

Employer Stock Ownership in 401(k) Plans and Subsequent Company Stock Performance

David Blanchett, CFA, CFP®
Head of Retirement Research
Morningstar Investment Management
david.blanchett@morningstar.com
(859) 492-5637

Abstract

Employer stock is still a common investment in 401(k) plans, although it is becoming less common. Past research has noted mixed findings regarding the potential benefits and costs associated with owning employer stock. In this paper we explore the historical relationship between employee stock ownership in 401(k) plans and subsequent company stock return on both a relative performance and risk-adjusted basis. Over the time period studied, we find that firms with comparatively high allocations to employer stock in 401(k) plans have tended to underperform those without.

Although available data is somewhat limited, our findings are compelling. While much of the underperformance can be attributed to the period of analysis---firms with higher company stock exposure tended to be larger-cap companies with lower betas during a period in which these attributes were unfavorable---the underperformance persisted even after adjusting for size, value orientation, momentum, and liquidity. Our findings appear to contribute to the already strong argument against employees holding significant company stock allocations.

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Employee ownership of company stock in a 401(k) plan could serve as way to align interests between an employee and employer, potentially leading to better future company performance. There are, however, a number of significant risks associated with owning employer securities, such as underdiversification, the high correlation between value of the employee's human capital, and potential fiduciary litigation for the employer. We review the existing literature on this topic and explore the historical relationship between different levels of employer stock ownership in 401(k) plans and the subsequent performance for publicly traded stocks in the U.S.

Our initial hypothesis was that companies with employees who had high allocations to employer stock within a self-directed 401(k) plan would outperform those without employer stock. This hypothesis would be consistent with some past research on similar subjects (largely focusing on ESOPs), as well as with the general notion that those individuals who decide to own individual securities (despite their noted risks) would only do so if they were knowledgeable investors and that by doing so they could generate higher returns. Our general findings were the exact opposite of our expectations, whereby companies with higher allocations to employer stock tend to underperform their peers the following year, both on a relative performance and risk-adjusted basis.

The relative underperformance of those companies with employees holding higher allocations to employer securities may largely be explained by the fact that they have market beta less than one (1) and a large-cap tilt. Even after correcting for these market factors, though, and after including other risk premiums such as value, liquidity, and momentum, we found this underperformance persists.

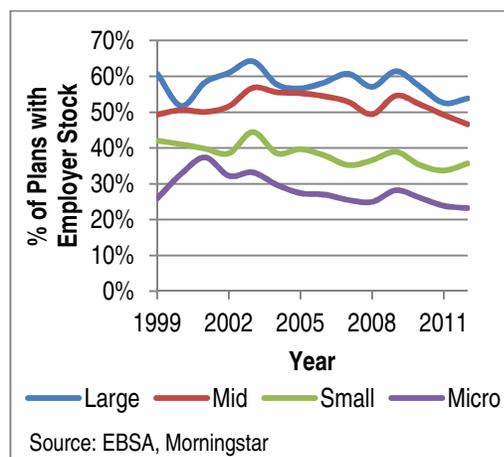
These findings have important implications for plan sponsor fiduciaries who allow participants to invest in employer stock in the 401(k) plan and those who are considering doing so in the future. In Section 1 we review current and historical employee stock ownership in 401(k) plans. In Section 2 we review some of the existing research and important concepts behind employee stock ownership. In Section 3 we introduce our data set of publicly-traded firms and explain our methodology and performance metrics. In Section 4 we explore the results, and in Section 5 we conclude.

1. Employer Stock in 401(k) Plans Today

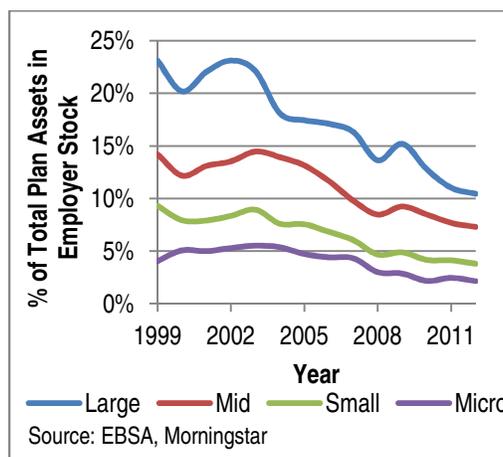
While employer stock is still common in 401(k) plans, it is becoming less so. We demonstrate this decline in Panels A and B in Figure 1. Panel A includes the historical percentage of plans having any incidence of ownership in employer stock by company market-capitalization groups and Panel B includes the total percentage of 401(k) assets invested in employer stock by company market-capitalization groups from 1999 to 2012. Within Figure 1 we define micro cap as a company with a market capitalization of less than \$200 million at the beginning of the year; small cap is \$200 million to \$1 billion; mid cap is \$1 billion to \$10 billion; and large cap is more than \$10 billion. The dataset is the same as the primary dataset used for the analysis, which is explained in greater detail in Section 3 of this paper.

Figure 1: Improving Trends in Employer Stock Ownership

Panel A: % of Plans with Employer Stock



Panel B: % of Total Assets in Employer Stock



This decreasing allocation to employer securities has been noted by others. For example, the Employee Benefit Research Institute (EBRI) finds an aggregate decrease in the allocation to employer stock from 19% in 1996 to 8% in 2010. Within our dataset we see an aggregate dollar-weighted reduction in the assets invested in employer stock from 17% at the beginning of 1999 to 10% at the end of 2011.¹ The decline in the total assets allocated to employer stock within 401(k) plans has been accompanied by the decreasing availability of employer stock as an investment option, which likely explains some of the decline. Wiatrowski (2008) notes in a *Bureau of Labor Monthly Review* that 70% of workers had the choice to invest in employer stock in 1985, but only 25% did as of 2008. There is an

¹ Our estimates regarding employer stock ownership in 401(k) plans are likely biased to some extent because we only include publically traded companies in our dataset. However, there are many firms that have no employer stock in the 401(k) plan because the employees are not able to purchase shares in the firm (e.g., the company is private). Therefore, the optimal test population would consist of those firms that could potentially make their stock available to employees, but either choose to or not do so.

aggregate decline in employer stock assets within our dataset; however, the availability of employer stock has been relatively consistent over the historical period reviewed (1999 to 2011) as demonstrated in Panel A of Figure 1.

One way many employees end up owning employer stock is because the company matches employee deferrals with employer stock as opposed to making a matching cash contribution. While this practice of limiting an employer match to company stock used to be relatively common, we find it is becoming increasingly rare. Research by Aon (2011) concludes that among plans that offer employer stock as an investment option, only 12% require matching contributions to be invested in employer stock down from 17% in 2009 (and down from 36% in 2005). Among those firms that still match with employer stock, 90% permit immediate diversification through the sale of the stock.

One of the most notable changes in employer stock allocations during the last decade is the reduction in plans with significant allocations to employer stock. For example, Douglass, Wu, and Ziemba (2004) reported that as of November 2001 Proctor & Gamble, Pfizer, Coca-Cola, and General Electric each had 94.7%, 85.5%, 81.5%, and 77.4% of 401(k) plan assets invested in employer stock, respectively. Within our dataset, approximately 5% of the companies had more than 50% of 401(k) assets invested in employer stock at the beginning of 1999, while less than 1% did by the end of 2011. Despite these improvements, there are still a few firms with significant allocations to employer stock in their 401(k) plans. For example, companies such as Exxon Mobil Corp., McDonald's, and Lowe's Companies, each had more than 50% of total 401(k) plan assets invested in that company's stock at the end of 2011.

