Private Markets Asset Classes Performance: Reality Versus Rhetoric

Private markets asset classes have long espoused higher nominal returns and less volatility than their public markets counterparts, thus playing a valuable role in optimizing risk-adjusted returns and increasing the long-term return potential of institutional portfolios. While this is generally true, it comes with more complexity, opacity, and less liquidity. Opacity is one of the primary challenges of investing in private markets, especially in understanding the delta between real values versus reported values. This paper examines performance throughout different vintage periods across the major private markets asset classes: Private Equity (Buyout and Growth), Venture Capital, Energy and Natural Resources, Infrastructure, and Real Estate. This paper is NOT meant to be an "in-the-weeds" deep analysis of performance in each asset class, nor comparing the nuances of performance across data sources, such as Cambridge and Pitchbook. Rather, it is intended to look at performance vectors across private markets, with a keen eye toward understanding real mark-to-market internal rate of return ("MTM" or "MTM IRR") and especially the spread between total value to paid in capital ("TVPI") and distributions to paid in capital ("DPI").

Executive Summary

A compilation of data from Cambridge and Pitchbook was used in analyzing historical performance. Cambridge is self-reported by fund managers who choose to participate in the Cambridge reporting process each quarter, and performance data from Pitchbook comes primarily from publicly available data the fund manager submits, often as part of public RFP processes or similar.

The key takeaways common to all private markets asset classes are as follows.

- Private market performance has outperformed public markets historically, and with less volatility in performance, some of which is due to how performance is measured and by whom.
- A clear performance trend across private markets asset classes is the negative correlation between fund flows and vintage year performance; that is to say, the best performing vintage years tend to be when fundraising is at lower relative levels.

- Benchmark performance is often overstated due to selection bias, as only fund managers who choose to report for a given fund and vintage are included. Moreover, the data provided is typically self-reported by managers, making it susceptible to bias.

- There is a clear corollary between the sample set of reporting funds and the performance for a particular vintage, that is to say, more managers report during high-performing vintages, and fewer report during lower-performing vintages.

- Each asset class generally has different valuation methodologies that are widely accepted, and individual funds managers can range widely in how conservative or aggressive they may be in marking non-realized positions, as well as how they account for fund expenses and J-curve when deducing the net returns indicated in Cambridge and Pitchbook, thus making it difficult to truly compare performance across asset classes, especially when looking at specific vintage years.

- The key takeaway is that, in most funds, the value of remaining positions is typically overstated, which in turn inflates MTM IRR and TVPI.

- A clear gap emerges between rhetoric and reality when there is a wide spread between TVPI and DPI, even for older vintage funds that should already be fully wound down, when TVPI ought to equal DPI.

- In recent years, realizations have been weak by historical standards due to significantly lower transaction volumes. This has widened the gap between TVPI and DPI, particularly as funds managers have been slow to adjust existing positions to their true current fair market value.

- This disconnect between reported valuations and actual fair market value makes it difficult for investors to assess historical performance, and more importantly, to determine the real value remaining in current positions. As a result, it can significantly influence asset allocation decisions and future commitment planning.

The key takeaways comparing private markets asset classes to one another are as follows.

- Private Equity (for older vintages) and Real Assets and Natural Resources (for newer vintages) have the highest nominal historical performance as measured by MTM IRR.

- Venture Capital has the highest nominal performance as measured by TVPI.

- Buyout, Venture, and Real Assets and Natural Resources (primarily Energy) show the widest gap in MTM IRR performance between the top quartile and the median and lower quartiles.

- Infrastructure, followed by Credit, have the smallest gaps between top quartile and median performers based on MTM IRR and TVPI.

- Among all asset classes, Real Estate shows the smallest gap between TVPI and DPI, while Real Assets and Natural Resources (for older vintages) and Venture (for newer vintages) have the largest.

Asset (Vintage)	**Multi-Year Average of Median MTM IRR (%)**	**Multi-Year Average of Median TVPI**	**Multi-Year Average of Median DPI**	**Mean Difference (TVPI minus DPI)**
Venture (Old) (1981-2013)	11.26	**1.81**	1.67	0.14
Venture (New) (2014-2024)	6.00	**1.52**	0.20	1.32
Real Estate (Old) (1994-2015)	11.03	1.45	1.41	**0.04**
Real Estate (New) (2016-2024)	2.12	1.14	0.26	**0.88**
Infrastructure (Old) (2006-2012)	7.44	1.34	1.11	0.23
Infrastructure (New) (2013-2024)	9.41	1.31	0.38	0.93
Real Assets and Natural Resources (Old) (2003-2015)	5.13	1.28	1.00	0.28
Real Assets and Natural Resources (New) (2016-2024)	**12.78**	1.31	0.35	0.96
Private Equity (Old) (1986-2014)	**13.36**	1.80	1.73	0.07
Private Equity (New) (2015-2024)	10.11	1.46	0.38	1.08

- If one were considering benchmark data principally to analyze the beta potential of each asset class to optimize for total return potential, predictability of outcomes, and actual realized returns, it appears buyout and real estate offer the most compelling risk adjusted returns as asset classes, however, there is a case to be made for the benefits of all private markets asset classes especially given the alpha potential that comes from superior manager selection within each asset class.

Data and Methodology

We draw on historical benchmark data from **Cambridge Associates** and **PitchBook.** Cambridge Associates' benchmarks are based on self-reported fund data (typically provided by GPs (General Partner) to Cambridge, often audited), while PitchBook aggregates fund performance data from various sources, including public filings and Freedom of Information Act (FOIA) disclosures by LPs (Limited Partner). In total, the dataset covers thousands of funds (e.g., nearly 3,000 private equity funds, 3,276 venture funds, etc.) across vintage years ranging from the early 1980s up through the 2010s, depending on the asset class. It is important to recognize that **both sources provide performance data that is self-reported by the underlying fund managers, and those fund managers can choose to report (or share publicly) certain vintages and not others**.

Metrics: The analysis centers on three key performance metrics for each asset class:

- **Mark to Market Internal Rate of Return ("MTM or MTM IRR"):** The annualized money-weighted return of a fund, calculated based on the timing and amounts of capital contributions and distributions, together with the current fair value of remaining investments. It measures an investment's expected compound annual growth rate and represents the discount rate at which the investment's net present value equals zero. MTM IRR reflects both realized cash flows and the mark-to-market valuation of unrealized positions. While a higher IRR often signals quicker return of capital and stronger interim performance, it can be misleading if early distributions dominate results or if unrealized assets are overvalued.

- **Total Value to Paid-In Capital or Multiple ("TVPI"):** The ratio of total value (distributed + remaining value) to capital paid in. TVPI (also called MOIC, multiple on invested capital) measures the *multiple of money* achieved by the fund, combining realized and unrealized gains. A TVPI of 1.5× means the fund's investments are worth 1.5 times the contributed capital, though part or all of that value may still be illiquid holdings.

