Retail Access to Alternative Investments Via Defined Contribution Plans

The Council of Economic Advisers

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Executive Summary

Amidst changes in the composition of US capital markets and the US retirement system towards private markets and defined contribution plans, this paper studies the implications of broadening retail investor access to "alternative investments" through defined contribution plans. The Council of Economic Advisers (CEA) finds that:

- Defined contribution (DC) plan allocation to alternative investments can have significant benefits to plan participants (retail investors), fund managers, private companies (including small businesses), financial markets, and the real economy.

- DC plan participants would benefit from diversification, higher risk-adjusted returns, and higher retirement income. Fund managers and private companies would benefit from access to a large, growing, diversified, and stickier capital base. Financial markets would benefit from enhanced liquidity and price discovery. These benefits would translate to a higher GDP.

- Across all age cohorts, we find that an allocation to private equity enhances portfolio risk-adjusted return (Sharpe ratio) and increases retirement wealth for defined contribution plan participants.

- Younger cohorts benefit more relative to older cohorts from an allocation to private equity. The two youngest cohorts see around a 2.5 percent increase in annuitized lifetime income while the gain to the two oldest cohorts is closer to roughly 0.5 to 1 percent.

- Overall, we estimate that retail investor access to private equity through defined contribution plans can result in a GDP benefit of up to $35 billion, or 0.12 percent of GDP. This estimate quantifies the benefit from expanding access to private equity only; there may be an additional benefit from expanding access to other forms of alternative investments such as hedge funds or venture capital.

Introduction

Regulatory restrictions designed to protect individual investors such as the accredited investor rule and fiduciary constraints under the Employee Retirement Income Security Act of 1974 (ERISA) have restricted retail investor access to private[1] markets. With the rise of private markets, decline in public markets, and delayed IPOs over the past two decades, retail investors have been deprived of the high growth investments and diversification benefits of private markets. As of the end of 2024, there are about 35 million private companies and fewer than 4,000 public companies in the US.[2] At the same time, the emergence of defined contribution (DC) plans such as 401(k)s as the dominant retirement vehicle for millions of Americans–and the reluctance of DC plan sponsors to invest in private markets–represents a substantial cost from the magnitude of retirement savings missing out on higher returns and diversification benefits. As of the end of 2024, DC plans held $30 trillion in assets compared to only $12 trillion in defined benefit (DB) plans.[3]

While DC plans in the US are not prohibited from investing in alternative[4] investments, these plans have avoided private market investments for several reasons: (i) legal and litigation risk under the ERISA fiduciary standards, (ii) the accredited investor rule established by the United States Securities and Exchange Commission (SEC) which prohibits direct access, (iii) illiquid private fund investments vs. daily liquidity offered by DC plans, (iv) infrequent private valuations vs. daily pricing offered by DC plans, and (v) higher private market fees vs. pressure from ERISA on DC plans to keep costs reasonable.

In this paper, we argue that expanding retail investor access to alternative investments via DC plans can have significant positive effects with respect to diversification benefits, return potential, retirement outcomes, price discovery, and aggregate savings.

Background: The Changing Landscape of US Capital Markets and the US Retirement System

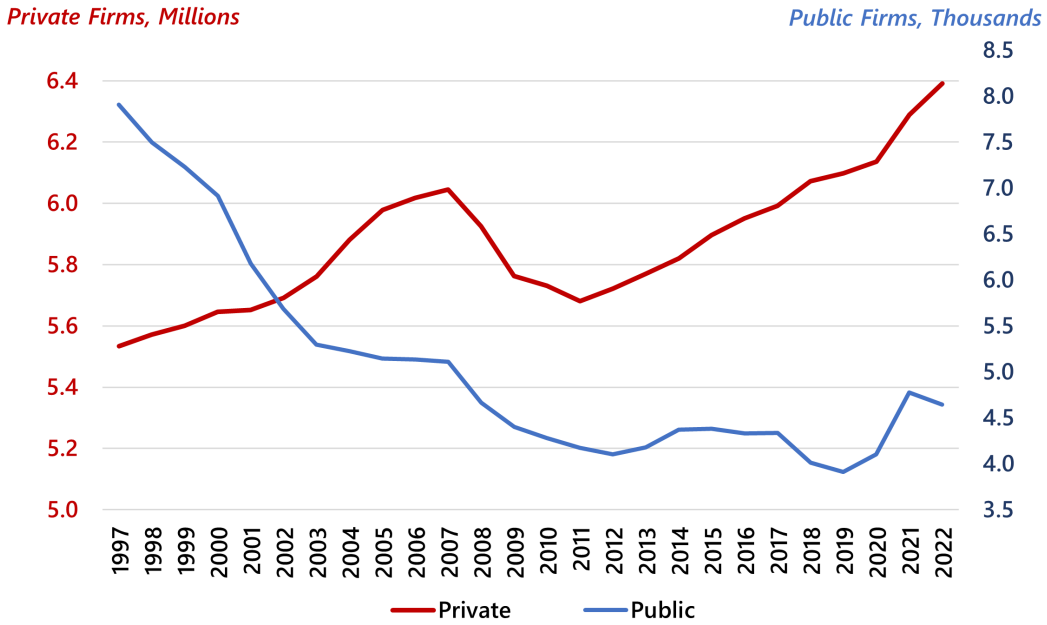
US Capital Markets: Shrinking Public Market and the Rise of Private Markets

Over the past few decades, there has been a structural shift in the composition of capital markets away from public markets and towards private markets.[5] While the shift towards private markets is a global trend, it is more pronounced in the US.[6] In the US, empirical evidence points to fewer public companies and significant growth in private capital. As of the end of 2024, there are about 35 million private companies and fewer than 4,000 public companies in the US.[7] From 1997 to 2024, the number of public companies

[1] Private market investments refer to investment opportunities in non-publicly traded companies.
[2] Weitzman (2023).
[3] Quarterly Retirement Market Data, Investment Company Institute.
[4] Alternative investments are non-traditional assets that do not fall within the conventional asset classes of stocks, bonds, or cash, and typically include private equity, hedge funds, and venture capital.
[5] Mauboussin and Callahan (2020).
[6] Europe exhibits a similar trend in private equity growth with some countries still relying on public markets as the dominant source for capital such as Germany and the UK. For Asia and Emerging markets, public markets remain an important source for capital.
[7] Weitzman (2023).

decreased by about 55 percent from around 8,800[8] while the number of private companies increased by about 67 percent from around 20 million.[9] Figure 1 illustrates this trend over 1997-2022 for the subset of employer[10] firms. Along with the increase in the number of private firms, US private funds gross assets have also increased by 228 percent from $9.5 trillion in 2012 to $30.9 trillion in 2024.[11]

Figure 1: Number of US Private and Public Firms (1997-2022)



Source: U.S. Census Bureau, Statistics of U.S. Businesses (SUSB); Excludes Non-Employer Firms

There is no consensus in the academic literature over the reason behind this structural shift from public to private markets. The most common reasons cited in the literature include: (i) increasing regulatory and compliance burdens in public markets (e.g., Sarbanes-Oxley Act of 2002);[12] (ii) abundant capital in private markets that is cheaper, more flexible, and has a long-term focus;[13] (iii) deregulatory changes that expanded private fundraising limits (JOBS Act of 2012 and Regulation D); [14] (iv) investor composition shift in private markets towards institutional investors that are characterized as being more patient, exerting strong governance control, and having a long-term focus;[15] (v) market pressure[16] on public firms to meet quarterly earnings expectations at the cost of long-term investment ("short-termism"); (vi) the Tax

[8] Wharton (2012).
[9] Economic Census 1997, Page 10, Table B.
[10] U.S. establishments with paid employees.
[11] "Investment Adviser Statistics", Securities and Exchange Commission (2024).
[12] Doidge, Karolyi, and Stulz (2017); Gao, Ritter, and Zhu (2013).
[13] Kaplan and Lerner (2010).
[14] Ewens and Farre-Mensa (2020) document that the JOBS Act (2012) increased the number of shareholders a private firm can have before being forced to go public and Regulation D made it easier for private firms to raise capital.
[15] Lerner, Schoar, and Wongsunwai (2007), Kaplan and Stromberg (2009).
[16] Graham, Harvey, and Rajgopal (2005).

