

The Law and Economics of Company Stock in 401(k) Plans*

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ABSTRACT

Some eleven million 401(k) plan participants take a concentrated equity position in their retirement savings account, investing more than 20% of the balance in their employer's stock. Yet investing in the stock of one's employer is a risky investment on two counts: single securities are riskier than diversified portfolios, and the employee's human capital is typically positively correlated with the performance of the company. In the worst-case scenario, workers can lose their jobs and much of their retirement wealth simultaneously. For workers who expect to work for the company for many years, a dollar of company stock can be valued at less than 50 cents to the worker after accounting for the risks. But employees still invest voluntarily in their employers' stock, and many employers insist on making matching contributions in stock, despite the fact that a dollar of investment or contribution may be worth only 50 cents on the dollar. How can competitive labor markets sustain a situation in which employers and employees make such a fundamental miscalculation? We provide evidence that employees underestimate the risk of owning company stock, while employers overestimate the benefits associated with employee stock ownership. We then analyze the likely effects of current and proposed regulations in this context.

I. INTRODUCTION

When the stock of the Enron Corporation suddenly collapsed, and eventually became worthless, many employees discovered that they had simultaneously lost their jobs and much of their retirement savings. Before the stock price fell, fully 62% of the assets in the Enron 401(k) plan were in the shares of Enron stock (based on the 11-k filings at the end of 2000). Now, more than two years after this well-publicized incident, it is still common for employees to have significant portions of their retirement investments in their employer's stock. Some examples are shown in Table 1.

[Insert Table 1 here]

In the aftermath of the Enron fiasco, Congress has considered a range of legal reforms that would protect employees against the risks associated with investments in their employer's securities (hereafter "company stock"). The most cautious proposal would require that sponsors provide an annual disclosure about company stock risks to participants and would limit an employer's ability to restrict a participant's right to diversify company stock investments. More ambitious initiatives would require mandatory diversification above some limit (such as 20% of the account balance) or disallow employee contributions in stock when employers already "match" in stock.¹ But no legislation has been passed, in part because of questions about its necessity. Employers argue that the provision of company stock in the 401(k) plan is part of voluntary agreements between employers and employees, agreements on which government should not intrude. If these agreements are mutually beneficial, as their pervasiveness suggests, then the presumption should be against legal intrusion.

¹ Purcell (2002) provides a good summary of recent proposals.

Our goal here is to investigate whether those agreements are in fact mutually beneficial. We provide evidence that they are not. On the contrary, we suggest that their pervasiveness reflects some combination of information failure and bounded rationality on the part of both employers and employees. Participants making voluntary investments in company stock appear to do so ignorantly, with no knowledge of the risks, investing a dollar in company stock when it is often in reality worth only 50 cents. Employers behave in a fashion that also reflects inadequate information. A naive analysis is that firms seem to be paying part of their compensation in the equivalent of Canadian dollars (that is, valued at less than one U.S. dollar) and to be paying nearly a dollar for those. We ask two questions: First, is this naive analysis approximately correct? We find that it is. Second, in light of that finding, we investigate the potential role that existing law may play in producing the high concentrations of company stock and consider some of the proposed changes to that law.

As a practical matter, the issue is exceedingly important. According to Mitchell and Utkus (2004), some eleven million participants in U.S. defined contribution plans have over 20% of their account balance invested in company stock. Within this group, some five million have over 60% of their account concentrated in their employer's stock. Many large U.S. firms encourage this practice by making their own "matching" or other contribution in the form of company stock. These firms typically restrict an employee's ability to diversify these contributions, often until the employee reaches age 50 or 55.² As reported by Benartzi (2001),

² Only 3% of defined contribution plans in the U.S. offer company stock, but these are the plans of the largest firms, covering over 40% of participants, according to Mitchell and Utkus (2004). About half of firms make a contribution in stock, while the other half simply make stock available as one of many plan investments. The decision to provide an employer contribution in stock is generally a feature of large firms. Benartzi (2001) reports that roughly 40 percent of the S&P 500 firms require that the matching contributions they provide to their employees be invested solely in company stock.

employees perceive the employer's decision to match in stock as an implicit endorsement of the stock and so invest even more of their own money in the stock than they otherwise might.

Encouraging or forcing employees to invest in a single stock, as opposed to a diversified fund such as a mutual fund, violates the first principle of investing—to diversify! As we describe below, concentrated holdings in an employer's stock can be extremely costly to employees. For example, in a paper we will discuss below, Lisa Meulbroek (2002) estimates that a large position in company stock held by employees over a long period is effectively worth less than 50 cents on the dollar, after accounting for the costs of inadequate diversification. Moreover, many employers are providing matching stock contributions that cost them nearly a dollar but are again worth less than 50 cents on the dollar.³

How can competitive labor markets sustain an equilibrium in which employees and employers make such fundamental miscalculations about the value of an investment asset? We investigate the puzzle from the perspectives of both employees and employers, comparing those perspectives with what is known about the real-world effects of company stock. Our survey of over 500 employees indicates that most workers do not correctly appreciate the risks associated with company stock. In particular, employees believe that shares in their company are relatively safe; many think it is safer than a “diversified fund with many different stocks.” Moreover, their perceptions of risk seem largely related to past returns rather than the volatility of those returns. We find similar misconceptions on the part of firms. The actual cost of giving a dollar of company stock to the employee is quite close to a dollar, and the benefits, at least in terms of

³ The optimal asset allocation depends on the specific asset pricing model being assumed. Under the static one-period CAPM, investors should hold the market portfolio. In contrast, under an intertemporal asset pricing model with a stochastic investment opportunity set, hedging demands may move the optimal portfolio away from the market portfolio. However, it is difficult to imagine any asset pricing model, intertemporal or not, in which company stock would be a good vehicle to hedge against unfavorable shifts in the investment opportunity set.

employees' productivity, are probably quite small. Employers appear to significantly overestimate those beneficial effects.

With respect to the law, we argue that the current situation is partly explained by the fact that the law now favors, rather than discourages, company stock holdings. Given that we believe that informed employers and informed employees would be quite unlikely to agree that employees' savings should be invested mostly or entirely in company stock, legal reform may be warranted. The least intrusive reforms would require either disclosure of information to employees or limitations on the time periods for which employees may be required to hold company stock, while more aggressive reforms would prohibit employee stock ownership altogether in retirement plans. We evaluate the various reforms in light of our findings.

This article proceeds as follows. In Part II, we discuss our research methodology, which consists of surveying employees and employers. In Parts III and IV, we discuss the costs and benefits of company stock to employees and employers, respectively. We draw on what is known about those costs and benefits and compare the reality with existing perceptions. In Part V, we discuss the legal environment.

II. SURVEYS

Our data and tests are based on two surveys—a telephone survey of employees and an online survey of employers.⁴ For the employee telephone survey, we drew a random sample of participants who are able to invest in company stock through their employer's defined contribution plan from the plan recordkeeping system of the Vanguard Group.⁵ Our sample

⁴ Additional detail on the survey can be found in Vanguard (2003).

⁵ Employers often hire third parties such as Vanguard to administer their 401(k) plan, a task that includes keeping track of the investments of each employee. This recordkeeping and plan administration business is separate from the portfolio management business.

includes 501 respondents from employees at roughly 100 different companies. A copy of the survey is attached in Appendix A. Our goal was to obtain a better understanding of how employees think about the costs and benefits of owning company stock. For example, the survey included a question on the perceived risk of company stock relative to a diversified fund with many different stocks (see Q6 of the employee survey). The complete surveys were linked to the recordkeeping system to obtain additional demographic and investment information, although the identity of the individual respondents was kept confidential.

The employer survey was sent to a group of 150 employers that offer company stock in their retirement savings plans: 135 were Vanguard retirement recordkeeping clients and 15 were firms for whom Vanguard provides investment services. Half of the respondents were in the human resources department, typically an individual with the title of director of benefits or vice-president of human resources, while just under half (43%) were in the corporate treasury function. The response rate was 50 percent, resulting in 76 complete surveys. Of the respondents, 45 percent provide at least a portion of their contribution in the form of company stock, and the remaining 55 percent made their contribution “in cash”—that is, they left the investment of the employer contribution to the discretion of the employees.⁶ The survey instrument, including the distribution of responses, is attached in Appendix B. The goal of the employer survey was to obtain a better understanding of employers’ perspectives on the costs and benefits of requiring employees to own company stock. Hence, besides providing background information on the individual responding to the survey and the structure of the specific retirement plan, the employer was asked to rate the degree of agreement or disagreement

⁶ Employer stock contributions in a defined contribution plan can take several forms: a matching contribution, such as \$0.50 of stock for each \$1.00 contributed by the participant, up to 6% of pay; a non-matching employer contribution that can vary from year to year, such as a 3% of pay stock contribution to all eligible employees; or an

with about a dozen statements on the costs and benefits of requiring employees to own company stock (see Q8 and Q9 of the employer survey).⁷ The complete surveys were linked to recordkeeping data for information such as asset allocation.

