESOPs.

$$H_0: \Delta \text{Wage}_{ti} \geq 0$$

vs.

$$H_a: \Delta \text{Wage}_{ti} < 0^5$$

Should the wage level of the ESOP companies be lower than the matched non-ESOP companies there would be evidence for the proposition that the employees of ESOP firms possess inferior bargaining power when compared to employees of the matched non-ESOP companies.

b. Wage levels and agency costs

A competing hypothesis under the agency theory of ESOPs is that the wage level for ESOP companies would be expected to be higher than the matched non-ESOP companies before the ESOP announcement. Here employees would be accepting the ESOP as a method of defending their higher salaries. This difference should be most pronounced in the anti-takeover type ESOPs. Wage levels may also be higher in wage concession type ESOPs if it is assumed that the employees are paid the competitive wages for the industry after the wage concession. This theory

⁵ See testing changes in wage levels and wage growth for further tests on this variable.

may be examined in the same manner as above with

$$H_0: \Delta \text{Wage}_{ti} \leq 0$$

vs.

$$H_a: \Delta \text{Wage}_{ti} > 0$$

c. Wage growth

The change in or significance of wage growth should be dependent upon the company wage levels in the period before the announcement of the ESOP. As previously stated, higher wage levels for the ESOP companies when compared to the matched non ESOP companies would be evidence for the theory that the ESOP was being formed to protect excess employee wages (the "devil's pact"). Should this be the case, no significant wage growth would be evidence that the ESOP had its intended effect of protecting excess wages. The formal null hypothesis in this case will be:

$$H_0: g\text{Wages} < 0$$

While the alternative hypothesis will be:

$$H_a: g\text{Wages} \geq 0$$

If there is no difference in wage levels for the ESOP companies before the ESOP announcement or the wage levels of the ESOP companies are less than the matched non ESOP companies, growth in wages may be expected to vary depending upon the category of ESOP. In the period after the ESOP announcement the pure ESOP companies may have a growth in compensation to the extent they are not being compensated in the form of

increased employment security or their perception of purchasing undervalued stock. In other words, if there is no significant growth in sales, employment or market value of the stock we would expect a growth in wages under the agency theory of ESOPs. The growth in wages in anti-takeover type ESOP companies would be indeterminant. While it is true that this type of ESOP would seem to be for the protection of excess compensation the company also has the confounding problem of an outside force trying to take over the company. This factor may force down the wage growth. Wage concession ESOP companies should have growth fall to the extent the ESOP is not a substitute for the compensation conceded plus normal growth in wages.

4. Testing changes in Sales and Gross Profit

In their paper on insider trading, Givoly and Palmer [17] noted that if the insider's purchase of their own stock in their own company was to be a valid signal some other event should occur subsequent to the trading to confirm the signal. For purposes of this study of ESOPs it is assumed that whatever the individual event is for each company it should translate into a positive change in sales for the company. For this test T-tests of the sales growth of the ESOP companies versus the matched non-ESOP counterparts were conducted in the same manner as described previously. The variable tested was $gSales_{ti}$. The formal null hypothesis in this case will be:

$$H_0: gSales_{ti} = 0$$

For the pure ESOPs under the alternative hypothesis there should be sales growth thereafter. Wage concession ESOPs would have questionable signaling effect. Here the main concern of the employees may be the avoidance of a company layoff and the ensuing costs of finding other employment. There should also be little change in sales for the anti-takeover ESOPs for the same reason.

The question of whether agency costs has an effect on growth of company profits was examined by examining gross profits, here defined as sales-COGS. Should agency costs dominate the signaling effect, gross profits would decrease. Should the signaling effect dominate, the growth of gross profits would increase.

5. Testing company returns

An analysis of returns around the announcement date of the ESOP was conducted. The parameters of the market model were estimated over the one hundred and fifty day interval [-170,-21]. The excess return for each company was calculated by the regression

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + e_{it}$$

Where

R_{it} = the company return for company i at time t

R_{ft} = The risk free rate at time t . Here the risk free rate was the interest rate calculated on treasury bills closest to 30 days until maturity.

R_{mt} = The market return at time t

α_i = The intercept

β_i = The company's systematic risk

$t = -170 \dots -21$

$E(e_{it}) = 0$

These parameters were then used to compute the abnormal returns for each company in the following manner:

$$ar_{it} = \sum_{t=-1..1} R_{it} - \alpha_i - \beta_i (R_{mt} - R_{ft})$$

The announcement effect was measured by the three-day prediction error from day -1 to day 1. Here day 0 is the day the ESOP announcement appeared on the Dow Jones News Wire. The time of the announcement's appearance on the wire service has also been recorded. The inclusion of the day previous to the ESOP announcement is included to control for any information "leakage" around the announcement event. The matched pair portfolio of stocks were then be used as a basis for comparison of the abnormal returns for the ESOP stocks during this event time. Similar studies in which the companies of interest were classified by the same SIC code have used a benchmark portfolio of all companies in that SIC code found on the CRSP tapes (excluding the companies of interest)[13]. The benchmark portfolio used here is in the spirit of these studies, but a matched pair portfolio was used because of the wide range of companies and industrial classifications within the sample. This should test for differences in returns between the control group and the ESOP companies by using a

benchmark portfolio that will be subject to the same risk factors as the ESOP companies. The Wilcoxon rank sum test was used to test for differences between the control period returns and announcement period returns and differences between control group returns and ESOP group returns.

The expected results of the event studies will vary depending upon the type of ESOP formed. Under the informational asymmetry or market signaling hypothesis there should be a positive market reaction to the ESOP announcement as this should be a signal of impending company growth. This reaction would be most likely expected in the pure ESOP companies. This may be also expected to a lesser extent in the wage concession ESOP companies. While it is possible that a wage concession ESOP company could use the ESOP announcement as a signal of impending growth, the market may interpret this as a signal that the company is in financial trouble. The management-employee incentive alignment theories would predict the same reactions for the same reasons. The "devil's pact" theory would predict negative abnormal returns for the ESOP companies. This would be most expected around the anti-takeover ESOP announcements. To the extent the market interprets this ESOP as a barrier to the normal market forces that regulate agency costs negative abnormal return would be expected.

6. Measures of changes in systematic risk.

Several of the theories in this paper such as market signaling, the "devil's pact" and employee-management incentive alignment have implications for long term changes within the company. With market signaling and the employee-management incentive alignment hypotheses there should be increased returns and long term company growth over the matched non-ESOP companies while with the "devil's pact" there should be lower returns due to higher agency costs. Should there be a systematic relationship between the ESOP formation and the parameters of the return generating model there could be a measurable change in these parameters with respect to the parameters of the matched non-ESOP companies. In testing these hypotheses the Chow test using a variation of the market model was utilized. The model estimated was:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + (\Delta\alpha)_i Z_{it} + (\Delta\beta)_i Z_{it} (R_{mt} - R_{ft}) + e_{it} \quad (5)$$

$Z_{it} = 1$ if $t > t_0$ Where t_0 is the announcement date of the ESOP

$$Z_{it} = 0 \text{ otherwise}$$

$\Delta\beta_i$ = Change in Beta after the ESOP announcement

$\Delta\alpha_i$ = Change in Alpha after the ESOP announcement

Formally, the null hypothesis for these tests is that there is no change in the systematic risk of the companies adopting ESOP plans, or:

$$H_0: \Delta\beta_i = 0$$

and

$$H_0: \Delta\alpha_j = 0$$

The test was run for each company using monthly return data for the periods of up to four years before and after the announcement of the ESOP for a total of up to 97 months of data per company (depending upon data availability). Under the employee-management incentive alignment theory there may be more diversification within the ESOP companies after the plan announcement to help lower the company's systematic risk. If this is correct there should be a decline in the company's beta.

As previously stated, one way for the employee shareholders to receive greater compensation for their increased risk exposure would be for the companies to earn excess profits. If this is the case the α should rise after the ESOP announcement if these excess returns are sustained over a long period of time.

A rise in the α of a single factor model may also indicate that the model has been mis-specified. Under the Arbitrage Pricing Theory (APT) the pricing model may be a multi-factor model[35]. Should another factor be assumed in pricing the stock the model would be:

$$R_{jt} = \alpha_j + \beta_{1j}r_{1t} + \beta_{2j}r_{2t} + e_{jt} \quad (6)$$

Where r_{1t} and r_{2t} are orthogonal.

Should this be the true model a comparison of the $\Delta\alpha$ of the ESOP company and the matched non-ESOP company may not

reveal a true intercept effect but instead a change in the volatility ($\Delta\beta_{2j}$) or the level ($\Delta E(r_2)$) of the omitted factor with respect to the matched non-ESOP company.

The number of incidents when the α and the β changed and the changes were significantly different from zero will be reported. In addition, an overall test of the change in the intercept and the slope will be run against the matched pair data set using the Wilcoxon rank sum test. Here the null hypothesis will be:

$$H_0: \Delta\alpha_{ie} = \Delta\alpha_{im} \quad \text{vs.} \quad H_a: \Delta\alpha_{ie} > \Delta\alpha_{im}$$

and

$$H_0: \Delta\beta_{ie} = \Delta\beta_{im} \quad \text{vs.} \quad H_a: \Delta\beta_{ie} < \Delta\beta_{im}$$

Where

e = The ESOP companies

m = the matched non ESOP companies

One problem with Chow testing is the fact that researchers must be able to pinpoint when there will be a change in the variable tested. The assumption in the above test is that the α and β will change after the introduction of the ESOP. The possibility also exists that these variables may shift over a period of months before the announcement of the ESOP. Here the market risk may fall before the announcement in anticipation of the ESOP or after the announcement as management and employees try to secure their employment. The intercept may also rise at different times as the company could be earning excess returns before or after the announce-

ment.

The Farley-Hinich test [15] was also conducted to examine whether there are structural breaks in the slope or intercept of the regression over the time period tested. This test is used when there is a suspected shift in the coefficients but the exact location of the shift is unknown. The coefficients for β will be modeled as $\beta_{jt} = \beta_j + \lambda_j t$ where $t = 1/n, 2/n, \dots, T/n$ where $T = n =$ the number of months in each data set for each company. When all data are available $T = 97$. The model was the same as the Chow test as shown above but with $\lambda_j t$ approximating a shift in the intercept and $\lambda_j t (R_{mt} - R_{ft})$ approximating a shift in the slope or market risk of the security over the period tested.

VI. Empirical Results

A. Testing Changes in Employment

Testing changes in employment examines the association of ESOPs with employment changes within the announcing company by using matched non-ESOP comparisons. The ESOP companies are divided into three categories, pure, wage concession, and anti-takeover. The T-tests of growth in employment are conducted on the variable $gEmp_{ti}$ in the manner as described in the methodology section. Because of the skew and kurtosis in the data the distribution cannot be considered normal. The sign rank and the median were also included in the statistics (Tables 1 and 2).

1. Overview

All three ESOP categories showed lower growth in employment in the four years preceding the ESOP than the matched non-ESOP companies. However, only the wage concession ESOP companies had significantly lower growth than their matched pair at the 5% level of significance. In the years after the announcement of the ESOP the pure and the wage concession ESOPs had significantly greater growth in employment than the matched non-ESOP companies. The ESOPs formed in response to takeover attempts continued to under perform the matched non-ESOP companies in employment growth.

