Adams Street

Private Equity Within the Broader Portfolio: A Quantitative Approach

October 25, 2021

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As of October 2021

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Workshop Goals

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- Identify the *fundamental* characteristics that enable private equity to add value to a broader, multi-asset class portfolio
- Explore *quantitative*, data-driven approaches to addressing common challenges surrounding risk management and portfolio construction:
  - What is the right number of investments?
  - What is the appropriate deployment pace?
  - What is the proper allocation of strategy and subclass?
- Rather than suggesting a single answer, we will seek to identify the appropriate assumptions, questions, and methodologies that ultimately lead to better outcomes
- Apply these principles to current market conditions

Adams Street Partners' Unique Perspective

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- 49 year history as a global private markets investment manager
- $45 billion of assets under management across five dedicated strategies
- Robust private markets database with multi-faceted performance data
- 1,000+ unique partnership funds
- 28,000+ unique portfolio companies
- Ability to analyze by strategy, time, geography, sector, etc.
- Dedicated investment strategy / risk management professionals and portfolio construction committee that regularly integrate advanced analytics capabilities and fund management objectives with investment teams' bottom-up selection work

Why Private Markets?

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Potential benefits investors seek by including private markets investments in their portfolios.

Better corporate governance and alignment of incentives

Improved company operating performance

Excess investment returns

Excess returns

- Strong performance in absolute terms and relative to public equity benchmarks
- Better governance structure can create an environment for outperformance

Attractive risk profile

- Moderate correlation with public equity benchmarks
- Investors can limit downside through time diversification and portfolio construction
- Provides overall improvement to the portfolio Sharpe ratio

Unique Challenges

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In order to capture the potential benefits of PE, investors must manage unique challenges related to portfolio construction and risk management.

Scarce Capital

- Outlier-driven returns
- Limited access
- Unpredictable fundraising cycles

Limited Information

- Quarterly reporting
- No standard reporting content
- Imperfect benchmarks

Costly Rebalancing

- No standard market portfolio or ETF
- Higher burden at implementation

Unique Sources of Risk

- Blind pool risk
- Unpredictable cash flows

The workshop will focus on the identification of these unique challenges and best practices in managing them.