III. EMPLOYEES AND COMPANY STOCK: REALITY AND PERCEPTION

What is the value of company stock to employees? The most careful estimates come from a 2002 study by Lisa Meulbroek, who focuses on the cost of failing to diversify the idiosyncratic risk of company stock.⁸ The relative value to the employee of a dollar of company stock, as opposed to a diversified stock portfolio, is inversely related to the proportion of wealth held in company stock, the number of years the stock will be held, and the volatility of the stock. For example, with an assumed investment horizon of ten years and 25 percent of the assets in company stock, a dollar in company stock is only worth 58 cents. Lengthening the investment horizon to 15 years, and increasing the allocation to company stock to 50 percent, would further reduce the value to 33 cents on the dollar. All other things being equal, more volatile small-cap stocks have a lower risk-adjusted value than blue-chip issues. But as Brown et al. (2004) point out, it is principally large blue-chip firms that encourage concentrated stock positions, and so for many participants, the risk adjustment should be based on the volatility of large-cap stocks.

Meulbroek's calculations actually understate the costs of holding company stock, because human capital considerations are not included. Because employees typically do well when their company does well, and vice versa, an investment in company stock is worth less, on average, than an investment in a single company picked at random. As the employees at Enron learned

Employee Stock Ownership Plan (ESOP) contribution, a stock contribution made to all eligible employees that qualifies for certain additional tax benefits.

⁷ To ensure that we did not miss some important aspects of the costs and benefits of company stock, the survey questions were based on focus groups that we conducted with employers earlier on.

the hard way, workers with a significant portion of their wealth invested in company stock can end up losing their job and a significant portion of their savings simultaneously. For workers who expect to stay with the firm for an extended period of time, a dollar that remains invested in the employer's stock can easily be worth less than 50 cents on the dollar.

For employees, then, the problem with investing in company stock is that it exposes them to idiosyncratic risk as well as to the possibility of suffering simultaneous reductions in both retirement savings and wages. Yet, from the employees' perspective, there could be some advantages to investing in company stock. For example, employees could enjoy certain tax benefits if they invest in company stock. In the rest of this section, we explore how employees view the advantages and disadvantages of owning company stock, and we attempt to compare their perceptions with rational calculations.

A. *Benefits to the Employee*

Advantageous tax treatment. Company stock does enjoy tax advantages not available for other investment funds in 401(k) plans. First, when changing jobs or retiring, a participant may elect to have all appreciation in company stock taxed at a preferential capital gains tax rate. For example, suppose a participant retires with \$250,000 invested in company stock, with a cost basis of \$100,000.⁹ The participant may elect an "in-kind" distribution, namely, a distribution of share certificates, and transfer those assets to a taxable brokerage account. The participant must pay ordinary income taxes on the cost basis of \$100,000 at the time of distribution. If she

⁸ See also calculations by Poterba (2003) and Ramaswamy (2004).

⁹ The cost basis of shares acquired in a retirement plan is the average cost of shares acquired by the trustee, rather than on specific share purchases by individuals. Because of plan forfeitures and other factors, an employee's cost basis at the time of the lump-sum distribution from the plan may be lower than the actual dollar value of his or her contributions, which provides an additional tax benefit to the employee. For example, if some employees leave the

decides to sell her stock then, she pays a lower capital gains tax on the \$150,000 of appreciation. Second, if she chooses to continue to hold the stock, she is able to defer the capital gains tax. While she must pay the ordinary income tax on the \$100,000 cost basis immediately, the capital gains tax on the \$150,000 appreciation—and on any future appreciation—is deferred until the shares are sold. Finally, because the company stock shares are now in a taxable brokerage account, the participant can pass these shares at death to heirs at a “stepped up” basis. In effect, this eliminates all capital gains tax on the stock’s appreciation for her heirs. By comparison, all other investments in a retirement savings plan are made in the form of cash—there are no “in kind” distributions of mutual fund securities, for example. Nor do these distributions have a favorable tax treatment. They are subject to ordinary income tax rates, either when they are withdrawn from the plan or when they are withdrawn from a rollover IRA.¹⁰

Can this potential tax benefit be of sufficient value to explain why employees would be willing to invest a large proportion of their retirement money in company stock? We assume that employees cannot be valuing something that they do not know about, so we began our investigation by simply surveying employees about the capital gains tax treatment of company stock. Interestingly, only one in ten of the respondents is even aware of the preferential tax treatment of company stock (see Q13 of the employee survey), a bit less than the 12 percent of employees who think that company stock is taxed at a higher rate! Most survey respondents

company before vesting in employer stock contributions in their account, the unvested balance reverts to the plan and may be used as new employer contributions to employee accounts, while retaining their earlier cost basis.

¹⁰ Upon the death of an IRA account holder, spouses are allowed to retain the assets in an IRA, benefiting from continued tax deferral, while other beneficiaries must pay tax. All withdrawals are still taxed at ordinary income rates. All account holders, either original owners or spouse heirs, must also begin withdrawals, taxed at ordinary income rates, beginning at age 70 ½.

either do not know the answer (35 percent) or think that company stock has the same tax treatment as other investments (44 percent).¹¹

Next, we explored whether awareness of the tax benefits of company stock translates into a higher allocation of employees' own contributions into company stock. We actually found the opposite. Those who know that company stock enjoys a preferential tax treatment allocate 20.9 percent of their monthly contributions to company stock, whereas those who think that company stock has a tax disadvantage allocate 28.3 percent. Hence, it seems unlikely that the tax benefits of company stock could explain why employees choose to invest their own discretionary contributions in company stock. Similarly, it seems unlikely that the tax benefits could explain why employees are willing to accept 50 cents on the dollar.

We do not find it surprising that employees are unaware of the tax benefits, given our own experience with leading 401(k) providers. One anecdote comes from a dinner two of us had with a dozen consultants who specialize in advising large 401(k) plans. Even those experts could not agree on the tax benefits to employees. Given that most people (even experts) are unaware of the tax treatment of company stock, we explored whether company stock provides other benefits that employees find valuable enough to sustain an equilibrium that requires them to own company stock.

Private information. Employees might know more about their employing company than outside investors. As a result, they might be able to earn abnormal returns. This private information hypothesis, however, makes more sense for employees' discretionary funds than for

¹¹ Although the employers in our study provide information on the tax-management techniques, they generally do so at the time of distribution, when the workers are changing jobs or retiring. Such disclosures do not encourage adoption of the technique; they merely explain it and recommend a consultation with a tax advisor. Ideally, we

amounts they are required to keep in company stock. After all, if employees are required to own the stock for many years, they have no opportunity to use their private information.

We believe that the private information hypothesis is in general unconvincing, even with respect to employees' discretionary funds. First, typical employees at a large company are unlikely to know much about all the different products and divisions. And even if they know a lot about the company, they still have to assess whether the information is already incorporated in the price or not. Second, the calculations by Meulbroek (2002) indicate that the lack of diversification can be extremely costly. Hence, the degree of private information that is required to justify a substantial allocation to company stock has to be correspondently high. It seems unlikely that the typical employee in a large corporation would have sufficient private information to justify the observed allocations. Third, the extent to which employees invest in company stock is often public information (that is, filed in 11-K forms). So arbitrageurs could limit employees' profits. Fourth, and most damagingly, the private information hypothesis has no empirical support. Benartzi (2001) sorted firms based on the extent to which employees invest their discretionary funds in company stock. He found no correlation between the amount invested in company stock and subsequent investment returns. Similarly, Huberman and Sengmuller (2002) regressed current investment choices on the future performance of company stock and did not find any significant correlation.¹²

Non-monetary benefits of owning company stock. For employees, owning company stock may provide them with non-monetary benefits, such as feeling part of a team, but because we cannot observe the non-monetary benefits, it is difficult to assess how important these are. We

would like to know the actual usage of these tax benefits by participants, but the IRS has not made such data available.

attempted to gauge these benefits by asking employees how their day-to-day attitudes and feelings are affected by owning company stock (see Q9 of the employee survey). While 32 percent of the respondents confirm that it makes them feel better, 55 percent indicated that it either does not affect them or it makes them feel worse. Furthermore, those who claim to feel better owning company stock seem to be concentrated in the best-performing stocks. For example, 54 percent of those claiming their employer's stock performed much better than the market also believe that owning it makes them feel better. In contrast, when company stock performed much worse than the market, only 19 percent feel that owning it makes them feel better. We suspect that some of those who claim to feel better owning company stock just feel better when they pick a winner regardless of its being company stock or not.

We also investigated whether making money on company stock feels better than making money on the overall stock market, because company stock provides additional non-monetary benefits. In particular, we asked individuals whether they would feel more regret "missing the boat" on company stock versus "missing the boat" on the stock market in general (see Q11 and Q12 of the employee survey). In a pilot test of the survey, we found that asking both Q11 and Q12 over the phone was somewhat confusing. Hence, we used a between-subject approach, in which half the subjects answered Q11 and the other half answered Q12. We did not find any significant differences in regret whether one misses a run up in company stock or the overall stock market.