Table 1
Employment Changes Before the ESOP Announcement
The ESOP companies compared to the matched non ESOP companies
 Variables tested are the means of the annual employment growth and the differences in means

	A. Pure ESOP companies		B. Wage concession type ESOPs		C. Anti-Takeover type ESOPs	
	Mean Diff	ESOP Firm Matched Pair	Mean Diff	ESOP Firm Matched Pair	Mean Diff	ESOP Firm Matched Pair
N	238	238	66	66	111	111
Mean	-0.014	0.0635	-0.0834	0.0419	-0.047	0.0441
Std Dev	0.3382	0.2572	0.2465	0.1440	0.3050	0.2521
T:Mean=0	-0.6583	3.8105	-2.7485	2.3623	-1.6233	1.8446
Prob> T	0.5110	0.0002	0.0077	0.0212	0.1074	0.0678
Num ^ = 0	238	232	66	64	111	111
Num > 0	218	153	22	40	47	61
Sgn Rank	-759.5	4893.5	-480.5	379.5	-768	491
Prob> S	0.4762	0.0001	0.0016	0.0142	0.0232	0.1494
50% Med	-0.0010	0.0348	-0.0661	0.0458	-0.0164	0.0213

Table 2
Employment Changes After the ESOP Announcement
The ESOP companies compared to the matched non ESOP companies
 Variables tested are the means of the annual employment growth and the differences in means

	A. Pure ESOP companies		B. Wage concession type ESOPs		C. Anti-Takeover type ESOPs	
	Mean Diff	ESOP Firm Matched Pair	Mean Diff	ESOP Firm Matched Pair	Mean Diff	ESOP Firm Matched Pair
N	156	156	44	44	58	58
Mean	0.0524	0.0639	0.0172	0.0969	-0.0907	0.0306
Std Dev	0.2673	0.1916	0.3337	0.3111	0.2906	0.2525
T:Mean=0	2.4490	4.1643	0.3414	2.0653	-2.3776	0.9217
Prob> T	0.0154	0.0001	0.7345	0.0450	0.0208	0.3606
Num ^ = 0	156	156	44	43	58	55
Num > 0	90	99	24	27	17	24
Sgn Rank	1578	2194	35	178	-437.5	-32.5
Prob> S	0.0049	0.0001	0.6878	0.0362	0.0004	0.8038
50% Med	0.0311	0.0283	-0.0083	0.0405	-0.0407	-0.0121

The results for the pure and wage concession ESOP companies support the market signaling theory of ESOPs. The rise in employment growth is consistent with the hypothesis that the companies are beginning a major growth period after the ESOP announcement.

2. Detailed Results

a. The four year period before the ESOP announcement

The test comparing the differences in the means for the ESOP vs the matched non-ESOP companies all showed less growth in ESOP company's employment than the matched pair (Figure 1, Tables 1 and 2). This difference was significant at the 1 and 2% level for the wage concession and the anti-takeover ESOP companies, respectively.

There is no statistically significant difference in employment growth between the pure ESOP companies and the matched non-ESOP companies in the four years before the ESOP announcement (Figure 2) (Table 1)⁶.

The wage concession companies were characterized by an employment growth that was significantly less than their matched non-ESOP counterparts. Wage concession ESOPs had an employment growth in the years before the ESOP of approximately 4% while the matched pair growth was 12% (Figure 2) (Table 1). This suggests that the wage concession ESOP

⁶ The median annual employment growth for both the ESOP companies and the matched non-ESOP companies are approximately the same at 3%. This is less than half of the mean growth of the two data sets, which are 6.4% and 7.8% respectively.

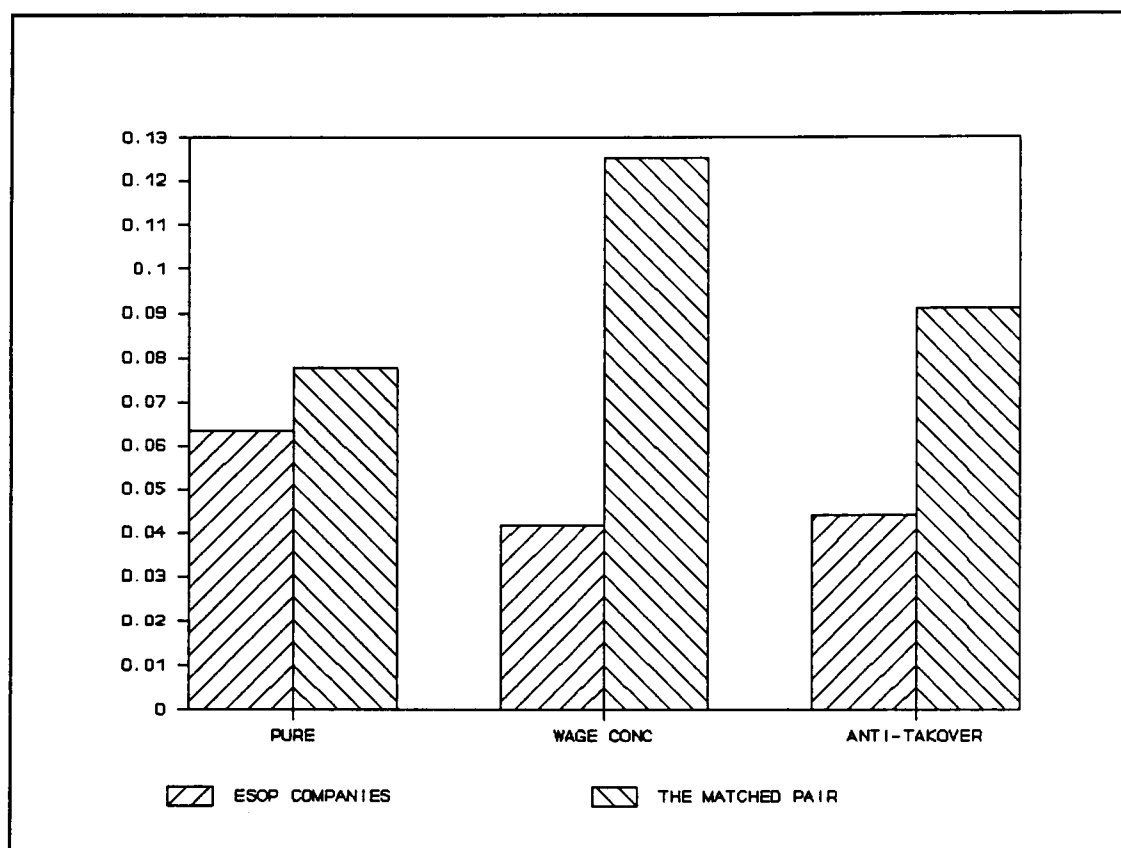


Figure 1 Average annual employment growth over the four years preceding the ESOP announcement by category of ESOP

companies may be losing market share. The employees may have viewed the ESOP as an exchange of certain benefits for what they perceive as security from a company layoff.

Anti-takeover ESOP companies also lagged their matched non-ESOP counterparts in employment growth. Comparisons of the differences between the means of the two groups revealed marginal significance at the 10% level ($T=-1.62$) and significance at the 5% level using the sign rank test (Figure 1)(Table 1).

B. The Period after the ESOP announcement

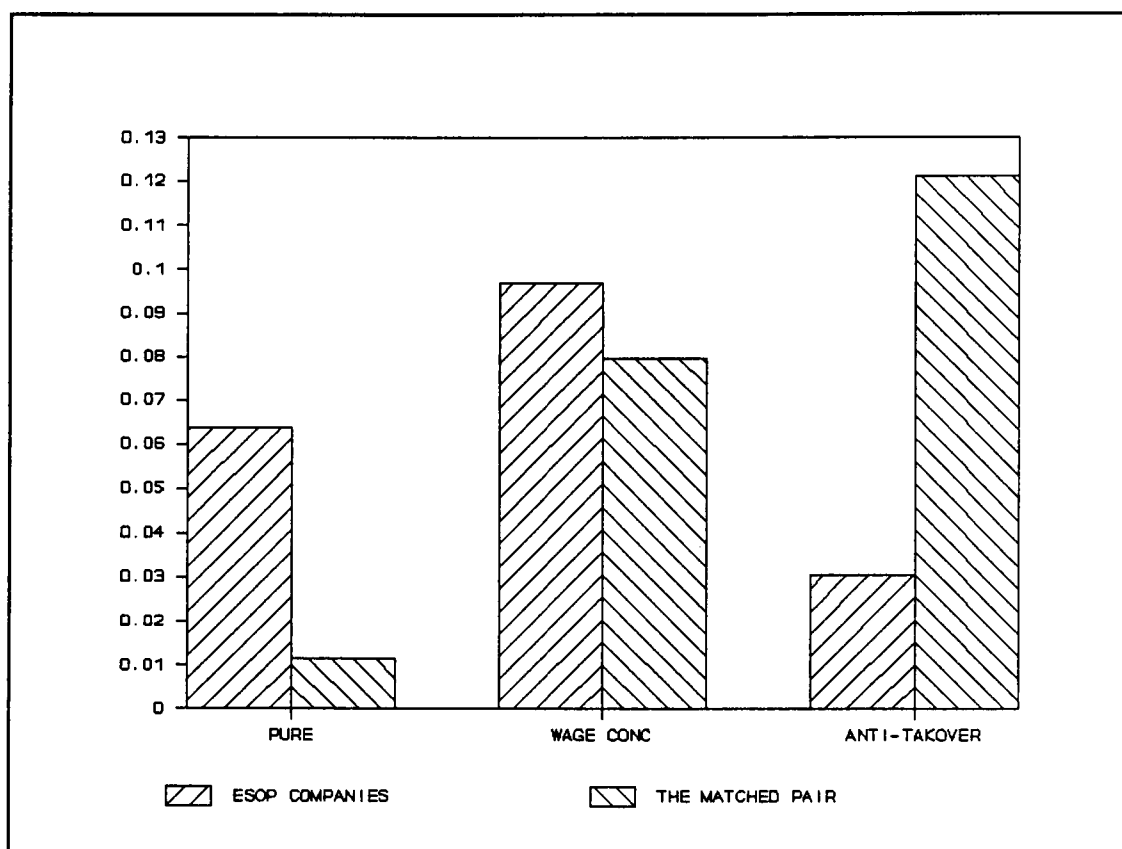


Figure 2 Average annual employment growth over the four years after the ESOP announcement by category of ESOP

In the years after the announcement of the ESOP the pure ESOP companies showed growth in employment that would be consistent with the market signaling and the employee-management alignment theories as discussed in previous sections. The pure ESOP companies had an employment growth rate that was significantly higher than the matched non-ESOP companies at the 1% level (sign rank and T test). If it is assumed that the companies have a policy of "last hired, first fired" the rise in employment would be consistent with the employees' increasing job security by adding a new tier of workers below

them. This growth in employment could also indicate company growth. Company growth is more in line with the market signaling theory than the employee-management incentive alignment theory. The employee management incentive alignment theory does not necessarily predict company growth as the employees and management could increase company profits by greater efficiency in the present production process. Should the market signaling hypothesis be true there should also be a significant increase in company sales, which is tested in section C of this chapter.

The wage concession ESOPs had an insignificant mean difference from the matched non-ESOP companies after the ESOP announcement (Table 2) (Figure 2). When compared to the highly significant (-8%) difference in means before the ESOP announcement the fact that the wage concession companies had caught up to the matched non-ESOP companies in employment growth may show as great a change as that in the pure ESOP companies. This gives more support to the "devil's pact" theory as well as the market signaling theory. The tests on wages and sales should help distinguish between them.

The anti-takeover ESOP companies fell even further in employment growth after the ESOP announcement (Table 7) (Figure 2). This -9% difference between the mean of the ESOP companies and the matched non-ESOP companies was significant

at the 1% level⁷. In the case of anti-takeover ESOPs the fear of a takeover and possible cuts in the labor force may outweigh any additional security achieved by adding additional employees after the ESOP.