As demonstrated in Figure 1 and broken down further in Table 1, the allocation by employees to employer stock varies across companies of different sizes. Large company plans tend to have the biggest and most significant allocations to employer stock, while 71.6% of companies included in our data with market capitalizations of less than \$200 million (defined as micro caps) had no employer stock allocations whatsoever. While fewer small companies have large allocations to employer stock, employer stock allocations among large companies is bimodal—either the option to invest in employer stocks doesn't appear to be available, or the allocation to employer stock is significant (greater than 20% of total 401(k) assets).

Table 1: Average Full-Period Employer Stock Allocation as a % of Total 401(k) Assets by Market Capitalization Groups: 1999-2012

		Market Capitalization			
		Micro	Small	Mid	Large
Average Employer Stock %	None	71.61%	61.62%	47.95%	42.03%
	0%- 5%	9.96%	10.58%	8.74%	5.11%
	5%-10%	5.78%	7.06%	8.02%	5.31%
	10%-15%	3.24%	5.15%	7.79%	6.75%
	15%-25%	4.10%	6.15%	10.27%	11.34%
	25%-40%	3.06%	5.39%	9.31%	12.61%
	40%-100%	2.26%	4.05%	7.93%	16.84%

Source: EBSA, Morningstar

2. Is Employee Ownership a Good Thing?

Prior to the Employee

The majority of research on employee ownership has found benefits to individual employee owners and the firms themselves from shared ownership, focusing mostly on ESOPs. One obvious potential benefit of employee ownership is a reduction in agency costs when employee owners become more interested in the long-term success of the company because they get to participate in the gains. Prior to the Employee Retirement and Income Security Act (ERISA) in 1974, employee ownership was limited to a few worker co-operatives (Freeman 2007). With the introduction of the 401(k) plan, and more direct company ownership vehicles such as Employee Stock Ownership Plans (ESOPs), employee stock ownership became more common. Benefits such as higher average compensation (Blasi, Conte, and Kruse, 1996) and greater job security (Blair, Kruse, and Blasi, 2000) have been noted among public companies with broad-based employee ownership. Kruse and Blasi (1997) summarize 11 studies evaluating comparison of companies with ESOPs and find increased productivity and profitability of those firms with ESOPs versus those without. Park, Kruse, and Sesil (2004) and Blair, Kruse, and Blasi (2000) find higher performance and survivability for public companies with employee ownership stakes.

The only research we can find that directly addresses the relationship between employer stock 401(k) ownership and subsequent performance is by Huberman and Sengmueller (2004), in Appendix D, that company stock investment does not predict investment returns over the next one or two years. They suggest this is due to mean reversion and the tendency to increase investment in company stock following positive returns (this momentum effect is touched on in a later section). We reach different conclusions using a larger dataset and a more robust procedure to define and quantify outperformance.

2.1 Explaining Employee Company Stock Ownership

Why do employees own company stock? There are a variety of reasons, for example, many companies sell their stock to employees at a discount or the company may match employee deferrals with company stock. While there appear to be some benefits that accrue to the employer and the employee, as discussed in the previous section, there are also notable costs. Mitchell and Utkus (2002), Poterba (2004), and Meulbroek (2005), among others, demonstrate substantial financial and welfare costs associated with employees who own company stock in defined contribution plans. There are a variety of behavioral effects that can explain the persistence of employee stock ownership in 401(k) plans despite these costs.

For example, Benartzi and Thaler (2001) find greater discretionary purchases of company stock when the company makes its matching contribution in company stock. This is due to an “endorsement effect,” whereby the employer match serves as an implicit endorsement for the employer stock. The number of available investment options in the plan may also affect the share of contributions allocated to company stock if participants invest $1/n$ of their contributions in company stock.

Benartzi and Thaler (2001) report that many 401(k) participants purchase company stock after returns have been high. Sengmuller (2001) and Choi, Laibson, Madrian, and Metrick (2003) also find evidence of the momentum effect, although Choi et. al (2003) suggest that these participants are momentum investors when making contribution decisions and contrarian investors when making trading decisions. Empirically, these trading decisions are consistent with Sirri and Tufano (1998), who find a similar asymmetry for mutual fund flows.

There is also “local bias” with respect to portfolio construction. Huberman (2001) finds that investors have a strong tendency to invest in stocks that are geographically proximate and familiar, which would explain the desire for an employee to invest the stock of his employer (since it should be both geographically proximate and familiar). This local bias has also been noted by Goetzman and Kumar (2008) and Ivkovic and Weisbenner (2005). Coval and Moskowitz (1999) find that U.S. investment managers exhibit a strong preference for locally headquartered firms in their portfolios.

One of the most frequently cited dangers associated with owning employer stock is that it is inefficient from a total wealth diversification perspective, because it blends an individual’s human capital and financial capital. Human capital can be defined simply as the “earnings power” of an individual based on that person’s unique set of education, skills, and experiences, while financial capital can be defined simply as one’s financial assets or investible wealth.² By using one’s financial capital (i.e., 401(k) balance) to purchase employer stock, an individual is effectively over-allocating to the future success of his or her current employer (or “doubling up” on their human capital risk

² For more information on human capital considerations when investing, see Ibbotson, Milvesky, Chen, and Zhu (2007).

exposures). This is especially noteworthy because individual stocks contain unsystematic risk unrewarded by the market.

Enron is a commonly cited example of the dangers of holding employer stock in a 401(k) plan. Before Enron collapsed in 2001, its employees invested 57.7% of the 401(k) plan assets in Enron stock (Douglas, Wu, and Ziemba, 2003). Enron stock subsequently fell in value by 98.8% (Enron Debacle). While the vast majority of those individuals who used to work at Enron have likely since found employment, the damage to the retirement portfolio of these employees was permanent and will materially affect the ability of many former Enron employees to retire comfortably.

While Enron's eventual demise may seem obvious with the benefit of hindsight (as do other market collapses, such as the technology bubble and the real estate bubble), before its demise Enron had been heralded by *FORTUNE* magazine for six straight years as "America's Most Innovative Company." Enron was well-regarded within the industry and had significant ownership by institutional investors. Few employees were aware of the accounting fraud taking place at the company, yet all the employees were affected when the company filed for bankruptcy. Therefore, while most individuals feel their company is safe, the unsystematic risk of holding a large investment in individual companies is greater than holding a more diversified portfolio.

2.2 Fiduciary Considerations

Up to this point we have explored the implications of owning employer stock within the 401(k) plan largely from the perspective of the employee. In this section we briefly review an important risk from the employer's perspective associated with making employer stock available within a 401(k) plan: fiduciary litigation.

