

DISCUSSION PAPER SERIES

IZA DP No. 12303

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ABSTRACT

Do Employee Share Owners Face Too Much Financial Risk?*

A major theoretical objection against employee ownership is that workers become inadequately diversified and exposed to excessive financial risk. Recent theory concludes that 10-15% of a worker's wealth portfolio can be prudently invested in employer stock provided the rest of the portfolio is properly diversified. This paper analyzes employee share ownership in U.S. family financial portfolios using data from the 2004-2016 Survey of Consumer Finances. We find that 15.3% of families with private-sector employees had employer stock in their portfolio, with a median value of \$6,000 and a median percent of family net worth of 3.1%. About one in five (19.2%) of the families with employer stock exceed the 15% threshold. This may be overstated given that the 15% threshold pertains to purchased stock and not to stock granted with no sacrifice by the employee. A higher percentage of families exceed the threshold for stock bought directly than for stock in pension plans. The analysis shows that employee ownership appears to generally add to, rather than substitute for, other wealth, which lessens the financial risk. We also find that families with employer stock are found to express more tolerance of financial risk, have higher self-rated knowledge of personal finances, and are more likely to understand the value of diversification. While financial risk does not appear to represent a substantial problem in practice for most employee share owners, a small minority may face excessive risk. We conclude with approaches to address excessive financial risk in company stock when it appears.

JEL Classification: J32, J33, J54, D31, P13

Keywords: employee ownership, financial risk, wealth, diversification

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Introduction

One of the major theoretical objections to employee share ownership is that it can lead to an excessive amount of financial risk for workers (Kruse, Freeman, & Blasi, 2010; Blasi, Kruse, & Markowitz, 2010; Pendleton & Robinson, 2018). Employee share owners may be at substantial risk not only from having their economic resources excessively concentrated in one asset, but also from having the value of that asset linked to their employment, since if their company fails they will lose not only their jobs but also a potentially substantial amount of their wealth. The dangers are illustrated in some high-profile failure of companies such as Enron and United Airlines where employees owned substantial amounts of employer stock (Walter & Corley, 2015). In both cases the employees purchased the stock with mostly cash contributions to their 401(k) plan (as in Enron) or the substitution of wage, retirement, and work rule concessions as part of a restructuring (as in United).

Such failures are rare, however, and the evidence indicates that companies with employee ownership tend to have higher survival rates and lower employment downturns in recessions compared to otherwise-similar firms without employee ownership (Kurtulus & Kruse, 2017). A study of the three largest banks offering loans to establish Employee Stock Ownership Plans (ESOPs) in effect during 2009-2013, and a companion study of forty appraisal firms that evaluate the annual stock prices of ESOPs, found that the annual default rate among ESOPs was 0.2%, which was less than the default rate for other transactions in this tumultuous period (Rosen & Rodgers, 2014).

Nonetheless there is valid concern about whether employees in general tend to have too much of their assets invested in employer stock, and attention to why employee owners do not diversify more (Pendleton & Robinson, 2018). The value of employees' retirement portfolios

and overall wealth may be greatly affected by the stock performance of their own company, and while some employee owners do well it is possible that there are some others who do poorly due to company failures or declines in performance. This concern has been recently highlighted with respect to concentrations of employer stock in 401(k) plans (Pozen & Liu, 2018).

This issue is important given that close to 20% of U.S. private-sector workers own stock in their companies (Kurtulus & Kruse, 2017: 33). The most common form of employee share ownership is through an Employee Stock Ownership Plan (ESOP), covering 10.6 million employees in 2016 (U.S. Department of Labor 2018: 58). A meta-analysis of performance studies shows that employee share ownership has a small but significant link to better firm performance (O'Boyle et al., 2016; also see Kruse, 2016; Kruse, Freeman, & Blasi, 2010; Blasi, Freeman, & Kruse, 2014, 2015), and employee ownership firms appear to have greater employment stability and higher survival rates (Kurtulus & Kruse, 2017). Yet the question of financial risk persists, since even if employee share ownership companies have better performance and stability on average, there is always a risk that workers may suffer in those firms that do not do well. One study found that loss in diversification reduces the value of employees' holdings (Meulbroek, 2005). Recent research has found that employee share ownership has a stronger link to performance in cultures with lower risk aversion (Kang & Kim, forthcoming), and has explored the individual-level determinants of investments in employer stock in the UK's Save as You Earn Plans (Pendleton & Robinson, 2018), the institutional and workgroup influences on foreign subsidiary employees' willingness to participate in employee ownership plans (Oehmichen et al., 2018), and the use of employee share ownership plans in family firms (Mullins, 2018).

The issue of financial risk has important implications not just for employees and their families, but also for companies. If employer stock plans substitute risky assets for wages or other benefits, it is likely to be harder for companies to attract employees, especially those who are risk averse. Companies may also have dissatisfied employees if they are not given proper training and education about how to fit employee share ownership into their personal financial planning, and may face liabilities if the stock plans are mismanaged. If employee share ownership is mostly purchased by employees with their wage and retirement savings, it is hard to argue that it can have an impact on broadening access to wealth and reducing inequality, as it may mainly substitute fixed wages and benefits for company shares.

This study represents the first investigation using nationally representative data of the role of employee share ownership in overall family wealth. We use 2004-2016 *Survey of Consumer Finances* (SCF) data, with a focus on 2016. These data are collected by the U.S. Federal Reserve Board, the sponsor of the SCF, to explore:

- 1) How many families have employee-owned stock;
- 2) The total value of employee share ownership relative to family wealth;
- 3) How the prevalence and amount of employee share ownership differs by income level;
- 4) Whether employee share ownership appears to add to or substitute for other forms of wealth; and
- 5) The attitudes of employee owners versus non-owners regarding financial risk, willingness to search hard for the best financial terms, and financial knowledge.

Prior Literature

Portfolio theory

A fundamental premise of portfolio theory is that portfolios should be structured to balance risk and reward, and diversification is important to mitigate risk. Having a large portion of one's wealth portfolio in any one asset means that the portfolio may not be properly diversified, and a plunge in the value of that asset can cause a significant decline in the portfolio's overall value (Markowitz, 1971). Employee share ownership may also add an extra layer of risk since if the company does poorly, the employee may lose his or her job in addition to experiencing a decline in wealth.

Recent theory by the 1990 Nobel Prize winner in economics for portfolio theory, Harry Markowitz, explicitly rejects the idea that risk aversion condemns employee share ownership to be absent from employee's investment portfolios. His theory concludes that certain calculated amounts of a single asset—including stock in one's company—can be part of an efficient portfolio as long as the overall portfolio is properly diversified (Markowitz, Blasi, & Kruse, 2010). Using standard assumptions about utility functions, he concludes that the optimal portion of an otherwise diversified portfolio that could conceivably be in company stock is 8.33 percent, while 10 to 15 percent would have a small effect of the volatility of the employee portfolio” and would be “not too imprudent” (Blasi, Kruse, & Markowitz, 2010: 121, 126).

One key purpose of this paper is to examine how these recommended holdings correspond to the actual holdings of employee share owners in the U.S. economy. In particular, how many employees exceed the standard of having 15 percent of their family wealth in company stock? There are no prior data on the role of employee share ownership in total wealth in a fully representative dataset. One non-representative study of 40,000 employees in 14 U.S.-based companies whose goal was to have significant employee share ownership found that 40% of their employees who owned company stock reported that the value of the stock exceeded 15%

of the total wealth of themselves and their spouses (Kruse et al., 2010). Because this study focused on companies that offer broad-based employee share ownership plans, it clearly did not reflect a random sample of U.S. companies or employees, and was not representative of the U.S. population. Looking just within 401(k) plans, one study found that 10% of participants held 20% or more of their 401(k) assets in company stock (Utkus & Young, 2014), while another study found that close to 10% of new participants held more than 50% of their 401(k) assets in company stock (Vanderhei et al. 2016). In the UK, Pendleton and Robinson (2018) found that 22% of employees who purchased stock in the British Government's Save As You Earn (SAYE) plans held more than 50% of their savings and investments in company stock (counting all savings and investments except for home and company pension). These numbers raise the possibility that a substantial number of employees may be too heavily invested in employer stock, although it is unclear how generalizable these results are because they are either not based on representative datasets or do not measure all forms of wealth as they relate to employee ownership. They also do not distinguish between shares that were granted to the employee on top of regular compensation versus shares that the employee purchased with wages or savings, which may be important in the level of risk, as we will discuss.