To summarize, we find no evidence that employees value the potential benefits of owning company stock. The vast majority are unaware of the main monetary benefit (that is, the capital gains tax incentive). Most employees do not seem to appreciate the potential non-monetary

¹² See also related work by Choi et al. (2004).

benefits—and to those who do, the benefit appears to have more to do with “picking a winner.” Hence, the ostensible benefits of owning company stock could not fully explain why employees are willing to receive 50 cents on the dollar. To get a better understanding of the puzzle, we explore a key question: whether employees are aware of the costs of investing in company stock.

B. Costs to the Employee

Idiosyncratic risk. As we have noted, investing in a single stock could be very costly once idiosyncratic risk is considered. This is especially true when employees invest in their employer’s stock, because they could lose their retirement funds and job at the same time. But there is some evidence that employees do not fully understand the risk of investing in company stock. For example, John Hancock Financial Services (1999) reports that only 18 percent of employees realize that their employer’s stock is riskier than a stock fund. Similarly, Benartzi (2001) finds that only 16 percent of employees understand that their employer’s stock is riskier than the overall stock market. Furthermore, only 6 percent of those with a high school education or less recognize the risk of company stock. Mitchell and Utkus (2004) report on Vanguard survey data showing that the average participant views company stock as safer than a diversified stock fund.

We revisited employees’ understanding of the risk of company stock for two reasons. First, we wanted to test the possibility that employees might have learned from the well-publicized Enron bankruptcy case in particular, and the market decline in general, that company stock could be very risky.¹³ Second, we rephrased the questions used in the earlier studies to make it more transparent that a stock fund includes many different stocks. In particular, our

¹³ Our employee survey was administered in September and October 2002.

question read, “Would you say your employer’s stock is more risky, less risky or has about the same level of risk as an investment in a diversified stock fund with many different stocks?” In a sense, we gave employees another chance to show that they recognize the risk associated with holding shares of a single company.

Our results indicate that despite the Enron bankruptcy case and the bear market, most respondents do not appreciate the risk of company stock. In particular, 25 percent of the respondents believe that their company stock is safer than a diversified stock fund, and another 39 percent believe that company stock has the same level of risk as a stock fund (see Q6 of the employee survey). Only three out of ten respondents realize that company stock is riskier than a diversified stock fund (33 percent). Our results are consistent with recent evidence by the Boston Research Group (2002) indicating that employees are aware of the Enron bankruptcy case, but they have a hard time applying any lessons about diversification to their own company stock holdings.

Part of the issue may be that participants do not think of “risk” as related to return volatility, the typical modern portfolio theory measure of risk. For 415 out of 501 participants, we were able to link their survey risk ratings to the five-year return and standard deviation of the company stock they owned (Table 2). In this subsample, four in ten (42 percent) claimed their company stock had the “same level of risk” as a diversified fund. Yet their actual holdings had an average standard deviation of 36 percent versus the market’s 18 percent. Two in ten (22 percent) thought their company stock was “less risky,” though these “less risky” stocks had an average standard deviation of 31 percent versus the market’s 18 percent. One-third of participants appeared to get the risk assessment right. They claimed their company stock holdings were “more risky,” and indeed they were, with an average volatility of 40 percent.

[Insert Table 2 here]

So one possibility is that only one-third of participants understand return volatility. But perhaps a more plausible explanation, suggested by the relationship between participants' understanding of risk and five-year returns, is that all of the participants are basing their risk perceptions on past returns, not volatility of returns. In Table 2, participants' risk perceptions correlate neatly with past returns. From this perspective, it is not surprising that eleven million participants overinvest in company stock and fail to construct mean-variance efficient portfolios for their retirement savings. Their conception of company stock risk appears largely unrelated to modern portfolio theory notions of volatility of returns. Overall past performance appears to be a pervasive decision-making heuristic for participants' thinking about company stock. It drives holdings, as Benartzi (2001) has shown, and as we have noted, it appears to drive both motivation levels and risk perceptions.

Next, we tried to assess the monetary value employees place on company stock, assuming they cannot sell it until they reach age 50 (a relatively common restriction). We did so by asking employees to choose between \$1,000 they can invest as they wish or \$1,000 worth of their employer's stock that they cannot sell until age 50 (see Q10a of the employee survey). Among those under 50 years old, 20 percent preferred \$1,000 worth of employer's stock, despite not being rewarded for the idiosyncratic risk. We continued by asking the remaining 80 percent who prefer to invest the \$1,000 at their discretion whether they would take \$1,100 in company stock or \$1,000 to invest as they wish (see Q10b of the employee survey). Another 14 percent selected company stock when offered the 10 percent premium, and then we found that an additional 29 percent chose company stock when the premium goes up to 50 percent (see Q10c

of the employee survey). Adding up the responses to the three scenarios, 63 percent of our respondents prefer company stock when it provides a premium of 50 percent.

We repeated the above analysis for people under the age of 40, as the requirement to hold company stock till age 50 imposes greater costs on them. We found that 16 percent prefer company stock even when it offers no premium; an additional 14 percent choose company stock when a premium of 10 percent is offered, and then 26 percent switch to company stock when the premium is raised to 50 percent. Adding up the responses, 56 percent of our respondents prefer company stock when it provides a premium of 50 percent.

The aforementioned calculations by Meulbroek (2002) suggest that employees ought to ask for a premium of approximately 100 percent if they cannot (or choose not to) sell company stock for a period of 10 to 15 years. A comparison of Meulbroek's calculations with our own findings indicates that at least six in ten respondents ought to ask for a higher premium if they are required to hold company stock for more than a decade. This is consistent with our earlier result that roughly six in ten respondents do not understand that company stock is riskier than a diversified fund with many different stocks. Put differently, participants do not fully understand the costs that are associated with owning company stock and being undiversified. This lack of understanding provides at least part of the explanation for employees' willingness to accept an equilibrium in which they are required to own company stock or in which they voluntarily concentrate their portfolios in company stock.¹⁴

Non-monetary costs. Employees who do not choose to own company stock might experience non-monetary costs such as feeling that they have betrayed their employer.

¹⁴ Although many employees in our sample do not seem to fully understand the degree of risk associated with company stock, it is plausible that some employees, like top management, do realize the risk involved.

Similarly, employees who do not invest in company stock might feel peer pressure to invest at least a little bit in it. But there appears to be little evidence for these speculations. Benartzi (2001) used the Organizational Commitment Questionnaire of Mowday, Steers, and Porter (1979) to estimate loyalty, and he found no evidence that loyalty correlates with the decision to invest in company stock. Similarly, he did not find any evidence that peer pressure plays a significant role in the decision to invest in company stock.

C. Summary: The Employee

In this section, we evaluated the costs and benefits of owning company stock from the perspective of the employee. We found that the vast majority of employees do not place much weight on the alleged benefits of owning company stock. For example, only one in ten individuals are aware of the advantageous tax treatment of company stock, whereas the rest are either unaware of the preferable tax treatment or think that company stock has a tax penalty. We also explored possible non-monetary benefits of owning company stock and, again, found that most employees do not find those extremely valuable.

With respect to the costs of owning company stock, our main finding is that most employees do not appreciate the risk of investing in a single stock. For example, six out of ten individuals believe that company stock is either safer or at least no riskier than a diversified fund with many different stocks. And for all participants, risk perceptions seem more related to past performance than for portfolio volatility. But perhaps employers have good reasons to favor company stock, an issue to which we now turn.

IV. EMPLOYERS AND COMPANY STOCK: REALITY AND PERCEPTION

At first glance, employees' investments in company stock could offer many advantages and disadvantages to the employer. Stock ownership could motivate employees to work harder. If company stock underperforms the stock market, however, workers' motivation might be adversely affected, and in extreme situations, management could face legal liability as plan fiduciaries. In this section, we explore how employers view the effects of requiring employees to invest in company stock. In particular, we are interested in comparing employer's perceptions of the costs and benefits of employee stock ownership with more objective evaluations.

A. Benefits to the Employer

Increased motivation and productivity. One of the oft-cited benefits of employee stock ownership is increased motivation and productivity, but there are several problems with the increased productivity hypothesis. One major problem is that for a (rational) rank and file employee at a large company, stock ownership provides virtually no monetary incentive to work hard, because one's work effort has an extremely small effect on the company's overall performance. This has often been referred to as the " $1/N$ " problem. If there are many employees, and many shareholders, then any one employee's effort will only have a trivial impact on the overall profits of the firm, and this employee will only receive a trivial portion of that profit. But perhaps employees do not understand this point; perhaps ownership of company stock spurs productivity through forms of "magical thinking" that reduce or even eliminate the " $1/N$ " problem.

