STRATEGIC INSIGHTS

Strategic Frontier Management

June 2026

ALTERNATIVE REALITY

- Private Capital is critical to finance entrepreneurial innovation, start-up and business formation, expand manufacturing, commercialization, infrastructure, and expanding business opportunities. America enjoys deeper private markets that bolster competitiveness, potential growth, productivity, and lift living standards.
- We discuss insights and concerns about alternative private funds, exposing various myths and dirty little secrets of *Alternative Reality,* as last updated in 2018 (first published 2014). We've updated public and corporate pension, endowment, hedge fund, and private fund performance—results remain appalling, thus reiterate our conclusions. Private funds struggled to add value over public market equivalents for two decades with higher implicit risk. Adverse impact of high costs, capacity constraints, and longer exit horizons are compounded by lack of transparency, cost of leverage, and valuation uncertainty of stale market-to-model valuations. Private market illiquidity premiums and low correlation are insidious myths.
- Adding value in private funds is difficult with high fees, illiquidity costs, and uncertain valuations for longer holding periods to exit. Cost of capital for illiquid companies must rise with increasing default risk, and higher interest rates. Fund Manager selection is more difficult given lack of transparency and infrequent mark-to-market. Adverse impact of misguided asset allocation can no longer can be ignored, as asset owners lag simple multi-asset indexed strategies. Rapid innovation and creative destruction marginalize weaker companies more quickly. Longer holding periods must increase *shadow default rates* of private loans. There is $3 trillion locked up in private credit funds that can trigger a market destabilizing *liquidity squeeze* given loans aren't marked-to-market.
- Strategic allocations to venture capital, private equity, private debt, infrastructure, property/real estate, and other real assets increased over the last 40 years among pension, endowment, and sovereign wealth funds, as well as family offices and high net worth individuals. We discuss secular and structural reasons why private funds lagged far behind public market equivalent indices, and have higher correlation and volatility than typically assumed.
- We observe private fund returns struggled over the last decade and return potential is increasingly insufficient to overcome high fund management costs. Lower correlation is myth—lagged mark-to-model and valuation uncertainty do not increase diversification. Private alternatives increase portfolio risk, particularly with use of leverage. However, active management *Alpha* can be a novel *alternative investment* that is transparent and liquid, while increasing diversification given uncorrelated return. Tracking error marginally increases total risk without disrupting asset allocation efficiency. Hedge funds rely on excess return of active strategies, and competition is driving lower fees.
- Pension, endowment, and sovereign wealth funds have increased private fund allocations for decades, despite private funds underperforming equity indices with high costs. Asset owners with scale and longer horizons might be better off investing in direct private investments in opportunistic portfolios versus siloed strategies, but have given up on hiring competitive talent and incentivizing them to add value. Holding periods increased with fewer exits, while high demand for constrained capacity limit return potential. Private Credit of $3 trillion offer nondilutive financing to remain private longer, but stood-up companies that are no longer viable or with subpar potential growth.
- Endowment performance has lagged simple indexed multi-asset benchmark returns since 2005 with higher risk before considering overhead and administrative costs. Adverse effects of increasing private market allocations in College Endowments are observed in the NACUBU-Commonwealth Endowment Survey. Detrimental decisions beyond asset allocation, including poor manager selection, illiquidity costs, and non-pecuniary objectives (DEI, ESG, etc.), which all contributed to their poor performance and higher risk.
- Pension returns struggled as strategic asset allocation shifted toward higher bond and private alternative exposure. Lagging returns, higher management costs, and soaring future liabilities increased contribution requirements and taxpayer costs. Misguided strategic asset allocation, the key driver of long-term return, and underperforming alternative investments, are undermining pension and endowment performance.

Need for Private Capital is Great

Asset owners, including pension and sovereign wealth funds, *endowments, foundations, and family offices* are well-positioned to provide needed private capital. In *Alternative Reality*, we discuss various issues and how to improve performance of private alternative investing to better align with investor objectives. Private market investing relies more heavily on active security selection and economic factor exposure with greater valuation uncertainty that requires a longer horizon than listed market strategies. The age of rapid creative destruction and disruptive innovation demands that investors be more nimble active allocators across sectors, industries, risk factors, future themes, and security selection. Pace of change is challenging for private funds with locked-up illiquid investments more suitable for Rip Van Winkle, being unable to trade holdings at will for 5-10 years. Shorter macroeconomic cycles intensify illiquidity costs.

There are advantages in having greater flexibility, longer time horizon, and sufficient capital that asset owners fail to exploit. Private markets increase opportunities within available market inefficiencies, including between-the-cracks of asset classes and sectors, or extending beyond private fund horizons, capitalizing on our future themes, such as: Quantum Computing, Artificial Intelligence, Additive (3D) Manufacturing, Security, etc. Chasing illiquidity premiums may seem theoretically compelling, but too often is eroded by high fund fees, administrative expenses, transaction costs, and misaligned incentives or agency costs.

Without sufficient number and capitalization of private companies to satisfy investor demand, increasing alternative allocations further strain private market capacity and overvaluation. Assumed low volatility and correlation of illiquid private funds is misleading, inferring portfolio diversification from stale mark-to-model security valuations just annually or quarterly. Reduced transparency and greater uncertainty about price, volatility, and correlation should increase risk.

Alternative investments gained popularity promising to improve portfolio risk diversification and leverage inefficiencies of illiquid private securities. However, speculative valuations (price) and still high fund fees appear to negate illiquidity risk premiums since 2005. Combined illiquidity, lack of transparency, and fund lock-ups limit efficient rebalancing of a drifting asset allocation. Despite struggling performance, high costs, and lack of transparency of private funds, herding pension and endowment plans continue driving higher exposure. Asset managers and consultants insistently promote alternative products and reinforce behavioral biases with misleading risk analysis, and performance, using flawed benchmarks.

Private funds are expensive, complex, non-transparent, illiquid, more risky and higher correlation than assumed, often fail to exceed market indices, and consume administrative resources. Private equity buyout holding periods have been extending for over a decade. McKinsey's Global Private Markets Report 2025 highlighted that holding periods are well above pre-2020 norms. IPOs are trending down, despite introduction of SPACs[1]. Mergers & Acquisitions hovered around a similar level for 10 years of ~$1.7 trillion, although 2025 rose to $2.1 trillion. Exit conditions remain difficult, but private credit helped span financing needs as holding periods extended. Rising interest rates and tighter credit increase cost of capital, increasing scrutiny of struggling illiquid private companies rolling maturing debt.

Since mid-2025, we have highlighted our concerns about the $3 trillion Private Credit market. Rising fund redemption requests, increasing defaults, frequency of loan restructurings, and non-accruals increase stress on borrowers to defer markdowns of loans held at cost. The *illusion of stability* in mark-to-model hints at a similar mirage of mortgage derivatives that triggered the 2008 Financial Crisis. Illiquidity plus valuation uncertainty can result in fire sale prices during liquidation. Many investors were disappointed that private market funds didn't perform better during the Financial Crisis, but seemingly diverse asset classes can experience higher correlation during periods of turmoil given similar common risk factor exposures.

Net cash flow from private credit funds remains positive, despite increasing redemptions, thereby insulating the market from systemic crisis. Redemption caps or "gates" manage outflows to prevent a fire-sale. Banks provide critical credit lines to funds, but which lenders can cut, if concern metastasizes. Stock prices of BDCs and private fund managers (i.e., Blue Owl, Ares, Eagle Point, Blackstone, FS KKR, etc.) tumbled 35-50%. Secondary markets indicating private fund prices can reinforce spiraling investor confidence. Thus, Private Credit remains a potential financial risk, given unrecognized deteriorating valuations and increasing "shadow" defaults, as higher rates stress weak businesses.

Private market funds struggle with structural challenges to add value under difficult conditions with longer holding periods, illiquidity, high transaction and administrative costs, valuation uncertainty, limited trading or infrequent rebalancing, yet portfolios are riskier with higher correlation than assumed. It seems inconsistent to replace active strategies, just as management fees and transaction costs decline, with passive index strategies and private market exposure, which is more dependent on active security and manager selection skills.

[1] A Special Purpose Acquisition Company (SPAC) is a "blank check" company that raises money through an IPO structured to merge or acquire a private company, and thereby take it public more quickly with less scrutiny within two years to accelerate exit.

Investing Successfully in Private Markets

Venture Capital intuitively and empirically correlates most with the Russell 2000, and up until 2025 had lagged its public market equivalent of small-cap equity. We've spilled considerable ink discussing disappointing small-cap (vs. large) and value (vs. growth) equity tilts since the Financial Crisis, but observe that Venture Capital also has not outperformed the S&P 500 except in 2025, when small-cap stocks surged ahead on earnings growth. Venture Capital should outperform leveraged Private Equity, and provides needed capital for innovative start-ups, buoying national productivity.

Private Capital Fund Returns (A.R.)

State Street	Buyout	Venture Cap	Private Debt
1-year	10.25%	21.95%	8.76%
3-year	8.67%	8.92%	9.24%
5-year	11.59%	8.48%	10.05%
10-year	13.03%	13.99%	9.17%

Benchmark Returns (A.R.)

Indices	SP500RI	FR2000ri	WRDX-US$	HYBDRI	BARCAP	SHRTBND	Cash
1-year	17.88%	12.81%	32.55%	5.10%	7.30%	6.11%	4.09%
3-year	23.01%	13.73%	18.28%	8.87%	4.66%	4.91%	4.70%
5-year	14.42%	6.09%	10.04%	3.83%	-0.36%	1.56%	3.17%
10-year	14.82%	9.62%	9.11%	6.11%	2.01%	2.07%	2.14%

Source: SSgA Private Capital Indices (Private Fund Returns)

We prefer the methodology of the *SSgA Private Capital Indices* for benchmarking private market funds, although published history spans just over a decade. As the largest global custodian, SSgA have duplicative access to LP investors' private fund valuations. Consultants rely on limited client data, while fund aggregators rely on self-reported unaudited fund updates for only those funds that want to be tracked, increasing survivorship bias. When equity markets experience a correction, then private equity and venture capital companies should suffer similarly, but volatility is never directly observed until shares are bought or sold.

Private Equity and Venture Capital valuations rely on public market multiples of earnings, revenues, or book value, which implies there should be a high correlation between returns to equity indices and private equity or venture capital funds—our private market equivalent methodology find that private equity correlates well with large-cap equity with a value tilt. Similarly, private credit funds correlate most with high yield, with additional exposure to long corporate bonds and leveraged loans, which adjust to changes in credit and interest rates.

A 409A valuation is a fair market appraisal of a private company's stock price required to ensure *safe harbor* for IRS compliance by updating annually or after material events. No equivalent requirement exists for private debt, thus a loan's price is often held at par or acquisition cost, unless there is impairment, non-accrual, or default. We will return to the consequences of this issue later,

Limited ability to price illiquid investments more than quarterly or even annually results in low estimates of volatility and correlation. This tends to overstate private market diversification, while ignoring cost of illiquidity during volatile periods. Illiquid private investments require a longer holding period in an age of disruptive innovation---young companies are often single product or narrowly focused ventures. Limited mark-to-market pricing nor increased portfolio complexity doesn't increase portfolio diversification or enhance returns.