Reform Act of 1986 (TRA86) that significantly reduced the tax advantages for public companies;[17] and (vi) the rise of intangible-intensive companies that are undervalued by public markets and risk revealing proprietary information when disclosing necessary information to go public.[18]

From a US investor standpoint, there are several important distinctions between private and public market investments. Public market investments are characterized by liquidity, frequent (real-time) valuations, transparency due to disclosure requirements, lower fees, heavy regulatory oversight, shorter investment horizons, and lower minimum investments. In contrast, private market investments are characterized by illiquidity, infrequent valuations, limited transparency, higher fees, lighter regulatory oversight, longer investment horizons, and higher minimum investment.[19] These characteristics entail a tradeoff for US investors of high risk-high return for private markets relative to a low risk-low return for public markets.[20]

Public markets are open to retail and institutional investors while private markets restrict access to only institutional and accredited investors.[21] Retail investors have different risk profiles and characteristics relative to institutional investors. Retail investors are typically individual, non-professional investors trading for their personal account. Relative to institutional investors, retail investors are typically characterized with a shorter investment horizon, lower risk tolerance, less liquidity, and are, therefore, granted more protections by the SEC. In contrast, institutional investors like pension funds and endowments are large organizations investing on behalf of clients with a long investment horizon, higher risk tolerance due to diversification and expertise, and substantial liquidity. While the degree of financial sophistication may significantly vary among retail investors, institutional investors are typically considered highly sophisticated.[22] Therefore, the SEC has fewer restrictions on investments by institutional investors.

Private companies have a much higher growth potential relative to public companies.[23] Delayed IPOs in the US have caused US public companies to be much larger and older[24] relative to private companies,[25] often implying that they are past their high-growth phase by the time they reach IPO. Figure 2 shows the count of private vs. public firms with revenue greater than $100 million.[26] We observe that most of the increase in the total number of firms is driven by private companies, with private firms comprising a larger share of total firms over time from 62 percent in 2002 to 87 percent in 2022. As a result, the universe of investable

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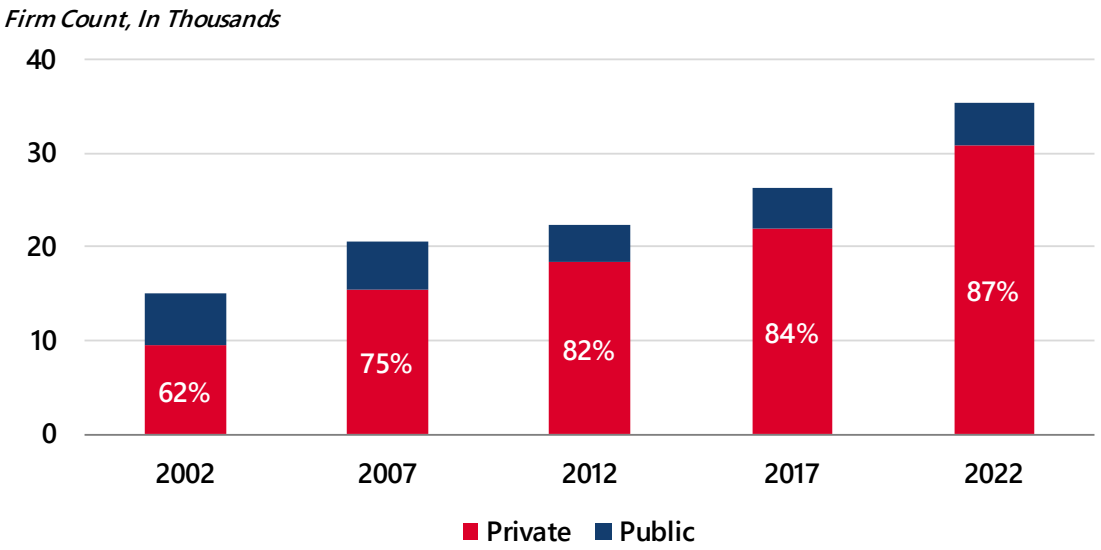
[17] See, for example, Carroll and Joulfaian (1997) and Dyrda and Pugsley (2024).
[18] Doidge et al. (2018) document that intangible-intensive firms are less likely to want to be publicly traded due to costly disclosure requirements and public accounting treatment.
[19] Adams, Benham (2024).
[20] Moon (2006).
[21] The SEC's accredited investor definition denotes an individual with either $200k in income ($300k for couples); a net worth of $1 million excluding primary residence; professional certifications (Series 7/65/82); director, executive officer, or general partner (GP) of the company selling the security; any "family client" of a "family office" that qualifies as an accredited investor; or being a knowledgeable employee of a private fund. Burdens imposed by this definition on retail investor access to private markets is explored later in this paper.
[22] Moon (2006).
[23] Asker et al (2011) find that private firms have higher reinvestment rates and agility, indicating greater growth capacity.
[24] Kahle, Stulz (2017).
[25] Unlike public companies, private companies are typically smaller, younger, and fast growing.
[26] This calculation uses the total number of public companies. Around 80% of public companies as of 2024 have revenue more than $100 million.

opportunities has been significantly limited for retail investors.[27] With the growth in private markets and the fact that most high-growth companies do not IPO until past their peak growth phase,[28] if at all, retail investors are faced with a smaller opportunity set that limits diversification benefits and excludes companies with the highest growth potential.

Figure 2: US Private vs. Public Firms with Revenue Greater than $100 Million



Source: U.S. Census Bureau, Statistics of U.S. Businesses (SUSB)

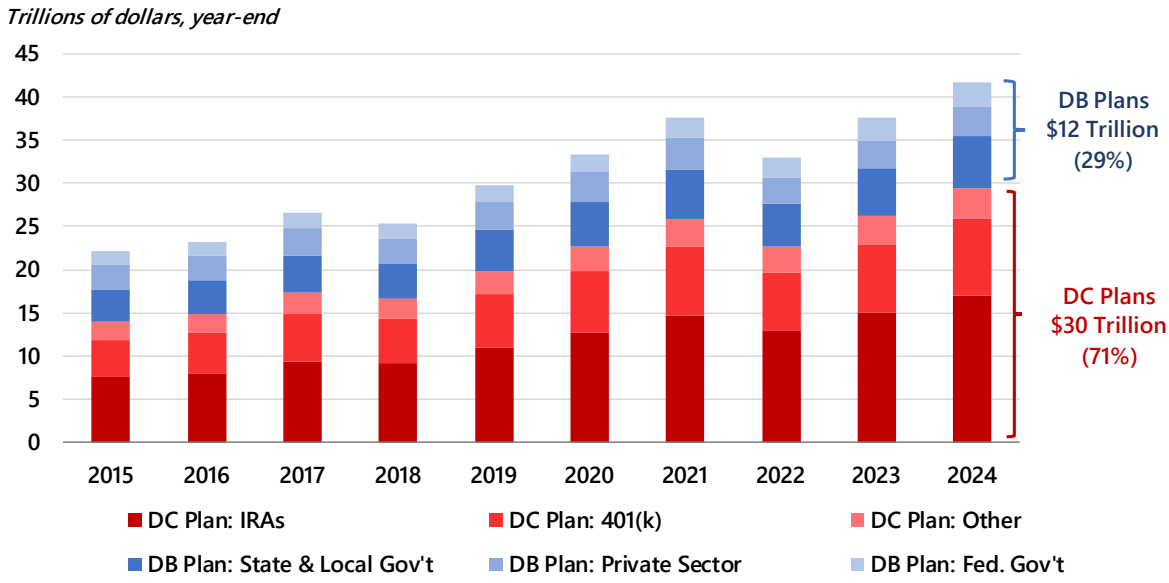
Given the rise of private markets and shrinking investment opportunities in public markets, portfolio optimization that includes private and public market securities achieves diversification benefits and earns higher net-of-fees returns.[29] When benchmarked against the public market, recent academic literature finds that private equity (PE) buyout funds have consistently outperformed the S&P 500 net of fees. Relative to the S&P 500, outperformance of PE (buyout) funds is estimated at 20 to 27 percent over the fund's life and more than 3 percent annually.[30] Using a risk-adjusted measure of return (Sharpe ratio), our analysis shows a significant benefit for portfolios diversifying into an allocation of private equity and that younger DC plan participants would benefit the most.

[27] Finley, "Expanding Retail Investor Access to Private Markets" (2019).
[28] Nain, Ying (2018).
[29] The three commonly-used performance measures of private fund returns are: internal rate of return (IRR), public market equivalent (PME), and total-value to paid-in capital (TVPI). IRR and TVPI are absolute measures of performance while PME is a relative measure that benchmarks performance against the public market (INSEAD, "Measuring Private Equity Fund Performance").
[30] Estimates are from Robinson & Sensoy (2013a), Harris et al. (2014), and Higson & Stucke (2014). A PME greater than 1 outperforms the public market benchmark net of all fees.