There have been a number of lawsuits brought against plan sponsors related to employer stock in qualified plans—especially after a substantial decline in the employer stock price. In these so-called “stock-drop cases,” plan fiduciaries are accused of failing to protect participants from losing money in their company stock investment. The rationale is that investment committee members may have material non-public information regarding the company's financial condition given their senior positions within the firm. Jean Young, a researcher with Vanguard Center for Retirement Research, called company stock-drop cases “the biggest source of litigation in 401(k) plans,” a sentiment echoed by Gene Paranczak, an ERISA attorney and senior consultant with Vanguard Strategic Retirement Consulting (Vanguard).

Recent court rulings have provided mixed relief to plan sponsors. In *George v. Kraft Foods Global*, the Seventh Circuit Court of Appeals ruled that fiduciaries should consider whether their efforts to deliberate, decide, and document issues affecting plan investments are sufficient. The good news for plan sponsors is that the Second Circuit recently became the latest Circuit Court to adopt the “presumption of prudence” test for retirement plans holding company stock as an investment option based on *Gearren v. McGraw-Hill Cos., Inc.* (2d Cir. Oct. 19, 2011) and *Gray v. Citigroup, Inc.* (2d Cir. Oct. 19, 2011) In both cases, plaintiffs filing suit against the companies allege the 401(k) plan's fiduciaries violated ERISA by continuing to offer company stock as a plan investment option. According to the plaintiffs, 401(k) plan fiduciaries “knew or should have known” that each company's subprime mortgage exposure made the company stock a poor retirement plan investment. The Second Circuit observed that the presumption of prudence alleviates the pressure on plan fiduciaries to predict the future of the company stock fund's performance (Winston & Strawn). Dell and Nassau (2010) provide a more thorough examination of the “presumption of prudence” investment standard and fiduciary responsibility with respect to stock in defined contribution plans.

In terms of recent guidance, on May 18, 2010, the IRS and the Treasury Department released final regulations on Code §401(a)(35) investment diversification requirements for certain defined contribution plans with publicly traded employer securities. Defined contribution plans holding publicly traded employer securities are considered “applicable defined contribution plans” and are subject to the diversification requirements of Code §401(a)(35), which apply to employee contributions and employer contributions allocated to participants (or their beneficiaries) with at least three years of service. These plans must contain at least three investment options other than employer securities (which is already a general requirement for 404(c) compliance). A plan can't restrict a participant's right to invest in or to divest employer securities any more than it restricts any other plan investment options.

When considering offering company stock as an investment option in a retirement plan, there are a number of important considerations according to Murray and Singleton (2010). These include educating participants about diversification, asset allocation requirements, and the risks related to investments in company stock. Any restrictions on the transfer or sale of company stock should be monitored in the same manner as other plan investments. It may also be prudent to set limits on the amount of company stock a participant may hold in his or her account (e.g., limit the company stock to 20% of the account balance).

2.3. Data Set

In order to determine the relationship between employer stock ownership in 401(k) plans and subsequent company stock performance, we had to match two separate datasets: a database of 401(k) plan attributes compiled by the U.S. Department of Labor (DOL), and a database of historical stock returns and stock attributes obtained from Morningstar Direct.³ The DOL data on 401(k) plans is obtained through Form 5500s. The Form 5500 is an annual report that is required to be filed with the IRS and contains information about employee benefit plans, such as the type of plan (e.g., 401(k) plan, defined benefit plan, ESOP) the number of participants, assets, cash flows, etc.

For our analysis, we use Form 5500 data from 1999 to 2011. Since the Form 5500s for 2012 were not widely completed when the data was extracted from the DOL website (January 25, 2013), and are not technically due until the seventh calendar month after the end of the plan year, we used the end-of-year data for the 2011 dataset as a proxy for the beginning of year data for 2012. We use 1999 as the start year since that is the first year data is available on the DOL website; this is also the first year Form 5500 data was entered using electronic scanning.

We only include those retirement plans in our analysis that specifically designate themselves as 401(k) plans on the 5500 by selecting code 2J for question 8 on the Form 5500. The plan must also designate that it allows for self-direction (by selecting either 2F, 2G, and 2H for question 8), and a Schedule H form must be available that can be matched to the 5500. The Schedule H is a form that contains detailed information about the assets of the plan and is required by plans with approximately 100 or more participants at the beginning of the year.

We match the 401(k) plans to their respective company based on the Employer Identification Number (EIN) reported in the 5500. Our EIN database is compiled using data from Compustat and FactSet, where Compustat is used as the primary database and FactSet is used as the secondary database should a mismatch occur or data be unavailable from Compustat. We include all publicly traded stocks available in the Morningstar Direct universe, which is survivorship-bias free. The final listing location of most companies included in the analysis was the NASDAQ (45.5% of all companies included), followed by the New York Stock Exchange (29.3%), the Pink OTC Market (18.8%), the OTC Bulletin Board (3.6%), and the NYSE AMEX (2.8%).

In order for a company to be included in our analysis we must have monthly total return data and monthly market capitalization data for that stock for the entire year, as well as the percentage of total 401(k) assets invested in employer securities at the beginning of the year. We use total returns as the proxy for stock performance, which includes dividends and assumes dividends are automatically reinvested in shares of the issuing stock.

³ www.dol.gov/ebsa/foia/foia-5500.html

We are able to match a total of 4,871 different companies across the entire test period. The number of available companies increases from 1,688 in 1999, to 3,023 by 2005, and then decreases to 2,224 by 2012. The average number of companies is 2,598 each year. While our sample of ~2,500 companies per year represents less than 1% of the more than 450,000 401(k) plans in the U.S., the total assets in our plans is 38.4% of the average historical total assets in all 401(k) plans over the historical period⁴ and we cover 43.7% of the 51 million participants enrolled in a 401(k) plan as of 2011⁵.

⁴ Based on data obtained from www.icifactbook.org/fb_ch7.html

⁵ Based on data obtained from www.ici.org/policy/retirement/plan/401k/faqs_401k

3. Composite Portfolios

For each of our different tests, we group stocks into different portfolios that we call “composite” portfolios. The first set of composite portfolios considered, which are primary portfolio groups for the purposes of this analysis, are based on seven different levels of stock ownership within the 401(k) plan at the beginning of the respective calendar year: none (0%), .01% to 5.00%, 5.01% to 10.00%, 10.01% to 15.00%, 15.01% to 25.00%, 25.01% to 40.00%, and 40.01% to 100.00%. While some 401(k) plans report values that are off calendar year, the majority of plans report data on a calendar basis (approximately 95%) and therefore we assume that all plan data is based on the calendar year. The ownership portfolios are reconstituted annually and rebalanced monthly.

In an attempt to minimize any potential bias regarding how we construct the different ownership portfolios, we use three different weighting techniques: equal weight, market weight, and total participant count. For the equal weight technique we simply equally weight each stock in the ownership composite. The equal weight approach tilts the average and median market capitalization of the composite significantly toward small-cap and mid-cap stocks, since there are significantly more small- and mid-cap stocks in our universe than large-cap stocks.

