

Company stock in DC plans

Vanguard Research

December 2020

John A. Lamancusa and Jean A. Young

- Between December 2005 and June 2020, the number of defined contribution (DC) retirement plans that offer company stock fell by 36% and the number of plan participants investing in company stock fell by nearly two-thirds. The number of participants with concentrated holdings declined by nearly three-quarters—from 14% of all participants to only 4%. Over that period, half of organizations that offered company stock funds either closed or liquidated their company stock fund.
- In an effort to discourage concentrated stock positions, two-thirds of plans with active company stock funds impose some type of restriction on contributions to and/or exchanges into company stock.
- When employer contributions are or ever have been directed to company stock, participants are three times more likely to have concentrated positions in employer stock.
- Ongoing litigation has underscored the risks that concentrated stock positions may pose for plan fiduciaries. Sponsors that seek to reduce company stock concentration and mitigate these risks should consider making employer contributions “in cash” (i.e., at the participant’s direction) and restricting the amount that participants can contribute to and exchange into company stock.

Background

Company stock has historically played an important role in certain DC plans in the United States, particularly those sponsored by large firms. Yet for participants, investment in company stock poses substantial risks to retirement security because of the lack of diversification inherent in investing in a single security. This investment risk is correlated with job market risk: When a company is doing poorly, the value of company stock holdings in the participant's retirement account declines at the same time that the risk of job and income loss for the participant increases.¹

"Stock drop" cases—in which the value of the employer's stock held in retirement plan participant accounts declines—have become a meaningful source of litigation for DC plan fiduciaries over the past few decades. Historically, high-profile bankruptcies (or near-bankruptcies) of prominent firms whose retirement plans had concentrated positions in company stock have contributed to the increased litigation risk. Fiduciaries who oversee retirement plans in which there are concentrated stock positions are likely to face such risks at a time when both the company's and the stock's financial performance are weak.

Responding to concerns about single-stock risk, the 2006 Pension Protection Act (PPA) introduced certain diversification rights for participants. Participants now are able to diversify their own company stock contributions at any time, and must be allowed to diversify employer contributions invested in company stock once the participant has been credited with three years of service

under the plan. (There are exceptions to these rules for privately held company stock and certain employee stock ownership plans, or ESOPs.²) Before these rules were enacted, a plan could severely restrict a participant's ability to diversify a concentrated stock position.

Given the well-documented inertia that characterizes participant investment behavior in DC accounts, it's less likely that PPA diversification rights on their own have contributed materially to reducing participants' company stock exposure. In this paper, we show that concentrated stock positions are strongly linked to employer plan design decisions. Employer decisions—to remove company stock from a plan, to end directed contributions to stock, or to impose restrictions on participant concentrated holdings—appear to be the major reason for a reduction in concentrated company stock holdings in DC plans.

Employers continue to evaluate company stock in light of litigation and single-stock risk as well as its impact on retirement accumulations. Plan sponsor interest surged in response to the 2014 *Dudenhoeffer* case.³

This paper begins with an overview of factors unique to company stock in DC plans. Next, we provide an overview of the characteristics of plan sponsors that actively offer company stock and the nature of company stock restrictions. We then consider two simple regression models, incorporating both participant demographics and plan design features, that examine holdings of company stock. We conclude with a discussion of our findings and with implications for plan sponsors.

¹ See Benartzi (2001), Mitchell and Utkus (2003), and Benartzi, Thaler, Utkus, and Sunstein (2007) for analysis of the history of company stock in DC plans and the propensity for participants to hold concentrated positions in employer securities.

² Plans that offer privately held company stock are not subject to the diversification requirements, nor are stand-alone ESOPs that are funded solely by employer contributions in stock that are not conditioned on an employee's making contributions.

³ In June 2014, the U.S. Supreme Court issued an opinion affecting sponsors of plans that offer company stock. In *Fifth Third Bancorp et al. v. Dudenhoeffer et al.*, the court ruled that there is no presumption of prudence for the fiduciary regarding company stock in an employee stock ownership plan. While aspects of the ruling may make it more difficult for plaintiffs to pursue stock drop cases, plan sponsors that offer company stock are reevaluating the role that the investment option plays in their DC plans.

Company stock in DC plans

The Employee Retirement Income Security Act of 1974 (ERISA) is the primary legislation governing private pension plans in the United States and requires that plan sponsors comply with several broad fiduciary standards. These include the principles of prudence when investing, diversification of plan assets, and acting exclusively for the benefit of plan participants.

At the time ERISA was adopted, defined benefit (DB) plans were the dominant type of pension plan. ERISA imposed a 10% limit on company stock holdings in DB plans in response to the failure of some pension plans that had concentrated holdings in employer securities. DC plans at the time were considered supplementary savings plans, and no comparable company stock restriction was imposed on them. In fact, ERISA specifically exempted company stock from the diversification fiduciary standard for DC plans. When the Revenue Act of 1978 codified 401(k) plans as a type of DC profit-sharing plan financed by employee contributions, 401(k)-type plans were also exempted from the 10% cap on company stock holdings.

