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

Shlomo Benartzi *University of California, Los Angeles*

Richard H. Thaler *University of Chicago*

Stephen P. Utkus *Vanguard Center for Retirement Research*

Cass R. Sunstein *University of Chicago*

Abstract

Some 11 million participants in 401(k) plans invest more than 20 percent of their retirement savings in their employer's stock. Yet investing in the stock of one's employer is risky: single securities are riskier than diversified portfolios, and an employee's human capital typically is positively correlated with the company's performance. In the worst-case scenario, workers can lose their jobs and much of their retirement wealth simultaneously. For workers who expect to work for a company for many years, a dollar of company stock can be valued at less than 50 cents after accounting for risk. However, employees still invest voluntarily in their employer's stock, and many employers insist on making matching contributions in stock. 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.

1. Introduction

When the stock of the Enron Corporation suddenly collapsed and eventually became worthless, many employees discovered that they had lost their jobs and much of their retirement savings simultaneously. Before the stock price fell, fully 62 percent of assets in the Enron 401(k) plan were in shares of Enron stock (on the basis of 11-k filings at the end of 2000). Now, more than 2 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.

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Table 1
Allocation of Retirement Plan Assets
to Company Stock

Employer	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. Jacobius (2003).

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 referred to as "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 percent of the account balance) or disallow employee contributions in stock when employers already match in stock.¹ However, legislation has not been passed, in part because of questions about its necessity. Employers argue that the provision of company stock in 401(k) plans is part of voluntary agreements between employers and employees, agreements on which the government should not intrude. If these agreements are mutually beneficial, as their pervasiveness suggests, then the presumption should be against legal intrusion.

Our goal in this paper is to investigate whether these 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, without knowledge of the risks, investing a dollar in company stock when it is often 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

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

of their compensation in the equivalent of Canadian dollars (that is, valued at less than U.S.\$1) 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 the existing law may play in producing high concentrations of investment in 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 11 million participants in U.S. defined-contribution plans have more than 20 percent of their account balance invested in company stock. Within this group, some 5 million have more than 60 percent of their account balance 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), employees perceive the employer's decision to match in stock as an implicit endorsement of the stock and therefore invest even more of their own money in the stock than they otherwise might.

Encouraging or forcing employees to invest in a single stock, rather than 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 discussed below, 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 that, again, are 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 this 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 more than 500 employees

² Only 3 percent of defined-contribution plans in the United States offer company stock, but these plans are those of the largest firms, covering more than 40 percent of participants (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 to their employees be invested solely in company stock. Following the adoption of the Pension Protection Act of 2006 (Pub. L. No. 109-280, 120 Stat. 780) participants are now able to diversify their own contributions immediately and most (but not all) employer contributions after 3 years of service.

³ The optimal asset allocation depends on the specific asset-pricing model being assumed. Under the static 1-period capital asset-pricing model, 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.

indicated 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 that company stock 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 found 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 are probably quite small, at least in terms of employees' productivity. 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, whereas more aggressive reforms would prohibit employee company stock ownership in retirement plans. We evaluate the various reforms in light of our findings.

This article proceeds as follows. In Section 2, we discuss our research methodology, which consisted of surveying employees and employers. In Sections 3 and 4, we discuss the costs and benefits of company stock ownership for employees and employers, respectively. We draw on what is known about these costs and benefits and compare the reality with existing perceptions. In Section 5, we discuss the legal environment.

2. Surveys

Our data and tests are based on two surveys: a telephone survey of employees and an on-line survey of employers.⁴ For the employee telephone survey, a random sample of participants who are able to invest in company stock through their employer's defined-contribution plan were drawn from the plan record-keeping system of the Vanguard Group.⁵ Our sample included 501 employee respondents at roughly 100 different companies. A copy of the survey is given 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 question 6 in Appendix A). Completed surveys were linked to the record-keeping system, to obtain additional

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

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

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 firms were Vanguard retirement record-keeping clients, and 15 were firms for which Vanguard provides investment services. Half of the respondents were in the human resources department and usually had the title of director of benefits or vice president of human resources, and just under half (43 percent) were in the corporate treasury function. The response rate was 50 percent, resulting in 76 completed surveys. Of the respondents, 45 percent provided 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, the investment of the employer contribution was left to the discretion of the employees.⁶ The survey, including the distribution of responses, is given 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. Thus, in addition to 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 with about a dozen statements on the costs and benefits of requiring employees to own company stock (see questions 8 and 9 of Appendix B).⁷ The completed surveys were linked to record-keeping data for information such as asset allocation.