- **Distributed to Paid-In Capital, Multiple or Realized ROI ("DPI"):** The ratio of capital returned (cash distributions to investors) to capital paid in. DPI measures actual cash-on-cash returns realized by LPs. A DPI of 1.0× means the fund has returned all paid-in capital; DPI >1.0× means profit has been realized. This may also be referred to as realized return on investment ("ROI"). DPI ignores any remaining portfolio value, so it starts at 0 and moves upward as a fund liquidates holdings. **This includes both return OF capital and return ON capital. Of the three primary performance measurements, this is the only one that cannot be manipulated,** short of outright fraud. At the end of a fund's life, TVPI should equal DPI.

We segregate **vintage years** to distinguish mature "old" vintages (which **should** be mostly wound down by now) from more **recent vintages** (still in their investment/harvest period). By examining **TVPI alongside DPI**, we can see how much of the "total value" is still unrealized (the difference TVPI–DPI indicates the portion of value on paper). We report primarily median values (50th percentile funds) to characterize typical performance, but also note upper-quartile vs. lower-quartile where relevant to illustrate dispersion.

Selection Bias

Performance data for closed-end drawdown funds is **almost entirely self-reported**. Fund managers decide both **what performance metrics to share and whether to report at all**, either to Cambridge Associates or through publicly available sources like PitchBook. Because of this, the number of **reporting funds varies widely by vintage year**. **Simply put, more GPs tend to report in strong-performing vintages, while fewer report in weaker years.**

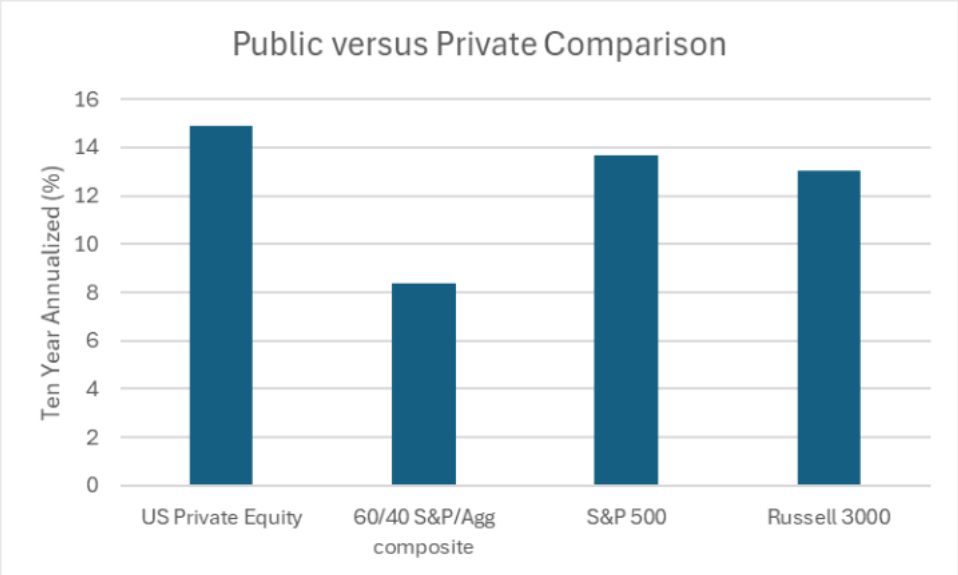
This leads to **selection bias and a lack of consistency** as to which managers are reporting which funds over a long-term period. The data does not represent the full fund manager universe but is skewed toward stronger performers. As a result, the **reported performance is biased toward the better-performing funds for each vintage rather than a broad representation of the entire manager universe for that asset class**. This bias strengthens our findings. If clear patterns and concerns emerge even within a dataset skewed toward top performers, those trends are likely even more significant across the broader market, where weaker performers are underrepresented or entirely missing.

Another important consideration is that **valuation methods vary by asset class and manager.** For example, venture capital funds often hold their early stage companies at cost or last funding round until a new financing or exit (which may never come), even if the market has changed materially for the worse, whereas buyout funds

may use market comparables, private or public (discount rates to PMEs can vary widely), or periodic third-party reviews, while real estate funds typically rely on capitalization rates ("cap rates") applied to current net operating income ("NOI"), broker opinion of value ("BOV"), or appraisals (typically backward looking) that often smooth volatility. These differences make reported net asset values, and therefore metrics like **MTM (Market-To-Mark) IRR and TVPI, difficult to compare across funds.** There is also a general tendency for GPs to report unrealized holdings at optimistic values, especially in the later years of a fund. When exits are delayed, these values can become outdated or inflated. As a result, benchmark **IRRs and TVPIs may be overstated.** We address these limitations directly in the following section, where we examine how these practices contribute to the gap between reported and realized performance in each of the private markets asset classes.

Public vs Private Market Performance

In this section, we show that private markets have consistently outperformed public markets over nearly all long-term periods. The chart shows that US Private Equity net IRR has outperformed key public market benchmarks, including the S&P 500, the Russell 3000, and the traditional 60%/40% S&P 500/Barclays Aggregate "long only" public portfolio. Admittedly**, the spread between public and private market performance has narrowed substantially in recent years, especially as the S&P 500 continues to reach all-time highs.**



Although this may be especially misleading, because the majority of performance has come from a handful of select mega tech stocks, such as the "Mag 7," which now comprise ~35% of the market cap of the entire S&P 500, with the other 493 stocks comprising the other ~65%. The ten-year net IRR for US Private Equity stands at 14.89%, which is higher than the S&P 500's 13.65% and the Russell 3000's

13.02% while substantially exceeding the 60/40 mix at 8.38%. **Normally, one expects 300 to up to 500 bps of liquidity premium for private investment versus public investment, although with the rise of increased liquidity and greater depth of market size and transparency in private equity, many institutional investors today look for 300 bps or less from their public market equivalent ("PME") performance.** Thus, private equity has underperformed on a relative basis to its PME equivalent over the last decade.

Having said that, the estimated CAGR (Compound Annual Growth Rate) of the Mag 7 over the last decade is ~28%. If you invested in the S&P 500 on an equal-weighted basis over the last ten years (rather than capitalization weighted), your inflation adjusted CAGR would only be ~8.3%, and if you owned the other 493 names in the S&P 500 without the Mag 7, your CAGR would be even less. **In summary, the Mag 7 skewed the PME to a degree never seen in public equities, thus narrowing the historical spread in performance between private and public equities over the last decade.** The equivalent would be if someone invested in private equity or venture during this same period and was able to weigh 35% of their investment to the top 1.4% of performers of the entire asset class. The spread between private and public equities performance would be far wider in those circumstances.