In the intervening years, DC plans have become the dominant type of private-sector retirement plan.

Before the PPA was passed in 2006, many plans with company stock restricted participants' ability to diversify their company stock holdings. High-profile losses in DC plans that offered company stock led to the introduction of the PPA diversification rules. Under these rules, as noted earlier, participants are able to diversify their company stock holdings purchased with their contributions at any time and may diversify holdings from employer contributions once the participants have been credited with three years of service. One exception to this rule was created for privately held stock, under the theory that illiquid private stock might be difficult to diversify easily. A second exception was created for stand-alone ESOPs, under the theory that such plans represented separate stock-based compensation funded solely by the employer.

Company stock can be offered as simply another investment option within a plan or as part of an ESOP. In general, an ESOP is a stand-alone plan financed exclusively by employer contributions and invested principally in company stock. ESOPs can be paired with employee contributions under a 401(k) feature in a combined plan, often referred to as a KSOP.

ESOPs originated from the "workers' capitalism" movement of the 1950s, which sought to align worker interests with the interests of company owners and management through broad-based employee stock ownership. The ESOP movement predated the modern-finance understanding of single-stock risk, which holds that investors on average are not rewarded for taking on single-stock risk.

ESOPs are emblematic of an inherent tension in federal law: On the one hand, it encourages a modern-finance view of diversification and risk under the ERISA diversification standard, and on the other, it encourages concentrated single-stock risk as a way to foster alignment of employee interests with those of the company and its owners. ESOPs historically imposed stringent restrictions on diversification—employees were not permitted to diversify until they turned 55 and had participated in the plan for 10 years, and then could diversify only slowly, over a five-year period.

ESOPs, whether stand-alone or as part of a 401(k) plan, may be leveraged. Under certain tax and accounting rules, companies derived advantages from purchasing large blocks of employer stock with debt (the leverage element), and then agreeing to allocate that stock to the ESOP participants over an extended period, such as 15, 20, or 25 years.⁴ Leveraged ESOPs lost their special tax advantage in 1996, so no leveraged ESOPs have been created since then. Many leveraged ESOPs that were formed earlier are today coming to an end, leading to a reconsideration of the role of company stock generally in the large-company retirement plans that adopted the strategy decades ago.

⁴ On the tax side, for leveraged ESOP loans (referred to as "securities acquisition loans") issued prior to June 10, 1996, Internal Revenue Code section 133 (since repealed) permitted the lender to exclude from gross income one-half of the interest earned by the lending institution. This tax preference enabled institutions to issue ESOP loans at more favorable interest rates; the result was favorable financing terms for the organization sponsoring the ESOP. On the accounting side, contributions to the ESOP were reported at historical acquisition cost over the life of the ESOP. As a result, employees received compensation in the form of stock at current market values, but the cost of that compensation appeared on shareholder statements at a much lower historical cost.

Company stock in DC plans continues to benefit from two other tax incentives—again underscoring the tension between the ERISA diversification standard and the incentives in the tax code for assuming single-stock risk. Plans offering company stock may allow plan participants to take in-kind distributions that are entitled to special tax benefits.

First, upon receipt of an in-kind distribution of employer securities, a participant may elect to have the net unrealized appreciation on the participant's employer stock taxed at capital gains rates, which historically have been lower than ordinary income tax rates. The participant must immediately pay ordinary income tax on the cost basis of the shares. But any taxes on the accrued capital gains may be deferred indefinitely until the shares are liquidated.⁵

For participants, this tax benefit can be attractive—although few participants are aware of it. The cost basis of company stock shares can often be quite low. This is especially the case if the participant is a long-tenured employee and the stock has appreciated over time, or if the plan is a leveraged ESOP where the cost basis was established at the time the ESOP was formed, often many years before the distribution event. As a result, much of the gain on company stock can be deferred and taxed at a lower rate.

A second tax benefit relates to plans holding company stock in an ESOP. The Economic Growth and Tax Relief Reconciliation Act (EGTRRA) of 2001 made the ESOP dividend pass-through feature more appealing to plan sponsors. Prior to EGTRRA, plan sponsors were entitled to take a tax deduction for dividends paid to plan participants on shares of company stock if the dividends were “passed through” to participants in the form of cash distributions from the defined contribution plan.

Under EGTRRA, the plan sponsor is permitted to take a tax deduction for all dividends paid to plan participants if participants are permitted to elect to take dividends in the form of cash distributions. The sponsor receives the tax deduction for dividends paid to the plan whether or not the participants elect cash distributions.