3. Employees and Company Stock: Reality and Perception

What is the value of company stock to employees? The most careful estimates come from Meulbroek (2002), who focused on the cost of failing to diversify the idiosyncratic risk of company stock (see also calculations by Poterba [2003] and Ramaswamy [2004]). The relative value to the employee of a dollar of company stock, rather than 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 10 years and 25 percent of assets in company stock, a dollar in company stock is worth only 58 cents. Lengthening the investment horizon to 15 years and increasing the allocation in company stock to 50 percent would further reduce the value to 33 cents on the dollar. All else being equal,

⁶ Employer stock contributions in a defined-contribution plan can take several forms: a matching contribution, such as 50 cents of stock for each dollar contributed by the participant, up to 6 percent of pay; a nonmatching employer contribution that can vary from year to year, such as a stock contribution of 3 percent of pay to all eligible employees; or an employee stock ownership plan (ESOP) contribution—that is, 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 at an earlier time.

more volatile small-cap stocks have a lower risk-adjusted value than blue-chip issues. However, as Brown, Liang, and Weisbenner (2004) point out, most firms that encourage concentrated stock positions are large blue-chip firms; therefore, 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 considerations regarding human capital 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 the hard way, workers with a significant portion of their wealth invested in company stock can end up losing their jobs 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 an employer's stock can easily be worth less than 50 cents on the dollar.

For employees, 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 employee's 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.

3.1. *Benefits to the Employee*

Advantageous Tax Treatment. Investment in company stock does have tax advantages that are 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 \$100,000.⁸ The participant may elect an in-kind distribution—namely, a distribution of share certificates—and may 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 the participant decides to sell the stock, a lower capital gains tax is paid on the \$150,000 of appreciation. Second, if the participant chooses to continue to hold the stock, the capital gains tax is deferred. Although the participant must immediately pay ordinary income

⁸ The cost basis of shares acquired in a retirement plan is the average cost of shares acquired by the trustee rather than the cost of specific share purchases by individuals. Because of plan forfeitures and other factors, an employee's cost basis at the time of a 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 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.

tax on the cost basis of \$100,000, the capital gains tax on the \$150,000 of appreciation, as well as on any future appreciation, is deferred until the shares are sold. Finally, because the shares of company stock are now in a taxable brokerage account, these shares can be passed to the participant's heirs on a stepped-up basis. In effect, this eliminates all capital gains tax on the stock's appreciation for the participant's heirs. By comparison, all other investments in a retirement savings plan are made in the form of cash; for example, there are no in-kind distributions of mutual fund securities. In addition, these distributions do not 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 individual retirement account.⁹

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 10 respondents is even aware of the preferential tax treatment of company stock (see question 13 in Appendix A), which is a bit less than the 12 percent of employees who think that company stock is taxed at a higher rate! Most survey respondents either do not know the answer (35 percent) or think that company stock has the same tax treatment as other investments (44 percent).¹⁰

Next, we explored whether awareness of the tax benefits of company stock translates into a higher allocation of employee contributions into company stock. We actually found the opposite. Those who know that company stock has 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. Thus, it seems unlikely that the tax benefits of company stock explain why employees choose to invest their own discretionary contributions in company stock. Similarly, it seems unlikely that the tax benefits explain why employees are willing to accept 50 cents on the dollar.

We are not surprised that employees are unaware of the tax benefits, given our own experience with leading 401(k) providers. One anecdote comes from a dinner that 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

⁹ At the death of a holder of an individual retirement account (IRA), spouses are allowed to retain the assets in an IRA, thereby benefiting from continued tax deferral, whereas other beneficiaries must pay tax. All withdrawals are still taxed at ordinary income tax rates. All account holders, either original owners or spouse heirs, must begin withdrawals taxed at ordinary income tax rates at age 70 1/2.