Portfolio Construction Considerations

ALWAYS RELEVANT

Investment Selection:
Access and underwriting standards

Time Diversification:
Dollar cost average across market cycles

KEY EXPOSURES

Strategy:
Manage duration and risk/return profile

Subclass:
Tradeoff between Venture & Buyout

Geography:
Unique country specific risks

UNDERLYING EXPOSURES

# of Investments:
Concentrated vs. Diversified

Sector:
Long-term investment themes

Company Size:
Differing drivers of value creation

RISK MANAGEMENT IS ESSENTIAL TO MEETING PORTFOLIO OBJECTIVES OVER THE LONG-TERM

Investment Selection: Returns Driven by Positive Outliers

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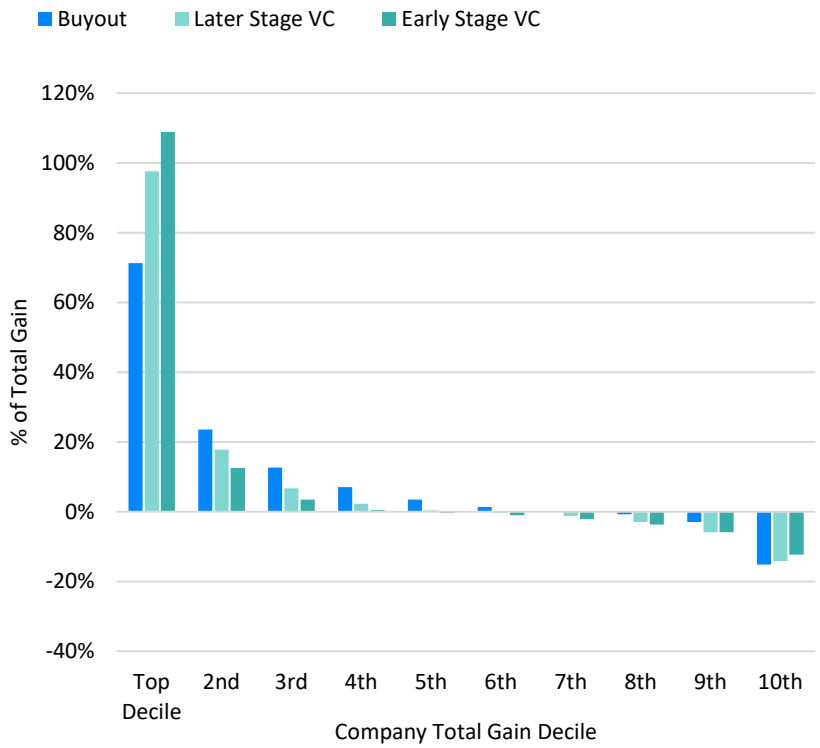
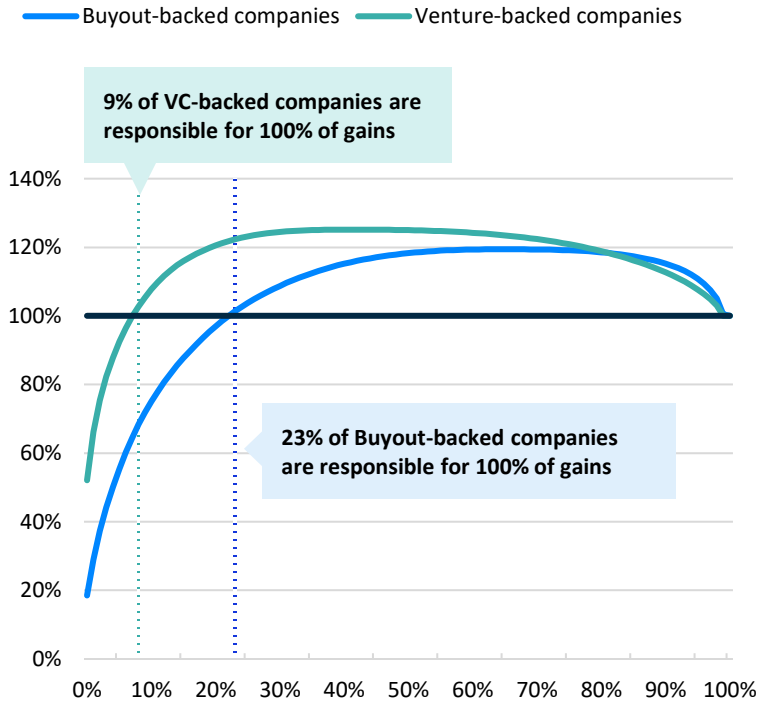
Private markets returns are driven by a concentrated group of top performing companies. The ability to identify and access top-tier companies is critical in order to outperform other private market investments.

Company Contribution to Total Gain, by Decile



Company Contribution to Total Gain, Cumulative



Based on the underlying data set of companies in which Adams Street has invested on a primary basis, as of 3/31/2020. The data set consists of 26,322 portfolio companies from 964 partnership funds from Adams Street Partners' portfolio company database. This database consists of companies from Adams Street Partners' investment portfolio in addition to some in which Adams Street Partners did not invest. Gains and losses are at the underlying portfolio company level and are gross of any fund-level fees, carried interest, and expenses; provided, however, that the percentage of total gain represents absolute total return to the applicable fund.

Investment Selection: Persistence in Manager Returns

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Return persistence is also evident on a market-relative basis, using public market equivalents (PME).

- Consistent with observations around absolute return, rankings based on PME suggest that performance of VC funds relative to public markets persists over multiple funds.
- The same set of VC funds was assigned quartile rankings based on public market equivalent of the S&P 500 Total Return Index.
- PME is measured as the ratio of the future value of fund distributions and NAV over the future value of paid-in capital, with future value determined by performance of the public market index.