B. Testing changes in wages

One of the objectives of this study is to determine whether the ESOP is being imposed upon the employees because of unequal bargaining power. In this case the ESOP companies should have a lower absolute wage level than the matched non-ESOP companies before the announcement of the ESOP. A competing hypothesis is the "devil's pact" theory which states that employees are taking the ESOPs to protect excess wages they receive from the company or in anticipation of excess wages. Here the level of absolute wage differences should be higher before and/or after the ESOP announcement.

Paired difference T-tests were performed on the differences in absolute levels of compensation as described in the methodology section. The second variable tested was the percentage differences in annual wage growth (gWages) between the ESOP companies and the matched non-ESOP companies.

Due to missing wage data for the SIC codes 2000-3999 the proxy for wages as described in the methodology section was substituted in this SIC code group. All wage expenses were scaled by dividing the expense by the number of employees.

⁷ In the case of anti-takeover ESOP companies the median employment growth rate was negative and insignificantly different from zero.

This removes the effects of growth in employment on the data⁸.

1. Findings

No evidence was found to support the hypothesis that employees of companies instituting ESOPs possess inferior bargaining power as compared to non-ESOP companies (Tables 3 and 4). In all of the categories (pure, wage concession, and anti-takeover) the wage levels in the periods before the ESOP announcement were higher than the matched pair.

In the periods before and after the ESOP announcement the pure ESOP companies had wage levels and wage growth that was insignificantly different from the matched non-ESOP companies. This does not detract from the signaling theory that employees are accepting the ESOP shares based on their own evaluation of the company.

Wage concession ESOP companies had significantly higher wages per employee in the years before and after the ESOP announcement (Table 3). This is strong evidence for the rejection of the null hypothesis that wages are the same for wage concession ESOP companies and their matched pair. It

⁸The proxy for wages was tested against the actual wages for companies reporting both cost of goods sold and wage expenses. The correlation was .45 (N = 250). The same test of growth in wages and wage differences was also run without using the wage proxy. The number of observations was reduced by approximately 75% overall with almost no observations in the 2000-3999 SIC code group. The results were approximately the same as those tests with the wage proxy. One exception was that the levels of absolute compensation were significantly higher (5% level, T-test and sign rank) in all ESOP categories before and after the announcement. Wage growth was not significant in any period.

would then appear that ESOPs in wage concession cases are at least partially for the protection of excess wages. The growth of wages in wage concession ESOPs was significantly positive after the ESOP announcement ($T= 2.26$) (Sign rank prob. = .06). This apparent anomaly may be explained by the companies' accounting for employee benefit plans versus pension plans. Pension plans are generally not included in wages but listed as a separate item on the balance

Table 3
Wage levels and changes before the ESOP announcement¹
Variables tested are the differences in means of wage levels
and wage changes

WAGEDIFF	A. Testing wage differences ²			B. Testing wage changes ³		
	Pure Plans	Wage Concess	Anti- Takeovr	Pure Plans	Wage Concess	Anti- Takeovr
N	169	55	86	162	55	84
Mean	0.8893	7.933	2.7019	0.2621	-0.1862	-0.261
Std Dev	13.659	22.802	19.96	3.477	2.7169	2.668
T:Mean=0	0.8463	2.580	1.255	0.9590	-0.5083	-0.895
Prob> T	0.3985	0.0216	0.213	0.339	0.6133	0.3731
Num ^= 0	169	55	86	162	55	84
Num > 0	97	35	50	85	27	36
Sgn Rank	866	262	382.5	508.5	36	-224
Prob> S	0.175	0.0268	0.0998	0.3999	0.766	0.3207
50% Med	1.5666	1.384	1.002	0.0033	0.0056	-0.044

¹Raw data on wage levels and wage growth are not included in tables 3 and 4 because of lack of economic significance.

²Differences in average compensation: ESOP firms vs matched non-ESOP firms by ESOP category.

³Differences in annual percentage changes in comparison of ESOP firms vs non-ESOP firms by ESOP category.

Table 4
Wage levels and changes after the ESOP announcement
Variables tested are the differences in means of wage levels
and wage changes

WAGEDIFF	A. Testing wage differences			B. Testing wage changes		
	Pure Plans	Wage Conces	Anti- Takeover	Pure Plans	Wage Conces	Anti-tako Takeover
N	109	34	40	108	34	40
Mean	3.2345	10.916	6.1919	-0.6985	0.3211	0.3512
Std Dev	26.159	26.565	8.9018	5.8065	0.8279	1.7481
T:Mean=0	1.2909	2.3961	4.399	-1.2501	2.2614	1.2708
Prob> T	0.1995	0.0224	0.0001	0.214	0.0304	0.2113
Num ^= 0	109	34	40	108	34	40
Num > 0	67	21	32	57	21	20
Sgn Rank	788.5	122.5	297	-23	110.5	56
Prob> S	0.0164	0.0341	0.0001	0.9442	0.0576	0.4586
50% Med	2.6598	1.6309	4.6046	0.0253	0.1135	0.0058

sheet. Employee benefit plans are included in wages. Of the wage concession ESOPs six replaced pension plans while the rest replaced employee benefit plans. This addition to wages apparently made wage growth significant for the wage concession ESOPs⁹. It would otherwise appear that the ESOPs took the place of the normal increases in employee compensation.

In the years before the ESOP announcement the anti-takeover ESOP companies had insignificantly higher wages than their matched non-ESOP companies under the T-test ($T= 1.63$) and higher wages that were only marginally significant at the 10% level under the Sign Rank test.

In the years after the announcement of the ESOP anti-takeover type ESOP companies had wage levels that were significantly higher than the matched non-ESOP companies (Table 4). This would be evidence for the hypothesis that employees of anti-takeover type ESOP companies are attempting to protect excess wages and supportive of the "devils pact" hypothesis that employees and management are using the ESOP to increase their own wages.

There was no significant growth in the ESOP company wages as compared to growth in the matched non-ESOP companies in the years before the announcement (Table 3). It would therefore appear that the most significant difference between the ESOP

⁹The growth in wages was also tested on a yearly basis for wage concession type ESOPs. Only the financial statements for the year of the ESOP announcement showed significant wage growth.

companies and the matched non-ESOP companies before the announcement is in the different levels of compensation of the wage concession and the anti-takeover ESOP companies.

C. Testing Changes in Sales

The testing of changes in sales was conducted in the same manner as testing of employment changes.

1. Findings

Changes in sales lent support to the market signaling hypothesis that the company initiating a pure or wage concession ESOP was about to have a significant growth in sales. The pattern of growth in sales for the ESOP companies vs the matched non-ESOP companies (Table 5) (Figure 3) closely followed the patterns for changes in employment. In all three categories of ESOP companies the growth in sales before the introduction of the ESOP was less than the matched non-ESOP companies. The pure and wage concession ESOP companies had significantly lower sales growth in the years before the ESOP announcement when compared to their matched non-ESOP counterparts. After the ESOP announcement the pure ESOP companies led the matched non-ESOP companies in sales growth that was significant at the 0.2% level of significance. Wage concession ESOP companies improved their sales growth to the point where it was statistically the same as the matched non-ESOP companies.

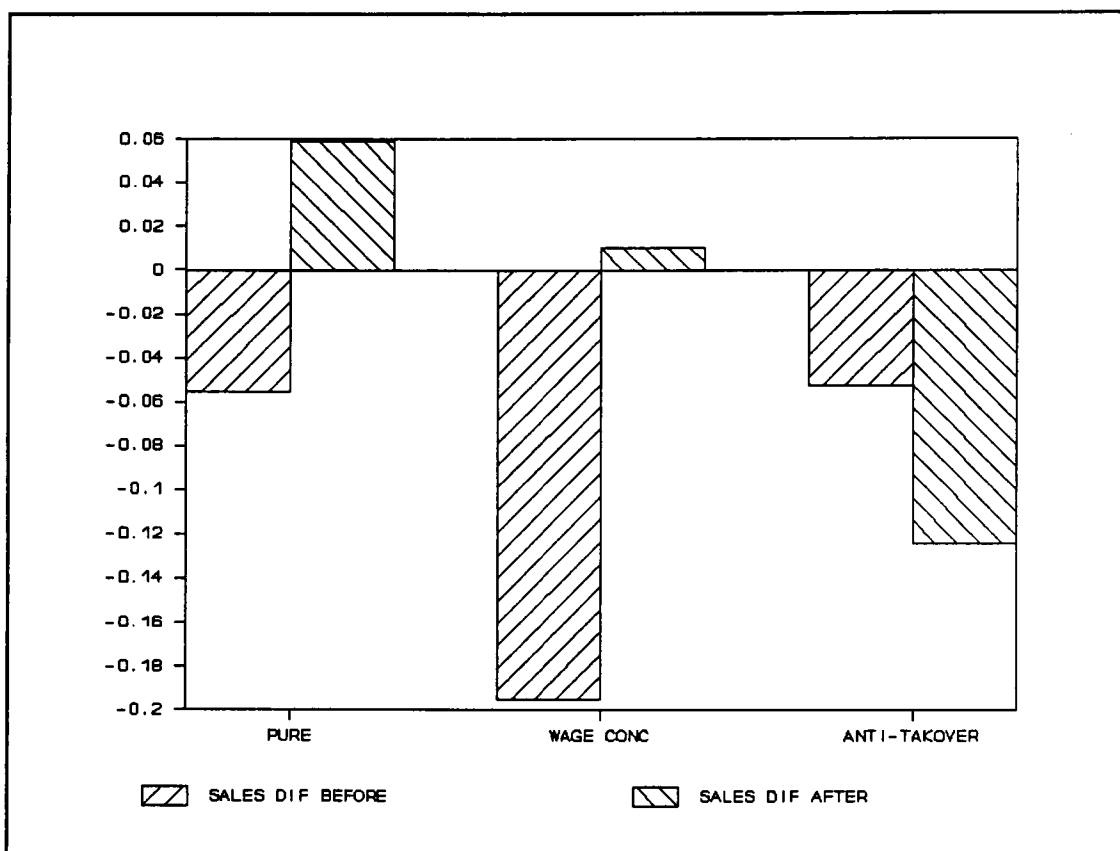


Figure 3 Differences in sales growth between the ESOP companies and the matched non-ESOP companies before and after the ESOP announcement by ESOP category.

Table 5
Testing changes in sales
Before and after the ESOP Announcement
The ESOP companies vs. the matched non-ESOP companies
Variables tested are the differences in means of sales changes

	A. The period before the announcement			B. The period after the announcement		
	Pure Plans	Wage Conc	Anti-Takeovr	Pure Plans	Wage Conc	Anti-Takeover
N	236	66	111	156	44	58
Mean	-0.0554	-0.1947	-0.0527	0.0589	0.0103	-0.1240
Std Dev	0.5359	0.8154	0.7115	0.2233	0.3475	0.3091
T:Mean=0	-1.5889	-1.9401	-0.7800	3.2936	0.1965	-3.0543
Prob> T	0.1134	0.0567	0.4371	0.0012	0.8452	0.0034
Num ^>= 0	236	66	111	156	44	58
Num > 0	110	27	43	92	22	16
Sgn Rank	-1635	-343.5	-608	1731	-20	-448.5
Prob> S	0.1196	0.0271	0.0735	0.002	0.8185	0.0003
50% Med	-0.014	-0.052	-0.031	0.0232	-0.005	-0.0531

The anti-takeover ESOP companies lagged the matched non-ESOP companies in sales growth by approximately 5% before the ESOP announcement. This was marginally significant at the 8% level under the sign rank test. The anti-takeover type ESOPs saw their negative difference in sales growth plunge even further after the ESOP announcement (from -5% to -12%). This difference was highly significant under both the T-tests ($T = -3.05$) and the sign rank test (prob. = .0003). This could reflect the diversion of management's efforts and company capital from the business of sales to the business of fighting the takeover. Under the management entrenchment or "devil's pact" hypothesis this can be interpreted as a sign of incompetent management that is getting worse after fighting off a takeover attempt.