¹⁰ Although the employers in our study provide information on 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 would like to know the actual use of these tax benefits by participants, but the Internal Revenue Service has not made such data available.

employees. Given that most people (including 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 employer than do 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 amounts they are required to keep in company stock. After all, if employees are required to own company stock for many years, then they do not have the opportunity to use their private information.

We believe that, in general, the private-information hypothesis is 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 stock price. Second, the calculations by Meulbroek (2002) indicate that the lack of diversification can be extremely costly. Thus, the degree of private information that is required in order to justify a substantial allocation to company stock has to be correspondingly high. The typical employee in a large corporation is unlikely to have sufficient private information to justify the observed allocations. Third, the extent to which employees invest in company stock is often public information (it is filed in 11-k forms); therefore, arbitrageurs could limit employees' profits. Fourth, and most damaging, the private-information hypothesis has no empirical support. Benartzi (2001) sorted firms on the basis of 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 future performance of company stock and did not find any significant correlation (see also Choi et al. 2004).

Nonmonetary Benefits of Owning Company Stock. For employees, owning company stock may provide them with nonmonetary benefits, such as feeling part of a team, but the importance of nonmonetary benefits is difficult to assess because we cannot observe them. We attempted to gauge these benefits by asking employees how their day-to-day attitudes and feelings are affected by owning company stock (see question 8 in Appendix A). Although 32 percent of respondents confirm that they feel better, 59 percent indicate that owning company stock either does not affect them or makes them feel worse. Furthermore, those who claim to feel better seem to be those who own the best-performing stocks. For example, 54 percent of those claiming that their employer's stock performed much better than the market also believe that owning it makes them feel better. In contrast, when company stock performs 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 whether it is company stock.

We also investigated whether making money on company stock feels better than making money on the overall stock market because company stock provides additional nonmonetary 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 questions 11 and 12 in Appendix A). In a pilot test of the survey, we found that asking both questions 11 and 12 over the telephone was somewhat confusing. Thus, we used a between-subject approach, in which half the subjects answered question 11 and the other half answered question 12. We did not find any significant differences in regret with regard to missing an increase in company stock versus missing an increase in the overall stock market.

To summarize, we did not find 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 nonmonetary benefits; for those who do, the benefit appears to have more to do with picking a winner. Thus, 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.

3.2. 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) found 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 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 from the market decline in general that company stock could be very risky.¹¹ Second, we rephrased the questions used in earlier studies, to clarify that a stock fund includes many different stocks. In particular, our question read as follows: “Would you

¹¹ Our employee survey was administered in September and October 2002.

Table 2
Participant Risk Assessment of Company Stock, Volatility, and Past Performance

Risk Assessment	Respondents (%)	Average SD (%)	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

Note. Risk assessment was in response to the following survey question: "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?" Data are for a subsample of survey respondents ($n = 415$ of 501 total respondents). Returns and SDs were calculated for the period ending September 30, 2003. The SDs were calculated over 60 months and annualized. The S&P 500 was used as a reference: for the S&P 500, average SD was 18%, and average 5-year annualized return was 1.1%. The SDs for company stock were significantly higher than that for the S&P 500 at the 99% level. Returns for more risky (less risky) company stock were significantly lower (higher) than those for the S&P 500 at the 99% level.

* Categories were significantly different from one another at the 95% or 99% level.

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 owning 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 question 6 in Appendix A). Only three of 10 respondents realize that company stock is riskier than a diversified stock fund (33 percent). Our results are consistent with recent evidence reported by the Boston Research Group (2002) indicating that employees are aware of the Enron bankruptcy case but that 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 of the 501 participants, we were able to link their survey risk ratings to the 5-year return and SD of the company stock that they owned (Table 2). In this subsample, four in 10 participants (42 percent) claimed that their company stock had the same level of risk as a diversified fund. Yet their actual holdings had an average SD of 36 percent, versus the market's 18 percent. Two in 10 participants (22 percent) thought that their company stock was less risky, although these less risky stocks had an average SD of 31 percent, versus the market's 18 percent. One-third of participants appeared to accurately assess the risk. They claimed that their company stock holdings were more risky, and indeed they were, with an average volatility of 40 percent.

