Closing the Income Gap:

Evaluating the Effectiveness of Employee Stock Ownership Programs

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Abstract

Since the 1950s, the disparity between executives and employees in America has been on the rise and has increased to staggering levels, stalling income mobility and affecting individuals and the economy at large. This paper examines the impact of Employee Stock Ownership Plans (ESOPs) and Employee Stock Purchasing Plans (ESPPs) on the pay structure within publicly traded companies. Economists have been studying the effectiveness of ESOPs since 1974 and have found that ESOPs improve employee morale, productivity, and firm performance, but few have examined the role that ESOPs play in wealth inequality, and none have utilized the gap between CEO and average worker pay as a mechanism for measuring disparity. This study is the first to utilize panel data from the last decade to study the impact of stock ownership plans on CEO pay, and to examine whether or not companies with ESOPs have a smaller CEO to average worker pay gap. The findings suggest that overall CEO pay sensitivity is higher in ESOP companies than it is in non-ESOP companies, as evidenced by higher increases in ESOP CEO pay than in non-ESOP CEO pay to the same increases in firm performance metrics. On the other hand, there is no significant difference between the ways CEOs are compensated in companies with ESPPs versus in those without. Lastly, there is inconclusive evidence to support the claim that companies with ESOPs have a lower CEO to average worker pay ratio.

I. Introduction

In the last 50 years, average wealth has increased tremendously around the world, but this increase has not been shared equally by all groups (McKernan et al. 2017). Specifically, the top .1 percent has captured 13 percent of all economic growth over the past four decades (Levitz 2017). One measure of this inequality is the increased disparity between executive and employee pay. For example, in 2015 the ratio of average CEO pay to average worker pay was 335 times, compared to 40 times in 1980 (Hermalin and Weisbach 2017). In 1956 political economist Louis Kelso, recognizing executive and employee pay disparity as a potential barrier to long-term capital expansion, devised the Employee Stock Ownership Plans (ESOPs) and the Employee Stock Purchase Plans (ESPPs) as a way of distributing economic growth to the entire workforce and providing lower-income workers with access to increased earnings (Freeman and Knoll 2008). ESOPs allow employees to own stock in the company without having to purchase shares, and ESPPs allow employees to use after-tax wages to purchase stock in their companies, usually at a discounted price (NCEO 2018). In 1974, Congress passed the Employment Retirement Income Security Act (ERISA) which contained information regarding ESOPs, and led to the start of companies incorporating these plans. As of 2015, 36% of employees working for companies with stock options owned stock or options in their companies (NCEO 2018). By providing all employees, not just those at the top, with access to capital, is it possible that in companies with ESOPs and ESPPs, the economic gap between the top and the bottom is compressed? And, given possible differences in incentive structure within ESOP companies, are the management teams at those companies more likely to reward the firm's CEO for increasing the pay of its workers? Might ESOPs be a viable response to the urgent problem of income inequality?

This paper will utilize panel data from 2007-2016 to answer these questions by examining

whether or not CEO pay in ESOP-firms is more sensitive to employee wage increases, to an increase in the number of employees, or to an increase in firm performance and by analyzing whether there is a significant difference between the within-firm pay gap in the various types of firms. Perhaps CEOs of ESOP companies get remunerated for pursuing worker interests in addition to shareholder interests or perhaps companies with ESOPs impose more discipline on CEO pay because employees now have stake in the game. Similarly, perhaps because ESOPs have been proven to improve employee morale and productivity, then employees of ESOP companies are not only making more income due to higher productivity, but are also now making money through capital gains. If this is the case, then not only does this provide insight into the type of incentive structures prevalent in ESOP firms, but it could help to explain whether or not ESOPs can serve as an effective tool for mitigating the rising economic gap between the top and the bottom.

To date, no study has examined whether the presence of ESOPs or ESPPS impact CEO pay, and no study has tried to target whether the pay disparity in ESOP companies is lower- the initial reason for why ESOPs were created. The data indicate that CEOs in ESOP companies are held more accountable than CEOs of non-ESOP companies. This is evidenced by the fact that CEOs of ESOP companies have higher pay increases than non-ESOP CEOs do for increasing the firm's market cap and employee wage. However, the within-firm pay gap is not significantly lower in ESOP companies than it is in non-ESOP companies. This paper will proceed with a brief history of ESOPs, followed by an overview of relevant literature. It will then progress into an overview of the data and methodology utilized, and conclude with the results and implications.