The data set

Our analysis of company stock is based on Vanguard recordkeeping data as of June 2020 and includes 1,432 sponsors with 1,776 distinct DC plans. We were interested in the incidence of company stock and how demographic and plan design attributes affected active-participant investment decisions. Accordingly, we limited our analysis to the 3.2 million active participants with account balances greater than \$100.⁶

One important caveat is that our data set is subject to survivorship bias. We were able to examine only plans and participants that survived through June 2020. We did not observe plans and participants associated with employers that went bankrupt over the period, that were acquired by another entity (because of financial distress or other reasons), or that left our recordkeeping services business. For example, if a firm went bankrupt during the financial crisis of 2008–2009 and its stock became worthless, and it liquidated the plan or left our recordkeeping services business, it would not appear in our sample.

Another factor in our data is that large employers, who are more likely to offer company stock, are also more likely to sponsor multiple DC plans. As a result, participants at large companies often have more than one DC plan account with the plan sponsor. For example, participants at one company might have a 401(k) account with no company stock and a stand-alone ESOP account with company stock. At another company, participants may have a 401(k) plan/ESOP plan with company stock and a stand-alone profit-sharing plan with no company stock. Where multiple plans are offered by a sponsor, we have aggregated participant-level account balances to more accurately quantify the effect of company stock on the participant's entire DC account wealth with the current plan sponsor.

⁵ Indeed, upon death of the participant, the shares may pass to heirs at a “stepped-up” basis, thereby eliminating the capital gains tax due.

⁶ Active participants are those currently eligible to participate in the plan and currently making employee elective deferrals and/or receiving employer contributions.

Changing incidence of company stock

We examined the changing incidence of company stock in Vanguard plans by analyzing 826 plan sponsors that were continuously on our recordkeeping systems between December 2005 and June 2020. Over that period, the incidence of company stock in these plans fell.⁷ The percentage of plan sponsors offering company

stock fell from 11% to 7%, a relative decline in plan sponsors of 36% (**Figure 1**). The percentage of participants offered or investing in company stock declined even more. Importantly, the percentage of participants with a concentrated stock position (greater than 20% of total account balance) dropped by nearly three-quarters.

Figure 1. Plan incidence of company stock

Continuous panel of DC plan sponsors from December 2005 to June 2020 (n = 826)

	Pre-PPA		PPA													Post-PPA		Change 2005 to June 2020
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	June 2020		
Percentage of plan sponsors offering company stock	11%	11%	10%	10%	10%	9%	9%	9%	9%	9%	8%	8%	7%	7%	7%	7%	-36%	
Percentage of all participants offered company stock	40%	42%	40%	27%	26%	25%	24%	24%	23%	22%	22%	20%	20%	20%	21%	19%	-53%	
Percentage of all participants using company stock	24%	22%	20%	18%	18%	16%	15%	14%	12%	11%	11%	10%	9%	9%	9%	9%	-63%	
Percentage of participants using company stock if offered	54%	50%	47%	51%	50%	47%	44%	42%	39%	35%	32%	32%	29%	33%	32%	32%	-41%	
Percentage of all participants with company stock concentrations greater than 20%	14%	13%	11%	9%	9%	8%	7%	6%	6%	5%	5%	4%	4%	4%	4%	4%	-71%	

Source: Vanguard, 2020.

⁷ Holden, VanDerhei, Alonso, and Bass (2017) also find a shift away from company stock holdings in DC plan participant accounts.

One important reason for the decline in stock concentration was plan design changes made by sponsors. Between December 2005 and June 2020, 54% of company stock funds were closed to new money and/or eliminated from the plan (**Figure 2**). Closing a company stock fund to new money is often a precursor to liquidating the company stock fund.

Company stock fund closures typically fall into two categories. Some closures result from merger and acquisition activity—the acquiring firm purchases a

company that has a plan offering company stock and then closes the option. In other instances, plan sponsors may close company stock funds on a proactive basis—for example, to mitigate fiduciary or litigation risk. Over this period, we observed more company stock fund liquidations than fund closings.

Finally, four organizations launched new company stock funds between December 2005 and June 2020.

Figure 2. Change in incidence of company stock funds

Continuous panel of DC plan sponsors from December 2005 to June 2020

Sponsor incidence of company stock	Number of sponsors	Percentage of sponsors
Offering company stock	98	12%
Not offering company stock	728	88%
Total sponsors	826	100%
Changes in company stock among sponsors offering		
Company stock remaining open to new monies June 2020		
Company stock funds	26	27%
Employee stock ownership plan	15	15%
	41	42%
Company stock closed		
Company stock funds closed to new monies June 2020	18	18%
Liquidated company stock funds	35	36%
	53	54%
Company stock added		
Added company stock fund	4	4%
Total sponsors offering company stock	98	100%

Source: Vanguard, 2020.

