

INSIDER TRADING AROUND ESOP ANNOUNCEMENTS: WEALTH EFFECT VS. CONTROL EFFECT

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Abstract

Following the enactment of ERISA (Employee Retirement Income Security Act) in 1974, employee stock ownership plans (ESOPs) have become a popular form of employee compensation among U.S. companies. The introduction of an ESOP has important implications for management interest that should encourage insiders buying activity. This paper documents that unusual insider buying activity has indeed resulted from the introduction of an ESOP. Further we examine two competing explanations, the wealth hypothesis and the control hypothesis, for the increase in insiders buying activity. We conclude that insiders buying activity is primarily motivated by control considerations.

1. Introduction

This paper documents unusual insider purchase activity around the announcement of the adoption of an ESOP (Employee Stock Ownership Plan). We postulate two explanations for this activity. The wealth hypothesis argues that insiders purchase shares at this time to profit from positive wealth impacts of ESOP announcements. This hypothesis is consistent with previous findings that indicate a positive stock market reaction to ESOP announcements and to additional findings that indicate an increase in corporate earnings following an ESOP announcement. The wealth hypothesis is also con-

sistent with extant literature showing insider trading occurring prior to various corporate announcements that result in an increase in share price.

Our second hypothesis, the control hypothesis, argues that insiders purchase shares at the time of an ESOP announcement in order to prevent shifts in the ownership structure of the firms. We are led to support this hypothesis based on three empirical findings. First, we find neither positive earnings effect following the adoption of an ESOP nor positive stock price impact from the ESOP announcement, suggesting that insiders would not directly profit from purchasing shares prior to the announcement. Second, consistent with the control hypothesis, we find that the level of insider purchases is significantly influenced by the previous ownership structure and the size of the ESOP plan. Third, the pattern of the trading behavior around the ESOP announcement argues for the control hypothesis.

The rest of the paper is organized as follows: Section II develops the competing explanations for insider buying associated with the introduction of an ESOP; Section III describes the sample data; Section IV presents the empirical results and it is followed by a conclusion.

2. Hypothesis Development

The expressed purpose of ERISA was to develop "people's capitalism." (Weston, Chung and Hoag, 1990). Since ESOPs allow employees to own a segment of a corporation's equity, ESOPs should align employees' interests with those of other shareholders of the firm¹. This alignment of employee and shareholder interests should mitigate agency costs and increase the future earnings of the firm. If investors hold the expectation that ESOPs will achieve this goal, the prospect of future earnings increase would result in an immediate increase in the market value of the firm. The wealth hypothesis posits that insiders will buy prior to an ESOP announcement to gain benefit from this price increase.

Just as prior research supports the supposition that insiders have an incentive to purchase stock at the time of an ESOP announcement, there is a preponderance of evidence to indicate that insiders do trade for their own benefit based on non-public information. Insider trading occurs despite regulatory deterrence provided by the Insider Trading Sanctions Act of 1984² and other measures. Evidence of insider trading to corporate announcements is provided in Oppenheimer and Dielman (1988) on dividend payments, Karpoff and Lee (1991) on new issues of securities, Lee, Mikkelson, and Partch (1992) on stock repurchases, and Seyhun and Bradley (1995) on bankruptcy filings. These papers document that insiders engage in unusual purchases before a positive market announcement and in unusual sales before a negative market

announcement. For example, abnormal buying occurs before a stock repurchase announcement and abnormal selling occurs before a stock issuance announcement.

Studies find that insiders reverse their trading patterns or end unusual trading activity after the announcement period. For example, Seyhun and Bradley (1995) observe insider purchases after the stock price falls during financial distress. Karpoff and Lee (1991) find insignificant net sales after the announcement of common stock issuance. Such trading behavior in the post announcement period indicates insiders' perception that stock prices fully react or overreact to an announcement. Thus, the wealth hypothesis postulates unusual buying activity before an ESOP announcement, and either unusual selling activity or at least no unusual buying activity after the announcement.

Although insiders may view ESOPs favorably based on possible wealth effects, insiders may hold a negative view of ESOPs based on control considerations. Since ESOPs are qualified plans they must meet minimum coverage requirements of section 401 of the Internal Revenue Code. This minimum coverage requirement insures that, because of their sheer number, the non-management employees, as a group, will accumulate more shares. As a result management may perceive a change in the balance of power. The control hypothesis suggests that management responds to this perception by purchasing equity control rights (shares) around the announcement of the ESOP. Since shares from an ESOP plan are distributed over time, unlike the timing for wealth considerations, purchases associated with the control hypothesis may continue well after the ESOP announcement.