D. Testing Changes in Gross Profit

For purposes of this test gross profit was defined as sales less COGS¹⁰

¹⁰ Before any comparisons can be made with the previous tests of sales it must be remembered that some companies in the sales database did not have COGS in their income statement (33 observations total). These are companies such as financial and transportation companies. The test of sales for all of these ESOP types was then rerun excluding companies without COGS in their data to see if exclusion of this category biased the data. The results were basically the same for changes in sales as previously reported with the one exception that changes in sales for pure ESOP companies before the ESOP announcement was more negative and significant (Prob. of $T = .067$ vs. .11 for the full data set) (Sign Rank Prob. = .03 vs .11 for the full data set).

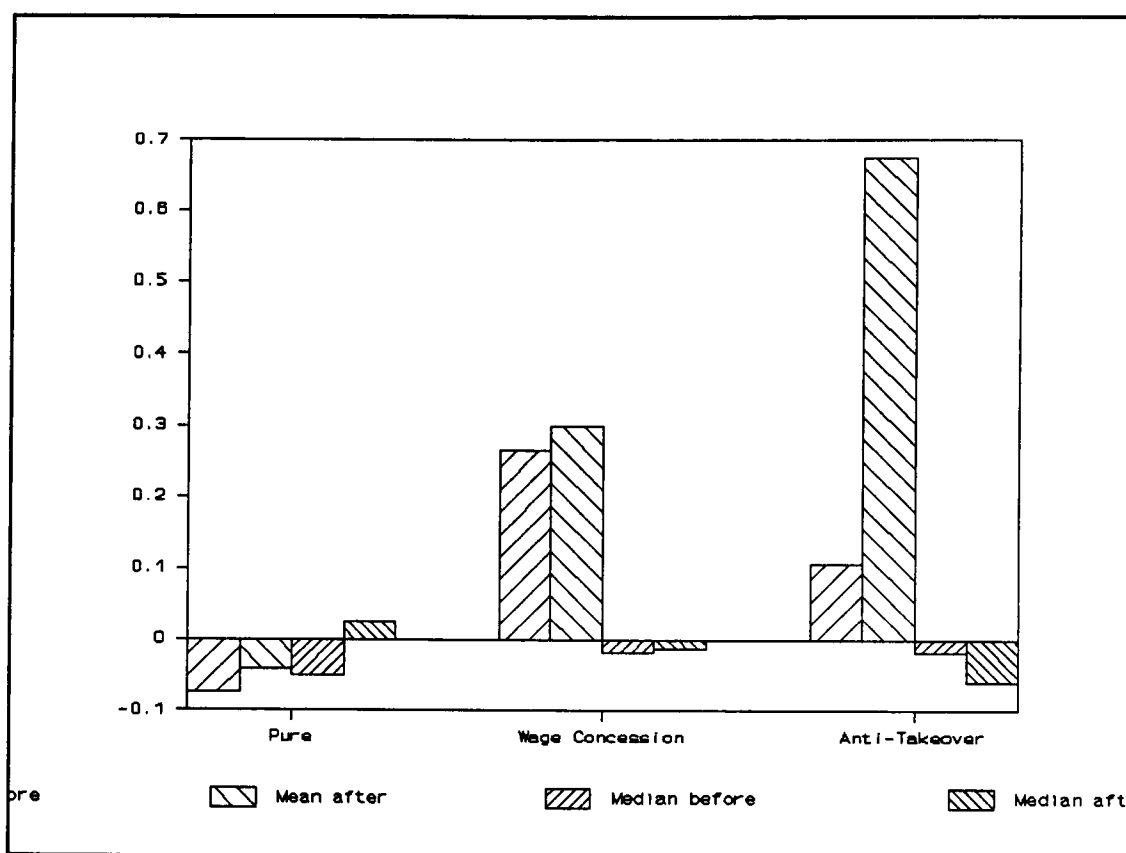


Figure 4 Changes in gross profit
Variables tested are the differences in the growth of gross profit for the ESOP companies and the matched non-ESOP companies.

Table 6
Testing changes in gross profit
Before and after the ESOP announcement
Variables tested are the differences in means of changes in gross profit

	A. The period before the ESOP announcement			B. The period after the ESOP announcement		
	Pure Plans	Wage Conc	Anti-Takeovr	Pure Plans	Wage Conc.	Anti-Takeovr
N	203	62	103	135	40	50
Mean	-0.074	0.265	0.1073	-0.04088	0.2989	0.67471
Std Dev	0.5851	2.156	1.1714	1.7730	1.5021	4.76334
T:Mean=0	-1.802	0.9679	0.9296	-0.268	1.2587	1.0016
Prob> T	0.073	0.3369	0.3547	0.7892	0.2156	0.3215
Num ^= 0	203	62	103	135	40	50
Num > 0	87	29	46	78	19	18
Sgn Rank	-2071	-92.5	-234	856	22	-226.5
Prob> S	0.0131	0.521	0.4441	0.0598	0.7716	0.0273
50% Med	-0.049	-0.017	-0.018	0.0249	-0.012	-0.05914

Gross profit is here defined as net sales less cost of goods sold

The tests of growth in gross profit (Figure 4, Table 6) showed COGS to significantly moderate the changes in sales as discussed previously.

Of the three categories of ESOP companies only the pure ESOPs had significantly less growth in gross profit than their matched non-ESOP companies before the ESOP announcement (Table 6). In the periods after the announcement of the ESOP the pure ESOP companies' growth in gross profit became insignificantly different from the matched pair under the T-test. The median was higher than the matched pair and significant under the sign rank test at the 6% level. It is interesting that the pure ESOP companies managed to show this much improvement under the median and the sign rank test. This improvement occurred despite the fact that from the growth in sales and employment the ESOP companies appeared to be at the beginning of a growth period in the company when start up expenses might be expected to be higher than normal.

For the wage concession ESOP companies before and after the ESOP announcement both the mean and the median comparisons of growth in gross profit were insignificantly different from zero (Table 6). In the tests in growth of sales, discussed previously, wage concession ESOP company sales growth significantly lagged the matched non-ESOP companies. It would thus appear that wage concession ESOPs were doing a better job of controlling costs than the pure ESOPs before the announcement

of the ESOP.

The anti-takeover ESOP companies also had a growth in gross profit before the ESOP announcement that was insignificantly different from the matched pair. In the period after the ESOP announcement the gross profit for the anti-takeover ESOP companies was significantly below the matched pair under the sign rank test (Prob. = .027). When the drop in gross profit is taken in perspective with the drop in employment growth and rise in wage levels when compared to the matched pair data set an overall pattern begins to emerge that is supportive of the "devil's pact" hypothesis. Here it would appear that management has been underperforming its competition in the field. It has only shown competence in fighting off takeover attempts and increasing salaries. It further appears that management's ability to increase gross profits has declined after the institution of the ESOP rather than increased.

E. Testing Changes in Systematic Risk

A company can do several things that can affect the long and short term certainty of employment of its workers, such as taking on less or more risky projects or diversifying into other areas of service or manufacturing. Should this be the case with companies adopting ESOPs should also experience a corresponding change in the correlation of the company's

returns with those of the market. If the management and employees of the ESOP company are attempting to decrease employment risk by taking on less risky projects or by company diversification, the company's market beta would be expected to fall. If the company can also be viewed as a portfolio of assets (here workers and machinery instead of stocks and bonds) a comparison of the returns of the ESOP company with another in the same industry would be possible. As previously stated, one of the reasons for employees purchasing stock in their own company may be their belief in its ability to produce excess returns within that industry. Should this be the case the alpha, or intercept, of the market model for the ESOP company would be expected to rise in comparison with the matched non-ESOP companies.

The monthly company returns for each company were tested under both the Chow test and the Farley-Hinich test for the period of up to forty-eight months before and after the ESOP announcement date as described in the Methodology section. The model estimated for the Chow test was:

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + \Delta \alpha_i Z_{it} + \Delta \beta_i Z_i (R_{mt} - R_{ft}) + e_{it} \quad (7)$$

$Z_i = 1$ if $t > t_0$ Where t_0 is the announcement date of the ESOP

$Z_i = 0$ otherwise

$\Delta \beta_i =$ Change in Beta after the ESOP announcement

$\Delta\alpha_i$ = Change in Alpha after the ESOP announcement

Formally, the null hypothesis for these tests was that there will be no change in the systematic risk of the companies adopting ESOP plans, or:

$$H_0: \Delta\beta_i = 0$$

and

$$H_0: \Delta\alpha_i = 0$$

The model for the Farley-Hinich test was the same as the Chow test as shown above but with λ_{jt} approximating a discrete shift in the intercept and $\lambda_{jt}(R_{mt}-R_{ft})$ approximating a discrete shift in the slope or market risk of the security over the period tested. This test is used when there is a suspected shift in the coefficients but the exact location of the shift is unknown. The coefficients for β were modeled as $\beta_j = \beta_j + \lambda_{jt}$ where $t = 1/n, 2/n, \dots, T/n$ where $T = n =$ the number of months in each data set for each company. When all data are available $T = 97$.

These tests were conducted for each company using monthly return data for the periods of up to four years before and after the announcement of the ESOP for a total of up to 97 months of data per company (depending upon data availability). The results were divided into categories of pure, wage concession, and anti-takeover ESOPs and compared with the results of similar tests performed on the matched non-ESOP

companies by percentage of coefficients that were positive or negative at the 5% level of significance. (Tables 8, 10, 12, 14, 16). The differences between the coefficients of the ESOP companies and the matched non-ESOP companies were then computed and the T-test and sign rank test performed to see if there were any significant differences between the two groups (Tables 9, 11, 13, 15, 17).

The Pure ESOP companies

No clear pattern is found in the comparison of coefficients under the Chow test for the ESOP companies or the matched non-ESOP companies (Table 7). When the coefficients are compared under the T-test and the sign rank test the intercept (α) and the slope (β) are the same (Table 8). This supports the validity of the procedure used in finding matches of non-ESOP companies.

When the pure ESOP companies are viewed in the perspective of their growth in sales, gross profit, and employment more support is found for the market signaling theory than the devil's pact or employee-management incentive alignment theories. Any changes in the intercept should therefore be positive. Given the employees' preference for risk avoidance any changes in the systematic risk should be negative. The test for a rise in the intercept was found to be marginally significant at the 10% level (sign rank). The test for a downward shift in the slope of the ESOP companies, or market

risk, was found to be significant at the 8% level (one tailed test). It appears that the pure ESOP companies are decreasing market risk through either controlling the risk of the projects adopted or by company diversification. This would be in accordance with the hypothesis of Morick, Schleifer and Vishney [26] [27] that management is using the firm to secure their own employment.