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 5-year returns, is that all the participants base their risk perceptions on past returns and not on the volatility of returns. In Table 2, participants' risk perceptions correlate neatly with past returns. From this perspective, it is not surprising that 11 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 to be largely unrelated to modern portfolio theory notions of the volatility of returns. Overall, past performance appears to be a pervasive decision-making heuristic in participants' thinking about company stock. As Benartzi (2001) has shown, it drives holdings, and, as we have noted, it appears to drive both motivation levels and risk perceptions.

Next we tried to assess the monetary value that employees place on company stock, assuming that they cannot sell it until they reach age 50 (a relatively common restriction). We did so by asking employees to choose between \$1,000 to invest as they wish or \$1,000 worth of their employer's stock, which they cannot sell until age 50 (see question 10A in Appendix A). Among those less than 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 question 10B in Appendix A). Another 14 percent selected company stock when offered the 10 percent premium. We then found that an additional 29 percent chose company stock when the premium increased to 50 percent (see question 10C in Appendix A). When the responses to these three scenarios are added together, 63 percent of our respondents prefer company stock when it provides a premium of 50 percent.

We repeated the above analysis for respondents under the age of 40, since the requirement to hold company stock until age 50 imposes greater costs for them. We found that 16 percent prefer company stock even when it offers no premium; an additional 14 percent chose company stock when a premium of 10 percent was offered, and 26 percent switched to company stock when the premium was raised to 50 percent. When these responses are added together, 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 10–15 years. A comparison of Meulbroek's calculations with our own findings indicates that at least six in 10 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 10 respondents do not understand that company stock is riskier than a diversified fund with many different stocks. In other words, participants do not fully understand the costs 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.¹²

Nonmonetary Costs. Employees who do not choose to own company stock might experience nonmonetary costs such as feeling that they have betrayed their employer. Similarly, employees who do not invest in company stock might feel peer pressure to invest at least a little bit in company stock. However, 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 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.

3.3. 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 majority of employees do not place much weight on the alleged benefits of owning company stock. For example, only one in 10 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 nonmonetary benefits of owning company stock and, again, found that most employees do not find these benefits to be 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 of 10 individuals believe that company stock is either safer or at least no riskier than a diversified fund with many different stocks. For all participants, risk perceptions seem to be more related to past performance than to portfolio volatility. Perhaps employers have good reasons to favor company stock, an issue to which we now turn.

4. Employers and Company Stock: Reality and Perception

At first glance, employee investment 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.

¹² Although many employees in our sample did not seem to fully understand the degree of risk associated with company stock, it is plausible that some employees, such as top management, do realize the risk involved.

4.1. 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 have only a trivial impact on the overall profits of the firm, and this employee will receive only a trivial portion of that profit. 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 relationship between employee ownership and productivity found significant results and that the magnitude of the effect typically was 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, by 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. However, as Prendergast (1999) 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. Thus, the continuing growth around the adoption point may be simply an extension of this trend. More important, the increase in productivity typically occurs in firms that adopt cash profit-sharing plans, as opposed to deferred plans. In fact, the increase in productivity for firms that adopt deferred plans is a mere .9 percent of sales, a change that is not statistically significant (Kruse 1993, p. 70). Thus, the empirical evidence of a relationship between employee stock 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, company stock ownership could actually demotivate employees. We found 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 questions 7, 8, and 14 in Appendix A). We found a small but significantly positive correlation between stock performance and motivation level ($r = .10$; $p < .03$). Similarly, we found a positive correlation between job satisfaction and stock performance ($r = .14$; $p < .01$). Thus, employees should be expected to be more motivated

and to work harder when the company does well but to be less motivated and less eager to contribute when the company does poorly. This is unlikely to be the type of incentive program that chief executive officers would choose in order to maximize shareholder value.

Still, for the purpose of discussion, let us assume that employee stock ownership does yield a one-time increase in productivity of .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 employee contributions at 50 cents on the dollar, up to 6 percent of pay—that is, if employees contribute 6 percent of their salary, then the firm contributes another 3 percent. 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, therefore, would be indifferent in choosing between an unconstrained 50 percent match, as above, and a 100 percent match (up to 6 percent) if constrained to invest in company stock. Thus, firms essentially would be buying the .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 revenue and \$7 billion of salaries, the potential increase in productivity of \$126 million (that is, .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).