The control hypothesis is supported by studies investigating the issue of monitoring firm's managers. Schleifer and Vishny (1986) argue that large outside shareholders have sufficient investment in the firm to warrant effective monitoring of managerial decisions. Like outside shareholders, employee owners as a group have sufficient ownership interests in the firm to closely monitor performance of executives. With voting power in their hands and incentive to improve share value, the employees might join with outside shareholders and vote to dismiss top executives during declining performance. Thus, as a strategic move to offset the tilt in ownership control that results from an ESOP, managers may increase their shareholdings in the firm.

There is evidence that management does respond with purchases when control issues occur. For example, Hanson and Song (1995) find evidence that managers reduce their shareholdings to offset the increase in their proportionate vote ownership resulting from a dual-class recapitalization. Since a dual-class recapitalization creates a second class of stock with disparate voting rights, managers adjust their ownership in the firm through stock sell-

ing when the recapitalization increases their proportionate ownership. Thus, previous literature documents both an incentive for managers to act to increase proportionate shareholdings in response to an ESOP announcement and also insider purchase activity in similar situations.

3. Data and Sample

Two sources are used to identify ESOP adoptions or expansions over the period 1987 through 1997. The Employee Ownership Public Companies List provided by the National Center for Employee Ownership (NCEO) reports a total of 281 ESOP adoptions during this time period. We supplement this sample by searching the general section of the *Wall Street Journal Index*. This search identifies an additional 38 announcements of ESOP adoptions or expansions providing a total sample of 319.

We use the *CDA Investmet* Database to identify insider sales and purchases for our sample of ESOP expansions or adoptions. We include only open market transactions (because of their informational value) by the top executives, officers, and directors. From our original sample of 319 firms, a total of 213 firms³ have insider buying and selling data available on *CDA Investmet*. Among this sample, two firms experience insider purchases roughly 300 times the sample average. We delete these two outliers resulting in a final sample size of 211 firms.

Since the NCEO identifies only the year in which the ESOP announcement was made we conduct part of our analysis on an annual basis. For the firms included in the annual sample we provide descriptive data (including size of the ESOP plan and size of prior management ownership), investigate changes in annual earnings and study annual changes in insider transactions. The descriptive data and earnings data are obtained from the *Research Insight* database. Data on insider trading transactions are obtained from *CDA Investmet*. Data on management ownership prior to the ESOP announcement is acquired from *Value Line*.

We create a sub-sample for which we are able to identify the exact date of the ESOP announcement in order to provide more precise data on insiders' transactions and to observe market price reaction to the ESOP announcement. From the 211 firms in the annual sample we determine the exact date of the ESOP announcement for 70 firms from the *Wall Street Journal Index*. We investigate market reaction to this announcement by gathering daily return data from the CRSP database. We are able to obtain daily return data for 65 out of the 70 firms for which we have identified the day of the announcement.

Table 1 provides descriptive information for the annual sample. ESOP activity concentrates in the late 80' and early 90's. Over 95 percent of the sample announcements occur in the first five years of our sample period (1987 through 1991) and only nine of the ESOP announcements occur in the last six years of our sample period (1992 through 1997). Our sample is widely diversified by industry. There are 134, 4-digit SIC code industries represented in the sample and no industry is represented by more than eight observations.

Table 1
Descriptive statistics for the 211 CDA Investnet firms
that adopted ESOPs, 1987-1991

Panel A: Year of ESOP Adoption												
Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
N	23	39	89	40	11	0	4	1	2	0	2	211
Panel B: Industry Distribution												
Industry	4-digit SIC code										N	
State commercial banks	6022										8	
Telephone communications	4813										6	
Fabricated metal products	3490										5	
Other (131 industries)											192	
Total											211	
Panel C: Size and Ownership												
	Assets (\$millions)	Employees (000)	ESOP ownership	Management ownership								
N	178	179	166	111								
Mean	\$3,237	19.44	11.72%	11.19%								
Median	\$651	3.75	10.00%	5.8%								
Maximum	\$55,193	304,200	39.00%	46.00%								
Minimum	\$1	200	3.00%	0.50%								

Table 1 reports size information for that portion of our sample where data is available from Research Insight. We also show (using data provided by the NCEO list and *Wall Street Journal* announcement) that the amount of stock placed into the ESOP plan is not trivial. The lowest amount of stock involved in an ESOP plan is 3 percent and in one case fully 39 percent of the outstanding shares is involved in the ESOP offer. On average the ESOP plan involves 11.72 percent of the shares outstanding. Thus, the percent of management ownership in the year prior to the ESOP announcement averages just slightly less than the amount to be placed in the ESOP plan. The ESOP plans in the sample have clear control implications.

4. Empirical Results

4.1 *Insider Buying*

We begin our empirical analysis by examining insider buying and selling activity around the ESOP announcement to determine if, regardless of the cause, unusual insider buying occurs around ESOP announcements. We make this examination first with all 211 observations for which we have insider transaction data and then provide a more powerful test using the 70 observations for which we have the exact announcement date.