Data below suggests a widening gap between private credit holdings valuation and fair value given fund accounting practice of maintaining cost or acquisition prices despite shifting interest rate or credit conditions. Leverage up to 2X should exaggerate rising interest rate and credit effects observed in 2020 (pandemic) and 2022 (rate hikes). Also observe private credit's high correlation with the BoA/Merrill Lynch High Yield Master Index, as expected—thus, leveraged lower quality credit holdings should have higher implied volatility than high yield indices with similar relative correlation versus other asset classes.

Quarterly %	SSgA PCI Private Debt	BoA/M.Lynch High Yield	BBG Agg Bond BARCAP	U.S. Treasury US10Ts
2020-Q1	-11.10%	-13.12%	3.15%	14.26%
2020-Q2	5.73%	9.61%	2.90%	0.31%
2020-Q3	4.51%	4.71%	0.62%	0.14%
2020-Q4	7.41%	6.48%	0.67%	-1.91%
2021-Q1	5.95%	0.90%	-1.99%	-6.69%
2021-Q2	5.96%	2.77%	0.40%	3.77%
2021-Q3	3.91%	0.94%	0.05%	-0.12%
2021-Q4	3.13%	0.66%	0.01%	0.88%
2022-Q1	1.21%	-4.51%	-5.93%	-7.03%
2022-Q2	-1.99%	-9.97%	-4.69%	-5.47%
2022-Q3	0.68%	-0.68%	-4.75%	-5.84%
2022-Q4	3.07%	3.98%	1.87%	0.30%
2023-Q1	2.60%	3.72%	2.96%	4.29%
2023-Q2	2.72%	1.63%	-0.84%	-1.90%
2023-Q3	1.83%	0.51%	-3.23%	-5.13%
2023-Q4	2.96%	7.06%	6.82%	6.77%
2024-Q1	2.17%	1.49%	-0.78%	-1.72%
2024-Q2	2.18%	1.09%	0.07%	-0.25%
2024-Q3	3.06%	5.31%	5.20%	5.76%
2024-Q4	0.83%	0.16%	-3.06%	-5.03%
2025-Q1	1.53%	1.70%	2.78%	4.00%
2025-Q2	3.03%	1.12%	1.21%	1.01%
2025-Q3	2.45%	1.10%	2.03%	1.83%
2025-Q4	1.48%	1.09%	1.10%	1.07%
Average Return	**2.30%**	1.16%	0.27%	0.14%
PCI Correlation		**83.70%**	6.30%	-38.52%
HY Correlation			**46.26%**	-1.31%
Agg Correlation				**83.80%**

Source: SSgA Private Capital Indices, Federal Reserve, Bloomberg

A private loan's price is typically held at cost. Herein lies the risk of reflecting only impairment or default—if private credit funds were required to recognize fair value, the resulting chaos would be akin to fair valuing derivatives in 2008, as required by FAS 157: *Fair Value Measurements*. Mortgage securities marked to fair market value forced massive write-downs, eroded bank capital, and accelerated distressed sales triggering the Financial Crisis. Banks forced to rely on "mark-to-model" valuations of illiquid leveraged bond derivatives triggered a *liquidity squeeze*, which evolved into a *credit crunch*. Instead, we naively look the other way.

While it is unlikely such a confluence of events would occur again, secondary markets provide a reference price for private funds. Discounted secondary private

debt funds indicate stresses could increase redemption requests. Share prices of BDC companies and Asset Managers with private fund businesses suffered similarly, including Apollo, Blackstone, and BlackRock. Failing to mark-to-market private credit fund holdings could spiral, and force reckoning of transparency, valuation, and benchmarking scrutiny. Increasingly gated redemptions could lead to a liquidity squeeze.

Private credit defaults are rising, with Fitch Ratings reporting the U.S. Private Credit Default Rate (PCDR) peaked in January at 5.8% vs. a high yield default rate of 2.5-2.8%. The leveraged loan default rate has risen to 4.5%–5.0%. Originated by banks, these loans are syndicated to mutual funds, hedge funds, CLOs, or other institutional investors. There has been a worrisome rise in restructured loans in private credit, known as "shadow" or selective defaults, accounting for 65% of 2025 defaults typically facilitating PIK (payment-in-kind) or extending loan maturity.

Higher interest rates are reflected daily in bond indices, but aren't reflected in private loan valuations, nor are changes in credit default rates. Comparing quarterly returns of private credit funds with fewer drawdowns during periods of credit or interest rate stress suggests higher default risk should be reflected in future returns. Mark-to-model valuations are misleading and may result in a crisis of trust that triggers further redemptions.

High correlation between private equity and the S&P 500 exceeds 85%, so funds should reflect leverage of 1.5X volatility, more or less. Similarly Private Credit funds can leverage holdings up to 2.0X, so why isn't investment volatility at least two times High Yield volatility? This equation illustrates return is a function of the cost of leverage. If you borrow to leverage and $r_d \leq R_p$, fund risk increases, but break-even return does not.

$$R_{levered} = R_p + \frac{D}{E}(R_p - r_d)$$

where,

r_d = interest rate on the borrowed funds
Rp = return of unleveraged asset
D = Debt relative to invested capital E

Exceeding capacity constraints has overwhelmed any illiquidity premium that existed in the 1980s and 1990s, once sufficient to cover high fees. Too many funds are chasing too few investment opportunities, as evident in increasing dry powder, exacerbating the now *crowded sandbox*, as we've described. Illiquid private securities with high specific or small company risks aren't traded easily when you change your mind or conditions warrant, thus require greater margin for error than managing equity strategies. Acceleration in innovation, including emerging AI tools and capabilities, can change industry dynamics in a few quarters for new companies.

That is not to say that during the 1980s and 1990s, venture capital investments produced remarkable returns, while financing incredible start-up companies. However, net returns of private equity funds struggled, failing to exceed returns of the S&P 500 since the Financial Crisis with higher implied volatility and higher correlation than assumed given leverage in Private Equity Funds. Higher risk without diversifying low asset class correlation must increase portfolio risk.

It was inevitable this dirty little secret would be exposed. Critical research has stacked up observing that private equity funds lag returns of equity indices. A paper[2] a decade ago on risk-adjusted private equity performance by principals of ADIA and CPP contend that private equity buyout funds failed to deliver excess return versus market equivalent indices. It hasn't gotten any better, as our data suggests below. Richard Ennis also drew similar devastating conclusions[3] (see other work at richardmennis.com).

Adding up illiquidity costs, leverage, high fees, capacity constraints (overvaluation), longer lock-ups, and survivorship bias in performance composites undercuts high expected return and low risk assertions—which are difficult to disprove with private company or fund managers' mark-to-model valuations Private funds will struggle as long as risk premiums are insufficient to support high management and incentive fees. For example, a 2+20% schedule would exceed 4.4% annual cost for an 8% annual gross return—no wonder private market funds have struggled to beat public market equivalent indices net of fees.

Demand for private investments pushed valuations far beyond any reasonable illiquidity premium assumed, which probably existed in 1985-2000 during a period of rapid technology innovation and desperate need for venture financing. Initial Public Offerings were frequent enough to limit holding periods. However, skillful selection of private fund managers requires a much longer time horizon, and is more difficult than choosing between public fund managers.

Early-stage and startup companies offer potential for transformative growth, so financing them is a key driver of innovation and productivity. Venture capital funded companies create jobs, intellectual property, technological progress, and enhance productivity, but are riskier because most are not yet profitable, focus on unproven products with less experienced management, and pursue challenging go-to-market strategies. Private equity funds are typically financed with leveraged debt to re-organize, break-up, or financially re-engineer

[2] L'Her, J., Stoyanova, R., Shaw, K., Scott, W., Lai, C. 2016. "A Bottom-Up Approach to the Risk-Adjusted Performance of the Buyout Fund Market." *Financial Analyst Journal, Vol. 72-4*

[3] "Have Alternative Investments Helped or Hurt?" (Ennis 2023) draw similar devastating conclusion: *Since the 2008 Global Financial Crisis, public funds realized a negative alpha of ~1.2% per year, virtually all of which was attributable to alternative investments.*

companies to extract higher value, but don't unlock any transformative innovation or new market.

Hedge Funds and Liquid Alternatives

Hedge fund performance is often be compared to equity indices, but hedge funds are differentiated by hedging or reduced market exposure for market neutral or long-short. Unlike private markets, hedge fund "alpha" or manager skill is impractical to replicate systematically, even with the number of risk factors available to us. We should expect hedge funds to be theoretically and empirically uncorrelated with equity and bond indices. Higher turnover with leverage increases turnover, triggering greater short-term capital gains.

Constructive risk diversification realized by Hedge Funds is idiosyncratic alpha from active management. Risk-adjusted performance, which is uncorrelated by design, particularly for long-short, market neutral, and global macro funds. Hedge funds typically invest in in listed equities, bonds, and derivatives that are more liquid with greater transparency into holdings, which can be valued and traded on a daily basis. Hedge fund fees have trended lower with increased competition from liquid alternative funds, but hedge fund-of-funds, layering additional fees for manager selection, persistently underperform Hedge Fund Composites.

Hedge Fund Performance Composites

Thru 2025	Credit Suisse Hedge Fund	HFRI Asset Wgted Hedge	HFRI Credit
1-Year	10.50%	9.66%	8.86%
5-Year	7.03%	6.05%	6.29%
Risk	3.88%	3.70%	3.11%
10-Year	5.54%	4.85%	5.84%
Risk	4.65%	4.77%	4.69%
20-Year	5.26%	—	—
Risk	5.27%	5.18%	5.33%

Source, HFRI and Credit Suisse – December 31, 2025

Various databases report hedge fund performance. HFRI is widely cited and has a long monthly history, which is fund-reported, resulting in survivorship and selection bias that tends to overstate average returns. Data prior to 1995 is back-filled, whereas new hedge funds may delay reporting until returns are compelling so we'd expect some survivorship bias.

Liquid alternative funds hope to increase capacity and lower cost of investing in alternative assets with greater transparency and liquidity. The alluring pitch capitalized on investors' envy of what they can't have from private equity to hedge funds, but investors still struggle with high cost and complexity of these products. So, the need for a simpler and smarter approach to investing is acute. Cash and short-term bonds seem to provide better diversification than liquid alternatives or commodities without sacrificing portfolio efficiency of return/risk or value added with associated specific risk.

