RE-THINKING PRIVATE EQUITY RISK AND REWARD FOR LP ALLOCATIONS

SUMMARY

In this paper, we attempt to provide a balanced, evidence-based answers to four questions regarding private equity allocations:
(1) Does private equity provide higher returns, lower volatility, and diversification benefits for institutional investors?
(2) Can private equity returns be replicated with a public market strategy?
(3) Do private equity lockups enhance returns or increase risk?
(4) What are the implications for LP allocations to private equity?

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ABSTRACT

In this paper, we hope to provide a balanced, evidence-based view that challenges the current thinking around private equity risk and reward assumptions and the impact on LP allocations. We summarize existing research from academic institutions, capital providers, investment managers, and market research firms. This paper attempts to answer four questions:

1. Does private equity provide higher returns, lower volatility, and diversification benefits for institutional investors?
2. Can private equity returns be replicated with a public market strategy?
3. Do private equity lockups enhance returns or increase risk?
4. What are the implications for LP allocations to private equity?

We believe these topics are timely to re-visit as LP allocations to private equity have increased significantly[1], GP dry powder levels are at record highs, and private equity fund returns have been declining.

Our research suggests that US private equity returns can likely be replicated in public markets using a levered US small-cap value index. However, reported levels of volatility for private equity returns are substantially lower than reported levels of volatility for public markets, due to systematic smoothing of returns. This implies unconstrained asset allocation models, using return and volatility input variables, may over-allocate to private equity and require intervention to adjust for the understatement of reported volatility in private equity returns. In addition, recent forecasts predict lower returns to private equity vs. historical levels and relative to other asset classes, which may also suggest that LPs should limit increasing allocation to private equity funds as a % of the total portfolio.

In support of increasing allocations to private equity, we highlight research on UK buy-out funds that suggests private equity ownership indeed does provides significantly value-added services that cannot be replicated in public markets. This implies LPs should overweight allocations to private equity managers that can 'add value' to portfolio businesses in ways that cannot be replicated in the public market context (cheaper financing, higher leverage, more aggressive growth targets).

We also find evidence to support US private equity returns being negatively correlated with the S&P 500, therefore providing real diversification benefits to a traditional stock-bond portfolio.

Finally, we conclude long-term perspectives can enable investors to generate superior performance in a private or public market context. In this regard, private equity lockups can be viewed as an advantageous feature of the asset class, rather than an extra liquidity risk, as lockups act as an effective mechanism to focus investors on long-term returns over short-term volatility.

[1] According to McKinsey, in 2019 private market assets under management grew 10% to a new record at $6.5 trillion as investors continued to shift capital from the public markets in search of higher returns. Private equity led the increase, climbing 12.2% to $2.9 trillion. McKinsey found that for PE alone, institutional investors were under-allocated versus target levels by more than $500 billion. That's as much as the global amount raised for PE in 2019.

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Introduction

Investors ('LPs') have historically allocated to private equity managers ('GPs') due to the high returns, low volatility, and diversification benefits associated with the asset class. In their February 2020 report, Bain & Co. states, "*Investors have poured more than $2 trillion into buyout funds over the past decade for a simple reason: They deliver*" (Hugh MacArthur, 2020).

According to Bain & Co. over the last 30 years, US private equity buy-out funds have generated average net returns of 13.1% vs. 8.1% for an alternative private-market performance benchmark[2]. However, returns data since the Great Financial Crisis in 2008, appears to show the performance delta narrowing. US public market returns are now matched by returns from US buy-out funds at c.15%[3].

In this paper, we aggregate existing research supplemented with recent data to answer four questions regarding private equity allocations:

1. Does private equity provide higher returns, lower volatility, and diversification benefits for institutional investors?
2. Can private equity returns be replicated with a public market strategy?
3. Do private equity lockups enhance returns or increase risk?
4. Conclusion: What are the implications for LP allocations to private equity?

In this paper we hope to provide balanced, evidence-based arguments using research from academic institutions, investment firms (both LP and GPs), and market research firms. However, we note together with the authors of the various studies we cite, that different metrics for returns (IRR vs. public market pricing), methodologies to construct benchmarks and relevant public market equivalent ('PME') indexes, and biases (e.g. survivorship bias in private equity returns) across data sets will impact underlying comparability.

We believe these topics are timely to re-visit as LP allocations to private equity have increased significantly, GP dry powder levels are at record highs, and private equity fund returns have been declining. New research has also highlighted COVID-19's negative impact on private equity returns. In the first two quarters of 2020, LBO funds around the world delivered an average multiple of 1.36x on invested capital, a decrease from 1.45x recorded in late 2019, returning to levels last seen in 2014, according to data from research group eFront[4]. In particular, the strong performance of public markets over the last decade, and the recent increasing disconnect between stock market performance during the COVID-19 pandemic and growing pressures on the real economy where private equity operates are giving rise to challenges for private equity allocations.