For all 211 observations we define the year in which the ESOP was announced as Year 0 and compare insider trading for that year to the year prior, Year -1, and with the following two years, Year 1 and Year 2. We determine the number of shares purchased and the number of purchase transactions each year for each of the 211 firms. The average number of shares purchased and the average number of purchase transactions are reported in Panel A of Table 2. For reference we also report the average number of shares sold and the average number of sales transactions for each of the years.

Both the control hypothesis and wealth hypothesis argue for an increase in insider buying during Year 0. If an increase in insider buying results from control considerations, the buying activity will be longer lived as the distribution of the ESOP to other employees occurs over time. Panel A of Table 2 reports a marked increase in both total shares purchased and the number of purchase transactions following the ESOP announcement. The average number of shares purchased in the year the ESOP was announced is more than four times higher than the average number of shares purchased in the year preceding the ESOP announcement year. The increase in insider buying continues through Year 2. Applying a standard paired t-test, the average number of shares purchased by insiders is significantly higher than the average number of shares purchased by insiders in the year prior to the announce-

ment in each year, Year 0 through Year 2. Similar results are found comparing the average number of transactions. The substantial increase in purchases in Year 0 supports both the wealth and control hypothesis. The significant difference in years following the ESOP announcement and the year prior to the announcement argues for the control hypothesis and against the wealth hypothesis.

Table 2

Managerial purchases, sales, and net purchases from one year before through two years after ESOP adoption (year 0) during the period, 1987-1997. Transactions data for 211 ESOP firms are used. No-trading case during a year is set to zero value. Net shares purchased as a percentage of shares outstanding are reported for 184 firms due to missing shares outstanding data for some firms. Mean values are reported in this table

Panel A: Raw Data (N=211)				
	Year -1	Year 0	Year 1	Year 2
Total shares purchased (000)	14.09	71.44 ^b	143.97 ^b	104.87 ^b
Total purchase transactions	2.92	6.28 ^c	8.57 ^c	6.89 ^c
Total shares sold (000)	57.33	58.43	93.44	106.76
Total sale transactions	5.34	6.30	6.26	7.33 ^b
Panel B: Buying Activity Relative to Total Activity (percentage) (N=211)				
	Year -1	Year 0	Year 1	Year 2
Net shares purchased (%) (NPI)	-18.99	0.99 ^b	-2.06 ^c	16.18
Net purchase transactions (%) (NTI)	-9.10	9.60 ^c	7.19 ^c	-4.65
Panel C: Net Shares Purchased as Percentage of Shares Outstanding (N=184)				
	Year -1	Year 0	Year 1	Year 2
Net shares purchased (%) (RPI)	-0.20	0.02	0.22 ^b	0.50

^{a, b, c} Significantly different from the base-year (defined as year -1) mean at the 10%, 5%, and 1% levels using a two-tailed t-test for the difference in means.

Panel A of Table 2 also reports insider sales activity during this period. In the year before the ESOP announcement insider sales exceed insiders purchase⁹. In contrast to the substantial increase in insider buying in Year 0, the average number of shares sold by insiders in the year of the ESOP announcement falls slightly. Thus, the increase in insider buying is not a result of a general increase in insider trading activity. In years following the ESOP announcement average sales almost double, suggesting the possibility that some purchases in the announcement year are reversed. Still, in contrast to the year prior to the ESOP announcement, sales are less than or equal to purchases. In Year 1 average purchases are almost one-half times average sales. In Year 2 purchases are closer to sales.

To further investigate the relationship between insiders' purchases and sales around ESOP announcements we create indexes similar to those used by John and Lang (1991) and Yur-Austin (1998). For each firm for each year we determine net shares purchased, the difference between total purchases and total sales. We standardize this difference using two measures: total shares traded and total shares outstanding. In addition we determine for each firm in each year the difference in the total number of purchase transactions and total number of sales transactions.

Thus, the net purchase index, NPI is shown as equation (1):

$$NPI_{it} = \frac{(PV_{it} - SV_{it})}{(PV_{it} + SV_{it})} \quad (1)$$

where NPI_{it} is the net purchase index for firm i in year t , PV_{it} is the total insiders' purchase volume for firm i in year t , and SV_{it} is the total insiders' sales volume for firm i in year t .

The net transaction index, NTI is shown as equation (2):

$$NTI_{it} = \frac{(PT_{it} - ST_{it})}{(PT_{it} + ST_{it})} \quad (2)$$

where NTI_{it} is the net transaction index for firm i in year t , PT_{it} is the total insiders' purchase transactions for firm i in year t , and ST_{it} is the total insiders' sales transactions for firm i in year t .