To be sure, if one took the long-term performance of the S&P 500 back to March of 1957 at its inception, or back tested the largest public equities to 1926, the CAGR would be 9.8% - 10.0%, substantially less than private equity performance over the long-term, 13.3% median net IRR for vintages from 1986 - 2013, PE funds that should be fully realized by now. This highlights the historical advantage of allocating to private equity for investors seeking higher long-term returns, let alone the benefits of diversification, lower correlation, and overall portfolio performance.

The performance gap is notable. While both the S&P 500 and the Russell 3000 have generated strong double-digit annualized returns, private equity's net IRR has provided an additional return premium. This outperformance is largely attributable to the illiquidity premium, the variability in manager skill, and the enhanced use of leverage in private market strategies. In contrast, the 60/40 allocation has trailed primarily because of the lower relative performance of its bond component.

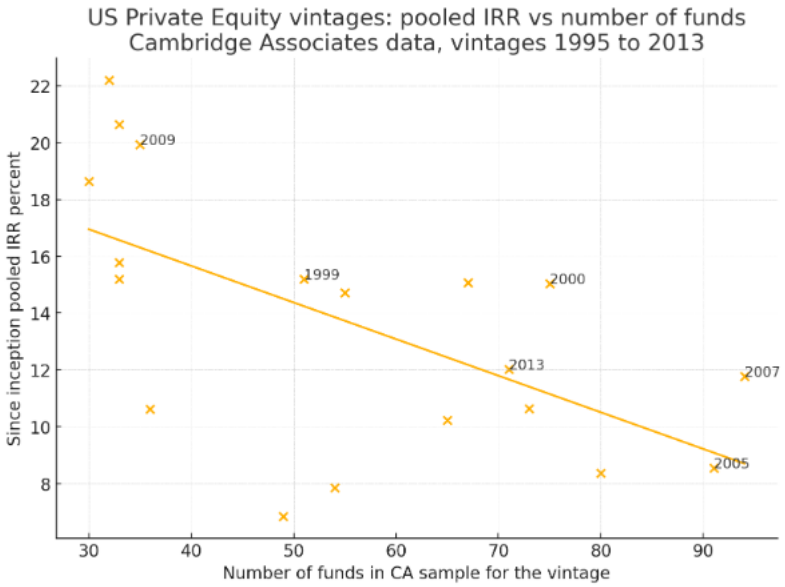
The private market net IRR is sourced from the Cambridge Associates US Private Equity Index as of March 31, 2025. The S&P 500 return figure is from the BlackRock iShares IVV Fact Sheet as of June 30, 2025, and the Russell 3000 return figure is from the FTSE Russell Russell 3000 Index Fact Sheet as of July 31, 2025.

Fundraising Cycles and Vintage Performance

As demonstrated in subsequent sections, return dispersion ranges widely across private markets cycles and especially by vintage year. **Private markets routinely display an inverse link between how much capital is raised in a vintage year and how that vintage later performs.** When money pours into funds, competition intensifies, entry prices rise, leverage tends to creep up, and value creation compresses. When the flow of new commitments slows, managers face less bidding pressure, buy at more attractive prices, and the following outcomes improve. Recent periods of slow distributions and the denominator effect have also reduced recycling of capital, which tightens commitments and reinforces these dynamics in the present moment.

Evidence from Brown et al. (2021) shows a significant negative relationship between the level of fundraising in a vintage year and subsequent fund performance for both buyout and venture capital funds. Using Burgiss data for vintages from 1987 to 2013, the table depicts the results of regression-pooled performance on aggregate fundraising scaled by the size of the equity market**. In buyouts, high fundraising years are followed by lower absolute returns (IRR, MOIC) and somewhat lower relative performance as measured by the Public Market Equivalence (PME) indicator constructed by the authors of this study. In venture capital, the effect is stronger across all performance measures, including relative to public markets.** This supports the view that private equity performance is cyclical, with capital surges often preceding weaker outcomes. R-squared values around 0.41 and 0.44 show a meaningful share of variation explained.

Panel	Metric	Fundraising Coefficient	t-stat	R-Squared
Buyout	IRR	-13.76	-4.18	0.41
	MOIC	-0.81	-4.40	0.44
	PME	-0.23	-1.83	0.12
Venture Capital	IRR	-216.73	-2.82	0.24
	MOIC	-14.36	-3.36	0.31
	PME	-5.87	-2.60	0.21



The scatter plot, which uses **the number of funds in each vintage year as a proxy for fundraising intensity, shows a clear downward-sloping relationship between fundraising volume and subsequent pooled net IRR.** Vintages with a higher number of funds, indicative of hot fundraising markets, tend to deliver lower net returns, while those with fewer funds, representing cold fundraising years, generally achieve stronger performance.

Recent weakness in fundraising should therefore be viewed as a constructive signal for forward-looking performance rather than a cause for concern. **Historically, vintages launched in subdued capital raising environments have enjoyed better buying conditions and higher ultimate returns.** If the past patterns hold, the current low fundraising climate could set the stage for stronger returns in the coming years, making it an opportune time to maintain or even increase commitments rather than pull back.

Performance by Asset Class and Vintage

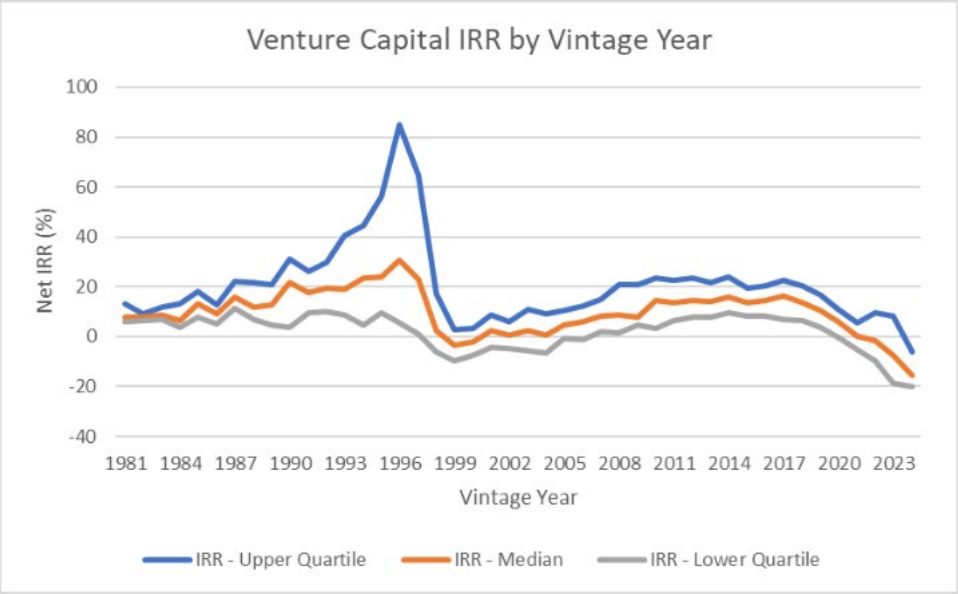
In this section, we will dig deeper into individual private market asset classes and their performance.