US Retirement System: The Emergence of Defined Contribution Plans as the Dominant Retirement Vehicle for the Majority of Americans

Along with the shift from public to private markets over the past few decades, the US retirement system has also shifted from DB plans to DC plans. The percentage of full-time employees in the private sector participating in DB plans fell from 80 percent in 1985[31] to 11 percent in 2023.[32] DB plans offer employees a guaranteed retirement income based on salary and years of service, with employers bearing the investment risk and the responsibility of managing the plan's funding and investments. While DB plan payouts are predictable, they are less portable, as benefits are tied to long-term employment. In contrast, DC plans–such as 401(k)s–typically do not guarantee a retirement benefit but instead the benefit depends on contributions by the employee (and the employer) and investment returns. Under DC plans, employees bear the investment risk and the responsibility of managing their investments while benefiting from portability when changing jobs. Since DC plans have lower administrative costs and funding obligations for employers, they have emerged as the dominant US retirement vehicle.[33]

Figure 3: US Defined Benefit vs. Defined Contribution Plan Assets (2015-2024)



Source: Investment Company Institute, 2025 and 2022 Factbooks

However, DC plans have largely missed out on the diversification and return potential offered by alternative investments. As of the end of 2024, DC plans held $30 trillion in assets compared to only $12 trillion in DB plans (see Figure 3).[34] Despite the significant scale of DC plans, their allocation to alternative investments has largely been negligible relative to DB plans. As of 2024, alternative investments represented about 30

[31] Dickerson, "Employee Participation in Defined Benefit and Defined Contribution Plans, 1985-2000". Bureau of Labor Statistics.
[32] Statistics on frozen defined benefit plans. Bureau of Labor Statistics.
[33] Types of Retirement Plans, U.S. Department of Labor.
[34] Quarterly Retirement Market Data, Investment Company Institute.

percent of DB plan[35] assets but only 0.1 percent of DC plan[36] assets. The main reason for this significant divergence is the guidance from the United States Department of Labor (DOL) which administers and enforces ERISA.[37] While the DOL has issued advisory opinions in 2006 providing foundational guidance on alternative investments for DB funds,[38] the earliest such guidance for DC funds was in 2020[39] with additional guidance in 2021.[40] In addition to the operational risks (illiquidity, valuation, and disclosures), DC plan fiduciaries are deterred by the legal and fiduciary risks under ERISA from the inclusion of alternative investments. As a result, the absence of a safe harbor and litigation risk under ERISA has barred investors from the diversification and return potential of alternative investments in DC plans.[41]

Regulatory Landscape: Restrictions on Retail Investor Access to Private Markets

Limits on Direct Access: SEC's Accredited Investor Rule

Restricting retail investors from direct access to private markets for over 40 years,[42] the SEC's accredited investor definition uses wealth, income, and/or professional credentials to proxy for investor financial sophistication and risk tolerance. The accredited investor definition restricts access to private markets and requires one of the following: $200k in income ($300k for married couples), net worth of $1 million excluding primary residence, professional certifications (Series 7/65/82), or knowledgeable employees of a private fund. The accredited investor definition intends to protect retail investors and ease capital and regulatory constraints for private companies by allowing them to bypass costly SEC registration and disclosure requirements if they only sell to accredited investors.[43]

While the SEC's enhanced safeguards for less sophisticated investors is justifiable, the accredited investor definition and associated restrictions have drawn several criticisms: (i) wealth is not necessarily an indication of financial sophistication or the ability to absorb losses; (ii) the method of enforcement limits access to high growth private investments to wealthy investors;[44] (iii) it restricts capital formation for private companies; and (iv) it reduces diversification benefits for retail investors. As of 2022, the SEC estimates that only 18.5 percent of households[45] meet the accredited investor definition, suggesting that the definition is in fact quite restrictive.

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[35] U.S. Public Pension Plans Now Overallocated to Alternatives vs. Target., Pensions & Investments.
[36] Hall (2025).
[37] The DOL has authority to issue regulations and interpretive guidance, enforce fiduciary standards, conduct investigations and audits of retirement plans, and ensure compliance. Passed in 1974, ERISA (Employee Retirement Income Security Act) imposes numerous requirements on both DC and DB plans, attempting to induce plan fiduciaries to invest plans responsibly.
[38] Advisory Opinion 2006-08A, U.S. Department of Labor.
[39] Information Letter 06-03-2020, U.S. Department of Labor.
[40] Supplement Statement on PE in DC Plan, U.S. Department of Labor.
[41] Anstett (2025), JP Morgan.
[42] The accredited investor definition was formalized in 1982 with SEC's adoption of Regulation D. The definition was further amended by the 2010 Dodd-Frank Act and the 2012 JOBS Act. In 2020, the SEC expanded the accredited investor definition to add licensed professionals but maintained the wealth-based criteria.
[43] Accredited Investors, U.S. Securities and Exchange Commission.
[44] "Is the U.S. Public Corporation in trouble?," Kahle, Kathleen M., and René M. Stulz, Journal of Economic Perspectives, 2017.
[45] Review of the "Accredited Investor" Definition, U.S. Securities and Exchange Commission.

Given the prohibition on direct access through the accredited investor definition, DB plans typically pool funds from their retail plan participants and invest in private markets as a single institutional accredited investor (or qualified purchaser).[46] In contrast, DC plans may qualify as institutional accredited investors but individual DC plan participants typically do not qualify as accredited investors (or qualified purchasers). Even when the DC plan itself qualifies as an accredited investor, they are still reluctant to directly offer private market investments or pool funds and invest on the plan participants' behalf due to the higher ERISA fiduciary risk.[47]

Limits on Access via Retirement Plans: ERISA Fiduciary Rules

DC plans face higher ERISA risk relative to DB plans for several reasons. Under ERISA, fiduciaries of retirement plans are required to act solely in the interest of participants with the care, skill, and prudence of an expert, ensuring investments are reasonable, diversified, and cost-effective.[48] The responsibility of bearing the investment risk and making the investment decisions shifts from the employer in DB plans to the employee in DC plans.[49] As a result, DC plans are easier to sue since the employer is not responsible for funding the promised benefit as in DB plans.[50] In addition, the liability focus under ERISA is more granular for DC plans–typically tied to the prudence, low-cost, and adequate disclosure for every investment, in contrast with long-term prudent oversight of the overall portfolio for DB plans.[51]

Due to fiduciary and litigation risk under ERISA, DC plans have generally refrained from offering standalone private equity, venture capital, or hedge funds directly. Instead, they have recently offered limited exposure through pooled, professionally managed vehicles such as target-date funds or collective investment trusts (CITs).[52] Even with the indirect exposure to alternative investments, the adoption remains limited and concentrated among the largest institutional plans.[53] A key reason behind the recent offerings of alternative investment exposure as part of a diversified portfolio and the limited adoption among DC plans is the 2020 and 2021 Department of Labor (DOL) guidance.[54]

A 2020 DOL letter initially encouraged private equity in DC plans through diversified funds while the 2021 DOL follow-up letter cast doubt on DC plans' ability to manage private equity investments due to their illiquid and complex nature. In June 2020, the DOL issued an informational letter[55] confirming that offering a professionally-managed multi-asset fund such as a target date fund that includes a private equity component does not violate ERISA, provided that the allocation is limited and well-diversified, the fund offers daily liquidity, and private equity is not offered as a direct or stand-alone option. In December 2021, the DOL issued a supplemental statement[56] that essentially pulled back on initial guidance–clarifying that

[46] Poterba et al (2009).
[47] Almazora (2024), InvestmentNews.
[48] Arendshorst et al (2025), Varnum Law.
[49] Broadbent et al (2006).
[50] Katz (2021), AI-CIO.
[51] Stoel Rives LLP (2022).
[52] Anstett (2025), JP Morgan.
[53] Sclafani and Priestley (2025), T. Rowe Price.
[54] Callan (2022).
[55] Information Letter 06-03-2020, U.S. Department of Labor.
[56] Supplement Statement on PE in DC Plans, U.S. Department of Labor.

the 2020 letter was not an endorsement of private equity in DC plans with warnings that most plans don't have the expertise to manage private equity investments due to their illiquid and complex nature. In addition, the letter required the sponsors to understand and document their analysis of the risks, adding caution and limiting potential to offer private equity investments to only large, well-established DC plans.