[2] Based on the Long-Nickels public market equivalent (PME) and using the S&P 500 as the proxy.
[3] Based on end-to-end pooled net IRR (As of June 2019).
[4] Coronavirus hits LBO funds' global performance (October 2020). Private Equity News.

1.0 Does private equity provide higher returns, lower volatility, and diversification benefits for institutional investors?

While private equity can entail higher fees, illiquidity, complexity, and a lack of transparency, research shows that they can also offer opportunities for increased returns, greater diversification benefits, and dampened volatility over traditional stock and bond portfolios (Cambridge Associates, 2015).

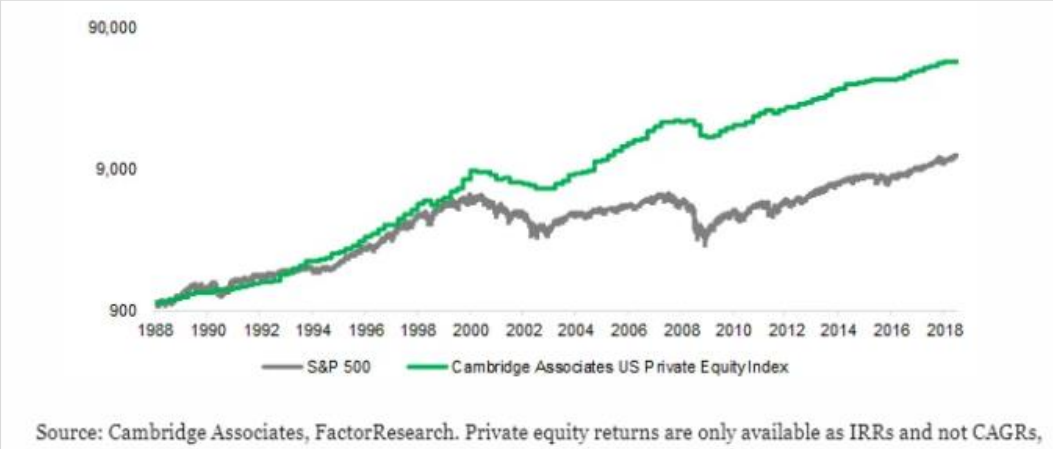
In this section, we discuss the three assumptions (higher returns, lower volatility, and diversification benefits) that make private equity a highly attractive asset class for LPs.

1.1 Higher returns

Long-term data shows US private equity funds have outperformed the S&P 500

Long-term data (figure 1) clearly shows US private equity returns have outperformed *the S&P500 index*, based on data from Cambridge Associates analyzing returns from 1,481 US GPs, net of fees since 1988 (Rabener, Private Equity: Fooling some people all the time?, 2020).

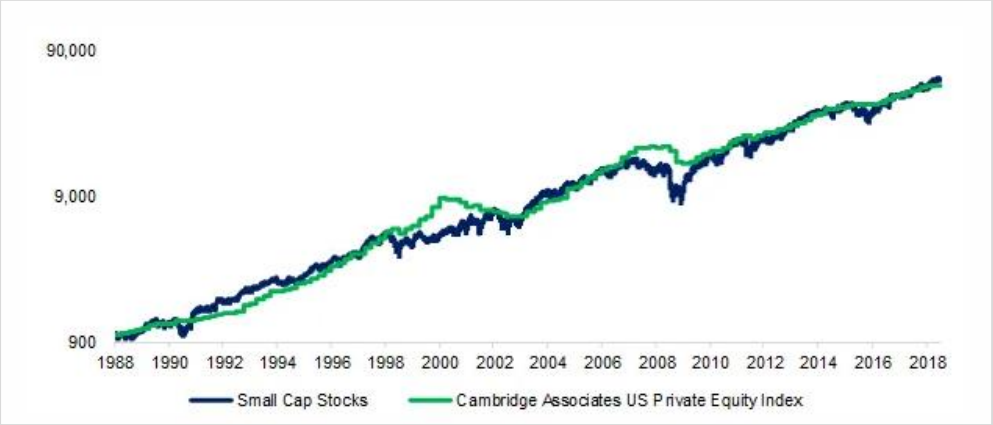
Figure 1. US Private Equity Returns vs. S&P 500



However, comparing US private equity returns with a comparable US small-cap public market index shows near-identical performance since 1988

By using a more narrowly defined index, we can better benchmark private equity returns against public market returns. Despite the news of global private equity firms engaged in mega-cap buyouts, most US private equity deals are comparable in size to US small-cap equities. Factor Research created an index consisting of the smallest 30% of US public companies with a market capitalization greater than $500m (the 'small-cap stocks' index) and compared the benchmark with US private equity returns since 1988 (Rabener, Private Equity: The Emperor Has No Clothes, 2018). Figure 2 illustrates this data set and shows the small-cap stock index and US private equity returns have been almost identical since 1988.

Figure 2. US Private Equity returns vs. US small-cap stock index since 1988



Increased allocations to the private equity asset class are reducing future expected returns

Global private equity firm KKR expands this analysis (figure 3) to show private equity has historically been the highest performing asset class with ~14% annualized returns, when compared to hedge funds, stocks, real estate, bonds, and cash (McVey, 2018).