Why employees invest in company stock in SAYE plans has been analyzed by Pendleton and Robinson (2018). They assess six potential explanations, finding that sizeable concentrations of employer stock are associated with familiarity (perceiving that one knows the company really well), reciprocity (responding to the employer "gift" of share subsidies), and inertia (reviewing one's portfolio less frequently), but not with organizational commitment or naïve extrapolation of past stock performance. With regard to the familiarity bias, they note that

this may simply reflect psychological comfort with what is familiar, but also informational advantages as expressed by Keynes:

[T]he right method in investment is to put fairly large sums into enterprises which one thinks one knows something about and in the management of which one thoroughly believes. It is a mistake to think that one limits one's risk by spreading too much between enterprises about which one knows little and has no reason for special confidence. (Keynes, 1983).

Employee share ownership as substitute or addition to other wealth

A key question on the financial risk of employee share ownership is whether it substitutes for other wealth or pay—in which case it can present substantial risk—or instead adds to wealth and pay so that it represents “gravy” that does not jeopardize the financial security that workers would have in the absence of employee ownership. Analysis of the NBER dataset of 40,000 employees found that an extra dollar of employee ownership value was associated with an extra 94 cents of wealth, indicating that there is very little substitution between employee ownership and other forms of wealth, so that employee-owned stock appears to add to wealth in general (Buchele et al., 2010: 367). While that dataset focused on companies with tend to offer broad-based employee ownership programs, most of these programs did not require employees to purchase the stock with their wages or savings. We discuss this critical issue later.

Consistent with this analysis of wealth, previous evidence clearly points toward employee share ownership coming on top of employee wages. While there are rare concession situations (Blasi & Kruse, 1991: 325-328), a comprehensive longitudinal study of all ESOP adoptions over 1980-2001 found that employee wages (excluding ESOP contributions) either increased (for small ESOPs) or stayed constant (for large ESOPs) after adoption, controlling for state-level and industry-level wage changes and other company characteristics (Kim & Ouimet, 2014). A recent study following young workers in the National Longitudinal Survey found that ESOP

participants had 13% higher wages than non-participants, controlling for individual fixed effects (Baek, 2018). Comparisons of matched ESOP and non-ESOP firms have likewise found that ESOPs appear to come on top of other worker pay and benefits (Kardas, Scharf, & Keogh, 1998; Scharf & Mackin, 2000). Similarly, other cross-sectional studies found that employee share ownership is associated with higher yearly earnings (Kruse et al., 2010), average compensation (Blasi et al., 1996), and pension assets (Kroumova, 2000). The evidence from worker cooperatives is more mixed, with higher wages in Uruguayan cooperatives but lower wages in Italian cooperatives compared to conventional firms (Pencavel et al., 2006; Burdin & Dean, 2009). However, worker cooperatives may not be a good comparison group to explore employee share ownership in general since they are often started with direct investments by workers, the riskiest form of employee share ownership.

Several studies have found that ESOPs generally appear to supplement rather than replace diversified pension plans and assets. One study using Department of Labor administrative data found that diversified non-ESOP defined contribution plans are more common in ESOP companies than in non-ESOP companies, and the ESOP was begun after the diversified plan in 65% of cases where both existed (Rodgers, 2010). This study also found that: company contributions were on average 75% higher for ESOPs than for primary plans in non-ESOP companies; the majority of contributions to plans in non-ESOP companies came from the participants compared to less than 10% for ESOPs; and net assets per participant across all plans were 20% higher in ESOP companies than in the non-ESOP companies. An earlier study using DOL data found that 75% of ESOP participants were in firms with a second diversified pension plan (Kruse, 2002). A study following closely-held firms that adopted ESOPs over the 1988-98 period found that the ESOP companies were five times more likely than matched non-ESOP

companies to have defined benefit, 401(k), or deferred profit sharing plans, with the likelihood of these other plans increasing following ESOP adoption (Blasi, Kruse, & Weltmann, 2013). More recent studies also find that the majority of ESOP companies offer an additional retirement plan, and ESOPs in S corporations have higher distributions than 401(k) plans (Carroll, 2015; Wiefek & Nicholson, 2018).

Job security and risk aversion

The question of overall financial risk also has to be considered in the context of job security, since the biggest financial risk faced by most workers is the loss of their job. The prior evidence points to greater job security in employee share ownership companies due to higher survival rates and greater employment stability (Perotin, 1987; Blair et al., 2000; Park et al., 2004; Blasi et al., 2013; Brill, 2012; Burdin, 2014; Kurtulus & Kruse, 2017).

Another key factor in assessment of financial risk is workers' levels of risk aversion. Even if employee share ownership does increase financial risk, some employees may be willing to tolerate the risk for the prospect of higher returns. This phenomenon is well-known in high-tech start-ups where sometimes employees purchase stock at a very low price with the expectation of a very successful IPO. The risk aversion of employee owners was directly measured in the NBER study, which found that employees who own stock expressed less risk aversion: on a 0-10 scale of willingness to take risks (with 0="hating to take any kind of risk" and 10="loving to take risks"), those who owned company stock had a mean of 5.75 compared to 5.45 for non-owners, and the significant difference was maintained when controlling for demographic and job characteristics (Kruse et al., 2010: 63). While employee owners have greater risk tolerance, one surprising finding from this dataset is that even two-thirds of the most risk-averse employees reported they would like at least some ownership, profit sharing, or stock

options in their pay package: among those who rated themselves as 3 or lower on the 0-10 risk scale, 66% said they would prefer to be paid at least in part with profit sharing, stock, or stock options as opposed to all fixed wage or salary (Kruse et al., 2010: 65). Risk aversion clearly influences attitudes toward variable pay, since the above figure was even higher among those who are less risk averse, but these results indicate that even risk-averse employees are open to employee ownership and other variable pay plans.

Therefore the limited prior evidence on financial risk under employee share ownership presents a mixed picture: a substantial number of employee owners appear in non-representative samples to have more than 15% of their wealth in company stock, but their risk is mitigated by a) the apparent “gravy” nature of much of the employee ownership (based not on employee purchases of stock but on grants of stock on top of regular compensation), b) the availability of separate diversified retirement plans, c) the greater job security of employee owners, and d) lower levels of risk aversion among employee owners. As noted, however, it is very unclear whether these results can be generalized to all employee owners in the United States. In addition, there has been no prior analysis of how these results vary by income level, to see whether employee share ownership may present greater problems of risk for low-income as opposed to high-income families. In this paper we present the first data from a fully representative data source to explore the role of employee share ownership in family wealth, the risk aversion of employee owners compared to other employees, and how these results may differ between high- and low-income families.

Data

This study uses data from the 2004-2016 *Survey of Consumer Finances* (SCF), sponsored by the Federal Reserve Board in cooperation with the Treasury Department, and conducted by the National Opinion Research Center at the University of Chicago.¹ The SCF has been conducted every three years since 1989, and began adding questions that allow identification of employer stock in 2004. We present the 2004-2016 trend but focus on the 2016 survey that contains information on 6,248 families. We limit our analysis to families where employee share ownership was possible given that the householder and/or his or her spouse was a private sector employee, numbering 3,568 families. High-income families are oversampled, but weights adjust for the oversampling so that the final estimates reflect a representative sample. Missing values are handled through multiple imputation, creating five replicates for each observation with values drawn from an estimate of the conditional distribution of the data. The regressions and significance tests reported in this study account for the five replicates using Stata's "micombine" procedure, which estimates the model for each replicate and then reports figures averaged across results for the replicates.