There is another reason to be skeptical of the productivity argument. Suppose that employee stock 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 minuscule 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 the idea of ownership rather than the magnitude of ownership seems to matter, why do competitive labor markets sustain an equilibrium at which 11 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 overestimate the potential increase in productivity. In 1986, the U.S. General Accounting Office (GAO 1986) conducted a related survey that asked employers to indicate factors that influenced their decision to adopt an ESOP. They found

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

Assessment of Contributions in Company Stock	Degree of Agreement		<i>p</i>
	Employers Contributing Cash	Employers Contributing Company Stock	
Potential advantage:			
Increased motivation and productivity	4.93	7.97	.01
Cash flow	4.34	4.77	.54
Friendly hands	4.34	5.85	.02
Status quo	1.58	3.09	.01
Advantageous tax treatment	4.86	6.10	.11
Financial reporting	3.03	4.22	.06
Potential drawback:			
Compliance with SEC and DOL rules	3.54	2.76	.11
Fiduciary risk	6.51	4.56	.01
Lack of diversification	7.61	5.26	.01

Note. Employers were asked to rate their degree of agreement on a scale of 1 (disagree completely) to 10 (agree completely). Data are mean values for employers who match in cash ($n = 42$) and employers who match (at least partially) in company stock ($n = 34$). The p -values indicate the difference in degree of agreement between the two groups, as determined by t -test. SEC = Securities and Exchange Commission; DOL = Department of Labor.

that, although 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 results of the GAO survey are consistent with the notion that employers might overestimate the potential increase in productivity. We reiterate, however, that even if employers estimate the projected increase in productivity precisely, the need to require that the entire match be invested in company stock is not necessary.

Nevertheless, in our survey we found that, on average, employers rate increased motivation and productivity as the most important benefit to making contributions in company stock. On a scale of 1 to 10 (with 1 meaning disagree completely and 10 meaning agree completely), employers rated increased motivation and productivity as 6.30 (see question 8 in Appendix B). As in GAO (1986), employers seem to be overestimating the effect of employee stock ownership on motivation and productivity. Furthermore, those employers matching at least partially in company stock rate the importance of increased motivation and productivity higher than those matching in cash (7.97 versus 4.93, respectively; $p < .01$; see Table 3).

Advantageous Tax Treatment. Company stock has provided employers with several tax benefits over the years. Prior to the Tax Reform Act of 1986, company stock provided employers with a tax credit. The 1984 and 1986 tax acts replaced tax credits with a different tax benefit geared toward leveraged ESOPs.¹³ In

¹³ 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 such as a combined 401(k)/ESOP, or KSOP.

particular, lending institutions were allowed to exclude half the interest revenues they derived from ESOP loans from their taxable income (I.R.C., sec. 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, which is too small to compensate for the diversification costs to employees. In any case, the interest revenue exclusion was repealed in 1996 and 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, although this would benefit only firms that pay dividends. There are several ways to receive the dividend tax deduction (I.R.C., sec. 404[k]). First, dividends used to pay interest on ESOP loans are deductible; however, because interest is deductible in general, company stock does not provide any incremental benefit. Second, dividends used to pay the principal of ESOP loans also are deductible, although paying the principal is equivalent to allocating shares from the ESOP trust to individual employee accounts, so the dividends would be deductible in any case as a compensation expense. Third, dividends that are paid in cash directly to employees also are deductible, but companies rarely pay dividends in this manner in 401(k) plans. A new, more advantageous form of dividend deduction became effective on December 31, 2001: 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 savings 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, whereas the average dividend yield for our sample firms was 1.7 percent and the median was .9 percent. When a net tax benefit of less than 1 percent per year is assumed, the present value of the benefits over a 10-year period is roughly 5–10 percent. Again, employers seem to spend 90 cents and employees seem to 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. On a scale of 1 (disagree completely) to 10 (agree completely), tax benefits received an average score of 5.43 (question 8 in Appendix B). Again, those employers matching in stock rate the tax benefits higher than those matching in cash (6.10 versus 4.86, respectively; $p = .11$; 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 versus 1.34 percent, respectively; $p = .06$). However, since the present value of tax benefits is not more than 5 to 10 percent of the market value of the stock, employers seem to be overestimating the tax benefits.