Persistence in Performance of VC Managers

Prior Fund IRR Quartile	Fund %, by IRR Quartile: I	II	III	IV	Total
I	36%	33%	26%	6%	100%
II	26%	43%	21%	11%	100%
III	34%	34%	25%	8%	100%
IV	17%	33%	21%	29%	100%

Prior Fund PME Quartile	Fund %, by PME Quartile: I	II	III	IV	Total
I	40%	28%	14%	8%	100%
II	26%	43%	19%	12%	100%
III	31%	28%	31%	9%	100%
IV	19%	19%	31%	31%	100%

As of March 31, 2021

Source: Adams Street Partners and Burgiss. Sample includes 245 funds in Adams Street's database in vintage years 1979-2017. Quartile rankings are based on the Burgiss Manager Universe of Venture Capital funds by vintage year. PME is based on cash flows that are is net of fees, carried interest, and expenses to the underlying General Partner but does not reflect any fees or expenses charged by Adams Street Partners or any similar fund of funds party. Past performance is not a guarantee of future results.

Approach to Risk Management and Portfolio Construction

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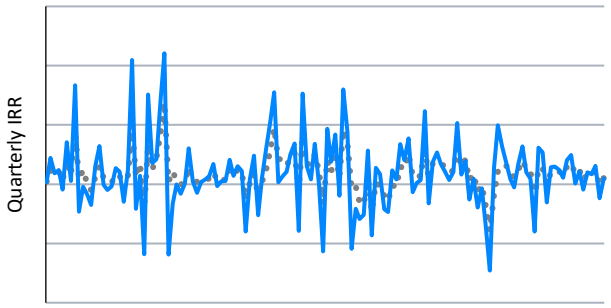
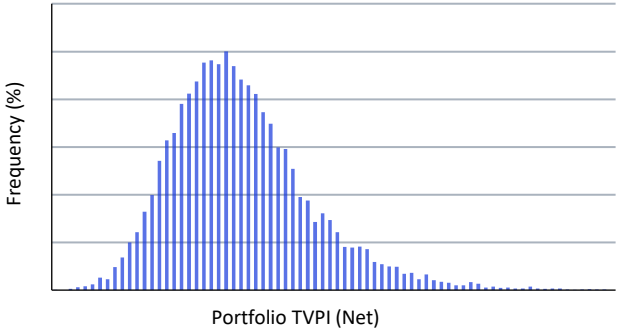
"Investment risk" can mean different things to different investors. Adams Street takes a multi-faceted approach to manage risk and construct portfolios.

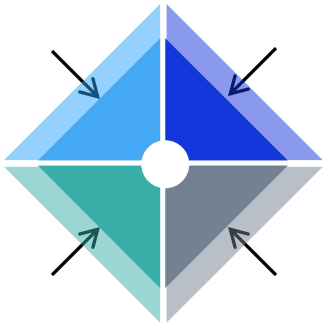
Multi-Faceted Risk Analysis and Portfolio Construction

Interim Period Volatility

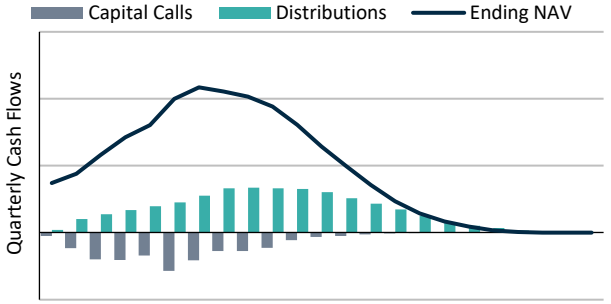


Distribution of Final Outcomes





Liquidity and Cash Flow Projections



Fundamental Investment Analysis

- Macroeconomic input
- Investment strategy
- Manager specific factors

The graphics provided here are for illustrative purposes only and are not intended to indicate the overall risk, volatility, cash flows or complete investment analyses of an actual strategy or portfolio.