II. History and Background of ESOPs

In 1958, Louis Kelso along with philosopher Mortimer Adler argued that wealth disparity is a negative force in society and that most workers are excluded from ownership and prosperity. One way to counter this growth is by enabling workers to have greater access to capital ownership (Freeman and Knoll 2008). Thus, ESOPs were developed and enacted as part of the 1974 Employee Retirement Income Security Act (ERISA), and expanded steadily during the 1980s as changes in the tax code made plans more attractive for business owners. ESOPs work by putting workers' retirement savings into the stock of a single company, the same one on which they depend for their wages and current benefits (NCEO 2018). There are various forms of employee ownership plans: employees can buy stock directly, be given it as a bonus, can receive stock options, or can obtain stock through a profit sharing plan (NCEO 2018). But the most common form of employee ownership in the U.S. is the ESOP, covering 14.1 million employees (NCEO 2018), and ranging from industries like manufacturing, professional services and financial services. In an ESOP, a company sets up a trust fund, into which it contributes new shares of its own stock or cash to buy existing shares at a tax-deductible rate. Regardless of how the plan acquires stock, all company contributions to the trust are tax-deductible, meaning companies can deduct the cost of contributions or discounts on stock, and employees can at least defer, and sometimes avoid, taxation (NCEO 2018). Lastly, as employees accumulate seniority with the company, they acquire an increasing right to the shares in their account. Thus, ESOPs are primarily used as a mechanism for motivating and rewarding employees.

ESOP-type arrangements outside the U.S. are less common, but when employee ownership is found, it is almost entirely in listed companies with employees owning a small percentage of shares. The most notable contrast between other countries and the U.S. is the absence of ESOP-type arrangements aimed at the long-term holding of shares, and the absence of incentives to

owners to sell a substantial stake to the trust (NCEO 2018). Relying on employees to make the decision on whether or not to purchase shares historically shows that the majority of eligible employees will not participate, as people tend to favor current income over future rewards (NCEO 2018). Furthermore, among those who do participate, the amount set aside will be skewed towards higher-paid employees who have more disposable income (NCEO 2018). Despite the different rules, countries such as Ireland, the UK, Australia, New Zealand, and South Korea all have multiple laws to encourage widespread employee ownership, but the number of employees involved is significantly lower. For example, in the UK there are only about one million employees engaged in ownership plans (NCEO 2018). Similarly, in South Korea in 2012, there were 3,000 employee ownership plans covering just 1.2 million workers (NCEO 2018).

Both ESOPs and broad-based option plans provide more wealth to employees. Findings indicate that ESOP participants have about 2.2 times the retirement assets of comparable employees in comparable companies and almost all of that is from the employer's contribution (not the employee's as in 401(k) plans) (NCEO 2018). As of 2014, 34.9% of employees, or 30 million Americans, worked for companies with stock options in their companies (NCEO 2018). Given that ESOPs are already widespread and are only on the rise (since 2010, 229 ESOPs have been created each year) (NCEO 2018), it is worth further examining what the implications are for the individuals who participate in these plans.

III. Review of the Literature

Economists have been studying the effectiveness of ESOPs since 1974, but there have been few studies that have specifically examined the role such programs might play in mitigating income inequality, and none that utilize the gap between CEO and average worker pay as a

mechanism for measuring disparity. Broadly speaking, if low-wage workers increase their earnings relative to higher earnings, or if they accumulate a larger share of their firms' profits, then inequality would decrease (Bernstein 2016). In the U.S., the gap in CEO-to-worker pay has become a great concern with regulations being put in place to try to mitigate the disparity (Teh Hooi Ling 2011). As the wealth disparity has been on the rise, so too has the prevalence of new human resource management practices, increasing from 65% to 85% of companies from 1992-1997 (Ichniowski and Shaw 2003). Compensation policy is one of the most important factors in an organization's success, as it both shapes the way executives behave and determines what kinds of executives an organization attracts (Jensen and Murphey 1999). Jared Harris (2008) argues that current compensation practices and high executive pay are problematic because people value fairness of distribution, and thus when lower-level employees perceive that they are being underpaid relative to CEOs, they are more likely to leave the organization.

If economists have proven that within-firm inequality has negative consequences on the overall moral of employees, the question then becomes which types of pay mechanisms have impacted this rising inequality. Bradley Benson and Wallace Davidson (2010) position the pay debate in the context of stakeholder management and CEO compensation, specifically examining the validity of the Stakeholder theory of corporate governance. This theory states that stakeholder managers should operate the company to maximize the social welfare of all individuals impacted by the business (Donaldson and Preston 1995). Benson and Davidson (2010) examine shareholder value maximization, a competing theory to stakeholder management, which proposes that managers should operate the company to maximize shareholder wealth in order to get the greatest social welfare and build off the assertion that ignoring stakeholders would prohibit the firm from maximizing its value (Jensen 2010). Thus, if

a firm wants to achieve a specific goal, they will orient their reward system towards it (Jensen 2010). Therefore, if employee stock ownership plans essentially make employees shareholders, then under this theory, a firm would want to reward an employee potentially through higher wages. By examining how CEO pay sensitivity differs with respect to varying pay schemes, we can broaden our understanding of the goals within that company and further understand how managerial incentives have developed over the past few decades.