AVERAGE MANAGER PERFORMANCE As of March 31, 2026	Quarter	YTD	1 Yr.	3 Yr.	5 Yr.	10 Yr.	Volatility*	Sharpe Ratio*
Multistrategy	2.26%	2.26%	8.76%	9.38%	7.23%	4.97%	5.69%	0.58
Equity Market Neutral	1.64%	1.64%	5.28%	8.97%	8.01%	4.04%	7.21%	0.71
Long-Short Equity	-0.79%	-0.79%	11.31%	12.85%	12.17%	8.48%	10.33%	0.82
Commodities Broad Basket	24.84%	24.84%	31.59%	13.25%	14.67%	9.64%	14.95%	0.77
Macro Trading	3.48%	3.48%	7.94%	6.20%	5.03%	5.03%	7.09%	0.25
Systematic Trend	7.92%	7.92%	14.64%	5.51%	6.60%	3.69%	11.28%	0.24
Tactical Allocation	0.59%	0.59%	17.76%	10.96%	6.76%	6.72%	10.62%	0.29
Relative Value Arbitrage	1.16%	1.16%	6.95%	7.24%	4.28%	5.34%	2.95%	0.34
S&P 500	-4.33%	-4.33%	17.80%	18.32%	12.06%	14.16%	15.26%	0.57
Bloomberg US Aggregate Bond Index	-0.05%	-0.05%	4.35%	3.63%	0.31%	1.70%	6.39%	-0.47
60/40 S&P 500 / US Aggregate	-2.62%	-2.62%	12.35%	12.36%	7.41%	9.26%	10.98%	0.37

Source: AQR- Liquid Alts Roundup, 1Q2026 using Morningstar Data

Competition is also driving lower costs for liquid alternative products. Hedge fund like products have been the most compelling strategies offered, including Long-Short Equity, Equity Market Neutral, and Commodity funds delivering higher Sharpe ratios. Commodities are more economically cyclical than other liquid alternatives, which depend on value added of security selection or tactical asset allocation. Finding active managers that produce reliable alpha is a wonderful source of low correlation to diversify returns. We still believe that short-term bonds offer significant risk-adjusted diversification at low cost, particularly during periods of market turmoil, and a much better store of value than gold or cryptocurrencies.

Property, Infrastructure, Commodities, and Gold

Low inflation and moderate global growth have been cyclical challenges for real assets including real estate, infrastructure, commodities, and timber. Correlations between asset classes, commodity returns, and gold, as well as economic variables are revealing. Goldman Sachs repeated calls for a *Commodity Super Cycle* since 2007 has faltered again.

Higher commodity and basic material prices rose on concern about peak oil production and higher basic material prices due to a secular supply deficit from underinvestment, increased environmental regulation, urbanization, and power demand with physical supply constraints. Yet, all supply-demand imbalances and excess profits are levelled in free market capitalist economies leveraging technology, innovation, and creative destruction of demand. Commodities lagged inflation since 1900, according an empirical law that Input costs can't exceed output costs, therefore commodity returns can't exceed inflation.

Governments are reluctant to privatize underutilized assets, limiting infrastructure, property, and real estate investment opportunities, but fiscal necessity could encourage greater privatization. Consider that the U.S. Government manages 640 million acres or 28% of total land area and owns half of the Western United States, including 85% of Nevada, 64% of Utah and Idaho, and 60% of Alaska (State of Alaska retains 28%). This precludes commercial utilization and extracting natural resources. State and local governments own about 5%.

Privatizations were popular in the 1990s, particularly among developing economies, but have stalled with governments' reluctance to relinquish control. The U.S. Government faces many challenges managing its property holdings, including underutilized property and overreliance on leasing. Yet, government agencies argue against disposal, except under dire fiscal circumstances.

Freeing up non-strategic underutilized property and real estate could reduce U.S. debt, increase productivity, as well as improve housing and office building affordability. East of the Mississippi, the U.S. Government owns less than 10% of land, which is more consistent with other countries. Our National Parks are magnificent assets, but comprise just 13% of U.S. Government holdings.

Infrastructure projects can provide public benefits, as demand for investment opportunities increased, but the limited number and size of deals limit investment capacity. Given limited opportunities and rich valuations of privatizations, it seems timely to divest non-strategic holdings, including ports, airports, buildings, roads, railways, land, and essential services like sewer, sanitation, and water. Power utilities, telecommunication networks, pipelines and transmission lines are typically privately owned already in the U.S.

McKinsey Global Institute confirms that U.S. federal, state and local infrastructure spending of 3.2% of GDP has exceeded Japan and the European Union since 2000. The U.S. Government continues to acquire land and property at an astonishing rate, while accumulating significant debt. *U.S. Land and Conservation Fund* budgets $900 million/year for acquisition, although they struggle to maintain existing property, including land, buildings, parks, monuments, and forests. The $870 billion for the *American Recovery and Reinvestment Act* of 2009 hoped to provide a boost to GDP with shovel-ready projects for a nation in recession, but the economy was already recovering by Q2/2009, well before the first contracts were awarded. And, there was no *economic multiplier* effect in the way this program was legislated.

Private investor accountability improves development projects, including Public-Private Partnerships. It should be more popular out of fiscal necessity, while reducing taxpayer cost with better aligning private operators to efficiently develop and manage assets. Real property disposals can fund new projects to balance social good with fiscal prudence, but projects must be commercially viable and compelling to attract investment. Tax incentives and smoothing regulatory requirements also can enhance investor returns. Co-investment projects tend to be better managed during development and operational life, seeking to optimize cash flow.

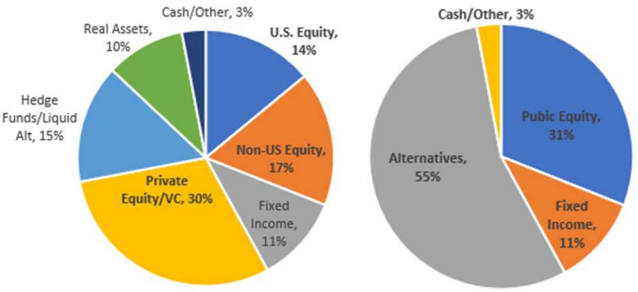
Calls for additional infrastructure investment coincide with strong demand for private market investment opportunities. Government spending might bolster jobs and economic growth, but we have seen repeatedly that fiscal stimulus has been ineffective and inefficiently deployed. We can't spend ourselves into enhanced productivity any more than we can tax an indebted society into prosperity.

Impact of Dismal Asset Allocation and Alternatives

As endowments drove up alternative exposure, many struggled to outperform a simple global balanced portfolio on a risk-adjusted basis. Private illiquidity limits the ability to rebalance and manage allocation exposures. Pension funds also increased alternative exposure. Private market correlation and volatility are difficult to measure and understated, but in the long-run, maybe all that matters is return if ½% lower risk doesn't buy anything. Alternatives failed to moderate downside risk during the Financial Crisis, as large endowments were forced to liquidate private assets at a discount to raise needed cash flow and rebalance holdings.

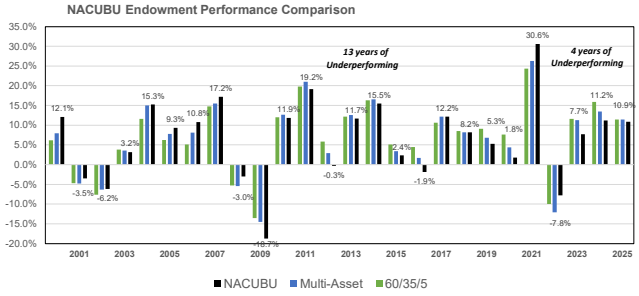
Given the average endowment has underperformed a simple US Balanced (60/35/5) or Multi-asset (including small-cap, non-US) indexed strategy for 17 out of the last 18 years, one might suggest that net performance can't justify incentivizing top talent and operating budgets (i.e., additional salaries, administrative, legal, compliance, governance, record keeping, rent, etc.).

2025 NACUBU-Commonwealth Endowment Study



Average Endowment Allocation as of June 30, 2025

The persistence of lagging performance, comparing FY 2000-2015 vs. FY 2016-2025, suggests the illiquidity premium that might have existed in the 1990s, has now reversed and are an illiquidity cost in a post-GFC world. After the Financial Crisis, illiquidity premiums collapsed or even reversed, and no longer can support 2%/20% fee structure.



NACUBO-Commonfund Study of 657 U.S. College Endowments

Annualized	NACUBU-Benchmark Return			
Return Difference	Global	60/35/5	65/30/5	NACUBU
Full	6.48%	6.60%	6.78%	6.26%
FY 2000-2015	5.56%	5.09%	5.03%	5.55%
FY 2016-2025	7.97%	9.06%	9.65%	7.40%
Post-GFC	7.65%	8.51%	8.94%	6.50%
Risk	Global	60/35/5	65/30/5	NACUBU
Full	9.68%	9.08%	9.89%	10.13%
Since 2000	10.00%	9.04%	9.93%	11.38%
Since 2010	6.31%	4.91%	5.35%	6.93%
Post-GFC	10.31%	9.37%	10.09%	11.04%
Sharpe Ratio	Global	60/35/5	65/30/5	NACUBU
Full	0.47	0.52	0.49	0.43
Since 2000	0.26	0.23	0.21	0.23
Since 2010	0.81	1.26	1.27	0.65
Post-GFC	0.62	0.78	0.77	0.48

Summary Performance Thru June 30, 2025 (Latest Fiscal Year)

Source: NACUBO Endowment Study Returns versus Simple Balanced/Multi-Asset Indexed Benchmarks.

Yale's success stood out during 1990s, benefiting from contributions of active manager selection and increasing allocations to private markets during a period illiquidity seemed to provide a positive risk premium or excess return over public market equivalents. We can observe periods when Yale followed its conviction in strategic allocations differentiated from its peers—in one such example, real estate was the best performing asset class in FY2016 and Yale's exposure was higher than most (2015 Annual Report).

Tactical Asset Allocation (stocks vs. bonds, equity style of growth vs. value or quality, equity capitalization size, sectors, and regions, including U.S. vs. International) was embraced during the 1990s with expanding use of futures, forwards, and options in derivative overlays---this too added value. Again, alpha from active management is a remarkable source of diversification without dislocating an efficient asset allocation. The evolution of private market exposure in institutional portfolios continued to broaden across Venture Capital, Real Estate, and Hedge funds as the sour memory and lessons learned of the 2008 Financial Crisis faded over time. The Global Pandemic might have resurrected this cautionary tale, except tits duration lasted a few months.

Results from a similar exercise with corporate pension plans are included below. Implementing Liability Driven Investing (LDI) likely drove significantly reduced public equity exposure, as misguided asset allocation easily overwhelms any negative consequence of increased alternative exposure. Bond returns have been dismal (failing to exceed inflation), and relative to equity performance over the last 20 years. Imagine the irony that soaring inflation, which required interest rates to rise 5% thereby drove pension liabilities lower to improve funding gaps. But higher inflation boosts benefit cost-of-living increases in the long-run.

Pension and Endowment private alternative allocations continue to increase, but performance still lags simple indexed benchmarks, even before administrative, rent, record keeping, and management overhead. High private market exposures also require additional legal expenses. These additional costs are not considered in plan return performance. Lower volatility of quarterly or annual mark-to-model valuations is contrary to the nature of private equity, venture capital, and private debt with higher implicit risk than public market equivalents.