The relative purchase index, RPI is shown as equation(3):

$$RPI_{it} = \frac{(PV_{it} - SV_{it})}{O_{it}} \quad (3)$$

where RPI_{it} is the relative purchase index for firm i in year t , PV_{it} is the total insiders' purchase volume for firm i in year t , SV_{it} is the total insiders' sales volume for firm i in year t , and O_{it} is the total shares outstanding for firm i at the beginning of year t .

Panel B of Table 2 reports average values by year for NPI and NTI. In the year before the ESOP announcement the indexes indicate that for the average firm insider sales dominate insider purchases both in terms of volume and number of transactions. In the year of the ESOP announcement both the average NPI and average NTI are positive. Thus, in the announcement year for the average firm insider purchases dominate insider sales both in total volume and number of transactions. Application of a paired t-test indicates that the differences in these indexes between Year 0 and Year -1 are statistically significant. The differences in the index values between Year 1 and Year 0 are also statistically significant. In Year 2 the index values remain higher than the values for Year -1, but are no longer significantly different.

Results using average sales and purchase volume and average sales and purchase transactions, as reported in Panel A, support the hypothesis that an ESOP announcement will encourage insider buying. Indexes created based on volume and transaction data confirm these findings. There are, however, some noticeable contrasts in the average values for the raw data and the indexes. For instance, in Year 1 the average number of shares purchased by insiders is almost one-half times greater than the average number of shares sold by insiders. The index value, however, is negative, indicating that for the average firm the number of shares sold by insiders is greater than the number of shares purchased by insiders. This contrast indicates that the difference in the raw data results from intense buying activity in a relatively small number of firms. On the supposition that control considerations would be a less general motivation than wealth considerations, the contrast between raw data results and index results tends to support the control hypothesis over the wealth hypothesis.

Panel C of Table 2 shows the average value for RPI. The sample size in this comparison is reduced from 211 to 184 because the number of shares outstanding is missing from the Research Insight database for 27 firms. Similar changes occur for this index as reported by previous comparisons. The negative index value in Year -1 indicates that prior to the ESOP announcement insider sales dominate insider purchases. In the year of the announcement and the two years following the announcement purchases dominate sales.

The difference is significant between Year 1 and Year -1 at the .05 level. Collectively, the insider sales and purchase data provide strong evidence of a significant increase in insider purchases relative to insider sales during and following an ESOP announcement.

We identify the month of the ESOP announcement for a subsample of 70 securities. This subsample allows a more precise examination of the impact of the ESOP announcement on the relationship between insider purchases and insider sales. We apply a time series methodology developed by Karpoff and Lee (1991) and applied by Lamba and Khan (1999) to calculate abnormal net insider purchases.

The number of abnormal net insider purchases, ANP, is calculated as shown in equation (4):

$$ANP_{it} = NP_{it} - ENP_{it} \quad (4)$$

where ANP_{it} is the number of abnormal net insider purchases for firm i in month t , NP_{it} is the number of net insider purchases for firm i in month t , and ENP_{it} is the expected number of net insider purchases for firm i .

We calculate ANP for each of the firms in the subsample for a nineteen-month period including the month of the ESOP announcement, the 12 months preceding the announcement and the six months following the announcement. We determine ENP, following Karpoff and Lee (1991)⁵ as the adjusted average number of net insider purchase in the 30 months prior to the event window (month -42 through month -13). As reported in the Appendix, Karpoff and Lee show that the average abnormal net purchases in month t , $MANP_t$, and the cumulative average abnormal net purchases CUMNP can be converted to z distributions.

Table 3 reports findings for abnormal insider purchases for the 12 months before the ESOP announcement month, the ESOP announcement month and the six months following the ESOP announcement. Panel A, which reports $MANP$ and the corresponding z -statistic, shows weak evidence of unusual purchase activity before the month of the ESOP announcement but strong evidence of unusual purchase activity during the month of the ESOP announcement and for the months following the ESOP announcement.

In the 12 months prior to the ESOP announcement $MANP$ is positive in 10 of the 12 months but significantly different from zero at the .10 level in only three cases. In the month just prior to the announcement, abnormal net insider purchases are negative. The wealth hypothesis suggests that insiders purchase stock on or before an ESOP announcement to benefit from a long-run positive effect from a reduction in agency cost and from an immediate

market reaction to this expected benefit. In order to assure that they would receive these benefits insiders should purchase before the date of the announcement. Certainly the wealth hypothesis would not suggest that these purchases should concentrate in the months after the announcement.

Table 3

Abnormal net insider purchasers (MANP) from month -12 to month +6, with 0 being the announcement month of the ESOP adoption, 1987-1997. Normal number of insider transactions are computed using data over the preceding thirty months, from month -42 to month -13. Data reported are for 70 firms for which MANPs could be computed using monthly insider transactions data.