Of course, whether stock ownership increases productivity is an empirical question, but the existing literature does not suggest that the effect is a strong one. In their review of this

literature, Kruse and Blasi (1995) note that only two of the nine studies examining the relation between employee ownership and productivity find significant results. And the magnitude of the effect is typically small. In particular, Kruse and Blasi (1995) calculated the change in sales per employee around the time an Employee Stock Ownership Plan (ESOP) was adopted, using the average effect across several studies. They found a one-time increase in productivity of about 4 percent and no change in the long-term growth rate. But, as Prendergast (1993) noted, the results are very difficult to interpret because most studies do not properly control for the trend in productivity. Firms that adopt ESOPs typically have enjoyed a relatively high growth rate prior to the adoption point. Hence, it is possible that the continuing growth around the adoption point is simply an extension of the trend. More importantly, the increase in productivity typically occurs in firms adopting cash profit-sharing plans as opposed to deferred plans. In fact, the increase in productivity for firms adopting deferred plans is a mere 0.9 percent of sales, a change that is not statistically significant (Kruse, 1993, p. 70). Thus, the empirical evidence of a relation between employee ownership and productivity is weak at best.

An additional problem with the studies on the association between stock ownership and productivity is that they covered time periods with mostly rising stock prices. During a bear market, it is entirely possible that company stock ownership could actually de-motivate employees. We find some support for this possibility in our employee survey. Specifically, we asked employees to rate their motivation level and job satisfaction as well as the performance of company stock (see Q7, Q8, and Q14 of the employee survey). We find a small but significantly positive correlation between stock performance and motivation level ($r = 0.10, p < 0.03$). Similarly, we found a positive correlation between job satisfaction and stock performance ($r = 0.14, p < 0.01$). Thus, employees should be expected to be more motivated and work harder

when the company is doing well but be less motivated and less eager to contribute when the company does poorly. This is unlikely to be the type of incentive program that CEOs would choose to maximize shareholders' value.

Still, let us assume, for the purpose of discussion, that employee ownership actually does yield a one-time increase in productivity by 0.9 percent for deferred type plans, as estimated by Kruse (1993). One question to explore is whether that increase in productivity would be sufficient to compensate the firm for the risk premium that (informed and rational) employees might require for holding an undiversified portfolio. In trying to answer this question, we consider a typical plan in which the employer matches employees' contributions at 50 cents on the dollar up to 6 percent of pay, that is, if employees contribute 6 percent of their salary, they get another 3 percent contributed by the firm. If the match is provided in company stock, we assume that employees understand that they get only 50 cents on the dollar on a risk-adjusted basis, and hence, would be indifferent in choosing between an unconstrained 50 percent match, as above, and a 100 percent match (up to six percent) if constrained to invest in company stock. Thus, firms would essentially be buying the 0.9 percent productivity increase at a cost of an increase in compensation of (up to) 3 percent, if every worker contributed enough to receive the entire match. This is likely to be an expensive way to buy productivity. For example, for United Airlines, with \$14 billion of revenues and \$7 billion of salaries, the potential increase in productivity of \$126 million (that is, 0.9 percent of \$14 billion) is quite a bit less than the potential increase in compensation of \$210 million (that is, 3 percent of \$7 billion).

But there is another reason to be skeptical of the productivity argument. Suppose that employee ownership does in fact increase productivity. The source of this increase in productivity must come from the *idea* of owning the employer's securities rather than the extent

of ownership, because an individual employee has no more than a miniscule portion of the outstanding shares. In their review article, Kruse and Blasi (1995, p. 24) confirm that “where there were differences in attitudes or behavior linked to employee ownership, they were almost always linked to the status of being an employee-owner, and not to the size of one’s ownership stake.” Given that it is the idea of ownership rather than the magnitude of ownership that seems to matter, why do competitive labor markets sustain an equilibrium at which eleven million participants invest more than 20 percent of their account balance in company stock, and many firms require the *entire* match to be invested in company stock? In particular, given that employees who are required to have the match in company stock have approximately half their plan assets in company stock (Benartzi, 2001), why don’t the forces of the labor market dictate that only a portion of the match be invested in company stock?

One potential explanation for the existing equilibrium is that employers over-estimate the potential increase in productivity. The U.S. General Accounting Office conducted a related survey in 1986, asking employers to indicate factors that influenced their decision to adopt an Employee Stock Ownership Plan (U.S. GAO, 1986). They found that whereas 70 percent of the survey respondents indicated that the plan was formed to achieve increased productivity, only about half as many (36 percent) claimed that their firms actually realized such an advantage. The GAO survey is consistent with the notion that employers might overestimate the potential increase in productivity. We would reiterate, however, that even if employers estimate the projected increase in productivity precisely, there is no need to require that the *entire* match be invested in company stock.

Nevertheless, in our survey we find that, on average, employers rate increased motivation and productivity as the most important benefit to making contributions in company stock. Using

a scale of 1 to 10, on which “10” means agree completely and “1” means disagree completely, employers rate increased motivation and productivity as 6.30. Consistent with the GAO survey, it seems that employers may well be overestimating the effect of employee ownership on motivation and productivity. Furthermore, those matching at least partially in company stock rate the importance of increased motivation and productivity higher than those matching in cash (7.97 vs. 4.93, $p < 0.01$; see Table 3).

[Insert Table 3 here]

Advantageous tax treatment for employers. Company stock has provided employers with several tax benefits over the years. Prior to the 1986 Tax Act, company stock provided employers with a tax credit. The 1984 Tax Act and the 1986 Tax Act replaced the tax credits with a different tax benefit geared toward leveraged ESOPs.¹⁵ In particular, lending institutions were allowed to exclude half the interest revenues they derived from ESOP loans from their taxable income (IRC Section 133). Scholes and Wolfson (1989) estimated that the present value of this benefit amounts to less than 10 percent of the fair market value of the stock, too small to make up for the diversification costs to employees. In any case, the interest revenue exclusion was repealed in 1996, so it is no longer applicable. The rest of our discussion focuses on the current tax benefits.

The main tax benefit of company stock is the deductibility of dividends, though this could only benefit firms that pay dividends. There are several ways to receive the dividend tax deduction (IRC Section 404(k)). First, dividends used to pay interest on ESOP loans are deductible, but because interest is generally deductible, company stock does not provide any

incremental benefit. Second, dividends used to pay off the principal of the ESOP loan are also deductible, though paying off the principal is equivalent to allocating shares from the ESOP trust to the individual employee accounts, so it would be deductible in any case as a compensation expense. Third, dividends that are paid in cash directly to the employees are also deductible, yet it is rare for companies to pay dividends in this manner in 401(k) plans. A new, more advantageous form of dividend deduction became effective December 31, 2001, in which employers are permitted to deduct dividends that are voluntarily reinvested in company stock by employees. Although this provides an incremental tax benefit to the employer beyond the deduction of compensation expense, several caveats are worth noting. All the retirement saving plans in our sample were established before the dividend deduction was available. In addition, the dividend deduction is most valuable when the dividend yield is high, while the average dividend yield for our sample firms is 1.7 percent and the median is 0.9 percent. Assuming a net tax benefit of less than one percentage point per year, the present value of the benefits over a ten-year period is roughly five to ten percentage points. Again, it seems as though employers are spending 90 cents and employees receive approximately 50 cents on a risk-adjusted basis. The magnitude of the tax benefit seems far too small to explain the labor market equilibrium.

In our survey, employers rate tax benefits as the second most important factor in choosing to match in company stock. Using the 1 to 10 agree/disagree scale, tax benefits receive an average score of 5.43 (recall that “10” means agree completely). Again, those matching in stock rate the tax benefits higher than those matching in cash (6.10 vs. 4.86, $p = 0.11$; see Table 3). Consistent with the tax savings hypothesis, those matching in stock have a higher dividend yield than those matching in cash (2.36 percent vs. 1.34 percent, $p = 0.06$). Given that the

¹⁵ This paper addresses 401(k) plans, not stand-alone ESOPs, but most of the tax benefits of ESOPs could be applied to most retirement savings plans using combination plans like KSOPs (that is, a combined 401(k) / ESOP

present value of the tax benefits does not amount to more than 5 to 10 percent of the market value of the stock, however, it seems that employers are overestimating the tax benefits.

Advantageous fiduciary law treatment for employers. Company stock in defined contribution plans also enjoys an important benefit under federal fiduciary law, namely, the Employee Retirement Income Security Act of 1974 (ERISA). ERISA sets forth three fiduciary principles for retirement plan investments: the exclusive benefit rule, that plans be managed exclusively for the benefit of participants; the prudence rule, that plan assets be invested according to a “prudent investor” standard; and the diversification rule, that plan assets be diversified so as to minimize the risk of large losses. Most notably, company stock is exempt from the diversification requirement in defined contribution plans—largely because, at the time ERISA was passed, large employers with profit-sharing plans invested in company stock lobbied Congress to exempt them from the diversification requirements imposed on defined benefit plans.¹⁶ Employers are still expected to act prudently, however, in determining whether company stock is a suitable investment.

In our survey, we asked employers about fiduciary risk by asking whether it was a bad idea from a fiduciary perspective to make matching contributions in stock. We know that plans that match in stock tend to have significantly higher concentrations than plans that match in cash, presumably raising fiduciary exposure. Using a 1 to 10 agree/disagree scale, fiduciary risks of matching in stock received a 5.6 score (with “10” meaning that matching in company stock was a bad idea because of increased fiduciary risk). Yet those matching in stock rated the fiduciary

plan).