The SCF identifies two basic types of employee share ownership. First, for those who report owning stock in any publicly-traded company, it asks the question "Of your (family's) publicly-traded stock, is any of it stock in a company where you (or anyone in your family living here) work or have worked?" and if yes, then "What is the total market value of your stock in the company?" This is referred to as direct employee ownership in this study. This will overestimate ownership of stock in current employers since it includes stock from a previous employer, which is most likely to be a problem for retirees who hold onto company stock. To

¹ <http://www.federalreserve.gov/econresdata/scf/aboutscf.htm>

mitigate this potential problem, the focus of our analysis is on families that have at least one current private-sector employee.

The second type of employee ownership identified in the SCF is through pension plans. For those with a pension plan in their current main job who report that at least some of the assets are invested in stock, respondents are asked “Is any of this stock in the company where (you/he/she/he or she) work(s)?” and if yes, then “About what percent of this stock is in company stock?”² These answers are combined with data on the total pension balance, and the percent of the balance in stocks in general, to obtain the estimated dollar value of employer stock held in a pension plan. Respondents are asked these questions about the first two pension plans of the respondent, and the first two pension plans of the respondent’s spouse or partner, and we sum the values to arrive at a family-level value of employer stock held through pension plans.

These questions theoretically cover the major ways in which employees can own employer stock. It is possible, however, that employees do not report all of their employee-owned stock since there are not specific questions about the different forms of employee ownership. As will be seen, it is likely that the extent of employee share ownership in pension plans is understated relative to figures based on administrative data from the U.S. Department of Labor’s Form 5500 that is filled out by employers for every pension plan.

In addition to measuring economic values, the Survey of Consumer Finances contains several opinion measures that can shed light on the preferences and knowledge of employee owners relative to other employees. One question measures the key variable of risk preference; self-reported measures of risk have been found to have greater temporal stability than behavioral measures, and to be potentially have more validity in predicting real-world outcomes (Mata et

² Defined benefit pension plans that do not include a lump sum option or any access to the funds before retirement are excluded.

al., 2018). Two questions measure self-reported attention to and expertise in financial matters, including willingness to search for best financial terms and one's knowledge about personal finances. A final question we analyze here measures whether the respondent understands that single stocks are less safe than mutual funds, shedding light on whether employee share owners are simply naïve about the general advantages of diversification. The question wordings are in Appendix A.

Results

Prevalence

How many families hold employee-owned stock? As shown in Table 1, responses to the SCF show that an estimated 15.3% of the 76.6 million families with private sector employees in 2016 had employee-owned stock, with 10.5% owning employer stock in pension plans and 6.9% holding employer stock directly (including some overlap). These numbers were higher in 2004 but represent an increase since 2013. This dip and recovery roughly follows the pattern in the 2002-2014 General Social Surveys (Kurtulus & Kruse, 2017: 33). The dip after 2004 likely reflects employers moving away from company stock in 401(k) plans following the Enron debacle.

The SCF numbers are somewhat lower than other estimates of employee share ownership prevalence, although comparisons are limited by the unit of analysis. Data from the 2014 U.S. General Social Survey show that 19.5% of private-sector employees report owning employer stock in some form (Kurtulus & Kruse 2017). Moving the unit of analysis to the family level, as done by the SCF, may increase or decrease the prevalence figure, depending on whether employee share owners are clustered in the same families or spread across families. The overlap

among family members in employer stock ownership cannot be estimated from the GSS data, and can be estimated in the SCF data only for pension employee share ownership since the direct employee ownership is measured only at the family level. In the SCF data the individual-level measure shows 8.4% of private-sector employees with pension employee ownership, compared to the family-level measure showing 10.5% in families with employee share ownership. Apart from the level of measurement, the gap between the SCF and GSS measures may reflect a) overestimates by GSS respondents, and/or b) undercounting of certain types of employee share ownership by the SCF, possibly due to new types of employee share ownership that have expanded in recent years (e.g., restricted stock) that are not captured by updated SCF questions and measures.

The SCF figures are also slightly lower than indicated by administrative data on pension employee ownership. Data from the U.S. Department of Labor's Form 5500 database, which covers the universe of private pension plans, show that 10.6 million, or 8.7% of private-sector workers, in 2016 were participants in ESOPs, while an additional 2.8 million or 2.3% of private sector workers were participants in other defined contribution pension plans that held at least 5% of their assets in company stock.³ These numbers are slightly higher than the 8.4% figure from the SCF. Given that the Form 5500 is administrative data with presumably a higher degree of accuracy than employee-reported figures, the gap between the SCF and Form 5500 figures probably largely represents lack of knowledge on the part of employees about having employer stock in their pension plans. Such a lack of knowledge is not surprising, as Budd found that 18% of workers who were covered by ESOPs did not report being in an ESOP (Budd, 2010: 296).

³ Based on calculations using the Department of Labor's 2016 Form 5500 Private Pension Plan Research File.

Value of employee share ownership

For those who reported any employee share ownership in their family, Table 2 presents the size of the ownership stakes. The mean value is \$111,136, but this represents a skewed distribution since the median is \$6,000, with a 10th percentile of \$150 and a 90th percentile of \$153,000 (column 1).⁴ The ownership stake as a percent of the family income is 31.3% at the mean, and 5.8% at the median (column 2).

The most relevant figure for calculating financial risk is the employee share ownership stake as a percent of the family's total wealth or net worth. As shown in column 3, employee share ownership represented 7.2% of net worth on average, and 3.1% at the median, with a 10th percentile of 0.1% and 90th percentile of 26.7%. The bottom half of Table 2 provides more detail using a categorical breakdown, showing that 68.5% of families with employee share ownership had stakes between 0% and 10% of their net worth, 7.4% had stakes between 10% and 15% of their net worth, and 19.2% had stakes greater than 15% of their net worth. In addition, 4.9% of families with employee ownership had negative net worth. Summing these last two categories, this initially indicates that 19.2% of the families with employee share ownership may be facing excessive financial risk due to either holding high levels of employee share ownership or combining employee ownership with a negative net worth. Combining this figure with the percent of families with employee share ownership (15.3% from Table 1) indicates that 2.9% of all families with private sector employees, or 2.25 million families are likely overinvested in company stock beyond the 15% Markowitz threshold.

There may be important differences between stock owned directly and stock owned through a pension plan. Directly owned stock is likely to have been purchased directly, such as

⁴ This average is slightly lower than the average assets per active participant in ESOPs of \$129,632, calculated from data in U.S. Department of Labor (2018: 58).

through an ESPP, while stock owned through a pension plan is more likely to have been granted to an employee, such as through an ESOP. Directly owned stock is more likely to contribute to families exceeding the threshold, as shown in the bottom half of Table 2. There were 19.7% of families that exceeded the 15% threshold counting only their directly-owned stock (column 3), compared to 13.5% of families who exceeded the threshold counting only the stock in their pension plans (column 2). Any overinvestment is therefore concentrated among people who made a voluntary choice to directly purchase employer stock (recognizing that employees can sometimes also choose to purchase employer stock in 401(k) pension plans).

The relation of employee share ownership to other components of net worth across the wealth distribution is examined in Table 3. As can be seen, the median employer stock value for employee share owners in the lowest quarter of the wealth distribution is \$480, rising to \$40,000 among those in the top quarter. The median net worth across all in our sample is \$225,030, while the medians are \$116,100 for of total financial assets and \$228,600 for total nonfinancial assets (column 1). For our purposes it is noteworthy that employer stock is small relative to each of the categories examined here, as indicated by the median ratio of each household's value of that category relative to their employer stock. The figures are closest for liquid financial assets, where the median ratio relative to employer stock is 1.36, and the ratio is greater than one across the wealth distribution. In other words, cashing in all of one's employer stock would provide less money to most employee share owners than the liquid assets they currently hold.