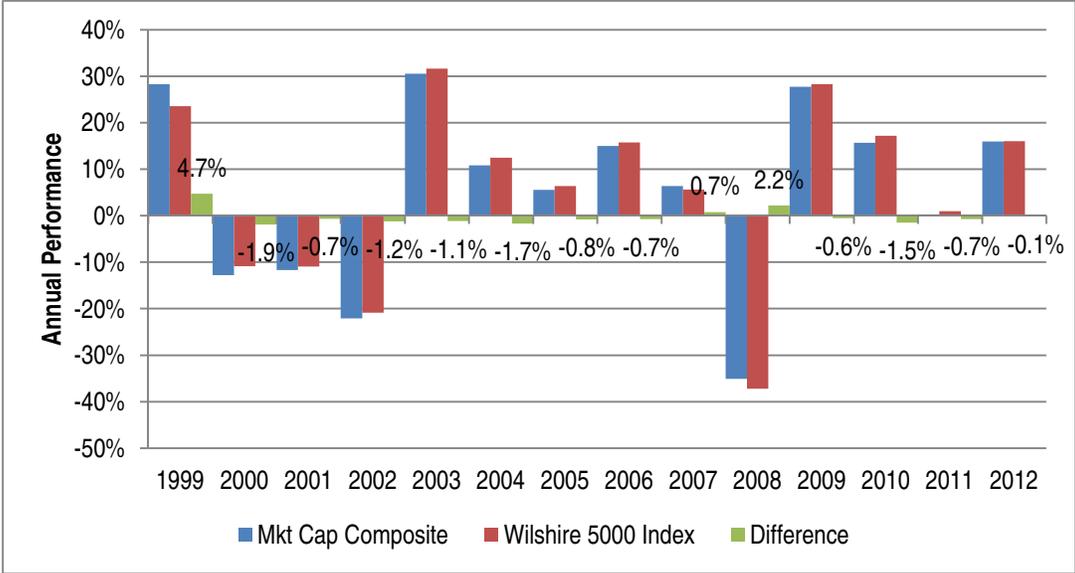
For the market weight technique each stock is weighted based on its market capitalization at the beginning of that month. This approach will significantly favor larger companies with larger market capitalizations. For example, there are some stocks with market capitalizations well in excess of \$100 billion within a given year. A company with a market capitalization of \$100 billion would be weighted 1,000 times more than the minimum company size (which is assumed to be \$100 million for the purposes of this analysis).

The final weighting method, total participant count, is introduced as an alternative weighting scheme to proxy the number of individuals making a choice within a plan. This choice framework is meant to imply that if more people are in a plan, and the allocation to employer stock is higher, more people think owning the company stock is a good idea (on average). We do not have the actual participant holdings, though, so while we know the average allocation to employer stock in the 401(k) plan may be higher, and that there are more participants in the plan, do not in fact know the shape of the actual distribution (i.e., the actual number of participants holding employer stock). We expect a plan with more participants to be a larger company, therefore, the participant count weighting scheme is relatively similar to the market capitalization scheme since some plans have significantly greater weight than others.

The stocks included in our dataset are relatively representative of the U.S. stock market from a historical performance perspective. In Figure 2, we include the annual returns of the market capitalization composite (which includes all stocks in the data set), the annual total returns of the Wilshire 5000 Index, and the difference between the two. The Wilshire 5000 had a slightly higher average arithmetic monthly return (.41% versus .40%) than our composite portfolio over the historical period; however, the difference is not significant at any reasonable level. The

correlation of the two monthly returns series is quite strong, at .994, and the market capitalization composite has a beta of .995 when compared to the Wilshire 5000.

Figure 2: Market Capitalization Composite Returns versus Wilshire 5000 Index



The equal-weight composite had the highest average performance among the three weighting schemes, at .93% per month over the historical test period. This high relative performance of the equal-weight composite can largely be attributed to the fact smaller companies tended to outperform larger companies over the historical time period (e.g., the average monthly return of the Wilshire 5000 was .41% versus .71% for the Russell 2000). The participant count composite had an average monthly performance of .73%.

3.1 Measuring the Impact

We use two different techniques to gauge the returns of the composite portfolios—relative performance and a five factor regression model. The first technique, relative performance, simply compares the return of a given composite portfolio to its respective composite aggregate benchmark. The relative performance results may be biased by the attributes of the stocks that comprise that composite (e.g., large companies tend to have higher allocations to employer stocks and therefore we would expect the higher employer stock allocation portfolios to have a large-cap tilt), so the second technique uses a factor regression in an attempt to control for different potential risk premiums that have been noted in past research.

For both tests, the return of the assumed market portfolios (R_{Mkt}) is based on the return of the entire universe of stocks using that respective weighting scheme. For example the market portfolio for the equal-weight weighting scheme is just the average performance of all available stocks. Using a different market portfolio for each of the three weighting schemes ensures the overall market beta (β_{Mkt}) is equal to approximately one for the composite market composition, and that any outperformance or positive alpha for one subgroup of stocks would mean underperformance or negative alpha for another. In other words, relative performance is a zero-sum game and five-factor alpha is approximately a zero sum game.

The factor regression approach used for this analysis begins with the three factor model as developed by Fama and French (1993), who demonstrate the existence of a small-cap premium (SMB) and value premium (HML) in addition to the market portfolio (R_{Mkt}). We also include a momentum (MOM) factor in our regression. Momentum is the effect reported by Jegadeesh and Titman (1993), among others, where stocks that have performed well (poorly) historically tend to continue to perform well (poorly). The risk-free (R_f) return, SMB factor, HML factor, and MOM factor values are obtained from the data library on Kenneth French's website.⁶

Our final regression factor is liquidity. A liquid stock is one where it is possible to trade large quantities of the stock quickly, at low cost, without affecting the price. Research by Pastor and Stambaugh (2003), among others, has demonstrated that illiquid securities tend to outperform more liquid stocks, which suggests the existence of a liquidity premium (LIQ). We use a monthly liquidity factor provided by Zebra Capital Management, LLC and described in Table 5 of Ibbotson, Chen, Kim, and Hu (2012) for this analysis. Our five-factor regression formula is noted in Equation 1.

$$R_c - R_f = \alpha_{5f} + \beta_{Mkt}(R_{Mkt} - R_f) + \beta_{SMB}(SMB) + \beta_{HML}(HML) + \beta_{MOM}(MOM) + \beta_{LIQ}(LIQ) \quad [1]$$

⁶ http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

In addition to the five-factor regressions discussed in the results section, we also ran three-factor regressions (excluding *MOM* and *LIQ*) and four-factor regressions (excluding *LIQ*). While a four-factor approach may be more common, the five-factor regression is more descriptive, yielding the highest adjusted R^2 value. We also believe including a liquidity factor given the different size and ownership levels of different firms. The results among the three different regression models are also very similar; therefore we only include the results from the five-factor regression in order to minimize redundancy.

4. Results

The relative performance and five-factor alphas for the seven employer stock ownership portfolios for the three different weighting schemes are included in Table 2. We find that neither the relative performance nor the five-factor alphas are statistically significant at the 5% level for any meaningful number of ownership composites. We do, however, find a statistically significant relationship (at the 5% level) with regards to the slope of the relative performance for the equal-weight and participant-count weighting schemes.

When calculating the slope, we assume the dependent variable for a given composite is the average of the given range (e.g., 17.5% would be the assumed employer stock 401(k) allocation for the 15% to 20% composite portfolio). We assume an employer stock ownership rate of 50% for the largest ownership group (40% to 100%), though, to better reflect the actual average within that composite over the historical period.