In the same 2018 report, KKR recognize that given the increasing new allocations to the private equity asset class, future returns will likely be well below historical returns (figure 4). However, most relevant to a discussion around allocation is not the absolute level of return for an asset class, but the relative returns of asset classes in a portfolio.

As figure 4 shows, KKR believes private equity returns will continue to outperform hedge funds and stocks, but caution it is not a simple equation, particularly over a shorter time horizon.

Figure 3. Historical Returns vs. Risk, % (KKR)

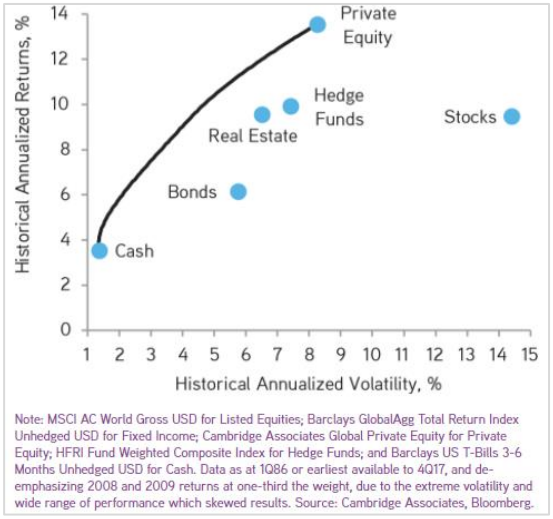
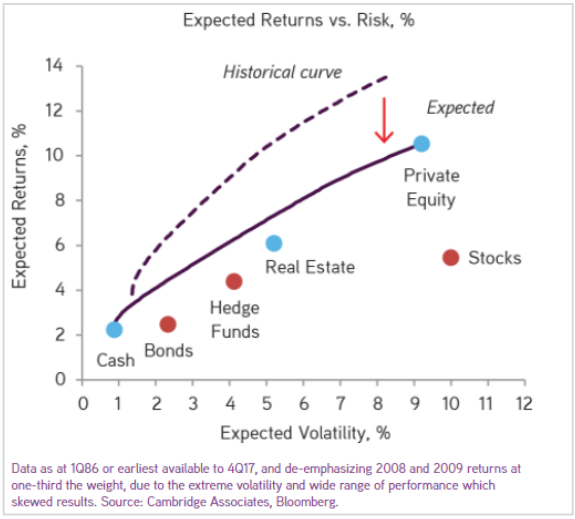


Figure 4. Expected future returns to decline, % (KKR)



More recent data shows private equity returns converging with public market returns, and levered public market returns significantly outperforming

Analyzing returns over a shorter and more recent timeframe, for example since 2011 (as opposed to the long-term data since 1988), we note public markets (in this case the S&P500) have outperformed private equity returns in the U.S (figure 5). This public market outperformance is even more pronounced when the S&P500 returns are 'levered-up' to comparable private equity leverage levels (~5x debt-to-EBITDA). In the 2018 report, KKR suggests public market returns in recent years have been ebullient, and looking to long-term data presents a more normalized base case where private equity returns continue to outperform relative to public markets through the cycle (figure 6).

Figure 5. S&P500 vs. private equity returns in recent years

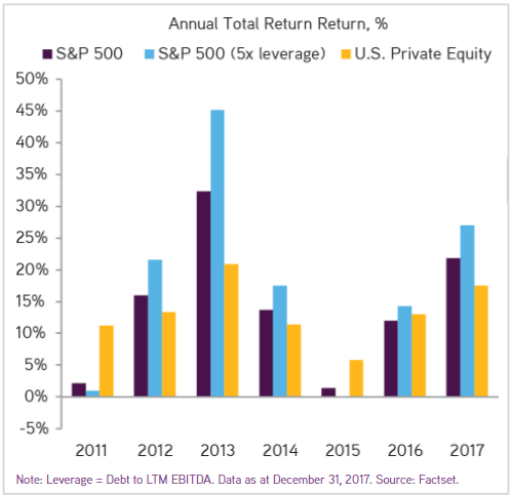
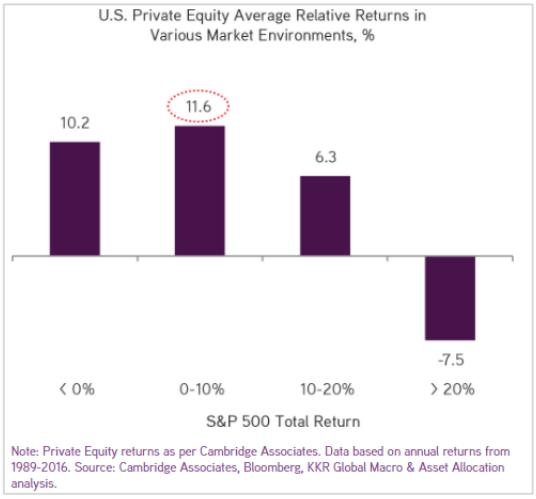