One way for wealth disparity to diminish is by giving lower income workers higher wages. There are two channels by which ESOPs can potentially increase wages- through higher productivity and through higher employee morale. Many economists have studied ESOPs in regards to its effects on firm productivity and employee satisfaction. Michael Quarrey, Joseph Blasi, and Corey Rosen (1986) were the first to examine the relationship between employee ownership and corporate performance through a difference-in-difference method and found that ESOP companies had a sales growth rate of 3.4% per year higher in the post-ESOP period than would have been expected had the company not implemented ESOP. Jones and Kato (1993), like Quarrey, Blasi and Rosen, also found evidence showing that ESOPs improve performance, and asserted that it was through the channel of increased productivity by encouraging a stronger alignment of employee goals and those of the firm (Jones and Kato 1993). If ESOPs have been proven to increase productivity (Quarrey et al. (1986), Jones and Kato (1993), and productivity has been proven to move with wages (Dearden, Reed, Reenen (2006), then ESOPs can increase wages through the channel of increased productivity.

Just as there have been studies linking ESOPs to higher productivity, there have also been studies specifically looking at whether the same is true for ESOPs and employee morale. Senator Russell Long (1978) pioneered the effort to understand how ESOP adoption would impact the

attitudes of employees and concluded that employee-owners exhibit higher levels of integration, involvement and general satisfaction than non-owners. Daniel Hollack et al. (2004) build upon these findings and assert that employee satisfaction is higher in ESOP companies because ownership enables employees to feel as if their work has more influence on the firm- a feeling correlated to higher satisfaction. But Saioa Arando et al. (2015) find that job satisfaction is actually lower among workers with significant employee ownership than it is in firms with modest employee ownership. If employee satisfaction in ESOP companies is higher than in non-ESOP companies, and higher satisfaction leads to higher wages indirectly, then this is yet another mechanism by which ESOPs should lead to employee wage improvement.

ESOPs can not only improve wages indirectly through higher productivity and satisfaction, but also have been linked to higher levels of wealth directly. Robert Bruner and Richard Brownlee (1990) examined the relationship between ESOP and wealth and found that public shareholders' wealth increased by 15.90% post ESOP implementation (Bruner and Brownlee 1990). Buchele et al. (2010) utilize a newer data set and find that a one-dollar increase in ownership is associated with an 80 cent increase in total wealth. If ESOPs have been proven to increase firm performance (Jones and Kato (1993), Quarrey et al. (1986)), wealth of workers (Bruner and Brownlee (1996), Blasi et al. (1996), Buchele et al. (2010)) and employee satisfaction (Long (1978), Bryson and Freeman (2004), Bryson et al. (2013)), it is worth asking whether they can serve as a means for addressing the inequality gap.

Buchele et al. (2010) study this question by examining the distribution of company stock ownership and wealth. They find the top 10 percent of employees' households with employer stock hold 58.5 percent and 4 percent for those in the bottom 40 percent, compared to the sample without employer stock whose numbers are 61 percent and 3 percent respectively (Buchele et al.,

2010). Thus, we can see the equalizing effect of ESOPs. But when looking more specifically at the wealth distribution, the results show that the shape of the distribution of wealth within the group of employee-owners may not be greatly affected by employee ownership, potentially due to the fact that employee ownership plans distribute company stock in proportion to salary, and salary is distributed unequally (Buchele et al. 2010). Thus while employee ownership may increase wealth, these results show that the shape of the distribution of wealth is unchanged, as everyone's wealth is going up by a similar percentage, or in proportion to their salaries, potentially widening the gap further (Buchele et al. 2010).

The lack of adequate data available has provided a limitation in the extent to which employee stock ownership plans have been studied. While there has been extensive literature examining the financial benefits- productivity, performance, etc. and there have been studies examining the psychological benefits- employee satisfaction and worker influence, there have been few studies that put the two together. This paper assesses how employee stock ownership programs impact CEO pay relative to firm growth, whether CEO pay increases in ESOP companies when wages of that company rise, and how CEO pay relates to that company's number of employees. These findings will provide a deeper understanding of the type of culture likely to promote ESOPs and whether or not these programs can serve as tools for closing the income gap. If there is a correlation between employee stock ownership plans and CEO pay, relative to wage increases, then perhaps employee stock ownership plans have an equalizing effect and are tied to a more egalitarian corporate culture. This is especially possible given that a company's human resource department is often the one to make initial recommendations of pay levels (Murphy 1999).