Plans actively offering company stock

How do sponsors that offer company stock differ from those that do not? To answer this question, we examined all Vanguard plans and actively contributing participants at a single point in time: June 2020. In this sample, 5% of sponsors were actively offering company stock to 25% of plan participants (Figure 3).⁸ Company stock plans tend to be larger, with a median participant population of 6,423, compared with 500 for non-

company-stock plans. Among employers actively offering company stock, 36% of actively contributing participants had an investment in company stock.

Participants in plans with access to company stock are slightly older, a bit longer-tenured, and more likely to be male. The median equity allocation for participants in plans with company stock was higher by 2 percentage points—86% in plans with company stock versus 84% for plans not offering company stock.

Figure 3. Plan sponsor and participant characteristics

DC plan sponsors and active participants as of June 2020 with balances >\$100

	Plan sponsors with active company stock funds	Plan sponsors with no (or closed) company stock funds	All plan sponsors
Plan sponsor characteristics			
Number of plan sponsors	75	1,357	1,432
Percentage of plan sponsors	5%	95%	100%
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Number of unique active participants (with balances >\$100)	791,917	2,419,801	3,211,718
Percentage of active participants	25%	75%	100%
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Number of active participants holding company stock	286,684	18,073	304,757
Percentage of active participants holding company stock	36%	1%	9%
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Demographic characteristics*			
Participants per plan sponsor	6,423	500	580
Age	44	43	43
Job tenure (years)	6	5	5
Percentage male	57%	56%	57%
Percentage completing college	46%	47%	47%
Household income	\$62,500	\$62,500	\$62,500
Nonretirement-plan wealth	\$53,800	\$68,551	\$64,893
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DC plan characteristics*			
Account balance	\$35,975	\$29,524	\$31,056
Participant contributions for 12 months ended June 2020	\$4,228	\$3,903	\$3,990
Employer contributions for 12 months ended June 2020	\$2,767	\$2,284	\$2,392
Equity allocation	86%	84%	85%

* Median values among active participants with balances >\$100

Source: Vanguard, 2020.

⁸ An organization is categorized as actively offering company stock if any contributions, employee and/or employer, are permitted to be invested in company stock as of June 2020. A participant is considered active if the participant received any contributions during the prior 12-month period and had an account balance greater than \$100.

Generosity of company stock plans

Company stock plans tend to be more generous and better-funded than non-company-stock plans. Median account balances are higher in company stock plans, as are median employee and employer contributions.

To better understand the factors influencing the generosity of such plans, we estimated a regression model relating change in participant account balances to demographic and plan design features.⁹ This statistical technique helps us distinguish the unique effect of a given factor on participant account balances, controlling for the broad differences among participants and plan designs.

Controlling for these factors, participants in plans that actively offer company stock have average account balances that are 7% higher (Figure 4).¹⁰ Also in our model, male and college-educated participants had substantially higher balances, while participants in mid-sized and larger plans had smaller balances.¹¹

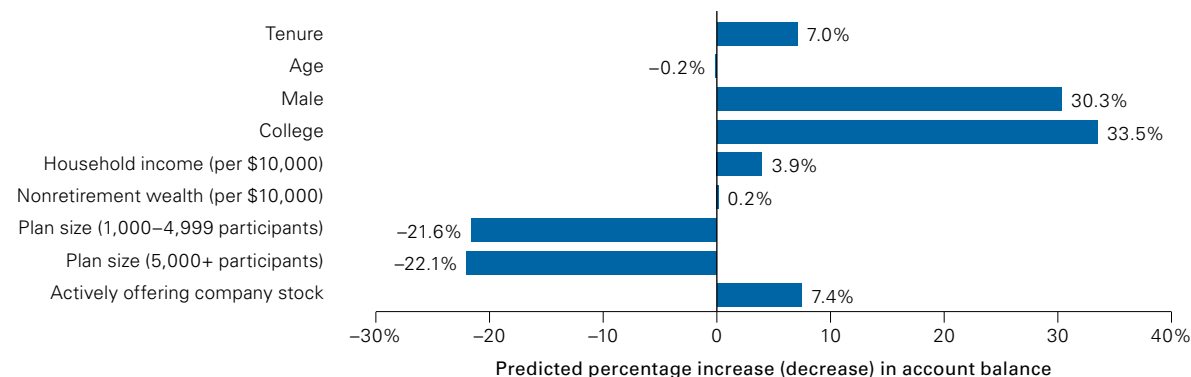
One reason for the greater generosity of company stock plans is the prevalence of employer matching or other employer contributions. All of these plans with company stock make matching or other contributions compared with 96% for all Vanguard plans (Figure 5).¹² But three-quarters of organizations with active company stock funds make both matching and other employer contributions to participant accounts—compared with 35% of all Vanguard plans. Sixteen percent of organizations that actively offer company stock direct an employer contribution to company stock, and 5% direct both a matching and another employer contribution to company stock.