¹⁶ Mitchell and Utkus (2004) report that the retailer Sears had a profit-sharing plan invested largely in company stock and pressed Congress to exempt defined contribution plans from the 10% diversification rule being applied to

risks significantly lower than those matching in cash (4.56 vs. 6.51, $p < 0.01$; see Table 3). This suggests the perplexing result that the more employers encourage plan concentration by matching in stock, the lower they perceive their fiduciary risk to be. This overoptimism about fiduciary risk is even more striking because the only significant round of fiduciary litigation affecting 401(k) plans has centered on those plans with significant concentrations in company stock.

Friendly hands. It is often argued that managers encourage employee ownership to reduce the risk of a takeover. Because employees typically vote with management, employee ownership serves as a takeover defense mechanism. Rauh (2003) investigates this hypothesis and finds some support for it, though the magnitudes are not large. Perhaps not surprisingly, employers do not offer this as their primary reason for supporting employee ownership. In the 1986 GAO survey, only 5 percent of employers stated that takeover defense was a motive for setting up an ESOP back in the 1980s (U.S. GAO, 1986). Our employers do offer some support for the potential value of getting shares into the friendly hands of employees (see Table 3). Note, however, that the fraction of outstanding shares held by retirement saving plans is typically modest. Mitchell and Utkus (2004) report that employees in a sample of very large companies controlled 6 percent of the firm's outstanding market capitalization. These figures are not enough to exercise significant managerial control but presumably could be important in deciding closely contested shareholder votes. Perhaps more important to discussions of legal reform, if employers are requiring their workers to hold shares in the company in order to avoid takeovers, their claims to protection by the law are rather flimsy. Indeed, if this is the true explanation for

defined benefit plans. Sears was once a highly successful firm, and its employees previously retired with large balances from the company stock plan.

why firms pay the match in company stock, then the argument for restricting or even prohibiting such policies is significantly enhanced.

Cash flow. It is often noted in the press that company stock is a “cheaper” form of compensation, because the employer could issue shares without having to spend cash. For example, an article in *Institutional Investor* argues that “companies make the match in their own shares because it’s a lot cheaper than shelling out hard cash” (Hawthorne, 2002). We find it difficult to take such an argument seriously. After all, employers could issue shares to the market and then use the proceeds to contribute cash to employees’ retirement accounts.¹⁷

What makes the cash flow hypothesis even more puzzling is the fact that many employers actually buy the shares on the market and then contribute them to employees’ retirement accounts. Hence, the cash is spent in any case. In our survey, we find that 56 percent of the firms buy the shares on the market; another 15 percent sometimes buy them on the market and sometimes issue shares, and the remaining 30 percent issue shares to the plan. It should be unsurprising that the cash flow argument did not score very high as a motive for matching in stock (a score of 4.53 on the agree/disagree scale). And the difference in responses between those matching in stock versus those matching in cash was statistically insignificant (4.77 vs. 4.34; see Table 3).

Financial reporting. Under older accounting rules, leveraged ESOPs offered financial reporting benefits. ESOP debt could remain off the employer’s balance sheet. Contributions were reported at historic cost, not market value, at least during the term of the ESOP loan. In

¹⁷ Obviously the cash argument has more legitimacy for firms using privately held company stock in their 401(k) plans. Such firms accounted for less than 5% of our respondents.

this way, firms could contribute stock at fair market value to employees' accounts, while reporting pension plan expense to shareholders at a much lower historic cost. Some existing ESOPs still take advantage of these benefits, but only four firms in our sample have leveraged ESOPs. Furthermore, the financial reporting aspect of leveraged ESOPs did not score high on our agree/disagree scale (mean = 3.53), most likely because only four out of 76 firms received any such benefit.

B. The Costs to the Employer

It is very difficult to quantify the disadvantages of company stock to the employer. Hence, we take a rather descriptive approach. Our survey indicates that employers' main concerns are fiduciary risk and lack of diversification in the plan (see Q9 of the employer survey and Table 3). Despite employers being concerned about the lack of diversification, they do not believe that matching in company stock should provide a large premium to compensate for the idiosyncratic risk. When those matching in cash were asked whether they would change the amount of the matching contribution if made in stock, the vast majority (79 percent) indicated that they would keep the amount the same (see Q11C of the employer survey). Similarly, when those matching in stock were asked whether they would change the amount of the matching contribution if made in cash, again, the vast majority (78 percent) responded that they would keep the amount the same (see Q11A of the employer survey).

C. Regression Analysis of the Decision to Match in Company Stock

We conclude the analysis of the employers' survey with a regression analysis explaining the decision to match in company stock versus cash. The purpose of the regression analysis is to

explore whether the survey responses could predict the actual choices of employers. The dependent variable is an indicator set to one if the match is (at least partially) invested in company stock and zero if it is left at the discretion of the employees. The dependent variables include the degree of agreement with the following factors being relevant to the decision to match in company stock: increased motivation and productivity, cash flow, friendly hands, status quo, advantageous tax treatment, compliance with SEC and DOL rules, fiduciary risk, and lack of diversification.¹⁸ The degree of agreement is based on our survey results, and it is measured on a one to ten scale, with one being “disagree completely” and ten being “agree completely.” We also included dividend yield as an explanatory variable.

The results of the Logit regression are reported in Table 4, based on 52 employers. Consistent with our earlier results, increased motivation and advantageous tax treatment are statistically significant in increasing the likelihood of matching in company stock. Specifically, a one-point increase in the degree of agreement with employee motivation being relevant to the choice of the match type increases the likelihood of matching in company stock by 14 percentage points. Increasing the degree of agreement with taxation being relevant to the choice of the match increases the likelihood of matching in company stock by eight percentage points. The dividend yield, a proxy for the potential tax benefits of company stock, is also significant, with a one-percentage-point increase in the yield causing the likelihood of matching in company stock to go up by 12 percentage points.

[Insert Table 4]

Among the drawbacks to matching in company stock, only lack of diversification is statistically significant. Here a one-point increase in the variable decreases the likelihood of

¹⁸ We have omitted the question regarding financial reporting considerations (see Q8F) because many employers did not respond to that question. The results are similar when we use the smaller sample for which Q8F is available.

matching in company stock by 11 percentage points. The likelihood ratio index for the regression is 0.49, indicating a high degree of fit.

D. Summary: The Employer

In this section, we evaluated, from the employer's perspective, the costs and benefits of providing a match in company stock. We think a reasonable conclusion is that it would be hard to justify an estimate of the benefits to the company of imposing its shares on the employees at more than 10 percent of the fair market value of the shares. For example, the oft-cited increase in motivation and productivity has very little empirical support. Furthermore, it seems that the effect is unrelated to the magnitude of employee ownership, so employers could scale down employee ownership without sacrificing productivity. As to the tax benefits, rough calculations suggest that they are fairly small. Employers view the remaining benefits that are associated with company stock, such as takeover defense and cash flow conservation, as even less important, and they are uncorrelated with the actual decision to match in company stock versus cash.

On the basis of our employers' survey, we conclude that the benefits of company stock are limited and that employers may not have accurate perceptions of them. Employers might overestimate the increase in motivation and productivity. Similarly, they might appreciate some of the tax benefits that are associated with company stock, without realizing that most of the tax benefits could have been replicated with interest and compensation deductions. Overestimating the benefits of company stock provides a partial explanation of why employers keep matching in company stock.

V. THE EFFECTS OF GOVERNMENT REGULATION

Our conclusion so far is that decision-making errors by employers and employees constitute at least partial explanations for the observed concentrated positions in company stock. Employees appear to be unaware of the idiosyncratic risks of company stock, and most fail to grasp the costs relative to a diversified portfolio. They voluntarily invest a dollar in company stock—for an asset that is only worth 50 cents. Meanwhile, employers who make stock contributions spend 90 cents in compensation (paying one dollar for the stock but receiving not more than ten cents in tax benefits), while employees receive only 50 cents in value. It is natural, then, to consider what effect government regulations have had, either in mitigating or exacerbating this situation, and how other regulations might work out in practice.¹⁹

A. *Government Neutrality*

A fact that seems to have been missed by many is that, as noted above, company stock is currently given highly *preferential* treatment under federal tax and fiduciary law. The tax law incentive is the ESOP dividend deduction. Companies that pay a dividend are entitled to an additional tax deduction at the corporate level. The fiduciary law incentive is the exemption of company stock from ERISA's diversification requirements. Companies must investigate and approve mutual funds before they are included in the plan, and no fund would be approved if it invested in the shares of a single company, even a giant company such as GE or Microsoft. But the company, no matter how small or risky, can include its own shares in the plan. A dot-com

¹⁹ See also Mitchell and Utkus (2002), Iwry (2003), and Munnell and Sunden (2004, Chap. 5) for a discussion of the alternative policy options.

startup would probably not include an Internet fund in the 401(k) plan because that would be considered too risky, but it could include its own speculative shares.