While there have been three studies (Buchele et. al (2010), Blasi et al. (2008), Bernstein (2016)) examining wealth inequality's relationship to ESOPs, none have utilized the difference

between CEO pay and average wages to represent inequality. Furthermore, all three studies utilize the same two datasets, the NBER survey of workers in 14 companies that use shared capitalism programs extensively, and the national GSS survey, which provides a broad representative view of the extent of the pogroms (Blasi, Freeman, Kruse 2008). Both of these data sets encompass data up until 2006. No studies have examined wealth inequality using data from the past decade. My study hopes to provide a broader understanding of the implications for employee stock ownership plans on income inequality, and assess whether or not widespread employee stock ownership plans could be an effective solution to the growing disparity between CEO and employee pay. Given the importance and changing nature of managerial structures, and given that pay inequities between executives and lower level workers has been proven to lower productivity, increase turnover, and decrease morale (Murphey 1999), it is vital that we explore ways to counter the rising wealth disparities in America.

IV. Basic Empirical Strategy and the Data

In order to test the sensitivity of CEO pay to ESOPs, I will utilize a panel database that includes annual observations from 2007-2016 on all public companies on the S&P 500 Index. Data on ownership plans come from The National Center for Employee Ownership (NCEO), which is the main provider for information regarding employee stock ownership plans. The NCEO was founded in 1981 and has been gathering information on employee stock ownership plans in public companies since its beginning. I utilize Form 5500 data from Brightscope to confirm that the majority of companies established ownership plans prior to 2007 (before my data collection period). Measuring employee wages has historically been challenging, as US corporations tend to shy away from reporting this type of data. I utilize Glassdoor's study on

CEO to Worker Pay Ratios to gather information on CEO total pay and median worker total pay. One caveat I recognize in using this data is the potential response biases, as most workers historically underreport bonuses and stock options in surveys, or neglect to remember the exact numbers—tendencies that could impact the recorded data from Glassdoor's salary survey (Glassdoor 2015). I will take these CEO pay and median worker pay measurements to gather a within firm pay-gap measurement. I will control for firm metrics gathered through Bloomberg to ensure robustness in my results.

On the one hand, it is possible that given that ownership plans are often correlated with a more egalitarian company culture, and given that the culture of the company (HR policies) influences CEO pay (Murphy 1999), then perhaps CEO pay would not rise even if employee wages rise, mitigating the inequality gap. It is also possible that managers of companies that decide to employ ownership plans would want to reward a CEO who increases the wellbeing of its workers, providing insight into the incentive structure prevalent in companies with employee stock ownership plans (ESOP), and employee stock purchasing plans (ESPP). The result of this provides insight into the sensitivity of CEO pay to employee wages. I will then examine whether companies with ownership plans tend to reward their CEOs for increasing the number of employees or whether there is no difference in the sensitivity of CEO pay between ownership companies and non-ownership companies when the number of employees increase. The results of these findings will broaden the discussion on both incentive structure and income inequality by showing how ownership plans impact CEO-pay sensitivity. Lastly, I will examine how the within-firm pay compression variable differs between the types of firm, providing understanding of whether or not firms with employee ownership tend to be more egalitarian.

V. Methodology

To account for the possibility that the presence of pay systems may have an indirect effect on CEO salary, I will employ a fixed effects model following the specification of Jones and Kato (1995). This model includes year dummy variables to capture shocks that are common to all firms, as well as firm specific effects, like managerial ability and worker quality, to capture the time invariant heterogeneity of firms (Jones and Kato, 1995). Specifically, the general model will regress CEO salary onto the firm metric, followed by the same regression but with the interaction between the metric and the ownership scheme:

$$Salary = \alpha_{it} + \beta_1 X_{it} + u_{it} + \delta_i$$

$$Salary = \alpha_{it} + \beta_1 X_{it} + \beta_2 X_{it} E_i + \beta_3 X_{it} P_i + u_{it} + \delta_i$$

where β_1 represents the sensitivity of CEO pay with respect to the firm's performance metric, E is the ESOP dummy, P is the ESPP dummy, δ captures firm fixed effects and u is the error term. I employ this model utilizing three metrics- Market Cap, Wages, and Number of Employees. Market Cap refers to the total value of the company's shares and is typically used to measure company revenues (Murphy 1999). Due to the fact that American corporations neglect to report wages, I utilize the ratio of total labor costs to number of employees to represent an employee wage. The Number of Employees represents the total number of employees present in that current year. I expect the β_1 coefficient to be positive for all three performance metrics as higher market cap, higher wages, and more employees would indicate better company performance and would be reflected in an increased CEO salary. My main interest lies in the interaction term between ESOP and ESPP companies and the performance metrics. In ESOP companies, regular employees become shareholders and therefore when the company aims to please shareholders, it also aims to please employees. It is possible that due to this stronger interest alignment between