We first published this analysis in 2012 based on 2011 data. In 2011, 37% directed an employer contribution to company stock, and 1 in 8 directed both a matching and another employer contribution to company stock.

Figure 4. Regression of account balances

Active DC plan participants with balances greater than \$100 as of June 2020 (n=3,211,718)

Dependent variable: average account balance (mean = \$117,369)



Note: The average active participant in all plans is 44 years old, has nine years of tenure, is male, is college-educated, and has household income of \$94,000, nonretirement wealth of \$336,000, and a plan balance of \$117,000. All variables significant at the 99% confidence level.

Source: Vanguard, 2020.

⁹ See Appendix for a detailed explanation of the regression models.

¹⁰ See Brown, Liang, and Weisbenner (2006), who also find that participants at firms matching in company stock have higher account balances.

¹¹ The lower balances at larger firms may be due to several factors, including the presence of other benefit programs, such as a DB plan, and the rising use of automatic enrollment among larger firms.

¹² See *How America Saves 2020*, Vanguard, institutional.vanguard.com.

Figure 5. Employer contributions

DC plan sponsors

	Actively offering company stock (n = 75)		All Vanguard plans
	Number	Percentage	Percentage
With either matching or non-matching contributions	75	100%	96%
With both matching and non-matching contributions	56	75%	35%
With a match	70	93%	86%
Matching in company stock	10	13%	1%
With non-matching employer contributions	61	81%	45%
Directing non-matching contributions to company stock	6	8%	1%
Directing any employer contributions to company stock	12	16%	1%
Directing both matching and non-matching contributions to company stock	4	5%	<0.5%

Source: Vanguard, 2020.

Diversification restrictions

Passage of the PPA enabled participants to diversify their own contributions to employer stock at any time. However, plans retain the option of restricting diversification of employer contributions to participants who have at least three years of service.¹³ As of June 2020, half of

Vanguard-administered plans that direct an employer contribution to company stock allowed participants to immediately diversify those contributions to other plan investment options (**Figure 6**). The plan sponsors that restrict diversification use plan designs that are not subject to the PPA diversification rules.

Figure 6. Restrictions on diversification of employer contributions

DC plan sponsors with active company stock funds as of June 2020

	Number	Percentage
Plan sponsors actively offering company stock	75	
Plan sponsors directing any employer contributions to company stock	12	16%
Among plan sponsors directing any employer contributions to company stock		
Allowing immediate diversification of employer contributions to company stock	6	50%
Imposing restrictions on diversification of employer stock contributions	6	50%
	12	100%
Restricted using PPA exemptions		
Age 50 and 10 years of service, 25% annually up to 50%	1	
Five years of service, 10% annually up to 50%	1	
Privately held stock restricted	4	

Source: Vanguard, 2020.

¹³ As noted, the PPA diversification rules do not apply to privately held stock or stand-alone ESOPs.

Pass-through dividends and in-kind distributions

Four in 10 active company stock funds are designated ESOPs (Figure 7). Some of these plans are leveraged ESOPs and some are not. Eighty-six percent of organizations with ESOPs have adopted a pass-through dividend feature. Nine in 10 organizations that actively offer company stock allow plan participants to take in-kind distributions.

Restrictions on concentration

A relatively recent development in company stock plans, driven by fiduciary concerns, has been the introduction of rules designed to mitigate concentrated single-stock positions. As of June 2020, two-thirds of organizations that offer company stock restricted participant contributions and/or exchanges into company stock (Figure 8).

Typically, the same restrictions are imposed on both contributions and exchanges. However, a few plans allow employee elective contributions to company stock but do not allow participants to exchange into company stock. A few plans permit the reverse, allowing exchanges into company stock but not allowing participant contributions. In some ways, these restrictions appear motivated by sponsor recognition of the risks of participants' "doubling down"—in other

words, if employers provide contributions in company stock, participants may increase single-stock risk by directing their own monies to the option as well.

When an organization restricts the investment of participant employee elective contributions in company stock, the most common restriction is at 20%. The next most common restriction is at 0%—in other words, no participant-directed contributions may be made to company stock. The same percentages hold true for restrictions on exchanges. Some organizations allow the company stock allocation to float above the restriction level if it is the result of market fluctuation and/or ongoing contributions. For example, once a participant account balance reaches 20% in stock, the participant may be restricted from making additional contributions and/or exchanges—but the concentration level can rise above 20% through market appreciation.

One in 5 organizations goes further and restricts and redirects participant account balances so the amount of company stock does not breach the limit. These organizations redirect contributions and/or account balances to the plan's qualified default investment alternative (QDIA), such as a target-date fund, when the company stock position exceeds the limit.