Case Study: What is the Appropriate Deployment Pace?

What is the Appropriate Deployment Pace?

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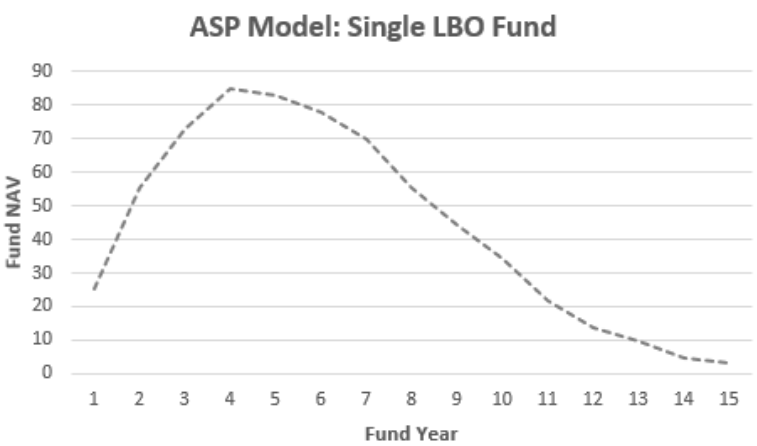
- Key considerations:
  - Time to reach PE target vs. tracking error of PE target?
  - What are the portfolio's cash flow needs?
  - To what extent is NAV determined by market vs. non-market forces?

If fund life cycles were predictable...

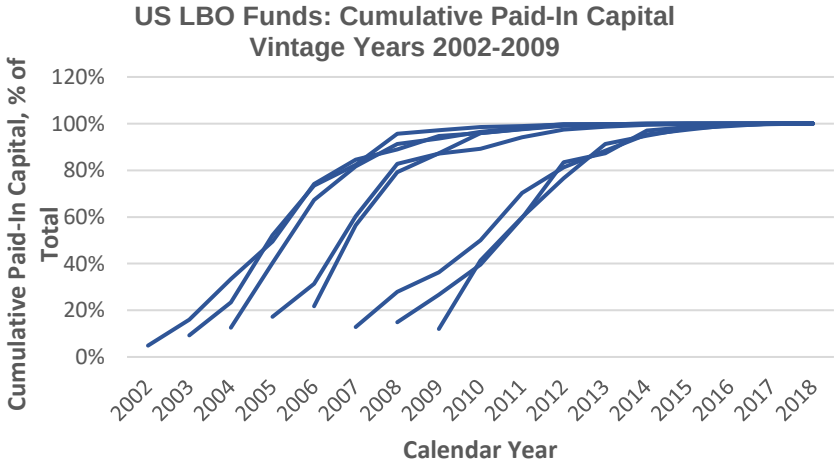


... regular commitment pacing would be sufficient

The model shown represents the evolution of net asset value (NAV) for a hypothetical buyout fund, based on a composite of historical data for buyout funds from vintage years 1979 to present. Actual NAV patterns will vary from that of the model.

What is the Appropriate Deployment Pace?

- Adams Street approach
  - Emphasize *fund life cycles* and *market cycles* over traditional vintage diversification
  - Historical data suggests fund patterns follow market forces rather than vintage labels
- In practice:
  - Vintage labels can be misleading
  - Proactive monitoring is critical
  - Consider utilizing secondary market as portfolios evolve



Cumulative paid-in capital represents the total paid-in capital as a function of fund age for a universe of buyout funds in vintage years 2002-2009. Paid-in capital is shown as a percentage of the total (max 100%) and includes all capital flowing from the limited partners to the general partners, including management fees. There can be no guarantee that future paid-in capital patterns will follow historical patterns.

Case Study: What is the Proper Allocation of Strategy & Subclass?

What is the Proper Allocation of Strategy and Subclass?