Comparisons by income level

In line with prior data at the employee level (Kruse et al., 2010), lower-income households are less likely to hold employer stock. Among families with private-sector

employees, Table 4 shows that 4.5% of those in the lowest quarter of income (0-\$36,455 in the past year) had any employee share ownership, compared to 27.3% of those in the highest quarter of income (\$110,377 or more) (columns 1 and 4). Likewise the mean value of the ownership stake increases with income level among families with employee share ownership, from \$6,299 in the lowest quarter to \$231,790 in the highest quarter of income, while the median values increase from \$800 to \$22,000. The figures also increase when the ownership stake is calculated as a percentage of annual income, but increase only a little when calculated as a percent of net worth.

This last point is better explored in Table 5 by comparing across income levels the categorical distribution of ownership stake as a percent of net worth. Table 5 does not show substantial differences in this measure across income levels. Under half (37.7% to 44.2%) of families in each of the income quarters have ownership stakes between 0% and 2.5% of their net worth. The percent of families who have employee share ownership stakes exceeding 15% of their net worth is 23.8% among those in the lowest quarter of income, dipping to 18.2% in the top quarter. The measure showing the most difference by income level, not surprisingly, is the percent of families with negative net worth, which is highest (11.5%) in the lowest quarter of income, and lowest (2.2%) in the highest quarter of income.

Does employee share ownership substitute for other wealth?

The financial risk associated with investment in a single asset is much lower if the asset comes on top of other wealth, since a collapse in the asset's value would not change the value the portfolio would otherwise have had. In contrast, employee share ownership is a much greater concern if it substitutes for other assets.

Without detailed longitudinal data at the family level it is impossible to know whether assets in a portfolio are being substituted for each other. With the SCF data we can, however, make cross-sectional comparisons between otherwise-similar families and see if employee share ownership is associated with similar levels of wealth (so it appears to be substituting for other assets) or higher levels of wealth (so it may be adding to the value of other assets). We can also analyze the relation of employee share ownership to traditional defined benefit pension plans that provide more predictable retirement income. Because we cannot make a strong causal argument, we present these as descriptive regressions that shed light on, but cannot conclusively demonstrate, whether substitution is in fact taking place.

These regressions are presented in Tables 6, 7, and 8. Table 6 first addresses whether employee share ownership within pension plans is substituting for other pension wealth, as would be the case if employers replaced other pension plans with ones using employer stock. The regressions in Table 6 predict the pension balance, minus employer stock, of the respondent (columns 1 and 2) and of the partner or spouse (columns 3 and 4), limited to those with pension balances. The key independent variable is the value of the pension employee share ownership, with controls for the demographic characteristics of the respondent. Columns 5 and 6 present similar regressions for the total pension wealth within the family, testing whether there may be substitution across plans (e.g., a wife may take a pension without employer stock if her husband's pension is heavily invested in employer stock). Both OLS and median regressions are presented.

If employer stock perfectly substitutes for other pension assets, we would expect a coefficient close to minus one. Instead, the results in all six columns show positive coefficients between .425 and .896, indicating that each dollar of pension employee share ownership is

associated with other pension assets of 42.5 to 88.9 cents. This fits with findings cited earlier that ESOPs generally supplement rather than replace other pensions, and average employer contributions are higher to ESOPs than to defined contribution plans in non-ESOP companies (Rodgers, 2010).

Most defined benefit pensions do not have individual pension balances, and are not included in the Table 6 calculations. The defined benefit plans provide more secure retirement vehicles for employees. It is possible that employee share ownership plans substitute for defined benefit plans – although in recent decades all forms of defined contribution plans have substituted for defined benefit plans as a societal trend—or alternatively that they are combined with defined benefit plans to cushion the financial risk of employee share ownership plans. Table 7 examines this using logit regressions to predict the likelihood of a defined benefit plan. As can be seen, the value of employer stock in pensions is not a significant predictor of the likelihood of a defined benefit plan for the respondent, spouse, or the respondent and spouse together. Combined with the Table 6 results, this argues against the idea that employee share ownership is substituting for more secure retirement vehicles. This is consistent with prior studies cited earlier.

A similar result is obtained when predicting family net worth apart from employer stock in Table 8. Along with the OLS regression predicting mean values, this table presents predictions for the 10th, 25th, 50th, 75th, and 90th percentiles in order to explore the likelihood of substitution across the spectrum of net worth. All of the coefficients on the two employee share ownership variables (representing pension employee share ownership and direct employee share ownership) are positive and significantly different from zero at the 95% level. These results are inconsistent with a simple story of substitution between employee share ownership and other

wealth. It should be kept in mind that the fact that all coefficients are positive does not indicate that a dollar of employee share ownership is creating wealth apart from employer stock. Rather, it is likely that there is reverse causality due to richer households being more likely to either purchase employer stock directly, such as on the open market or through ESPPs, or make 401(k) contributions that generate employer matches using company stock. In other words, these significant positive coefficients do not tell a simple causal story, since employee share ownership may add to wealth while higher wealth also leads to more employee ownership. For our purposes, the key result is that the strongly positive coefficients go against the idea that employee share ownership is directly substituting for other forms of wealth.

Attitudinal Variables

Are employee owners more risk tolerant, and possibly more naïve about financial matters? We explore employee attitudes and knowledge of financial matters using four SCF variables. The first finding is that families with employee share ownership are more risk tolerant, as shown in Table 9 which asks respondents to rate their family's risk tolerance on a 0 to 10 scale (question wordings in Appendix A). The mean score of employee owners was 5.14 (in column 2), significantly more than that of other families (4.38 in column 1). This unsurprising relationship is consistent with the employee reports from Kruse et al. (2010). An interesting question that cannot be answered with these cross-sectional data is whether lower risk aversion leads to more employee ownership, or perhaps owning employer stock has an effect on one's risk aversion. The simple comparisons also show that employee owners appear more willing to search for the best financial terms, to rate themselves as knowledgeable about personal finances, and to understand that single stocks are less safe than mutual funds.

These relationships are tested more rigorously in Table 10, which regresses the attitude variables on employer stock and demographic variables, both before and after controlling for other assets and financial variables. The greater risk tolerance of employee owners persists in columns 1 and 2, and the greater self-rated knowledge of personal finances persists in columns 5 and 6. There is no significant difference between employee owners and other families in willingness to search for the best financial terms (columns 3 and 4), while respondents who own employer stock directly are more likely than respondents without employer stock to understand that single stocks are less safe than mutual funds (columns 7 and 8). The latter result suggests the relevance of Keynes' quote about the wisdom of investing in companies that one knows well rather than diversifying among companies that one does not know, since these employee share owners are investing in a company they know well despite their greater recognition of the general value of diversification. Overall these results go against the idea that employee owners are more naïve about financial matters than other employees.

Discussion and Conclusion

The *Survey of Consumer Finances* offers a valuable opportunity to explore the role of employee share ownership in family wealth. Key findings from this analysis are:

1. Over one in seven, or 15.3%, of U.S. families with private-sector employees own some employer stock.
2. The value of employer stock held per family ranges substantially, with a mean of \$111,196 and median of \$6,000. As a percent of family net worth, employer stock represents 7.2% at the mean and 3.1% at the median, which are well below the Markowitz 15% threshold.

3. Employer stock represents more than 15% of net worth among about one-fifth (19.2%) of families holding employer stock, which may mean they face excessive risk according to the Markowitz results. In addition, employer stock may be risky for the 4.9% of families holding employer stock who have negative net worth.
4. Among all families with private sector employees, 2.9% or 2.25 million families have more than 15% of their net worth invested in company stock.
5. Lower-income households are less likely to hold employer stock, but among families with employer stock, the distribution as a percent of net worth does not vary greatly by income level.
6. Financial risk is lessened if employee share ownership represents “gravy” on top of other wealth. Regressions clearly show that employee share ownership is associated with increased net worth, consistent with the idea that it is “gravy” and does not appear to substitute for other wealth or traditional defined benefit pensions. The Markowitz standard does not apply to employer stock that is granted above other compensation (as typically occurs in ESOPs), which reduces the number of families estimated to be overinvested in employer stock (assuming they have not substantially changed their financial planning based on the expected value of the employee share ownership).
7. Higher investments in employer stock may be explained in part by higher levels of risk tolerance among some families with employee share ownership.
8. Employee owners rate themselves as more knowledgeable on financial matters, and are no more likely to believe that single stocks are safer than mutual funds, compared to other employees, going against the idea that they are more naïve or uninformed investors.

