

Loyalty Based Portfolio Choice*

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Job Market Paper

First Draft: September, 2003
Current Draft: November, 2004

*I am grateful to the members of my dissertation committee: Toby Moskowitz (Chair), Nicholas Barberis, Monika Piazzesi, Josh Rauh, and Richard Thaler. I would also like to thank George Akerlof, Shlomo Benartzi, Effi Benmelech, John Cochrane, Karl Diether, Eugene Fama, John Heaton, Brigitte Madrian, Christopher Malloy, Lior Menzly, Andrew Metrick, Lubos Pastor, Ruy Ribeiro, Wendy Rothschild, Tano Santos, Breno Schmidt, Paul Sengmuller, and seminar participants at the University of Chicago, the SIFR Conference on Portfolio Choice and Investor Behavior, and the EFA 2004 Maastricht Meeting for their helpful discussions and comments. I thank Mark Minichiello and Spin-Off Advisors, LLC for providing me with spin-off and carve out data. *Correspondence to:* Lauren Cohen, Graduate School of Business, University of Chicago, 5807 S. Woodlawn Ave., Chicago, IL 60637. E-mail: LCohen2@GSB.UChicago.edu.

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Abstract

I evaluate the effect of loyalty on individuals' portfolio choice using a unique dataset of retirement contributions. I exploit the statutory difference that in 401(k) plans stand alone employees can invest directly in their segment, while conglomerate employees must invest in the entire firm, including all unrelated segments. Consistent with loyalty, employees of stand alone firms invest 11 percentage points (75%) more in company stock than conglomerate employees. I also find that own company stock allocations increase (decrease) following spin-offs (mergers) by 44% (36%). Support is found using variation in loyalty between different groups of employees, both across and within firms. These results cannot be explained by risk diversification, superior information, takeover defense, excessive extrapolation of past returns, or framing effects. The cost to employees of loyalty is larger than the cost of home bias, and can amount to over a 20 percent loss in retirement income. I quantify one benefit to firms of having loyal employees in the form of lower wages. Taken together, these results suggest that loyalty may play a substantial role in investment choice.

JEL classification: D31 J26 J32

Keywords: Portfolio Choice, Retirement Savings, Loyalty, Employee Investment, Company Stock

Introduction

The average worker in the United States spends between one fifth and one quarter of her life in retirement. While in retirement, she receives income from a number of sources, with around 20 percent coming from pension income. With the risk of a twenty percent income shock, we should expect individuals to weigh this pension investment choice very carefully. What we observe empirically is that employees, on average, invest a large portion of their pension savings back into company stock.¹ For instance, employees of Pfizer, Inc. invest almost 90 percent of pension assets into Pfizer common stock. This is a questionable asset allocation for two reasons. First, in most retirement plans there are a number of investment alternatives beside company stock, including diversified stock funds and bond funds. Portfolio theory suggests a diversified portfolio (free of the idiosyncratic risk associated with a single stock) would dominate a portfolio concentrated in one security. Second, employees of the firm also receive a large portion of their wealth from labor income. With labor income likely related to the success of the firm, the employees take on additional risk by tying labor income and retirement income to the same source of variation.

The large portion of employee pension wealth invested in one's own-company stock is a portfolio selection puzzle. My hypothesis is that workers' company loyalty helps explain this investment pattern. I define loyalty broadly here in the sense of an emotional tie, although this definition will be refined in Section 2. The question then arises of how to measure loyalty. The same problems inherent in measuring quantities such as utility arise in measuring loyalty. We cannot observe preferences or see their properties (such as level of risk aversion). What we can observe are measures like prices and investor holdings from which we can make inferences about risk aversion and utility. In the same way, we can make inferences regarding loyalty from individual behavior.

Further, loyalty makes observable implications on portfolio choice. In the case that employees form company loyalty at the division level, an hypothesis I motivate with evidence from social psychology in Section 2, I am then able to test specific implications of loyalty on portfolio choice. In particular, I assume employees of stand alone firms and those of conglomerates are, *ceteris paribus*, equally loyal to their division. I then exploit a difference stemming from the statutory requirements of 401(k) and security reporting for stand alone and conglomerate firms. In 401(k) plans, employees of stand alones can invest directly in their single division through company stock, while conglomerate employees must invest in the stock of the entire firm, which includes all unrelated divisions along with their division. Conglomerate employees may then

¹In addition, for over half the 401(k) participants, these 401(k) investments heavily weighted in company stock are their sole financial investments (Blake, Elton, and Gruber(2004)).

have a diluted loyalty to the entire firm relative to the loyalty that employees of stand alone firms have to their respective firms, and so loyalty based investment would predict that conglomerate employees will invest less in company stock than stand alone employees.

This prediction of loyalty is in contrast to a risk diversification motive of employees. In 2003, almost 80 percent of companies had at least one variable pay for performance plan in place (Hewitt Associates (2003)). Assuming that firm's align incentives of employees at a division level, part of income is determined by the division. Employees of conglomerate firms should then be willing to invest a larger percentage of contributions into company stock than employees of stand alones. This is because conglomerate employees have a company stock instrument less correlated with their labor income, due to the coinsurance effect of other divisions on the variation in company stock.

The contrasting predictions of loyalty and risk diversification against labor income set up a test between the two. I find that, controlling for other firm and plan characteristics, employees of stand alone firms invest as much as 11 percent more in company stock through their 401(k) retirement plans than do conglomerate employees. This represents more than a 75 percent difference in own-firm investing between employees of stand alone firms and those of conglomerates.

In addition to controlling for firm and plan characteristics, as a cleaner test between the above predictions, I use changes in employee contributions following a merger into another firm, or being spun-off into a stand alone firm. The same employees, presumably, can be followed pre- and post-merger and spin-off, thus controlling for employee specific effects. The results again are consistent with loyalty driving these contributions, as following a spin-off, the same employees increase investment into their company stock by 44 percent on average, while following a merger, employees decrease their investment into company stock by 36 percent.

I consider a number of alternative explanations of this result. The first is superior information driven investing. The hypothesis is that employees invest large percentages in company stock because they have superior information relative to other investors about the company. As this explanation lends itself more as a prediction about trading rather than holdings, (unless firms consistently receive true positive information) I test this explanation using two methods. The first is the ability of employees to predict future returns. I find that neither employees of stand alone firms nor employees of conglomerates can predict future returns based on allocation percentages, and stand alone employees do no better than conglomerate employees. The second test, which better addresses the trading aspect, is a test using the variance of allocation percentage into company stock. This test also lends itself to a perceived information explanation in which employees do not have superior information, but believe they do, and so trade on this level of perceived information. I find that stand alone employees

have significantly smaller coefficients in variation in allocation percentages, inconsistent with employees of stand alone firms having, and trading, on greater levels of superior or perceived information than employees of conglomerates.

The second explanation is that employees invest in company stock based on excessive extrapolation of past returns (Benartzi (2001)).² Benartzi (2001) finds that in a sample of S&P 500 firms, differences in past returns help to explain differences in percentage allocated to company stock among firms. Past returns, however, cannot explain the difference in company stock allocations between employees of stand alones and those of conglomerates. A third explanation I consider is that of perceived information, or familiarity (Huberman (2001)). This is the most difficult to empirically separate from loyalty. Given the results in this paper, a familiarity explanation of the result would be that employees of stand alones perceive that they have a larger amount of superior information than do conglomerate employees, and invest according to this level of perceived information. I test a number of forms of this alternative hypothesis in Section 4 and Section 6, and find evidence consistent with loyalty.

I also test whether the observed allocations are driven by plan characteristics at the firm's discretion, or by management's incentive for a takeover defense. I find that certain characteristics at the firm's discretion can significantly affect allocations into company stock by employees. Consistent with prior findings, I find that the number of investment options and the firm's choice to match in company stock affect employee investment choice (Benartzi (2001), Liang and Weisbenner (2002)). I also find that company stock position in the list of investment alternatives significantly affects company stock allocations. However, none of the characteristics considered can explain the differing investment choices between stand alone and conglomerate employees. In addition, considering company stock's use as a guard against takeovers (Rauh (2004)), I find that many of the main empirical determinants of takeover deterrence, including corporate governance characteristics, cannot explain the difference in allocations between employees of stand alone firms and employees of conglomerates.

I use variation in characteristics conditional on firms being stand alone and conglomerate, and between employees of the same firm, as additional measures of loyalty. One reason that labor unions develop is to provide a mechanism for employees to present discrepancies against the company. Union members may therefore, by self-selection, be those employees that have less of a tie to the firm, and may thus invest less in company stock. Moreover, a union's ability to collectively bargain is jeopardized when members of the union are too loyal to the firm as opposed to the union, and thus a successful (observable) union may be one in which

²This explanation hinges on the Representativeness heuristic, suggested in Kahneman and Tversky (1979). Representativeness can be described as individuals seeing a small sample of event outcomes, and updating priors about the population outcome too heavily based on this data.

employees are less loyal to the company. Consistent with this and after controlling for a firm being a stand alone or conglomerate, union members invest significantly less in company stock (about 6 percent less) than non-union employees.

The amount of exposure employees have to their firm may affect their company loyalty. Hourly workers, who are presumably more transient, have had less time and exposure through which to build an emotional tie to the firm, and thus may be expected to be less loyal to the firm. I find that, consistent with this explanation, after controlling for other firm characteristics hourly workers invest significantly less (5 percent less) than salaried workers in company stock.

When employees have a longer period over which to build a tie to their firm, they have more loyalty to it. I use the CEO's length of term in office, and the CEO's tenure with the company, to proxy for length of time over which the firm has been under one regime, and accordingly which the employees have had a stable entity to which they could form a tie. Controlling for other firm characteristics, the longer a CEO has spent in a firm, the more the firm's employees are willing to invest in company stock. A two standard deviation increase in the tenure of the CEO increases the amount invested in company stock by 4 percent. I further test this by looking at the potential shock to employee loyalty when a CEO leaves the firm. Often times, CEO departures are concurrent with large changes in the firm (including divestitures and employee firings), which may decrease employee loyalty. Consistent with this, and after controlling for past and future returns, when a CEO leaves the firm, the firms' employees investment in company stock decreases significantly (by 4 percent).

Advertising is one way in which a firm can increase its outside exposure to employees, and in doing so may generate pride and loyalty externally. Thus, firms that advertise more should have more loyal employees, and therefore employees that invest more in company stock. I find evidence that firms advertising more heavily do have employees that invest a significantly larger portion in company stock. Controlling for other firm characteristics, a two standard deviation move in advertising expenditures results in more than an 8 percent increase in company stock allocations.

I estimate the cost of this loyalty bias to the employee. The employee forgoes roughly 1.8 percent per year in returns because of the loyalty bias in portfolio choice. This cost is larger than the cost of home bias, and results in a loss of retirement income of over 20 percent for a 45 year old who defers 3320 dollars per year (sample average) into her retirement plan. I then estimate one possible benefit of loyalty to the firm, and find that firms with more loyal employees may be able to pay these workers lower wages.

The paper proceeds as follows. Section 1 further develops the notion of company loyalty, and Section 2 describes the main data used in the paper. Section 3 gives the main empir-

ical findings for loyalty based portfolio selection by employees, while Section 4 tests alternative explanations for these results. Section 5 gives additional evidence in favor of loyalty driving investment. Section 6 estimates the cost of loyalty to employees, and one possible benefit to firms of having loyal employees. Section 7 concludes.

1 Loyalty

There is a developed body of research in social psychology regarding both how loyalty develops and is manifested in groups. In particular, arbitrary social categorizations into such mundane groups as "us" and "them" result in feelings of in-group favoritism and out-group discrimination (Brown (1995), Rabbie and Horwitz (1969), Tajfel and Turner (1979)). The general format of these experiments³ is to classify subjects into arbitrary groups, based on few or no distinguishing group factors. The subjects are then asked to evaluate the in-group and the out-group on a number of characteristics (ex. intelligence, creativity, ability to work well together, etc.). Almost uniformly, subjects associate positive valence characteristics with their group (in-group), and negative valence characteristics with the out-group (Mummendey, Otten, Berger, and Kessler (2000)). In addition, the association happens quickly and somewhat "automatically", minutes after being assigned to the arbitrary social group (Otten and Wentura (1999)).

A different, but complementary question is how these emotions are translated into individual behavior. In a series of papers, Akerlof and Kranton (2000,2004) examine the effect of these emotional ties, which they call "identity," on a number of individual choices. They set up a model with two types of individuals, one with a strong identity and one with a weak identity, and derive different implications for the behavior of the two types in a number of settings. In the context of this paper, loyalty could enter into behavior in two distinct ways (Palacios-Huerta and Santos (2002), Morse and Shive (2004)), both through individual choice, which can be seen using the example of investing in company stock.

First, an individual could actually have a utility gain from being loyal, so that loyalty is an argument inside the utility function. In this case, the employee holds company stock, not because she truly believes that her company is "better" than other companies, or will have superior performance to these companies in the future. Instead, the employee gets utility out of building this emotional tie to the firm through holding company stock.

³Known as Minimal Group Paradigm (M.G.P.), for its classification into groups based on "minimal" or no distinguishing characteristics.