Venture Capital

Within the median quartile of venture capital vintages, the average IRR was 9.85%, while the upper quartile averaged 20.47%, the **widest spread between the top quartile and median of any asset class**. Median IRRs ranged from -3.24% in 1999 to 30.78% in 1996, reflecting the **extreme volatility in performance across vintages.** For 2014 and later vintages, median IRR averaged only 6.00%, with the upper quartile at 13.80%. Within this period, median IRRs ranged from -15.32% in 2024 (reflecting the typical J-curve plus tough performance period) to 15.66% in 2014, and the gap between top and bottom

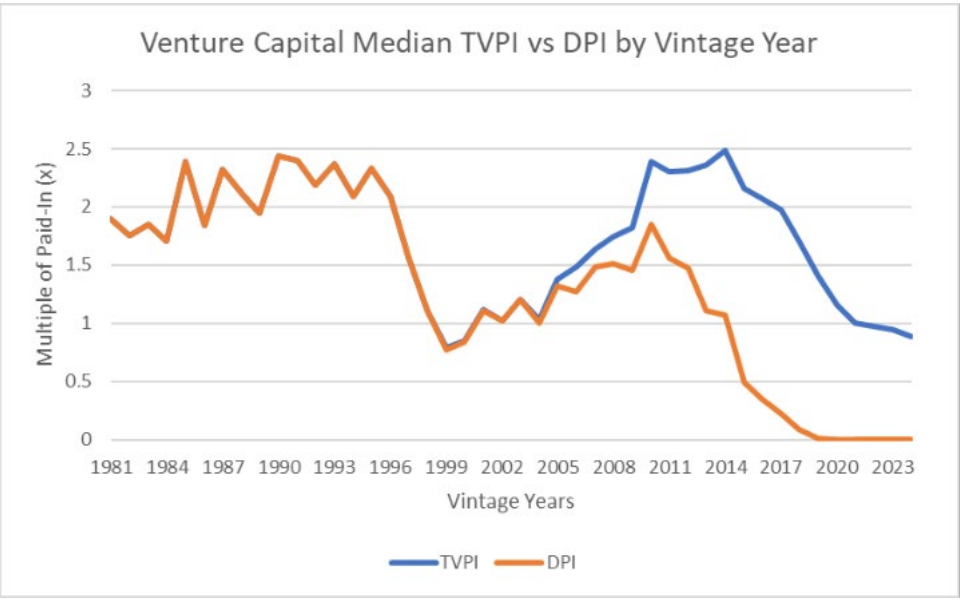
quartiles remained substantial across most vintages. There are a host of reasons for this volatility, not the least of which is the **Power Law concept, whereby only a small number of venture investments produce outsized returns, while the vast majority produce only modest returns or fail altogether.** One could argue that the Power Law concept may also apply to public equities in the tech space, when you look at the outsized returns of the Mag 7, or even other unicorns that went public at seemingly high values yet continued geometric growth in public market value. Most venture managers today will tell you that because of increased distribution of information and the emergence of artificial intelligence, they can detect losers faster and cut their losses sooner rather than continue throwing good money after bad. However, the jury is still out on that claim, especially when you look at the number of neutral to down-round investments many VC fund managers make, especially the larger VCs, and history has shown that those investments materially drag fund-level performance.

A critical issue in venture is the **gap between reported value and realized value**. Venture funds often hold companies at high valuations based on the last funding round, but it can take years to exit (or some "unicorns" may never live up to their valuations). Venture funds typically show **very low DPI until late in their life**, even if TVPI is high. For example, as of Q3 2024, the median 2015 vintage VC fund still had **DPI well under 0.5×** despite a healthy TVPI around 1.5× (meaning over two-thirds of the supposed value was still unrealized). Recent vintage stats are even more striking: the median 2018 - 2019 VC funds have TVPIs of ~1.3 - 1.4×, but have **distributed virtually nothing yet (DPI ≈ 0)**. The chart below illustrates this pattern for venture capital: median total-value multiples (TVPI) vs. cash-out multiples (DPI) by vintage year.



Early vintages eventually converge (for older vintages on the left side, the two lines meet, indicating TVPI = DPI once fully liquidated). But starting with the mid-2000s and especially the 2010s vintages, a

large and persistent spread opens. For instance, 2012 - 2014 vintages show median TVPIs in the 2.3 - 2.5× range while median DPIs were only 1 - 1.5×, and for 2016 - 2018 vintages, the gap is even larger, not surprisingly. This underscores that venture portfolios have **been marked up significantly** (especially during the 2020 - 2021 tech bull market), **but realizations lag far behind.**



The consequence is that **many LPs are sitting on "paper gains" that may or may not materialize**. The recent market downturn (2022 - 2023) put further pressure on VC: exits via IPO or M&A slowed to a trickle, and valuations of late-stage startups started to be marked down. As Howard Marks quipped, "you cannot eat IRR" - high IRRs or TVPIs mean little if they cannot be converted to cash. This sentiment resonates now: unsold venture assets are **"piling up"** in portfolios and creating a liquidity crunch for investors. Many VC firms called record amounts of capital in 2020 - 2021 but have since been unable to distribute much back (recall the historical negative correlation between fundraising and vintage performance referenced above). The rhetoric of VC as an engine of superior returns holds true only for those few funds that consistently access top-tier deals and can actually grow the value of said companies and exit with appropriate realized outcomes. For the average fund, the reality is more tempered: long holding periods, modest multiples, and heavy reliance on one or two big winners. And in lean exit environments, even solid paper returns can **"leak" away before they ever reach investors** – either through valuation corrections or simply the opportunity cost of delayed liquidity. Venture capital thus exemplifies the importance of focusing on DPI: **ultimately, cash returned is what matters, and as of 2025, a large portion of the value in even older VC vintages remains unreturned.**

There's another challenge with venture capital: the average time it takes even a successful start-up to reach maturation and exit is approximately 14 years, while the average venture fund has a 12-year term, which is one of the headwinds for DPI. This may be one of the reasons why investors allow venture

managers to invest in the same company at different rounds and valuations across multiple funds. In other asset classes, investors at least frown on and often block fund managers from having cross-fund investments, because there is an obvious conflict of interest. However, in venture, it is often encouraged by LPs to provide subsequent funding rounds. While this makes sense on one hand, it also opens the door for a fund manager to artificially prop up zombie companies that struggle to get capital in the marketplace. Moreover, only 10% of all start-ups are successful, while 2.5% of institutionally venture-backed start-ups reach "unicorn" status (.00006% of all start-ups). **So, even for the approximate 30% of venture-backed startups that achieve breakeven or profitability, they rarely do so during a typical venture fund term, especially when looking for an accretive enterprise value ("EV") exit.** This has led to a rise in continuation vehicles or recaps in the secondary market, often necessary to achieve realized returns, if any. More on this in the Secondaries Funds section.