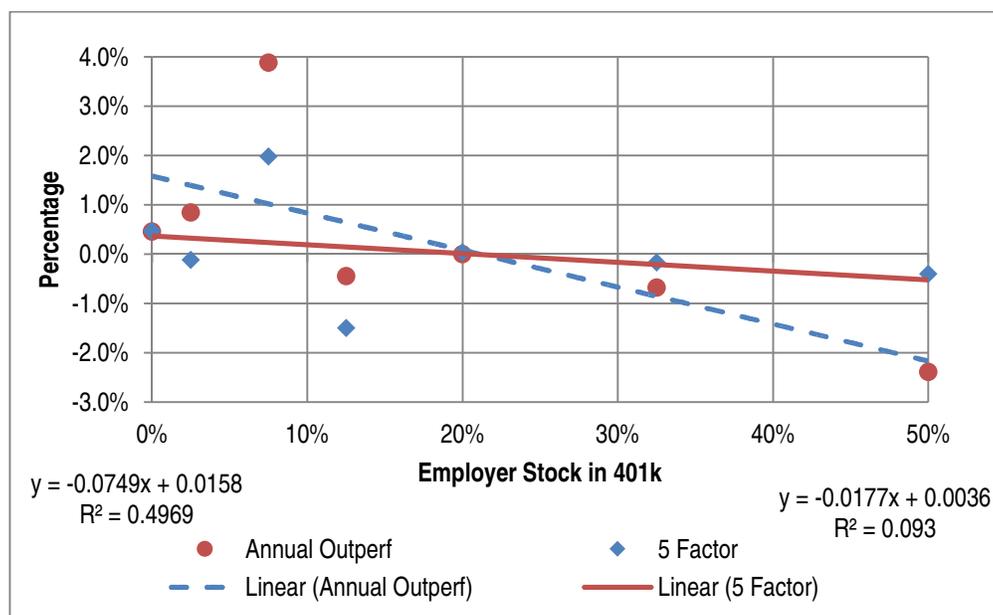
Table 2: Composite Results

Equal Weight Composite								
	Amount of Employer Stock at Beginning of Year							Slope
	None	0% ^{o-} 5%	5% ^{o-} 10%	10% ^{o-} 15%	15% ^{o-} 25%	25% ^{o-} 40%	40% ^{o-} 100%	
Outperformance	-0.20%	1.67%	2.17%	1.31%	0.77%	-0.79%	-2.49%	-0.07
	(-0.17)	(1.04)	(1.34)	(0.81)	(0.49)	(-0.40)	(-0.92)	(-3.06)
Adjusted R²	97.5%	93.1%	92.0%	91.8%	92.8%	89.0%	80.0%	65.3%
5 Factor α	-0.06%	0.59%	1.31%	0.54%	1.17%	0.01%	-0.36%	-0.02
	(-0.13)	(0.47)	(1.02)	(0.40)	(1.19)	(0.01)	(-0.26)	(-1.25)
Adjusted R²	99.5%	96.3%	95.7%	94.4%	96.7%	94.6%	90.3%	23.7%
Market Capitalization Composite								
	Amount of Employer Stock at Beginning of Year							Slope
	None	0% ^{o-} 5%	5% ^{o-} 10%	10% ^{o-} 15%	15% ^{o-} 25%	25% ^{o-} 40%	40% ^{o-} 100%	
Outperformance	0.02%	1.32%	5.93%	-0.13%	-0.33%	0.39%	-1.17%	-0.06
	(0.01)	(0.50)	(2.22)	(-0.05)	(-0.16)	(0.21)	(-0.56)	(-1.12)
Adjusted R²	94.7%	78.6%	68.4%	70.0%	82.4%	81.9%	77.4%	20.0%
5 Factor α	0.05%	1.27%	4.08%	-1.54%	-1.01%	-0.08%	0.87%	-0.02
	(0.05)	(0.47)	(1.67)	(-0.59)	(-0.49)	(-0.04)	(0.52)	(-0.34)
Adjusted R²	97.3%	79.5%	76.9%	75.2%	85.1%	83.6%	83.6%	2.2%
Participant Count Composite								
	Amount of Employer Stock at Beginning of Year							Slope
	None	0% ^{o-} 5%	5% ^{o-} 10%	10% ^{o-} 15%	15% ^{o-} 25%	25% ^{o-} 40%	40% ^{o-} 100%	
Outperformance	1.56%	-0.46%	3.55%	-2.52%	-0.42%	-1.62%	-3.50%	-0.09
	(1.59)	(-0.25)	(1.69)	(-1.15)	(-0.20)	(-0.69)	(-1.66)	(-2.16)
Adjusted R²	97.2%	90.6%	88.5%	83.2%	84.2%	76.0%	80.8%	48.3%
5 Factor α	1.46%	-2.20%	0.54%	-3.18%	0.06%	-0.31%	-1.71%	-0.02
	(1.84)	(-1.26)	(0.26)	(-1.37)	(0.03)	(-0.15)	(-0.92)	(-0.52)
Adjusted R²	98.1%	91.9%	89.7%	84.0%	86.9%	76.9%	83.5%	5.1%

This negative slope for the different composite groups varies by weighting approach, as do the overall results. Rather than just selecting a single approach to represent each ownership portfolio, e.g., the equal-weight approach because it tends to have the highest R², going forward we will average the monthly returns of each of the three approaches to get a “average composite” value for testing purposes. We do this to avoid any potential bias from selecting a single weighting method. While we acknowledge the average of averages is not necessarily any better than an average, an analysis using the equal-weight results would suggest a greater cost for employer stocks while a market- capitalization approach would note a smaller cost.

Figure 3 contains the average relative performance, the aggregate relative performance, and five-factor alphas for the seven different ownership portfolios. In Figure 3 we report a slope of -7.50% for the relative performance composite portfolios (with t statistic of -2.22). This suggests that if you were to have formed a portfolio of stocks with a 50% total allocation to employer securities in the 401(k), those firms would have underperformed historically by 3.75% per year on average. These results, while economically significant, are not statistically significant at the 5% level (given a p value of 7.7%). We also note a negative slope associated with the five-factor alpha (-.018, with a t statistic of -.72). This also suggests that companies with higher levels of company stock have historically underperformed their peers on a risk-adjusted basis, but by .18% for each 10% of the 401(k) invested in employer stock. The risk factor-adjusted results are not statistically significant at a meaningful level and are not as economically significant as the relative performance results.