Corporate plans were required to contribute billions to stay above their required 80% pension funding ratio since passage of the Pension Protection Act. Pensions are unaffordable to maintain, particularly after their errant asset allocation decisions. Corporations froze pension plans, replaced them with defined contribution or cash balance plans, and implemented risk transfer, offloading liabilities to insurance companies.

Asset allocation decisions had e significant impact on relative performance, as well documented since 1986[4]. The simple 60/40 balanced portfolio defies predictions of its demise, and remains a formidable challenge to beat. Asset allocation remains the most important investment decision, so misguided shifts in allocations explain the *devastating return shortfall for pension funds and endowments.* Persistent pension funding gaps are a dreadful consequence of material underperformance of annualized average returns vs. 60/35/5 Multi-Asset indexed benchmark for 5 (-6.35%), 10 (-2.40%), and 15 (-2.20%) years—the US 60/35/5 comparison is worse. How can such terrible outcomes persist so the only viable option is to freeze, or transfer risk of DB plans?

2000-2025	Milliman Corp 100	Simple Indexed 60/35/5 Multi Asset	U.S. 60/35/5
Full Period	**5.71%**	**6.48%**	**6.80%**
Last 15 Years	6.16%	8.36%	9.52%
Last Decade	**5.38%**	**8.78%**	**9.85%**
Last 5 Years	1.35%	7.70%	8.88%

Multi-Asset: 40% S&P 500, 8% Russell 2000, 12% World (x-US), 35% BBG Agg Bond, 5% Cash
U.S. 60/35/5: 60% S&P 500, 35% BBG Agg Bond, 5% Cash

Source: Milliman Corporate 100 Survey, December 31, 2025.

Under the *Pension Protection Act of 2006*, corporate pension funds were required to maintain at least an 80% funded ratio, but public and multiemployer (union) plans were not. They fell further behind, despite soaring taxpayer contributions, hovering in the 55-70% range over the last two decades. Closing large funding gaps is nearly impossible mathematically without higher returns.

Obsession with liability volatility, rather than maintaining a prudent 60%/40% mix was costly over the last two

[4] Brinson, G., Beebower, L., Hood, G. 1986. "Determinants of Portfolio Performance." *Financial Analyst Journal*, Jul/Aug

decades. Equity exposure plunged from 61% to 25% since 2006. Over the last decade, the S&P 500 returned 14.1%, but BBG Aggregate Bond returned just 1.8% on an annualized basis. What is the effect of holding 60% vs. 40% equity? In this scenario, there is over a 50% cumulative difference in asset value or ~5% per year return deficit—there isn't a better way to undermine US pension viability at great cost to taxpayers (public plans) and plan sponsors.

Since 2006, pension consultants recommended plan sponsors reduce equity allocations from over 60% to integrate insidiously complex asset allocation changes that persistently underperformed a simple indexed multi-asset allocation. Decades underperforming a simple multi-asset indexed strategy resulted in insufficient assets to bridge the massive underfunded liability gap, requiring massive contributions by plan sponsors. Some pension sponsors doubled down on this malpractice to engage Outsourced CIO providers, which further gutted remaining internal investment capabilities. Pension plans began closing to new employees, and others offloaded liabilities via *Risk Transfer* to insurance companies. Similar board negligence is evident in public pension plans, although funding gaps are much greater.

Historically, a stock versus fixed income mix of 60/40 was the prudent man standard of pension allocations for generations, highlighting considerable opportunity cost of ill-timed lower equity exposure. Public pension allocations followed consultant opinions as a herd, including increasing alternative and bond allocation. Decades of central banks flattening yield curves and targeting low interest rates yielded dismal bond returns.

Asset Allocation for Corporate Pension Plans

Source: Millian 2026 Corporate Pension Funding Study
Note: Asset class "Other" includes real estate, private equity and private debt, hedge funds, commodities, and cash equivalents.

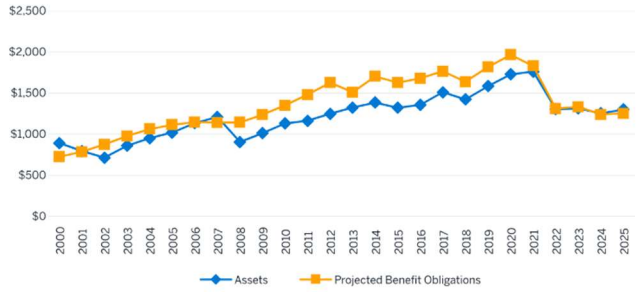
According to a Milliman 100 Survey, corporate pension plan average equity asset allocation has fallen to 24.1% in 2025 from 61.7% in 2005, while fixed income allocations have increased to 52.7% from 28.6% over the last two decades. Cash + Alternatives which has tended to hover around 20% since 2010 has risen to 23.2%, so corporate plans have not been as aggressive in this regard as public pension plans or endowments.

Fisher Black[5] concluded that broader definition of pension liability requires greater equity allocation. Employee compensation will tend to increase faster than inflation with changes in number of employees, service years, accrual rates, longevity, and extended benefits compounding to a multiple of inflation, plus periodic promotions and new job opportunities. Inflation plus real growth tends to drive compensation increases. This explains in part why pension plans continue to be underfunded, despite exceptional returns. Equities are the only asset class with positive correlation to inflation and potential return to exceed liability growth.

High allocations to expensive alternative funds continue to undermine performance. Average returns lag simple balanced asset allocation before administrative cost of governance and management overhead. If private market appraisals are a function of public market multiple valuations, then public and private markets will be more highly correlated with public markets, thus have higher implicit volatility than assumed.

The observed pension deficit: Assets - Pension Benefit Obligation narrowed since exceptionally low interest rates rose in 2022. What triggered this normalization? High inflation was caused by excessive wasteful government spending and persistent money supply growth. Average Plan Sponsor discount rate of 2.7% in 2021 jumped to 5.2% in 2022—higher interest rates required to lower inflation, also dramatically narrowed the pension funding gap, as seen below.

Defined Benefit Pension: Assets vs. PBO ($ billions)



Source: Millian 2026 Corporate Pension Funding Study

An asset allocation with >52% fixed income is unlikely to achieve pension fund return objectives, particularly given our low expected real bond returns. The average pension asset allocation is mathematically insufficient to meet long-term growth in real liabilities, thus will require increasing plan sponsor or taxpayer contributions to narrow the funding deficits. Maybe considering Fisher Black's advice above might have resulted in better outcomes over the last 25 years, without necessity of introducing alternatives with private illiquidity risk.

[5] Black, F. "Should You Use Stocks to Hedge Your Pension Liability?" *Financial Analyst Journal* (1989).

Explicit moral hazard of central banks manipulating yield curves drove a flat-to-inverted yield curve over the last decade. Anticipated yield curve normalization exposes investors to toxic interest rate volatility and global debt. An asset allocation with over 40% bond exposure and less than 37% equity is unlikely to be sufficient to meet increasing pension expense. Thus, pension funding gaps will likely widen increasing taxpayer contributions. Unions limited employee increases in contribution rates. Similarly, endowments will struggle with spending 4-5% with disappointing returns in similar allocation shifts.

U.S. corporate pension funds embraced consultant dependency in outsourcing investment expertise. Disappointing returns were a consequence of ill-considered asset allocation recommended by pension consultants with greater interest in fees for revamping investment policy schemes and manager searches, than simple prudent recommendations to maximize risk-adjusted expected return. Investment consultants figured out that complex investment policy statements necessitating manager turnover and asset allocation reviews produce high recurring annuitized revenue.

Public Pension Fund returns lagged a multi-asset index benchmark by 0.93% annually over the last decade, and 1.95% annually over the last 5 years. Both 5 and 10-year periods span the 2021 Global Pandemic. This is a stunning outcome that should concern taxpayers, and raise serious questions for board governance about strategic asset allocation and use of private alternatives.

Milliman Public Pension Fund Returns (2016-2025)

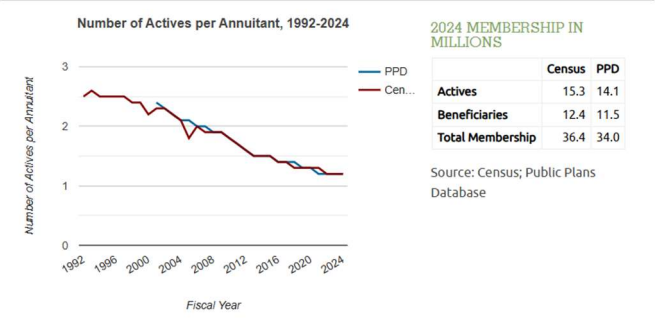
2016-2025	Milliman Public Pension	Simple Indexed 60/35/5 Multi Asset	U.S. 60/35/5
Full Period	8.01%	8.94%	9.96%
Last 5 years	7.11%	9.15%	9.84%
Risk			
Full Period	8.68%	10.60%	10.42%
Last 5 years	7.68%	10.64%	10.50%
Sharpe Ratio			
Full Period	0.68	0.64	0.75
Last 5 years	0.54	0.58	0.66

Multi-Asset: 40% S&P 500, 12% MSCI Non-US, 8% R2K Small-cap, 35% BBG Bond Agg, 5% US T-Bill
U.S. 60/35/5: 60% S&P 500, 35% BBG Agg Bond, 5% Cash

Source: Milliman Public Pension Survey (December 31, 2025)

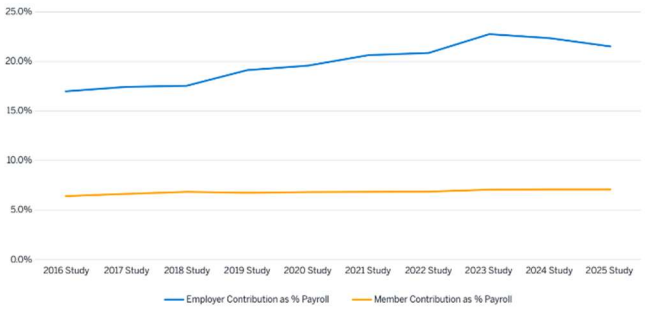
The aggregate funded ratio reported by public pension plan sponsors increased to 77.7% in 2024 as the discount rate increased significantly following rising interest rates during 2022-2023 in response to surging inflation. The present value of public pension liabilities declined, thereby increasing the pension funded ratio by magically reducing the liability. For comparison, in 2020 the Federal Reserve reported a public pension funding ratio of just 57.0% with a liability shortfall of $3.94 trillion, which had increased from $1.44 trillion in 2002. Shortfall reflected in any funding gap requires contributions from state or local government budgets (taxpayers), and employees, which now exceeds 21% of payrolls. Payroll match of defined contribution is much cheaper as long as plan sponsors fail to produce sufficient plan return.

Asset allocation for public pensions looks quite different than corporate pensions over the last decade, although both include a high and rising allocation to alternatives. Public pensions Alternative allocation exceeds 33% as equities declined to 41% on average for YE 2025. Imprudent alternative return and risk inputs allow pension funds to justify unrealistic portfolio return and risk expectations, compounding poor asset allocation results with higher private market alternatives exposure.