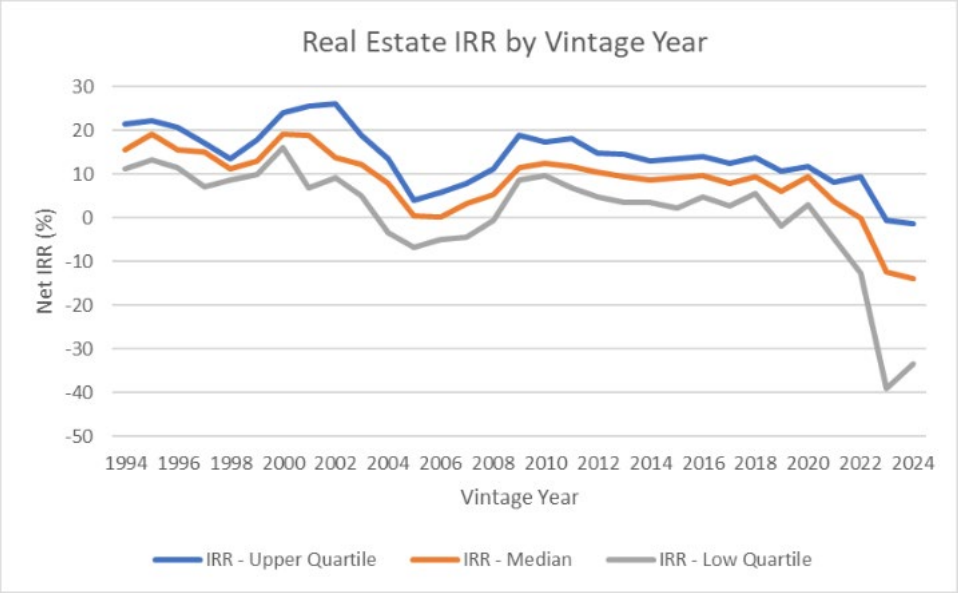
The volatility in the number of reporting funds is highest in **venture capital**, making **selection bias a significant concern**. In some years, the sample size has been extremely small, such as only **14 funds reporting in 1991**, then surging to **172 in 2000** before dropping again to **35 in 2002**. During the run-up to the global financial crisis, the number of reporting funds increased sharply, reaching **102 in 2006** and **101 in 2007**. This was followed by a steep decline, with only **37 funds in 2009** and **46 in 2010 as performance declined during the GFC (**while those would have been good years to launch a new fund, mature funds already in existence with companies purchased during a heated market had many positions that declined in value, and arguably went to zero**)**.

The market is witnessing a similar phenomenon more recently. From 2014 to 2022, when venture capital performance was strong, the average number of reporting funds rose to 152. In contrast, during the more challenging conditions of the Great Tightening, participation has fallen sharply, with only **74 funds in 2023** and just **47 in 2024**. Although some venture fund managers in recent years may be waiting to see how things shake out or getting past the long venture J-curve before reporting, this pattern clearly shows how reporting levels in venture are highly sensitive to market conditions, reinforcing that **selection bias is particularly acute** in this asset class.

In summary, venture capital can offer significant total return potential in a portfolio, but returns are highly cyclical, highly concentrated both in specific companies invested and specific fund managers, performance can swing sharply depending on market conditions and timing of exits, and reality versus rhetoric seems to be very wide as it relates to reported MTM and TVPI versus DPI, especially when analyzing median benchmark performance.

Real Estate

The real estate private funds universe spans a range from Core (low-risk, stabilized income properties) to Opportunistic (high-risk, distressed turnaround, development, or heavily leveraged deals). Interestingly, the data set shows less range in historical average performance between lower-risk strategies and higher-risk strategies; however, this may obfuscate the reality that there is a wide range in performance based on property sector and market selection. **U.S. real estate is not only the largest asset class in the world (~$120T total market cap, $40 - $60T of which is arguably investable), it is by far the most hyper segmented, with large range of outcomes between sector, market, submarket, and all the way down to the property level.** It is not uncommon, especially during challenging market environments, to see one property sector perform very differently from another property sector, even if the assets are across the street from one another. It is by far the most bespoke of all private market asset classes, with literally every single property ever invested in being truly unique. **As such, there can be a wide range of dispersion between managers and strategies within U.S. real estate; however, when aggregated together in a diversified portfolio of real estate executed by professional investors, the dispersion in performance comes down substantially**, arguably more so than other asset classes.



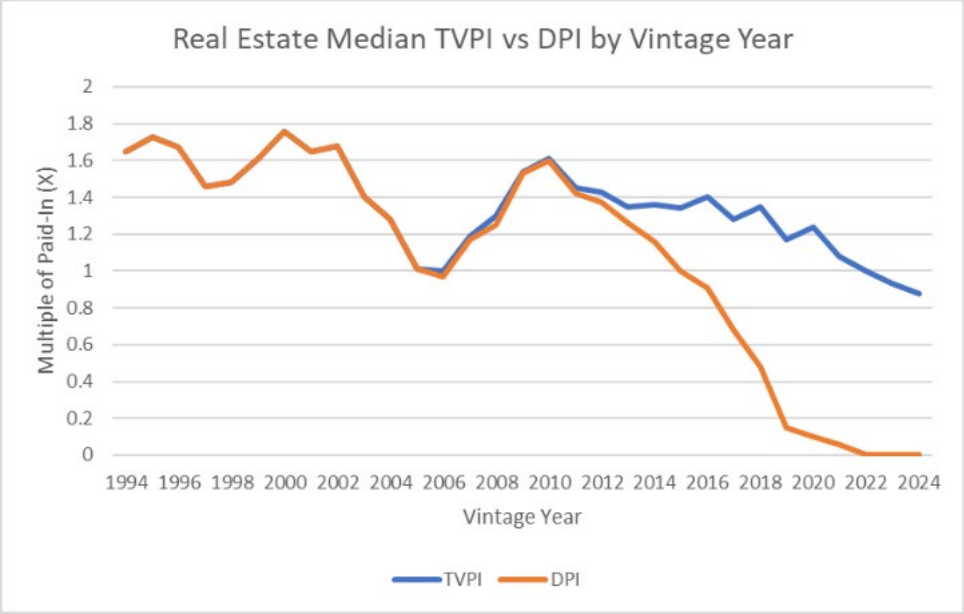
Median IRR across all real estate vintages has been relatively stable compared to more volatile asset classes, with the **average spread between upper quartile and median IRR at 538 basis points**. For 2015 vintages and older, which should have fully wound down by now, the average historical net IRR was 11.0%, with median IRRs ranging from 0.09% in 2006 to 19.23% in 1995, **interestingly with no negative performance for median IRR, unlike most other asset classes**. The widest dispersion by vintage occurred in 2001 with a 1,874 bps spread between top (25.47%) and bottom quartiles (6.73%), and in 2002 with a 1,226 bps spread between top quartile (25.97%) and median (13.71%). The highest-

performing vintages were 1995 and 2000, each delivering roughly 19% net IRR. In the last 15 years, the 2010 vintage led with a 12.5% net IRR. For the 2015 vintage (74 funds), which is now 10 years old and should be fully realized, the net IRR is 9.03%, while for 2020 and newer vintages, only 2020 and 2021 show positive median IRRs, with performance dispersion remaining very wide for younger funds.