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- Key considerations:
  - Risk-return expectations by asset class
  - How narrowly (broadly) should asset classes be defined?
- Adams Street approach
  - Estimate volatility and correlation of returns using historical data
  - Requires de-smoothing of return series for private markets data
- Example:

  I) U.S. Large Buyout portfolio (high commonality)

  II) Global “go-anywhere” PE portfolio (low commonality)

Portfolio Construction: Volatility Estimation

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De-smoothed returns for private markets strategies are compared with performance of other asset classes in order to construct more efficient portfolios.

Subset of Factor Correlation Matrix: Public and Private Markets

Some strategies may have higher volatility on a standalone basis (e.g., Venture Capital) yet are accretive to a portfolio in terms of expected return and risk mitigation.

	Global Equities	NASDAQ	S&P 500	Early Stage VC	Later Stage VC	US Buyout: Small-Mid	US Buyout: Large	Non-US Buyout
Global Equities	**1.00**	0.84	0.94	0.46	0.57	0.73	0.91	0.53
NASDAQ	0.84	**1.00**	0.88	0.66	0.72	0.68	0.84	0.33
S&P 500	0.94	0.88	**1.00**	0.47	0.58	0.75	0.90	0.46
Early Stage VC	0.46	0.66	0.47	**1.00**	0.81	0.45	0.54	0.16
Later Stage VC	0.57	0.72	0.58	0.81	**1.00**	0.60	0.64	0.31
US Buyout: Small-Mid	0.73	0.68	0.75	0.45	0.60	**1.00**	0.87	0.46
US Buyout: Large	0.91	0.84	0.90	0.54	0.64	0.87	**1.00**	0.62
Non-US Buyout	0.53	0.33	0.46	0.16	0.31	0.46	0.62	**1.00**

Source: ASPIRE and Bloomberg. Data is quarterly from 9/30/1994 through 9/30/2020. Volatility and correlations for public market data (Stocks, Bonds) is based on the standard deviation of quarterly returns for the corresponding market indices. Volatility and correlations for private markets investments are also based on quarterly returns of the respective asset classes, applying an unsmoothing process to account for the presence of autocorrelation in the reported returns of private market data. The unsmoothing process generally follows the methodology of Geltner 1993 (Geltner, D.M. "Estimating Market Values from Appraised Values Without Assuming an Efficient Market. Journal of Real Estate Research"). Additional information is available in the Appendix or upon request from Adams Street Partners.