Table 7
The Chow Test of pure ESOPs vs the matched non-ESOP companies

Variable	Mean		Percent Significantly					
	ESOP	Match	% Positive	ESOP	Match	Positive	Negative	
α	.000	.002	58	52	4	3	0	0
β	1.02	1.01	96	92	93	88	3	3
$\Delta\alpha$	-.004	-.01	41	37	3	1	8	10
$\Delta\beta$	-.04	0.17	48	59	9	14	7	5

N = 70

Significance is computed at the 5% level

α and β are computed using the market model

$\Delta\alpha$ and $\Delta\beta$ are computed after the announcement of the ESOP

Table 8
Differences in coefficients, the Chow test
Pure ESOP companies vs the matched non-ESOP companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	70	70	70	70
Mean	-0.0013	0.0096	0.0063	-0.21267
Std Dev	0.0163	0.6539	0.0538	1.274609
T:Mean=0	-0.666	0.1225	0.9888	-1.39596
Prob> T	0.5073	0.9028	0.163	0.083
Num $\hat{=}$ 0	70	70	70	70
Num > 0	34	37	43	28
Sgn Rank	-59.5	127.5	216.5	-232.5
Prob> S	0.7304	0.459	0.103	0.087

Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

In testing the coefficients under the Farley-Hinich test the percentage of positive intercepts (α) under this test rose from 52% under the Chow test to 70% here (Table 9). When the coefficients are compared under the matched pair testing there is a significant rise in the intercept of the ESOP companies as compared to their non-ESOP counterparts that is on the same order of magnitude as the Chow test. The change in the market risk becomes insignificant. This is evidence that the market risk changes only after the ESOP announcement. The Chow test is more powerful when the time of change is known while the Farley-Hinich is dominant when there is a discrete shift.

Table 9
The Farley-Hinich Test of pure ESOPs vs the matched non-ESOP companies

Variable	Mean		% Positive		Percent significantly			
	ESOP	Match	ESOP	Match	Positive	Negative	Positive	Negative
α	0.00	0.00	57	70	8	4	1	1
β	1.09	0.92	93	88	75	70	1	3
$\Delta\alpha$	-.004	-.01	45	29	7	4	5	4
$\Delta\beta$	-.14	.23	41	55	8	16	15	7

N = 70

Significance is computed at the 5% level

α and β are computed using the market model

Table 10
Differences in coefficients - The Farley-Hinich test
Pure ESOP companies vs the matched non-ESOP companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	70	70	70	70
Mean	-0.0025	0.1713	0.0077	-0.378
Std Dev	0.0183	1.5480	0.0521	2.7346
T:Mean=0	-1.145	0.9261	1.2407	-1.159
Prob> T	0.2558	0.3576	0.104	0.125
Num $\hat{=}$ 0	70	70	70	70
Num > 0	34	35	42	35
Sgn Rank	-95.5	100.5	244.5	-121.5
Prob> S	0.5799	0.560	0.075	0.240

Note: Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

Wage Concession ESOPs

The comparison of Chow test coefficients for percent positive and percent significantly positive (Table 11) revealed that the ESOP companies had a great deal more positive (50% ESOP vs 16% non-ESOP) and significantly positive (14% ESOP vs 0% non-ESOP) changes in the intercept than the non-ESOP matched firms. The matched pair had more significantly negative changes in the intercept than the ESOP firms (5% ESOP vs 21% non-ESOP). This was also reflected in the matched pair tests on the coefficients (Table 12). Here the ESOPs had a positive change in the intercept that was significant at the 1% level under the rank sum test. The rise in the intercept was also confirmed under the Farley-Hinich test at approximately the same level of significance (Tables 14 and 15). There were no significant changes in the other coefficients when compared to the matched pair. This is evidence for the proposition that the Wage Concession ESOPs are showing excess returns but these returns are only coming after the introduction of the ESOP. This rise in returns also seems to reflect the rise in the financial statement items tested such as employment and sales. It may be concluded that the ESOP companies are companies that are in a state of change and becoming more competitive after the institution of the ESOP.

Table 11
The Chow Test of wage concession ESOPs vs the matched
Non-ESOP companies

Variable	Mean		Percent Significantly					
	ESOP	Match	% Positive ESOP Match		Positive ESOP Match	Negative ESOPMatch		
α	.003	-.001	55	47	0	5	0	5
β	1.28	1.20	100	100	91	100	0	0
$\Delta\alpha$	-.001	-.025	50	16	14	0	5	21
$\Delta\beta$	-.08	.029	41	47	41	10	5	0

N = 19

Significance is computed at the 5% level

α and β are computed using the market model

$\Delta\alpha$ and $\Delta\beta$ are computed after the announcement of the ESOP

Table 12
Differences in coefficients - The Chow test
Wage concession ESOP companies vs the matched
non-ESOP Companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	19	19	19	19
Mean	0.004551	0.082941	0.023959	-0.11218
Std Dev	0.033765	0.601181	0.062954	0.580024
T:Mean=0	0.587484	0.601368	1.658865	-0.84301
Prob> T	0.5642	0.5551	0.057	0.205
Num ^= 0	19	19	19	19
Num > 0	8	12	13	7
Sgn Rank	-7	20	56	-22
Prob> S	0.7983	0.4413	0.011	0.3955

Note: Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

Table 13

The Farley-Hinich test of wage concession ESOPs vs the matched non-ESOP Companies

Variable	Mean		% Positive		Percent Significantly			
	ESOP Match		ESOP Match		Positive ESOP Match		Negative ESOP Match	
α	.003	-.001	50	53	9	16	0	0
β	1.35	1.17	77	95	77	74	0	0
$\Delta\alpha$	-0.0	-0.02	45	32	9	0	5	16
$\Delta\beta$	-0.2	.065	45	42	0	11	5	11

N = 19

Significance is computed at the 5% level

α and β are computed using the market model

Table 14

Differences in coefficients - The Farley-Hinich test
Wage concession ESOP companies vs the matched
non-ESOP companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	19	19	19	19
Mean	0.004499	0.1820	0.0235	-0.265
Std Dev	0.034164	0.7743	0.0636	0.9775
T:Mean=0	0.574003	1.0248	1.611	-1.184
Prob> T	0.5731	0.319	0.062	0.2515
Num ^= 0	19	19	19	19
Num > 0	8	11	13	10
Sgn Rank	-8	26	54	-24
Prob> S	0.768	0.3124	0.014	0.176

Note: Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

The Anti-Takeover ESOPs

Of the three theories concerning the motivations for establishing an ESOP (market signaling, devil's pact, employee-management interest alignment) the devil's pact theory would appear to be the most probable motivation for establishment of an anti-takeover ESOP. This is based on both intuition and the poor performance of these companies in the financial statement items tested.

In testing the differences in the intercept (α) and company market risk (β) both the percentage comparisons and the matched pair difference tests showed significant differences between the ESOP companies and the matched non-ESOP companies in both the intercept and change in market risk (Tables 16 and 17). The intercept was significantly lower in the ESOP companies under the sign rank test. This significance was also reflected in the Farley-Hinich test (Table 18) at the 1% level of significance. When the results of these tests are read with the results of the tests on the financial statement data on anti-takeover ESOP companies it would appear that these companies are underperforming their matched non-ESOP counterparts both before and after the ESOP announcement and the fact is reflected in the return data.

Table 15
The Chow test of anti-takeover ESOPs vs the matched
non-ESOP companies

Variable	Number ESOP Match		Percent Significantly					
			% Positive ESOP Match		Positive ESOP Match		Negative ESOP Match	
α	.005	.01	59	75	3	13	3	0
β	1.07	.97	97	97	91	88	0	0
$\Delta\alpha$	-.01	-.01	32	38	6	0	15	6
$\Delta\beta$	-.08	.274	53	59	6	6	3	6

N = 31

Significance is computed at the 5% level

α and β are computed using the market model

$\Delta\alpha$ and $\Delta\beta$ are computed after the announcement of the ESOP

Table 16
Differences in coefficients- The Chow test
Anti-takeover ESOP companies vs the matched non-ESOP companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	31	31	31	31
Mean	-0.005	0.1049	-0.0007	-0.3516
Std Dev	0.0352	0.4429	0.05365	1.10118
T:Mean=0	-0.806	1.3195	-0.0824	-1.7778
Prob> T	0.4263	0.197	0.231	0.043
Num ^= 0	31	31	31	31
Num > 0	8	20	13	11
Sgn Rank	-130	68	-25	-94
Prob> S	0.0085	0.1871	0.316	0.032

Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

Table 17
The Farley-Hinich Test of anti-takeover ESOPs vs the matched non-ESOP companies

Variable	Mean		% Positive		Percent Significantly			
	ESOP Match		ESOP Match		Positive		Negative	
					ESOP Match	ESOP Match	ESOP Match	ESOP Match
α	.004	.009	56	78	6	9	0	0
β	1.12	.958	94	94	74	63	3	0
$\Delta\alpha$	-.01	-.01	41	38	3	0	6	9
$\Delta\beta$	-.06	.27	53	56	9	6	3	0

N = 31

Significance is computed at the 5% level

α and β are computed using the market model

Table 18
Differences in coefficients - The Farley-Hinich test
Anti-takeover ESOP companies vs the matched non-ESOP companies

	α	β	$\Delta\alpha$	$\Delta\beta$
N	31	31	31	31
Mean	-0.004	0.1610	-0.000	-0.334
Std Dev	0.0355	0.9163	0.0561	1.7313
T:Mean=0	-0.680	0.9786	-0.044	-1.077
Prob> T	0.5016	0.3356	0.9647	0.29
Num $\hat{=}$ 0	31	31	31	31
Num > 0	9	20	13	12
Sgn Rank	-127	64	-27	-71
Prob> S	0.010	0.215	0.302	0.084

Probabilities for $\Delta\alpha$ and $\Delta\beta$ are computed for a one tailed test.

This test was conducted using the coefficients of the companies announcing ESOPs less the Coefficients of the matched non-ESOP companies.

F. Abnormal shareholder returns around the announcement date

The residuals of the ESOP companies and the matched pair companies were first averaged on a daily basis for the time t

$$AR_t = \sum_{i=1}^N AR_{it} / N$$
 = -20 to $t = 20$ using the equation . Here $N =$

the number of companies at time t . The abnormal return for each day was then transformed into the cumulative abnormal return by adding to it the sum of the abnormal returns for the preceding days from the day $t = -20$. These returns were then plotted on a daily basis in figures 6-8 (see also Appendix B for the daily AR).

The graph of the pure ESOP companies vs the matched non-ESOP companies showed a definite rise in the cumulative abnormal returns around the day -1 to 1 that does not fall back to zero during the remaining twenty day period. It would appear that the market has rather quickly evaluated the ESOP as a positive indicator for the future of the company. The three day rise in the cumulative abnormal returns was also found to be significantly different from zero under the T-test ($T = 3.01$) and the sign rank test (prob = .1%) (Table 19).