The second way in which loyalty could enter the choice problem is through subjective probability estimates. In this case, the individual incorrectly estimates the probability of a certain event because of loyalty associated with her firm. The employee holds company stock because she truly believes that her company is better, and will perform better, than other companies. In essence, the employee has overestimated the probability of good states of the world for her company (or alternatively underestimated the bad states) due to her loyalty to the firm. The employee thus gets no direct utility from holding company stock, but instead has an inflated expected utility due to loyalty biasing her subjective probability forecasts.

In both mechanisms of loyalty affecting choice, loyalty can raise the expected utility from a certain event or action. The individual may undertake actions, or make choices, not otherwise made without loyalty. In the case of company stock, the employee may choose to hold company stock even with the associated large costs of underdiversification. The projected benefits of either of the two mechanisms above may outweigh the costs of underdiversification. In this paper I will not try to distinguish between the two mechanisms of loyalty, although I think the distinction is an important one. Any policy aimed at correcting a bias caused by loyalty must take into account which of the two mechanisms is causing it. Depending on the mechanism of loyalty, the policy implications can be drastically different.

I will examine loyalty's implications for employee investment, and thus I need to establish the link between loyalty and employee investment: loyalty to company. The evidence from social psychology suggests that individuals develop loyalty quickly, even to arbitrary social groupings. This loyalty increases with relation to, and contact with, the social group (Perdue, Dovidio, Gurtman, and Tyler (1990)).⁴ With regards to this, the workplace is often one of an individual's most relevant social groupings. As a social group, members of the workplace are often second only to an employee's own family in terms of length of interaction time. The firm may then be a natural entity to which individuals develop loyalty.⁵ The question arises as to where such loyalty lies within a firm. As employees, almost by necessity, have as much or more contact with their segment as with the entire firm, employees might be expected to form loyalty at the segment level. For stand alone employees, the two are synonymous, so loyalty to the division and the firm are the same. The difference arises with conglomerate employees. In a conglomerate, when employees form loyalty to their division, this does not translate into equal loyalty to the firm. As individuals form weaker ties with groups to which they are less related

⁴These are experimental findings and are thus short term. It is reasonable to think, though, that loyalty would continue to increase with time in longer term settings, such as the workplace.

⁵This contact with the firm may work in the opposite direction, causing disloyalty, in the case of disgruntled workers. To get an idea of the likely magnitude of the disgruntled worker effect, I examine the General Social Survey of 1991. In the survey, 90 percent of workers say they are proud to be working for their organization, and 86 percent say that they are very satisfied or moderately satisfied with their jobs. This suggests, although it does not rule out, that the disgruntled attitude may not be a pervasive attitude among workers.

and have less contact, conglomerate employees would be expected to form weaker ties with the other divisions of their firm. Their loyalty to the entire firm, a combination of the loyalty to each segment, would thus be weaker than to their segment. Therefore, comparing a stand alone employee and a conglomerate employee, each with the same tie, or loyalty, to their segment, the conglomerate employee will have a weaker tie to the entire firm, diluted by the less strong loyalty to the segments of his firm to which he is not affiliated.

In the case where loyalty is driving employee investment into own-company stock, the prediction is clear: employees of conglomerate firms should invest a smaller percentage in company stock than do stand alone employees. An example illustrating this follows.

Consider two employees, one who works for Delta Airlines and one who works for Taco Bell. Assume they both have been working at the companies for the same number of years, they both have had an equal number of positive experiences, and they both are equally loyal to these segments. When the employee for Delta Airlines receives his 401(k) plan document, he is able to invest directly into Delta airlines, a single segment firm. On the other hand, when the employee of Taco Bell receives his 401(k) plan document, he cannot invest directly into Taco Bell. Taco Bell (until recently) was owned by Pepsi, Co., and so the employee of Taco Bell had the option only to invest in Pepsi common stock. Pepsi's segments other than Taco Bell included Pepsi Bottling Co., and industry competitors Kentucky Fried Chicken and Pizza Hut. Thus, for the Taco Bell employee to invest the same amount in own-company stock as the Delta employee, he must be just as loyal to a bottling company (different industry) and to his industry competitors, as he is to his division, Taco Bell. In the likely case that the Taco Bell employee does not have as strong of a tie to these alternative divisions as he does to his own division, he will have a diluted loyalty to Pepsi, Co. Therefore, even though both employees were equally satisfied and loyal to their segments, the employee of Delta Airlines will invest more in company stock than the employee of Taco Bell.

2 Data

2.1 401(k) Plans - Benefits and Misconceptions

The main data used in this paper are employee withholdings of income into company owned retirement plans. These data are obtained from form 11-k filings with the SEC. A further description of the form 11-k, and accompanying regulations, is provided in Appendix A. Huberman and Sengmuller (2004) Appendices A-C also give institutional background and the accompanying securities regulation governing 11-k filings. The main benefit associated with

401(k) retirement savings plans is that employees can contribute pretax income to the plan. Thus, employees can defer tax on both income and investment appreciation until the money is withdrawn from the plan when for instance, they have retired and are in a lower tax bracket. Another benefit offered by most plans is a company match. The match is usually given as a percentage of employee contributions (up to a set limit), and is given in one of two ways, (i) 100 percent in company stock or (ii) mimicking participant contributions. In either case, the match can be seen as an immediate "guaranteed" return on investment. For example, consider a plan in which the employee contributes 10,000 dollars to the plan and the employer makes a matching contribution of 2,000 dollars. Prior to any investment choice, the employee has, at time 0, attained a 20 percent return.⁶

There are a few misconceptions as to the driving factors for employee investment into own-company stock in 401(k) plans. These largely stem from regulation confusions between 401(k) plans and other related company plans. The first misconception is that company stock is offered at a discount, which induces employees to buy large amounts of it. 401(k) plans do not offer company stock at a discount. These discount plans are called Employee Stock Purchase Plans (E.S.P.P.). There are no E.S.P.P.s included in my sample, so the results are not dependent on these. The second aspect of these plans that is not driving the results in this paper, I term a "bonus match." Under a "bonus match," an employee receives a larger matching contribution for investing in company stock than the matching contribution for investing in other investment options.⁷ These are rare, and I exclude plans that have this bonus match feature from my sample. A third belief is that company pressure forces employees to invest their 401(k) contributions into company stock. Although this is difficult to completely rule out, the following practice has developed. Almost all 401(k) plans are run nearly completely through a plan custodian. For example, a firm may outsource operation of the plan to a firm such as Fidelity. All trades and allocation decisions are done through the custodian. Thus, when an employee decides to invest more or less in company stock, she would call Fidelity to change her allocation. It is very unlikely (although not impossible) that the company ever sees individual data on retirement contributions by employees. A main reason for outsourcing is to circumvent dealing with the day to day operations of the individual accounts in the plan. A final misconception is that the large percentage of funds invested in company stock does not represent the average worker's account, but instead is just an artifact of the huge top management retirement accounts heavily

⁶Following time 0, this 20 percent initial return depends on employee portfolio selection (under general match types). Also, the return is not immediately "guaranteed" in many plans, in the sense that the employee cannot withdraw it from the plan, often until reaching retirement age (without a penalty).

⁷A typical Bonus Match covenant would read "The company will match 50 percent of the participant's contribution, on the first 6 percent of income deferred. For every dollar the employee defers into own company stock, the company will match an additional 50 percent (a total of 100 percent) on the first 6 percent of income deferred."

tilted toward company stock. As top management may be under more scrutiny, be able to more materially affect the well being of the firm, or have more inside information about the firm, their holding of company stock may have different signalling purposes than that of the average worker. Large management accounts, however, are not driving the observed allocations in 401(k) plans. In fact, the participation requirements set out in IRC Section 401 *require* a salary cap to be imposed (determined annually by the I.R.S.) for eligible income deferred into the plan. Specifically, under IRC Section 401(a)-17(A), for a defined contribution plan to be "qualified" (receive preferential tax treatment) employees can contribute only up to a certain maximum dollar level, regardless of income. Over the sample years in this paper, no individual can contribute more than 10,000 dollars per year.⁸

2.2 Dataset and Methodology

The paper uses a unique database of 11-k filings of stand alone and conglomerate firms that I hand-collected from the SEC online database of company filings. Stand alone firms and conglomerate firms are defined as those firms that report a single business segment and multiple business segments, respectively, which are determined using the COMPUSTAT Industrial Segment database. The segment reporting, for my sample, stems from Statement of Financial Accounting Standards No. 131, which requires firms to report material segment information disaggregated according to how management internally evaluates the operating performance of business units (Berger and Hann (2002)).

The main sample in the paper spans the years 1997-2000, and I give a representative summary of the sample selection procedure of 11-k filings used for 2000. I first gathered data on all firms reporting on COMPUSTAT Industrial Segment database for the year 2000. I matched each stand alone firm's COMPUSTAT listing with its listing with the SEC forms filed in 2001, as the 2001 form filings cover the allocations and plan assets from the 2000 plan-year. This had to be done firm by firm, as there is no natural link variable between COMPUSTAT's listing and the SEC listing of a firm. Of the 1,319 single segment firms listed in COMPUSTAT, 73 filed an 11-k. For the conglomerate firm sample, because of the time involved matching on a firm by firm basis, I chose a random sub-sample in order to try to match the empirical percentage of conglomerate to stand alone firms. Of the 1,833 multiple segment firms I sampled, 274 had 11-k filings, representing 357 division 11-k filings. An important point is that this does not represent all segments of the 274 firms, as employee contributions is not one of the variables required to be

⁸Additional sections of the Internal Revenue Code that deal with this issue are Section 416(G)-1 and 410(b)-1. Both limit the participation, and benefits, of the plan received by key employees and management.

separately reported by firms.⁹ I then omit 11-k forms filed for employee stock ownership plans, and forms that were filed for joint E.S.O.P.-401(k) plans. Also omitted are those firms that began offering company stock as an option in the last quarter or last half of 2000 (non-company stock plans), and plans that offer a bonus match provision in own-company stock.

The main variable of interest from the statements is the percentage of employee contributions in company stock. In the form 11-k, firms are required to report the amount of plan assets in each investment option. In addition, in the 1997-1998 sample, firms also segregate yearly flows into the amount of flow going into each investment option.¹⁰ For 1997-1998, I use this annual segregated data, and for 1999-2000, I estimate it. I have information on both plan assets and the proportion of plan assets in company stock for each firm for each year, so I use the following two simple measures to estimate discretionary contribution to company stock for 1999-2000.

When employer match follows participant investment

$$T = \frac{C}{P}$$

When the employer match is in company stock

$$T = \frac{C}{P}(1 + M) - M$$

Where T is the estimate of discretionary contribution percentage invested in company stock, C is amount in company stock, P is total plan assets, and M is the annual percentage match by employer. Both measures incorporate the accumulation of past contributions and past returns in their calculation. The incorporation of past returns causes the second measure to give negative estimates of T for some firms. These firm estimates are omitted from the sample. To check the efficacy of this estimation, I use the same procedure on the 1997-1998 data. I then compare the estimates with the actual data for that sample period. I find that the correlation between estimates and actual is quite high, .81 for conglomerate firms and .92 for stand alones, lending support to the estimation procedure. In addition, although most of the results in the paper are reported for the entire pooled sample 1997-2000, all tests are also run for the sample 1997-1998 separately, and the results and conclusions remain the same. Another interesting aspect of the data is that employees allocation percentage to company stock changes slowly over time

⁹In a correspondence with the Public Reference Branch of the SEC, “ Regulation S-X Article 6A (applicable to employee stock purchase, savings and similar plans) does not require contributions or assets of the plan to be segregated by contributing subsidiary or division. ”

¹⁰This was altered by Statement of Position 99-3, effective for all SEC 11-k filings covering years of operation after, and including, 1999. S.O.P 99-3 states that retirement plans no longer have to report annual contributions (employee or employer) segregated by fund.

(average correlation of about .9 from year to year). This could be due in part to slowly changing preferences, but also in part to an effect consistent with Samuelson and Zeckhauser (1988), in which employees forget to rebalance their portfolios (Madrian and Shea (2001)).

2.3 Employee and Plan Characteristics

Table 1, Panel A contains firm and plan characteristics. As expected, conglomerate firms are on average larger firms with larger retirement plans, as both average ME and total plan assets are over three larger than those for stand alones. One piece of information provided by the 11-k is the company matching percentage, usually given as a percentage of employee contributions. The most common company match in the sample was 50 percent of employee contributions on the first 6 percent of income that employees deferred into the plan. I calculate Maximum Total Match as the maximum (as a percentage of employee income) that the company will match if the employee contributes the maximum percentage of income (usually 16 percent) into the plan. This can be seen as the benefit fully invested employees receive in the form of immediate return from the company match. For instance, in stand alone firms, the 4 percent Maximum Total Match represents about a 25 percent match to employee contributions (4/16), and so an average 25 percent immediate return to a fully invested employee. From the table, the percentage of firms that match in company stock (as opposed to following participant's investment choice) is similar across type of firm (27 and 32 percent for stand alone and conglomerate, respectively). This Maximum Total Match is also uncorrelated with whether or not the company matches in company stock.¹¹ The only significant positive correlation is that companies matching in their own stock have a larger percentage of company stock in plan assets.

Characteristics of employees of both types of firms are in Panel B of Table 1. I collect data on the number of plan participants (active and inactive) for a subset of firms using the *Department of Labor's Form 5500 Database*. The average annual contribution of employees to the retirement plans of both types of firms is around 3000 dollars. As a percentage of annual income, employees of conglomerate and stand alone firms defer on average 7.9 and 8.2 percent, respectively.¹² The ratio (Current Contribution/Total Plan Assets), which is the sum of total employee and employer contributions for a given year divided by total plan assets, and the ratio: Active/Total, the number of active participants divided by total participants, are both proxies for the age of the retirement plan. Both measures suggest that stand alone and conglomerate

¹¹I calculated separate mean Total Company Matches separately for firms that do and do not match in company stock, and they were not significantly different.