Source: Public Pension Database

According to Millian, current liabilities are $6.5 trillion versus total assets of about $5.3 trillion for an estimated funding ratio of about 85%. The ratio of actives per annuitant retirees declined steadily over the last 30 years, yet there are still about 5,000 public retirement systems, including about 300 state-administered plans. They support 15.3 million employees and 12.4 million retirees receiving $406 billion in annual benefits. Declining actives reflect departures before fully vested, employer declares bankruptcy, or offered buyouts redeemed into qualified retirement accounts.



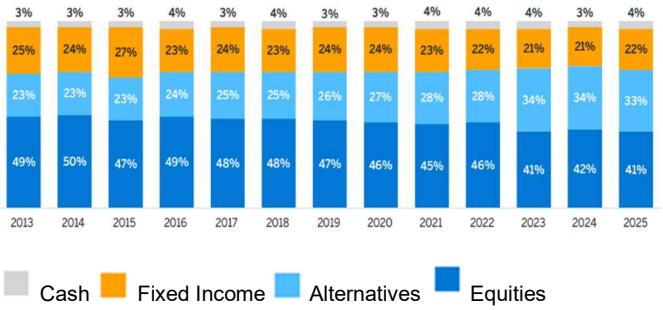
Source: Milliman Public Pension Survey (Apr 2026)

Employee pension contributions hover around 11% to 12% of salaries, with some plans requiring even higher contributions—new CalPERS and CalSTRS members require equal 50/50 cost-sharing between employers (taxpayer funded) and employee. Corporate pension plans are winding down (inc. risk transfer) or being frozen with a declining number of active participants. Public pension plans also are shrinking as many no longer accept new employees, which are being diverted

to 401(k), 403(b) and 457 plans. This increases need for individuals to manage self-directed accounts effectively.

Insufficient net returns from misguided asset allocation policy with high fixed income and underperforming alternative allocations, displacing equity allocations (that significantly outperformed) were costly given ever higher required contributions from taxpayers and members, yet public pensions remain underfunded.

Asset Allocation for Public Pension Plans



Source: Millian 2026 Public Pension Funding Study

Asset Owners—Poorer Outcomes by Choice

Efforts for decades failed to discredit classic portfolio efficiency of Modern Portfolio Theory's *Prudent Man* standard of 60% Equity/40% Fixed Income allocation, which has stubbornly stood the test of time. MPT is a mathematical framework for portfolio construction to optimize weights in portfolio of assets to maximize return for a given level of risk. MPT concludes that an asset's return and risk (return volatility and correlation) define how it contributes to a portfolio's overall risk and return.

Economist Harry Markowitz introduced MPT or mean-variance framework in a 1952 paper, for which he was later awarded a Nobel Prize in Economics. While some suggest that MPT—thereby multi-asset allocations, of which 60/40 is just one of an infinite number of solutions along the *efficient frontier*—is no longer relevant for *Modern* times. Yet, true portfolio diversification is never out of style. Later we will discuss other promoted inferior portfolio construction alternatives, such as *Risk Parity, Liability Driven Investing,* and *Total Portfolio Approach*, which led to dismal outcomes still being reconciled.

The challenge for Strategic Asset Allocation lies in determining appropriate data inputs. Forecasting returns and risk is not an easy exercise, but one that Strategic Frontier Management has focused on as key to effective Strategic and Tactical Asset Allocation. A systematic, intuitive, and proven process helps managing which is actively managed relative to policy benchmarks. Forecasting asset class returns and risk without comparable historical consistency across public and illiquid private markets is challenging. The classic mean-variance objective was never defined by any number or breadth of asset classes or securities. We can measure portfolio risk through a complementary macroeconomic or financial muti-factor framework instead of just asset classes.

The *Endowment Model* pioneered by David Swenson, Yale University's Chief Investment Officer (1985-2021), became the envy of institutional investors in the 1990s. Yale outpaced all other endowment funds by a wide margin with 13.1% annual return over Swensen's 35-year stewardship through June 2020, outperforming the Cambridge Associates endowment mean by 3.4%, and a 60/40 portfolio by 4.3% per annum. Yet, a turning point for the Endowment Model began to adversely impact performance around 2005. Since the Financial Crisis, endowment returns lagged simple balanced and multi-asset indexed benchmarks with greater implied risk.

Stanford University's endowment in the 1990s began to leverage its legendary proximity to Silicon Valley and University research into direct venture investments. Other university endowments tried to follow suit. Yet, as more institutional investors attempted to follow Yale's lead, the illiquidity premium reversed with an ever more crowded sandbox. Dry powder grew, exit opportunities narrowed, and fund horizons extended to over 12 years. Asset owners struggled since to deliver excess returns with a model so many had sought to emulate in jacking up private equity and alternative exposures. Endowment and pension investment offices typically are not staffed to manage active portfolios or direct investments, thus rely more on consultants and fund managers. If manager selection and asset allocation are floundering, then endowment and pension funds, which are all doing the same thing, seem to be similarly failing.

Yale was more tactical, favored international markets, known for astute manager selection, and leveraged tactical asset allocation, in addition to higher alternative allocations. Endowment staffing typically runs lean, thus most endowments can't manage direct investments or even active strategies. Excelling at asset allocation will have greater impact on relative performance. Attribution of Yale's performance shows contributions from tactical and strategic asset allocation (*Countries Still Matter*) as the U.S. dollar weakened and emerging markets rose.

Outsourcing reduces internal investment capabilities, critical resources (data, systems), and self-reliance. Can you rely on an asset allocation committee without experience managing stocks and bonds to respond to a financial crisis? It can limit the ability to partner with like-minded peers or pursue direct investment opportunities. Picking successful private fund managers is far more difficult than choosing active equity or bond managers.

Overview of The Canadian Model

The *Canadian Model*[6] stands in stark contrast to the *Endowment Model*, which has underperformed on an average. College endowments focus on picking external managers and asset allocation with lean staffing and reliance on public and private fund managers. If they persistently lag a simple multi-asset indexed strategy on a risk adjusted basis, asset allocation, manager selection, and alternative exposure must be scrutinized. This probably explains the increasing secondary market sales, and soaring redemption requests, including private debt. Actions speak loader than words when public pension investment committees are publicly announcing lower targets for private equity allocations, while annual fundraising totals decline too.

The Canadian Model is unique from governance, rooted in an independent professional board, to building institutionally competitive in-house investment teams with active investing capability, including managing private direct investments. Recruiting top talent for In-house management requires institutionally competitive compensation for investment professionals. Team incentives should be aligned with longer horizon objectives. Strong collaborative relationships of aligned trusted investors globally can foster shared insights.

The first to envision this model was Ontario Teachers in the 1990s, and requires asset scale of >$10 billion to efficiently support active and direct investment, systems, and management. Success of value added was attributed to practical and indirect benefits of talented portfolio management, greater objective alignment (career opportunity and compensation), and lower total costs. The Canadian Model can be more flexible, innovative, opportunistic, independent, and collaborative. Recruiting and retaining experienced teams, managing talent well, and providing career opportunities are key. Some pension funds were good enough to manage private assets for others, which further spreads costs over a larger asset base---imagine cost savings leveraging specialized strengths of each.

Despite the model's success, it is still rare to observe other asset owners adopting this model—particularly in the US—although elements reflect best practices. Yet, certain dangers, bias, and egos can undermine its fragile balance quickly. No where else have I observed how a group of like-minded asset owners work at scale collaborating together as partners, not just peers. I believe that pulling together the talent and leadership to drive success is the most challenging aspect executing the Canadian Model—but it is a fragile dance that can collapse from internal misaligned forces.

Experience from within the Canadian Model revealed its strengths, as well as weaknesses and vital keys to execution. It takes patience to refine an investment discipline as a team matures, gains confidence, and learns from experience. The success of the Canadian Model is evident in lower management cost and more consistent excess return. Direct and active investing successes emboldened partnerships across peers. They came to realize company founders preferred asset owners over private equity and venture capital investors. Scale and shorter decision timelines were advantages across venture capital, private equity, private debt, real estate, and infrastructure, even picking hedge funds.

Independent, self-sufficient, and capable staff are better able to develop internal investment talent, evaluate strategic decisions, manage market turmoil, select fund managers, as well as interpret risk management and performance attribution output. Greater transparency, and meritocratic incentive compensation aligned with fund objectives are necessary, but not sufficient conditions to adding long-term value. Strong investment management capabilities and internal resources can lower overall cost and should improve outcomes of active management. Recruiting and retaining top performing investment teams requires a well-designed industry competitive incentive-based compensation plan aligned with investment objectives, while complemented by a strong culture and leadership team.

Adopting industry competitive compensation may be the highest hurdle to successful internal management due to statute, public disclosure laws or increased scrutiny. Why are we willing to pay external managers (out of one pocket) far greater compensation than for their own investment staff (other pocket) doing a similar job? Corporate pension plans in the 1990s embraced more competitive compensation plans for internal in-house managed strategies (ex: ARCO Inv. Mgmt., Hughes, Ameritech, GTE, GM, General Electric, etc.). At ARCO, pension plan returns actually boosted earnings as overfunding grew. Other pension plans that were unable to reduce underfunding were frozen or pivoted into DC/401(k) plans, it was cheaper with less liability to outsource management to consultants. Investment staff focused on governance and risk management as strategies were allocated to external managers.

Adverse effects of the "pocket problem" are significant in the U.S., although many Canadian pension funds overcame the "pocket problem" and leveraged direct investing with flexibility at lower cost for decades. Trustees are demanding accounting of private fund fees. California law now requires pension funds to disclose fees, expenses, and carried interest of private

[6] The *Canadian Model* embraced by large Canadian pension plans since the mid-1990s is now practiced by many sovereign wealth and non-U.S. pension funds. Its characteristics include greater active and internal investment capability at lower total cost, including 20-30% in alternative investments. Canada has the second highest per capita pension exposure globally. Some *Total Portfolio Approach* attributes are borrowed from it, but the Canadian Model remains quite differentiated from TPA.

funds. The drive toward full expense accounting and performance attribution can expose total fund, agency, and internal costs, even if indirect benefits are difficult to quantify. As transparency improves, the pocket problem can give way to total performance net of all fees or cost.

Having a strong investment culture will attract top talent, but simply being a manager-of-managers is unlikely to attract great investors—this is where pension funds have struggled for a variety of reasons. As Wall Street reduces their analyst number (diminished investment banking use), independent advisory firms can partially fill the gap. Arriving at the active-passive tipping point—with more than 50% of assets indexed—shouldn't market inefficiency increase? Transaction cost plunged ($0/share stock trades) and management fees declined, as have active fund expenses, but we believe value and small-cap risk premiums must be restored for active management to pay-off. Small-cap and value tilts are finally paying off.