Figure 6. US private equity typically outperforms over the cycle, relative to public markets



In summary: *US private equity returns over the long-run (since 1988) outperformed the S&P500 but are near identical to returns on a US small-cap index over the same period. Recent data suggests public market returns have matched, or with comparable leverage levels, significantly outperform private equity returns since 2011.*

1.2 Lower volatility

Private equity investments are perceived to be less volatile than public market investments. US private equity returns over 1994-2019 appear to show a similar level of volatility as a US 10-year bond

Based on data from Cambridge Associates and Factor Research, we can compare the volatility of returns of US private equity, the S&P500, and an index composed of small, cheap, and levered stocks (Rabener, Private Equity: Fooling some people all the time?, 2020). Using data from 1994-2019 (figure 7), we note the volatility of US private equity returns was roughly half the volatility of returns on the S&P 500, and similar to the volatility of return to a US 10-year bond. In addition, we note during times of market

distress, such as in 2008 when the S&P 500 fell 38%, the data shows US private equity returns generated 11% IRR (the author notes IRR returns and public market returns are not directly comparable, however, private equity allocations are often made based on this basis).

Figure 7. US Private equity vs. S&P 500 and US 10-year bond returns volatility (1994-2019)

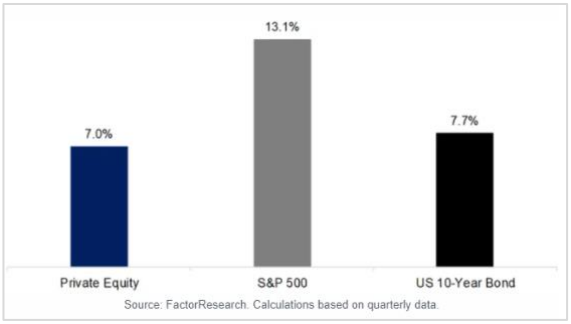
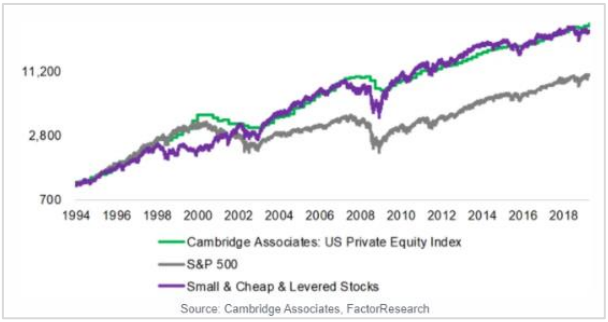


Figure 8. US Private equity returns, vs. S&P500 and constructed small, cheap & levered stock index



Reporting methodology potentially leads to consistently understating the volatility of private equity returns

The volatility associated with private equity investments is potentially understated and is difficult to accurately measure. Unlike public markets that are liquid in nature and where volatility can be easily measured, private equity investments are typically valued every quarter, and with some level of discretion by the GP. This anomaly in measurement between the different asset classes leads to challenges in estimating a comparable metric for asset class risk. Private equity returns demonstrate a smoothing effect over time which results in the potential for volatility measurements being consistently understated when compared with public market volatility. In theory, GPs could report daily variations in fund NAVs, however, this is not industry standard and it is unlikely to be useful as NAV will likely differ from market value, and will be subject to GP discretion or external appraisers using business plans provided by the GP.

Evidence for GPs smoothing private equity returns includes the annual 'true-up' of fund NAVs that can be noticed in data sets towards the end of each year. Based on the study by Private Equity International, the ratio of US private equity to public market volatility is roughly 50% during the first three quarters of each year, but increases to 93% during the fourth quarter (Private Equity International, 2014).

Adjusting for different measurement methodologies used for public market and private equity returns leads to a similar level of volatility for both asset classes

Factor Research claims the lower volatility of private equity earnings is a function of discretionary reporting, and private equity portfolio companies are influenced by the 'economic tides' just as much as public companies even if GPs prefer not to reflect this in their reporting. If private equity firms valued their portfolio companies daily using public market multiples, volatility would be much higher and more reminiscent of the S&P 500. For reference, the volatility of the S&P 500 was 14.67% vs 16.59% for the

small-cap stock index (used to mimic US private equity comparable investments) since 1988 (Rabener, Private Equity: The Emperor Has No Clothes, 2018).

Another method we can use to calculate the volatility of private equity returns is to calculate returns based on their Net Asset Values (NAVs) adjusted by interim cash flows. Effectively this calculates a time-weighted return similar to public markets, enabling a comparison with the returns of the S&P 500. To assess the quarterly return, we consider all the cash flows that happen during the quarter.