Panel A: MANP			Panel B: CUMNP		
Month	MANP	z-statistic	Period	CUMNP	z-statistic
-12	0.010	0.025	-12 to -1	2.672	1.660 ^a
-11	0.367	0.958	-1 to +1	2.172	3.143 ^c
-10	0.638	1.667 ^a	+1 to +6	6.858	5.702 ^c
-9	-0.233	-0.609			
-8	0.195	0.510			
-7	0.695	1.816 ^a			
-6	0.724	1.891 ^a			
-5	0.095	0.249			
-4	0.267	0.697			
-3	0.210	0.548			
-2	0.167	0.436			
-1	-0.462	-1.206			
0	1.267	3.309 ^c			
+1	1.367	3.570 ^c			
+2	-0.033	-0.087			
+3	0.581	1.518			
+4	0.581	1.518			
+5	2.038	5.325 ^c			
+6	2.324	6.071 ^c			

^{a, b, c} Significantly different at the 10%, 5%, and 1% levels.

As shown in Panel A of Table 3, abnormal net insider purchases concentrate in the month of the ESOP announcement and the following months. During the month of the ESOP announcement net insider purchases are positive and significantly greater than zero at the .01 level. In five of the six months following the ESOP announcement abnormal net insider purchases are positive. In three of these months net insider purchases are significantly different from zero at the .01 level. In each of these three months the abnormal net insider purchases are greater than for the month of the ESOP announcement. The control hypothesis suggests that insider purchases increase as a result of an ESOP announcement as insiders attempt to maintain their proportionate control share. This purpose could certainly be achieved by buying after the ESOP announcement. Thus, the buying activity reported in Panel A is consistent with the control hypothesis and largely inconsistent with the wealth hypothesis.

Panel B of Table 3 reports cumulative abnormal purchases over three different periods. In the 12 months prior to the ESOP announcement, CUMNP is positive but only marginally significant ($z = 1.66$). For the three-month period surrounding the ESOP announcement month CUMNP is also positive and significantly greater than zero at the .01 level ($z=3.14$). In the six-month period following the announcement CUMNP is positive and more than twice the value for the twelve-month period prior to the announcement. In the period following the announcement CUMNP is significantly greater than zero at the .01 level with $z = 6.86$. Our evidence suggests that insider purchases resulting from an ESOP announcement concentrate in the months following the ESOP announcement. These results support the control hypothesis relative to the wealth hypothesis in explaining insider purchases resulting from an ESOP announcement.

We provide strong evidence that insider purchases results from an ESOP announcement. The pattern of this insider buying suggests that it results from control considerations rather than wealth considerations. In the next two sections we examine additional tests to differentiate between the wealth and the control hypotheses.

4.2 *Tests on Earnings and Price Changes*

Although buying patterns tend to argue against the wealth hypothesis, theoretical arguments and previous empirical findings provide support for the wealth hypothesis. The purpose of an ESOP is to align employee and stockholders interest in such a way that future earnings will be increased. This increase in earnings over time should increase the firm's equity value. Further, an efficient market anticipated increases in earnings would cause an immediate increase in stock market prices at the ESOP announcement.

Previous studies have documented both an increase in earnings following the adoption of an ESOP and a stock price increase at the announcement of an ESOP plan. We test for similar findings using a much larger sample than utilized in previous studies. If we confirm these results with our large sample, we provide an inference that some of the early buying activity around an ESOP announcement results from wealth considerations.

Table 4

Earnings and stock returns around ESOP adoption. Earnings are defined as income before extraordinary items divided by prior year's total assets. Industry-adjusted earnings are computed as firm earnings minus industry median earnings. Raw annual stock returns are annualized rates of return adjusted for dividend reinvestment.

Panel A: Annual change in income as a percentage of total assets					
	Raw (N=164)		Industry-adjusted (N=160)		
Year	mean	median	mean	median	
-1	0.475	0.151	0.089	0.360	
0 (adoption year)	-0.511	-0.148 ^c	-0.336	0.070	
1	-1.527 ^b	-0.448 ^c	-1.291 ^a	-0.392 ^b	
2	-0.152	-0.435 ^b	-0.032	-0.166	
Panel B: Raw annual stock returns (N=162)					
Year	mean	median			
-1	13.86	10.35			
0 (adoption year)	16.94	11.02			
1	5.48 ^a	-0.47 ^a			
2	19.72	11.42			
Panel C: Cumulative abnormal stock returns (CRSP data, N=65)					
Interval	CAR	z-statistic	Day	Mean AR	t-statistic
-5,0	0.54%	.03	-1	0.32%	.04
-1,0	0.39%	.04	0	0.07%	.01
-1,1	0.59%	.03	1	0.19%	.02
-20,20	0.42%	.01			

^{a, b, c} Significantly different at the 10%, 5% and 1% levels using a two-tailed t-test for the means and a two-tailed Wilcoxon test for the medians.