¹²The percent of income deferred by employees is estimated using (total company contribution/total employee contribution) for a given year and the Maximum Total Match of a company. The percentage is thus an upper bound of income contribution percentage by employees.

firms have offered the sampled defined contribution plans to employees for roughly the same number of years.

3 Loyalty Based Investment

I begin by testing allocations to 401(k) plans of stand alone and conglomerate firm employees. Loyalty works in the opposite direction of portfolio diversification against labor income, setting up a test between the two. Loyalty predicts that employees of stand alone firms will invest a larger percentage in company stock than employees of conglomerate firms. This is because stand alone employees can invest directly in the division in which they work, while employees of conglomerate firms are forced to invest in all unrelated divisions of their respective firm through company stock. The portfolio diversification against labor income prediction is that employees of conglomerate firms invest a larger percentage in company stock than employees of stand alones due to the coinsurance effect of unrelated divisions.

3.1 Case Study: Employees of Connecticut Energy

The following example from my sample is representative of a much more systematic trend in employee investment behavior, which I document in the subsequent sections:

In February of 2000, Energy East Corporation purchased and formed a wholly owned subsidiary of Connecticut Energy Co. (Conn. Energy). Energy East was a diversified conglomerate in the energy sector, with businesses in natural gas, propane, and electricity (from sources including nuclear and hydroelectric). Conn. Energy was a focused firm in the distribution of natural gas¹³. Upon the merger, both the retirement plan and company stock of Conn. Energy were dissolved (only stock in the parent company Energy East was subsequently traded). The employees of Conn. Energy were given the option to invest the proceeds of their former

¹³Short descriptions of the main activities of each firm from Thompson Financial are included below.

Connecticut Energy Corporation - The principal activity of the group is the retail distribution of natural gas for residential, commercial and industrial uses.

Energy East Corporation - The group's principal activities are carried out through three business segments: electric delivery, natural gas delivery and other segment. Electric delivery segment consists of its regulated electricity transmission, distribution and generation operations in New York and Maine. Natural gas delivery segment includes regulated natural gas transportation, storage and distribution operations in New York, Connecticut, Maine and Massachusetts. Other segment includes providing energy services and distribution of natural gas and propane air. The group also generates electricity from its share of a nuclear plant and its several hydroelectric stations.

retirement plan into Energy East company stock or any of the other ten investment options in the Energy East plan. Presumably, the employees now working for a wholly owned subsidiary of a conglomerate should be willing to invest more in company stock. Their labor income is tied to the subsidiary, while company stock reflects the returns of the entire conglomerate. Thus, the former Conn. Energy employees' labor income covaries less with company stock than when in the stand alone. From Panel A of Table 2, it is seen how the contributions of Conn. Energy employees change in the new plan. Plan 1 and Plan 2 consist of employees that worked in 1999 for Conn. Energy, while Plan 3 consists of employees of Energy East in 1999. The former Conn. Energy employees actually decrease their allocation to company stock by 50 percent to 75 percent post merger, now that "company stock" represents Energy East instead of the more closely tied Conn. Energy. From Plan 3 in the table, pre-merger employees of Energy East do not change their level of company stock at all following the merger, suggesting that the decrease in allocation to company stock by former Conn. Energy employees was not driven by a widely known negative shock to Energy East.

3.2 Stand Alone and Conglomerate Investment

Investments by employees of stand alone firms and conglomerate firms are compared in Table 2, Panel B. Using discretionary contributions from 1997-1998, employees of stand alone firms direct 16.09 percent of their annual contributions into company stock while employees of conglomerate firms direct only 12.24 percent, and the difference of 3.42 percent is significant ($t = 2.29$) at the 5 percent level. This same statistics using the full sample (1997-2000) show that employees of stand alone firms allocate 18.06 percent to own-company stock, while employees of conglomerate firms allocate 12.47 percent, and the difference of 5.59 percent is significant ($t = 4.39$) at the 1 percent level.

3.3 Stand Alone and Conglomerate Regressions

3.3.1 Categorical Variable

The regressions of Table 3 provide the ability to separate the effect of other company characteristics that may be correlated with being a stand alone or conglomerate firm, on contributions into company stock by employees. The framework also makes it possible to more cleanly test loyalty against other explanations for employee contributions into own-company stock. The dependent variable in all regression models is employee discretionary contributions into company stock as a percentage of total employee contributions. The main independent variable of interest

is a categorical variable for stand alone and conglomerate firms (Stand Alone). This variable takes a value of one for stand alone plans, and a value of zero for conglomerate firm retirement plans. The coefficient on this variable should measure the increase (decrease) in contributions of employees of a stand alone as opposed to a conglomerate firm, controlling for the other variables in the regression. Control variables for firm characteristics include the logarithm of market equity, the logarithm of the book-to-market ratio, and the logarithm of wage¹⁴. I also include an employer matching contribution type indicator. This categorical variable, Com Match, is equal to 1 when the company has a policy to make matching contributions strictly into company stock, and 0 when the company match mimics the participant’s investment choice. This may capture an endorsement effect (Benartzi (2001)), as employees may invest more in company stock when there exists an employer matching policy that matches solely in company stock, merely because the employees view the employer match as implicit investment advice. However, if the employees have an optimal amount of company stock exposure they plan to take, we should see employees investing less of their own discretionary contributions in company stock when the company match is already forced into this investment choice. Additional firm characteristics of beta and standard deviation of past returns are also included in the regressions. These are calculated over a 12 month horizon.¹⁵ As pension assets make up a fairly large portion of retirement wealth for a number of employees, the variance of company returns may be an important factor in determining allocations to this investment choice.

Loyalty predicts a positive coefficient on Stand Alone while portfolio diversification predicts a negative coefficient. From Table 3, in all models the coefficient is positive and significant, with standard errors clustered at the firm level. From the first specification, employees of stand alone firms seem to invest about 7 percent more in company stock than employees of conglomerates, after controlling for firm and plan characteristics. When year and industry fixed effects are included along with firm beta and standard deviation of past returns, the difference widens to over 9 percent and becomes even more significant ($t = 4.07$). This 9 percent increase represents more than a 50 percent increase in allocation to company stock for employees of stand alone firms over the average conglomerate employee. Thus, the effect of loyalty seems to have a substantial impact on employee investment behavior. Another consistently significant independent variable is firm size. I provide evidence in Section 6 that size is proxying for the employee’s extent of outside exposure to the firm (as better captured by advertising expenditures). Company stock return volatility does not reliably affect employee investment into company stock,

¹⁴Wage is measured as the average of seasonally adjusted real industry wage of the firm’s industry (deflated to 1983 dollars) over the past 10 year period. This data was taken from the Current Employment Statistics of the Bureau of Labor Statistics. A company’s industry was defined by its SIC code assigned by the SEC, and companies were assigned to one of eight industries.

¹⁵24- and 36- month horizon betas and standard deviations were also used, and the results are similar.

except in the last specification of Table 3. The direction of each point estimate, though, is opposite to that expected, controlling for level of covariance with the market: the higher the variance of company stock returns, the more employees invest into company stock. Additionally, consistent with the endorsement effect and in contrast to employees' choice of a fixed optimal level of company stock exposure, employees increase the amount invested in company stock by about 7 percent when employers already match in it. Plan characteristics in addition to company match will be examined in more detail in Section 4.

3.3.2 Excessive Extrapolation

It may be the case that employees use past returns to determine future allocations. Specifically, they may use the representativeness heuristic (Kahneman and Tversky (1979)), so that they excessively extrapolate the past returns into predicted future performance. Benartzi (2001) finds that in a sample of S&P 500 firms, differences in past returns help to explain the varying allocations across firms. Thus, it could be that the results in the first three specifications of Table 3 are driven by cross-sectional differences in past returns of the firms. To test for this, I include the logarithm of buy and hold past returns for each firm, over a number of time horizons. The results are presented in Table 3. All regressions include industry and year fixed effects with standard errors clustered at the firm level, which pertains to all regressions throughout the paper. Although the effect of extrapolation increases with return period (in line with Benartzi (2001)), excessive extrapolation cannot explain the allocation decisions between stand alone and conglomerate employees. As predicted by loyalty, employees of stand alones invest significantly more in company stock than employees of conglomerates. In fact, after controlling for the effect of excessive extrapolation, the effect of loyalty is even more pronounced, as employees of stand alones invest 10 percent more ($t=4.19$) into company stock than employees of conglomerates (with a three year past return period). As this is an important source of variation, I include past returns in all future regressions of the paper. I use 3 year past returns to line up with the average employee tenure over this sample of 3.7 years (median 3.6 years).¹⁶

3.3.3 Herfindahl Indices

A potential problem with the Stand Alone categorical variable is that the measure may be too coarse a measure of firm diversification, and so may be misclassifying firms. Consider a

¹⁶Employee tenure is taken from the Department of Labor's Current Population Survey (supplemental questions). Median employee tenure has fluctuated between 3.4 and 4 years since 1983, and over the sample was 3.6 years.

firm that has two segments: one that makes up 90 percent of assets and income, and the other makes up 10. This might be classified as a conglomerate firm under the Stand Alone variable, but the bulk of the employees (those in the 90 percent segment) might be expected to act like stand alone employees. Consider the example of the investment patterns of Sara Lee employees: Sara Lee Corp., a food goods manufacturer, owns the relatively smaller apparel company, Hanes. The employees of Sara Lee Foods allocate, on average, 3 times the percentage of the Hanes employees into Sara Lee company stock. So, even though Sara Lee Corp. is a conglomerate firm, employee contributions of the larger Sara Lee Foods will drive the overall investment by employees into company stock, making employee investment look more like a stand alone than a conglomerate.

Thus there is a need for a more continuous measure of firm diversification. I construct two different measures of firm diversification. The first measure is the number of segments, where segment number proxies for increasing diversification of the firm. Loyalty predicts that the coefficient on this variable should be negative: as the number of segments increases, the amount invested by employees in company stock should decrease. The second measure consists of Herfindahl Indices of diversification within the firm. The COMPUSTAT Segment Database reports data on capital expenditures, sales, employees, and assets stratified by segment within a firm. I use each of the variables to create Herfindahl Indices, with an example of the Herfindahl Index for sales ($H_i(sales)$)

$$H_i(sales) = \sum_{j=1}^{seg_i} \left(\frac{sales_j}{\sum_{k=1}^{seg_i} sales_k} \right)^2$$

For stand alone firms, the Herfindahl Index is equal to one by definition. As the firm's value becomes more dispersed across the segments, the Index will get closer to zero. Thus, the more dispersed a firm is, the lower its Herfindahl Index value. The loyalty prediction is then a positive coefficient on the Indices, as a larger Index represents a firm closer to a stand alone. Portfolio diversification against labor income predicts a negative coefficient, as a smaller Index represents increased coinsurance by other segments, so an increased motive to invest in company stock. The results of the regressions are in Table 4. The negative and significant coefficient on segments in the first regression is consistent with the loyalty prediction. The -.01 coefficient means that the average employee of a conglomerate with 8 segments will invest 6 percent less in company stock than the average employee of a 2 segment conglomerate. The coefficients of the Herfindahl Indices are all positive, and are significantly positive for sales, employees, and capital expenditures, also supporting the loyalty prediction. The coefficient of

.074 on Sales Herfindahl translates into the average employee of a stand alone firm investing 6 percent more in company stock than the average employee of a conglomerate firm with 5 segments, all with equal sales. These continuous measures of diversification support the predictions of loyalty in contrast to the predictions of portfolio diversification, as did the categorical variable.

3.4 Direct Tests: Spin-Offs and Mergers

3.4.1 Spin-Offs

The spin-off of a segment or subsidiary gives a more direct experiment for testing loyalty's prediction on investment behavior. It provides a more direct test of the prediction of Section 3, in that the same employees can be followed from conglomerate to stand alone. Although the choice of whether to spin-off is endogenous, this framework allows me to orthogonalize against systematic differences in employees, as I am following (presumably) the same employees across firm type. In the case that employees in a conglomerate increase percentage invested in company stock when their segment is spun-off into a stand alone firm, this would provide cleaner evidence for loyalty. In the case that the employees decrease investment when spun-off into a stand alone firm, as labor income and company stock may be more closely tied to the same source of variation, this would provide cleaner evidence for portfolio diversification against labor income.

I match a database of spin-offs from 1993-2002 to my sample of stand alone and conglomerate firms. The cases where both parent firm and spun-off firm match my database are presented in Panel A of Table 5. Consistent with the predictions of loyalty, employees do, on average, increase the percentage held in company stock upon being spun-off into a stand alone firm. In fact, the increase is substantial, with the average employee increasing percentage invested in company stock by about 45 percent.

3.4.2 Mergers

The merger of two firms or acquisition of one firm by another, gives the opposite experiment of a spin-off. It provides a more direct test of loyalty's predictions, as the same employees can presumably be followed before and after being merged into another firm. As with a spin-off, the choice of acquiring a firm or being acquired is endogenous, although the reaction through employee investment can still be followed controlling for systematic differences across employees. In the case of a merger, the prediction of loyalty is opposite to that for a spin-off: the same

employee should decrease investment in the newly merged parent company, as compared to the investment in company stock in the pre-merger firm.