workers and shareholders, CEOs would be held more accountable to changes in company performance. In this way, I would expect the coefficient on the interaction term of the ESOP and ESPP variables with Market Cap and Wages to be higher than the coefficient on the performance metric un-interacted. This would indicate that CEO pay is more sensitive in ESOP and ESPP companies than it is in companies without these plans, implying that CEOs are held more accountable in these types of firms.

Lastly, it is worth examining whether ESOP companies, who strive for equality, are more likely to reward their CEOs for increasing the number of employees, versus other companies who may want executives to fire employees in order to diminish labor costs. Hallock et al. (2011) examine the relationship between layoffs and lagged CEO pay and find that increased layoffs tend to increase CEO pay, but that the relationship turns negative when accounting for fixed effects (Hallock et al. 2011). If CEO pay in ownership companies is more sensitive to increases in the number of employees, then this provides insight into the incentive structure prevalent within that company- the CEOs are encouraged to hire, not fire, in these corporations.

The next method I will employ will capture the pay-gap differences between companies with ownership plans versus in those without. I will perform a t-test to compare the pay-ratios which will provide information on whether or not there is a significant difference in the means for the CEO-pay ratio in ESOP vs. non-ESOP companies, and in ESPP vs. non-ESPP companies. I will then perform regressions controlling for various firm metrics to fully understand how the presence of ownership plans may impact the within-firm pay gap. The general model will be as followed:

$$PayGap_i = \alpha_i + \beta_3 X_i + u_i$$

$$PayGap_i = \alpha_i + \beta_1 E_i + \beta_2 P_i + \beta_3 X_i + u_i$$

where β_1 and β_2 represent the coefficients on the ESOP and ESPP term respectively, β_3 represents the coefficient on the performance metric, and u_i represents the error term. Given that Employee Ownership plans were initially designed to counter the growing wealth disparity in the 1950s, it is worth studying whether these plans have succeeded in their original mission. If the results indicate that there is in fact a lower pay-gap in ESOP companies, then employing them nationwide would have profound impacts on mitigating the excessive levels of wealth inequality in America.

VI. Results and Discussion

Descriptive Statistics of the Data

The summary statistics show data on the disparities between ESOP and non-ESOP companies, and between ESPP and non-ESPP companies. The merged panel dataset contains observations from companies on the S&P 500- 24% of which have an ESOP and 44% of which have an ESPP that were all established prior to 2007. The average CEO salary for ESOP companies is $1,969,967, approximately $490,000 higher than the average CEO salary for non-ESOP companies. The average wage in ESOP companies is $165,816 compared to $132,712 for non-ESOP companies. Thus ESOP companies report both higher CEO and wage salaries than their non-ESOP counterparts. Looking at these averages provides insight into the substantial difference in income levels between CEOs and employees. In contrast, the average CEO salary for ESPP companies is $1,746,115 compared to $1,499,727 for non-ESPP CEOs and the average wage for ESPP companies is $149,519 compared to $86,859 for non-ESPP companies. Thus both CEOs and employees of ESPP companies make more than do CEOs and employees of non-ESPP companies. The pay-gap cross-sectional data shows that the within-firm pay gap (CEO

total pay/median worker total pay) is almost 250 less than it is for non-ESOP companies. The opposite becomes true for non-ESPP firms where companies with ESPP actually have a 196 higher pay-gap ratio than their non-ESPP counterparts. This provides preliminary insight into the potential equalizing effects of ESOPs, and the potential non-equalizing effects of ESPPs.

Pay Sensitivity Results

Table 1

Table 1a shows the results of the Market Cap regressions using a fixed effects approach. The results indicate that as Market Cap increases by one million dollars, CEO Salary rises by $7.32 on average. The small positive relationship corroborates previous findings that CEO compensation is aligned to firm performance (Murphy, 1999). When incorporating the interaction term between ESOP companies and Market Cap, we see that in firms with ESOPs, CEO pay will rise by $15.11. Thus, CEOs of ESOP firms get remunerated more for the same increase in Market Cap[1]. This aligns with my expectations that CEOs of ESOP firms are held more accountable to changes in firm performance, and thus their pay sensitivity is higher than it would be in non-ESOP firms. However, this conclusion cannot be applied to all ownership schemes, as the interaction between Market cap and ESPP was insignificant. Thus the type of scheme matters in terms of how CEOs are rewarded in response to changes in firm performance.