^a Significantly different at the 10% level from year -1 median using Wilcoxon test.

We first examine the impact of ESOP announcement on future earnings. For the 211 securities in our NCEO sample we search for annual earnings before extraordinary items from Research Insight. We gather annual earnings for the year of the ESOP announcement and for the year prior and for the two years following the year of the ESOP announcement. Panel A of Table 4 reports the mean and median annual change in earnings for those firms for which data is available from Research Insight. In stark contrast to goals of the creation of an ESOP, the firms in our sample experience a decrease in earnings following an ESOP announcement. A positive increase in earnings occurs for the year preceding the ESOP announcement, but earnings decline in the year of the announcement and for the two years following the adoption of the ESOP. Indeed, this decline is significantly different from the average increase in the year before the ESOP announcement. Panel B of Table 4 reports the annual stock returns collected from our sample for the same period. These returns show little market response to an ESOP announcement.

Our results argue against the hypothesis that ESOP adoptions cause future earnings growth and consequent long-term equity value appreciation that would encourage insiders' purchases at the time of the ESOP announcement. The growth in earnings and price appreciation simply do not materialize. Although insiders may have purchased shares in anticipation of an earnings increase that did not materialize, if insiders hold rational expectations they are not buying shares based on long-term earnings increases. On this basis we are unable to support the wealth hypothesis as an explanation of insider purchases at the time of an ESOP announcement.

Insider purchases made at the announcement date may, however, still result from wealth considerations. Even in the absence of long-term earnings effects, there might be a positive market reaction at the time of the ESOP announcement. To examine this possibility we utilize the subsample for which the exact date of the ESOP announcement is available. The daily return data is collected from the CRSP tape. Of the 70 firms in this subsample we are able to gather sufficient daily return data for 65 securities to estimate abnormal returns around the ESOP announcement date.

We apply standard event study methodology to estimate abnormal return for a 41-day event window including the announcement day and the 20 trading days preceding and following the announcement. We determine abnormal returns using equation (5):

$$AR_{it} = R_{it} + (\alpha_i + \beta_i MR_t) \quad (5)$$

where AR_{it} is the abnormal return for security i on event day t , R_{it} is the realized return for security i on event day t , and MR_t is the market return for

event day t as proxied by the CRSP NYSE-AMEX-Nasdaq value-weighted index, a_i and b_i represent OLS estimates of the market model for security i using the standard market model with the CRSP NYSE-AMEX-Nasdaq value-weighted index as the market proxy. We determine the daily average abnormal return across the securities for each event day and cumulate the average abnormal returns over various periods within the event window. Applying standard event methodology we determine if the average daily returns and cumulative average returns represent significant departures from zero.

As reported in Panel C of Table 4, the wealth-hypothesis explanation for insider purchases around ESOP announcements is not supported by abnormal positive returns in reaction to an ESOP announcement.⁶ For the three days surrounding the ESOP announcement average abnormal return is always positive (Day -1, average abnormal return = .32%; Day 0, average abnormal return = .07%; Day 1, average abnormal return = .19%). However, the average abnormal return is not significantly different from zero for any of these three days (Day -1, $t = .04$; Day 0, $t = .01$; Day 1, $t = .02$). Likewise, as reported in Panel C of Table 4, average cumulative abnormal returns are not significantly different from zero over various event windows. The wealth hypothesis suggests that insiders purchase shares around an ESOP announcement in order to benefit from valuation increases resulting from increased earnings that would in an efficient market be reflected at the time of the ESOP announcement. We find, however, that earnings do not increase after an ESOP adoption. Indeed, they decrease. Further, abnormal returns at the time of the ESOP are insignificantly different from zero. Unless insiders misjudge the long-term and market impact of ESOP announcements, insiders are not making purchases around announcement dates because of wealth considerations.

4.3 *Differences In Insiders' Purchases Across Firms*

We have examined insider purchase patterns and have found these more consistent with the control hypothesis rather than the wealth hypothesis. The wealth hypothesis has also been brought into question since earnings growth did not materialize after the introduction of an ESOP and since there was an insignificant price reaction to the announcement of the ESOP. In this section we examine insider purchases across firms to further distinguish between the control and wealth hypothesis.