The preferred legal standing of company stock in ERISA is perplexing on a number of levels. If an employer is using company stock in a retirement plan to promote the productivity benefits of employee ownership, it is hard to see how the plan is being managed exclusively for the benefit of participants. Rather, it would seem that it is being managed for the benefit of shareholders, with participants (as shareholders) a secondary concern. It is also hard to see how any legal definition of prudence can accommodate a concentrated position in a single stock—especially if that stock’s performance is correlated with participants’ work earnings. At its core, company stock seems directly at odds with all of the fiduciary principles of ERISA.

By giving company stock this odd preferential treatment, existing law actually encourages the inclusion of company stock in 401(k) plans. A natural alternative to consider is to treat company stock just like every other investment, thus eliminating the preferential treatment of company stock in tax and fiduciary law. This simple change in regulations might, in and of itself, solve the problem, as firms might conclude that the fiduciary risk of imposing large amounts of company stock on their employees are not worth bearing. The insurance market might encourage the trend by raising fiduciary insurance premiums for employers. Certainly it is hard to see the logic in giving company stock this special treatment.

Perhaps Congress gave companies the special treatment inherent in the current law because it, too, believed in the benefits of employee ownership through defined contribution plans. As we have noted, however, these benefits are quite small, and like plan sponsors, policymakers need to make a full accounting of the costs. When it exempted defined contribution plans from a 10 percent company stock limit under ERISA, Congress was

responding to the concerns of sponsors and participants with highly successful company stocks. But policymakers should recognize that promoting company stock, in fact, leads to three related outcomes. At one extreme, a small group of employers and participants “win” spectacularly from company stock (such as Sears in the 1960s and Proctor and Gamble today). At the other extreme, a small group of employers and participants “lose” spectacularly due to their firms’ bankruptcy (such as Enron or WorldCom today or Color Tile a decade ago). And in the middle, there is a large group of participants who take significant positions in their employer’s stock and whose retirement savings are worth less than they seem (on average 50 cents on the dollar) because of the inherently higher volatility of an individual stock.

B. Disclosure

Because employees overestimate the value of company stock, an obvious remedy would be to correct their error by requiring employers to disclose to employees the risks associated with company stock. Employers might be asked, for example, to specify that the economic value of company stock is typically less than the economic value of a diversified portfolio. In many contexts, disclosure requirements of this kind have considerable promise. Their chief advantage here is that they would increase the likelihood that employees would actually understand the nature of the compensation package. The improved understanding might have desirable behavioral effects. Employees might demand higher wages; they might save more on their own; they might sell company stock and seek a diversified portfolio as soon as they are permitted to do so.

But by themselves, disclosure requirements may not alter the current situation very much. For one thing, it is not clear how legal disclosure requirements could be entirely neutral; any

framing of the disclosure mandate is likely to contain one or another bias. For another, it is possible that employees will not adequately understand what they are told. If employers require employees to hold company stock, and inform them that its value is less than they now believe, the best prediction is that the situation would be altered only marginally.

An important effect to consider is the impact of inertia and procrastination. An emerging body of empirical evidence suggests that few participants follow through on making desirable changes to their financial situation (Choi et al., 2001). Employees “know” they should join their 401(k) plan, save more for retirement, and regularly rebalance their portfolios. But many fail to follow through on these plans. The idea that a risk disclosure on company stock will encourage behavioral change seems to run counter to these findings.

C. Easing Restrictions on Diversification

One legal reform that has received some attention is to prohibit or limit the restrictions that many large employers impose on their employees’ ability to diversify company stock contributions. Although it is rare, some employers also restrict the ability of employees to diversify their voluntary investments in company stock, and government might eliminate this ability as well. The idea behind this reform is that it would ensure that workers would not be “locked in” for extended periods; it grants them a right to seek a diversified portfolio after (say) three years. But as with risk disclosure, there is a conspicuous problem with time limits: the force of inertia is such as to make it likely that most workers will stick with their existing allocations. A great deal of empirical work shows that those allocations are “sticky.” By themselves, time limits are unlikely to have much effect on reducing exposure to company stock.

A possible response would be to alter the default rule so that after a certain period of years, the employees' plans do not include company stock unless employees have affirmatively and expressly indicated that they want them to do so. In other words, companies might be required to allow employees to invest in a diversified portfolio after a period of years. After that period, employees might be shifted to such a portfolio unless they specifically indicate that they would like to do otherwise. This approach would be more intrusive but would likely have greater impact.

D. Caps and Prohibitions, Presumptive and Otherwise

Some proposed legislation would restrict investments in company stock more directly. Suggested rules include the following: (1) A cap on the proportion of assets that can be invested in company stock; typical suggestions are in the range of 10-25 percent. (2) An either/or rule specifying that companies can either pay the match in company stock or offer the option of investing in company stock, but not both. In other words, if employees are forced to invest their match in company stock, then company stock cannot be included as one of the options employees can elect on their own. (3) An outright ban on investing in company stock in 401(k) plans.

Option 1, the cap, has some appeal in that it directs attention only at the plans with the biggest problem, but complying with this rule might impose substantial costs on firms. The chief problem is created by the fact that stock prices vary, making the proportion invested in any one security a moving target. What are firms supposed to do if their stock price suddenly jumps, pushing employees over the allowable limit? Presumably there would be some time over which the company stock would be divested, but these details would have to be worked out before the

idea could be fully evaluated. However such rules are written, the costs of compliance are likely to be non-trivial.

A variant of option 1 would be to allow contributions in company stock only as long as company stock is below a relevant threshold, say 20%. Once company stock exceeds the 20% limit, employees and firms would be prohibited from directing additional contributions to company stock, but they would continue to benefit from any future appreciation. To add more to company stock, the concentration level would have to fall below 20%, either because employees and employers contribute more money to diversified assets or because the stock price falls. This variation is less complicated to administer and balances an interest in employee ownership with a concern about diversification.

In contrast, option 2, the either/or rule, offers a fairly simple rule that would be easy for firms to administer. Either employers contribute in company stock or employees voluntarily invest in it—but not both. This will not completely solve the company stock problem, as some participants will still be able to direct all of their own and the employer's money to company stock (if the employer doesn't match in stock). However, there are questions about the obligations of firms that have been (legally) violating this rule in the past. Some of the firms listed in Table 1 would be in this category. Do such firms merely have to stop offering the company stock in one place or the other, or do they have to do something to help increase the diversification of their employees' portfolios now?

Option 3 is the most intrusive policy and would create serious distortions. A ban on employee stock ownership is clearly a highly aggressive legal reform, one that might well have unintended consequences; its welfare consequences are not clear and hence do not unambiguously justify it.

VI. CONCLUSIONS

We have presented evidence that employees do not correctly understand the economic value of company stock. Most important, employees often believe, wrongly, that company stock is worth as much as a diversified portfolio and is not very risky. Employers also appear either to exaggerate the benefits to them of providing company stock or to impose the shares on their employees for motivations (such as getting the shares into friendly hands) that do not deserve government protection. It is hard to construct a story by which informed employees and employers converge on the existing equilibrium. Its pervasiveness appears to be a product of some combination of ignorance and excessive optimism. As a result, employees' savings are at excessive risk in a way that cannot be justified by pointing to accompanying benefits to either employees or employers.

We have discussed various proposed legal reforms in light of our findings. Another possibility for enhancing portfolio diversification would be to build on the trend toward automatic decision-making programs within 401(k) plans. Under an automatic diversification program for company stock, participants' holdings would be automatically reduced over time if they exceeded a particular cap (for example, 5 percent of account assets).²⁰ Such a policy could be voluntarily entered into by employers (perhaps with a fiduciary law incentive from Congress) or could be a mandatory feature of plans with company stock. Like the other automatic programs, such a feature might be structured as a negative or opt-choice, with portfolio diversification occurring automatically unless the participant annually elects to do otherwise. By selling stock gradually, the program would minimize participants' regret from any sudden spike

²⁰ See Benartzi and Thaler (2003) for a detailed discussion.

in stock prices and would not place large selling pressure on the stock price in the market. It would also combat inertia and procrastination. For employers, it would address fiduciary concerns: boards of directors do not want the liability associated with encouraging or mandating participants' diversification of company stock on a single day. The program would be automatic and work on its own.²¹

Whatever specific options are considered, it seems clear that participants' retirement outcomes will be improved by an effort to encourage rather than inhibit portfolio diversification. Our goal here has not been to specify a particular reform but to suggest that specific behavioral biases appear to underlie the existing situation and that well-designed reforms could likely produce substantial improvements in overall welfare.

²¹ In a world without regret aversion, both among participants and boards of directors and senior managers, the ideal strategy would be a one-time sale of stock. "Reverse dollar cost averaging" is an attempt to mitigate these psychological concerns. We would rather see employees lowering their company stock holdings gradually than not doing anything.