I collect data on all mergers from 1990-2003 using the SDC, Platinum database of Thompson Financial Services. I match this data to only consider cases where both pre- and post-merger firm were in my sample for the years 1993-2003. From these matches, I require that the employee group's allocation decisions be identifiable both before and after the merger. Often times when one firm acquires another, the acquiring firm immediately merges the target firm's retirement plan into the existing retirement plan of the acquirer. In these cases the target employees investment decisions are not observable after the merger. To assure that I am tracking, as closely as I can, the same employees' decisions over time, I exclude these cases. My sample includes only those mergers in which the target firm's 401(k) plan remained as a distinct plan post-merger, with the change in company stock from the target company stock to the acquirer company stock post-merger. The sample is in Panel B of Table 5. Consistent with the predictions of loyalty, merged employees do act in an opposite way, on average, to spun-off employees. Following the merger, and the switch to acquirer company stock, they decrease the amount invested in company. The decrease is large, and quite similar in magnitude to the increase of spun-off employees, with merged employees decreasing their investment into company stock by more than 36 percent following the merger¹⁷.

4 Information Based Explanations

4.1 Superior Information Hypothesis

The information-based explanation of employee investment in company stock is that employees have superior positive information about their company relative to other investors, and so are willing to purchase a large percentage of their company stock. One issue with this explanation is that access to true superior information about their employing companies implies that employees should be willing to trade on this information, both buying and selling. The data

¹⁷One merger for which I include both the acquirer and the target firm in the sample is Hewlett-Packard's acquisition of Compaq in 2002. This merger is an interesting case because it spurred a proxy battle at Hewlett-Packard within shareholders and management of those that supported, and those that were opposed, to the merger. It was seen as a matter of "employee loyalty" to the "legacy" of the firm to oppose the merger, and those employees supporting the merger were branded as disloyal ("Family Matters: Are Fords, Hewletts and Packards Right to Exercise Their Clout?", <http://knowledge.wharton.upenn.edu/index.cfm?fa=printArticle&ID=468>). The merger occurred in 2002, and whether the most "loyal" (and opposed to the merger) employees were fired, or whether the merger induced a feeling of disloyalty, as seen in Table 6, Hewlett-Packard employees (in addition to Compaq employees) decreased their allocations by a substantial percentage to Hewlett-Packard company stock.

from Section 2 and Section 3 imply instead that employees routinely direct a large percentage of discretionary contributions into company stock. Unless all the companies are consistently performing well, this would not be consistent with an information-based explanation. I use two tests to try to get at this superior information effect on allocations. The first is a test of the predictive power of employee allocations for future returns. The second is a more direct test of the trading implication of information on allocations, using the variance of allocations to company stock. In both tests I split between stand alone and conglomerate firms to test whether there are differences between the superior information of employees in both types of firms.

The first test is that of employees' ability to predict future returns, conditional on other firm and plan characteristics. For this hypothesis to explain the results of Section 4, stand alone employees' allocations should have a superior ability in predicting future returns. I thus also test whether this predictive effect is larger or smaller for employees of stand alones relative to employees of conglomerates. The results of the regressions are reported in Panel A of Table 6. The dependent variables in the regressions are one year ahead future return, the three year cumulative future return, and the five year cumulative future return. As can be seen in the table, the level of employees' discretionary contributions has no predictive power for future returns of any horizon considered, controlling for other firm and plan characteristics. The point estimate is even slightly negative in these specifications. This lack of predictive ability is well documented (Benartzi (2001), Huberman and Sengmuller (2004)). The interaction terms, $(\text{Com Stock\%}) * (\text{Stand Alone})$ and $(\text{Com Stock\%}) * (\text{Segments})$, measure the relative increase in the ability of employees of stand alone firms to use superior information to predict and trade on future returns, relative to employees of conglomerates. This relative difference in ability of stand alone employees is needed for the superior information hypothesis to explain the differences in stand alone and conglomerate investment. From Panel A of Table 6, stand alone employees do not seem to have any increased ability relative to conglomerates in forecasting and trading to take advantage of future returns of any horizon. None of the interaction terms are reliably different from zero, with the point estimates, in most specifications, even slightly negative.

The second test is using the variance of company stock allocations. This better addresses the implication of the superior information hypothesis that employees should be willing to trade more on this positive and negative superior information, both buying and selling company stock¹⁸. It also brings up the alternative explanation of perceived information. Perhaps employees do not truly have superior information about their firm, but perceive that they do. In this case, they will be willing to trade (although incorrectly) on this level of perceived

¹⁸Short selling is not allowed in these plans, and thus the lowest allocation percentage is 0. This may induce a bias in the forecast relating to negative information. There are, however, very few 0 allocations in the sample, and test results are the same when these are excluded.

information. Perceived information has an implication of no predictability of future returns, consistent with the results in Panel A. However, it has the same implication as superior information for the second moment of allocations. If employees of stand alone firms have either a higher level of superior information or perceived information relative to conglomerate employees, this should show up in the second moments of allocations. To test this, I examine the coefficient of variation (standard deviation/mean) of allocations for employees of stand alone firms relative to employees of conglomerates. I use this measure to scale the standard deviation, as from Section 4, the two types of firms have different levels of allocations. Coefficients of variation are calculated at the plan level over the sample (requiring at least two plan years of data). A note in the interpretation of these results, is that these allocations are aggregate plan allocations at a yearly frequency. Ideally, I would like to have individual account data at a much higher frequency to more cleanly test this implication. The results are in Panel B of Table 6. From this table, employees of conglomerates have significantly higher coefficients of variation relative to employees of stand alone firms. This is opposite to what would be expected in the case stand alone employees have higher levels of superior information or perceived information relative to conglomerate employees. The results of Table 6 suggest that superior information about their respective firms is not driving employee allocation into company stock, and further they suggest that employees of stand alone firms do not have higher levels of superior information or perceived information relative to employees of conglomerates.

4.2 Geographic Familiarity

Familiarity is the most difficult of the alternative explanations to separate conceptually and empirically from loyalty. Preference for the familiar (Heath and Tversky (1990)) predicts that employees will opt to make allocations into investments toward which they are "familiar," or about which they "perceive" they have the most information. In particular, a familiarity explanation in which employees of stand alones are assumed to perceive they know relatively more about the firm than conglomerate employees would produce similar results to those in Section 3. To test between the explanations of familiarity and loyalty, a measure must be found that causes variation in either familiarity or loyalty, without causing variation in the other.

The type of familiarity on which I focus in this section is geographic familiarity. There is evidence that geographic proximity can influence portfolio choice (Huberman (2001)). The hypothesis is that the closer in physical proximity individuals are to a firm, the greater their perceived information, and so the more they invest in the firm. To test the effect of geographic familiarity, I construct a measure of geographic concentration of firms, domestic exposure, defined as the ratio of domestic sales (provided in the COMPUSTAT geographic segment file) to total

sales. I then run the regressions in Table 3 and Table 4, including this geographic exposure measure. As I control for level of firm diversification, this measure attempts to capture the degree to which the employee is more familiar with other company activities, in a way not related to diversification. The hypothesis is that the employees will be more familiar with the firm's operations if they are concentrated in the local market. In contrast, the level of employee loyalty to other segments of the company is not dependent on the geographic distance between segments (the employee forms loyalty to his segment). The prediction of familiarity is then that the coefficient on Domestic Exposure should be positive and significant, while loyalty predicts that there should be no effect of geographic dispersion after controlling for firm diversification. Panel C of Table 6 shows that the measure of domestic exposure is not different from zero in any of the specifications, as predicted by loyalty and in contrast to familiarity. As well, this familiarity measure does not seem to effect the magnitude or significance of firm diversification on employee's allocation decision.

The caveat of this measure is that ideally segment level zip code information would be obtained to run the test more directly. As segment level zip code data is not available, and only data on country of segment, I create this coarser measure. Although it is a coarse measure, and does not capture within country variation, there is still much evidence that cross country variation has a large effect on investment patterns (French and Poterba (1991)). In Section 5, I present further evidence which seems less consistent with perceived information explanations, and supporting loyalty.

4.3 Managerial Incentives

In this section, I examine the possibility that the firm or management may induce employees to hold company stock. Either may have incentives to do so, as a defense mechanism against takeovers (Rauh (2004), Brown, Liang, and Weisbenner (2004)) or as a source of cheaper compensation in the face of cash constraints (Liang and Weisbenner (2002)). Further, in the case this incentive is correlated with being a stand alone or conglomerate firm, it may be driving the results of Section 3. I test for this in two ways. First, I examine to what extent discretionary plan characteristics are driving employees contributions. These plan characteristics may be unrelated to managerial incentives, however they are characteristics over which the firm can choose, and so are potentially usable to manipulate employee investment. In either case, it is important to see whether these plan characteristics are driving the employee allocation results of Section 3. Second, I examine the extent to which characteristics affecting the probability of being taken over drives company contributions.

4.3.1 Plan Characteristics

There are various plan characteristics over which management has discretion, a number of which have been shown to affect employee investment choice (Choi, Laibson, Madrian, and Metick (2004), Liang and Weisbenner (2002), Huberman and Jiang (2004)). I collect data from the 11-k filings for each plan year in the sample that data was available on the following plan characteristics: number of investment options in the plan, number of equity options, number of equity only options, position of company stock in the list of options, and the description of company stock. An important note is that the last two are obtained from the 11-k filing and not from the plan document that is sent to employees. However, in looking through a sample of the plan documents that are sent to employees, both the order and the descriptions in the 11-k filing are excerpted from the plan document (with the descriptions often shortened in the 11-k). I test the affect that each of the characteristics has on employee investment into company stock. These discretionary characteristics may be unaffected by managerial incentives, however as they are easily manipulable by the firm, in the case they have a large effect on employee investment choice, they may be candidates for inducing employees to hold company stock. The first column of Table 7 shows, as has been well documented, that the number of investment options affects employee choice¹⁹. A two standard deviation increase in the number of options decreases the amount invested in company stock by almost 3 percent. The second and third columns suggest that even the placement of company stock in the menu of investment choices can have a large impact on employee allocations to the company. The second column indicates that when company stock is the first investment option in the menu (Company First is a categorical variable equal to one when company stock is the first investment option, and zero otherwise), employees invest 5.6 percent ($t=2.45$) more in company stock. Column three uses Company Position, the relative position of company stock in the list of menu choices, and finds similar results. Controlling for the number of investment options in the plan, moving company stock lower on the list of options significantly decreases the amount invested in company stock. This coefficient suggests that in the average plan (12 options), moving company stock from first on the menu of options to last, decreases the amount invested in company stock by over 8 percent.

Column four examines the effect of the description of company stock in the plan document. Company Description is a coded variable on a 5 point scale, from -2 to 2 based on

¹⁹In unreported regressions, the number of equity options also affects employee investment allocation into company stock. Controlling for the overall number of options in the plan, having an additional equity option decreases significantly the amount invested in company stock (coefficient of -.0111 ($t=-2.05$)). This implies that a two standard deviation increase in number of equity options decreases amount invested in company stock by over 7 percent. In addition, in all regressions in Table 8, the independent variables of $\ln(\text{wages})$, past returns, and the constant are included, but not reported.

how favorably or unfavorably company stock is presented²⁰. It is centered around 0, which is given to a plain description such as "this option invests in the stock of X." A typical -2 would be "this is an unmanaged undiversified investment option," with a typical 2 describing company stock as having the "goal of providing long term participation in the ownership and profitability of the company." From the regression, it does not seem that the way in which company stock is described has a large or reliable effect on company stock allocations.

The last plan characteristics I examine are the restriction on company stock ownership placed by some plans, and the effect of brokerage accounts as investment options. Some plans explicitly restrict the percent of employee accounts that are allowed to be kept in company stock. In my sample, the most common restriction was less than or equal to 50 percent of the employees account (14 of the 25 ownership restriction plan years had this restriction). This may affect company stock allocation mechanically through restricting allocations, or through perceived investment advice of the firm. Although the population means of percent allocated to company stock are much lower than 50 percent (this represents the 90th percentile of company stock allocation percentage), the restriction could affect firms in the case that the true driver of observed company stock percentage is a small group of employees that invest extremely large percentages (greater than 50 percent) into company stock. The other plan characteristic examined is the existence of a brokerage account, with 34 plan year observations having this as an investment option. When a brokerage account is a plan option, this allows participants to invest in a much larger universe of stocks and mutual funds. A brokerage account can then be seen as a proxy for a very large increase in investment options. The fifth column of Table 7 shows these results. The presence of an ownership restriction, although slightly decreasing the percentage allocated to company stock, does not seem to significantly affect participant allocations. In contrast, the presence of a brokerage account has a significant effect of decreasing company stock allocations by 8.42 percent ($t=-2.85$). This large negative effect is consistent with the results on number of investment options. From these results, it seems that varying plan characteristics can have a potentially large effect on employee allocations into company stock. However, in none of the cases considered can variation in these plan characteristics explain the differing allocation decisions of stand alone and conglomerate employees.