Figure 7. Other company stock features

DC plan sponsors with active company stock funds as of June 2020

	Number	Percentage
Actively offering company stock	75	
With a designated ESOP design	29	39%
With a designated ESOP design and a pass-through dividend feature	25	33%
Permitting an in-kind distribution option	67	89%
Publicly traded company stock funds	69	92%
Privately held company stock funds	6	8%

Source: Vanguard, 2020.

Figure 8. Restrictions on company stock concentration

DC plan sponsors with active company stock funds as of June 2020

	Total	
	Number	Percentage
Plan sponsors actively offering company stock	75	
Plan sponsors restricting employee-elective contributions or exchanges into company stock	50	67%
Among plan sponsors restricting contributions or exchanges into company stock		
Direct a matching and/or another employer contribution to company stock	12	
Employer contributions follow employee elections	38	
Type of restriction		
Same restriction on contributions and exchanges	37	
Restrict employee-elective contributions but do not allow exchanges into company stock	1	
Restrict exchanges into, but do not allow employee-elective contributions to, company stock	3	
Restrict employee-elective contributions but allow exchanges into company stock	4	
Restrict and redirect when company stock exceeds restriction level	17	
Level of restriction		
Employee-elective contributions restricted	42	56%
Employee-elective contributions restricted at:		
0%	11	
5%	1	
10%	4	
15%	1	
20%	18	
25%	3	
33%	1	
35%	2	
50%	1	
Exchanges into company stock restricted	40	53%
Exchanges into company stock limited to:		
0%	11	
5%	1	
10%	3	
15%	2	
20%	15	
25%	3	
33%	1	
35%	3	
50% or more	1	
Other restrictions		
60-day round-trip restriction	34	45%
1 p.m., 2 p.m., or 3 p.m. trading cut-off	33	44%

Source: Vanguard, 2020.

Concentrated positions in company stock

A concentrated position in company stock can pose a substantial risk to a participant’s retirement security. It also raises litigation risks for plan fiduciaries.

In general, concentrated positions are strongly associated with the sponsor’s decision to direct employer contributions to company stock. When an organization directs¹⁴ any employer contributions to company stock, 1 in 5 participants hold a concentrated position greater than 20% (**Figure 9**). By comparison, when the organization makes employer contributions in cash, and leaves investment decisions in company stock to the discretion of the participant, only 8% of participants hold a concentrated position.

Not surprisingly, a concentrated stock position tends to displace investments in diversified equity funds and other balanced funds (**Figure 10**). Moreover, when an organization directs an employer contribution to company stock, the overall allocation to equities in those plans is higher.

To better understand the factors that influence concentrated stock holdings among participants, we estimated a regression model that relates the portion of participant account balances in company stock to

participant demographics and plan design features.¹⁵ This statistical technique helps us distinguish the unique effect of a given factor on participant company stock holdings, controlling for the other differences among participants and plan designs. In this analysis, we again consider active participants in plans that actively offer company stock.

Demographic characteristics such as age, income, education, job tenure, and nonretirement wealth, while statistically significant, are not strongly related to the percentage of company stock in the participant’s account balance (**Figure 11**). It is actually plan sponsor design decisions that have the strongest relationship to the proportion of participant holdings in employer stock. When a sponsor directs the employer match to company stock, a typical participant holds 3.3 percentage points more company stock than when an organization matches “in cash.” If a sponsor restricts the participant’s exchanges into company stock, the typical participant holds 1.3 percentage points less in company stock. Finally, when an organization restricts exchanges out of company stock, the typical participant holds 12.8 percentage points more in company stock. These organizations generally are privately held corporations.

Figure 9. Distribution of company stock exposure

DC plan sponsors with active company stock funds as of June 2020

	Company stock as fraction of plan assets						Concentrated subtotal
	0%	1%–20%	21%–40%	41%–60%	61%–80%	>80%	
A. Client concentration (percentage of clients)							
Employer contributions to company stock	0%	76%	20%	4%	0%	0%	24%
Employer contributions “in cash”	0%	94%	6%	0%	0%	0%	6%
B. Participant concentration (percentage of participants)							
Employer contributions to company stock	44%	35%	11%	5%	2%	3%	21%
Employer contributions “in cash”	71%	21%	5%	1%	1%	1%	8%

Notes: Shaded areas are concentrated positions exceeding 20% of plan assets or participant balances. “In cash” means that participants may direct contributions to any plan investment option, including company stock. We categorize an employer as directing a contribution to company stock if it was directing a contribution to company stock in 2020 or if it ever directed a contribution to company stock in the past.

Source: Vanguard, 2020.

¹⁴ We categorize an employer as directing a contribution to company stock if it was directing a contribution to company stock in 2020 or if it had ever directed a contribution to company stock.