Advantageous Treatment under Fiduciary Law. Company stock in defined-contribution plans also has an important benefit under federal fiduciary law, namely, the Employee Retirement Income Security Act of 1974 (ERISA). The

act 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 in accordance with a prudent-investor standard; and the diversification rule, that plan assets be diversified in order to minimize the risk of large losses. Most notably, company stock is exempt from the diversification requirement in defined-contribution plans, mostly 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.¹⁴ However, employers are still expected to act prudently in determining whether company stock is a suitable investment.

In our survey, we asked employers about fiduciary risk by asking whether matching contributions in company stock were a bad idea from a fiduciary perspective. We know that plans that match in company stock tend to have significantly higher concentrations than plans that match in cash, which presumably raises fiduciary exposure. On the 1-to-10 agree/disagree scale, the fiduciary risk of matching in company stock received a score of 5.62 (with 10 meaning that matching in company stock is a bad idea because of increased fiduciary risk [question 9 in Appendix B]). Yet those employers matching in company stock rated the fiduciary risks significantly lower than those matching in cash (4.56 versus 6.51, respectively; $p = .01$; 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. 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 often is argued that managers encourage employee stock ownership to reduce the risk of a takeover. Because employees typically vote with management, employee stock ownership serves as a takeover defense mechanism. Rauh (2003) found some support for this hypothesis, although the magnitudes of his results were not large. Perhaps not surprisingly, employers do not offer this factor as their primary reason for supporting employee stock ownership. In the GAO (1986) survey, only 5 percent of employers stated that takeover defense was a motive for setting up an ESOP in the 1980s. The results of our employer survey offered some support for the potential value of getting shares into the friendly hands of employees (Table 3). Note, however, that the fraction of outstanding shares held by retirement savings plans is usually 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 indicate significant managerial control but presumably could

¹⁴ Mitchell and Utkus (2004) report that the retailer Sears had a profit-sharing plan invested mostly in company stock and pressed Congress to exempt defined-contribution plans from the 10 percent diversification rule being applied to defined-benefit plans. Sears was once a highly successful firm, and its employees previously retired with large balances from the company stock plan.

be enough to be important in 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, then their claims to protection under the law are rather flimsy. Indeed, if this is the true explanation for why firms match in company stock, then the argument for restricting or even prohibiting such policies is significantly enhanced.

Cash Flow. The press often notes 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, p. 97). 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 employee retirement accounts.¹⁵

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 employee retirement accounts. Thus, the cash is spent in any case. In our survey, we found that 56 percent of the firms buy the shares on the market, another 15 percent sometimes buy the shares on the market and sometimes issue shares, and the remaining 30 percent issue shares to the plan. It is not surprising 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 [question 8 in Appendix B]). The difference in responses between those matching in stock versus those matching in cash was statistically insignificant (4.77 versus 4.34, respectively; $p = .54$; see Table 3).

Financial Reporting. Under older accounting rules, leveraged ESOPs offered financial reporting benefits. The 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. Thus, firms could contribute stock at fair market value to employee accounts while reporting pension plan expenses 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 (a score of 3.53 [question 8 in Appendix B]), most likely because only four of 76 firms received any such benefit.

4.2. Costs to the Employer

It is very difficult to quantify the disadvantages of company stock ownership to the employer. We therefore take a rather descriptive approach. Our survey indicates that the main concerns of employers are fiduciary risk and lack of diversification in the plan (see question 9 in Appendix B and Table 3). Despite employers being concerned about the lack of diversification, they do not believe

¹⁵ Obviously, the cash flow argument has more legitimacy for firms using privately held company stock in their 401(k) plans. Such firms accounted for less than 5 percent of our respondents.

that matching in company stock should include a large premium to compensate for idiosyncratic risk. When those matching in cash were asked whether they would change the amount of the matching contribution if the contribution was made in stock, the majority (79 percent) indicated that they would keep the amount the same (see question 11C in Appendix B). Similarly, when those matching in company stock were asked whether they would change the amount of the matching contribution if the contribution was made in cash, the majority (78 percent) responded that they would keep the amount the same (see question 11A in Appendix B).

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

We conclude the analysis of the employer 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 the investment is left to 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 Securities and Exchange Commission and Department of Labor rules, fiduciary risk, and lack of diversification.¹⁶ The degree of agreement is based on our survey results and was measured on a scale of 1 to 10, with 1 meaning disagree completely and 10 meaning agree completely. We also included dividend yield as an explanatory variable.