The adjusted return is calculated using the formula:

$$r_{t+1}^{PE} = \frac{NAV_{t+1} + CC_{t+1} + D_{t+1}}{NAV_t}$$

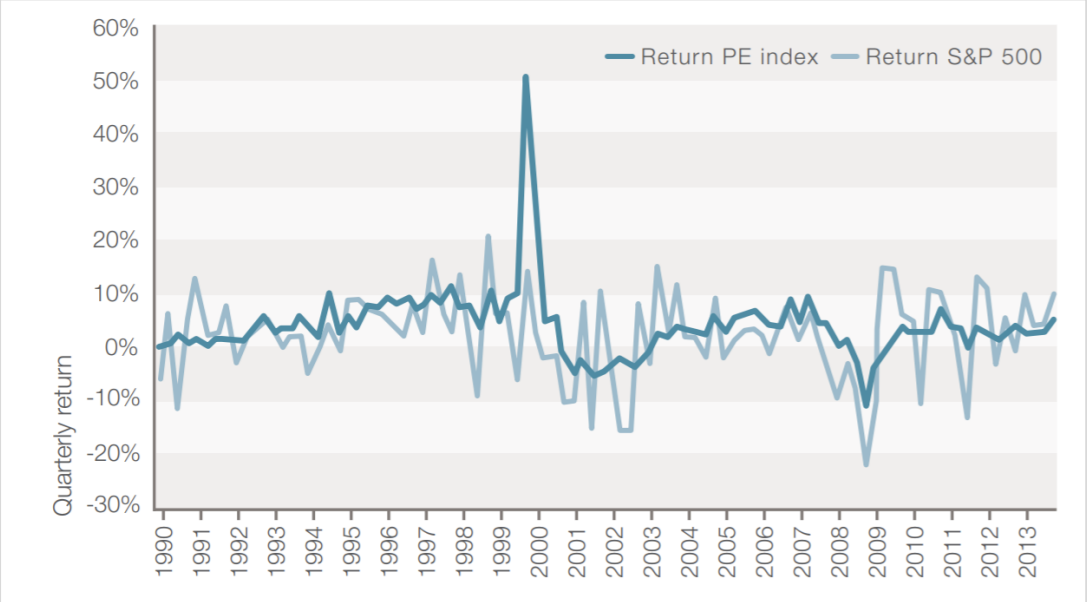
Where CCt+1 is the Capital calls in the last quarter

Dt+1 is the distributions in the last quarter

NAVt+1 and NAVt are the net asset value at the end of the current and last quarter.

The British Private Equity & Venture Capital Association (BVCA) uses this method to compute quarterly private equity returns and compare these with the S&P500 (figure 9). BVCA observe the volatility of both private equity and the S&P500 are comparable except during exceptional periods such as the dot-com bubble in 2000, and the great financial crisis of 2008. During 2000, private equity funds generated exceedingly high returns compared to the public market. Similarly, during the financial crisis in 2008, returns were more volatile for public markets. BVCA state the most likely explanation for the smaller decline and recovery in the private equity index is that some fund managers were slow in adjusting their valuations for the macroeconomic shock and did not adjust their valuations accordingly. As such, they did not have to write them up again when the markets recovered.

Figure 9. Market risk - Changes of NAVs adjusted by cash flows of aggregated private equity



BCVA's study concluded private equity investors face a market risk that correlates to levels experienced in public markets, but that the average NAV does not move to the same extent as the averge public market investment. This could be viewed as good news for LPs as private equity has a stabilizing effect on their reported returns. However, it is important to note that these results can also paint too positive a picture for private equity if the time series of the private equity index is not adjusted for its limitations (Dr. Christian Diller, 2015).

GPs legitimately argue reporting daily valuations for NAVs would not reflect a true estimate of value, as often assets have no direct public market comparable, are undergoing significant restructuring, and would not be realized in periods of market distress.

A feature not discussed in the research is the potential for increasing numbers of private equity secondary transactions to decrease GPs' ability to smooth returns. Currently, secondary transactions represent a small fraction of the overall private equity market[5], however with an increasing market share, secondaries could in the future act as an effective 'fair price' reporting mechanism for the private equity market.

In summary: *Unadjusted data from 1994-2019 shows US private equity returns have historical volatility similar to US 10-year bonds and significantly lower than the S&P 500. However, research suggests private equity returns are impacted by smoothing as GPs have discretion over quarterly NAV reporting, vs. public markets which are priced daily. Adjusting returns data to be more comparable or measuring volatility of a representative small-cap-levered index, indicates the historical volatility of US private equity returns has been roughly equivalent to public market volatility.*

1.3 Diversification benefits

The data above suggests private equity may not provide higher returns, and lower volatility when compared to a relevant small-cap-levered benchmark.