¹⁵ See Appendix for a detailed explanation of the regression models.

Figure 10. Impact of company stock employer contributions on asset allocation

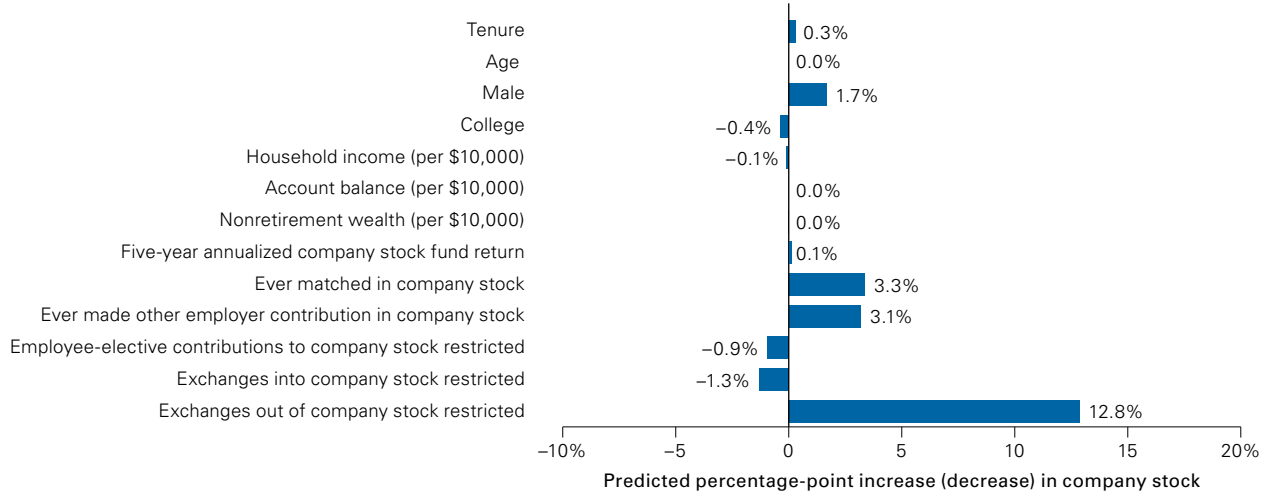
Vanguard defined contribution plans as of June 2020
 Active participants with balances greater than \$100

	All DC plan sponsors	Employer contributions "in cash"	Company stock offered and employer contributions "in cash"	Company stock offered and employer contributions ever directed to company stock
Number of plan sponsors	1,432	1,264	50	25
Percentage equity	72%	71%	74%	75%
Company stock	2%	<0.5%	7%	13%
Diversified equity funds	38%	38%	41%	34%
Balanced funds	43%	45%	36%	38%
Bond funds	8%	8%	8%	7%
Cash	8%	8%	8%	7%
Brokerage	1%	1%	<0.5%	1%
Average account balance	\$117,349	\$113,335	\$117,739	\$149,020
Median account balance	\$31,039	\$29,176	\$33,980	\$42,515

Source: Vanguard, 2020.

Figure 11. Regression estimation of change in company stock allocation

Active participants with balances greater than \$100 as of June 2020 (n=791,917)
 Dependent variable: Percentage of account balance held in company stock (mean = 6.5%)



Notes: The average active participant in plans actively offering company stock is 44 years old, has 10 years of tenure, is male, is college-educated, and has household income of \$82,000, nonretirement wealth of \$180,000, a plan balance of \$126,000, and an average five-year annualized company stock fund return of 5.10%. All variables significant at the 99% confidence level.

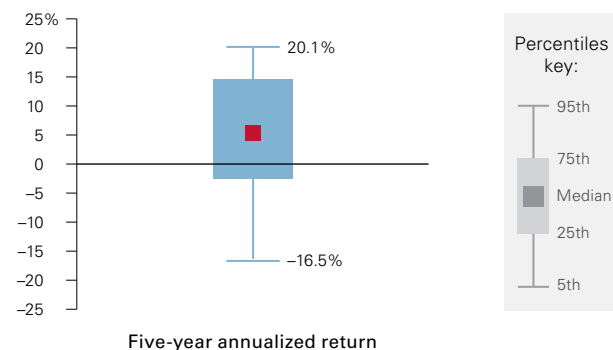
Source: Vanguard, 2020.

The five-year annualized return on the employer stock during this period played a minimal role in the company stock holdings of participants. The small influence of returns may in part reflect the market environment during the five-year period preceding June 2020, when nearly all these company stock funds had positive returns. In our model, each 1 percentage-point increase in the five-year annualized company stock return resulted in a 0.01 percentage-point increase in the percentage of company stock held—a very small increase in holdings.