Table 1b displays the results of the Wage regressions on CEO pay. The fixed effects results indicate that for every dollar in employee wage increase, CEO pay goes up by $25.04. When incorporating the interaction term between wages and ESOPs, we see that CEOs of ESOP

[1] I repeat the same regressions using a log-log specification to check for robustness and find the same conclusion. CEO performance sensitivity to increases in market cap is stronger in ESOP companies.

companies make $37.85 for every dollar increase in wages. This result is consistent with the conclusion from the Market Cap regressions discussed above in that CEOs of ESOP firms are held more accountable to changes in company metrics. In this case, CEOs of ESOP companies are rewarded more for improving the wages of their employees, providing information on the incentive structures prevalent in ESOP firms. But if ESOP CEOs are getting more than non-ESOP CEOs per every dollar increase in employee wage, this would mean that the gap for ESOP firms is actually growing. If CEO salary increases by $38 dollars (.0023%) to every $1 increase (.0007%) for employees, this would only work to perpetuate the inequality gap. Thus perhaps ESOPs cause CEOs to be held more accountable, but the closing of the income gap is not achieved. However, given the tendency for companies to not report wage data, one must note that the sample drops from 290 companies to 27 companies. Thus, the results must be taken cautiously as the sample is not representative. Lastly, the lack of significant results for the ESPP interaction reveal that the presence of ESPPs makes less of an impact than does the presence of ESOPs on CEO pay.

Table 1c gives us information on how CEO pay is impacted by a change in the number of employees within the company, and how this differs between ESOP and non-ESOP companies, and ESPP and non-ESPP companies. The coefficient on the number of employees is 26.47, indicating that as the number of employees increases by one, CEO pay will rise $26.74. The coefficient on the interaction term of both the ESOP and ESPP variable and the number of employees is statistically insignificant, indicating that the presence of an ownership scheme may not impact how sensitive CEO pay is to changes in the number of employees. This implies that CEOs of ESOP companies are more likely to get higher compensation increases than non-ESOP

CEOs for changes in market cap or employee wages than they are for changes in the number of employees.

Pay-Compression Results

Table 2

The t-test of pay gap and ESOPs show that despite the lower pay gap levels prevalent in ESOP companies, there is no significant difference between the mean pay gap of ESOP and non-ESOP companies. Similarly, despite the difference in average means between ESPP and non-ESPP companies, the t-test results show no significance. This is in accordance with the rest of the paper in that the impacts of ESPP on inequality are not clear. The results of the regression indicate that the pay gap ratio is 21 dollars less in ESOP companies than in non-ESOP companies when controlling for performance metrics and industry, though non-significantly. I followed these results by examining whether the effects of ESOPs were potentially lagged 1 year, and similarly found no significance. I then tried a log-log specification, regressing the log of pay gap onto the log of the performance metrics, and found that the ESOP and ESPP coefficients remained insignificant. These nonsignificant results indicate that in practice, ESOPs may not help to reduce the within-firm pay gap.

After finding no significant impact for ESOPs on the pay gap, I then examined whether it is possible that ESOPs could be a driver in how much that firm's CEO makes. However, when regressing CEO pay onto worker pay and controlling for performance metrics and the presence of an ESOP, the coefficient on the ESOP variable is statistically insignificant. Overall the data disprove the initial hypothesis that companies with ESOPs have a lower pay gap than do companies without ESOPs, and I neglect to find that ESOPs significantly impact CEO pay.

VII. Conclusions and Implications

This paper has looked at the dynamics between CEO salary and firm performance, wage improvements, and employee count, in the context of whether or not executive pay sensitivity varies between companies with employee ownership plans and those without, and whether or not the within-firm pay gap differs depending on ownership schemes. Ownership plans were designed to provide lower-income workers with a means of acquiring capital in the hopes of combatting the rising inequality that began in the mid-20th century and has continued through to today. Yet most literature on ESOPs focuses on whether or not it would improve firm performance, firm productivity, employee morale and employee satisfaction. Relatively few studies have examined ESOPs in the context of whether they are completing their mission as a way to ensure that all employees are reaping the benefits of capitalism, not just those at the top. Other studies have examined executive pay, but not in the context of ownership schemes.