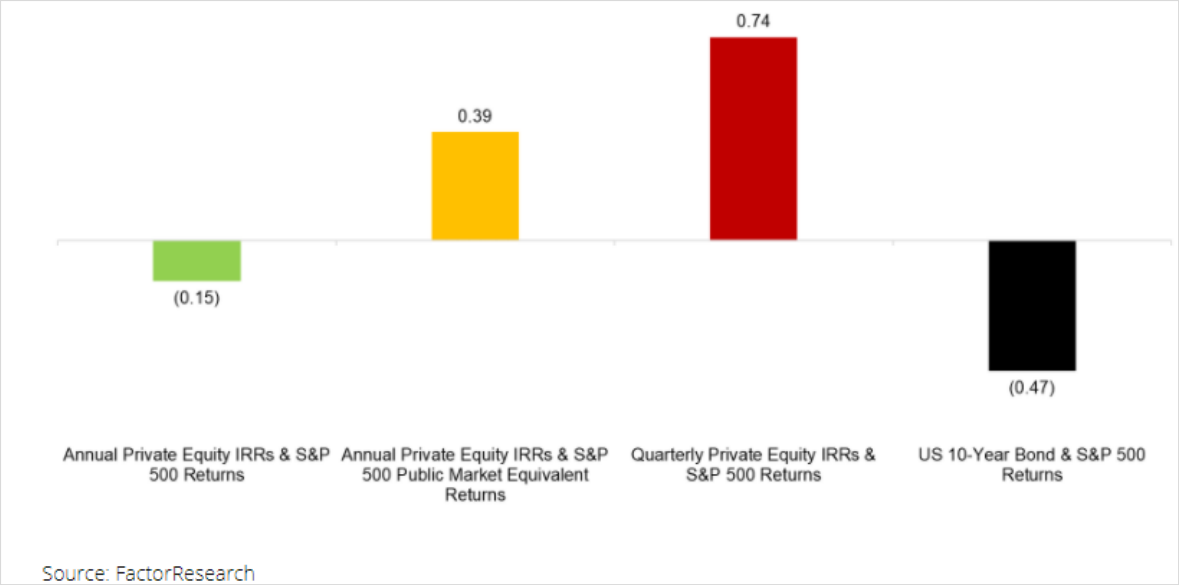
This potentially results in the private equity asset class providing a less appealing risk-adjusted return than expected. However, if private equity returns are uncorrelated with public market returns, the asset class could provide LPs with diversification benefits.

Factor Research published data (figure 10) comparing the correlation of US private equity returns to the S&P500 between 1994-2019 (Rabener, Private Equity: Fooling some people all the time?, 2020). Using annual reported private equity IRRs shows a negative correlation with S&P500 returns, indicating real diversification benefits for a traditional stock-bond portfolio. As expected, returns show a positive correlation with the S&P500 public market equivalent[6]. There is a strong positive correlation when

[5] According to Coller Capital's website, global secondary market transactions totaled $72bn in 2018.
[6] Private equity returns are calculated using money-weighting in contrast to the time-weighted returns of public markets and hence are not directly comparable. To overcome this, researchers

comparing quarterly private equity IRRs with the S&P 500 return, although this data is impacted by the smoothing effect described earlier. Factor Research also notes US 10-year bonds had a greater negative correlation to the S&P500 from 1994 to 2019, so offered better diversification benefits.

Figure 10. Private equity correlation to public markets (1994-2019)



In summary: *Annual private equity returns show a negative correlation with S&P 500 returns, indicating the private equity asset class offers real diversification benefits to a traditional stock-bond portfolio.*

2.0 Can private equity returns be replicated with a public market strategy?

Research has shown a passive, levered US small-cap index can provide comparable, and potentially superior returns compared to US private equity

A well-cited study by Harvard Business School researcher, Erik Stafford, showed that a passive listed portfolio of US small-cap value stocks with 2x leverage (similar characteristics to those invested by US private equity funds) outperformed the average US private equity fund return, on both a net and gross of fees basis, over 1986 – 2015 (Stafford, 2016). Stafford used two small-cap value indexes which returned 21% and 19% annualized over the period, compared with a return of 16% gross-of-fees for US private equity (based on Cambridge Associates private equity index). Figure 2 and figure 8 which uses data from Factor Research, supports the conclusion that a small-cap stock index can produce returns that are almost identical to US private equity

create indexes that show public market equivalent returns (PME), adjusting public market returns for the timing of private equity cash flows.

returns over the long-term. Stafford argues a passive replicating strategy represents an economically large improvement in risk- and liquidity-adjusted returns over direct allocations to US private equity funds, which charge estimated fees of 3.5% to 5% annually. However, listed portfolios cannot replicate all the value-add avenues available to private equity managers, including restructuring and operational improvements.

The study highlighted two key differences between the constructed levered US small-cap value indexes and the private equity asset class: volatility and fees. The volatility of the constructed public market indexes was extreme. During the 2008 financial crisis, the constructed indexes lost more than 85% of their value relative to peak valuation, compared with only a 20% drawdown for Cambridge Associates' private equity index (representing returns from the US private equity asset class). However, adjusting the constructed indexes to report returns equivalently to the private equity NAV reporting methodology, reduced the drawdowns for the constructed indexes to under 15%. Absolute returns remained the same, suggesting the constructed indexes significantly outperformed private equity returns, gross-of-fees, and with lower adjusted volatility.