Collaboration in The Canadian Model

Asset owner collaboration began in real estate and infrastructure, then extended to direct investments in venture capital, private equity, and private loan deals with like-minded investors. Venture capital and private equity deals can benefit from aligned partners sharing due diligence costs, joint board responsibility, unique insights, and ability to right-size investment stakes. Just because it is hard to do doesn't mean we shouldn't try. In contrast, U.S. pension nor endowment funds collaborate much, even those geographically nearby.

Below, we list collaboration benefits observed working with other Asset Owners from inside a Canadian Crown Corp, managing multiple public pension plans and a sovereign wealth fund, pioneering the Canadian Model:

- Shared due diligence, valuation, management (i.e., legal, tax, consultants, etc.), and lower costs with improved capability and oversight.
- Compare financial models, assumptions, evaluate management, and provide additional future liquidity.
- Secure greater shareholder rights, and more likely potential board seats in direct investment deals.
- More expedient and efficient deal closing, reduced overhead, and fewer investors, bigger checks. Cooperative syndication can right-size transactions.
- Expanded and unique deal sourcing, broader network, and diverse expertise.
- Financing flexibility, longer time horizon, and stable capital can improve deal terms (i.e., preference, shareholder rights, warrants, conversion, etc.)
- Synergies realized of overlapping investments using independent financial models leverage unique sourcing advantages, reputation, and relationships.
- Founders prefer investment from asset owners with longer time horizons, financing flexibility, longer horizon, and access stable/aligned follow-on capital.
- Asset owners can add value with public market experience to support company management.

Asset owners are able to exploit natural advantages working in collaborative relationships with like-minded investors exploiting active and direct investing opportunities with better investment insights, as the Canadian Model revealed. It does require patience, commitment, talent development, relationship building, good governance, and committed stakeholders. Developing internal investment capability is challenging, but can lower total cost, focus organization on objective, and yields various indirect benefits. While sourcing private market opportunities is demanding, collaborative relationships are helpful, effective and reduce cost.

Private fund co-investing alongside GPs was popularized as a way for LPs to reduce management costs and increase direct exposure. But GPs view co-investing as critical to fund raising. Such opportunities arise when earlier investors are tapped out by operating agreement, available funding, or conflict of interest. Although co-investment seems appealing, experience remains mixed over the last decade due to limited and adverse selection issues. If investment is so attractive, why are you asking me? Access seems competitive, but often only in exchange for a future funding commitment. We found many co-investments were *capital black holes,* not the real opportunity imagined or suggested.

How to Improve Performance Results

Consultants and Chief Investment Officers encouraged trustees to invest in alternatives from private equity and venture capital to real estate, hedge funds, and other real assets as a reliable way to beat the market on a net risk adjusted basis. Iincreasing alternative allocations seemed theoretically appealing, but has failed to provide much, if any, sustainable advantage in 20 years.

Given complexity, illiquidity, and infrequent uncertain pricing of alternatives, performance attribution is very difficult. Mark-to-model appraisals can be misleading—and performance reporting based on internal rate of return (IRR) by vintage masks total return, reducing transparency. This is a source of disagreement about illiquidity costs and unrealized diversification of private market allocations vs. a mythical illiquidity premium.

Deviations in asset allocation are an obvious source of observed underperformance, net of fees and overhead expenses. Isolating systematic effects of lower public equity and extended fixed income exposure is easy math. So, why do Consultants keep promoting new frameworks like Risk Parity, Liability Driven Investing, and Total Portfolio Approach that overcomplicate asset allocation with no perceptible advantage. Without the constant churn of manger searches and asset allocation

reviews, there is little remaining fee opportunity in simple performance monitoring and quarterly reviews—much of which staff can do with appropriate data and systems.

Indeed, the best parts of TPA have been practiced for decades, yet work better within classic Strategic Asset Allocation. My practical experience suggests to me that TPA will likely disappoint, while increasing costs, and weakens governance, shifting this burden to internal investment committees. Asset allocation becomes a residual outcome of investment selection, rather than a constructive exercise with a much different time horizon.

Some asset owners may be better served by collapsing their private market activities of venture capital, private equity, private debt, and infrastructure into an opportunistic portfolio with greater scale and financing flexibility. Strategy allocations of less than 3-5% usually provide no distinguishing value, increasing complexity and cost. Currency exposures should at least be managed in aggregate to hedge unintended exposures.

While these portfolio construction schemes may justify desired higher private alternative exposure with easily manipulated return and risk forecasts, the approaches mask illiquidity and other agency costs behind infrequent opaque valuation appraisals, rather than delivering true sustainable performance advantages. Adding private alternatives to the strategic asset allocation universe seemed theoretically appealing, but instead yielded a decisive outcome disadvantage since 2005. The average private market fund returns support this conclusion. More liquid and transparent alternatives, such as hedge funds, alpha sources, and short-term bonds, are better diversifying choices.

Outsourcing portfolio management has increased, while struggling with staff recruiting, retention, and confidence challenges. Those with sufficient scale are losing core investment capabilities, consistency, transparency, and objective alignment. Developing internal staff provides many indirect benefits and expertise needed to evaluate strategic decisions, understand performance attribution, control investment risk, and manage market turmoil. Asset owners have failed to fully exploit their scale advantage with external dependency that perpetuated portfolio complexity and generally failed to add value.

Better benchmarking (volatility, correlation, and return) is needed to assess private market investments. Performance attribution will require longer horizon evaluation than public markets to untangle asset allocation (equity vs. fixed income, country, currency) and factor exposure from security selection effects.

Management fees and transaction costs have fallen for mutual funds, ETFs, and separate accounts, including wealth management SMAs. This should reduce costly friction that limited active fund performance. However, high costs and longer holding periods more than offset any remaining illiquidity premium. Private equity, venture capital and hedge funds still charge about 2% of AUM + 20% of total appreciation. Why haven't private market fees followed suit? We believe that performance fees on value added versus an objective benchmark would help, and be more aligned with investor interests.

Capital intensive or long horizon to profitability (J-Curve) are rarely well compensated. Incentive fee should focus instead on excess return versus aligned indices, but requires greater access and reporting consistency among benchmark indices. Private fund asset-based fees need to moderate too. Exposure to private equity and debt, venture capital, hedge funds, infrastructure, real estate, and other alternative investments are what everyone seems to want, but can they add value versus their objectives?

Private fund managers need to consider restructuring their fees. For example, many institutional managers base incentive fees on active return instead of total return. Value added fee incentives with lower asset-based fees would improve private fund investor alignment and likelihood of adding value. A small-cap equity index better reflects equity market, small size, and illiquidity risks of venture capital. Hedge funds incentives could be a function of valued added over cash or a benchmark representative of its beta.

Asset owners may be better served by collapsing their private market activities of venture capital, private equity, private debt, and infrastructure into an opportunistic portfolio with greater scale and financing flexibility. Strategy allocations of less than 3-5% usually provide no distinguishing value, increasing complexity and cost. Currency exposures should at least be managed in aggregate to hedge unintended exposures.

A practical solution involves creating replicating liquid market proxies as determined by the *Private Market Equivalent* methodology, to improve understanding of portfolio holdings, as well as risk and return characteristics of private asset classes. Such liquid tracking strategies can increase liquidity and create synthetic exposure reducing cash drag. Proxies provide:

(1) Improved risk inputs (volatility and correlation),
(2) Reference for valuation adjustments,
(3) Provide a liquidity buffer with effective leverage
(4) Investible index for rebalancing asset allocation
(5) Enhanced performance attribution.

Better portfolio analytical tools and services will enhance client communication and understanding. All of these things expose the *Alternative Reality*.

Private Market Alternatives in Defined Contribution

Private equity firms have focused in on a new source of funding from retirement savings accounts of less sophisticated investors, because the traditional source of funds from institutional investors is slowing down (subscriptions) and we observe increasing redemptions.

Global private equity fundraising fell 11.0% in 2025, and was the fourth year in a row that fundraising declined, now at its lowest level in a decade, according to S&P. So, it is not surprising that private fund companies would want to target retirement savings plans, beyond shrinking pension plans. 401k plans total $13.8 trillion in assets, whereas 403(b) plans have about $1.5 trillion, so this is an alluring target, no doubt.

There is a reason we limit access to unregulated funds and private market securities. Unsophisticated retail and retirement plan investors don't have the resources or understanding to assess private market investments without assistance of ab advisor to assess valuation, illiquidity, leverage, specific company risks, and higher fees, including agency expenses. Policymakers and regulators, particularly the SEC, maintain that such investors require protection from complexities of private fund and security offerings. We agree.

Yet, Efforts seeking to *democratize* private market funds, cryptocurrency, and other high-cost alternative investment funds cannot ensure retirement plan accounts will benefit, or enjoy greater appreciation of balances without undue risk—instead, we think the opposite is true. Consumers, in this case retirement plan participants, crave what they can't have due to an innate behavioral bias called the *scarcity effect* that subconsciously tricks our brain into believing unavailable or inaccessible things are more valuable, necessary, desirable, and prestigious. We are too familiar with this bias in marketing to our wallets.

As directed by the President, the Department of Labor begrudgingly released a proposed rule that addresses fiduciary duties of prudence to provide safe harbor, under certain guidelines, for trustees selecting plan investment options to add private market funds and other alternative investments to self-directed retirement accounts. This is a stunning decision: Adding private equity, venture capital, private credit, infrastructure, property/real estate, and cryptocurrency funds seem alluring in the pitch to *Democratize Private Market* access but it is a misguided attempt to bypass investor accreditation. Capitalizing on investors' envy of what only rich folks' family offices, endowments, and pension funds hope to exploit is a foolish endeavour.

The *Fiduciary Duty of Loyalty* requires plan trustees must act solely in the best interest of plan participants for the purpose of providing benefits, including choosing retirement options. Fiduciaries, under ERISA Section 404(a)—*Duty of Prudence*, are prohibited from making decisions that sacrifice investment return or assume greater risks to promote non-pecuniary goals, such as promoting environmental or climate change, social justice (inc., equity over equality), diversity, or other alternative policy objectives. Uneconomic constraints or misguided objectives not fit for prudent investment purpose reduces flexibility and investment opportunity.

The Department of Labor's politically driven back-and-forth on fiduciary responsibilities and prudent duties exist for the foremost benefit of participants and shareholders should be simple and straight forward, acknowledging safe-harbor for investment choice is key. of retirement plan options. Private companies attempting to exploit regulatory arbitrage, tax credit reliance, or financial engineering probably won't realize sustainable advantage, as political winds switch often,

The practical consequence of Fiduciary Prudence and Loyalty to investors is that trustee decisions should provide the best chance of enabling outcomes that maximize expected risk adjusted net returns. Thus, as a matter of prudence in retirement plans, we should seek to protect individual investors from unwarranted and unscrupulous risks, including understanding misleading assumptions and myths of *Alternative Realty*.