We examine difference in insiders' purchases across firms using the relative purchase index, RPI. As defined in equation (3), RPI measures the strength of insiders' purchase activity by standardizing net purchase activity by the number of shares outstanding. We seek to explain differences in RPI

by regressing this variable against the explanatory variables as shown in equation (6):

$$RPI_{it} = \beta_0 + \beta_1 \cdot OC_{it} + \beta_2 \cdot \Delta E_{it+1} + \beta_3 \cdot R_{it-1} + \varepsilon_{it} \quad (6)$$

where RPI_{it} is the relative purchase index for security i in year t as defined in equation (3), OC_{it} is the operating control variable for security i in year t , ΔE_{it+1} is the change in earnings variable for security i in year $t+1$, and R_{it-1} is annual return variable for security i in year $t-1$.

The wealth hypothesis suggests that insiders purchase shares to benefit from future earnings increases resulting from the adoption of an ESOP. In the previous section we indicated that earnings, in general, decline after an ESOP announcement. However, ESOPs may, in particular cases, achieve their goals. Insiders may have the ability to determine if ESOPs will increase future earnings and purchase shares in those cases. Thus, even with negative increase in general, wealth considerations may affect purchases in particular instances. If management can predict when an ESOP will be successful they should purchase shares in firms that will experience future earnings increases. To test for this possibility we include a variable, ΔE_{it+1} , which measures the increase in earnings in the year following the ESOP announcement. If the wealth hypothesis explains insiders' purchases but only for firms where the ESOP was successful, b_2 should be positive and significantly different from zero. A positive value for b_2 would indicate that insiders are buying for wealth considerations in those instances when the ESOP should have a favorable impact.

We include the previous year's stock return, R_{it-1} , as a control variable since studies have shown (see Rozeff and Zaman (1998)) that insiders buy when stock returns are low and sell when stock returns are high. If these findings are evident in our sample, b_3 should be negative and significantly different from zero.

Finally the operating control variable, OC , seeks to test the control hypothesis. The control hypothesis suggests that insider purchase shares at ESOP announcements in an attempt to maintain proportionate ownership control in the face of increased ownership by other employees. Thus, insider purchase activity should be dependent on the threat to management ownership as determined by the size of the ESOP plan. The larger the size of the plan, the greater would be the threat to management control. Previous management ownership would also affect the need for insiders' purchases. The larger the ownership prior to the announcement, the smaller would be the threat to management control from any given plan size. We postulate that

insiders' purchases will respond to management control urgency as defined by the ratio of ESOP plan size (the percent of shares outstanding included in the ESOP plan) to prior management control (the percent of shares held by management in the year prior to the ESOP announcement).

We gather information on the size of the ESOP plan from the Employee Ownership Public Companies List provided by NCEO. We determine the level of ownership by management prior to the ESOP announcement from various issues of *Value Line*. The earnings and the stock return variables are acquired from *Research Insight*. We conduct three annual regressions including the year of the ESOP announcement and the following two years. Our sample size for these three years range from 73 to 77.

Table 5

Results of the regressions. The dependent variable is net shares purchased as a percentage of total shares outstanding in the prior year. In the regression, the independent variables are ratio ownership variable, next year's industry adjusted change in earnings, and prior year's annual stock returns. The ratio ownership variable is computed as ESOP ownership percentage divided by management ownership percentage. The sample size is small because of missing data for some variables

Dependent: net shares purchases as a % of shares outstanding						
Independent	Year 0 (N=77)		Year 1 (N=73)		Year 2 (N=74)	
	estimate	t-value	estimate	t-value	estimate	t-value
Constant	0.155	1.33	-0.141	-1.04	-0.052	-0.69
Ownership variable (ratio)	-0.007	-0.43	0.089	4.42 ^c	0.020	1.79 ^a
Next year's Earnings change	-4.652	-2.34 ^b	0.616	0.21	0.839	0.49
Prior year's Stock returns	-0.004	-1.08	-0.002	-0.53	-0.007	-4.88 ^c
Adjusted R ²	0.071		0.227		0.243	

^{a, b, c} Significantly different from zero at the 10%, 5%, and 1% levels.

Table 5 reports the results for each of the three annual regressions. As with previous tests, our results do not support the wealth hypothesis. The coefficient measuring the relationship between current insiders purchases

and next year's earnings change is positive but insignificant in Years 1 and 2. In Year 0 (the year where wealth effect purchases ought to be strongest) the relationship is significant. However, the relationship is of the wrong side. Insiders are displaying a significant tendency to purchase shares in ESOP securities that have poor performance in the following year. If the purchases are designed to create wealth, insiders are not displaying their normal tendency to trade profitably. The inclusion of the variable for last year's stock return appears to have provided an important control function. The regression coefficient for this variable is always of the correct sign and significantly different from zero in both equations for Year 2.