There is a clear argument to be made that real estate benefited from the long-term trend of generally falling interest rates over the last 40 years, similar to fixed income benefitting from the 40-year "bond-bull" during the same period. **Although fixed income total return is highly correlated to the vector of prevailing interest rates**, short-term rates, such as Fed Funds, LIBOR, and now SOFR, and especially longer-term securities like 10-Year Treasuries, **real estate is only partially correlated**. Historically, the correlation between basic food group (multifamily, industrial, office, and retail) cap rates and the 10-Year Treasury rate has been ~0.5, and it typically trails the 10-Year Treasury movement by about three quarters. That is to say, if the 10-Year Treasury rate were to go up 100 bps, one could expect a 50 bps increase in basic food group cap rates over the next three quarters. **If one examined other property types**, and there are approximately 30 property sectors in the U.S. (recognizing that some investors consider many of those to be a subset of the basic food groups), **the correlation to the 10-Year Treasury rate is less obvious**. More importantly, property-level NOI has only an indirect relationship with interest rate movements. That is to say, **unlike bonds, or even private credit to a degree, where an investor is along for the ride of the broader interest rate market, in real estate, an effective real estate investor can greatly influence the property level NOI off which the cap rate is calculated for determining the value of the property, let alone the yield generated by the property**.

No doubt, total return across real estate has decreased in recent years, both because of interest rates now increasing substantially during the Great Tightening (increasing borrowing costs hurting current yield along with expanded cap rates hurting property value), but also more generally and over a longer period due to the rise of liquidity, and hence capital competition for property investments. For example, vintages 2014 and earlier averaged a median IRR of 11.12% net with zero down years. However, this rise in capital competition and overall liquidity de-risks the asset class. Because there are more buyers of property (less true today post-Great Tightening, but certainly true over the prior period, generally 2015 - 2021), that also means **volatility is less and liquidity is greater, more so than any other private markets asset class, therefore the spread between private and public market performance should be materially less in real estate.**

When one looks at PMEs in real estate, public REITs are often compared to PERE (Private Equity Real Estate) performance, with ODCE as a representative of lower-risk core PERE. This may not be the most constructive, given long-term average leverage in publicly traded REITs has been between 40% and 50% (low to mid-30s over the last decade or so, but much higher before that), while long-term average leverage in ODCE funds has generally been between 22% and 28%. Further, most ODCE fund managers would likely argue that the quality of their properties is materially higher than the average quality of properties in their publicly traded REIT counterparts, thus meaning lower risk. Whether that is true or not, over the long haul, REIT performance has been more correlated to the S&P 500 than to the performance of their underlying properties. **Although correlation to the S&P 500 and 10-Year UST has come down substantially post-Great Tightening, REITs still tend to trade more like a public equity**, because individual investors are the primary owners of public REITs, especially when looking through ETFs and mutual funds. As such, behavioral finance and emotion play a greater factor in the pricing directions of public REITs than in more institutional real estate funds, like ODCE funds. **To be sure, public REITs have been the highest performing publicly traded asset class over the long term, but also with the greatest volatility and a very high correlation with the stock market.**



A key positive feature of PERE is the alignment of reported value and realized value for older vintages. As shown in the **TVPI vs. DPI** chart, vintages up to roughly **2014 – 2015** show TVPI and DPI **converging**, which is consistent with the typical real estate fund life cycle, where most assets are sold and proceeds distributed within about a nine-year fund life. This convergence indicates that older funds have largely **delivered their reported value as cash** back to investors. **Post-2015 vintages** show a gradual **widening between TVPI and DPI**, with the gap increasing for more recent funds, especially as **exits have slowed with low overall transaction volume**. This is expected for younger vintages still in

the **hold or development phase**, but it also reflects **current market headwinds delaying realizations**. The contrast with other asset classes is notable: in real estate, the historical pattern has been for unrealized gains to be **converted into cash within a reasonable time frame**, helping to **manage liquidity risk** for investors. Admittedly, liquidity has fallen to one of its lowest relative levels immediately after the Great Tightening. This is not surprising, given it has been more than four decades (1976 – 1981) since the U.S. has seen interest rates move up so high and so quickly as they did 1Q22 to 4Q23, with a 500+ bps increase to short-term interest rates, and a 400+ bps increase to the 10-Year UST from 3Q20 to 4Q23.

This lower relative liquidity is not only a function of interest rate movements, but also a change in investor sentiment around PERE. As previously mentioned, PERE vintage performance over the last decade has been ho-hum at best. **Many investors have taken the approach to their private markets investing as all illiquid asset classes compete on the same basis, thus making nominal performance (on paper) the primary factor in driving an investment decision**. **There is the perception that PERE's "day in the sun" is long in the rearview mirror, because PERE will not be able to benefit from the tailwinds of falling interest rates**. That could be right. **However, it may be just as likely that PERE is going through some of the exact vintage performance cycles as all private market asset classes have done, including buyout, growth capital, and venture.** Even if interest rates were to remain stable, with only moderate increases or decreases over the coming decade (yes, this is unlikely, and consensus indicates a higher likelihood of falling rates), PERE performance for recent vintages is likely to be some of the best in its historical dataset. Effective fund managers can make money in a stable interest environment, especially if they are focused on sectors with the ability to increase NOI, and thus drive unlevered yield and the value of the property. Almost more importantly, the current market conditions are unique in that many existing properties suffer from capital structure distress (overlevered from pre-Great Tightening), while simultaneously new fundraising is at its lowest level since the GFC (recall the negative correlation between fundraising and vintage performance). Part of the reason is lower transaction volume, because re-ups and new commitments are difficult for two simple reasons: distributions from prior vintages have been lighter than expected, and there is still a gap between real property values as measured by transaction values versus where many PERE funds presently have their properties marked. However, that means property valuations (real property valuations as measured by real transaction values) have come down, and competition from capital is lower, thus making the present moment likely a great entry point. Having said that, due to the hypersegmentation of the massive real estate market, it's likely not a market-wide beta opportunity. **It is likely an opportunity for outsized risk-adjusted returns, especially if one can**

wisely pick their spots. My guess is that if we are writing the follow-up to this paper in 2035, or more appropriately, if some advanced LLM is writing this paper in 2035, it will probably point to 2023 – 2026 vintages as perfect examples of higher vintage performance due to lower fundraising levels.