Figure 3: Average Relative Performance and Five-Factor Alphas for Different Levels of 401(k) Company Stock Ownership

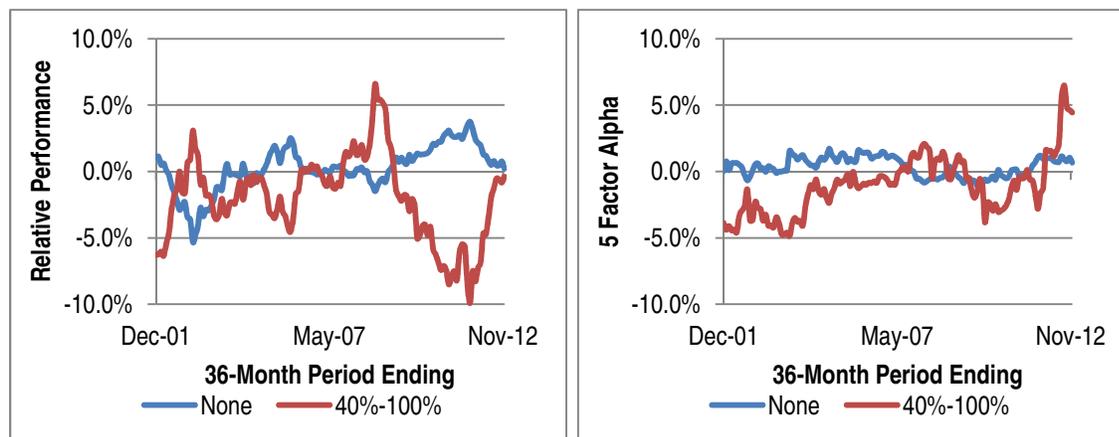


The primary five-factor regression analysis is based on the returns of the composite portfolios over the entire period (January 1999 to December 2012, 168 months). Another approach to estimate the potential relationship between employer stock 401(k) ownership and subsequent company stock performance would be to review rolling historical periods. This would allow us to better capture the potential dynamic risk factors of the composite portfolios as they change over time. We do this in Panels A and B in Figure 4, which include either the rolling average annualized 36-month arithmetic relative performance (Panel A) and the average annualized 36-month arithmetic five-factor for alpha the averaged composite portfolio for those companies with no employer stock in the 401(k) plan and those with 40%+ of the 401(k) assets invested in employer stock (i.e., the two extreme composite portfolios).

Figure 4: 36 Month Rolling Annualized Relative Performance and Five-Factor Alphas for the No Employer Stock and 40%+ Employer Stock Composite Portfolios

Panel A: Relative Performance

Panel B: Five-Factor Alphas

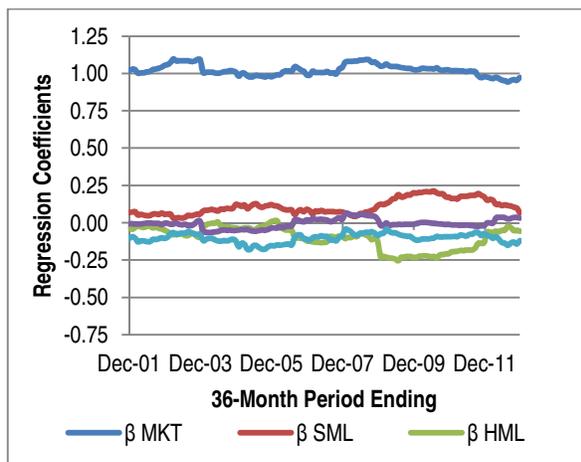


The differences between Panel A and Panel B of Figure 4 are relatively striking. First, the rolling relative performance varies significantly over the historical period for the 40%+ 401(k) employer stock ownership composite portfolio, ranging between -9.90% to +6.58%. The range in five-factor alpha is lower, between -4.85% to +6.48%, where the downside is significantly reduced. However, the average relative underperformance and negative five-factor alpha for the 40%+ employer stock 401(k) allocation composite are both significant at the 1% level with a value (t statistic) of -2.05% (-7.35) and -1.10% (-5.80), respectively. The no employer stock composite has an average relative (out)performance of +.36% (5.83) and five-factor alpha of +.25% (1.71). Again, it is worth noting that relative performance is approximately a zero-sum game within the scope of the analysis; therefore, if the 40%+ employer stock portfolios dramatically underperforms, some other employer stock composite portfolio would need to outperform to make the aggregate relative performance an approximate zero sum.

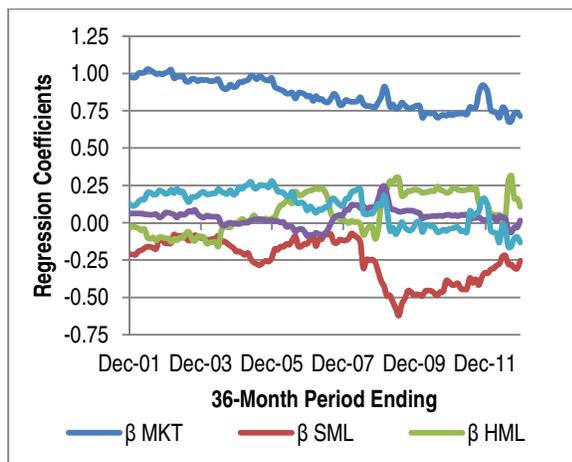
In Figure 5, we include the regression coefficients (betas) for the five different factors included in the rolling regressions, for the average composite portfolio (which is based on the average monthly return of the equal weight, market capitalization, and participant count composites) for those companies with no employer stock and those with 40% or more of the 401(k) plan invested in employer stock.

Figure 5: Rolling 36-Month Five-Factor Regression Coefficients

Panel A: No Employer Stock Composite



Panel B: 40%+ Employer Stock Composite



In Figure 5 we note a relatively constant market beta (β_{Mkt}) for the no employer stock composite and relatively insignificant tilts toward small, value, momentum, and liquidity. In contrast, the 40%+ employer stock portfolio has a decreasing market beta (β_{Mkt}), a clear large-cap bias (negative β_{SMB} weight), and β_{HML} , β_{MOM} , and β_{LIQ} values that are more volatile than the no employer stock portfolio, but not significant in an economic sense when averaged over the entire period.

The β_{Mkt} weight for the 40%+ employer stock 401(k) composite averages .86 in Figure 5 (which is very similar to the full period β_{Mkt} of .85). If we run a regression using the average β_{Mkt} on the average of the different employer stock ownership levels in the composite portfolios, we get a slope of -.46 (with a t statistic of -2.92). This suggests that a composite of portfolios with a total allocation to employer stock of 40%+ in the 401(k) would have a β_{Mkt} of .82. Using the basic CAPM equation, assuming a risk-free rate of 4% and an arithmetic equity-risk premium 6%, this company (with a 40%+ employer stock 401(k) allocation) would be expected to underperform by 1.1% per year, on average, assuming this historical relationship persists into the future.

In addition to β_{Mkt} less than 1.0, the 40%+ employer stock composite also has a clear large-cap bias (i.e., negative β_{SMB}). This likely stems from the fact that larger companies are more likely to have higher allocations to employer stock (note Table 1); however, this relationship persists across the three different composite weighting schemes. The β_{SMB} coefficient for the average full-period regression composite is -.69 (with a t statistic of -6.24). This negative β_{SMB} coefficient is especially important since the small-cap premium (SMB) has averaged +3.24% per year from January 1926 to December 2012.

4.1 The Impact of a Change

Up to this point in our analysis we have found there has historically been a negative performance relationship associated with employee stock ownership within the 401(k) plans and subsequent relative stock performance. While the statistical significance of the relative underperformance and the negative five-factor alpha varied based on the given test and weighting scheme, in every case the relationship was negative. This strongly implies that there is a “cost” associated with employees owning employer stock from a future performance perspective, not a benefit.

One common concern among plan sponsors that wish to potentially minimize or phase out employer stock in a 401(k) plan is the potential impact on stock price. Forcing employees to sell company stock not only sends a negative signal to the stock market in some sense (if the company doesn’t want their employees buying their stock, why should you?), but it also could put downward pressure on the stock price resulting in future underperformance.