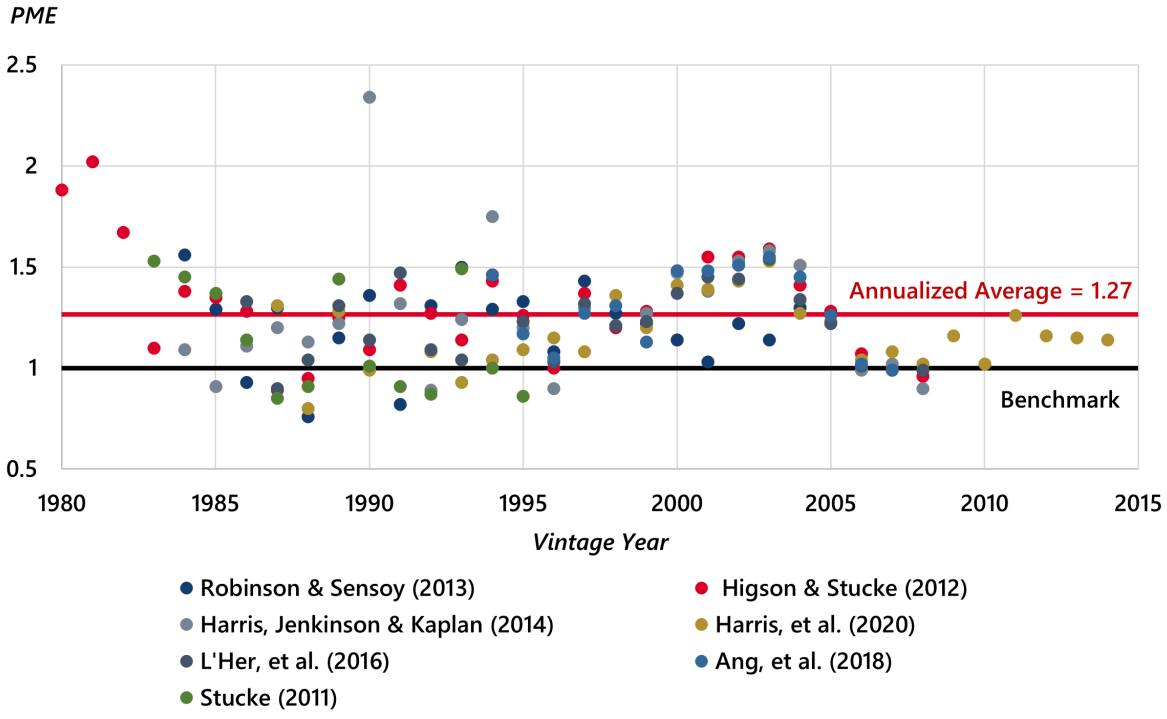
The Case for Broadening Retail Investor Access to Private Markets Through Defined Contribution Plans

Due to the operational and fiduciary/litigation risks under ERISA, DC plan participants are unable to benefit from diversification or the higher return potential from private markets. In this section, we assess the benefits from allowing DC plan participants to gain exposure to alternative investments through a diversified portfolio.

1. Benefits for Retail Investors (DC Plan Participants)

1.1. Persistent Long-Term Outperformance Relative to Public Equities

Figure 4: Private Equity Performance–Public Market Equivalent (PME) by Vintage Year



Source: CEA Calculations; PME estimates are based on Kaplan-Schoar (2005) methodology

An important benefit for retail investors from including alternative investments in DC plans is the higher return potential. To assess whether private equity has consistently outperformed public equity, we survey the academic literature for estimates of the public market equivalent (PME) for private equity (buyout) funds. PME measures the net-of-fee performance of a private equity fund relative to the hypothetical

performance of a public market index, typically the S&P 500, using the fund's actual cash flows. Figure 4 shows the PME estimates from the academic literature for US buyout funds with vintage years 1980-2014. We observe that most PME estimates are above 1, consistent with outperformance relative to the public market. This finding remains robust when we exclude private equity (buyout) funds with less than 70 percent realized investments and when we use the Internal Rate of Return (IRR) measure. We note two important caveats here. First, the PME estimates graphed below assume a portfolio entirely invested in private equity, which differs from return estimates for a diversified portfolio that contains private equity as would be the case for DC plans. Second, an important critique of the PME measure is that it is not risk-adjusted. To address both caveats and assess the potential for diversification, we next simulate portfolios with and without a private equity component and compute a risk-adjusted measure of return.

1.2. Diversification Benefit and Higher Risk-Adjusted Returns

To assess the potential diversification benefits from including private equity in DC plans and address the concern that PME is not a risk-adjusted return, we simulate portfolios with three assets: bonds, stocks, and private equity. We estimate the portfolio mean, variance, and Sharpe ratio using equations (1)-(3). The portfolio mean (r_p) is a weighted average of the expected returns of each asset in the portfolio. The portfolio variance (σ_p^2) measures the variance of each asset as well as the covariance between assets to capture diversification benefits. The portfolio Sharpe ratio captures the excess return[57] an investor earns per unit of risk and reflects a risk-adjusted return.

$$r_p = w_{PE} r_{PE} + w_{PU} r_{PU} + w_B r_B \quad (1)$$

$$\sigma_p^2 = w_{PE}^2 \sigma_{PE}^2 + w_{PU}^2 \sigma_{PU}^2 + w_B^2 \sigma_B^2 + 2 w_{PE} w_{PU} \sigma_{PE,PU} + 2 w_{PE} w_B \sigma_{PE,B} + 2 w_{PE} w_B \sigma_{PU,B} \quad (2)$$

$$Sharpe\ Ratio_p = \frac{r_p - r_f}{\sigma_p} \quad (3)$$

where:

- $r_p, r_{PE}, r_{PU}, r_B, r_f$: returns for portfolio ("*p*"), private equity ("*PE*"), public equity ("*PU*"), bonds ("*B*"), and a short-term risk-free asset (*"f"*).
- w_{PE}, w_{PU}, w_B: portfolio weights for private equity, public equity, and bonds.
- $\sigma_p^2, \sigma_{PE}^2, \sigma_{PU}^2, \sigma_B^2$: variances for portfolio, private equity, public equity, and bonds.
- $\sigma_{PE,PU}, \sigma_{PE,B}, \sigma_{PU,B}$: covariances between private equity and public equity, private equity and bonds, public equity and bonds.
- σ_p: standard deviation of the portfolio.

[57] We use a risk-free rate of 1.92% using an implied average from Korteweg and Westerfield (2022).

We rely on annualized estimates over 1998-2020 from Korteweg and Westerfield (2022) for the mean, variance, and correlations used to calculate[58] covariances (see Table 1). For stocks and bonds, the estimates are based on Vanguard Total Stock Market Index (VITSX) and Vanguard Total Bond Market Index Fund (VBTIX), respectively. For private equity (buyout), the estimates are based on Cambridge Associates U.S. Private Equity Benchmark Index which tracks a portfolio of buyout funds using quarterly net asset value (NAV) estimates reported by General Partners[59] (GPs). An important advantage of the private equity index is that it is based on a diversified portfolio of private equity funds which mimics the potential diversified exposure of DC plans to alternative investments.

A common issue with measuring aggregate private equity performance is NAV staleness–the lag between reported NAV and the actual market value due to infrequent valuations and reporting delays. The implication is that GP-reported volatility is typically lower than the actual due to the infrequent and smoothed valuations that fail to capture real-time market valuations. To overcome this challenge, we rely on the unsmoothed estimates calculated by the authors using the Geltner (1991) algorithm which corrects for the NAV staleness problem for private equity (buyout) funds. The unsmoothed (adjusted) estimates imply a return of 10.04 percent and standard deviation of 25.91 percent for private equity (buyout) funds.[60]

Table 1: Inputs for Portfolio Mean-Variance Analysis

	Stocks	Bonds	Private Equity (Buyout)
Mean	7.58	4.89	10.04
Standard Deviation	17.67	3.41	25.91
Sharpe Ratio	0.32	0.90	0.31
Correlations			
Stocks	1	-0.39	0.82
Bonds		1	-0.39
Private Equity (Buyout)			1

Source: Korteweg and Westerfield (2022)

For portfolio weights, we simulate sets of portfolios with fixed allocations to bonds and varying exposure to private equity to mimic portfolio allocations typically observed in retirement plans for different age groups. We create two sets of portfolios: (i) traditional portfolios with stocks and bonds ("non-PE portfolios") and (ii) portfolios with stocks, bonds, and private equity ("PE portfolios"). For each set of portfolios, we vary the

[58] We compute the covariances for equation (2) by scaling the correlations (from Table 1) by the product of the standard deviations of the two assets (e.g., $\sigma_{PE,PU} = \rho_{PE,PU} \times \sigma_{PE} \times \sigma_{PU}$).
[59] A General Partner (GP) is the fund manager of a private equity fund, responsible for making investment decisions.
[60] In contrast, the smoothed (unadjusted) GP-reported estimates over the same sample period entail a return of 11.65 percent and standard deviation of 10.51 percent, highlighting that GP-reported volatility is underestimated relative to actual due to the NAV-staleness problem.

fixed allocation to bonds from 10 percent (young) to 50 percent (old) to reflect the shift to less risk with age (glide path). A bond allocation of 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent would correspond to the typical allocation observed for a 25-year-old, 35-year-old, 45-year-old, 55-year-old, and 65-year-old, respectively.