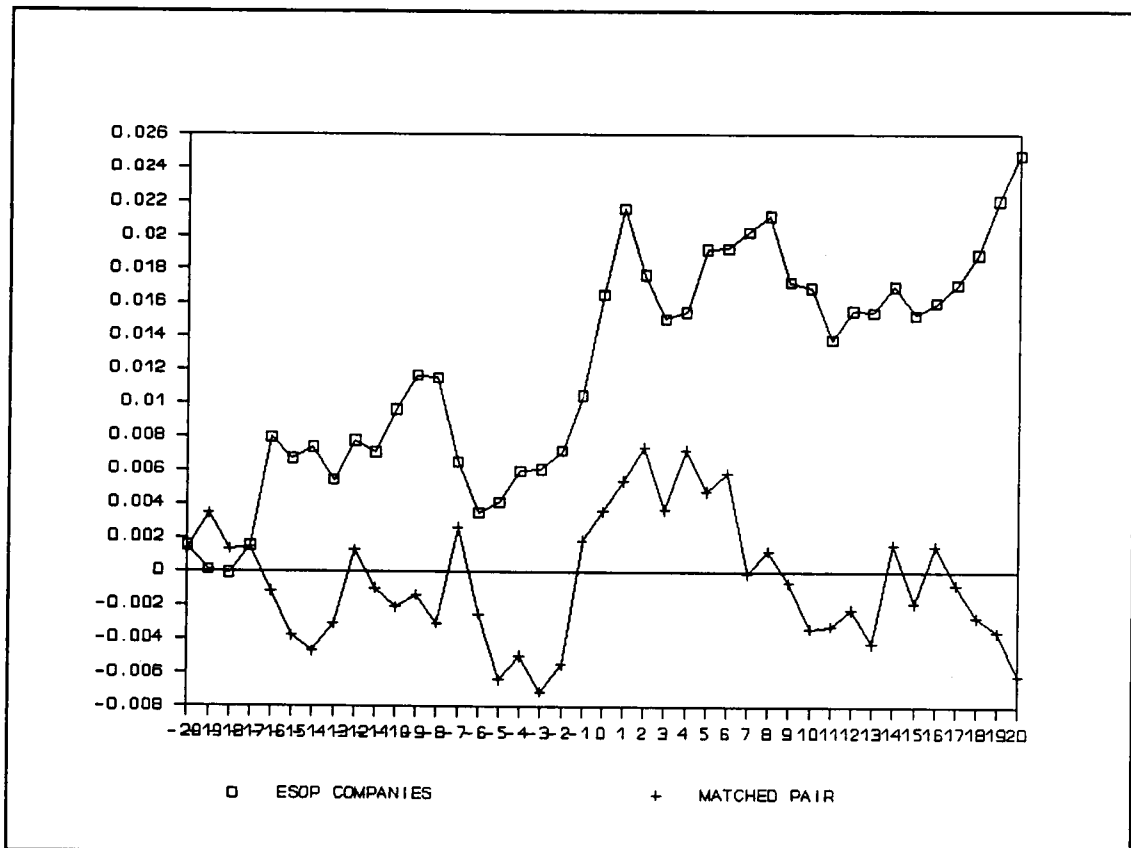


Figure 5 Comparison of cumulative average residuals for pure ESOP companies and the matched non-ESOP companies.

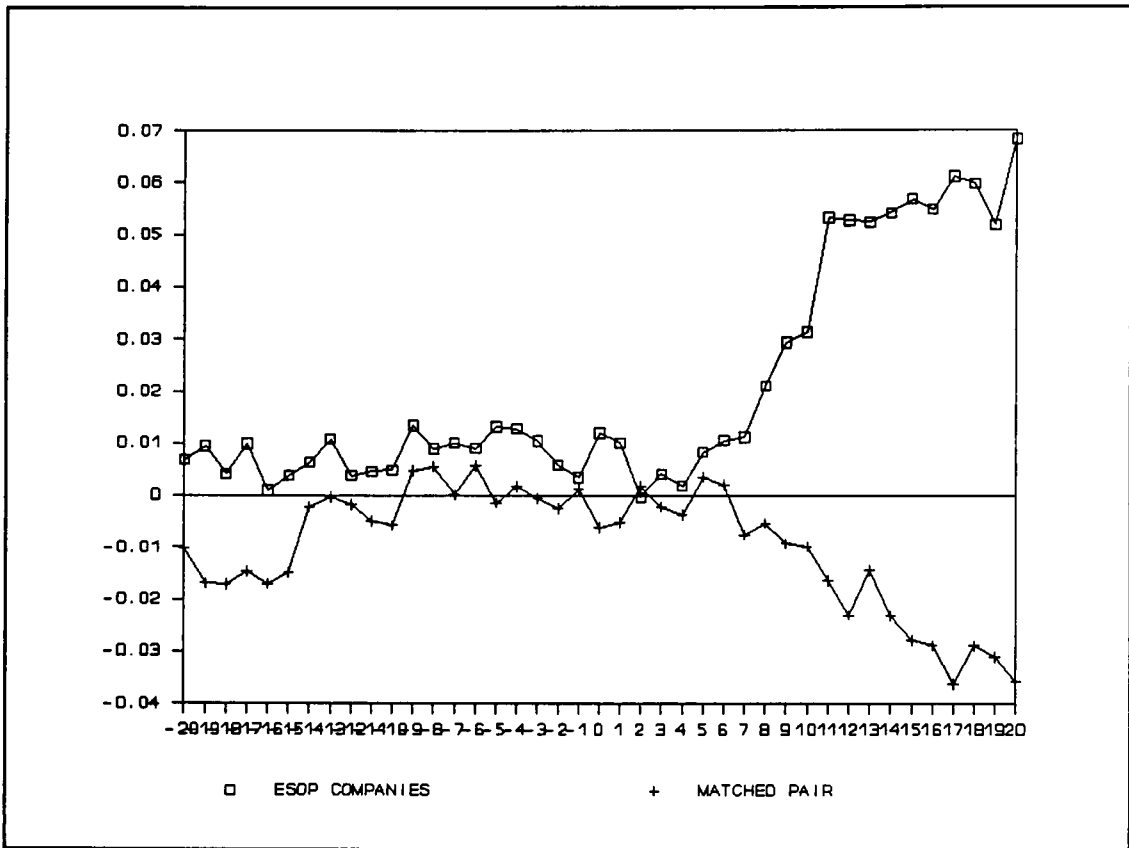


Figure 6 Comparison of cumulative average residuals for the wage concession type ESOP companies and their matched non-ESOP companies.

Table 19
Event Testing of the three day returns
For Pure ESOP companies

	ESOP	Match
N	74	72
Mean	0.01444	0.010854
Std Dev	0.041214	0.057199
T Stat	3.013921	1.610218
Prob>T	0.0035	0.1118
Num > 0	52	33
Sgn Rank	593.5	67
Prob> S	0.001	0.7097
50% Med	0.011186	-0.00545

The Wilcoxon Rank Sum Test
Pure ESOP companies vs the Matched Non-ESOP companies

	Number	Actual Rank Sum	Expected Rank Sum
ESOP	74	5934	5439
Match	72	4797	5292
CHISQ=		3.7541	Prob > CHISQ= 0.0527

The Wage Concession ESOP companies

The market appeared to view the announcement of a wage concession type ESOP as a non event in terms of announcement effect (Figure 6) (Table 20). There was, however, a positive increase in the residuals starting at day $t = 7$ through $t = 10$ that did not subsequently go down to zero by the time $t = 20$. It may be that the market was receiving mixed signals in a wage concession ESOP. The ESOP itself was sending positive signals that the employees now have a vested interest in the company and enough confidence in the company to purchase its stock. The wage concession on the part of the employees may,

however, signal financial trouble. In the week after the announcement the market had sufficient time to evaluate the company and interpret it as a positive event.

Table 20
Event Testing of the three day returns
For Wage Concession ESOP companies

	ESOP	Match
N	22	19
Mean	0.004362	-0.0028
Std Dev	0.040828	0.022586
T:Mean=0	0.501074	-0.54075
Prob> T	0.6215	0.5953
Num > 0	10	10
Sgn Rank	-3.5	-10
Prob> S	0.9126	0.7086
50% Med	-0.00092	0.002924

The Wilcoxon Rank Sum Test
Wage Concession ESOP companies vs the Matched Non-ESOP
companies

	Number	Actual Rank Sum	Expected Rank Sum
ESOP	22	454	462
Match	19	407	399
CHISQ=	0.04375	Prob >	CHISQ= 0.8343

The Anti-Takeover ESOP Companies

The Anti-Takeover ESOP companies (Table 21) had insignificant excess returns during the entire event period for $t = -20$ to $t = 20$. It would appear that the market attached no significance to the ESOP as far as company performance was concerned. The Wilcoxon Rank sum test in Table 21 shows no difference between the returns of the ESOP companies and the matched non-ESOP companies (Probability = .7828). This is also in conflict with Chang's study of Anti-Takeover ESOPs in which significant negative excess returns were found around the event date.

Table 21
Event Testing of the three day returns
For Anti-Takeover ESOP companies

	ESOP	Match
N	33	33
Mean	0.002423	-0.0101
Std Dev	0.064717	0.031425
T:Mean=0	0.215081	-1.84664
Prob> T	0.8311	0.0741
Num > 0	14	12
Sgn Rank	-32.5	-91.5
Prob> S	0.5695	0.1028
50% Med	-0.00693	-0.00614

The Wilcoxon Rank Sum Test
Anti-Takeover ESOP companies vs the Matched Non-ESOP
companies

	Number	Actual Rank Sum	Expected Rank Sum
ESOP	33	1127	1105.5
Match	33	1084	1105.5
CHISQ= 0.0762 Prob > CHISQ= 0.7828			

VII. Summary and Conclusions

The rise in popularity of ESOPs in the past few years has sparked a great controversy as to their worth. They have been alternatively been praised, usually by politicians and organizations with a vested interest in their formation, and damned, usually by such publications as the Wall Street Journal. This paper focuses on the alternative theories of why an ESOP is formed and the circumstances surrounding its formation. While the literature on ESOPs has focused on the effects of the ESOP on the corporation (usually the effect on the market value of the stock) this study has focused on the characteristics of the companies adopting ESOPs. The theories tested place more emphasis on the ESOP being the result of forces both within and outside of the company as well as the cause of change within the company.

The market signaling theory assumes shareholders believe employees have some inside information as to the true value of the company and will only invest in their company when they perceive the shares to be undervalued by the market. The employee-management incentive alignment theory is based on the historical reasons given for passage of the bills giving tax incentives for the creation of ESOPs. The basic reason given was to improve company productivity by giving the employees some equity ownership in the company. The equity stock in the

company was to bring the employee and management interests in line with those of the shareholders. This theory would predict a company increasing profitability by lowering agency costs. The "devils pact" theory places management and employees in an alliance to maximize their own utility in the form of wages and employment security at the expense of the stockholders. Here the equity stake of employees and management is used to help defeat any challenge to their use of company assets.

This paper has found no support for the hypothesis that ESOPs were being forced on employees who had inferior bargaining power. In every category of ESOP the wage levels were higher than those of non-ESOP companies.

The tests of companies announcing "pure" ESOPs have lent strong support to the market signaling theory. Under this theory the company is poised for major growth, in need of capital, and wishing to issue equity and signal the market that its shares are not overvalued. The company then uses the employees' relationship with and knowledge of the company to signal the market that the company's stock is underpriced. The employees' purchase of stock in their own company may then be viewed as a vote of confidence in the company and a signal that the stock may be underpriced. Support for this theory is found in the significant rise in sales and gross profit of the pure ESOP companies after the announcement of the ESOP when

compared to their matched non-ESOP counterparts. The employee-management incentive alignment theory receives little support from the tests on the pure ESOP companies. This is because the employee-management incentive alignment theory predicts the employees will increase productivity using reduction of agency costs. The rise in employment and sales is more indicative of a growing company rather than one merely decreasing agency costs.

The idea that certain fundamental changes were taking place in companies adopting pure ESOPs was also reflected in the market perception of the company. Testing of changes in the market risk before and after the announcement date of the ESOP showed a significant downward shift in the company market risk after the announcement date. A shift in the intercept was found in a significant number of ESOP companies when compared to the matched non ESOP companies. It appears that the company is decreasing market risk (fall in beta, or a decrease in the company stock covariance with the market) or increasing excess returns (rise in the intercept). Either of these would be consistent with the employees being more open to investing in their own company. Further evidence of the market's positive reaction to a pure ESOP announcement is found in the positive abnormal returns of the ESOP companies around the announcement day of the ESOP.

ESOPs that were formed along with a wage concession on

the part of the employees also show many of the characteristics of companies announcing pure ESOPs. Growth in sales improved from significantly less than the matched non ESOP companies before the announcement to being statistically the same as the matched pair after the announcement. The tests here indicated a change from a company that was lagging its matched non ESOP counterpart to one that had caught up to its matched pair after the announcement. Growth in gross profit was statistically the same as the matched pair before and after the ESOP announcement. Employment growth changed from being statistically lower than the matched non ESOP companies to approximately the same as the matched pair after the ESOP announcement. The overall evaluation of wage concession ESOPs appears to support the employee-management interest alignment hypothesis. The company has changed from one that was lagging the industry before the announcement to one that was keeping up with the industry afterward.