There are some limitations in these data and analyses, as noted earlier. The prevalence of employee share ownership is somewhat lower in the SCF than in other representative datasets, possibly reflecting the understatement of certain forms of employee share ownership and lack of worker knowledge about stock held in pension plans (based on comparisons to administrative data). The cross-sectional nature of the data also represents a limitation since it is not possible to see how employee ownership stakes change over time, which would be particularly valuable for assessing how employer stock affects total wealth holdings and may substitute for other forms of wealth.

Keeping these limitations in mind, the results are broadly consistent with prior research indicating that employee share ownership appears to add to worker pay and wealth. This is a difficult result to explain with standard economic theories such as compensating differentials theory, which predicts that different facets of compensation and job characteristics will trade off against each other to equalize the attractiveness of jobs in a competitive market. One interpretation that integrates the accumulated evidence on company performance, worker behavior, and pay is based on ideas of reciprocity and the economic model of “gift exchange” developed by Akerlof (1982). Workers may respond to a “gift” of employee share ownership on top of market compensation with a reciprocal “gift” of high effort, cooperation, and work standards. The collective incentive nature of employee share ownership may make it an especially effective “gift” for creating and reinforcing a sense of common purpose, and encouraging higher commitment and productivity (discussed further in Kruse et al., 2010: 377-385).

Do many employee share owners face excessive financial risk? As noted by Markowitz, investment of up to 15% of a portfolio in one asset may not be imprudent, as long as the

remaining portfolio is properly diversified. The results here indicate that one-fifth of families with employee share ownership exceed that standard, and an additional 5% hold employer stock while having negative net worth. Among all families with private sector employees, this represents about 3 in 100 families who appear to be overinvested in company stock. There is, however, a difference in the level of risk between employees who purchase all of their stock with their wages, savings, or retirement account versus employees who receive all of their stock as a grant from the company, especially where there is no evidence of wage substitution. The question arises as to whether distinguishing between grants versus purchases makes sense for an assessment of risk nationwide. Markowitz has indicated that the amount of stock received as a grant or gift should not be included in determining the percent of the portfolio that is overinvested in company stock if it comes as a free resource and does not substantially alter financial planning (since even if the granted stock drops in value, the worker is not worse off than he or she would have been without the granted stock).⁵ It is therefore important to know how much of the employee share ownership was granted versus purchased among the 2.25 million families that appear to be overinvested in company stock. Unfortunately, the Survey of Consumer Finances does not allow good estimates of this. As reviewed earlier, there is strong evidence that ESOPs tend to come on top of standard pay and benefits. ESOP stock is generally financed with credit extended to an employee trust which uses the credit to buy the stock and grants the shares to the employees as the loan is repaid by the company (Blasi, Freeman, & Kruse, 2014). Among the 10.6 million employees in ESOPs in 2016, it is likely that a good number were in the 2.25 million apparently overinvested families, meaning that the extent of overinvestment may be overstated. However, this cannot be known with certainty with the

⁵ Personal Communication with Professor Markowitz, June 22, 2018.

current set of questions in the SCF. Moreover, the analysis (in Table 2) of how overinvestment is related to pension plans versus direct ownership is pertinent here. The data show that directly-owned stock (which is mostly purchased as a voluntary decision) is a larger contributor to exceeding the 15% threshold than is stock owned through pensions (which is mostly granted to employees).

Certainly, when employee ownership companies fail, the losing worker does not receive any comfort from these statistics. However, if the default rate on employee ownership companies is low, the companies have separate diversified retirement plans, and the employee share ownership is based on grants versus purchases, there may be some mitigation of the risk on a national level. Also, the risk may not be excessive when employee share ownership adds to overall wealth, when employees may have “inside information” on the quality of the company as described in the Keynes quote, and when employee owners have higher levels of risk tolerance as shown by these data.

There are several implications for companies, HR professionals, and policy-makers. As noted by Pendleton and Robinson (2018), even if employee share ownership is generally good for employees by leading to higher company performance and greater job stability, it remains possible that some employees are overinvested in employer stock and would benefit from greater diversification.

For companies and HR professionals, one way to help employees manage risk is to provide access to financial counseling, so employees can become aware of the risks of overconcentration and will consider their employee ownership in the context of the rest of their family wealth.

A second way for companies to minimize risk is to ensure that employees have access to diversified retirement plans to supplement employee share ownership plans. Indeed, multiple studies establish that this is largely the case for the ESOP form of employee share ownership. The results here indicate that employee share owners generally have equal or greater access to diversified plans as do other employees (in fact they have higher pension balances not counting the employer stock); there are, however, employee share ownership companies without diversified plans, which clearly raises employee vulnerability in the event of an Enron-type disaster in those cases.

Related to this, a third implication is that individual companies can voluntarily provide employee share ownership plans on top of standard pay and benefits to minimize the risk. The evidence reviewed earlier indicates that employers generally do this already, which appears to pay off in improved employee attitudes and behaviors as described above in the “gift exchange” discussion. If a company does fail, employees may lose the “gift” they received as employer stock declines, but they will have preserved the assets built up from their market-level pay and other benefits.

Fourth, companies and HR professionals can mitigate overall risk for employee owners by providing them workplace training and employee involvement in decisions to improve their skills, which makes them more valuable for the company but also enhances employee career prospects and mobility in the event of a layoff or firm closing. More knowledgeable employees may be more able to identify excessive risk in a company’s operations and get involved in reducing the risk. Pendleton and Robinson (2011) find that training levels are higher in employee share ownership companies, and argue that employee ownership helps increase commitment and decrease turnover which lowers employer risks in realizing returns to

investments in training. Training, employee involvement, and information-sharing may help to build an ownership culture that promotes employee commitment and higher performance.

Fifth, individual companies could offer software “circuit breakers” that alert and prevent employees from overinvesting in company stock. In the current culture of employee benefit web sites, employees of most large stock market companies have a dashboard showing all of their benefit plan assets including their employee share ownership assets. Companies could adopt policies based on privately available software fixes that either prohibit overinvestments in company stock or alert employees and provide education and automated alternatives. Such circuit breakers may make more sense where employees are making personal decisions from week to week about purchasing company stock. Brokers may offer “informational circuit breakers” for employees who trade in their own company stock above a certain level of the value of their entire portfolio.

The remaining implications are for policy-makers as well as companies and HR professionals. There have been proposals for financial products that can help minimize the risk of holding employee equity shares. The founder of the ESOP, Louis Kelso, proposed a form of pooled equity insurance by companies with employee share ownership so that employees in failing companies can be compensated for at least some of their lost ESOP value. This idea is embodied more generally in stock protection funds as discussed by Boczar and Pai (2017), who present evidence based on backtesting and analysis of actual fund performance over the financial crisis that such funds do limit downside risk. Berson and Cushing (2009) make a broader case for private insurance protection for ESOP employees to limit their financial risk.

Another policy alternative would be to prohibit ERISA plans from having employee share ownership as a percent of any individual employee's overall portfolio above a certain percentage if the stock is purchased at full value and not granted.⁶

Related to the idea that employee share ownership works better and reduces employee risk when it is provided on top of standard pay and benefits, public policy could also minimize employee risk by encouraging forms of employee share ownership based on grants instead of employee purchases. These kinds of plans are becoming more and more popular in the United States today. For example, in stock market companies, grants of stock in broad-based equity plans using restricted stock units and performance stock units are becoming more common. As noted, the typical ESOP with no wage substitution and the availability of a second diversified retirement plan can minimize the risk to some extent. The percent of employees holding employer stock they purchase in 401(k) plans has been dropping since the Enron debacle. Some companies offer stock options where there is no employee investment of funds until there is a profit to be made by the employee by exercising the option when the stock price is above the exercise price.