Table 2: Portfolio Allocations (Weights) in Simulated PE vs. non-PE Portfolios

		PE Allocation						
		0%	5%	10%	15%	20%	25%	30%
	Bonds Allocation	Implied Stocks Allocation= (100% - Bonds Allocation - PE Allocation)						
		Non-PE Portfolio	*PE Portfolios*					
young	10%	90%	85%	80%	75%	70%	65%	60%
↓	20%	80%	75%	70%	65%	60%	55%	50%
	30%	70%	65%	60%	55%	50%	45%	40%
	40%	60%	55%	50%	45%	40%	35%	30%
old	50%	50%	45%	40%	35%	30%	25%	20%

Source: CEA Calculations

Table 3: Sharpe Ratios for PE and Non-PE Portfolios

		Sharpe Ratio						
		Non-PE Portfolio	PE Portfolios					
			PE Share of Portfolio Equity Allocation					
		0%	5%	10%	15%	20%	25%	30%
Implied Age	Portfolio	(1)	(2)	(3)	(4)	(5)	(6)	(7)
old	50 Equity/50 Bonds	0.5189	**0.5218**	0.5208	0.5166	0.5098	0.5012	0.4914
↓	60 Equity/40 Bonds	0.4519	0.4554	**0.4565**	0.4556	0.4529	0.4488	0.4436
	70 Equity/30 Bonds	0.4043	0.4080	0.4101	**0.4108**	0.4103	0.4086	0.4061
	80 Equity/20 Bonds	0.3690	0.3727	0.3753	0.3768	**0.3774**	0.3772	0.3762
young	90 Equity/10 Bonds	0.3419	0.3454	0.3482	0.3502	0.3514	0.3520	**0.3521**

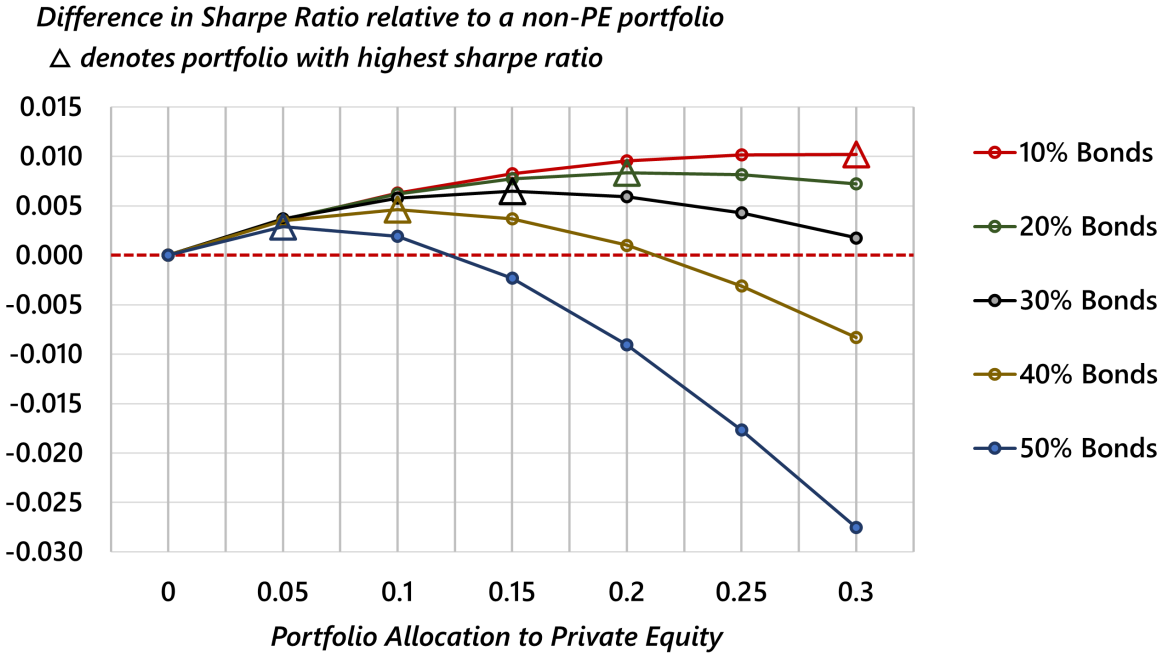
		Difference in Sharpe Ratio					
		PE Share of Portfolio Equity Allocation					
		5%	10%	15%	20%	25%	30%
Implied Age	Portfolio	(2)-(1)	(3)-(1)	(4)-(1)	(5)-(1)	(6)-(1)	(7)-(1)
old	50 Equity/50 Bonds	0.0029	0.0019	-0.0023	-0.0091	-0.0177	-0.0275
↓	60 Equity/40 Bonds	0.0035	0.0046	0.0037	0.0010	-0.0031	-0.0083
	70 Equity/30 Bonds	0.0037	0.0058	0.0065	0.0059	0.0043	0.0018
	80 Equity/20 Bonds	0.0037	0.0062	0.0078	0.0084	0.0081	0.0072
young	90 Equity/10 Bonds	0.0035	0.0063	0.0083	0.0095	0.0101	0.0102

Source: CEA Calculations
Note: Boxes represent the PE portfolio with the highest Sharpe ratio relative to the non-PE portfolio.

For each fixed allocation to bonds (i.e., age group), we create a set of portfolios that vary the allocation to private equity from 5 percent to 30 percent and calculate the implied weight for public equities such that weights sum to 100 percent. See Table 2 for implied stocks allocation (weights) for the PE and non-PE portfolios. For each of the 35 portfolios, we calculate the portfolio mean and variance from equations (1) and (2) using the inputs from Table 1 and weights from Table 2. We then compare PE to non-PE portfolios to assess potential diversification benefit and how it varies with age.

Using a risk-adjusted return measure (Sharpe ratio), we assess the benefit for younger vs. older age groups by comparing PE to non-PE portfolios (Table 3). We calculate the Sharpe ratio[61] for each portfolio using equation (3). Comparing the PE to the non-PE portfolios allows us to assess the diversification benefit. In particular, a higher Sharpe ratio for a stocks-bonds-PE portfolio relative to a stocks-bonds portfolio reflects a diversification benefit from adding PE. We also compare the Sharpe ratio for each PE portfolio against the non-PE portfolio with the same allocation to bonds (i.e., age group) to assess who benefits most from adding PE. Table 3 and Figure 5 show the difference in Sharpe ratios between PE and non-PE portfolios for the different age groups (based on bond allocation).

Figure 5: Difference in Sharpe Ratios Between PE and non-PE Portfolios by Age Cohort



Source: CEA Calculations
Notes: Each dot/triangle represents a portfolio that contains a fixed allocation of bonds to proxy for age, varying allocations of PE for each fixed allocation of bonds, and an implied allocation of stocks such that weights sum to 100 percent (see Table 2). A bond allocation of 10 percent, 20 percent, 30 percent, 40 percent, and 50 percent would correspond to the typical allocation observed for a 25-year-old, 35-year-old, 45-year-old, 55-year-old, and 65-year-old, respectively.

[61] We use a risk-free rate of 1.92% using an implied average from Korteweg and Westerfield (2022).

We note three important observations from Table 3 and Figure 5. First, all portfolios benefit from higher risk adjusted returns (Sharpe ratio) at a 5-10 percent PE allocation relative to no PE allocation, suggesting a diversification benefit from a PE allocation. Second, for older age groups (40-50 percent in bonds corresponding to 55–65-year-olds), an allocation to PE that is too high can result in Sharpe ratios that are lower than the non-PE portfolio, resulting in the observed negative difference.[62] In contrast, for the younger age groups (10-30 percent in bonds corresponding to 25–45-year-olds), all allocations to PE result in higher Sharpe ratios relative to the non-PE portfolio. Third, as allocations to bonds decrease (for younger age groups), portfolios with the highest risk-adjusted return (highest Sharpe ratio) correspond to an increasingly higher allocation to PE.

Overall, our analysis is consistent with a diversification benefit (higher risk-adjusted return) from adding PE to a traditional portfolio of stocks and bonds. The analysis by age group suggests that the younger age group will benefit the most from an allocation to PE on a risk-adjusted basis. The demonstrated diversification benefits and higher risk-adjusted returns from allocating a proportion of the portfolio to alternative investments directly translate to better retirement outcomes for DC plan participants and higher GDP, quantified in Section 4.

2. Benefits for Fund Managers (GPs) and Portfolio Companies

2.1. Access to a Large, Growing, and Diversified Capital Base

DC plan assets represent a significant fraction of US retirement assets and are fast growing, an important source of capital for GPs and portfolio companies. DC plan assets represents a significant source of capital, roughly $30 trillion as of end-2024 (71 percent of total US retirement assets).[63] Even a small allocation to alternative investments would represent a significant source of capital for GPs and PE/VC-backed portfolio companies as an allocation of 5 to 30 percent to alternative investments would entail about $1.5-8.7 trillion in additional capital. A more important advantage is that this capital is fast growing: DC plan assets increased by almost 50 percent while DB plan assets increased by 20 percent over 2019-2024.[64] Broadening DC plan access to alternatives would provide GPs and PE/VC-backed portfolio companies with a significant and underutilized source of capital from DC plans that can help support strong and broad-based economic growth.