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TABLE 1
The Allocation of Plan Assets to Company Stock

Employer	Percent of Plan Assets Allocated to Company Stock
Procter & Gamble Co.	90
Abbott Laboratories	78
Pfizer Inc.	75
General Electric Co.	68
Southern Co.	65
Marsh & McLennan	64
Target Corp.	63
Chevron Texaco Corp.	60
Meadwestvaco Corp.	59
Textron Inc.	56
Kimberly - Clark Corp.	55
Bank of America	54
Merrill Lynch & Co.	52
Johnson & Johnson	50
Merck & Co.	50

Source: *Pensions and Investments*, January 20, 2003.

TABLE 2
Participants' Risk Assessment of Company Stock, Volatility and Past Performance

“Would you say your employer’s stock is more risky, less risky or has about the same level of risk as an investment in a diversified fund with many different stocks? (n=415)	Percent of respondents	Average standard deviation*	Average 5-year annualized return*
More risky	33%	40% **	-8.8% **
About the same level of risk	42%	36% **	-2.0% **
Less risky	22%	31% **	2.2% **
Don’t know	3%	35%	-6.0%
<i>REFERENCE: S&P 500</i>		18% **	-1.1% **

* Returns and standard deviations calculated for a subsample of participants (n=415 out of 501) for the period ended September 30, 2003. Standard deviation is calculated over 60 months and annualized.

** “More,” “same,” and “less risky” categories are significantly different from one another at the 95% or 99% level. Standard deviations for company stock respondents were significantly higher than the S&P 500 at the 99% level. Returns for “more risky” (“less risky”) are significantly lower (higher) than the S&P 500 at the 99% level.

TABLE 3
Degree of Agreement with the Potential Advantages of and Drawbacks to Making Employer Contributions in Company Stock

Employers Were Asked to Rate their Level of Agreement with the Following Advantages of and Drawbacks to Making Contributions in Company Stock on a Scale of One (Disagree) to Ten (Agree)	Employers Contributing Cash (n=42)	Employers Contributing Company Stock (n=34)	p-value for the Difference
<i>Panel A: Potential Advantages of Making Contributions in Company Stock</i>			
A. Increased motivation and productivity	4.93	7.97	0.01
B. Cash flow	4.34	4.77	0.54
C. Friendly hands	4.34	5.85	0.02
D. Status quo	1.58	3.09	0.01
E. Advantageous tax treatment	4.86	6.10	0.11
F. Financial reporting	3.03	4.22	0.06
<i>Panel B: Potential Drawbacks to Making Contributions in Company Stock</i>			
A. Compliance with SEC and DOL rules	3.54	2.76	0.11
B. Fiduciary Risk	6.51	4.56	0.01
C. Lack of Diversification	7.61	5.26	0.01

Employers were asked to rate their level of agreement with the potential advantages of and drawbacks to making contributions in company stock on a scale of one (disagree completely) to ten (agree completely). The mean level of agreement is reported in the table for employers who match in cash versus employers who match, at least partially, in company stock. We also provide the p-value for the difference in the degree of agreement between the two groups using a t-test.

TABLE 4
Logit Regressions of Whether the Employer's Match Is Provided in Company Stock

The Explanatory Variables are the Degree of Agreement with the Following Factors being Relevant to the Decision of whether to Match in Company Stock (10 = agree completely; 1 = disagree completely)	Coefficient Estimate (n = 52)
Intercept	0.86
Increased motivation and productivity	0.56**
Cash flow	-0.18
Friendly hands	-0.24
Status quo	0.50
Advantageous tax treatment	0.31*
Compliance with SEC and DOL rules	-0.39
Fiduciary Risk	-0.28
Lack of Diversification	-0.53**
Dividend Yield	51.35**

The above table displays the results of a Logit regression with the dependent variable being an indicator of whether employers' contributions are provided, at least partially, in the form of company stock. The dependent variables are the degree of agreement with various factors being relevant to the decision of whether to provide employer contributions in company stock. The dependent variables are measured on a scale of one to ten, with one being "disagree completely" and ten being "agree completely."

* Statistically significant at the 0.10 level.

** Statistically significant at the 0.05 level.

*** Statistically significant at the 0.01 level.

APPENDIX A
Employee Company Stock Survey
October 2002

(N = 501)

1. In your retirement savings plan at work, do you have monies invested in the stock of your employer, also known as the company stock fund?

1	YES	73%
2	NO (SKIP TO Q3)	25%
-7	DON'T KNOW (SKIP TO Q3)	2%

2. Approximately what percentage of your retirement account is invested in your employer's stock? [Note that the sample for this question is conditional on having some money in company stock.]

RANGE 0 TO 100		Mean = 26%; Median = 17%
-7	DON'T KNOW	n/a = 23%

(IF Q2 <> -7, SKIP TO Q3)

2a. Would you say it is: >>**READ LIST**<<?

1	Less than 20% ..	53%
2	Between 20% and 40%	16%
3	Between 40% and 60%	5%
4	Between 60% and 80%, or	1%
5	Over 80%	0%
-7	DON'T KNOW	25%

3. Would you say the percent of money you have in your employer's stock in your retirement savings plan is: >>**READ LIST**<<?

1	Too low	14%
2	About right, or (SKIP TO Q6)	67%
3	Too high	13%
-7	DON'T KNOW (SKIP TO Q6)	6%

4. You said you think you have TOO MUCH in company stock.

Which of the following statements best describes what you'd like to do about this? >>**READ LIST**<<

1	I'd like to REDUCE my company stock investment soon	11%
2	I'd like to REDUCE my company stock investment over the next year or two	23%
3	I'd like to REDUCE my company stock investment over the next five years	13%
4	I'd like to REDUCE my company stock investment at some point, but I'm not sure when, or	21%
5	I'm not sure what to do	27%
-7	DON'T KNOW	6%

5. You said you think you have TOO LITTLE in company stock.

Which of the following statements best describes what you'd like to do about this? >>**READ LIST**<<

1	I'd like to INCREASE my company stock investment soon	16%
2	I'd like to INCREASE my company stock investment over the next year or two	16%
3	I'd like to INCREASE my company stock investment over the next five years	16%
4	I'd like to INCREASE my company stock investment at some point, but I'm not sure when, or	27%
5	I'm not sure what to do	24%
-7	DON'T KNOW	0%

6. Would you say your employer's stock is MORE RISKY, LESS RISKY or has ABOUT THE SAME LEVEL OF RISK as an investment in a diversified stock fund with many different stocks?

1	MY EMPLOYER'S STOCK IS MORE RISKY	33%
2	ABOUT THE SAME LEVEL OF RISK	39%
3	LESS RISKY	25%
-7	DON'T KNOW	3%

7. Using a scale of 1 to 10, with 10 meaning you are extremely motivated and 1 meaning not at all motivated, how would you describe your level of motivation at work these days?

RANGE 1 TO 10	Mean = 7.20; Median = 8.00
-7 DON'T KNOW	n/a = 1%

8. We would like to understand whether investing in your employer's stock affects your day-to-day attitudes and feelings.

Owning stock in your company might affect you in a positive way—for instance, some people say owning stock makes them happy, energized and excited; or, it could also affect you in a negative way—for instance, some people say it makes them feel unmotivated, anxious or negative.

Which of the following statements best describes you? >>**READ LIST**<<

1	Owning my employer's stock makes me feel better	32%
2	Owning my employer's stock makes me feel worse	4%
3	Owning my employer's stock does not affect my attitudes and feelings, or	55%
4	I don't invest in my employer's stock	7%
-7	DON'T KNOW	2%

9. Overall, how do you feel about your job? Would you say: >>**READ LIST**<<?

1	I love it	22%
2	I like it	55%
3	It is an OK job	19%
4	I dislike it, or	2%
5	I hate it	1%
-7	DON'T KNOW	1%

**[IF LESS THAN 50 IN QS2, CONTINUE;
ELSE SKIP TO INSTRUCTION BEFORE Q11]**

READ: Now I'd like to ask you some questions about matching contributions made by an employer.

- 10a. Let's suppose your employer gives you \$1,000 a year as a matching contribution in your savings plan. Which of the following choices would you prefer? Would you rather receive: >>**READ LIST**<<? (Note that the sample size is 323, because individuals above 50 years old were not asked the question.)

1	One-thousand dollars (\$1,000) to invest as you wish, or	79%
2	One-thousand dollars (\$1,000) worth of employer's stock which you cannot sell until age 50 (SKIP TO Q11)	20%
3	>> DO NOT READ << DOES NOT MATTER	1%
-7	>> DO NOT READ << DON'T KNOW	1%

10b. Next, what if your employer offers you the following choice: one-thousand dollars (\$1,000) to invest as you wish OR one-thousand one-hundred dollars (\$1,100) worth of employer's stock which you cannot sell until age 50. Which would you prefer? (Note that the percentages are calculated as of those answering Q10a, so they do not add to 100.)

1	\$1,000 to invest as I wish	63%
2	\$1,100 in employer stock (SKIP TO Q11)	14%
3	DOES NOT MATTER	2%
-7	DON'T KNOW	1%

10c. Last, what if your employer offers you the following choice: one-thousand dollars (\$1,000) to invest as you wish or one-thousand five-hundred dollars (\$1,500) worth of employer's stock which you cannot sell until age 50. Which would you prefer? (Note that the percentages are calculated as of those answering Q10a, so do not add to 100.)