A final idea for policy-makers is to make diversification alternatives—when overinvestment happens—a built-in part of policy on employee share ownership. For example, ESOPs are required by federal law to offer participants the opportunity to diversify stock in their ESOP accounts after the age of 55. Some companies have private policies that encourage or allow greater diversification beyond the required federal levels. As noted, these policies could

⁶ Note that some Employee Stock Purchase Plans that offer deep discounts (above 15% of the market price) and a “look-back feature” (allowing employees a two year “into the future” window to purchase the stock at a lower price in the past) are essentially close to “grant” programs. It is questionable if these ESPPs should be limited by any such restrictions.

be expanded particularly where employees are purchasing the entire value of the stock with wages or savings.

Future research would clearly be valuable to explore the role of employee share ownership in overall wealth and financial risk. We need to understand which formats of employee share ownership are most responsible for the excessive risk, namely, more than 15% of a family's portfolio, identified in these results. This study has provided some initial guidance on this question with the finding that directly-owned stock contributes more to the concentration of employer stock in family portfolios than does stock owned through a pension plan. How much of the "excessive risk" employee share ownership stems from 401(k) plans where the workers bought the company stock with their wages or savings? This would be the riskiest situation similar to open market purchases of employer stock. Is "excessive risk" employee share ownership concentrated in Employee Stock Purchase Plans where employees bought the stock with wages or savings but received a 15% discount to market? The discount and the availability of any "look-back" option moderates the risk in these situations. Is "excessive risk" employee share ownership concentrated in Employee Stock Ownership Plans (ESOPs) where generally employees do not buy the stock with wages or savings, but receive stock as grants that was financed with credit by their companies? The fact that the stock was based on grants further moderates the risk of employee share ownership especially if those employees are paid at or above market wages. Because the SCF does not have such detail on types of employee ownership, answering these questions will require new data sources.

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Appendix A: Attitude and knowledge questions

Financial risk tolerance: “Which of the following statements comes closest to describing the amount of financial risk that you (and your {husband/wife/partner}) are willing to take when you save or make investments? (values reflect reverse coding)

4. Take substantial financial risks expecting to earn substantial returns
3. Take above average financial risks expecting to earn above average returns
2. Take average financial risks expecting to earn average returns
1. Not willing to take any financial risks

Willing to search for best financial terms: “When making saving and investment decisions, some people search for the very best terms while others don't. On a scale from zero to ten, where zero is no searching and ten is a great deal of searching, what number would you (and your {husband/wife/partner}) be on the scale?”

Knowledge about personal finances: “Some people are very knowledgeable about personal finances, while others are less knowledgeable about personal finances. On a scale from zero to ten, where zero is not at all knowledgeable about personal finance and ten is very knowledgeable about personal finance, what number would you (and your {husband/wife/partner}) be on the scale?”

Understand that single stocks less safe than mutual funds: “Do you think that the following statement is true or false: buying a single company's stock usually provides a safer return than a stock mutual fund?” Coded “false” as 1, “true” or “don't know” as zero.

Table 1: Employee Ownership Prevalence by Families						
Includes all families with private sector employees.						
		2004	2007	2010	2013	2016
		(1)	(2)	(3)	(4)	(5)
Percent of families owning employer stock						
	Any ownership of employer stock	19.1%	15.9%	14.2%	13.3%	15.3%
	Own employer stock through pension	13.2%	10.1%	9.8%	9.0%	10.5%
	Own employer stock directly	9.6%	8.5%	6.5%	5.7%	6.9%
Estimated number of families						
	Total	72,150,836	73,668,166	72,631,563	75,474,228	76,590,669
	Any ownership of employer stock	13,751,655	11,700,848	10,281,524	10,006,746	11,701,898
	Own employer stock through pension	9,506,206	7,428,274	7,105,016	6,782,993	8,070,137
	Own employer stock directly	6,955,259	6,226,754	4,722,109	4,315,417	5,258,224
Number of families in sample		2589	2513	3796	3492	3568

Table 2: Value of Employee Owned Stock by Families, 2016

Table 2: Value of Employee Owned Stock by Families, 2016				
Figures limited to families that own employer stock				
		Dollar value	Percent of household annual income	Percent of household wealth [^]
		(1)	(2)	(3)
If own employer stock, value of stock				
	Mean	\$111,196	31.3%	7.2%
	'(std. dev.)	(\$1,502,393)	(74.6%)	(53.3%)
	10th percentile	\$150	0.2%	0.1%
	25th percentile	\$1,000	1.3%	0.5%
	Median	\$6,000	5.8%	3.1%
	75th percentile	\$40,000	31.1%	10.9%
	90th percentile	\$153,000	84.3%	26.7%
Distribution of families with employer stock by category of employer stock as % of net worth				
	Any employer stock	Own employer stock through pension	Own employer stock directly	
	Percent of families	Percent of families	Percent of families	
	Negative net worth	4.9%	5.5%	3.4%
	>0, <=10%	68.5%	74.4%	69.5%
	>10, <=15%	7.4%	6.6%	7.5%
	>15%	19.2%	13.5%	19.7%
	>0%, <=2.5%	40.6%	49.3%	36.8%
	>2.5%, <=5.0%	15.0%	14.1%	17.4%
	>5.0%, <=10.0%	12.9%	11.0%	15.3%
	>10.0%, <=15%	7.4%	6.6%	7.5%
	>15.0%, <=20.0%	5.0%	3.6%	4.6%
	>20.0%, <=30.0%	5.8%	4.1%	5.1%
	>30.0%, <=50.0%	4.6%	3.4%	5.5%
	>50.0%	3.9%	2.4%	4.4%

[^] Percent capped at 100%, and excludes families with negative net worth.

Table 3: Employer Stock in Relation to Other Components of Wealth, 2016

Figures limited to families that own employer stock

		Overall	Position in wealth distribution			
			Bottom quarter	Second quarter	Third quarter	Top quarter
			(1)	(2)	(3)	(4)
Employer stock	Mean	\$111,196	\$3,691	\$6,712	\$13,681	\$246,406
	Median	\$6,000	\$480	\$1,760	\$3,300	\$40,000
Total net worth	Mean	\$1,057,255	-\$10,744	\$39,590	\$173,174	\$2,332,493
	Median	\$225,030	-\$3,250	\$34,220	\$167,650	\$887,100
	Median ratio relative to employer stock	26.04	-2.89	23.55	45.83	25.45
Total financial assets	Mean	\$698,074	\$15,793	\$30,345	\$94,567	\$1,547,409
	Median	\$116,100	\$6,270	\$24,060	\$83,240	\$582,550
	Median ratio relative to employer stock	14.62	8.99	12.88	22.71	15.21
Total liquid financial assets	Mean	\$79,113	\$4,228	\$5,115	\$18,325	\$168,821
	Median	\$10,500	\$1,270	\$3,000	\$8,000	\$40,500
	Median ratio relative to employer stock	1.36	3.00	2.00	2.50	1.04
Total nonliquid financial assets	Mean	\$618,961	\$11,565	\$25,230	\$76,241	\$1,378,588
	Median	\$95,000	\$3,000	\$18,800	\$66,000	\$510,000
	Median ratio relative to employer stock	11.33	5.75	10.00	17.04	13.12
Total nonfinancial assets	Mean	\$536,922	\$50,636	\$93,177	\$205,186	\$1,059,573
	Median	\$228,600	\$15,700	\$46,500	\$179,700	\$536,700
	Median ratio relative to employer stock	27.03	24.67	26.95	51.07	15.77

Table 4: Employee Stock Ownership by Household Income Level, 2016

Figures limited to families where householder or spouse is current private sector employee

		Household income groups			
		Lowest quarter (0-\$36,455) (1)	Second quarter (\$36,455-65,821) (2)	Third quarter (\$65,821-110,377) (3)	Highest quarter (\$110,377 or more) (4)
Percent of families owning employer stock					
	Any ownership of employer stock	4.5% *	13.9%	15.4%	27.3% *
	Own employer stock through pension	3.1% *	9.9%	12.3%	16.7% *
	Own employer stock directly	1.7% *	4.9% *	5.0% *	14.8% *
If own employer stock, value of stock					
In dollars					
	Mean	\$6,299 *	\$11,613 *	\$17,822 *	\$231,790 *
	Median	\$800	\$1,500	\$3,000	\$22,000
As percent of annual income					
	Mean	20.2%	22.3%	21.1% *	43.5% *
	Median	5.1%	3.1%	3.7%	10.2%
As percent of net worth ^{^^^}					
	Mean	16.1%	9.9%	9.7%	10.0%
	Median	3.1%	2.9%	3.5%	4.0%
Estimated total families in economy		18,994,213	19,136,558	19,279,202	19,180,296