Furthermore, an additional important advantage for GPs and PE/VC-Backed portfolio companies from broadening DC plans access to alternative investments is the diversification of the capital base. The existing higher minimum commitments required for alternative investments suggest that the capital base ensuring the long-term survival of the GP is largely dependent on a highly concentrated investor (Limited Partner[65]) base. In the face of cyclical slowdowns in institutional fundraising, access to a diversified investor

[62] High allocations to PE result in lower Sharpe ratios for older cohorts because older cohorts hold a high allocation of bonds, and bonds have the highest Sharpe ratio among the three assets in the portfolio (see Table 1).
[63] We only include US retirement assets held in DB or DC plans and exclude annuities.
[64] ICI Factbook 2025 and 2020 estimates suggest that DC plan assets increased from about $20 trillion in 2019 to $30 trillion in 2024 whereas DB plan assets increased from $10 trillion in 2019 to $12 trillion in 2024.
[65] Limited partners are investors in a private equity fund who contribute capital and have liability limited to the amount of their investment.

base would insulate GPs and portfolio companies from liquidity shocks which may translate to higher returns.

2.2. Stickier and Long-Term Capital Can Entail Predictable Fundraising and Capital Deployment Outcomes

DC plans' capital is inherently stickier and long-term since plan participants are typically investing for 30-40 years and face significant penalties for early withdrawals. If DC plans offer exposure to alternative investments as part of a diversified portfolio, the risk of sudden liquidations/redemptions in the face of market stress can be mitigated. A key advantage of DC plans as a source of capital is the predictability of the income stream since allocations often stem from payroll contributions, automatic enrollment/deferrals, and follow systematic glide paths. Predictable capital inflows help allow GPs to plan investment sequencing and exit timing with greater certainty, efficiently deploy dry powder and strategic co-investments, and effectively raise future funds. As assets under management (AUM) increases, GPs may also be able to lower management and carried interest fees, unlocking more capital under ERISA's fee reasonableness standard. Ultimately, predictable cash flows can translate to lower fees, higher returns, and more capital which would benefit GPs, portfolio companies, DC plan participants, and the economy more broadly.

2.3. GP Signaling of Institutional Credibility and Operational Maturity

Broadening DC plans access to alternative investments poses an opportunity for GPs to demonstrate credibility and operational maturity–key factors for their long-term survival in the market. By implementing the rigorous standards required under ERISA to participate in DC plans, GPs would demonstrate their readiness to meet the high institutional standards of transparency, governance, and operational scale. GPs who opt to participate in the DC plan and meet this rigor are likely to gain benefits from signaling to the broader market (including LPs and regulators) their stewardship of capital and their capacity to innovate by adapting their operations to access a broader set of investors, which can attract more capital. In addition, GPs would benefit from brand visibility when featured in retirement-based products. Overall, GPs signaling their quality to the market through instituting the operational framework for retail investor access can unlock additional capital from sources other than retail and establish their presence in private markets.

3. Benefits for Financial Markets and the Real Economy

3.1. Price Discovery and Liquidity in Financial Markets

Liquidity and price discovery are interconnected, so public and private markets, which have varying levels of liquidity, often do not have the same degree of price discovery.[66] In public markets, high-frequency trading, continuous quotes, and mandatory disclosure ensure that new data—earnings surprises, merger and acquisition rumors, macro shocks—is immediately reflected in share prices. In private equity, by contrast, NAV updates are often stale, infrequent, and manager-driven, so transaction prices can deviate substantially from reported values.

[66] "Understanding Market Liquidity: A Deep Dive", AccountEnd.

Embedding private equity in ERISA-governed DC plans would bring the discipline of public markets to private markets by enhancing price discovery for private equity firms which choose to accept funds from DC plans. ERISA's requirement that DC plans strike a "fair" unit price at regular intervals and rebalance accordingly would force fund managers to move away from irregular and inaccurate NAVs towards audit-ready, timely marks.[67] By standardizing both the timing and format of valuations, this discipline curbs the appraisal-smoothing documented by Easton, Larocque & Stevens (2021) and constrains the fundraising-cycle mark-ups highlighted in Brown, Gredil & Kaplan (2019). In practice, that means investors and intermediaries would see a more continuous, comparable stream of valuations rather than opaque, lumpy vintages, sharply improving transparency and fair valuation.

Once defined contribution plans can rely on regular marks, they would gain the confidence (and scale) to build a genuinely two-sided secondary market in the interest of their funds. Working-age savers provide steady inflows of capital while retirees' glide-path outflows create predictable liquidity needs. As trade volumes rise, liquidity discounts tend to shrink, and the "cost of exit" for investors falls.[68] Such a deeper trading ecosystem can translate into lower hurdle rates for sponsors because the risk of permanent capital lock-in recedes. That channel also encourages managers to underwrite more nimble deals across a wider range of sizes and timelines. This cycle enhances market confidence and channels financial capital in a smoother manner toward more productive uses. Together, these mechanisms would transform private-equity NAVs from backward-looking estimates into forward-looking price signals that allocate capital efficiently across managers, sectors, and deal sizes. With better price signals, it will become more salient to investors precisely which funds are better to back than others, just as in public markets.

Over time, that enhanced liquidity and sharper price discovery should reduce the private equity illiquidity premium and ultimately drive a more efficient, resilient ecosystem of private equity financing. The extent to which the reform will improve the efficiency of private equity markets depends on how willing PE firms are to accept ERISA-governed capital, how easily they can innovate on now-casting their NAVs, and how difficult it is for plan fiduciaries to substitute shorter-term public equity investments with long-term private equity investments.

3.2. Aggregate Effects on the Real Economy

Instituting policies that encourage defined contribution plan access to private equity would have two major aggregate effects: increased saving through substitution effects and increased GDP through a reallocation of capital from low- to high-productivity firms. We discuss each in turn and quantify their effects in the following section.

Increased Saving. When DC plans can shift more into private equity—an asset class with higher expected net returns—the overall return on saved assets rises. This change has two opposing impacts on households' saving decisions:

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[67] "Valuation of plan assets at fair market value," Internal Revenue Service. Revenue Ruling 80-155 requires DC plan assets to be valued at least annually and reflect the fair market value.
[68] See, for example, work by Bekaert et al. (2007). They observe that when markets become more liquid, expected returns decline because the liquidity premium has dropped.

- Substitution effect: Higher expected returns make postponing consumption more attractive, leading households to save more.

- Income effect: Greater expected wealth from those higher returns can make households feel richer and inclined to save less.

Whether the substitution effect wins out depends on how strongly households respond to higher returns by shifting consumption over time and how much of any extra wealth they choose to set aside rather than spend. Most evidence suggests people both respond materially to higher returns[69] and save a solid share of any additional investment income,[70] so the incentive to save typically outweighs the tendency to strictly spend more.[71] As a result, lifting private equity caps should boost aggregate saving–and such extra saving then feeds directly into investment, supporting higher output.

Improved Allocative Efficiency and Higher Output. In a hypothetical frictionless economy, capital flows across sectors until the marginal product of capital is equalized everywhere, leaving no gains from further reallocation. Economists agree that policies distorting the free flow of capital may have large negative effects on output.[72] Existing regulatory restrictions that discourage private equity allocations break this equilibrium: they push too much capital into public markets and leave private equity opportunities underfunded, creating a wedge in marginal returns. Removing unnecessary and inefficient restrictions (frictions) restore the free flow of funds to higher-return, privately negotiated projects–thereby improving capital allocation and boosting aggregate output.

4. The Quantitative Effects of Broadening DC Plan Participants Access to Alternative Investments

We analyze relaxing the implicit restrictions on private equity allocations in two tightly linked steps by integrating two common models. First, we solve for optimal household allocations after relaxing constraints on allocations to PE using a mean-variance framework. Second, we back out aggregate effects from household allocation changes using a Harberger (1962)-style two-sector equilibrium model while holding returns fixed. To model the micro and macro effects of an allocation to private equity, we assume that households act as if there are strict legal caps or "limits" on private equity allocations.[73] We maintain conservative assumptions on parameters for the estimation.