The evidence indicates that there are differences between the ways in which CEOs are rewarded in ESOP companies versus in non-ESOP companies. When firm performance increases, ESOP-CEO salaries increase more on average than non-ESOP CEO salaries do. Similarly, CEO-pay sensitivity is higher in ESOP companies than in non-ESOP companies when employee wage increases, although these results may not be definitive given the lack of a representative sample. These findings offer insight into the type of management styles prevalent in ESOP companies and indicate that CEOs of ESOP companies are held more accountable and tend to be rewarded for improving firm value and increasing employee wages more so than CEOs of non-ESOP companies. This makes sense because the same board and HR team who were attracted to ESOPs in the first place—recognizing its potential to improve employee morale

and align the goals of the employees with those of the firm and with shareholders—would be more inclined to reward CEOs for their performance. Moreover, the data proves that the type of ownership scheme matters as the presence of ESPP does not statistically impact CEO pay sensitivity. These findings suggest that if companies with ESOPs impose more discipline on CEO-pay as represented by a stronger pay performance sensitivity, then CEOs of ESOP companies are incentivized to help their workers.

This paper provides an up-to-date assessment of the benefits of ESOPs. It uses panel data from 2007-2016 to examine how ESOPs impact executive pay, with the goal of assessing the potential role such plans might play in mitigating inequality. The results indicate that CEOs get rewarded more for higher Market Cap, in line with previous studies, and that this reward is higher for CEOS of ESOP companies, a new contribution to this field. Further research examining how other non-monetary benefits play into this equation would provide a deeper understanding of ESOP culture and inequality, as monetary benefits are not the only factor encompassing employee wealth. This paper is the first to utilize Glassdoor's CEO pay ratio data to examine whether or not ESOPs have an equalizing effect on the CEO to worker pay gap, and finds that ESOPs do not have a significantly lower pay gap. As of 2018, the Securities and Exchange Commission will require publically traded companies to disclose how their CEOs are compensated in comparison to their employees. Thus repeating the study with this new data could potentially alter the insignificant conclusions. Overall, this paper broadens the discussion of corporate pay schemes and CEO pay, and examines the potential for ESOPs to serve as a mechanism for mitigating the growing inequality in America.

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Summary Statistics

	Salary	Pay Gap	Market Cap (in millions)	Number Employees	Wages *27 obs.
ESOP	$1,969,967	$213.17	$42, 432.41	70,035.35	$165,816.8
NON-ESOP	$1,480,854	$462.63	$23,535.78	37,701.32	$132,712.1
ESPP	$1,746,115	$493.07	$29,933.75	$58,643.63	$149,519
NON-ESPP	$1,499,727	$297.55	$30,820.89	$32,977.22	$86,859

* 43.9% companies with ESPP
*24% companies with ESOP

Table 1a VARIABLES	1	2	3	4
Market Cap	7.322***	2.007	10.36**	1.674
	(2.319)	(2.874)	(5.187)	(5.908)
Market Cap*ESOP		15.11***		15.18***
		(4.846)		(4.981)
Market Cap*ESPP			-3.793	0.383
			(5.799)	(5.947)
Constant	1.426e+06***	1.373e+06***	1.410e+06***	1.375e+06***
	(77,344)	(79,027)	(81,492)	(82,120)
Observations	2,217	2,217	2,217	2,217
R-squared	0.005	0.010	0.005	0.010
Number of Companies	290	290	290	290
ESOP Interaction		X		X
ESPP Interaction			X	X

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1B VARIABLES	1	2	3	4
Wage	25.04***	27.82***	21.78	-22.73
	(6.543)	(7.642)	(54.64)	(42.43)
Market Cap				53.12***
				(11.86)
Wage*ESOP		-10.50		37.85***
		(14.85)		(12.41)
Wage*ESPP			3.304	15.25
			(55.04)	(41.99)
Constant	-1.179e+06	-975,910	-1.147e+06	272,203
	(983,720)	(1.026e+06)	(1.125e+06)	(925,933)
Observations	195	195	195	168
R-squared	0.081	0.083	0.081	0.222
Number of Companies	27	27	27	26
ESOP Interaction		X		X
ESPP Interaction			X	X
Market Cap				X