* Significantly different from other three combined income groups at p<.05

Table 5: Categorical Distribution of Employer Stock as Percent of Net Worth, by Income Group, 2016

Figures limited to families that own employer stock

	Household income groups			
	Lowest quarter	Second quarter	Third quarter	Highest quarter
	(0-\$36,455)	(\$36,455-65,821)	(\$65,821-110,377)	(\$110,377 or more)
	(1)	(2)	(3)	(4)
Employee ownership as % of net worth				
Negative net worth	11.5%	9.6% *	3.5%	2.2% *
>0, <=10%	58.6%	63.0%	69.4%	72.4%
>10, <=15%	6.0% *	5.4%	10.0%	7.2%
>15%	23.8%	22.0%	17.1%	18.2%
Negative net worth or >15%	35.4%	31.6%	20.6%	20.4%
>0%, <=2.5%	38.7%	41.3%	44.2%	38.6%
>2.5%, <=5.0%	12.9%	13.7%	12.1%	17.6%
>5.0%, <=10.0%	7.0%	8.0%	13.2%	16.2%
>10.0%, <=15%	6.0%	5.4%	10.0%	7.2%
>15.0%, <=20.0%	4.3%	5.4%	4.5%	5.1%
>20.0%, <=30.0%	6.3%	7.2%	5.4%	5.2%
>30.0%, <=50.0%	2.1%	7.4%	4.1%	3.8%
>50.0%	11.1%	1.9%	3.2%	4.2%

* Significantly different from other three combined income groups at p<.05

Table 6: Relation of Employee Ownership to Pension Wealth							
Limited to private sector employees with pension balances							
	Dep. var.: Type of regression:	Respondent's pension balance excluding employer stock		Spouse's pension balance excluding employer stock		Household's pension balance excluding employer stock	
		OLS	Median	OLS	Median	OLS	Median
		(1)	(2)	(3)	(4)	(5)	(6)
Value of employer stock in pension plan		0.761** (0.362)	0.889*** (0.133)	0.425 (0.317)	0.431 (0.532)	0.772** (0.342)	0.896*** (0.125)
Female		-35,276*** (6,438)	-8,953*** (1,513)	-35,086 (26,218)	-916.6 (8,902)	-41,344*** (6,469)	-10,605*** (1,633)
Race/ethnicity (white non-Hisp. excl.)							
Black		-25,471*** (6,493)	-4,652*** (1,359)	-26,876*** (6,169)	-4,187* (2,481)	-29,123*** (6,257)	-4,655*** (1,519)
Hispanic		-23,028*** (6,502)	-5,080*** (1,586)	-21,882*** (5,707)	-1,308 (1,525)	-26,547*** (6,192)	-4,599*** (1,603)
Other race		-32,915*** (10,485)	-3,542 (4,381)	-9,277 (11,793)	802.5 (5,668)	-27,719** (11,451)	-5,896 (5,338)
Education (<HS excl.)							
HS degree		-3,246 (5,354)	665.1 (1,243)	-4,546 (6,761)	203.5 (1,428)	-6,550 (5,726)	543.6 (1,305)
1-3 years college		22,617*** (7,175)	7,636*** (2,061)	17,194* (9,714)	4,612** (2,289)	30,045*** (8,397)	9,054*** (2,921)
4 years college		57,018*** (7,007)	15,840*** (1,965)	42,517*** (9,882)	12,812*** (2,839)	60,641*** (7,373)	18,143*** (1,941)
Graduate school		112,291*** (13,329)	37,110*** (4,959)	74,103*** (11,975)	24,298*** (5,353)	125,195*** (13,502)	46,675*** (4,864)
Age (<35 excl.)							
35-44		33,729*** (4,505)	15,825*** (1,447)	28,574*** (5,063)	9,115*** (1,838)	37,241*** (4,228)	16,375*** (1,516)
45-54		96,738*** (7,755)	36,295*** (2,622)	55,282*** (5,017)	19,864*** (2,398)	101,095*** (7,204)	37,962*** (2,621)
55-64		146,217*** (11,598)	47,010*** (4,304)	105,334*** (10,513)	33,860*** (4,457)	162,757*** (11,608)	49,530*** (4,406)
65-74		193,994*** (26,035)	52,975*** (11,512)	128,481*** (22,302)	18,997* (10,896)	205,819*** (27,043)	49,703*** (13,371)
75+		155,415 (113,820)	18,412 (20,337)	36,611** (14,326)	29,047 (21,969)	132,443 (93,116)	24,274 (17,673)
Marital status (never married excl.)							
Married, spouse present		17,603*** (6,379)	4,477** (1,779)	-1,423 (7,141)	2,167* (1,198)	21,115*** (6,220)	6,208*** (1,714)
Separated/divorced		-12,707* (7,076)	-6,029*** (1,360)	-4,407 (13,133)	-2,197 (2,201)	-16,015** (6,942)	-6,836*** (1,353)
Widowed		-47,508*** (14,072)	-21,357*** (3,635)	36,042 (128,159)	108,875 (451,934)	-52,595*** (14,008)	-21,765*** (4,051)
Number of children		-2,090 (2,503)	1,201** (516.3)	-1,749 (2,494)	-489.8 (608.3)	-2,399 (2,406)	570.3 (507.5)
Constant		-5,098 (6,527)	2,375* (1,437)	2,761 (8,493)	2,698** (1,356)	-5,329 (6,517)	2,692** (1,300)
Observations		5,720	5,720	2,955	2,955	6,391	6,391
R-squared		0.131		0.100		0.143	

Robust standard errors in parentheses. Based on combined estimates from multiple imputations using Stata micombine procedure.
*** p<0.01, ** p<0.05, * p<0.1
^ Pension balance in primary plan if more than one plan

Table 7: Relation of Employee Ownership to Defined Benefit Pension			
Based on logit regressions limited to private sector employees. Figures are odds ratios.			
Dep. var.:	Likelihood of defined benefit pension plan for:		
	Respondent	Spouse	Respondent or spouse
Type of regression:	(1)	(2)	(3)
Value of employer stock in pension plans	-4.97e-07 (8.27e-07)	-1.54e-06 (2.88e-06)	-7.00e-07 (7.57e-07)
Female	0.118 (0.0910)	0.217 (0.440)	0.00663 (0.0854)
Race/ethnicity (white non-Hisp. excl.)			
Black	0.145 (0.0916)	0.299** (0.136)	0.209** (0.0817)
Hispanic	-0.408*** (0.113)	-0.322** (0.154)	-0.374*** (0.0942)
Other race	-0.470*** (0.163)	-0.494** (0.208)	-0.542*** (0.137)
Education (<HS excl.)			
HS degree	0.226*** (0.0876)	0.198* (0.119)	0.214*** (0.0743)
1-3 years college	0.279** (0.126)	0.317* (0.164)	0.279*** (0.106)
4 years college	0.381*** (0.0970)	0.429*** (0.125)	0.397*** (0.0811)
Graduate school	0.783*** (0.103)	0.536*** (0.135)	0.662*** (0.0873)
Age (<35 excl.)			
35-44	0.321*** (0.102)	0.453*** (0.139)	0.344*** (0.0849)
45-54	0.835*** (0.0989)	0.641*** (0.133)	0.767*** (0.0830)
55-64	0.821*** (0.110)	0.736*** (0.141)	0.732*** (0.0914)
65-74	0.0524 (0.181)	0.520*** (0.190)	0.0546 (0.137)
75+	-0.607 (0.602)	-0.317 (0.477)	-0.683* (0.379)
Marital status (never married excl.)			
Married, spouse present	0.355*** (0.102)	0.576*** (0.178)	0.620*** (0.0895)
Separated/divorced	0.181* (0.104)	0.203 (0.253)	0.192** (0.0962)
Widowed	0.263 (0.189)	na	0.229 (0.186)
Number of children	0.00593 (0.0294)	0.0157 (0.0362)	-0.00520 (0.0236)
Constant	-2.950*** (0.112)	-3.108*** (0.189)	-2.789*** (0.0984)
Observations	13,166	7,368	15,958
Robust standard errors in parentheses	44		
*** p<0.01, ** p<0.05, * p<0.1			