Case Study: Buyout as Substitute for Public Equity

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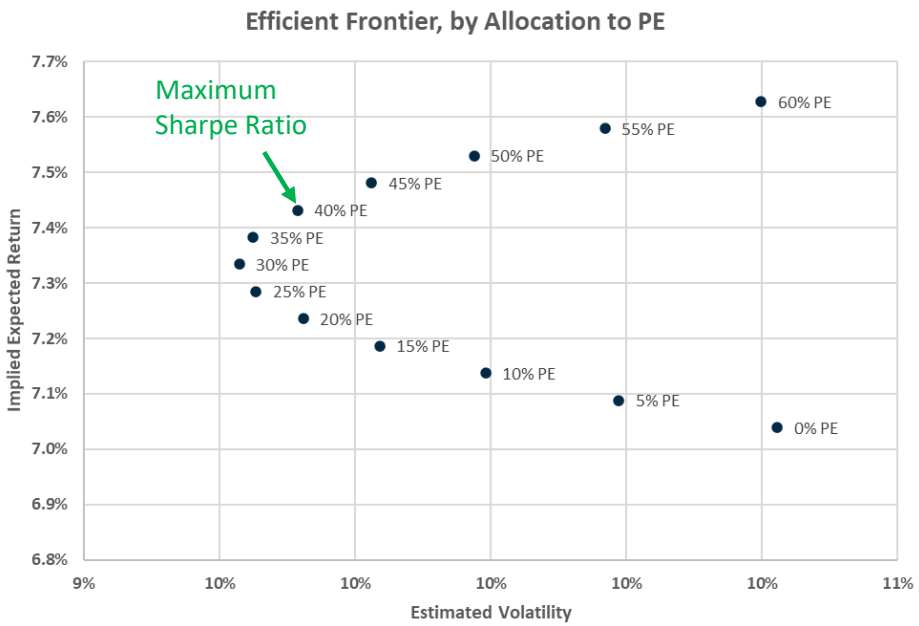
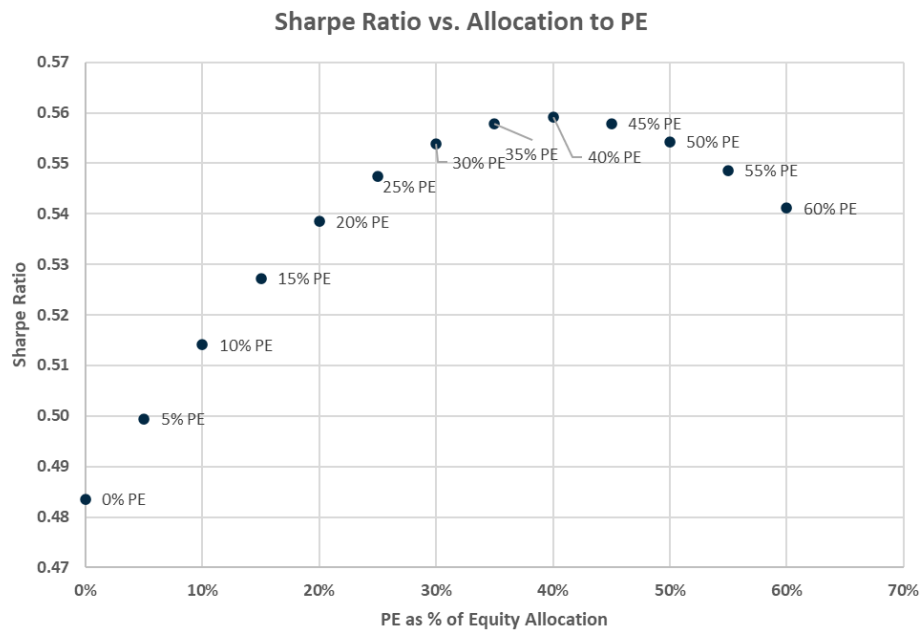
- PE as part of the equity allocation within traditional 60/40 portfolio
- Max Sharpe Ratio at 40% (40% PE + 40% Public Equity + 20% FI)





Sharpe Ratio estimation is based on the aforementioned volatility and inter-factor correlation assumption. For this analysis expected returns were derived based on the estimated volatility and the assumption of a constant Sharpe Ratio of 0.4 for each factor. Sharpe Ratios of greater than 0.4 for portfolios of multiple factors suggest the presence of portfolio diversification.