4.3.2 Takeover Defense

There has been varying evidence as to what factors affect takeover probability. The firm characteristic that seems most robust, both economically and statistically, across studies is firm size (Comment and Schwert (1995), Dyl and Hoffmeister (1981), Rauh (2004)). The larger

²⁰A full description of the statements coded as -2, -1, 0, 1, and 2 is available from the author.

the target firm, the less likely the takeover is to be successful. In addition to this, characteristics such as the market to book ratio, sales growth, and debt to equity ratio of firms have some marginal explanatory power. Of these, book to market seems to be the strongest, in that firms with a higher book to market ratio (perhaps distressed) have been found to have a higher probability of being taken over successfully. Column 6 of Table 7 shows the results with these factors included. As in all the regression specifications, they find that size is positive and highly significant. A two standard deviation increase in $\ln(\text{ME})$ increases the percentage invested in company stock by roughly 8 percent. This is in contrast to the prediction of a takeover defense motive: larger firms have a lower probability of being taken over, so their managers should need to induce less employee ownership of company stock. In addition, as in previous results, book to market enters negatively and significantly. A two standard deviation increase in $\ln(\text{BE}/\text{ME})$ decreases the allocation to company stock by 5 percent, while this effect is expected to be in the opposite direction in the case allocations are driven by a takeover defense motive. The other two factors, debt to equity ratio and sales growth are found to be weakly negatively related with takeover probability (Comment and Schwert (1995)). Although the regression coefficients in Table 8 are negative for these (as predicted by a takeover defense motive), they are economically small and not statistically significant.

In addition to these explicit firm characteristics, management and legislators can take other actions to affect takeover likelihood. State laws and firm-level shareholder rights restrictions can be passed to decrease the probability of takeover. I use the Gompers, Metrick, Ishii Index (Gompers, Ishii, and Metrick (2003)) of corporate governance to proxy for the level of shareholder rights restrictions. This index has a high value for firm's that have relatively weak shareholder rights, and a low value for firms with relatively strong shareholder rights. Thus firm's with a high level of the index should need less employee stock ownership as a guard against takeovers. The last column of Table 7 has these regressions²¹. Controlling for other firm and plan characteristics, the governance index does not seem to be a significant driver of employee investment into company stock²². These results suggest that a takeover defense motive does not seem to explain the variation in stand alone and conglomerate employee investment decisions into company stock.

²¹As there is only data on the Governance Index and governance characteristics for 1998 and 2000, only these two years of the sample are used in these regressions.

²²I also run this regression using only the Delay index of governance, as it has been argued (Gompers, Ishii, and Metrick (2003), Coates (2000)) that this index is the most pertinent to takeover defense. I find that Delay does have a negative coefficient (as predicted by a takeover defense motive), although it is not statistically significant.

5 Additional Evidence For Loyalty

This section documents evidence complimentary to Section 3 supporting loyalty in employee investment behavior. The results include measures of variation in loyalty conditional on the level of firm diversification.

5.1 Advertising

From the evidence in Social Psychology (detailed in Section 2), one way for firms to generate more loyal employees is to increase employees' contact with the firm. One method by which firms can do this is to increase what I call employees' "outside exposure" or "external exposure" to the firm. Firms can do this by increasing the amount of advertising of the firm. This will increase employees' outside contact with the firm, thus increasing loyalty to the firm.

It is true that the effect will be correlated with firm size. However, in the case that the external exposure hypothesis is true, firm size may just be a proxy for this effect. The consistent significance of size in the regressions of Section 3 and Section 4 may reflect the strength of this external exposure.

The variable Advertising is the advertising expenditures by the firm (in thousands of dollars). The prediction of loyalty is that the coefficient on this variable should be positive. As external contact of employees with the firm increases, loyalty increases, causing an increase in percentage invested in company stock. Also, in the case that firm size is merely proxying for external exposure, then when the more direct measure of advertising is included, it should drive out the effect of size on employee contributions into company stock. Table 8 contains these regressions. Controlling for firm characteristics (including level of firm diversification), increased advertising significantly increases employee investment into company stock. A two standard deviation move in advertising expenditures results in more than an 8 percent increase in company stock allocations. This supports the prediction of external exposure's effect on loyalty. In addition, Advertising drives out the effect of size (which was consistently significant in all previous regressions). This lends credence to the hypothesis that size may be merely proxying for external exposure to the firm.

5.2 Union Investing

One reason that unions develop is to create a forum to collectively present problems and discrepancies to the company. Union members may therefore, by self-selection, be those employees expected to be less tied to the firm. As well, one way that a union gains power is through its ability to collectively bargain, which hinges on its ability to make credible statements about the actions of its members. This ability is jeopardized when the members of the union are too loyal to the firm, as the members may be reluctant to take actions against the firm because of their loyalty. From self-selection and this collective bargaining effect, it is then predicted that union members are less loyal to the firm than non-union members, and so union employees would invest less than non-union employees in company stock.

The risk diversification prediction of union employee investment may be the opposite. Most unions provide a number of services to its members, including job search assistance in times of unemployment, and even in some cases direct payments during unemployed periods. As these benefits are specific to union members, and do not apply to non-union members, the labor income of union members would be somewhat insured by the union. This would cause their labor income stream to be less correlated with the company than non-union employees, and so in the case that they have these benefits, they might be expected to invest a larger percentage in company stock than non-union members.

The familiarity prediction is also different than that of loyalty. Under the assumption that given a certain job, union members work the same hours as non-union members, both sets of employees have equal exposure to the firm²³. With equal exposure to the firm, it is reasonable that union and non-union members have the same level of perceived information about the firm. Thus, familiarity predicts that union membership should not have an effect on employee investment into own-company stock.

Some unions bargain separately for retirement plans, and these plans are filed separately by the company. The union plans have roughly equivalent features as the non-union plans of the firm, including matching percentage and company match type (whether or not in company stock). In most cases, the union plans are outsourced through the same plan custodian, and so the investment options are also identical. I define the categorical variable *Union*, to take a value of one for solely union plans, and zero for all other plans. The predictions of the three explanations above on this coefficient are: loyalty, a negative coefficient, risk diversification, a positive coefficient, and familiarity, a zero value. The regressions are in Table 8. Controlling for other characteristics (including other sources of loyalty) union members do invest significantly less (about 6 percent less) than non-union members in company stock. This evidence supports

²³In the regressions, I control for both industry and wage, so in a sense I am controlling roughly for type of job.

the loyalty prediction, and contrasts the other two explanations. Even and Macpherson (2004) show that union membership as well decreases the probability that company stock is even offered as an investment option in the plan.

5.3 Transient Investing

In addition to filing separate plans for collectively bargaining employees, some firms also file separate plans solely covering hourly workers of the firm. This segregation of employees makes it possible to test the difference in investment patterns between hourly and salaried workers. Hourly workers are often those whose human capital is less specific, and whose labor income is less tied to the firm (ex. clerical workers). From a risk diversification framework, it is exactly these workers who should be most willing to invest in company stock. However, these are also the employees who are expected to be the most transient, and so who have, on average, the least contact with the firm. The prediction of loyalty is then opposite that of the risk diversification framework. As these more transient employees, on average, have likely developed a weaker tie to the firm, they should be less loyal. So, they should invest a smaller percentage in company stock than salaried employees.

The plans covering only hourly workers have roughly equivalent features as the other firm plans. I define the categorical variable, *Transient*, to take a value of one for plans solely covering hourly workers, and zero for all other plans. The regressions are in Table 8. In support of loyalty's prediction on employee behavior, hourly workers invest significantly less than salaried workers. These transient workers invest, on average, about 5 percent less in company stock than salaried workers.

5.4 CEO Tenure and Departures

When employees have a longer time to build a tie to their firm, they may have more loyalty to it. Thus, when a firm structure, hierarchy, and management stay constant over a long period of time, this allows employees a longer time over which to build loyalty to the company. To measure this effect, I use the tenure of the CEO in this position (*CEO Tenure*), and the CEO's tenure with the company (*Company Tenure*), to proxy for length of time over which the firm has been under one stable regime.²⁴ Long CEO tenures (and CEO tenures within the company) can also signal CEO loyalty,²⁵ which may lead other employees to be loyal as well. Thus, loyalty would predict that as employees of firms with a longer history of a stable regime have had more

²⁴The data on CEO characteristics is obtained from the COMPUSTAT Execucomp Database.

²⁵This is a noisy signal, as CEO tenure is probably correlated with past performance. I therefore control for past performance in these tests.

time to grow a tie to it, these employees should invest more in company stock. The regressions are in Table 9. The regressions in Table 9 and Table 10 are run controlling for future returns in addition to past returns to capture forecast ability of employees about CEO performance and following CEO departure. Future returns do not capture significant marginal variation. In support of loyalty's prediction, controlling for other characteristics, an increase in CEO tenure in office (and also tenure in the firm) has a significant effect on the amount employees invest in company stock. A two standard deviation increase in the tenure of the CEO increases amount invested in company stock by 4 percent.

Related to the length of time, I further test this by looking at the shock to employee loyalty when a CEO leaves the firm. Often times, CEO departures are concurrent with large changes in the firm (including divestitures and reorganizations), which may as well decrease employee loyalty. These changes may also be specifically directed to employees (ex. wage decreases and firings). Loyalty would then predict that when the CEO leaves a firm, this is a negative shock to employee loyalty, and so employees will decrease the amount invested in company stock. The regressions are in Table 10. I define the categorical variable, CEO Departure, to be equal to one in firms whose CEO left that year, and zero otherwise. Consistent with loyalty's prediction, when a CEO leaves the firm, the amount the firm's employees invest in company stock decreases significantly, by over 4 percent. The Execucomp Database also lists reasons for CEO departure, which it classifies into four categories. These categories are Resigned, Unknown, Retired, and Deceased. Table 10 includes regressions broken into these characteristics. Although the coefficients are, for most specifications, not distinguishable from each other, an interesting pattern emerges. The only effect that is consistently different from zero in both specifications is when the CEO Resigns. As well, the CEO resigning might be interpreted as the worst signal to the firm's stability of the four reasons. This suggests that consistent with the prediction of loyalty, within CEO Departures, the most disruptive to firm stability and so largest shocks to employee loyalty, may be driving changes in employee allocations, while the more exogenous departures may not have a large effect.

6 Cost and Benefit of Loyalty

6.1 Cost To Employees

There are a number of methods for estimating the cost to investors of concentrating their portfolios into company stock. Brennan and Torous (1999) define utility over final wealth, and use a certainty equivalent loss to estimate the loss from an undiversified portfolio. Meulbroek (2003) assumes an instantaneous CAPM and log normal returns to derive the loss to investors

from holding company stock instead of a more diversified portfolio. I am going to use a simple method of loss in Sharpe Ratio to estimate the cost of the loyalty bias to these employees in terms of foregone return for their given level of risk. I will use this method to also give a comparison of the cost of the loyalty bias to the cost of the home bias for domestic investors.

The loyalty bias in company stock investment is the value of overweighting in own-company stock due to loyalty to the firm, controlling for other firm and plan characteristics. Taking a conglomerate and stand alone employee and controlling for all other firm and plan differences, I measure this as the difference in their investment choices. I will use the regression estimates of Table 3 to do this. Thus, I will attempt to take employees in the same situation by roughly equating the characteristics of the firm and investment plan that they face, and measure the marginal effect of being in a stand alone or a conglomerate. This estimate is in Panel A of Table 11. For simplicity, I assume that the other assets of the plan are in a market index fund for both employees of stand alones and employees of conglomerates. To find the amount invested in company stock by the employees, I use the model estimates by plugging in the mean values of all plan and firm control variables and using a value of the Stand Alone variable of 0 for conglomerate employees and 1 for stand alone employees. I then calculate the average monthly return and standard deviation of monthly returns for the sample of conglomerate and stand alone firms, and for the value weighted market index, over my sample period. In addition, I calculate the covariance of monthly returns of the market index separately with both conglomerate firm returns and stand alone firm returns, and the average monthly return on the 3 month T-Bill (labeled Risk Free Rate). The Sharpe Ratios for the portfolios of the stand alone and conglomerate employees, in addition to the market index, are in Panel A. The difference in Sharpe Ratios of 0.0322 represents a 23 percent higher Sharpe Ratio²⁶ for employees of conglomerates than those in stand alones²⁷. I then calculate the Sharpe Ratio that an employee of a stand alone firm could achieve with the same investment allocation as an employee of a conglomerate. The difference in Sharpe Ratios between stand alone employee investment choice with and without the loyalty bias is 0.0243, which is an 18 percent difference in Sharpe Ratios. I multiply 0.0243 by the standard deviation of the stand alone employee's portfolio, which gives a measure of the foregone return incurred because of the investment bias of loyalty. Translating this into an annual return, the loyalty bias results in foregone returns of 1.7856 percent per year for stand alone employees.

²⁶In this analysis, neither outside wealth (beside the proxy for wage that is included as a rough proxy for wealth) nor correlation of labor income with company stock are included. Assuming wealth is distributed equally across stand alone and conglomerate employees, the difference in Sharpe Ratios between stand alones and conglomerates is likely to be even larger, as stand alone employees' labor income correlation with company stock return is likely higher than for employees of conglomerates.

²⁷Note that both employees of conglomerates and stand alones would be better off (in terms of Sharpe Ratio), by investing 100 percent in the market index. This is a feasible discretionary contribution allocation for almost all employees, as nearly every plan had a market index fund investment option.