We note that the analysis above uses average returns, and there is a significant range of returns between the top quartile and bottom quartile of private equity funds. We believe average returns are likely reflective of the actual returns that investors should expect from private equity allocations over the long-term, however, there is a school of thought suggesting top-performing private equity firms have an advantage that enables them to continue to be top-performers over time.

Beyond the academic realm, there are mutual funds that attempt to replicate private equity returns in public markets. These include Dan Rasmussen's Verdad Advisers, which invests in small, cheap, and leveraged stocks. Rasmussen claims he can replicate private equity style returns with carefully screened public companies (Teitelbaum, 2018).

Recent research has argued private equity-owned firms respond differently to financial distress, and that the resulting outperformance cannot be replicated by other investors

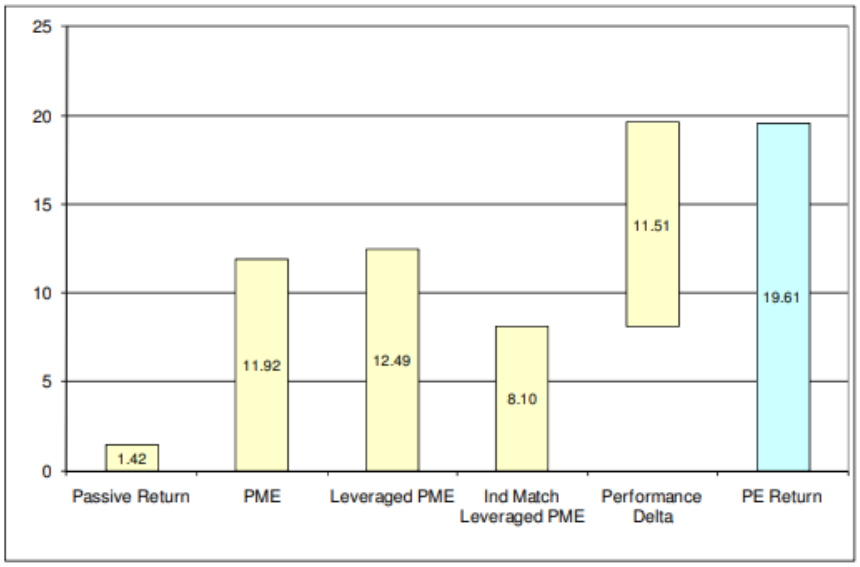
A study by Alex Belyakov in 2020, from the University of Pennsylvania's Wharton School, concludes a portion of excess returns delivered by private equity firms can be explained by the more aggressive growth-focused behaviors of company management teams with private equity backing (Belyakov, 2020). In particular, Belyakov looks at a sample of 407[7] private equity buyouts in the UK. His research shows how companies form rational expectations about the costs of financial distress, and how these expectations affect ex-ante policies. Belyakov states, "private equity owners act as deep-pocket investors: when the internal cash flow of their portfolio companies is insufficient to fully finance investments and/or make required debt

[7] Verdad Advisors' founder Dan Rasmussen cautioned against drawing serious conclusions from the Wharton paper, given its relatively small sample size and manually collected data (as reported by the Institutional Investor, September 2020 issue).

payments, the private equity owner steps in and provides additional capital". This leads to private equity-owned companies willing to take on more leverage and make larger investments more frequently. The study showed that greater tax-shield benefits, and superior growth of private equity-owned companies explained 6.4% of the abnormal return of private equity. The study concludes that companies with private equity ownership outperform companies without private equity ownership, and this feature cannot be replicated by other investors.

A similar, larger research study was conducted in 2011 by Pantheon and BVCA (O. Gottschalg, 2011). The study analyzed a sample of 64 UK buyout funds with vintages between 1988-2009 (a total of 1,138 investments in Europe) and concluded that UK private equity returns could not be replicated by public markets. The study found UK buyout funds achieved performance 11.51% higher than four constructed public market indexes (passive, PME, leveraged PME, Industry-Matched PME) over the period (figure 11).

Figure 11. Components of UK Buyout Funds' Returns based on Levered Benchmarks



In summary: *Competing research exists as to whether private equity returns can be replicated with a passive, public market strategy. In the US it has been shown a levered, small-cap index can replicate the private equity returns, albeit with a higher level of reported volatility. In the UK, research has shown private equity ownership changes the behavior of firms, leading to higher returns which cannot be replicable in public markets.*

3.0 Do private equity lockups enhance returns or increase risk?

Private equity lockups can be more than 10 years. The resulting liquidity premium may partially explain historical private equity performance

Private equity funds are structured such that LP funds are committed for ~10 years with limited options for early withdrawal. This liquidity risk has created secondary markets that have subsequently decreased liquidity risk. However, the secondary market for private equity investments is still relatively small as a percentage of the overall private equity market. In corporate finance theory, the inability to withdraw funds increases the risk of investment and requires a liquidity premium to added to expected returns. Compared to public market investments which are highly liquid, there is certainly a higher liquidity risk associated with private equity investments, which may partially explain private equity performance.