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1C VARIABLES	1	2	3	4	5
Number Employees	1.875	4.273	-1.866	4.979	26.74**
	(3.258)	(3.656)	(11.82)	(12.78)	(13.31)
Number Employees*ESOP		-11.62		-11.74	8.667
		(8.047)		(8.352)	(50.09)
Number Employees*ESPP			4.049	-0.735	
			(12.29)	(12.75)	
Wage					30.79***
					(7.048)
Constant	1.631e+06***	1.736e+06***	1.661e+06***	1.732e+06***	-3.178e+06**
	(139,627)	(157,597)	(166,563)	(174,100)	(1.432e+06)
Observations	2,232	2,232	2,232	2,232	195
R-squared	0.000	0.001	0.000	0.001	0.105
Number of Companies	290	290	290	290	27
ESOP Interaction		X		X	X
Wage					X
ESPP Interaction			X	X	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2A: Pay Gap VARIABLES	1	2	3	4
ESOP	-23.08		-81.74	-77.52
	(145.1)		(163.5)	(160.8)
ESPP		-14.20	-54.38	
		(130.8)	(165.1)	
Market Cap			0.000830	0.000314
			(0.00115)	(0.00130)
Return on Equity			1.801	1.814
			(2.868)	(2.908)
Number Employees				0.000441
				(0.000517)
Constant	343.5	320.4	173.7	169.7
	(1,066)	(1,056)	(1,035)	(1,043)
Observations	364	364	270	266
R-squared	0.291	0.291	0.332	0.334
ESOP	X		X	X
ESPP		X	X	
Market Cap			X	X
ROE			X	X
Number Employees				X
Salary Bonus				X
Industry Controls	X	X	X	X

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2b:Log Pay Gap				
VARIABLES	1	2	3	4
ESOP	-0.133		-0.0595	-0.115
	(0.215)		(0.239)	(0.231)
ESPP		0.0569	0.0523	
		(0.194)	(0.242)	
Market Cap			-2.34e-06	-4.81e-06**
			(1.68e-06)	(1.86e-06)
ROE			0.00155	0.00204
			(0.00420)	(0.00418)
Number Employees				2.21e-06***
				(7.43e-07)
Constant	5.903***	5.770***	4.722***	4.776***
	(1.581)	(1.567)	(1.516)	(1.497)
Observations	364	364	270	266
R-squared	0.332	0.332	0.356	0.382
ESOP	X		X	X
ESPP		X	X	
Market Cap			X	X
ROE			X	X
Number Employees				X
Salary Bonus				X
Industry Controls	X	X	X	X

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2C: Lag Pay Gap

VARIABLES	1	2	3	4
ESOP	-23.08		-79.62	-79.46
	(145.1)		(165.9)	(178.1)
ESPP		-14.20	-46.91	
		(130.8)	(168.1)	
Market Cap			0.000954	0.000415
			(0.00124)	(0.00147)
ROE			-1.209	-1.173
			(4.503)	(4.970)
Number Employees				0.000423
				(0.000554)
Constant	343.5	320.4	186.6	146.3
	(1,066)	(1,056)	(1,046)	(1,098)
Observations	364	364	266	240
R-squared	0.291	0.291	0.331	0.333
ESOP	X		X	X
ESPP		X	X	
Market Cap			X	X
ROE			X	X
Number Employees				X
Salary Bonus				X

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 2D: Estimating CEO Pay VARIABLES	1	2	3	4
Median Worker Pay	8.751	8.639	0.744	0.401
	(10.29)	(10.33)	(10.23)	(10.47)
ESOP		236,168	-1.340e+06	-1.802e+06
		(1.533e+06)	(1.692e+06)	(1.672e+06)
ESPP			1.941e+06	
			(1.714e+06)	
ROE			-21,123	-17,742
			(29,683)	(30,226)
Market Cap			70.19***	69.36***
			(12.03)	(13.69)
Constant	3.392e+06	3.160e+06	4.799e+06	7.478e+06
	(1.112e+07)	(1.124e+07)	(1.072e+07)	(5.538e+06)
Observations	364	364	270	266
R-squared	0.280	0.280	0.497	0.493
ESOP		X	X	X
ROE			X	X
Market Cap			X	X
Number Employees				X
ESPP			X	

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Appendix

T-Test pay gap (by ESOP)

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	263	347.6709	83.18571	1349.046	183.8733	511.4686
1	102	213.0103	16.33671	164.9927	180.6027	245.418
combined	365	310.0398	60.16325	1149.417	191.7286	428.3509
diff		134.6606	134.0729		-128.9965	398.3177

diff = mean(0) - mean(1) t = 1.0044
Ho: diff = 0 degrees of freedom = 363

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.8421 Pr(|T| > |t|) = 0.3159 Pr(T > t) = 0.1579

T-Test pay gap (by ESPP)

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	187	297.5533	70.24086	960.5293	158.9821	436.1244
1	178	323.1576	99.07139	1321.777	127.6444	518.6707
combined	365	310.0398	60.16325	1149.417	191.7286	428.3509
diff		-25.60431	120.5213		-262.6119	211.4033

diff = mean(0) - mean(1) t = -0.2124
Ho: diff = 0 degrees of freedom = 363

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.4159 Pr(|T| > |t|) = 0.8319 Pr(T > t) = 0.5841