To put this result into perspective, consider the cost to investors of the more familiar home bias. Using a similar analysis as above, the Sharpe Ratios of both the optimal domestic portfolio and the optimal global portfolio are in Panel B of Table 11. These figures are calculated from monthly returns using the sample 1990-2001 (Eun and Resnick (2004)). The difference in these Sharpe Ratios of .032 represents a 20 percent higher Sharpe Ratio attainable by considering global investment options. This translates into a cost to domestic investors of 1.68 percent per year of not investing in global equities. Comparing the cost of home bias to the cost of the loyalty bias calculated above, the loyalty bias results in foregone returns larger than those for home bias²⁸.

Consider an employee that is 45, has 20 years until retirement, and that defers 3320 dollars per year (sample average) into her retirement plan. The cost of the loyalty bias to her will be the compounded foregone return from investment. Assuming she faces until retirement the average monthly return of a stand alone firm since 1990²⁹, her amassed retirement income with and without the cost in foregone return per year of 1.79 percent are calculated in Panel C. From Panel C, she faces a decrease in retirement income of over 20 percent from the loyalty bias in investment.

6.2 Benefit To Firms

It is often exuded that loyal workers are a desirable characteristic and benefit to the firm. This benefit, however, is difficult to quantify. In this section I test for one possible benefit of loyal employees, an effect on wages. When employees have greater loyalty to a firm, it may be expected that the firm has more discretion than otherwise in decisions regarding the employees. This is because the employees are more reluctant to sever with the firm because of the stronger ties developed. I find that, controlling for other firm characteristics, the more loyal employees are to a firm, the lower wage the firm needs to pay them³⁰. Controlling for other firm characteristics, as the firm gets closer to a stand alone, so has increased employee loyalty, the wage per employee it must pay decreases. For instance, a conglomerate firm that becomes closer to a stand alone by decreasing firm diversification by one standard deviation (using the Herfindahl Index for sales concentration) is able to decrease its wage bill per employee by 3177 dollars ($t = 2.41$). This represents over a 4 percent decrease in wages per employee. As wage

²⁸The calculation of the cost of home bias did not include other international frictions such as exchange rate risk, government appropriation risks, capital controls, and tax burdens. Including these frictions would likely shrink the cost to domestic investors of the home bias (by reducing the benefit of foreign investment), resulting in a wider gap between the cost of the loyalty bias and home bias to these employees.

²⁹Other sample periods and assumed expected rates of return yield the same results.

³⁰These results are not included here, but are available upon request.

decisions across firms depend on a number of variables, this result is including firm fixed effects and year fixed effects. Thus, this result is picking up the change in diversification within a given firm over time, controlling for other firm characteristics. The result seems to suggest that a tangible benefit of lower wage costs may exist from having more loyal employees. There are difficulties in drawing conclusions from these regressions. First, there is a relatively small sample of firms for which wage expense data is available. Second, there are likely to be a number of other effects affecting wage determination, which may be correlated with the loyalty result found.

7 Conclusion

There has been a shift in employer sponsored retirement plans away from defined benefit plans into defined contribution plans. Along with this shift has been a shift in dependence on defined contribution plans, with over 50 percent of 401(k) participants having 401(k) assets as their sole financial investment. What, then, drives employees' portfolio decisions in these defined contribution plans. I find support for employee loyalty affecting this portfolio choice problem. I find systematic investment decisions of employees both between firms and within employees of the same firm that support the loyalty explanation. These contribution results cannot be explained by, and in some cases are even opposite to, that which would be predicted by a portfolio diversification against labor income explanation, an information based explanation, a takeover defense mechanism, or excessive extrapolation of past returns. The cost of this loyalty bias is potentially large for these employees, larger than the cost of home bias, and amounting to over a 20 percent loss in retirement income.

There are two paths of further research on loyalty in investment. The first is deciphering the mechanism that loyalty plays in individual choice. Loyalty could be effecting individuals' judgements through a direct increase in utility, or through a bias in probability forecasts (or both). Although the two may make observationally equivalent predictions in some contexts, they are important to distinguish between as loyalty may have a large effect on investor choice and investor wealth, and policy implications for dealing with loyalty effects caused by the two mechanisms can be drastically different. The second is identifying additional situations in which loyalty is likely to play a role in the individual's investment decision. For instance, Morse and Shive (2004) find that loyalty to country plays an important role in investment allocation. Specifically, they find that more patriotic countries have a more severe home bias in equity portfolio formation. Loyalty in investment, though, need not be constrained to equity portfolio decisions. Managerial decision making with respect to labor choice, location of investment capital, and external financing, are all decisions in which loyalty may play a substantial role.

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A Data Appendix

The main data used in this paper are employee withholdings of income into company owned retirement plans. The plans qualify under Section 401 of the Internal Revenue Code ("401(k) plans"), and in addition, the data are selected from those companies that give employees the option of investing in own-company stock. Most of the firms that offer company stock in their 401(k) plan must file annual reports with the SEC, called Form 11-k filings³¹. The main criteria of whether a plan must file a report is whether its interests constitute "securities"³². A simple way to identify this is that firms having plans that issue new shares of company stock to fund the plan, must file a Form 11-k³³.

I will be using four types of 11-k contributions: employee total discretionary contributions, employee discretionary contributions in company stock, total plan assets, and company stock in plan assets. The first two can be thought of as yearly flow variables, and the second two as accumulations. They are best illustrated in the following example (the example will also include the two different forms of company match). Consider an employee participating in year 5 of the retirement plan of company A. The plan offers three investment options: company stock, an S&P 500 Fund, and a T-Bill Fund. The participant chooses to defer 100 of income into the plan, investing 40 in the S&P 500 Fund, 40 in the T-Bill Fund, and 20 in company A stock. The employee's discretionary contribution to company stock and total discretionary contributions for year 5 are then 20 and 100, respectively. Assume that the company match for year 5 is 10. If the match is in company stock, then all 10 is invested in company A stock. If the match follows participant contributions, then 4 is invested in the S&P 500 Fund, 4 in the T-Bill Fund, and 2 in company A stock. In either case, the accumulation and appreciation (depreciation) of the investments of both employees and the company over the life of the plan is total plan assets. In this example, assuming that there is only one employee of the company, the plan assets at year 5 may be, for example, 400, with company stock in plan assets being, for instance, 100.

³¹Most 11-ks are filed pursuant to Section 15(d)-21 of the Securities Exchange Act of 1934.

³²A "security" is defined under the Act of 1933 and has been further clarified by case law such as SEC vs. Howey and the Teamsters vs. Daniels. A rule of thumb provided to me in a conversation with a business lawyer of the Chief Counsels in the division of Corporation Finance is that: when the plan is mandated to file an S-8 form (filed upon the issuance of new securities) for the retirement plan under the Act of 1933, its participants interests in the plan are considered "securities", so it must file an 11-k for the plan.

³³For a discussion of the regulatory issues surrounding Form 11-k, see Huberman and Sengmuller (2004), Appendix B.

Table 1:
Employer and Employee Summary Statistics

Panel A: This panel is a summary of employer retirement plan and company characteristics for the sample year 1999. Plan Assets is the aggregate of the current value of all participant accounts in the retirement plan. Company Stock is an aggregate market value of employer stock aggregated across all firms. Average Company Stock/Plan Assets is the average over all firms of company stock as a percentage of plan assets. Maximum Total Match is the maximum annual contribution that employers will contribute to the retirement plan on behalf of participants, as a percentage of participant income. Match In Company stock is the percentage of all firms in the sample that match in company stock. This variable is coded as a 1 if the company makes a matching contribution in company stock, and 0 otherwise. ME is in millions of dollars.

Panel A: Employer Characteristics						
Plan Characteristics						
	Conglomerate		Number of Firms	Stand Alone		Number of Firms
	Mean	St. Dev		Mean	St. Dev	
Plan Assets	653,214,357	2,729,587,701	199	191,270,202	634,010,558	64
Company Stock	222,062,544	1,407,759,623	199	44,940,580	109,709,730	64
Company Stock/Plan Assets	17.30%	17.61%	199	20.60%	18.80%	64
Maximum Total Match	3.35%	1.75%	231	4.05%	2.68%	50
Match In Company	32%			27%		
Company Characteristics						
ME	13,602	51,242	219	4,069	7,484	52
B/M	.6811	.5354	216	.7918	.7975	52
1 year past return	.08363	.6899	215	.3209	1.263	48
5 year past return	1.579	3.087	176	1.357	2.257	34
10 year past return	5.804	15.06	132	7.841	16.49	18
Correlations						
	Plan Assets	C Stock/P Assets	Maximum Total Match	Plan Assets	C Stock/P Assets	Maximum Total Match
Plan Assets						
C Stock/P Assets	.228			0.047		
Maximum Total Match	.020	.116		-0.110	-0.104	
Match In Company (0 or 1)	-0.044	.483	.079	0.127	0.493	0.025

**Table 1:
Employer and Employee Summary Statistics (Continued)**

Panel B: This table is a summary of employee characteristics. Data was collected on the number of plan participants (active and inactive) for a subset of firms using the *Department of Labor's Form 5500 Tapes*. The percent of income deferred by employees is estimated using (total company contribution/total employee contribution) for a given year and the Maximum Total Match of a company, and so is an upper bound of income contribution percentage by employees. The last two measures Total Annual Contribution/Total Plan Assets and Active Participants/Total Participants are both proxies for the number of years that the retirement plan has been offered (plan age).

Panel B: Employee Characteristics						
	Conglomerate			Stand Alone		
	Mean	St. Dev	Number of Firms	Mean	St. Dev	Number of Firms
Annual Contribution	3,718	1,312	25	2,978	1,357	29
Percent Of Income	7.9%	2.9%	199	8.2%	2.9%	50
Total Contribution/Plan Assets	17.0%	52.1%	199	19.4%	18.0%	64
Active/Total	79.8%	11.0%	21	81.9%	20.1%	26

Correlations						
	Match In Company	Contr/P Assets	Active/Total	Match In Company	Contr/P Assets	Active/Total
Match In Company						
Contr/P Assets	0.096			.047		
Active/Total	-0.133	0.060		.011	.431	
Annual Contr	0.126	-0.004	0.134	-.179	-.393	-.45

Table 2:
Conglomerates and Stand Alones: Case Study and Means Test

Panel A: This panel documents the effect of merging into Energy East Corp. (a conglomerate) on the percentage contributed into company stock by employees of Connecticut Energy Co. The first two rows of the table represent two different 401(k) plans of Conn. Energy (Plan 1 and Plan 2), while the third represents a 401(k) plan of Energy East (Plan 3). 1999 was a pre-merger year and so the 1999 column represents the percentage of 401(k) contributions directed to Conn. Energy company stock by Plan 1 and Plan 2, and Energy East company stock by Plan. In 2000, Energy East acquired, and formed a wholly owned subsidiary of Conn. Energy. Thus in 2000, the employees of all three plans had to invest in the company stock of Energy East, shown in the third column. The last column shows the percentage increase (decrease) in contributions to company stock (as a percentage of total contributions) following the merger.

Panel A: Merging Into Conglomerate-Effects On Contributions				
Retirement Plan	Employer In 1999 (Pre-Merger Employer)	Percentage In Company Stock		percent inc (dec)
		Pre-Merger 1999	Post-Merger 2000	
1	Conn. Energy	47.2%	22.6%	-52.2%
2	Conn. Energy	32.2%	8.2%	-74.6%
3	Energy East	18.2%	18.4%	1.2%

Panel B: This panel provides comparisons of the percentage of discretionary contributions allocated to company stock between conglomerate and stand alone firms for different sample periods. The first panel provides means tests of the differences in average percentages between the two types of firms for the different samples. Negative BE firms are not included for comparability to subsequent regressions (which control for $\ln(B/M)$). The results are unchanged.