We also note the drag of returns on the cash required to be held while awaiting GP capital calls can materially reduce return, whereas in a public market strategy this cash could be fully deployed in liquid markets.

In contrast to corporate finance theory, lockups could be viewed as 'advantageous features' of investing in private equity

Private equity participants propose that the nature of locked-up capital is what makes the asset class so advantageous – what if illiquidity was a feature rather than a disadvantage? It keeps investors from redeeming their funds at market lows and helps private equity firms weather storms like the global financial crisis.

CalPERS ex-CIO, Ben Meng, speech at the CalPERS' December 2019 investment committee highlighted potential benefits of illiquidity in the asset class. He stated, *"so when it's not a timely valuation it provides a time diversification as well, so the risk reduction from private markets is coming from two folds: one is alpha components that it's diversifiable, the idiosyncratic risk, and the other one is beta, the valuation, the marking is less frequent and is marked based on the model, appraisal based, not so much about market transaction-based"*[8]. Meng comments suggest less frequent valuation methodology employed in private markets offers less theoretical risk to a portfolio (assuming that risk is defined as volatility, not a permanent loss of capital).

Investors could replicate 'lockups' or 'less-frequent valuations' in public markets to achieve comparable returns, but it is difficult to implement

Cliff Asness, founder of investment manager AQR, in his December 2019 investment memo, largely agrees with Ben Meng; but concludes that investors could apply long-term lockups, and delayed reporting to public markets to achieve better returns. He

[8] As reported by FT Alphaville Jamie Powell (Calpers and the 'illiquidity premium', January 2020).

states, *"What if many investors actually realize that this accurate and timely information will make them worse investors as they'll use that liquidity to panic and redeem at the worst times? What if illiquid, very infrequently and inaccurately priced investments made them better investors as essentially it allows them to ignore such investments given low measured volatility and very modest paper drawdowns?"* (Asness, 2019). Cliff goes on to propose a smart investor could deploy more capital into public markets as the true (long-term) risk of public markets might be perceived to be lower with delayed reporting, but is likely difficult to implement in reality: *"Could the same investor who finds private equity easy to stick with also find a levered publicly traded small-cap portfolio impossible to stick with even if they're economically very similar investments? Sounds pretty plausible to me."*

In summary: *It appears that lockups work well for illiquid asset classes, not just because capital calls are difficult to time, but also as a mechanism to ensure investors focus on long-term returns over short-term volatility. Some managers suggest, lockups are an advantage, and investors can even implement this strategy in public market investments to stick through harrowing times when investors might sell if they had to face up to the full losses.*

4.0 Conclusion: Implications for LP allocations

Unconstrained asset allocation models may over-allocate to private equity, requiring LPs to intervene to adjust volatility metrics or add constraints. Lower If private equity returns decline relative to public markets, this may also suggest that LPs should limit increasing allocation to private equity funds as a % of the total portfolio

Private equity has proved to be the most popular alternative asset class, according to the 2019 Preqin Investor Outlook for Alternative Assets, with a 9.9% target allocation for institutional investors. LPs are attracted to private equity because it delivers high returns, low volatility, and diversification benefits. Research indicates private equity does provide real diversification benefits for a stock and bond portfolio. However, recent studies show the convergence of private equity returns with public market returns, and the inconsistent measurement of volatility between the two asset classes.

This leads us to question whether allocation models that rely on such assumptions are misleading investors as to the relative attractiveness of private equity. With higher relative return and lower risk (volatility), a standard mean-variance-optimized portfolio would likely over-allocate to private equity. LPs can use constraints and limits on asset class allocations to restrict over-allocation. However, the data raises the question 'if additional private equity allocations should be limited further.

A feature not discussed in the research is the potential for increasing numbers of private equity secondary transactions to decrease GPs' ability to smooth returns. With

an increasing market share, secondaries could in the future act as an effective 'fair price' reporting mechanism for the private equity market.

Private equity returns can be replicated in public markets, however, some value-added services cannot. LPs should overweight allocations to private equity GPs that can 'add-value' to portfolio businesses in ways that cannot be replicated in the public market context

Research has shown private equity returns can be mimicked in public markets, albeit with higher reported volatility. However, studies have also shown private equity investors add real value to buyouts in Europe, in ways that cannot be replicated in the public market.

These studies suggest LPs should overweight allocations to private equity firms that add value to portfolio businesses in ways that cannot be replicated in a public market investment (for example higher leverage, cheaper funding during distress, and targeting more aggressive growth).

Long-term perspectives can enable investors to generate superior performance in a private or public market context

Private equity lock-ups act as an effective mechanism to focus investors on long-term returns over short-term volatility. Lockups could be replicated in public market investments, however for other reasons would be difficult for investors to implement in the context of very liquid investments.

Whilst there are compelling arguments on both sides as to whether lockups increase or decrease the risk-return trade-off, they are a practical and necessary part of private equity investments. As such, we suggest the existence of lockups should not significantly impact LP allocations to private equity.

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