Market reaction to a wage concession type ESOP tends to come much later than the announcement date, if at all. This may be due to the market's evaluating the results of the ESOP and/or other cost cutting measures instituted later. While the event testing of the wage concession ESOP announcement was inconclusive, the testing of ESOP returns over the years after the ESOP announcement showed a significant rise in the intercept not shown in the matched non ESOP companies. Under

CAPM it would appear that the wage concession ESOP companies are earning significant abnormal returns over an extended period of time.

The anti-takeover ESOP companies lent support to the "devil's pact" hypothesis. Companies that formed ESOPs for anti takeover purposes have shown no subsequent changes that would benefit their shareholders. The anti-takeover ESOPs showed significantly less growth in sales and gross profit both before and after the ESOP announcement. Employment growth was significantly less than the matched non ESOP companies before and after the ESOP announcement. Anti-takeover ESOP companies outperformed their non ESOP counterparts only in the area of employee salaries, where they were higher than the match both before and after the ESOP announcement. Under the market return testing only the intercept of the anti takeover ESOPs was found to be significantly lower than the matched non ESOP companies. No excess returns were found around the announcement date of the ESOP.

This paper has differed from many other papers analyzing company performance in that it analyzes the risk to company employees as well as shareholders. The compensation employees will demand for this risk change may be in a form that is contrary to the shareholders interests (devil's pact) or may actually help the shareholders retain their stock value (market signaling).

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Appendices

Appendix A

Pearson Correlation Coefficients of Variables Tested

Tables contain: Correlation Coefficients/Prob. of Correlation/Number of Observations

Variables tested are the annual growth rates

"Before" and "After" refers to before and after the ESOP announcement
The Pure ESOP Companies

BEFORE	Gross Inc	NET SALES	WAGES	EMPLOYMNT
Gross Inc	1	0.66978	0.59399	0.45516
	0	0.0001	0.0001	0.0001
	210	210	44	210
NET SALES	0.66978	1	0.64831	0.55261
	0.0001	0	0.0001	0.0001
	210	238	68	238
WAGES	0.59399	0.64831	1	-0.05259
	0.0001	0.0001	0	0.6702
	44	68	68	68
EMPLOYMNT	0.45516	0.55261	-0.05259	1
	0.0001	0.0001	0.6702	0
	210	238	68	238
AFTER	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.64989	0.17033	0.58812
	0	0.0001	0.4604	0.0001
	128	128	21	128
NET SALES	0.64989	1	0.1185	0.78944
	0.0001	0	0.4978	0.0001
	128	144	35	144
WAGES	0.17033	0.1185	1	-0.24826
	0.4604	0.4978	0	0.1504
	21	35	35	35
EMPLOYMNT	0.58812	0.78944	-0.24826	1
	0.0001	0.0001	0.1504	0
	128	144	35	144

The Matched Pair for the Pure ESOP Companies

Before	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.91264	0.05134	0.44646
	0	0.0001	0.7045	0.0001
	202	202	57	202
NET SALES	0.91264	1	0.33975	0.5086
	0.0001	0	0.0022	0.0001
	202	236	79	236
WAGES	0.05134	0.33975	1	-0.09715
	0.7045	0.0022	0	0.3944
	57	79	79	79
EMPLOYMNT	0.44646	0.5086	-0.09715	1
	0.0001	0.0001	0.3944	0
	202	236	79	238
AFTER	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.0154	0.06874	0.06135
	0	0.8652	0.7333	0.4985
	124	124	27	124
NET SALES	0.0154	1	0.41293	0.68897
	0.8652	0	0.0081	0.0001
	124	144	40	144
WAGES	0.06874	0.41293	1	-0.45682
	0.7333	0.0081	0	0.003
	27	40	40	40
EMPLOYMNT	0.06135	0.68897	-0.45682	1
	0.4985	0.0001	0.003	0
	124	144	40	144

The Wage Concession ESOP Companies

BEFORE	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.63765	-0.16559	0.39444
	0	0.0001	0.3819	0.0015
	62	62	30	62
NET SALES	0.63765	1	-0.09978	0.6306
	0.0001	0	0.5745	0.0001
	62	66	34	66
WAGES	-0.16559	-0.09978	1	-0.4586
	0.3819	0.5745	0	0.0064
	30	34	34	34
EMPLOYMNT	0.39444	0.6306	-0.4586	1
	0.0015	0.0001	0.0064	0
	62	66	34	66
AFTER	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.23871	0.54574	-0.09451
	0	0.1433	0.0234	0.5671
	39	39	17	39
NET SALES	0.23871	1	0.03636	0.43848
	0.1433	0	0.879	0.0037
	39	42	20	42
WAGES	0.54574	0.03636	1	-0.81484
	0.0234	0.879	0	0.0001
	17	20	20	20
EMPLOYMNT	-0.09451	0.43848	-0.81484	1
	0.5671	0.0037	0.0001	0
	39	42	20	42

The Matched non-ESOP Wage Concession Companies

BEFORE	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	-0.42645	-0.01813	-0.31257
	0	0.0005	0.9449	0.0134
	62	62	17	62
NET SALES	-0.42645	1	0.97853	0.51475
	0.0005	0	0.0001	0.0001
	62	66	21	66
WAGES	-0.01813	0.97853	1	0.3747
	0.9449	0.0001	0	0.0942
	17	21	21	21
EMPLOYMNT	-0.31257	0.51475	0.3747	1
	0.0134	0.0001	0.0942	0
	62	66	21	66
AFTER	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	-0.05642	0.02582	-0.04323
	0	0.733	0.9333	0.7939
	39	39	13	39
NET SALES	-0.05642	1	0.5815	0.55024
	0.733	0	0.0181	0.0002
	39	42	16	42
WAGES	0.02582	0.5815	1	-0.36726
	0.9333	0.0181	0	0.1617
	13	16	16	16
EMPLOYMNT	-0.04323	0.55024	-0.36726	1
	0.7939	0.0002	0.1617	0
	39	42	16	42

The Anti-Takeover ESOP Companies

BEFORE	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.84274	-0.05289	0.25464
	0	0.0001	0.7775	0.0094
	103	103	31	103
NET SALES	0.84274	1	0.24194	0.29184
	0.0001	0	0.1378	0.0019
	103	111	39	111
WAGES	-0.05289	0.24194	1	-0.58517
	0.7775	0.1378	0	0.0001
	31	39	39	39
EMPLOYMNT	0.25464	0.29184	-0.58517	1
	0.0094	0.0019	0.0001	0
Take Aft	103	111	39	111
Gross In- come	1	0.53392	0.51688	0.08476
	0	0.0001	0.0485	0.5668
	48	48	15	48
NET SALES	0.53392	1	-0.24836	0.62131
	0.0001	0	0.2777	0.0001
	48	54	21	54
WAGES	0.51688	-0.24836	1	-0.85909
	0.0485	0.2777	0	0.0001
	15	21	21	21
EMPLOYMNT	0.08476	0.62131	-0.85909	1
	0.5668	0.0001	0.0001	0
	48	54	21	54

The Matched non-ESOP Anti-Takeover Companies

BEFORE	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	-0.1026	-0.0649	-0.14082
	0	0.3024	0.6647	0.156
	103	103	47	103
NET SALES	-0.1026	1	0.94089	0.46023
	0.3024	0	0.0001	0.0001
	103	111	55	111
WAGES	-0.0649	0.94089	1	0.18818
	0.6647	0.0001	0	0.1689
	47	55	55	55
EMPLOYMNT	-0.14082	0.46023	0.18818	1
	0.156	0.0001	0.1689	0
	103	111	55	111
AFTER	GROSS INC	NET SALES	WAGES	EMPLOYMNT
GROSS INC	1	0.07559	-0.36368	0.01364
	0	0.6096	0.115	0.9267
	48	48	20	48
NET SALES	0.07559	1	0.31584	0.48552
	0.6096	0	0.116	0.0002
	48	54	26	54
WAGES	-0.36368	0.31584	1	-0.46531
	0.115	0.116	0	0.0166
	20	26	26	26
EMPLOYMNT	0.01364	0.48552	-0.46531	1
	0.9267	0.0002	0.0166	0
	48	54	26	54

Appendix B

The One Day Excess Returns for the Twenty Days Before and After the ESOP Announcement

Day	Pure ESOP Companies			The matched nonESOP companies		
	Residual	T Stat	Prob	Residual	T Stat	Prob
-20	0.0016	0.7433	0.46	0.0013	0.4957	0.62
-19	-0.0014	-0.6245	0.53	0.0021	0.8681	0.39
-18	-0.0002	-0.0709	0.94	-0.0021	-0.8834	0.38
-17	0.0016	0.6164	0.54	0.0002	0.0597	0.95
-16	0.0064	1.7741	0.08	-0.0026	-0.8527	0.40
-15	-0.0013	-0.3897	0.70	-0.0026	-1.0631	0.29
-14	0.0007	0.4170	0.68	-0.0009	-0.3635	0.72
-13	-0.0020	-1.0226	0.31	0.0016	0.3804	0.70
-12	0.0024	0.9905	0.33	0.0044	2.0827	0.04
-11	-0.0007	-0.4313	0.67	-0.0022	-0.4893	0.63
-10	0.0025	1.2027	0.23	-0.0011	-0.2739	0.78
-9	0.0021	0.7592	0.45	0.0007	0.2328	0.82
-8	-0.0001	-0.0689	0.95	-0.0017	-0.5148	0.61
-7	-0.0050	-1.9230	0.06	0.0056	1.8134	0.07
-6	-0.0030	-1.2861	0.20	-0.0051	-1.9424	0.06
-5	0.0006	0.2761	0.78	-0.0039	-1.4030	0.16
-4	0.0019	0.8944	0.37	0.0014	0.4125	0.68
-3	0.0001	0.0519	0.96	-0.0021	-0.7840	0.44
-2	0.0011	0.5056	0.61	0.0016	0.7167	0.48
-1	0.0033	1.0660	0.29	0.0073	2.2101	0.03
0	0.0060	1.9001	0.06	0.0018	0.3446	0.73
1	0.0051	1.8865	0.06	0.0018	0.4469	0.66
2	-0.0040	-1.7238	0.09	0.0020	0.6368	0.53
3	-0.0026	-1.2635	0.21	-0.0037	-1.4479	0.15
4	0.0004	0.2370	0.81	0.0035	0.7402	0.46
5	0.0037	1.4294	0.16	-0.0025	-0.8929	0.37
6	0.0000	0.0217	0.98	0.0011	0.4080	0.68
7	0.0010	0.6391	0.52	-0.0059	-1.5397	0.13
8	0.0009	0.5474	0.59	0.0013	0.5211	0.60
9	-0.0040	-2.3985	0.02	-0.0019	-0.8605	0.39
10	-0.0003	-0.1434	0.89	-0.0027	-1.1027	0.27
11	-0.0031	-1.4115	0.16	0.0002	0.0711	0.94
12	0.0018	0.8065	0.42	0.0010	0.2874	0.77
13	-0.0001	-0.0553	0.96	-0.0020	-0.5336	0.60
14	0.0015	0.5320	0.60	0.0059	1.2849	0.20
15	-0.0017	-0.7952	0.43	-0.0035	-1.3212	0.19
16	0.0008	0.3078	0.76	0.0034	0.9504	0.35
17	0.0011	0.4153	0.68	-0.0023	-0.6451	0.52
18	0.0018	0.8126	0.42	-0.0019	-0.7288	0.47
19	0.0032	1.3150	0.19	-0.0009	-0.4340	0.67
20	0.0027	1.3554	0.18	-0.0026	-0.9141	0.36