In order to better understand the implications associated with changes in the overall allocations to employer stock within a 401(k) plan, an additional analysis was conducted where we grouped stocks into composites based on the unexpected change in the company stock allocation in the 401(k) plan over the previous year. We specifically look at unexpected change in the allocation to employer stock in the 401(k) plan, or the change that is not a direct result of the relative performance of the employer stock to the non-employer stock portion. This enables us to better capture the actual effect of decisions made by participants versus changes based entirely on different returns.

For example, if we assume the employer stock allocation for a company at the beginning of the previous year ($ER401k\%_{t-1}$) was 20%, the return of employer stock ($ERRet_{t-1}$) during the year was +50%, and the return for the non-employer portfolio ($PortRet_{t-1}$) was +10%, we would expect the employer stock to increase to 25.4% of the total 401(k) balance at the end of the year.⁷ If the actual ending employer stock allocation ($ER401k\%_t$) was 40.0%, the overall allocation to employer stock would have increased by more than we would have expected given the relative performance of the employer stock and the non-employer stock portfolio. This would suggest that the participants within the plan had increased their allocation to employer stock, on average.

Using equation 2, we can determine the unexpected change in the employer stock ownership in the 401(k) plan over the previous year. This calculation allows us to create composite portfolios of stocks based on different degrees of changes of employer stock ownership within the 401(k). For equation 2, we assume the return of the non-employer stock portfolio ($NonER401k\%_{t-1}$) is 50% S&P 500 and 50% Barclays Aggregate Bond Index. This assumption is consistent with the findings of Benartzi and Thaler (2001), who note that the non-employer stock allocation in a plan

⁷ We acknowledge the actual change will depend on a significant amount of other factors, such as the differences in contributions versus account balances, when monies are invested, etc.

tends to be roughly split between stocks and bonds, regardless of incidence of employer stock ownership within the plan.

$$\left(\frac{ER401k\%_t \left((1+ER401k\%_{t-1}) * ERRet_{t-1} \right) + \left((1+NonER401k\%_{t-1}) * PortRet_{t-1} \right)}{\left((1+ER401k\%_{t-1}) * ERRet_{t-1} \right)} \right) - 1 \quad [2]$$

Our composites are based on the unexpected change in employer stock from the previous year, i.e., whether the allocation to employer securities in the 401(k) is increasing, decreasing, or approximately the same year-to-year. In order to minimize the noise associated with the estimated change⁸, we require the absolute change in the employer stock allocation be greater than 2%. For example, a change in total allocation to employer securities from 2.0% in year 1 to 3.5% in year 2 would not be sufficient to result being categorized as an increase since it is only an absolute change of +1.5%. We also require the percentage change to be more than 20% of the previous allocation to employer stocks. For example, if the previous allocation to employer stock was 25%, the absolute change would need to be +/- 5% to be deemed significant.

We then categorize the stocks into one of three groups: Increase (where the allocation to employer stocks increased more than expected), Decrease, and No Significant Change. We create composite indexes using the three different weighting approaches and then take the average monthly performance of each weighting scheme to develop our aggregate composite index.

We find that those companies that tend to have consistent levels of employer stock in the 401(k) plan (the No Significant Change group) tend to subsequently outperform those with an unexpected change on a risk-adjusted basis, either positive or negative, among all companies holding employer stock in the 401(k) plan. The annualized five-factor alpha (t statistic) for the No Significant Change was .93% (1.90) versus -1.79% (-1.48) for the Increase Group and -1.57% (-.83) for Decrease group⁹. This suggests that an unexpected “change” (i.e., one that can be fully attributed to the return differential in the employer stock and non-employer stock assets) has not been good for future performance.

Focusing only on whether there was an unexpected change in the employer stock allocation in the 401(k) plan may not provide a complete picture as to the reasons for the change. As noted in the Literature section, company stock investors tend to be momentum investors. This means employees tend to purchase (or increase their allocation to) company stock after it has outperformed and sell company stock after it has underperformed. In an attempt to control for these momentum investors, we add an additional filter to our analysis where we rank the annual

⁸ Especially given the inherent imprecision of our unexpected change methodology

⁹ We only report the five factor alpha given the divergent market factors of the three groups.

performance of each of the stocks in our database over the year. Those stocks in the worst 30th performance percentile are defined as “Below Average” performers for the previous year and those stocks whose performance in the best 30th percentile are defined as “Above Average” performers for the previous year.

For this test we loosen our restrictions within equation 2 to a 1% absolute change and a 10% relative change. We do this in order to increase our sample size. For our analysis we only focus on those companies that had an unexpected Increase or Decrease in the allocation to employer stock in the 401(k) and relative performance over the previous year that was Below Average or Above Average. In this respect we’re focusing on the “four corners” of the nine possible combinations, since each of the five “average” scenarios are excluded.

We find the two momentum groups have the lowest five-factor alphas (t statistics), with those companies with Above Average past performance and an Increase in the employer stock allocation having an annualized five-factor alpha of -3.00% (-.95) and the Below Average/Decrease having an annualized five-factor alpha of -3.78% (-1.95). In contrast, those plans that saw a reduction in employer stock (Decrease) yet above average performance outperformed by 5.70% (1.98) and the Below Average/Increase was -1.86% (-.73). These findings suggest that a “non-momentum” approach is optimal to reducing the allocation to employer securities in a 401(k), whereby participants are forced to reduce their allocations after the company stock has done well, versus after performing poorly.

5. Conclusions

There is still significant investment in employer stock by participants in 401(k) plans today, although we have seen a marked decrease over the past decade. While a few studies have noted potential gains to employees and companies from “shared ownership,” the majority of research suggests that from a financial planning perspective employer stock is not a prudent investment for the average 401(k) participant. In this paper we reviewed relevant literature on the subject and performed an analysis to determine the historical relationship between employer stock ownership in 401(k) plans and subsequent company stock performance. We note a negative relationship, whereby firms with employees who have higher allocations to employer stock in 401(k) plans have tended to underperform those without.

This underperformance can primarily be attributed to two factors. First, companies with higher allocations to employer stock in their 401(k) plans tend to have a market beta that is less 1.0, and therefore have underperformed given a positive equity-risk premium. Second, these companies tend to have a large-cap tilt and sacrifice the small-cap premium. We note a slope of -7.5% for future annual relative market performance (as a percentage of 401(k) plan assets invested in employer securities) and an annual five-factor alpha of -1.8% over the entire period of the analysis (i.e., a company that has a 50% allocation to employer stock would have underperformed by 3.75% on an absolute basis and .90% on a risk-adjusted basis). Using 36-month rolling historical five-factor regressions we note an average underperformance for those companies with 40% or more invested in employer securities to be -2.05% and a five-factor alpha of -1.10%.

Although available data is limited, these findings have implications for 401(k) plan fiduciaries, especially plan sponsors. These findings contribute to the already strong argument against employees holding significant company stock allocations and reinforce our stance that employers should minimize (or even eliminate) participant investment in employer securities.