Department of Labor has proposed a rule to provide safe harbor under certain guidelines for trustees to include private market funds and other alternatives in defined contribution plans they oversee (Note: 457 plans for government workers are exempt from ERISA and DoL regulation). We strongly believe that individual investors are not equipped to manage illiquid, expensive, opaque, and less regulated private alternative funds without direct access to advisors. This slippery slope for self-directed retirement plans logically suggests applying similar alternative investment rules for Individual Retirement Accounts and 457 plans without protections to ensure prudent efficient outcomes for individuals.

Regulatory arbitrage, tax credit reliance, or financial engineering are unreliable ways of adding value. Activist investors also are having an increasingly difficult time advocating for anything that sacrifices performance for the sole benefit of participants, hence the withering of environmental, social justice, equity (over equality), and other uneconomic objectives. The fiduciary standard is a legal and ethical obligation requiring financial advisors to act solely in their client's best interest, prioritizing client's needs above their own.

Adverse individual outcomes of poor portfolio management and contribution decisions (not taking advantage of company match), as well as behavioral biases and failing plan design, have led to disappointing performance of self-directed accounts. Dalbar's QAIB Study for 20 years through December 2024 implies that equity investors lagged the S&P 500's annualized return of 10.35% by 1.1% with a return of 9.24%. Increasing reliance on self-directed defined contribution plans require effectively navigating a wise strategy to achieve beneficial outcomes. Plan design, tax advantaged savings, and matching contributions provide a helping hand. Failure to allow individual guidance and advice into retirement plans has been a hindrance, increasing the wedge between accumulation success and failure.

The effort to democratize private alternative funds and cryptocurrencies by providing safe-harbor for fiduciaries private alternative funds and cryptocurrency is a dangerous proposition for self-directed retirement plan participants without the help of an investment advisor to guide them. We don't believe it is prudent for retirement plans to add illiquid high-cost private funds, which are more complex, risky, and less transparent in self-directed accounts. Offering private alternative funds only benefit fund managers, and can cause greater harm for less sophisticated individual investors. However, proposed language in the final DoL rule should give pause to any fiduciary considering incorporating such generally unsuitable investments.

Rather than allowing self-directed retirement accounts to invest in private fund alternatives, sufficient options exist in Liquid Alternative mutual funds and ETFs. These alternative funds adhere to regulatory requirements for liquidity, valuation, transparency, and leverage, so are already allowed in retirement plans. These are more appropriate fund options for self-directed retirement plans enjoy greater transparency, daily liquidity, and lower costs versus illiquid private funds, only available to sophisticated or accredited investors for good reason. The fact liquid alternatives are not typically included in retirement plan options begs the question whether there is a real need for private fund alternatives in DC plans. We suggest fiduciaries avoid private equity, private debt, and particularly cyptocurrency as plan options.

Private market fund managers are eager to access new sources of funds as their desire for investment capital is insatiable. With pension fund assets declining and endowment funds treading water, the only remaining avenue for fund raising funds is wealth management and retirement savings plans. So, it's not surprising Blackstone, Carlyle Group, Apollo, Goldman Sachs, and KKR lobbied for including private funds in 401(k) plans. With fast growth in 401(k) assets of $13.8 trillion. just a 5% allocation would drive $690 billion in new fund flows, exceeding last year's private fund raising. Private markets continue to have an investment capacity issue with Private Equity dry powder (uncommitted capital) of $2.18 trillion, given $6.24 trillion under management recently. Global Venture Capital also has $601 billion callable on $2.6 trillion in assets. Dry powder approaching 30% of AUM begs the question, wouldn't additional flows limit returns in an already crowded sandbox? Few seem worried about capacity constraints.

Global Market Outlook, Risk and Correlation

Asset allocation remains the critical determinate of long-term wealth. Investors need to re-discover the adventurous spirit of active management. Long-term volatility and correlation expectations continue to evolve, which has implications for our strategic asset allocation. Investors should expect higher equity, bond, currency, and commodity volatility as interest rates and monetary policies normalize globally. Increased volatility within and across asset classes suggests expanded global tactical asset allocation opportunities. We believe that relative fundamentals will become more important and that *Countries Still Matter*, as do sector and risk factor exposures with varying cyclical economic forces.

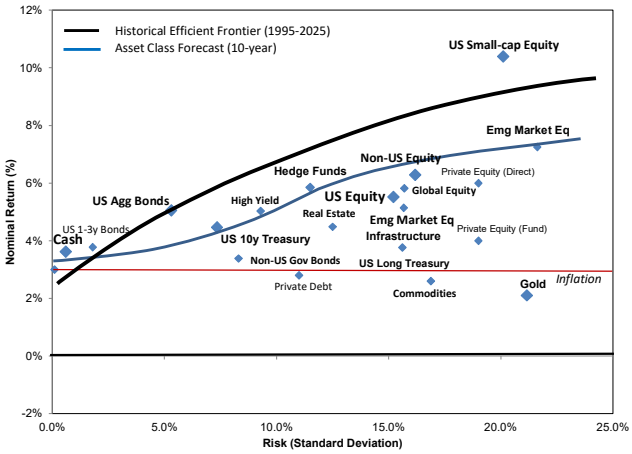
Our outlook reflects mean reversion of global bond and equity valuations, both which remain stretched, as well interest rates normalized and yield curve slopes steepened some (still not enough). The remarkable economic result has been U.S. profit margins that drove persistent high earnings growth. Higher implicit correlation and volatility reduce benefits of portfolio diversification, but valuation uncertainty is difficult to manage and a risk. Return forecasts for the next decade reflect stretched relative valuations. Global growth, productivity, and margins continue to lag the U.S.

Our Capital Market Return Expectations

	10-year Returns		30-Year Returns		1900-2025	10-year Forecast	
Asset Class	Return	Risk	Return	Risk	LT Return	E[Return][1]	Risk
U.S. Stocks (S&P 500)	14.3%	13.5%	10.2%	15.2%	10.2%	5.5%	15.2%
U.S. Small-cap	9.7%	18.9%	8.6%	20.1%	8.1%	10.4%	20.1%
World (ex-US)	9.0%	15.0%	6.3%	16.2%	4.1%	6.3%	16.2%
Emg. Market Equity	8.8%	17.7%	6.6%	21.6%		7.3%	21.6%
U.S. 10Yr Treasury	1.2%	7.4%	4.0%	7.3%	4.6%	4.5%	7.3%
US BBG Agg Bond	2.0%	5.0%	4.2%	4.1%	-.-	5.0%	5.3%
US BBG Gov/Cr 1-3y	2.1%	2.3%	3.3%	1.8%	-.-	3.8%	1.8%
US High Yield (ML/BoA	6.2%	7.3%	6.5%	8.4%	-.-	5.0%	9.3%
JPM Non-US Bond	-0.3%	8.4%	2.5%	8.3%	-.-	3.4%	8.3%
Commodities (CRB)	10.3%	16.9%	5.6%	16.9%	2.9%	2.6%	16.9%
Gold (US$)	15.8%	15.1%	8.6%	16.1%	4.3%	2.1%	21.2%
Cash (T-Bills)	2.3%	0.6%	2.4%	0.6%	3.3%	3.6%	0.6%
US Inflation (CPI)	3.3%	1.1%	2.6%	1.0%	3.0%	3.0%	1.0%
Global Equity	12.3%	23.5%	8.4%	15.2%	7.1%	5.9%	15.7%
Global Multi-Asset	7.7%	12.6%	6.6%	13.7%	4.7%	6.0%	13.7%
Infrastructure	10.3%	15.8%	9.7%	15.7%		5.1%	15.7%
Private Equity[4]	13.0%	18.9%	7.4%	19.8%		6.0%	19.0%
Venture Capital	14.0%	24.6%	8.6%	26.1%		10.4%	24.6%
Small-cap Equity	-4.6%		-1.6%		-.-	4.9%	
Stock-Bond	13.1%		6.2%		5.6%	1.1%	
Stock-Cash	12.0%		7.8%		6.9%	1.9%	
Bond-Cash	-1.0%		1.6%		1.2%	0.8%	

Source: Strategic Frontier Management, Q2/2026

The heavy black line of the efficient frontier traces the historical efficient frontier over the last 50 years. Concern about the outlook for balanced portfolios has focused on equities, but overvalued global bonds remain concerning, as they have for some time.



Source: Strategic Frontier Management, Q2/2026

Redemption gates and lock-ups, as well as a lot of dry powder likely preclude a dramatic private market correction. but increasing secondary discounts could be signs of trouble ahead. The *Alternative Reality* is that expected net risk-adjusted returns for private funds and other alternatives (inc., gold, commodities, crypto) are too far below the efficient frontier to warrant strategic allocations. Our private market forecasts reflect a private market *illiquidity cost* (not premium) from private market equivalent basis (equity, bond, credit, size, etc.).

Private equity and venture capital remains expensive too. We've discussed our concerns about Private Credit, and question robustness of due diligence, and increasing *shadow default rate*. We expect Private Equity (Buyout) funds will languish below the public market efficient frontier with a disappointing Sharpe ratio (leverage boosting risk). Venture Capital has higher risk than small-cap equity, but we forecast a better return than private equity—direct investing in small private companies is more compelling, but not easy given longer holding periods or lock-up, even if you are a Silicon Valley insider or venture capital firm.

Private equity (Buyout) has underperformed public market equivalent options for over a decade, particularly the highly correlated S&P 500, despite leverage and low interest rates since 2000. We forecast that private equity funds would lag large-cap equities since 2016, but with much higher risk due to leverage. Unlikely private equity will perform better after normalizing higher interest rates.

This table below illustrates remarkably unexpected relationships over 30 years, including correlation of inflation to other asset classes. Commodities can't be much of an inflation hedge at a low 0.21, and gold has zero correlation with inflation. High correlation of private and public equity, as well as private and public debt is intuitive. Even basic stock vs. bond correlates at 0.22.