In contrast to the wealth hypothesis, the results from our regression analysis supports the control hypothesis. For Year 1 and Year 2 there is a significant positive relationship between control urgency and insiders' purchases. Across firms, as the size of the ESOP increases relative to previous management ownership, insider purchases increase. As management control is threatened insiders purchase more stock. Consistent with the hypothesis that these purchases should occur as the ESOP stock is distributed, the relationship between control urgency and purchases is insignificant in Year 0.

5. Conclusion

We study insider purchase activity around an ESOP announcement. We provide evidence that unusual buying activity occurs at the ESOP announcement and in the years following the adoption of the ESOP plan. We test two hypotheses to explain this behavior. The wealth hypothesis suggests that insider buying should result from expectations of future earnings increases consistent with the purpose of the ESOP plan and expectations of an immediate positive market reaction to the adoption of the plan. This hypothesis predicts buying activity before the ESOP announcement. We are led to reject the wealth hypothesis since: a) unusual insider buying activity is not restricted to the time before the ESOP announcement, b) expected earnings increases do not materialize and significant buying activity is inversely related to the level of earnings increases, and c) because a significant market reaction does not greet the ESOP announcement.

The control hypothesis suggests that insider buying activity results from an attempt by management to maintain control in the face of stock distributions to employees as a consequence of the ESOP plan. Support is provided for the control hypothesis on two bases. First, insider-buying activity continues in the years following the ESOP, consistent with buying activity occurring as stock ownership is transferred to employees. Second, the level

of insider buying is associated with a measure of control urgency. We find that as the size of the ESOP plan and consequent stock distribution to employees increase relative to prior management ownership insider buying activity increases. Thus, as management control appears in greater jeopardy buying activity increases.

Endnotes

1. Contrary to the purpose of ESOP legislation, ESOPs have also been developed as a takeover defense as for example in the 1989 ESOP established by Polaroid. If the goal of an ESOP is to entrench current management, the value of the firm should fall with the establishment of an ESOP. Gordon and Pound (1990), Chang (1990) and Dhillon and Ramirez (1994) find a negative market reaction to ESOPs designed as a takeover defense. These types of ESOPs, however, constitute a small proportion of total ESOP offerings.
2. The Insider Trading Sanctions Act of 1984 granted the SEC authority to seek court orders for the disgorgement of insider trading profits, as well as the right to impose penalties up to three times the amount of the profits.
3. There were 12 additional firms for which some data was given on the CDA database. However, for these firms total transactions were less than either total purchases or total sales. Hence, these firms were deleted from our sample.
4. There is evidence that insider sales are generally higher than insider purchases. Lakonishok and Lee (2001) observe that stock sales by management exceed purchases in every single year in their sample period. They argue that over time a higher percentage of managers' wealth is in their own firm's stock which results in an increase in stock selling for portfolio diversification.
5. ENP_i is determined following Karpoff and Lee (1991) as $a_i / (1 - b_i)$ where a_i and b_i are OLS estimates of the following equation:
$$NP_{it} = a_i + b_i \cdot NP_{it-1} + e_{it}$$
estimated from months -42 through -13.
6. Results from our study contradict previous findings that indicate significant price increases at the announcement of an ESOP. Our sample

is much larger and covers a longer period than previous studies. Thus, our findings may indicate a learning curve whereby traders bought at the announcement of an ESOP in anticipation of future price increases associated with future earnings increases. As over time, these increases did not materialize, the market learned not to bid up prices at the announcement of an ESOP.

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Appendix

As shown in equation (A1), mean abnormal net purchases are determined by summing monthly abnormal purchases across firms and dividing by the total number of firms, N .

$$MANP_t = \frac{\sum_{j=1}^N ANP_{jt}}{N_t} \quad (A1)$$

Karpoff and Lee show that the appropriate test statistic for the hypothesis, $MANP_t = 0$, is shown in (A2).

$$z = \frac{MANP_t}{\frac{1}{N_t} \sqrt{\sum_{j=1}^N \frac{s_j^2}{(1-\beta_j^2)}}} \quad (A2)$$

where s_j^2 is the variance in the equation in footnote 3 and β_j is as shown in footnote 3. The cumulated mean abnormal number of net purchasers from months -12 to t is computed as shown in (A3).

$$CUMNP_{-12,t} = \sum_{k=-12}^t MANP_k \quad (A3)$$

To test the null hypothesis that $CUMNP_{-12,t} = 0$, the test is shown in (4A):

$$z = \frac{CUMNP_{-12,t}}{\sigma_{-12,t}} \quad (4A)$$

where $\sigma_{-12,t}^2$ is computed as shown in (A5):

$$\sigma_{-12,t}^2 = \sigma_{t-t}^2 + \frac{1}{N_t^2} \sum_{j=1}^N \frac{s_j^2}{(1-\beta_j^2)} [1 + 2 \sum_{k=1}^{t+12} \beta_j^k] \quad (A5)$$