4.1. Micro Effects: Household Retirement Saving and Portfolio Reallocation

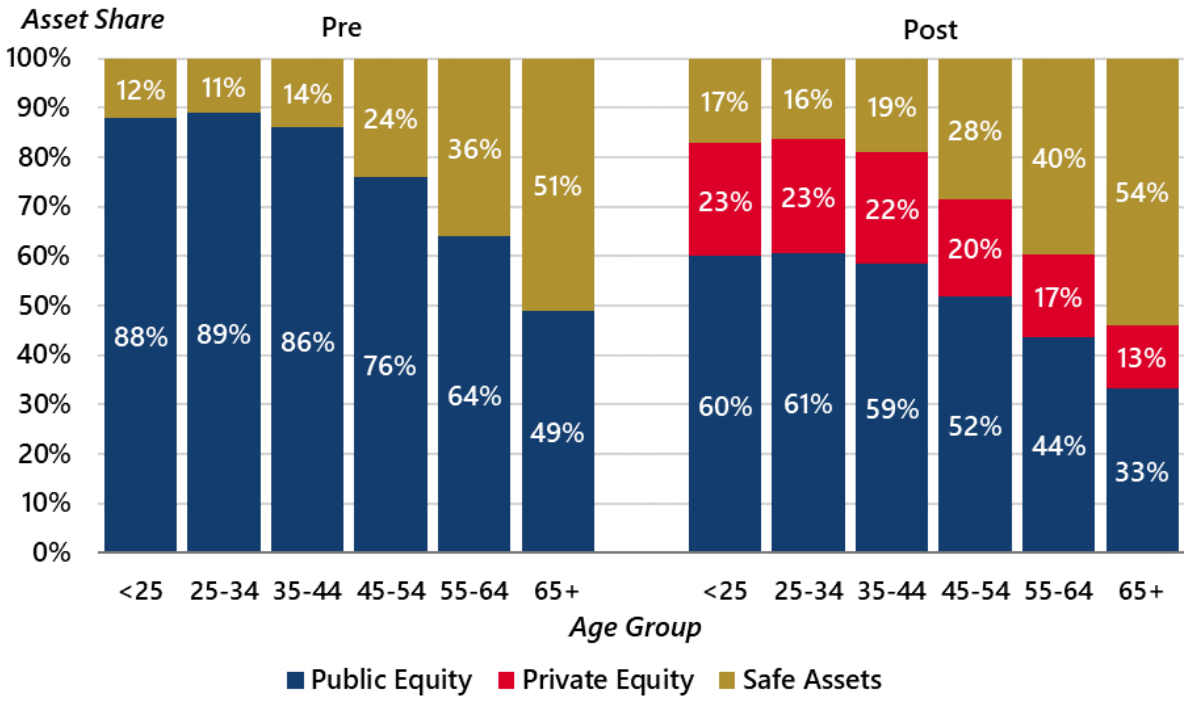
At the micro level, we quantify the allocation of savings to private equity for people in different age cohorts using a mean-variance analysis. We ask: given observed risk aversion and an observed vector of returns and covariances, how much would households save in public equity, private equity, and safe assets if they were

[69] Briggs et al. (2015), Bekaert et al. (2007).
[70] Rodgers et al. (2023).
[71] Holm et al. (2024).
[72] See the line of literature started by Hsieh and Klenow (2009).
[73] Whenever we refer to the "cap" or "limit" in the model, it is with the understanding that it is not an explicit legal limit in practice.

free to allocate investments with no constraints? The model's resulting solution maximizes the Sharpe ratio taking as given household preferences over risk aversion.

Using the 2023 Federal Reserve's Survey of Consumer Finances (SCF),[74] we determine exactly how much each age cohort holds in retirement accounts, and we pair that with data from Vanguard on the public equity share of the corresponding age-specific portfolios.[75] The left panel of Figure 6 plots the current portfolio shares by age. Younger people hold more equity and slowly shift to safe assets over time.[76] For each age cohort, we assume that the observed public equity allocation from the SCF is optimal. We use this assumption to determine the risk aversion coefficient which would generate the observed portfolio allocations for each age group, thus yielding an estimate of risk aversion specific to each cohort. This gives us a life-cycle profile for risk aversion.

Figure 6: Portfolio Allocations Before and After Eliminating Private Equity Restrictions



Source: CEA Calculations

Next, we re-solve that same portfolio choice problem with no limit on private equity holdings. The right panel of Figure 6 plots the resulting allocations. Across every age group, intermediaries would shift a meaningful portion of their public equity holdings into private equity along with slightly more safe assets. The result is a slightly higher average portfolio return for every age cohort along with a higher Sharpe ratio.

[74] Federal Reserve Board of Governors, Survey of Consumer Finances.
[75] See page 57 of Vanguard's "How America Saves".
[76] For the purpose of our analysis, we assume that everything in the portfolio which is not equity is a risk-free asset.

Our allocations generally feature a weighted-average slice of private equity around 20 percent, which is close to allocations observed in many defined benefit plans.[77]

With portfolio weights and optimal allocations now determined, we can quantify how much extra lifetime income PE access grants to households. For each cohort, we take their entire stream of projected returns from today through the end of the cohort members' lives, and convert that stream into one constant annuity payment, discounted at the portfolio return. We then compare that level payment before and after allowing PE access to compute the percent increase in lifetime income.

For each age cohort, our calculation comes from performing static portfolio optimization and subsequently computing total returns in a forward-looking fashion (while accounting for the rebalancing of portfolio components which will occur as the cohort ages). In particular, we take a cohort with T remaining years of life and compare return paths r_t^0 (pre-reform) and post-reform r_t^1. The return paths arise from the allocations by age defined in Figure 6. Given those paths, the annuity factor (AF) associated with each return path i is

$$AF_i = \left(\sum_{t=0}^{T} \prod_{s=0}^{t} \frac{1}{1 + r_s^i} \right)^{-1}, \qquad i = 0, 1.$$

Thus, the percent increase in lifetime income is

$$\%Gain_i = 100 \cdot \frac{AF_1 - AF_0}{AF_0}.$$

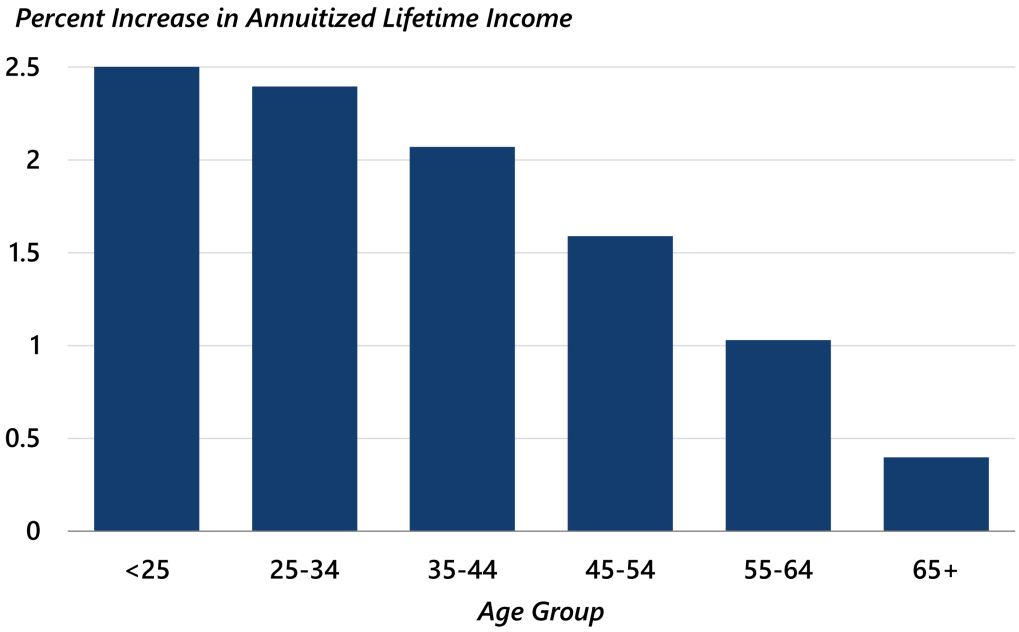
For each cohort, this calculation gives the percent increase in the size of the flat annual check (annuity) that could be drawn every year from today until death at age 78, after accounting for cohort aging and reform to allow private equity investment. Effectively, the metric captures the percent increase in lifetime income for a participant from the PE reform scenario relative to a no reform scenario–assuming a participant smoothed all future retirement income into a flat paycheck paid from today through the end of the participant's life.[78]

Figure 7 plots the percent increase in annuitized lifetime income resulting from the reform. The result is a 2.5 percent increase in annuitized lifetime income for the youngest workers and a 0.5 to 1 percent increase for the most elderly. We compute the overall increase in lifetime income by taking a weighted average of

[77] CalPERS, for example, is targeting an allocation of 17% to private equity. See CalPERS (2024), BlackRock (2025).
[78] Boyle and Hardy (2003). The annuity factor is the level annual payment which can be withdrawn from $1 of wealth while running that dollar down to zero over the T-period horizon given our assumed investment returns stemming from the optimal static portfolio allocations.

annuitized percent increase, where weights are given by the cohort share of retirement wealth. This yields an aggregate increase in lifetime income of up to 1.3 percent. [79]

Figure 7: Annuitized Increase in Lifetime Income by Age Group



Source: CEA Calculations

4.2. Macro Effects: Output Gains through Extra Saving and Reallocation

Having established that savers would reallocate a significant share of their portfolios into private equity under our model and assumptions, we ask: what is the aggregate effect on output? To quantify the aggregate effect on output, we envision a stylized and static world in which PE-backed firms produce output using a Cobb-Douglas bundle of capital and labor. We assume that public equity firms produce using the same underlying production technology as private equity-backed firms, and total output produced by both types of firms is the linear sum of each sector's output. The two sectors differ initially in their capital stocks, the labor they employ, and their inherent productivities.