Portfolio Construction: Venture Capital vs. Buyout Investments

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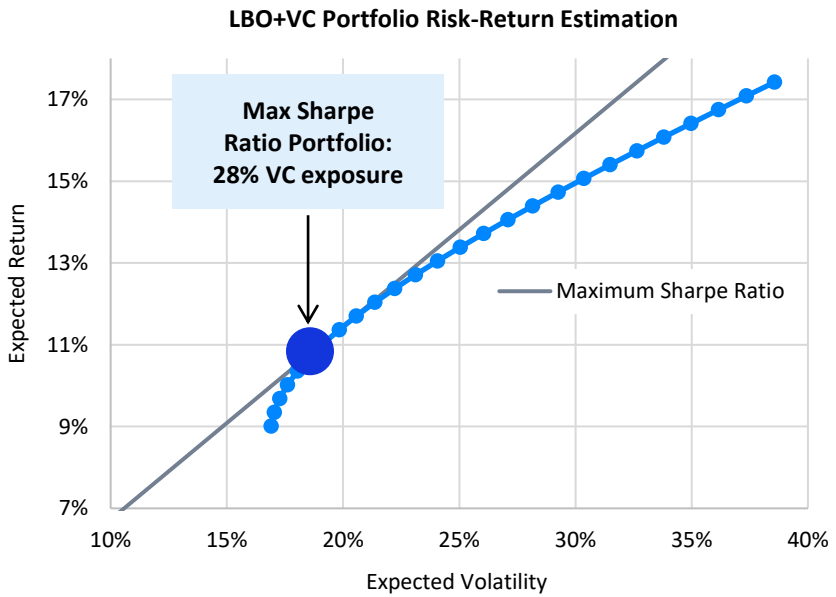
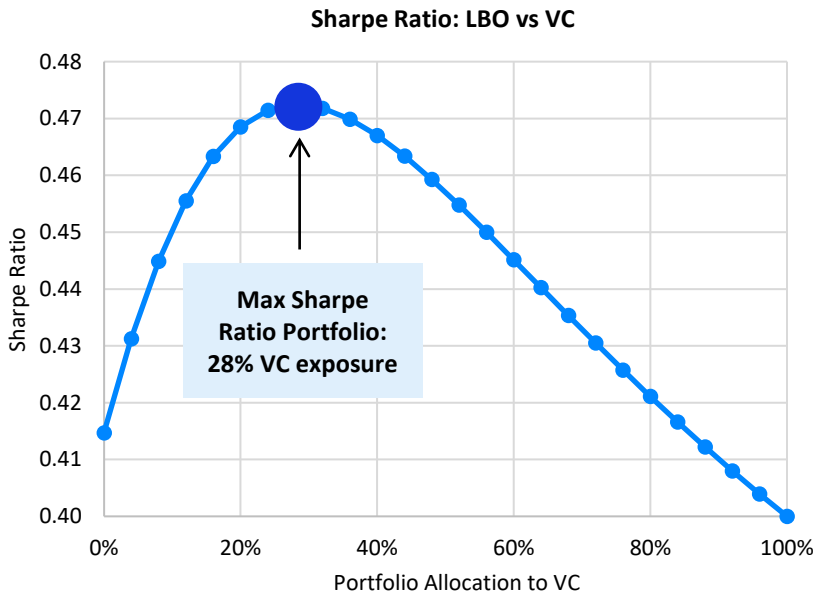
The volatility model suggests an allocation of 25-30% venture capital and 70-75% buyout investments to have an appropriate balance of risk and return.

Impact of Different Buyout and VC Allocations

In practice, volatility depends on many other factors including investors' expected returns and other investment-specific expectations (investors without access to top tier venture managers should not allocate 30% to venture).





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Conclusion and Application to Current Market Environment

Practical Takeaways

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- Every institutional portfolio is unique; there is no single “optimal” portfolio construct for everyone
- The factors you deem most important to the evaluation of your PE allocation should drive your individual portfolio construction framework
  - Determining the “right” number of investments should consider return objectives and investment correlations
  - Assessing proper time diversification should evaluate impact of both market cycles and fund life cycles
  - Setting subclass and strategy allocations can be aided by quantitative analysis but is never an exact science
- Selling in the secondary market can be a useful tool to maintain portfolio management objectives
  - Secondaries no longer a defensive, forced action; the market is growing in diversity and acceptance
  - Prioritizing goals for a secondary sale an important first step to an easy, successful process
  - Understanding market dynamics can help determine pros/cons of pursuing specific sale options

Private Market Observations

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Opportunities

- Structural consumption / employment shifts due to Covid
- Acceleration of digitization and tech transformation
- Globalization and ESG
- Expansion of exit/financing alternatives
- Premium yields vs. liquid markets
- Evolving secondary market

Concerns

- Covid uncertainty
- How to define technology sector
- Multiple compression and hidden leverage risks
- PE fundraising, dry powder and product proliferation
- SPACs – buyer beware
- Underwriting discipline