1	\$1,000 to invest as I wish	36%
2	\$1,500 in employer stock	29%
3	DOES NOT MATTER	1%
-7	DON'T KNOW	1%

[USE QUOTA MAP TO ASSIGN RESPONDENTS TO Q11 OR Q12]

11. Suppose you could have invested in your employer's stock but did not, and over a two-year period the stock price of your company doubles. On a scale of 1 to 10, with 10 meaning severe regret and 1 meaning no regret at all, to what extent would you regret having not invested in your employer's stock?

RANGE 1 TO 10	Mean = 5.76; Median = 5.00
-7 DON'T KNOW	n/a = 2%

[SKIP TO Q13]

12. Suppose you could have invested in the stock market, not your employer's stock, but didn't, and over a two-year period the stock market doubles. On a scale of 1 to 10, with 10 meaning severe regret and 1 meaning no regret at all, to what extent would you regret having not invested in the stock market?

RANGE 1 TO 10	Mean = 5.40; Median = 5.00
-7 DON'T KNOW	n/a = 3%

13. Now I'd like to ask you a question about the tax rules that govern retirement savings plans. Suppose you are retiring, and you plan to take your retirement plan savings out of your employer's plan and spend it. Do you have to pay a higher tax rate, a lower tax rate, or the same tax rate on your company stock as the other investments in your plan?

1	HIGHER	12%
2	LOWER	10%
3	SAME	44%
-7	DON'T KNOW	35%

14. Compared to the overall stock market, how would you rate the past performance of your employer's stock over the last five years? Would you say your employer's stock has performed:
>>**READ LIST**<<?

1	Much higher than the stock market	12%
2	Somewhat higher	20%
3	About the same	30%
4	Somewhat lower, or	19%
5	Much lower than the stock market	13%
-7	DON'T KNOW	7%

15. Does your employer offer a PENSION PLAN to you? A pension plan provides you with a set monthly income when you retire; and pension payments typically depend on your salary and years of service with the company.

1	YES	73%
2	NO	23%
-7	DON'T KNOW	4%

APPENDIX B
Employer Survey on Company Stock

Thank you for agreeing to participate in this survey of the role of company stock in employer-sponsored retirement plans. Please note that your responses to the following questions will be kept strictly confidential. All answers and opinions will be combined and reported only in the aggregate.

Throughout this survey, please respond to the questions based on your company's perspective or philosophy regarding the use of company stock in retirement programs.

Plan Description

1. What is the name of your defined contribution plan? If you offer several plans, please provide the name of the defined contribution plan that covers your largest non-unionized employee group.

Name of plan _____

Throughout the survey, when referencing your plan, we will be referring to this plan.

2. Which of the following best describes the design of your plan?

- | | |
|---|-------|
| 1. 401(k) plan (offering employee elective deferrals and an employer match) | (51%) |
| 2. 401(k) and profit-sharing plan (offering employee elective deferrals and an employer profit-sharing contribution, with or without a separate match) | (30%) |
| 3. 401(k) / ESOP or KSOP plan (offering employee elective deferrals and an employer ESOP contribution) | (16%) |
| 4. Other (Please specify). _____ | (3%) |

(IF Q2 = 1, 2 or 3, SKIP TO Q5)

3. Is the ESOP component of your plan **401(k) / ESOP or KSOP plan** leveraged or unleveraged?

- | | |
|----------------|-------|
| 1. Leveraged. | (33%) |
| 2. Unleveraged | (50%) |
| 3. Not sure | (17%) |

(IF Q3 = 2 or 3, SKIP TO Q5)

4. **(Asked only of those plans that are leveraged)** In how many years does the leveraged component expire?

Median = 2 years

5. Which of the following statements best describes the type of *employer* contributions you make to your plan?
1. All employer contributions are made in company stock (28%)
 2. Some employer contributions are made in company stock and some in cash (i.e., to be invested by the participant) (17%)
 3. All employer contributions are made in cash (55%)
 4. Not sure (0)
 5. Other (Specify) _____ (0)

(If Q5 = 3, 4, or 5, skip to Q7)

6. You indicated all employer contributions are made in company stock. When making employer contributions in the form of company stock, how does your company provide shares to the plan?
1. We typically buy the shares on the open market (56%)
 2. We typically issue new shares to the plan (30%)
 3. Sometimes we buy shares on the market and sometimes we issue new shares (15%)
 4. Not sure (0)
7. Approximately, what percentage of your company's outstanding shares are held by the employees through defined contribution plans sponsored by your company? Please answer this question for all tax-qualified defined contribution retirement plans sponsored by your company.

Median = 8% (n = 23)

If you're uncertain of the exactly amount, select one of the following ranges:

1. Less than 5% (70%)
2. 5% to 10% (9%)
3. 10% to 20% (4%)
4. 20% to 50% (7%)
5. More than 50% (0)
6. Not sure. (11%)

Some companies make employer contributions in company stock, while others do not. Regardless of your current practice, we are interested in learning your company's views on the potential advantages and drawbacks of making employer contributions in company stock. Please note we are interested in the point of view of your organization.

8. The following is a list of the potential benefits from making employer plan contributions in stock. Please rate how much you agree with each statement on a scale of 1 to 10, where 10 means you agree completely and 1 means you disagree completely.

- A. Making employer contributions in company stock is a good idea because it helps the company realize benefits from employee stock ownership (including higher motivation, productivity and shareholder value). Mean = 6.30

- B. Making employer contributions in company stock is a good idea because it saves the company cash—it's cheaper to issue new shares than to make cash contributions. Mean = 4.53

- C. Making employer contributions in company stock is a good idea because it means that more shares of stock of the company are in friendly employee hands, for shareholder voting purposes. Mean = 5.01

- D. Making employer contributions in company stock is a good idea because it's the way we have always done things here—and it's easier to keep it that way. Mean = 2.29

- E. Making employer contributions in company stock is a good idea because it generates tax benefits for the company (such as the ESOP dividend deduction). Mean = 5.43

- F. Making employer contributions in company stock is a good idea because it means better shareholder financial reporting for the company (such as grand-fathered accounting treatment of leveraged ESOP shares). Mean = 3.53

- G. For what other reasons do you think making employer contributions in stock is a good idea? (Please specify reason) _____

9. The following is a list of the potential drawbacks from making employer plan contributions in stock. Please rate how much you agree with each statement on a scale of 1 to 10, where 10 means you agree completely and 1 means you disagree completely.

- A. Making employer contributions in stock is a bad idea because it is too complicated legally because of SEC and Department of Labor rules. Mean = 3.18
- B. Making employer contributions in stock is a bad idea because it raises fiduciary risk and the chance of lawsuits against the company and its management. Mean = 5.62
- C. Making employer contributions in stock is a bad idea because it reduces diversification of participant accounts. Mean = 6.56
- D. For what other reasons do you think making employer contributions in stock is a bad idea? (Please specify reason) _____

10. If your company were to redesign its defined contribution plan from scratch, how would it invest employer contributions?

- 1. The company would make employer contributions in cash. (53%)
- 2. The company would make employer contributions in stock. (17%)
- 3. The company would make some employer contributions in cash and some in stock. (24%)
- 4. Not sure (7%)

(If Q5 = 2, 3, 4, or 5, skip to instructions before Q11B)

11A. **(Asked only of those who make ER contributions in stock only.)** Suppose your company decided to switch from making contributions in company stock to making contributions in cash. How would the company change the amount of its own contribution?

- 1. The firm would decrease its contribution by a lot. (0%)
- 2. The firm would decrease its contribution somewhat. (17%)
- 3. The firm would keep its contribution at the same level (78%)
- 4. The firm would increase its contribution somewhat (0%)
- 5. The firm would increase its contribution by a lot. (0%)
- 6. Don't know. (6%)

(If Q5 = 1, 3, 4, or 5, skip to instructions before Q11C)

11B. **(Asked only of those who make ER contributions partly in stock and partly in cash.)** Suppose your company decided to switch from making contributions partly in stock and partly in cash to making contributions all in cash. How would the company change the amount of its own contribution?

1. The firm would decrease its contribution by a lot. (8%)
2. The firm would decrease its contribution somewhat. (25%)
3. The firm would keep its contribution at the same level (58%)
4. The firm would increase its contribution somewhat (0)
5. The firm would increase its contribution by a lot. (0)
6. Don't know. (8%)

(If Q5 = 1, 2, 4, or 5, skip to instructions before Q12)

11C. **(Asked only of those who make ER contributions in cash only.)** Suppose your company decided to switch from making contributions in cash to making contributions in company stock. Would the company change the amount of its own contribution? If so, how?

1. The firm would increase its contribution by a lot. (0)
2. The firm would increase its contribution somewhat (3%)
3. The firm would keep its contribution at the same level (79%)
4. The firm would decrease its contribution somewhat. (0)
5. The firm would decrease its contribution by a lot. (0)
6. Don't know. (18%)