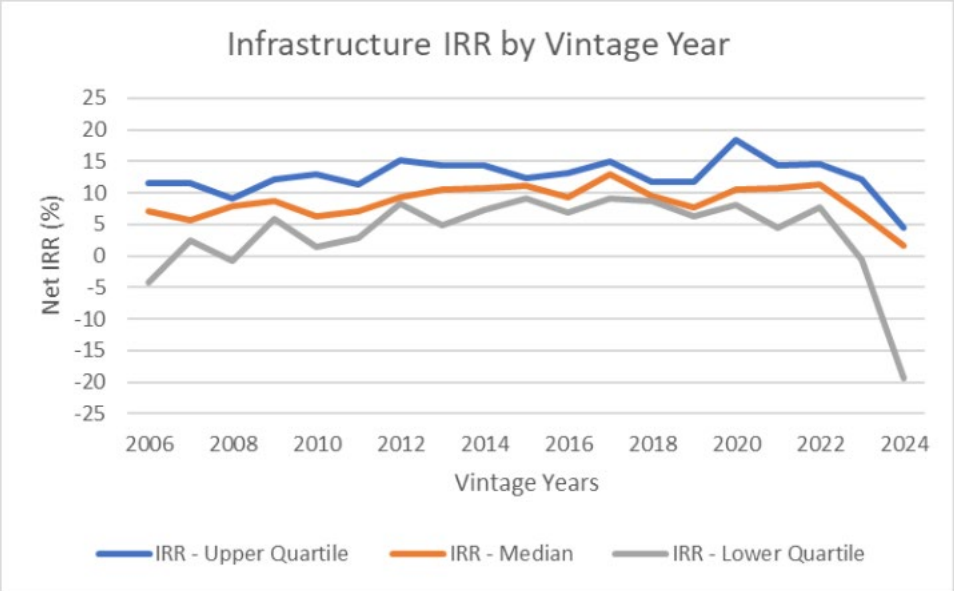
In summary, while PERE has been in the middle of the pack of private markets asset classes in terms of performance as measured by MTM IRR and TVPI, it is arguably at least one of the lowest risk of all the private markets asset classes, with the highest degree of liquidity and realizations to investors.

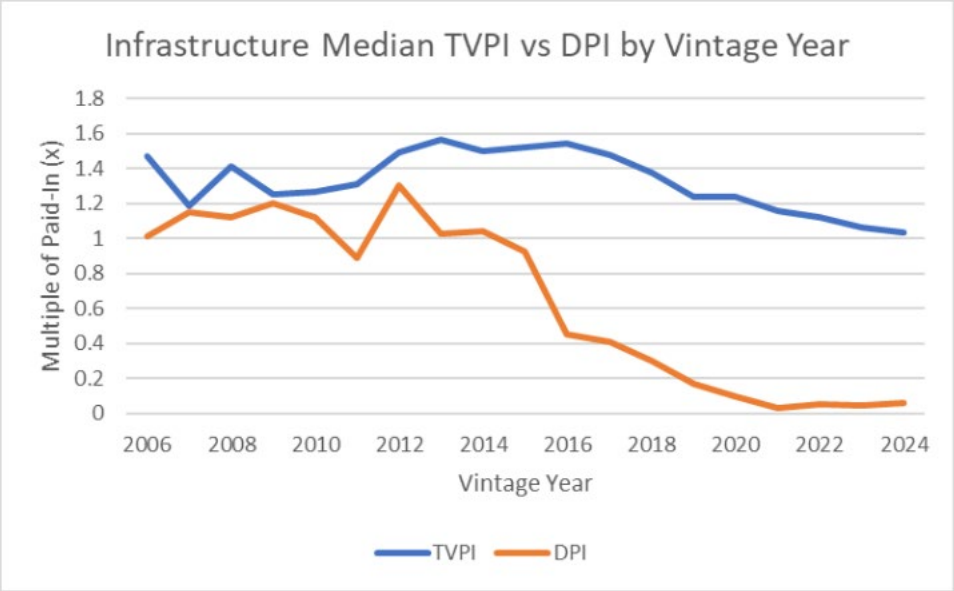
Infrastructure

The infrastructure private funds universe is smaller and less mature than other asset classes in the dataset, with data before 2006 not statistically relevant due to fewer than five reporting funds per year. Overall, performance dispersion is modest compared to venture or buyout, but still meaningful in certain vintages. For **2012 and older vintages** (2006 - 2012), which should have fully wound down even under a long **14-year fund life**, **median IRRs have ranged from 5.66% in 2007 to 9% in 2012**. The **highest median DPI** over the entire period was only **1.3×** (2012), **reflecting the asset class's steady but unspectacular cash-on-cash returns**. Notably, the 2011 vintage still shows a positive 7% IRR despite a median DPI under 1×, meaning managers are still marking assets above cost more than a decade after inception. Across these mature vintages, median DPI has averaged only 1.11×, while median TVPI remains 1.34×, implying that managers expect roughly another 0.23× in distributions — a significant amount for funds that are already well past their typical holding period.

Performance spreads in infrastructure tend to be narrower than in other private markets, but exceptions exist. The widest DPI spread occurred in 2006 (12 funds) at 0.53× between the upper quartile (1.54×) and median (1.01×). **That is telling, in that a nearly two-decade old fund universe has barely returned the original investment to its investors**. For IRR, the largest gap came in **2010** (18 funds) with 674 bps between the top quartile (13%) and median (6.26%). More recent vintages tell a different story: for 2020 and newer funds, median IRRs remain **positive even for 2023 - 2024 vintages**, possibly driven by **sectors like data centers and energy infrastructure,** which can begin generating income early and are very hot asset classes presently with lots of capital chasing them and thus increasing values. However, **distributions remain negligible** for these younger funds — even the 2020 vintage has yet to deliver meaningful DPI despite what should be a steady annual yield in core income-generating assets. This suggests that while reported performance may look healthy on paper, the realization profile in infrastructure is slower than expected, and in some cases, unrealized

valuations are doing much of the heavy lifting in IRR calculations. **Overall, the reality generally aligns with the rhetoric that infrastructure offers steadier, if lower, returns, although DPI remains fairly anemic.** The performance across vintages is relatively consistent: no negative-median vintages like VC experienced, but also no huge outlier vintages – most cluster in a tight band of outcomes.





It is worth noting that many fund managers within infrastructure generally consider closed-end funds to be a less-than-efficient investment vehicle structure, given the long-duration nature of the underlying assets of the fund, and thus an open-end fund with investors having the ability to come in and out may be a better structure. **It is a reasonable view given that typical infrastructure assets, like toll roads, airports, railway systems, and shipping terminals, often have multi-decade lease terms. Although in recent years, the definition of infrastructure has been widened to include energy infrastructure and data centers, which can have more volatile counterparties and**

underlying assets with shorter leases, albeit with substantially higher yields. There has also been a movement to include "social infrastructure" in the infrastructure category, such as healthcare, education, and affordable housing, which can tend to have the stability of traditional infrastructure, albeit with shorter lease terms.