The results of the logit regression are reported in Table 4 and are based on 52 employers. Consistent with the results reported above, increased motivation and advantageous tax treatment were found to be statistically significant in increasing the likelihood of matching in company stock. Specifically, a 1-point increase in the degree of agreement with employee motivation being relevant to the choice of match type increased the likelihood of matching in company stock by 14 percent. Increasing the degree of agreement with taxation being relevant to the choice of match type increased the likelihood of matching in company stock by 8 percent. The dividend yield, a proxy for the potential tax benefits of company stock, also was significant, with a 1 percent increase in yield causing the likelihood of matching in company stock to increase by 12 percent.

Among the drawbacks to matching in company stock, only the lack of diversification was statistically significant. A 1-point increase in the variable decreased the likelihood of matching in company stock by 11 percent. The likelihood ratio index for the regression was .49, indicating a high degree of fit.

¹⁶ We omitted the question regarding financial reporting considerations (see question 8F in Appendix B) because many employers did not respond to that question. The results are similar when we used the smaller sample for which responses to question 8F are available.

Table 4
 Logit Regression for Factors Relevant to Whether
 Employers Provide Matching Contributions
 in Company Stock

Variable	Coefficient
Intercept	.86
Increased motivation and productivity	.56*
Cash flow	-.18
Friendly hands	-.24
Status quo	.50
Advantageous tax treatment	.31 ⁺
Compliance with SEC and DOL rules	-.39
Fiduciary risk	-.28
Lack of diversification	-.53*
Dividend yield	51.35*

Note. The dependent variables are the degree of agreement with the various factors being relevant to the decision of whether employer contributions are provided (at least partially) in the form of company stock. Dependent variables were measured on a scale of 1 (disagree completely) to 10 (agree completely). Data are based on 52 employers. SEC = Securities and Exchange Commission; DOL = Department of Labor.

⁺ Statistically significant at the 10% level.

* Statistically significant at the 5% level.

4.4. Summary: The Employer

In this section, we evaluated the employer's perspective of the costs and benefits of providing a match in company stock. We think a reasonable conclusion is that an estimate of the benefits to the company of imposing its shares on employees at more than 10 percent of the fair market value of the shares would be hard to justify. For example, the often-cited increase in motivation and productivity has very little empirical support. Furthermore, the effect seems to be unrelated to the magnitude of employee ownership, and employers could scale down employee ownership without sacrificing productivity. As for 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 these benefits were not correlated with the actual decision to match in company stock versus cash.

On the basis of our employer 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 be replicated with interest and compensation deductions. Overestimation of the benefits of company stock provides a partial explanation of why employers keep matching in company stock.

5. The Effects of Government Regulation

Thus far, our conclusion is that decision-making errors by employers and employees constitute at least a partial explanation for the observed concentrated positions in company stock. Employees appear to be unaware of the idiosyncratic risks of owning company stock, and most fail to grasp the costs relative to a diversified portfolio. They voluntarily invest a dollar in company stock when the asset is only worth 50 cents. Meanwhile, employers who make stock contributions spend 90 cents in compensation (paying \$1.00 for the stock but receiving not more than 10 cents in tax benefits), while employees receive only 50 cents in value. We now consider what effect government regulations have had on either mitigating or exacerbating this situation and how other regulations might work in practice (for a discussion of alternative policy options, see Mitchell and Utkus 2004; Iwry 2003; Munnell and Sunden 2004, chap. 5).

5.1. *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 General Electric or Microsoft. However, a company, no matter how small or risky, can include its own shares in a plan. A dot-com start-up probably would not include an Internet fund in a 401(k) plan because that would be considered too risky, but it could include its own speculative shares.

Under ERISA, the preferred legal standing of company stock 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. Instead, 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 participant work earnings. At its core, company stock seems to be 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 solve the problem, since firms might conclude that the fiduciary risk of imposing large amounts of company stock

on their employees is not worth bearing. The insurance market might encourage the trend by raising fiduciary insurance premiums for employers. It certainly 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 also 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 consider a full accounting of the costs. When defined-contribution plans were made exempt 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, in fact, the promotion of company stock 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, owing to their firms' bankruptcy (such as Enron or WorldCom today or Color Tile a decade ago). In between, a large group of participants take significant positions in their employers' stock, and their retirement savings are worth less than they seem (on average, 50 cents on the dollar) because of the inherently higher volatility of individual stocks.