Panel B: Means Test							
	Mean	St. Dev	St. Error	Num of Obs	Differnce (SA-C)	t-stat	p-value
1997-1998							
Stand Alone	16.086%	12.540%	1.647%	58	3.849%	2.299	.022
Conglomerate	12.237%	10.809%	.766%	199			
1999-2000							
Stand Alone	19.082%	18.096%	1.710%	112	6.509%	3.831	.000
Conglomerate	12.573%	15.655%	.724%	468			
1997-2000							
Stand Alone	18.060%	16.436%	1.261%	170	5.587%	4.390	.000
Conglomerate	12.473%	14.374%	.557%	667			

Table 3:
Determinants of Employee Allocation Into Company Stock

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The independent variable of interest in the regressions is Stand Alone, a categorical variable indicating the firm type of stand alone or conglomerate. It is equal to 1 if the company is a stand alone firm, and 0 if the company is a conglomerate. Also included in the regressions are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{B/M})$. In addition, where indicated, the beta and standard deviation of monthly returns for each firm are included. These characteristics are estimated at the 12 month time horizon. The natural logarithm of a proxy for wage is included, $\ln(\text{Wages})$. Wages are measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. Past returns of 1-, 3-, 5-, and 10-years are included. Industry fixed effects are at the 2 digit SIC code level. The sample period is 1997-2000, and year fixed effects are also included where indicated. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>							
Stand Alone	0.068*** (3.72)	0.084*** (3.89)	0.092*** (4.07)	0.094*** (4.13)	0.104*** (4.19)	0.127*** (4.33)	0.128*** (3.21)
$\ln(\text{ME})$	0.022*** (4.01)	0.022*** (4.10)	0.020*** (3.71)	0.021*** (3.75)	0.019*** (3.28)	0.020*** (3.00)	0.016** (2.11)
$\ln(\text{B/M})$	-0.029*** (-3.01)	-0.034*** (-3.28)	-0.040*** (-3.49)	-0.040*** (-3.40)	-0.038** (-3.30)	-0.037*** (-2.74)	-0.039** (-2.30)
$\ln(\text{Wages})$	-0.024 (-0.65)	-0.254 (-1.00)	-0.461 (-1.43)	-0.467 (-1.43)	-1.00*** (-3.49)	-0.951*** (-2.96)	-0.763*** (-2.99)
Com Match	0.075*** (2.86)	0.075*** (3.21)	0.072*** (3.02)	0.072*** (3.01)	0.071*** (2.90)	0.066** (2.57)	0.069** (2.41)
Beta			-0.001 (-0.13)	-0.003 (-0.32)	-0.003 (-0.30)	-0.008 (-0.70)	-0.000 (-0.03)
St Dev			0.033 (0.25)	0.062 (-0.47)	-0.026 (-0.21)	-0.052 (-0.41)	-0.503*** (-3.17)
$\ln(1+\text{R1})$				-0.001 (-0.08)			
$\ln(1+\text{R3})$					0.020** (2.06)		
$\ln(1+\text{R5})$						0.024** (2.09)	
$\ln(1+\text{R10})$							0.037*** (3.16)
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	831	831	787	785	704	618	431
Adj. R-squared	0.290	0.424	0.436	0.436	0.456	0.480	0.561

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 4:
Continuous Measures

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The first independent variable in the regressions is number of firm business segments as reported in COMPUSTAT segment database. The remainder of the diversification measures are firm Herfindahl Indices based on the segment measures of Employees, Sales, Assets, and Capital Expenditures. These Herfindahl Indices will be equal to 1 for stand alone firms, and will approach 0 as firms become more and more diversified. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{BE}/\text{ME})$. The natural logarithm of a proxy for wage is included, $\ln(\text{wage})$. Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. 1-year past returns are also included. The sample period is 1997-2000, and both year fixed effects and industry fixed effects at the 2 digit SIC code level are included in all regressions. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>					
Segments	-0.010*** (-2.93)				
Emp Herfindahl	0.042** (2.20)				
Sales Herfindahl	0.074** (2.29)				
Assets Herfindahl	0.050 (1.41)				
Cap Ex Herfindahl	0.084** (2.41)				
$\ln(\text{ME})$	0.025*** (3.62)	0.022*** (3.66)	0.023*** (3.57)	0.025*** (3.74)	0.027*** (3.42)
$\ln(\text{B}/\text{M})$	-0.028** (-2.32)	-0.031** (-2.52)	-0.029** (-2.45)	-0.033** (-2.54)	-0.028** (-2.05)
$\ln(\text{Wages})$	-0.827** (-2.41)	-0.867*** (-3.03)	-0.877*** (-2.77)	-0.925*** (-3.32)	-0.921*** (-2.81)
Com Match	0.078*** (3.09)	0.080*** (3.10)	0.077*** (3.02)	0.063** (2.35)	0.059** (2.24)
$\ln(1+\text{R3})$	0.018* (1.80)	0.017* (1.79)	0.017* (1.72)	0.027*** (3.11)	0.009 (0.92)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	704	702	702	621	614
Adj. R-squared	0.436	0.426	0.427	0.450	0.436

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 5:
Effect of Spin-offs and Mergers On Employee Contributions

Panel A: This table shows the effects of a spin-off on the percentage invested in own-company stock by employees. The percentage in own-company stock for the parent firm is calculated using the ending year balances from form 11-k for the year prior to the spin-off. The percentage in own-company stock for the spun-off firm is calculated using the 11-k ending year balance from the year of spin-off, and dependent on the number of months included in the initial spin-off year, also using the year following the spin-off. The spin-off data was provided by Spin-off Advisors, LLC.

Panel A: Spin-offs					
Spin-off Year	Spin-Off	Percentage	Parent	Percentage	Perc. Inc.(Dec.) After Spin-Off
1993	Albemarle	0.260535	Ethyl Corp	0.164961	57.94%
1995	Capital One Financial	0.358563	Signet Banking Corp.	0.234284	53.05%
2000	Edwards Lifesciences	0.171038	Baxter Int.	0.149825	14.16%
2000	Moodys	0.055944	Dun and Bradstreet	0.046505	20.30%
1998	R.H. Donnelly Corporation	0.097551	Dun and Bradstreet	0.086009	13.42%
1992	El Paso Natural Gas	0.124057	Burlington Resources	0.252509	-50.87%
1992	Control Data	0.005598	Ceridian Corp.	0.055203	-89.86%
1999	Nabisco Group	0.045196	RJ Reynolds	0.026043	73.55%
1997	Getty Petroleum Mktg.	0.091559	Getty Petroleum	0.02812	225.60%
2001	Acuity Brands	0.079	National Services Ind.	0.03449	129.05%
Average Inc.					44.63%

Table 5:
Effect of Spin-offs and Mergers On Employee Contributions (Continued)

Panel B: This table shows the effects of a merger on the percentage invested in own-company stock by employees. The percentage in own-company stock for the target firm in the pre-merger year is calculated using the ending year balances from form 11-k for the year of the merger, and depending on the number of months included in the merger year, the prior year. The percentage in own-company stock in the post-merger firm is calculated using the 11-k ending year balance from the same retirement plan now operated by the parent, and dependent on the number of months included in the merger year, using the year following the merger. The spin-off data was collected from the SDC Platinum database of financial transactions.

Panel B: Mergers					
Merger Year	Target	Percentage	Acquirer	Percentage	Perc. Inc.(Dec.) After Merger
1996	American Cyanamid Co.	0.316084	American Home Products	0.267904	-15.24%
2000	ITI	0.253181	Interlogix	0.027461	-89.15%
2002	Interlogix	0.046257	General Electric	0.056370	21.86%
1998	Atlantic Energy, Inc.	0.003300	Connectiv	0.001214	-63.22%
1997	Allwaste	0.202470	Philip Services	0.165044	-18.48%
1999	Allegiance	0.290116	Cardinal Health, Inc.	0.240437	-17.12%
2001	Bindley Western Industries	0.273775	Cardinal Healthcare	0.263791	-3.65%
2003	Syncor	0.664803	Cardinal Healthcare	0.539002	-18.92%
2002	Moore North America, Inc.	0.153618	Moore-Wallace Incorporated	0.134574	-12.40%
1999	Aeroquip-Vickers, Inc.	0.060409	Eaton	0.013953	-76.90%
1998	Echlin, Inc.	0.134815	Dana Corp.	0.100865	-25.18%
2001	Galileo International, Inc.	0.016695	Cendant Corporation	0.026283	57.43%
1993	Associates First Capital Paramount	0.064862	Ford	0.003670	-94.34%
1996	Harley Davidson Holiday Rambler	0.356448	Monaco Coach Corporation	0.004380	-98.77%
2002	Compaq	0.141529	Hewlett-Packard	0.117187	-17.20%
2002	Hewlett-Packard	0.216267	Hewlett-Packard	0.144022	-33.41%
1999	Nielsen Media Research	0.117312	Moore Corporation Limited	0.006512	-94.45%
1997	BDM International, Inc.	0.058142	TRW, Inc.	0.009668	-83.37%
2002	Immunex Corporation	0.136601	Amgen, Inc.	0.118079	-13.56%
1995	SciMed Life Systems, Incorporated	0.230003	Boston Sceintific Corporation	0.291709	26.83%
1999	Halter Marine Group	0.076282	Friede Glodman Halter, Inc.	0.051795	-32.10%
1999	Friede Goldman International, Inc.	0.045056	Friede Glodman Halter, Inc.	0.040065	-11.08%
1999	Motor Coils Manufacturing Company	0.126537	Westinghouse Airbrake Technologies, Inc.	0.055211	-56.37%
1999	MotivePower, Inc.	0.344227	Westinghouse Airbrake Technologies, Inc.	0.187082	-45.65%
2000	Connecticut Energy	0.472000	Energy East	0.226000	-52.12%
2000	Connecticut Energy	0.322000	Energy East	0.082000	-74.53%
Average Inc.					-36.20%

Table 6:
Alternative Explanations - Information and Perceived Information

Panel A: The dependent variable in the regressions is the future 1-year (FutRet-1), 3-year (FutRet-3), and 5-year return (FutRet-5) of company stock. The first independent variable ComStock% is percentage of employee discretionary contributions in company stock. The diversification measures are: Stand Alone, a categorical variable equal to 1 for the firm type of stand alone and 0 for a conglomerate, and Segments, the number of business segments reported. Both measures are constructed using COMPUSTAT Industrial Segments database. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, ln(ME) and ln(BE/ME). The natural logarithm of a proxy for wage is included, ln(wage). Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. 1-year past returns are also included. The term (ComStock%)*(Stand Alone) is the interaction between percentage invested in company stock and firm type. The term (ComStock%)*(Segments) is the interaction between percentage invested in company stock and number of firm segments. Year fixed effects and industry fixed effects at the 2 digit SIC code level are included. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

Panel B: Predicting Future Returns						
Dependent Variable:	FutRet-1	FutRet-1	FutRet-3	Fut1Ret-3	FutRet-5	FutRet-5
ComStock%	-0.279 (-1.53)	-0.099 (-0.42)	-0.930** (-2.23)	-0.576 (-1.26)	-0.613 (-0.72)	-0.012 (-0.01)
Stand Alone	0.023 (0.19)		0.271** (2.04)		0.543* (1.71)	
Segments		-0.005 (-0.38)		-0.029 (-1.22)		-0.040 (-1.04)
ln(ME)	0.004 (0.26)	0.008 (0.53)	-0.017 (-0.60)	0.000 (-0.01)	0.080 (1.48)	0.083 (1.63)
ln(B/M)	-0.032* (-1.94)	-0.032** (-2.02)	-0.032 (-0.92)	-0.030 (-0.92)	-0.079 (-1.20)	-0.086 (-1.38)
ln(Wages)	-0.727 (-0.56)	-0.852 (-0.63)	-2.974 (-1.12)	-2.795 (-0.98)	14.748*** (3.57)	18.699*** (4.76)
Com Match	0.087* (1.69)	0.090* (1.77)	0.211** (1.96)	0.226** (2.15)	0.181 (1.05)	0.175 (0.99)
ln(1+R1)	-0.142** (-2.13)	-0.146** (-2.22)	-0.310*** (-3.37)	-0.324*** (-3.50)	-0.602** (-2.59)	-0.574** (-2.47)
(ComStock%)*(Stand Alone)	0.029 (0.09)		-0.097 (-0.17)		-0.569 (-0.38)	
(ComStock%)*(Segments)		-0.051 (-1.12)		-0.099 (-0.95)		-0.161 (-0.79)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	746	700	203	746	700	203
R-squared	0.134	0.266	0.532	0.137	0.273	0.533

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 6:
Alternative Explanations - Information and Perceived Information (Continued)

Panel B: This panel presents a means test of the coefficients of variation of allocation percentage. The coefficient of variation of percentage allocated in company stock is measured as (standard deviation/mean) of percentage allocated to company stock. It thus requires at least two plan years of data to be calculated. The panel represents a means test of the difference between the average coefficient of variation for stand alone and conglomerate firms.

Panel B: Means Test of Coefficients of Variation							
	Mean Coeff of Var	St. Dev	St. Error	Num of Obs	Difference (SA-C)	t-stat	p-value
Stand Alone	0.395	0.279	0.039	51	-0.127**	-1.98	.049
Conglomerate	0.522	0.439	0.029	235			

Table 6:
Alternative Explanations - Information and Perceived Information (Continued)

Panel C: The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. Geographic familiarity is measured by Domestic Exposure. Domestic Exposure is constructed as the ratio of sales in domestic segments to total sales by all geographic segments. The diversification measures are: Stand Alone-Congl, a categorical variable equal to 1 for the firm type of stand alone and 0 for a conglomerate, Segments, the number of business segments reported, and a Herfindahl index based on segments net sales (equal to 1 for stand alone, approaches zero as firm becomes more diversified). All measures are constructed using COMPUSTAT Industrial Segments database. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{BE}/\text{ME})$. The natural logarithm of a proxy for wage is included, $\ln(\text{wage})$. Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. 3-year past returns are also included. Year fixed effects and industry fixed effects at the 2 digit SIC code level are included. The sample period is 1997-2000. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

Panel C: Geographic Familiarity

<i>Dependent Variable: Percentage In Company Stock</i>				
Domestic Exposure	0.022 (0.46)	0.039 (0.86)	0.029 (0.64)	0.030 (0.63)
Stand Alone		0.103*** (4.00)		
Segments			-0.009** (-2.53)	
Sales Herfindahl				0.075** (2.36)
$\ln(\text{ME})$	0.018*** (2.94)	0.019*** (3.10)	0.024*** (3.43)	0.023*** (3.39)
$\ln(\text{B}/\text{M})$	-0.039*** (-3.29)	-0.037*** (-3.16)	-0.029** (-2.39)	-0.029** (-2.42)
$\ln(\text{Wages})$	-0.853*** (-2.74)	-0.981*** (-3.37)	-0.841** (-2.55)	-0.901*** (-2.78)
Com Match	0.079*** (3.04)	0.069** (3.03)	0.076*** (3.00)	0.073*** (2.94)
$\ln(1+\text{R3})$	0.014 (1.14)	0.016 (1.61)	0.017 (1.42)	0.014 (1.34)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	660	660	660	658
Adj. R-squared	0.419	0.464	0.435	0.431