Table 8: Relation of Employee Ownership to Household Net Worth						
Dependent variable=household net worth excluding employer stock. Limited to families with private sector employees.						
Type of regression:	OLS	Quantile=.10	Quantile=.25	Quantile=.50	Quantile=.75	Quantile=.90
	(1)	(2)	(3)	(4)	(5)	(6)
Value of employer stock:						
In pension plans	3.203*** (1.065)	0.551** (0.215)	1.106*** (0.428)	1.873*** (0.466)	4.262*** (1.379)	5.987*** (1.676)
Owned directly	0.863*** (0.243)	0.402*** (0.134)	1.133*** (0.358)	2.430*** (0.363)	4.719*** (0.660)	7.858*** (1.517)
Female	-168,587*** (17,009)	-6,606*** (1,193)	-11,358*** (1,132)	-19,102*** (1,980)	-31,566*** (3,693)	-43,840*** (8,452)
Race/ethnicity (white non-Hisp. excl.)						
Black	-191,343*** (12,577)	-11,449*** (1,270)	-25,936*** (1,629)	-43,092*** (2,307)	-42,900*** (4,637)	-56,777*** (10,066)
Hispanic	-136,781*** (13,174)	-6,977*** (1,155)	-20,758*** (1,404)	-36,053*** (2,732)	-39,256*** (4,272)	-53,815*** (9,631)
Other race	-152,248*** (33,874)	-4,363 (4,746)	-18,043*** (3,345)	-16,456** (8,107)	-13,828 (18,587)	-41,623** (19,656)
Education (<HS excl.)						
HS degree	-36,425*** (10,531)	3,231*** (986.9)	1,677* (937.7)	2,381 (1,786)	-4,175 (3,554)	-7,820 (7,838)
1-3 years college	66,076*** (16,508)	2,317 (2,040)	12,157*** (2,397)	28,636*** (4,390)	47,044*** (8,725)	56,430*** (15,509)
4 years college	407,511*** (22,698)	6,344*** (2,416)	28,822*** (2,867)	88,429*** (6,187)	225,235*** (16,606)	474,333*** (33,737)
Graduate school	865,798*** (38,982)	11,916** (4,668)	61,996*** (7,958)	220,120*** (19,104)	592,404*** (44,630)	1.528e+06*** (133,868)
Age (<35 excl.)						
35-44	103,030*** (12,530)	13,145*** (1,367)	20,506*** (1,579)	37,399*** (2,379)	47,345*** (4,602)	71,656*** (11,950)
45-54	342,439*** (17,091)	21,773*** (1,557)	42,750*** (2,417)	105,234*** (5,284)	211,393*** (10,923)	346,488*** (20,035)
55-64	646,215*** (27,433)	29,330*** (2,338)	72,289*** (4,903)	192,534*** (9,263)	408,214*** (22,884)	785,612*** (52,641)
65-74	770,320*** (51,074)	35,830*** (3,762)	83,289*** (6,521)	197,485*** (18,547)	436,437*** (53,868)	968,975*** (114,475)
75+	809,147*** (104,229)	36,919*** (13,130)	94,610*** (14,074)	199,336*** (27,256)	300,207*** (73,775)	537,570*** (202,527)
Marital status (never married excl.)						
Married, spouse present	101,036*** (16,734)	8,615*** (1,553)	18,541*** (1,510)	38,623*** (3,346)	81,370*** (7,385)	191,101*** (17,076)
Separated/divorced	-91,510*** (16,201)	-1,938 (1,282)	-11,015*** (1,493)	-21,260*** (2,529)	-24,197*** (4,053)	-29,245*** (8,782)
Widowed	-137,372** (55,973)	-263.3 (2,251)	-16,019*** (5,811)	-38,159*** (9,658)	-58,369*** (20,303)	-28,313 (50,205)
Number of children	20,138*** (5,774)	427.7 (462.6)	1,673*** (496.9)	3,561*** (970.9)	6,149*** (1,621)	7,967** (3,424)
Constant	-39,767*** (13,593)	-18,112*** (1,627)	-6,292*** (1,214)	8,380*** (2,089)	44,393*** (4,094)	97,045*** (9,122)
Observations	15,958	15,958	15,958	15,958	15,958	15,958
R-squared	0.077					

Robust standard errors in parentheses. Based on combined estimates from multiple imputations using Stata micombine procedure.

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

Demographic characteristics refer to householder

Table 9: Employee Ownership and Attitudes Toward Financial Issues				
Question wordings in Appendix A. All data come from 2016 survey.				
	No employee ownership	Any employee ownership	Own employer stock through pension	Own employer stock directly
	(1)	(2)	(3)	(4)
Financial risk tolerance (0-10 scale)	4.38 (2.60)	5.14 * (2.47)	4.44 * (2.59)	4.42 * (2.60)
Willing to search for best financial terms (0-10 scale)	6.13 (3.05)	6.49 * (2.90)	6.15 (3.03)	6.15 * (3.05)
Knowledge about personal finances (0-10 scale)	7.17 (2.07)	7.71 * (1.85)	7.20 * (2.06)	7.22 * (2.05)
Understand that single stocks are less safe than mutual funds (0-1 dummy variable)	0.64 (0.48)	0.69 * (0.46)	0.63 (0.48)	0.79 * (0.48)
n	2981	586	379	289

* Significant difference from column 1 at p<.05

Table 10: Regressions of Attitudes Toward Financial Issues on Employee Ownership

Table 10: Regressions of Attitudes Toward Financial Issues on Employee Ownership									
Limited to families with private sector employees.									
	Dep. var.:	Financial risk tolerance		Willing to search for best financial terms		Knowledge about personal finances		Understand that single stocks less safe than mutual funds	
	Type of regression:	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Value of employer stock:									
	In pension plans	0.368**	0.344*	0.188	0.185	0.283*	0.271*	-0.0487	-0.0513
		(0.186)	(0.184)	(0.254)	(0.254)	(0.149)	(0.148)	(0.0364)	(0.0361)
	Owned directly	0.763***	0.646***	0.140	0.0911	0.254*	0.186	0.0840***	0.0715**
		(0.159)	(0.159)	(0.199)	(0.201)	(0.142)	(0.143)	(0.0290)	(0.0293)
Financial variables:									
	Financial assets (000's)		4.24e-08**		.99e-08**		2.39e-08**		3.18e-09**
			(1.69e-08)		1.57e-08		(1.07e-08)		(1.58e-09)
	Non-financial assets (000's)		2.16e-08*		1.18e-08		7.18e-09		6.44e-10
			(1.19e-08)		9.26e-09		(6.27e-09)		(1.19e-09)
	Debt (000's)		9.46e-07***		2.34e-08		1.44e-07**		9.67e-08***
			(2.67e-07)		1.79e-07		(1.56e-07)		(3.55e-08)
	Family income (000's)		5.32e-08		1.20e-08		8.90e-08		1.78e-08*
			(7.41e-08)		5.77e-08		(6.83e-08)		(1.05e-08)
Demographics									
		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations									
		3,568	3,568	3,568	3,568	3,568	3,568	3568	3568
R-squared									
		0.078	0.088	0.034	0.035	0.049	0.053	0.081	0.084
*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses.									
Based on combined estimates from multiple imputations using Stata micombine procedure.									
All regressions control for demographic variables (gender, race, age, education, marital status, number of children).									
See Table 9 for descriptive statistics on dependent variables.									