References

- Aon Hewitt. 2011. "Trends & Experience in Defined Contribution Plans Report." Retrieved from www.aon.com/attachments/thought-leadership/2011_Trends_Experience_Executive_Summary_v5.pdf.
- Benartzi, Shlomo. 2001. "Excessive Extrapolation and the Allocation of 401(k) Accounts to Company Stock." *Journal of Finance*, vol. 56: 1747-64.
- Benartzi, Shlomo, and Richard H. Thaler. 2001. "Naïve Diversification Strategies in Retirement Savings Plans." *American Economic Review*, vol. 91, no.1: 79-98.
- Blair, Margaret, Douglas Kruse & Joseph Blasi. 2000. "Is Employee Ownership an Unstable Form? Or a Stabilizing Force?" In Thomas Kochan and Margaret Blair, Eds., *Corporation and Human Capital*. Washington, DC: The Brookings Institution.
- Blasi, Joseph, Michael Conte & Douglas Kruse. 1996. "Employee Stock Ownership and Corporate Performance Among Public Companies." *Industrial and Labor Relations Review*, vol. 50, no. 1: 60-79.
- Choi, James J., David Laibson, Brigitte C. Madrian, and Andrew Metrick. "Optimal defaults." *The American Economic Review*, vol. 93, no. 2 (2003): 180-185.
- Coval, Joshua D., and Tobias J. Moskowitz. 1999. "Home Bias at Home: Local Equity Preference in Domestic Portfolios." *Journal of Finance*, vol. 54: 1-39.
- Dell, Michael J. and Michael J. Nassau. 2009. "Stock Drop Cases and the Presumption of Prudence: When It Applies, How It Is Overcome." *Journal of Retirement Planning*, November/December: 13-24.
- Douglass, Julian, Owen Wu, and William Ziemba. 2004. "Stock Ownership Decisions in Defined Contribution Pension Plans." *The Journal of Portfolio Management*, vol. 30: 92-100.
- EBRI Issue Brief. 2011. "401(k) Plan Asset Allocation, Account Balances, and Loan Activity in 2010". Retrieved from: www.ebri.org/publications/ib/index.cfm?fa=ibDisp&content_id=4968.
- "Enron Debacle Will Force Clean Up of Company Stock Use in DC Plans," *IOMA's DC Plan Investing*, Dec. 11, 2001.
- Fama, Eugene F., and Kenneth R. French. 1993. "Common risk factors in the returns on stocks and bonds." *Journal of Financial Economics*, vol. 33, no.1: 3-56.
- Freeman, Steven F. 2007 "Effects of ESOP Adoption and Employee Ownership: Thirty years of Research and Experience". http://repository.upenn.edu/cgi/viewcontent.cgi?article=1001&context=od_working_papers.
- Goetzmann, William N., and Alok Kumar. 2008. "Equity Portfolio Diversification." *Review of Finance*, vol. 12, no. 3: 433-463.
- Huberman, Gur. 2001. "Familiarity Breeds Investment." *Review of Financial Studies*, vol. 14, no. 3: 659-680.
- Huberman, Gur, and Paul Sengmueller. 2004. "Performance and employer stock in 401 (k) plans." *Review of Finance*, vol. 8, no.3: 403-443.
- Ibbotson, Roger G., Zhiwu Chen, Daniel J.-Y. Kim, and Wedndy Hu. 2013. "Liquidity as an Investment Style." Forthcoming in the *Financial Analysts Journal*.

Ibbotson, Roger G., Moshe A. Milevsky, Peng Chen, CFA, and Kevin X. Zhu. 2007. "Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance." The Research Foundation of CFA Institute.

Ivković, Zoran, and Scott Weisbenner. 2005. "Local does as local is: Information content of the geography of individual investors' common stock investments." *The Journal of Finance*, vol. 60, no.1: 267-306.

Jegadeesh, Narasimhan, and Sheridan Titman. *Profitability of momentum strategies: An evaluation of alternative explanations*. No. w7159. National Bureau of Economic Research, 1999.

Kruse, Douglas & Joseph Blasi. 1997. "Employee Ownership, Employee Attitudes, and Firm performance: A Review of the Evidence." In Daniel J.B. Mitchell, David Lewin, and Mahmood Zaidi, eds., *Handbook of Human Resource Management*. Greenwich, CT: JAI Press, 1997, pp. 113-151.

Liang, Nellie and Scott Weisbenner. 2002. "Investor Behavior and the Purchase of Company Stock in 401(k) Plans: The Importance of Plan Design." Working Paper 9131. www.nber.org/papers/w9131.

Meulbroek, Lisa. 2005. "Company Stock in Pension Plans: How Costly Is It?" *Journal of Law and Economics*, vol. 48, no. 2: 443-474.

Mitchell, Olivia and Stephen Utkus. 2002. "Company Stock and Retirement Plan Diversification"
https://institutional.vanguard.com/iam/pdf/CRR_company_stock.pdf

Murray, Ann E. and Leah Morgan Singleton. 2010. "Focus On...Compensation Offering Company Stock as an Investment Option in Retirement Plans." Retrieved from:
www.mckennalong.com/media/site_files/1521_Compensation%20Offering%20Company%20Stock%20As%20An%20Investment.pdf.

Park, Rhokeun, Douglas Kruse & James Sesil. 2004. Does employee ownership enhance firm survival?" In Virginie Perotin and Andrew Robinson, eds., *Advances in the Economic Analysis of Participatory and Self-managed Firms*, Vol. 8. Greenwich, CT: JAI Press

Pástor, Luboš, and Robert F. Stambaugh. 2003. "Liquidity Risk and Expected Stock Returns." *Journal of Political Economy*, vol. 111, no. 3 (June): 642–685.

Payne, G. Tyge, George S. Benson, and David L. Finegold. 2009. "Corporate board attributes, team effectiveness and financial performance." *Journal of Management Studies*, vol. 46, no.4: 704-731.

Poterba, James M. 2004. "Portfolio Risk and Self-Directed Retirement Saving Programmes." *The Economic Journal*, vol. 114, no. 494: C26-C51.

Renders, Annelies, Ann Gaeremynck, and Piet Sercu. 2010. "Corporate-Governance Ratings and Company Performance: A Cross-European Study." *Corporate Governance: An International Review*, vol. 18, no. 2: 87-106.

Sengmuller, Paul. 2002. "Performance Predicts Asset Allocation: Company Stock in 401 (k) Plans." *Columbia University, Department of Economics*.

Sirri, Erik R., and Peter Tufano. 2002. "Costly search and mutual fund flows." *The Journal of Finance*, vol. 53, no. 5: 1589-1622.

Vanguard. 2010. "Company Stock Revisited: Some Good News, Room for Improvement." Retrieved from: <https://institutional.vanguard.com/VGApp/iip/site/institutional/researchcommentary/article?File=NewsCoCompanyRevisited>.

Winston & Strawn. 2011. "Second Circuit Joins Five Other Circuits in Ruling Company Stock Investments in 401(k) Plans Are Presumptively Prudent." Retrieved from: www.winston.com/siteFiles/Publications/Citigroup_McGraw-Hill_ERISA_Cases.pdf.

Wiatrowski, William J. 2008. "Bureau of Labor Monthly Review." Retrieved from: www.bls.gov/opub/mlr/2008/11/art1full.pdf.

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