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 7:
Plan Characteristics and Managerial Incentives

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The independent variables of interest are # Options, Company First, Company Position, Company Description, Ownership Restriction, Brokerage, Debt to Equity, Sales Growth, and Governance Index. # Options is the number of investments options offered in the plan. Company First is a categorical variable equal to 1 if company stock is the first option listed, and 0 otherwise. Company Position is the position of company stock in the list of investment options. Company Description is a coded variable on a 5 point scale for the manner in which company stock is described in the plan (see text for details). Ownership Restriction is a categorical variable equal to 1 if there is a restriction in the plan on the percent of account balance that can be held in company stock, and 0 otherwise. Brokerage is a categorical variable equal to 1 if there is a brokerage account in the plan, and 0 otherwise. Debt to Equity is the debt to equity ratio of the firm. Sales Growth is the sales growth of the firm. Governance Index is the corporate governance index constructed by Gompers, Ishii, and Metrick. Stand Alone is a categorical variable equal to 1 if the company is a stand alone firm, and 0 if the company is a conglomerate. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, ln(ME) and ln(BE/ME). Com Match is a categorical variable equal to 1 if the company matches in company stock and 0 otherwise. The natural logarithm of a proxy for wage is included, ln(wage), as are past returns, and a constant (all unreported). The sample period is 1997-2000, and both year fixed effects and industry fixed effects at the 2 digit SIC code level are included in all regressions. Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>							
Stand Alone	0.101*** (4.14)	0.077** (2.38)	.071** (2.36)	0.078** (2.30)	0.101*** (4.13)	0.102*** (4.10)	.120*** (3.15)
ln(ME)	0.024*** (3.84)	0.029*** (2.68)	0.027*** (2.70)	0.031*** (2.99)	0.020*** (3.46)	0.021*** (2.98)	0.30** (2.53)
ln(B/M)	-0.033*** (-2.85)	-0.032* (-1.87)	-0.031* (-1.84)	-0.037*** (-1.55)	-0.038*** (-3.27)	-0.037*** (-2.97)	-0.033 (-1.44)
Com Match	0.062** (2.57)	0.052 (1.64)	0.056* (1.93)	0.056* (1.77)	0.073*** (3.07)	0.071*** (2.93)	0.052 (1.75)
# Options	-0.001** (-2.27)		-0.003 (-0.81)				
Company First		0.056** (2.45)					
Company Position			-0.007*** (-2.78)				
Company Description				0.005 (0.27)			
Ownership Restriction					-0.011 (-0.29)		
Brokerage					-0.084*** (-2.85)		
Debt to Equity						-0.001 (-0.15)	
Sales Growth						-0.000 (-0.46)	
Governance Index							0.002 (0.35)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	663	376	376	378	704	704	246
Adj. R-squared	0.484	0.467	0.495	0.459	0.464	0.456	0.479

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 8:
Advertising, Union Membership, and Transient Workers

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The three independent variables of interest are Advertising, Union, and Transient. Advertising measures the advertising expense of firms (in thousands of dollars). Union is a categorical variable equal to 1 for plans covering solely union workers, and 0 for all other plans. Transient is a categorical variable equal to 1 for plans covering solely hourly workers, and 0 for all other plans. The independent variable Stand Alone is a categorical variable indicating the firm type of stand alone or conglomerate. It is equal to 1 if the company is a stand alone firm, and 0 if the company is a conglomerate. Sales Herfindahl is a Herfindahl index based on segments net sales (equal to 1 for stand alone, approaches zero as firm becomes more diversified). Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{BE}/\text{ME})$. The natural logarithm of a proxy for wage is included, $\ln(\text{wage})$. Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. The sample period is 1997-2000, and both year fixed effects and industry fixed effects at the 1 digit SIC code level are included in all regressions. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>						
Stand Alone	0.122** (2.36)		0.066*** (2.68)		0.070*** (2.81)	
Sales Herfindahl		0.171*** (2.96)		0.060* (1.90)		0.064** (2.02)
$\ln(\text{ME})$	-0.010 (-1.24)	0.006 (0.58)	0.017*** (3.05)	0.019*** (3.27)	0.016*** (2.93)	0.019*** (3.22)
$\ln(\text{B}/\text{M})$	-0.067** (-3.88)	-0.040** (-2.34)	-0.034*** (-2.99)	-0.027** (-2.34)	-0.033*** (-2.89)	-0.026** (-2.25)
$\ln(\text{Wages})$	0.042 (0.52)	0.046 (0.57)	-0.027 (-0.40)	-0.048 (-0.73)	-0.082 (-0.61)	-0.064 (-0.92)
Com Match	0.093*** (2.78)	0.080** (2.14)	0.084*** (3.29)	0.085*** (3.22)	0.081*** (3.17)	0.082*** (3.11)
$\ln(1+\text{R}3)$	0.014 (0.88)	0.012 (0.77)	0.020* (1.91)	0.019* (1.77)	0.020* (1.93)	0.019* (1.78)
Advertising	0.116*** (4.12)	0.100*** (2.85)				
Union			-0.056** (-2.17)	-0.055** (-2.35)		
Transient					-0.056*** (-3.12)	-0.049*** (-2.86)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	164	164	704	702	704	702
Adj. R-squared	0.589	0.587	0.371	0.356	0.368	0.351

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 9:
CEO Tenure In Office and CEO Tenure In Company

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The two independent variables of interest are CEO Tenure and Company Tenure. CEO Tenure is a measure of the number of years the current CEO has been in office. Company Tenure is a measure of the number of years the current CEO has been with the company. Data on both CEO measures is obtained from COMPUSTAT Execucomp database. The independent variable Stand Alone is a categorical variable indicating the firm type of stand alone or conglomerate. It is equal to 1 if the company is a stand alone firm, and 0 if the company is a conglomerate. Segments is a measure of the number of segments in the firm. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{BE}/\text{ME})$. The natural logarithm of a proxy for wage is included, $\ln(\text{wage})$. Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. $\ln(\text{Past3Ret})$ and $\ln(\text{Fut3Ret})$ are the natural logarithm of the past 3- and future 3-year returns. The sample period is 1997-2000, and both year fixed effects and industry fixed effects at the 1 digit SIC code level are included in all regressions. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>				
Stand Alone	0.091*** (2.64)		0.149*** (3.26)	
Segments		-0.009* (-2.18)		-0.012* (-2.07)
$\ln(\text{ME})$	0.020** (2.24)	0.026*** (2.77)	0.018** (2.04)	0.025** (2.51)
$\ln(\text{B}/\text{M})$	-0.040*** (-2.94)	-0.026* (-1.83)	-0.059*** (-3.87)	-0.043** (-2.48)
$\ln(\text{Wages})$	-0.119 (-1.27)	-0.173* (-1.73)	-0.170** (-2.22)	-0.184 (-1.61)
Com Match	0.060** (2.19)	0.065** (2.33)	0.021 (0.79)	0.039 (1.25)
$\ln(\text{Past3Ret})$	0.020 (1.45)	0.019 (1.39)	0.013 (1.11)	0.011 (0.90)
$\ln(\text{Futt3Ret})$	-0.024** (-2.01)	-0.028** (-2.19)	-0.039** (-2.46)	-0.040** (-2.25)
CEO Tenure	0.003** (2.09)	0.003** (2.19)		
Company Tenure			0.003** (2.57)	0.002** (2.03)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	453	453	297	297
Adj. R-squared	0.416	0.404	0.563	0.521

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 10:
CEO Departures

The dependent variable in the regressions is percentage of employee discretionary contributions in company stock. The independent variables of interest are CEO Departures, and then reasons for departure Resigned, Unknown, Retired, and Deceased. CEO Departures is a categorical variable equal to 1 for a firm if its CEO left that year, and 0 otherwise. Resigned, Unknown, Retired, and Deceased are classifications of the terms of departure given by COMPUSTAT Execucomp database. The independent variable Stand Alone is a categorical variable indicating the firm type of stand alone or conglomerate. It is equal to 1 if the company is a stand alone firm, and 0 if the company is a conglomerate. Segments is a measure of the number of segments in the firm. Also included in the regression are the firm characteristics of natural logarithm of market equity and book-to-market equity, $\ln(\text{ME})$ and $\ln(\text{BE}/\text{ME})$. The natural logarithm of a proxy for wage is included, $\ln(\text{wage})$. Wage is measured as the average of the seasonally adjusted real industry wage (deflated to 1983 dollars) over the past 10 year period. Com Match is a categorical variable equal to 1 if the company matches in company stock and zero otherwise. $\ln(\text{Past3Ret})$ and $\ln(\text{Fut3Ret})$ are the natural logarithm of the past 3- and future 3-year returns. The sample period is 1997-2000, and both year fixed effects and industry fixed effects at the 4 digit SIC code level are included in all regressions. All regressions include an intercept (not reported). Standard errors are robust and clustered at the firm level. t-statistics calculated using the clustered standard errors are in parentheses.

<i>Dependent Variable: Percentage In Company Stock</i>				
Stand Alone	0.076*** (2.78)		0.077*** (2.77)	
Segments		-0.008** (-1.98)		-0.008* (-1.71)
$\ln(\text{ME})$	0.018** (2.53)	0.023*** (2.94)	0.017** (2.34)	0.022*** (2.75)
$\ln(\text{B}/\text{M})$	-0.023** (-2.01)	-0.016 (-1.31)	-0.023** (-1.97)	-0.017 (-1.33)
$\ln(\text{Wages})$	-0.106 (-0.23)	0.177 (0.35)	0.045 (0.08)	0.290 (0.49)
Com Match	0.068** (2.43)	0.070** (2.47)	0.070** (2.49)	0.071** (2.50)
$\ln(\text{Past3Ret})$	0.019** (2.40)	0.017** (2.10)	0.020** (2.46)	0.018** (2.09)
$\ln(\text{Fut3Ret})$	-0.003 (-0.39)	-0.003 (-0.38)	-0.004 (-0.54)	-0.004 (-0.48)
CEO Departure	-0.043** (-2.25)	-0.044** (-2.20)		
Resigned			-0.080** (-2.30)	-0.076** (-2.11)
Unknown			-0.037 (-1.09)	-0.054 (-1.52)
Retired			-0.026 (-1.60)	-0.030* (-1.68)
Deceased			-0.047 (-0.50)	-0.033 (-0.31)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	665	665	665	665
Adj. R-squared	0.686	0.678	0.687	0.678

*, **, *** denote significance at the 90%, 95%, and 99% level, respectively.

Table 11:
Cost to Employees of Loyalty

This table presents an estimate of the cost of loyalty to employees. Summary statistics were calculated on the sample of firms used in the paper from 1997-2000. The value weighted market index summary statistics were calculated from 1997-2000. The Risk Free Rate is the average one month yield on the 90-day T-Bill, over the period 1997-2000, and was obtained from the Federal Reserve historical files on T-Bill rates.

Panel A: Cost to Employees of Loyalty

	Stand Alone	Conglomerate	Market
ComStock% Estimated From Table 3 - Column 5	0.2130	0.1095	
Avg Monthly Return of Firm	0.0095	0.0129	0.0134
Avg Monthly Standard Deviation of Firm	0.1654	0.1449	0.0522
Avg Covariance of Monthly Return With Market	0.0230	0.0251	
Risk Free Rate	0.00425		
Sharpe Ratio	0.1366	0.1688	0.1753
Sharpe Ratio of Stand Alone Without Loyalty Bias	0.1609		
Cost of Loyalty in Sharpe Ratio Terms (C)	0.1609-0.1366 = 0.0243		
C*Standard deviation of Returns	0.00148		
Cost of Loyalty in Annualized Foregone Returns	1.7856%		

Table 11:
Cost to Employees of Loyalty (Continued)

This table presents an estimate of the cost of home bias to US domestic investors. The summary statistics are estimated from 1990-2001, and are taken from Eun and Resnick (2003).

Panel B: Cost of Home Bias		
	Domestic	Global
Avg Monthly Return	0.0126	0.0142
Avg Monthly Standard Deviation	0.0443	0.0451
Risk Free Rate	0.005502	
Sharpe Ratio	0.161	0.193
Cost of Home Bias in Sharpe Ratio Terms (C)	0.193-0.161 = 0.032	
C*Standard deviation of Returns	0.0014	
Cost of Home Bias in Annualized Foregone Returns	1.68%	

This table presents an estimate of the cost of loyalty to an employee. The employee is assumed to be 45, have 20 years until retirement, and to defer the sample average amount into her retirement account each year, 3320 dollars. The expected return of the Stand Alone firm and of the market are estimated using the period 1990-2003.

Panel C: Cost of Loyalty in Retirement Savings			
	Employee with Loyalty Bias	Employee without Loyalty Bias	Market
ComStock% Estimated From Table 3 - Column 5	0.2130	0.1095	
Market%	0.7870	0.8905	
Avg Monthly Return of Firm	0.0101	0.0101	0.0095
Avg Monthly Standard Deviation of Firm	0.1559		0.0443
Annual Deferred Saving	\$3320		
Average Annualized Risk Adjusted Return of Portfolio	0.1214	0.1214+.017856=.1392	
Amount of Retirement Savings After 20 Years	\$272,751	\$341,417	
Cost in Dollars	\$68,667		
Cost in Percent of Retirement Savings	20.112%		