5.2. *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.¹⁷ 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 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, or they might sell company stock and seek a diversified portfolio as soon as they are permitted to do so.

By themselves, however, disclosure requirements may not alter the current situation very much. It is not clear how legal disclosure requirements could be entirely neutral; any framing of the disclosure mandate is likely to contain a bias. Employees also may 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

¹⁷ The Pension Protection Act of 2006 includes provisions for providing a standard risk disclosure to participants.

through on making desirable changes to their financial situation (Choi et al. 2001). Employees know that 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.

5.3. 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 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 (for example) 3 years. The Pension Protection Act of 2006 generally allows participants to diversify their own contributions immediately and employer stock contributions after 3 years of service with the company. As with risk disclosure, however, there is a conspicuous problem with time limits: because of inertia, most workers will be likely to stick with their existing allocations. A great deal of empirical work shows that 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, employee plans do not include company stock unless the 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 be likely to have greater impact.

5.4. 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 within 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 that 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 because it directs attention at only the plans with the biggest problem, but complying with this rule might impose substantial costs to firms. The chief problem is created by the fact that stock

prices vary, which makes 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 nontrivial.

A variant of option 1 would be to allow contributions in company stock only as long as company stock is below a relevant threshold, such as 20 percent. Once company stock exceeds the 20 percent 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 percent, 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 company stock but not both. This will not completely solve the company stock problem, since some participants will still be able to direct all of their own and the employer's money to company stock (if the employer does not 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 company stock in one place or the other, or do they now have to do something to help increase the diversification of their employees' portfolios?

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, which might have unintended consequences; its welfare consequences are not clear, and therefore this reform is not unambiguously justified.

6. Conclusions

We have presented evidence that employees do not correctly understand the economic value of company stock. Most important, employees often believe incorrectly that company stock is worth as much as a diversified portfolio and is not very risky. Employers also appear to either exaggerate the benefits of providing company stock or impose shares on their employees for reasons that do not deserve government protection (such as getting the shares into friendly hands). Constructing a scenario in which informed employees and employers converge on the existing equilibrium is difficult. The pervasiveness of this equilibrium appears to be a product of some combination of ignorance and excessive optimism. As a result, employee savings are at excessive risk, which 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, participant holdings would be automatically reduced over time if they exceeded a particular cap (for example, 5 percent of account assets) (for a detailed discussion, see Benartzi and Thaler 2003). Such a policy could be voluntarily enacted by employers (perhaps with a fiduciary law incentive from Congress) or could be a mandatory feature of plans with company stock. Like other automatic programs, this feature might be structured as a negative or opt-out choice, with portfolio diversification occurring automatically unless the participant annually elects to do otherwise. By selling stock gradually, the program would minimize participant regret from any sudden spike in stock prices and would not place large selling pressure on the stock price in the market. It also would combat inertia and procrastination. For employers, it would address fiduciary concerns: boards of directors do not want the liability associated with encouraging or mandating participant diversification of company stock on one particular day. The program would be automatic and would work on its own.¹⁸

Whatever specific options are considered, participant retirement outcomes will be improved by an effort to encourage, rather than inhibit, portfolio diversification. Our goal 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 are likely to produce substantial improvements in overall welfare.

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.)

¹⁸ In a world without regret aversion, among both 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 prefer to see employees lowering their company stock holdings gradually rather than not doing anything.

RANGE 0 TO 100

-7

DON'T KNOW

mean = 26%; median = 17%; N.A. = 23%

(IF Q2 \diamond -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 5 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 5 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 0 TO 10	
-7	DON'T KNOW

mean = 7.20; median = 8.00; 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 YEARS OF AGE, 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 con-

tribution 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 they 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 2-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 0 TO 10

-7

DON'T KNOW

mean = 5.76; median = 5.00; 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 2-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 0 TO 10

-7

DON'T KNOW

mean = 5.40; median = 5.00; 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 5 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 nonunionized 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 exact 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 grandfathered 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 employee retirement 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 employee retirement 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 employee retirement 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% |

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