Asset	*LARGECAP*	*SMALLCAP*	*HIGHYLD*	*AGGBND*	*TRSY10*	*SHTBND*	*CASH*	*CRB*	*INFLATION*
Return	7.1870	9.9568	5.0377	4.0846	2.8210	4.7785	3.5301	3.2042	3.0000
Risk	15.1040	15.2624	7.9408	4.3851	7.5193	1.9805	0.7114	14.8967	0.9219
LARGECAP	1	0.997	0.566	0.223	0.051	0.129	-0.003	0.265	-0.034
SMALLCAP	0.997	1	0.580	0.229	0.054	0.138	0.015	0.270	-0.028
WRDXUS	0.715	0.719	0.537	0.202	0.029	0.153	0.014	0.319	-0.027
HIGHYLD	0.566	0.580	1	0.521	0.261	0.443	0.023	0.258	-0.039
AGGBND	0.223	0.229	0.521	1	0.916	0.902	0.161	-0.121	-0.131
TRSY10	0.051	0.054	0.261	0.916	1	0.782	0.098	-0.224	-0.188
SHTBND	0.129	0.138	0.443	0.902	0.782	1	0.376	-0.126	-0.023
TIPS	0.111	0.117	0.274	0.425	0.454	0.325	0.053	0.167	0.076
CASH	-0.003	0.015	0.023	0.161	0.098	0.376	1	-0.048	0.368
CRB	0.265	0.270	0.258	-0.121	-0.224	-0.126	-0.048	1	0.213
INFLATION	-0.034	-0.028	-0.039	-0.131	-0.188	-0.023	0.368	0.213	1
GINFRA	0.814	0.811	0.500	0.306	0.174	0.213	0.021	0.217	-0.060
GOLD	0.049	0.055	0.068	0.111	0.109	0.104	-0.099	0.193	-0.001
CRPTOCUR	0.201	0.199	0.164	0.055	-0.011	0.044	-0.096	0.053	-0.066
PROPERTY	0.082	0.083	0.160	0.035	0.000	-0.060	-0.046	0.150	0.163
HEDGEFUND	0.590	0.606	0.550	0.153	-0.071	0.114	0.133	0.421	0.133
BANKLOAN	0.480	0.494	0.750	0.044	-0.292	-0.031	-0.011	0.429	0.224
PEQUITY	0.873	0.889	0.566	0.137	-0.042	0.068	-0.013	0.283	-0.044
VCAPITAL	0.949	0.949	0.443	-0.049	-0.188	-0.168	-0.099	0.312	-0.017
PDEBT	0.550	0.560	0.836	0.028	-0.188	-0.119	-0.205	0.353	-0.032

Source: Strategic Frontier Management, data through 12/31/2025.

Increasing focus on global multi-asset investing has bolstered risk management practices. Risk factors such as inflation, economic growth, interest rate sensitivity, leverage, volatility, energy, style, size, credit, and currency can complement portfolio construction. Emergence of risk factor investing and breadth of ETFs provide new ways to monitor and manage multi-factor risks. Interest rate sensitivity of private fund holdings is greater than assumed

Insights into *Technological Change, Innovation*, and *Future Themes* are valuable, even if difficult to invest. Direct investing with a longer horizon can exploit insights that may be difficult to leverage otherwise. Seeking growth consistency and sustainable competitive advantage with an appreciation for creative destruction can increase the margin for error over a longer horizon.

An Alternative Strategic Frontier

Strategic Frontier Management's *Optimal Empirical Resampling*[7] methodology for engineering *Strategic Frontiers* has been in practical use since 2001, and found to be more intuitive and more stable than Markowitz Mean-Variance Optimization or the Black–Litterman model for optimizing strategic asset allocation policies spanning all possible risk aversion, equivalently 0-100% equity exposure). It has been utilized for global clients with a range of investment objectives. Empirical re-sampling of capital market returns is not reliant on normal or *independent, identically distributed returns*, as assumed in mean-variance portfolio optimization. Our robust and intuitive methodology can incorporate Bayesian adjustments to accommodate divergences from equilibrium, such as an overvalued stock or bond market, or adjustments to volatility risk.

We know small changes in expected return, volatility, or correlation can have an exaggerated impact on mean-variance solutions. OER addresses this issue. Selected portfolio allocations derived in this manner tend to be more robust, stable, and intuitive. Empirical analysis of asset class relationships linked in time preserves descriptive statistical relationships that are insightful, so there is no assumed underlying distribution (i.e., normal, lognormal). Investors should be skeptical of risk allocation strategies, such as minimum variance, maximum diversification, or risk parity.

Combining active Tactical Asset Allocation relative to an OER derived benchmark policy can add value and increase portfolio diversification from an alternative alpha source to provide true active diversification. Experience suggests active return correlation between tactical asset allocation and other alpha-generating strategies (such as security selection) and even other asset classes is usually uncorrelated> *Dual Alpha* results from overlaying active strategies, such as TAA, operating independently and in parallel to *leverage potential alpha without leveraging total risk*. Market neutral derivative strategies, such as Global TAA, have modest collateral requirements. In contrast, alternative funds displace holdings, which can reduce potential active return or alpha potential.

[7] Inspiration for naming *Strategic Frontier Management*

Final Thoughts

Everything should be made as simple as possible, but not simpler. --Albert Einstein

Alternative investments promising enhanced risk-adjusted return and portfolio diversification is theoretically compelling. Yet, limited investment capacity and high transaction costs increase difficulty in managing and rebalancing asset allocations. There is no assured illiquidity premium. Assumed volatility and correlations with other asset classes is generally too low, but who is to judge if lagged valuations don't reflect real-time market conditions. We observed a stunning disconnect between public and private markets risk and return must be taken into account to understand the realistic impact of incorporating private alternatives.

Access to private markets increases investment opportunities, and the need for long-term private capital investment is substantial. However, private market and real asset valuations are stretched with growing demand from increasing global savings and rising alternative allocations. Limited private market capacity, despite restrained commercial bank financing, led to erosion of private market risk premiums. The attraction of alternatives promising higher returns with increased portfolio diversification is persuasive. We discussed the recent DoL proposal to provide safe-harbor for integrating private funds into self-directed retirement plans, which we don't think is a good idea.

Private market investments are likely more susceptible to interest rate risk. Conventional wisdom anticipates higher equity volatility. We expect increased volatility-of-volatility but relatively more normal equity volatility, albeit higher than observed since 2015. We anticipate higher bond and currency volatility as interest rates rise.

Some asset owners may be better served by collapsing their private market activities of venture capital, private equity, private debt, and infrastructure into an opportunistic portfolio with greater scale and financing flexibility. Strategy allocations of less than 3-5% usually provide no distinguishing value, increasing complexity and cost. Currency exposures should at least be managed in aggregate to hedge unintended exposures.

Capacity remains an increasing challenge, as well. The number of U.S. venture capital (VC) firms grew from approximately 1,000 in 2008 to a peak over 4,000 by 2022, but since has declined to about 3,400. Various sources estimate there are more than 18,000 private equity firms globally.

Private markets must reflect valuation changes in public markets. If a private asset's value can only be estimated quarterly or annually, volatility and correlation can't be easily determined. A dirty little secret of private markets is how valuation latency effects tend to result in misleading risk inputs of volatility and correlation. Unlisted illiquid assets should increase investment risk, not lower volatility or correlation estimates, even if these inputs are difficult to quantify. Such naïve reasoning must not justify an *Alternative Reality* of lofty alternative allocations, as we've observed all too often.

Commodities, including gold, may be more liquid, but can't provide much diversification without a meaningful allocation (>10%). Commodities, including gold and cryptocurrencies, have no place in strategic asset allocation policy given expected return/risk, particularly for individual retirement plans or taxable accounts. If there was a way to forecast commodity returns, then a case for tactical allocations could be made. Commodity returns can't inflation, and cryptocurrency is a commodity—stable coins undermine transactional use of Bitcoin and others, which will never be a store of value. Reasonable expected return can't justify displacing other more prudent asset classes. Over the long-run, stocks and bonds tend to be positively correlated, but Cash can one of the best low-cost diversifying assets with lowest risk of all. Liquid alternatives can have surprisingly high correlation with stock and bond indices. Correlations and volatility of Bitcoin and other cryptocurrency suggest strategic allocations are a really bad idea for an asset class that is really an extremely volatile commodity with higher correlation to equities than bonds.

Alpha from active management can be allusive, but is a remarkable source of portfolio risk diversification that doesn't require displacing assets that can reduce asset allocation efficiency. Strategic Frontier Management observes that security selection is particularly hard in semi-efficient markets, but we believe alpha from tactical asset allocation is not limited by market efficiency arguments and can be applied across the entire portfolio in frameworks with minimal transaction costs using index futures, forwards, and options. Of course, the number of specialized index products has soared in recent years.

Investors are <u>not</u> compensated for higher private fund fees, administrative expenses, management costs, or pricing uncertainty, revenue share, transaction or agency costs. Risk premiums are cyclical, and can be smothered by speculative demand that stretches valuation with constrained capacity (dry powder) exceeding *supply*. Investors want to cast as wide a net as possible to uncover uncommon values. Private inefficiencies and risk premiums can be compelling, but high management fees are uncompensated costs.

Alternative returns appear more correlated with public markets then usually assumed. Large asset owners should be compelled to increase direct investment capabilities from infrastructure and real estate to even private equity and venture capital opportunistically, as observed in the Canadian Model. Active return is valuable during periods of expected lower portfolio return, and a great diversifying alternative investment.

High private fund costs including management fees, transaction costs, legal expense, fair value pricing, illiquidity, risk management and lack of transparency have undermined asset owner performance. Private markets can be compelling, but illiquidity costs with implicitly higher volatility and correlation than assumed suggests private market funds are not as compelling as desired. Constrained capacity in private small companies limit attractive opportunities, now reflected in stretched valuations and record dry powder. We remain concerned about private credit conditions with *shadow defaults* increasing and loans marked at cost, which is reflected in returns decoupled from high yield.

Accelerating creative destruction is a challenge for start-ups, particularly as holding periods extend exits. Excess profit or market advantage is difficult to sustain for up to a 10-year horizon, particularly if a company is trying to invent a new industry or product category. High profit growth is not sustainable without durable competitive advantage, patent protection, high regulatory hurdles, or oligopoly—some refer to this as a product moat.

Lack of frequent mark-to-market can infer an illusion of lower risk and less correlation, deceiving investors. Generally, correlations increase during volatile periods, but investors are no worse off during these periods, and better off over the long-run. Choosing active strategies isn't easy, but "alpha" or excess return is generally uncorrelated with market indices and thus increases diversification. A disciplined and smarter approach to investing can improve outcomes, but asset allocation is still the most important decision for outcome success.

Institutional investors have little to show for increased cost, higher risk, or leverage of alternative exposures on a net return basis versus simple balanced (60% equity/40% fixed income) or multi-asset indexed strategies. Lagged mark-to-model pricing increases valuation and risk uncertainty. Performance attribution and risk assessment of private market investments is challenging given limitations of mark-to-model and fuzzy appraisals of portfolio investments. Mythical low correlation and volatility assumptions of private equity and private debt can't diversify portfolios to reduce total risk as much as assumed—this is a dangerous illusion.

Total costs and management fees for private funds should decline, if not restructured. Mutual Fund, ETF, and Separate account fees have collapsed, as have transaction costs. Blackrock, Vanguard, Schwab, and State Street are managing listed funds for just a few basis points, which should increase pressure on private funds to reduce fund and management costs too.

Illiquidity, capacity constraints, secondary sales at bigger discounts, lock-ups, misleading myths, longer holding periods, higher cost of capital for leverage, and high fund expenses are hurdles impeding objective-beating results of private funds. Asset allocation studies with misleading volatility and correlation estimates have led many investors astray. Theoretical alternative diversification is overstated if private markets are more correlated with blended public market indices than assumed. Investor scrutiny of disappointing alternative returns focused on high fees, illiquidity, valuation uncertainty, lack of transparency, administrative expenses, and rebalancing difficulty. Such unsettling disturbances awakened an *Alternative Reality of an unsustainable private fund status quo.* We believe that investors should limit alternative exposure to less than 25%, whereas less than 15% may be prudent for those relying on funds.