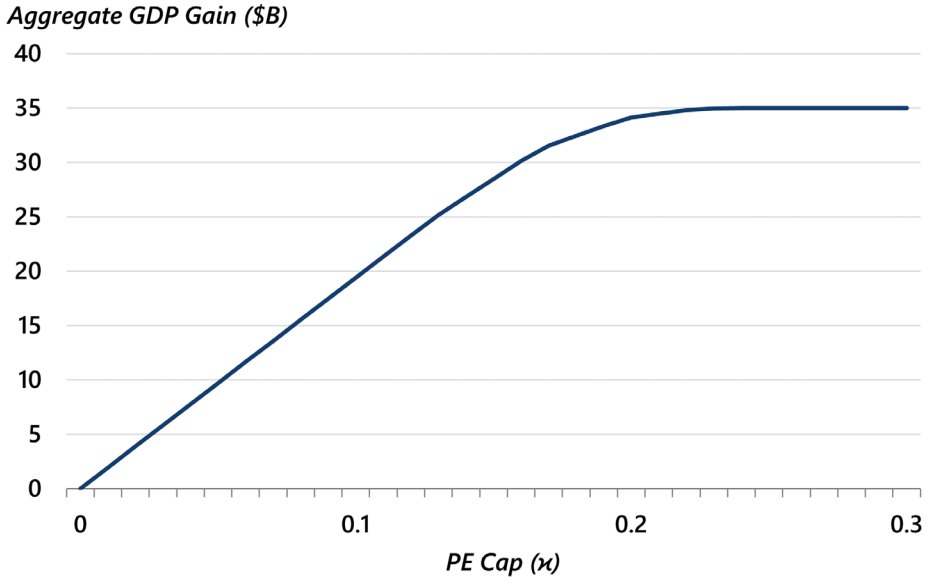
Using the calibration inputs from Box 4.2.1, we solve for labor allocations in each sector by imposing wage equalization. The last assumption ensures that the initial condition is an equilibrium: workers are indifferent between working for a private firm and a public firm. Importantly, we assume that capital markets are segmented. Under segmented capital markets, returns are not equalized between the two sectors. With initial conditions set, we investigate: (i) how much capital and labor allocations would change if the existing

[79] EBRI estimates the reduction in retirement savings shortfall (RSS) between 1.3-3.5% across all age cohorts with at least 10 years of future 401(k) participation (ages 35-54), for a 5-15% PE substitution in Target-Date Funds. The RSS provides the present value of the simulated retirement deficit at retirement age, and is calculated using EBRI's Retirement Security Projection Model which simulates retirement income adequacy for all U.S. households between the ages of 35 and 64. The model reflects the real-world behavior for 27 million 401(k) participants and 20 million individuals with individual retirement accounts (IRAs).

$30 trillion of DC retirement financial capital could flow freely into the PE sector and (ii) how much aggregate output would change as a consequence while holding the rest of the economy fixed.

For the counterfactual, we first determine how much financial capital would flow into PE-backed firms as a function of the implicit cap on private equity. To aggregate from the household side, we take a wealth-weighted average of household portfolio allocations. Under no limit on allocations, about 20 percent of household retirement wealth would flow into private equity. To capture the substitution effect from higher returns, we apply a consensus estimate of the marginal propensity to save.[80] After translating financial into physical capital flows, we solve for how much labor reallocation occurs as a result. To obtain the total change in the share of the economy taken up by PE-backed and public firms, we calculate the change in output within each sector and sum them. Finally, to get the change in aggregate output, we multiply that change by 32 percent, which is the share of the economy from PE-backed and public firms.

Figure 8: Output Gain as a Function of the PE Cap



Source: CEA Calculations

When policy loosens the cap on PE allocations by encouraging DC plans to invest, capital floods the sector and labor follows until wages equilibrate between sectors. Figure 8 plots the gain in GDP as a function of the PE cap. We estimate that a full loosening of the cap would lead retirement plans to allocate around 20 percent of their portfolio to private equity, which translates into an extra $35 billion in aggregate output, or around 0.12 percent of GDP.[81] As limitations on investing in private equity are relaxed, more

[80] Following the discussion in Section 3.2, access to higher returns may lead individuals to save more. As savings increase, more capital becomes available for investment, boosting overall economic output. To quantify this effect, we translate the increase in returns into additional savings using estimates from a broad survey of the literature by Sokolova (2023).
[81] Our calculation uses the most recent 2025Q1 nominal GDP estimate in the National Income and Product Accounts from the Bureau of Economic Analysis, which is around $30 trillion.

capital and labor are reallocated from the lower productivity public sector into the higher productivity private equity sector.

A number of factors make our analysis conservative. First, by assuming all non-equity components of household allocations are risk-free, we overstate risk aversion and understate the propensity of households to shift into private equity. Second, we focus exclusively on private equity rather than the broader suite of alternative investment vehicles like hedge funds and venture capital. These factors tend to bias our estimates downward. On the other hand, general equilibrium factors would dampen our aggregate results. By assuming segmented markets, we assume that returns do not equalize post-reform. If returns had to equalize net of the liquidity premium, then less capital would flow out of public equity and into private equity, thereby dampening our results with segmented capital markets.

Box 4.2.1. Quantifying Macro Effects – Calibration Steps

To quantify the macro effects, we calibrate the underlying parameters in three steps:

Step 1: We observe financial capital from the recent market capitalization of public firms and the value of private equity funds. The corresponding values are $48 trillion[1] and $10 trillion,[2] respectively. We translate financial capital into physical capital using Tobin's q.[3]

Step 2: We retrieve an estimate of value-added for PE-backed firms and public firms. The value added of PE-backed firms is 7 percent of the economy,[4] while it is 25 percent for public firms.[5] We use an annual GDP estimate of $30 trillion[6] and estimates from Step 1 to solve for labor allocations in each sector.

Step 3: We solve for productivity in each sector implied by labor, capital, and value added. Under our calibration, private equity-backed firms are about 10 percent more productive than their public equity counterparts, consistent with the academic literature finding that private firms are more productive.[7,8]

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[1] SIFMA Capital Markets Factbook 2024.
[2] SEC Investment Adviser Statistics, Table 5.1.
[3] Tobin's q is the ratio of market to book equity and is often used to convert financial into real capital. We use an aggregate proxy from the Federal Reserve's Flow of Funds Table B.103 Lines 39 and 42. In particular, we divide the market value of equities (Line 42) by net worth (Line 39), which yields a figure of 1.75. We assume the same q for private and public firms. That tends to understate private capital stock, thus dampening our output gains. The reason is that if we had a value for Tobin's q for PE, it would probably be smaller. Because PE has a liquidity premium, it also trades at a discount relative to public equity, which implies the current market price must be lower for the same PE capital stock.
[4] "Economic Contribution of the U.S. Private Equity Sector in 2024." Ernst & Young.
[5] Schlingemann and Stulz (2022). See Figure 1. The 25% figure we use is an approximation from the plot.
[6] See BEA Table 1.1.5 Line 1, nominal GDP for 2025Q1.
[7] In general, the literature estimates that private equity-backed firms are more productive. See, for example, Asker et al (2011) and Davis et al (2014); Asker et al finds that private firms invest more efficiently than public firms, and Davis et al finds that PE buyouts raise TFP by 2.1.
[8] We assume constant productivity for both types of firms. Given the influx of new capital into PE, we would see firms investing in lower-productivity projects on the margin in that sector, while public equity productivity may increase on average as they are no longer able to fund low-productivity projects. That could change relative productivity between sectors.

4.3. Taking Stock

Because our assumptions are intentionally conservative throughout, the resulting estimates should be considered a lower bound on the micro and macro effects of loosening the cap on investments in private equity. We also abstract from a number of important factors including dynamics, adjustment costs, and general equilibrium effects. Nevertheless, the core of the mechanism would hold even if the quantitative results may change by incorporating those factors. By integrating a detailed household-level portfolio shift with a two-sector model, we demonstrate a clear "double dividend:" allowing DC plans to hold more private equity both increases lifetime income for households and aggregate income for the United States through reallocation of capital and labor.

Conclusion

Amidst the changing landscape of US capital markets and the US retirement system towards private markets and DC plans, we assess the implications of broadening retail investor access to alternative investments through DC plans. We find that an allocation to private equity enhances portfolio risk-adjusted return (Sharpe ratio) and increases retirement wealth for DC plan participants across all age cohorts. The two youngest cohorts see the largest benefit of around a 2.5 percent increase in annuitized lifetime income while the gain to the two oldest cohorts is closer to roughly 0.5 percent to 1 percent. Fund managers and private companies also benefit from access to a large, growing, diversified, and stickier capital base; financial markets at large benefit from enhanced liquidity and price discovery. Overall, we estimate that retail investor access to private equity through defined contribution plans can result in a total GDP benefit of up to $35 billion, or 0.12 percent of GDP. In sum, our analysis points to significant benefits to DC plan participants, fund managers, private companies, financial markets, and the US economy from allowing DC plans to invest in alternative assets.

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