The Wage Concession ESOP Announcements

Day	ESOP Companies			The matched nonESOP companies		
	Residual	T Stat	Prob	Residual	T Stat	Prob
-20	0.0069	0.9630	0.35	-0.0101	-3.3052	0.00
-19	0.0026	0.9262	0.36	-0.0068	-1.3868	0.18
-18	-0.0054	-1.1490	0.26	-0.0001	-0.0157	0.99
-17	0.0059	0.7973	0.43	0.0025	0.6612	0.52
-16	-0.0091	-1.7749	0.09	-0.0024	-0.5299	0.60
-15	0.0029	0.6240	0.54	0.0021	0.2328	0.82
-14	0.0025	0.5065	0.62	0.0128	2.9811	0.01
-13	0.0045	1.1106	0.28	0.0019	0.3282	0.75
-12	-0.0070	-1.7811	0.09	-0.0014	-0.3668	0.72
-11	0.0008	0.1720	0.87	-0.0033	-0.4184	0.68
-10	0.0002	0.0878	0.93	-0.0008	-0.1177	0.91
-9	0.0085	1.9307	0.07	0.0105	1.4933	0.15
-8	-0.0045	-1.3991	0.18	0.0008	0.1942	0.85
-7	0.0011	0.2654	0.79	-0.0054	-0.8676	0.40
-6	-0.0010	-0.3428	0.74	0.0056	1.7720	0.09
-5	0.0041	0.9306	0.36	-0.0071	-1.6740	0.11
-4	-0.0004	-0.1223	0.90	0.0031	0.8582	0.40
-3	-0.0024	-0.6392	0.53	-0.0023	-0.4395	0.67
-2	-0.0047	-1.3879	0.18	-0.0019	-0.4529	0.66
-1	-0.0023	-0.4218	0.68	0.0037	0.8518	0.41
0	0.0085	1.2747	0.22	-0.0075	-1.8544	0.08
1	-0.0019	-0.2727	0.79	0.0009	0.2184	0.83
2	-0.0105	-2.1218	0.05	0.0070	1.1338	0.27
3	0.0045	1.4893	0.15	-0.0039	-0.9313	0.36
4	-0.0023	-0.5115	0.61	-0.0016	-0.6676	0.51
5	0.0065	1.4615	0.16	0.0073	1.6273	0.12
6	0.0023	0.4414	0.66	-0.0015	-0.3855	0.70
7	0.0006	0.1035	0.92	-0.0096	-1.8782	0.08
8	0.0098	1.0053	0.33	0.0022	0.4297	0.67
9	0.0084	1.6045	0.12	-0.0039	-0.6849	0.50
10	0.0020	0.3331	0.74	-0.0006	-0.1094	0.91
11	0.0219	1.8782	0.07	-0.0066	-1.3953	0.18
12	-0.0004	-0.0482	0.96	-0.0066	-1.3174	0.20
13	-0.0004	-0.1017	0.92	0.0086	1.7381	0.10
14	0.0017	0.3386	0.74	-0.0087	-3.0828	0.01
15	0.0026	0.4330	0.67	-0.0048	-1.3319	0.20
16	-0.0019	-0.2869	0.78	-0.0011	-0.1637	0.87
17	0.0063	1.2153	0.24	-0.0073	-1.5292	0.14
18	-0.0014	-0.2301	0.82	0.0073	1.1436	0.27
19	-0.0079	-2.1881	0.04	-0.0022	-1.0271	0.32
20	0.0164	1.1181	0.28	-0.0047	-0.7158	0.48

The Anti-Takeover ESOP Companies

Day	ESOP Companies			The matched nonESOP companies		
	Residual	T Stat	Prob	Residual	T Stat	Prob
-20	0.0001	0.0191	0.98	-0.0082	-2.2252	0.03
-19	-0.0005	-0.1577	0.88	0.0026	0.3412	0.74
-18	-0.0060	-1.8313	0.08	-0.0021	-0.5803	0.57
-17	0.0051	0.9104	0.37	0.0047	1.2402	0.22
-16	-0.0011	-0.2473	0.81	-0.0011	-0.3003	0.77
-15	-0.0008	-0.2316	0.82	-0.0037	-1.1574	0.26
-14	0.0035	0.6386	0.53	-0.0037	-0.4511	0.66
-13	-0.0005	-0.0948	0.93	-0.0046	-0.6616	0.51
-12	-0.0026	-0.5881	0.56	0.0010	0.1872	0.85
-11	-0.0021	-0.4235	0.67	-0.0006	-0.1287	0.90
-10	-0.0032	-1.0617	0.30	-0.0048	-0.9959	0.33
-9	0.0026	0.5284	0.60	0.0028	0.4246	0.67
-8	-0.0028	-0.5783	0.57	-0.0007	-0.1758	0.86
-7	0.0017	0.2736	0.79	-0.0015	-0.3233	0.75
-6	-0.0077	-1.8202	0.08	-0.0015	-0.6498	0.52
-5	-0.0017	-0.5224	0.60	-0.0054	-2.0024	0.05
-4	-0.0021	-0.2998	0.77	0.0028	1.0355	0.31
-3	0.0061	0.8483	0.40	0.0033	0.8368	0.41
-2	0.0098	1.4044	0.17	-0.0016	-0.6259	0.54
-1	-0.0026	-0.3629	0.72	-0.0040	-1.1470	0.26
0	0.0073	0.9441	0.35	-0.0054	-1.5557	0.13
1	-0.0023	-0.4336	0.67	-0.0007	-0.2649	0.79
2	-0.0033	-0.7568	0.45	0.0053	1.6110	0.12
3	0.0039	0.7644	0.45	-0.0077	-2.2543	0.03
4	0.0007	0.1704	0.87	0.0033	1.1795	0.25
5	-0.0036	-0.8874	0.38	-0.0030	-0.7599	0.45
6	-0.0038	-1.0183	0.32	-0.0008	-0.1912	0.85
7	0.0005	0.1120	0.91	-0.0010	-0.2179	0.83
8	0.0020	0.2891	0.77	0.0049	1.1271	0.27
9	-0.0025	-0.5374	0.59	0.0051	1.1772	0.25
10	0.0096	2.3366	0.03	0.0034	0.9984	0.33
11	0.0142	1.7213	0.09	-0.0021	-0.5686	0.57
12	-0.0027	-0.4242	0.67	0.0051	1.7781	0.08
13	-0.0034	-0.9922	0.33	0.0052	1.2860	0.21
14	-0.0022	-0.5948	0.56	-0.0071	-2.5067	0.02
15	0.0103	1.6195	0.12	-0.0043	-1.1497	0.26
16	-0.0018	-0.2834	0.78	-0.0053	-1.6176	0.12
17	-0.0007	-0.1884	0.85	0.0023	0.3755	0.71
18	-0.0082	-1.6345	0.11	-0.0044	-1.3178	0.20
19	-0.0014	-0.4566	0.65	0.0008	0.3404	0.74
20	-0.0060	-1.4661	0.15	0.0096	2.0640	0.05

Appendix C

SIC Codes of the ESOP companies used and the frequency of their occurrence

The Pure ESOP companies

SIC	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
1530	1	1	1.5	1.5
1540	1	2	1.5	3.0
2010	1	3	1.5	4.5
2030	2	5	3.0	7.5
2040	1	6	1.5	9.0
2080	1	7	1.5	10.4
2330	1	8	1.5	11.9
2420	1	9	1.5	13.4
2430	1	10	1.5	14.9
2510	1	11	1.5	16.4
2520	1	12	1.5	17.9
2670	1	13	1.5	19.4
2710	1	14	1.5	20.9
2800	2	16	3.0	23.9
2840	1	17	1.5	25.4
2910	2	19	3.0	28.4
3220	1	20	1.5	29.9
3420	1	21	1.5	31.3
3490	1	22	1.5	32.8
3520	1	23	1.5	34.3
3530	1	24	1.5	35.8
3570	4	28	6.0	41.8
3610	1	29	1.5	43.3
3630	1	30	1.5	44.8
3690	1	31	1.5	46.3
3710	1	32	1.5	47.8
3820	2	34	3.0	50.7
3840	2	36	3.0	53.7
3910	1	37	1.5	55.2
4520	1	38	1.5	56.7
4810	3	41	4.5	61.2
4920	2	43	3.0	64.2
4950	2	45	3.0	67.2
5140	1	46	1.5	68.7
5170	1	47	1.5	70.1
5210	1	48	1.5	71.6
5310	1	49	1.5	73.1
5330	1	50	1.5	74.6
5810	1	51	1.5	76.1
5940	1	52	1.5	77.6
6020	6	58	9.0	86.6
6030	3	61	4.5	91.0
6210	1	62	1.5	92.5
6330	2	64	3.0	95.5
6410	1	65	1.5	97.0
7370	2	67	3.0	100.0

The Wage Concession ESOP companies

SIC	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
1540	1	1	5.3	5.3
2250	1	2	5.3	10.5
2890	2	4	10.5	21.1
3080	1	5	5.3	26.3
3310	1	6	5.3	31.6
3440	1	7	5.3	36.8
3520	1	8	5.3	42.1
3590	1	9	5.3	47.4
3660	1	10	5.3	52.6
3670	1	11	5.3	57.9
3720	1	12	5.3	63.2
4210	1	13	5.3	68.4
4510	1	14	5.3	73.7
5600	1	15	5.3	78.9
6020	1	16	5.3	84.2
6210	1	17	5.3	89.5
6330	1	18	5.3	94.7
7380	1	19	5.3	100.0

The Anti-Takeover ESOP companies

SIC	FREQ	CUM. FREQ	PERCENT	CUM. PERCENT
1310	1	1	3.3	3.3
2000	1	2	3.3	6.7
2080	1	3	3.3	10.0
2620	1	4	3.3	13.3
2800	1	5	3.3	16.7
2830	1	6	3.3	20.0
2840	1	7	3.3	23.3
2850	1	8	3.3	26.7
2910	1	9	3.3	30.0
3080	1	10	3.3	33.3
3310	1	11	3.3	36.7
3460	1	12	3.3	40.0
3540	1	13	3.3	43.3
3560	1	14	3.3	46.7
3670	1	15	3.3	50.0
3820	1	16	3.3	53.3
3860	1	17	3.3	56.7
4210	1	18	3.3	60.0
4510	1	19	3.3	63.3
4810	1	20	3.3	66.7
5120	2	22	6.7	73.3
5310	1	23	3.3	76.7
5810	1	24	3.3	80.0
5960	1	25	3.3	83.3
6020	1	26	3.3	86.7
6030	1	27	3.3	90.0
6190	1	28	3.3	93.3
6330	1	29	3.3	96.7
6790	1	30	3.3	100.0

VITA

Roger W. Clark was born in Memphis, Tennessee on June 27, 1949. He attended elementary school and high school in Franklin County, Tennessee. He attended Middle Tennessee State University from 1967 to 1971 and received his Bachelor of Science degree. In 1975 Mr. Clark received the degree of Doctor of Jurisprudence from The University of Tennessee in Knoxville, Tennessee. Mr. Clark was admitted to the Tennessee Bar in 1975 and practiced law for twelve years. Mr. Clark was licensed as a Certified Public Accountant in 1984. In 1988 he matriculated at the University of Tennessee and in 1992 received a Doctorate of Philosophy degree in Business Administration with Finance as his primary area.

He is currently employed by Austin Peay State University in the capacity of Assistant Professor.