As a point of reference, the average five-year annualized company stock fund return was 4.8% for the organizations in our data set (Figure 12). However, there was wide variation in these returns. The five-year annualized return was -16.5% at the 5th percentile and 20.1% at the 95th percentile. This wide range underscores the risk of company stock. A five-year annualized return of -16.5% translates to a cumulative loss of 59% over the period, whereas a five-year annualized return of 20.1% translates to a cumulative return of 150%. Prior research suggests that participants holding company stock do not understand the risks involved.¹⁶

Figure 12. Distribution of five-year annualized returns

Active company stock funds as of June 2020



Reading a box-and-whisker graph: Top of line represents 95th percentile; top of box, 75th; -, median; +, average; bottom of box, 25th, and bottom of line, 5th. Source: Vanguard, 2020.

Implications

The incidence of company stock in DC plans has declined in recent years. Among Vanguard recordkeeping clients, both the percentage of plan sponsors actively offering company stock and the percentage of participants holding concentrated company stock positions have fallen. More than half of sponsors who had previously offered company stock no longer do. Also, permitting immediate diversification of employer contributions directed to company stock has become the norm, even though the PPA allows a three-year service requirement.

Moreover, many sponsors have come to recognize the risks associated with single-stock ownership—whether to participants or to plan fiduciaries—and have imposed restrictions on concentrated company stock holdings. Two-thirds of sponsors limited employee contributions and/or exchanges into company stock as of June 2020. On balance, the decline in company stock in DC plans seems largely a function of these employer plan design decisions, whether they involve the presence of company stock on the menu, the direction of employer contributions to company stock, or the imposition of restrictions on concentrated holdings.

Still, 16% of sponsors with active company stock funds continue to direct an employer contribution to company stock.

Plan sponsor design decisions have the strongest influence on participant company stock holdings.

The single-stock risks of company stock are well-known. At the same time, organizations that offer company stock tend to be more generous than those that do not. Organizations that actively offer company stock make employer contributions that are about one-third more generous. Their participants have account balances that are about 7% larger after controlling for participant demographic and plan design features.

This greater generosity is no doubt due in part to a legacy of leveraged ESOP programs—which magnify the value of employer stock contributions in a rising stock market. These programs are now gradually unwinding.

In evaluating the role of company stock in a DC plan, plan sponsors need to strike a balance between the incentive effects of employee stock ownership and the risks—including the fiduciary risk for the sponsor and the investment risk for participants.

Organizations that seek to mitigate the risks arising from concentrated stock positions can consider two strategies. First, make employer contributions “in cash” (at the participant’s direction), and second, restrict the amount that participants can contribute or exchange into a company stock fund.

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Appendix

Our analysis is based on Vanguard recordkeeping data as of June 2020. Recordkeeping services were provided for 1,432 sponsors of 1,776 plans. There were 4.5 million participants holding 4.8 million accounts in these plans. We were interested in the incidence of company stock and how demographic and plan design attributes affect participant company stock holdings. Accordingly, we limited our analysis to the 3.2 million active participants with account balances greater than \$100 in these plans.

As noted earlier, our data set is subject to survivorship basis. We were able to examine only plans and participants that existed in our systems as of June 2020. As a result, we were unable to observe plans and participants associated with employers that went bankrupt over the period, that were acquired by another entity (because of financial distress or other reasons), or that left our recordkeeping service.

For our account balance regression, we estimated an ordinary least squares (OLS) regression to assess the effect of participant demographic attributes and plan design features on relative differences in participant account balances. The dependent variable, account balance, was transformed using a natural log function. For the ϵ_{ij} participant in the ϵ_{ij} plan, the general form of the regression is:

Natural log (ln) account balance = demographic variables + plan design features + ϵ_{ij}

Demographic variables include participant tenure expressed as years of service, participant age, gender, and indicators of education, household income, and nonretirement wealth. Plan design features include indicators for plan size and for whether company stock is actively offered.

For the fraction of participant account balances in company stock, we estimated an OLS regression to assess the effect of participant demographic attributes and plan design features on the percentage of the participant's account balance invested in company stock. The general form of the regression is:

Participant percentage company stock = demographic variables + plan design features + ϵ_{ij}

Participant percentage company stock is simply the company stock holding as a percentage of the total account balance as of June 2020. Demographic variables include participant tenure expressed as years of service, age, gender, account balance, and indicators of education, household income, and nonretirement wealth. Plan design features include the value of the employer match, the five-year annualized return for the company stock fund as of June 2020, and indicators for whether an employer match and/or nonmatching contributions are directed to company stock, whether employee-directed contributions and/or exchanges into company stock are restricted, and whether exchanges of employer contributions out of company stock are restricted.

Complete regression results, including coefficients, standard errors, and predicted marginal effects, are available from the authors.

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ISGCSDC 122020