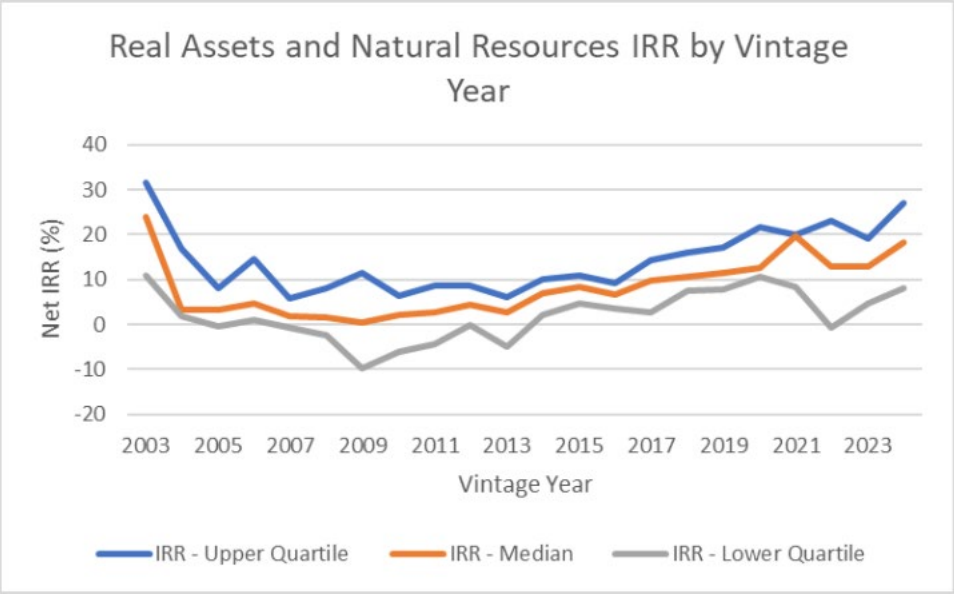
Real Assets and Natural Resources

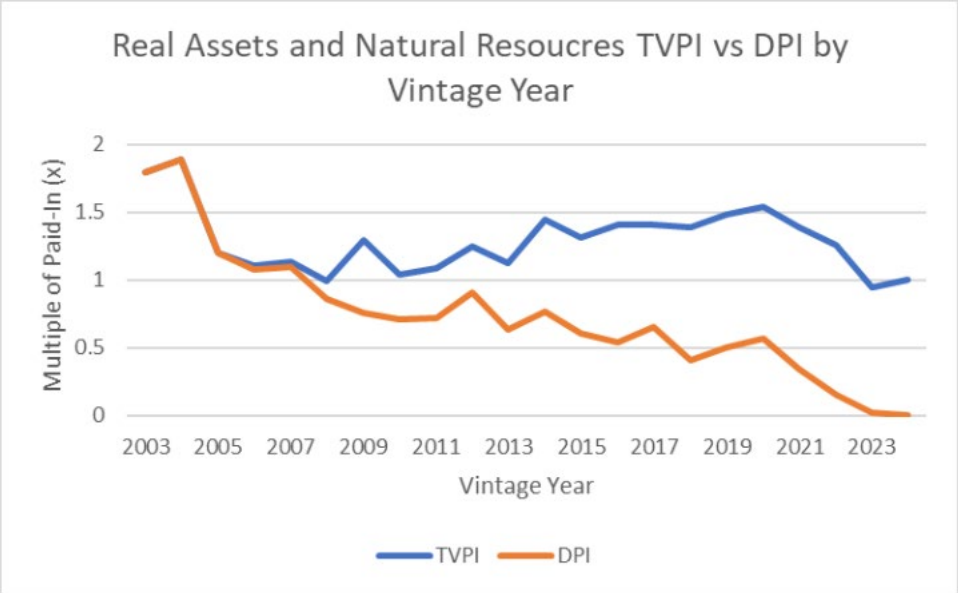
It has long been recognized that Real Assets and Natural Resources private fund performance has been highly correlated to the underlying commodity price. **The preponderance of the Cambridge index is comprised of fossil fuel and related funds, especially upstream-focused strategies, while only a small portion is comprised of timber funds. While the correlation to commodity price and investment performance remains true today, it has decreased for a host of reasons, not the least of which is improved technology for extracting fossil fuels, greater control over drilling costs, and increased hedging activities.**

Despite these advancements, the Real Assets and Natural Resources private funds universe is smaller, with data before 2003 not statistically relevant due to minimal reporting. However, this is one of only two asset classes showing positive median IRRs even for 2023 and 2024 vintages, suggesting enhanced opportunity in recent market conditions.

Admittedly, distribution performance tells a very different story. Other than the 2003 - 2005 period, which had median DPIs ranging from 1.2× to 1.9×, **only the 2006 and 2007 vintages have posted a positive median DPI over the entire sample period, at only 1.07× and 1.10×, respectively. Since 2008, no single vintage has returned even the original invested capital based on median DPI**, and even for the upper quartile, there have been only four instances above 1.0×, the highest being 2009 with just 1.09×.

For vintages from 2003 - 2015, which should have fully wound down by now, median IRRs ranged from 0.36% in 2009 to 23.85% in 2003, but the average IRR across this period is only 5.13%. Median DPI ranged from 0.89× in 2011 to 1.89× in 2004, with an average of exactly 1.0×. The 2011 vintage still shows a positive 7% IRR despite a negative median DPI, indicating valuations remain above cost even with no net cash return to investors after 14 years. Across these mature vintages, median TVPI is 1.28×, meaning managers are still projecting an additional 0.28× in distributions, with the 2013 vintage standing out for a 0.63× gap between TVPI and DPI. The widest IRR spread occurred in 2009, when the difference between the top quartile and the median was 1,122 basis points, though this result was based on only two funds reporting in the top quartile.





In vintages from 2020 onward, **the reporting sample dropped sharply from 24 funds in 2019 to only 8 in 2020 and has not exceeded 10 since.** Unlike other asset classes, where the decline in sample set is mostly attributable to fund managers not reporting during challenging periods or waiting longer to get past the J-curve on recent vintage funds before possibly reporting, **the small sample set of energy funds is likely attributable to an overall shrinking manager universe.** There are two primary reasons for a shrinking manager universe. First, the historical returns as highlighted above have been lackluster at best, especially for challenging vintages impacted by low nominal commodity pricing, such as immediately after the GFC, when most other private market asset class vintages were showing outsized performance. This made it more difficult for fund managers to raise subsequent funds. Second, as fossil fuels became more vilified, especially over the last decade, and many investors pulling away from fossil fuel investment as part of the increased focus on Environmental, Social, Governance ("ESG") objectives, the amount of capital flowing into traditional energy funds, especially

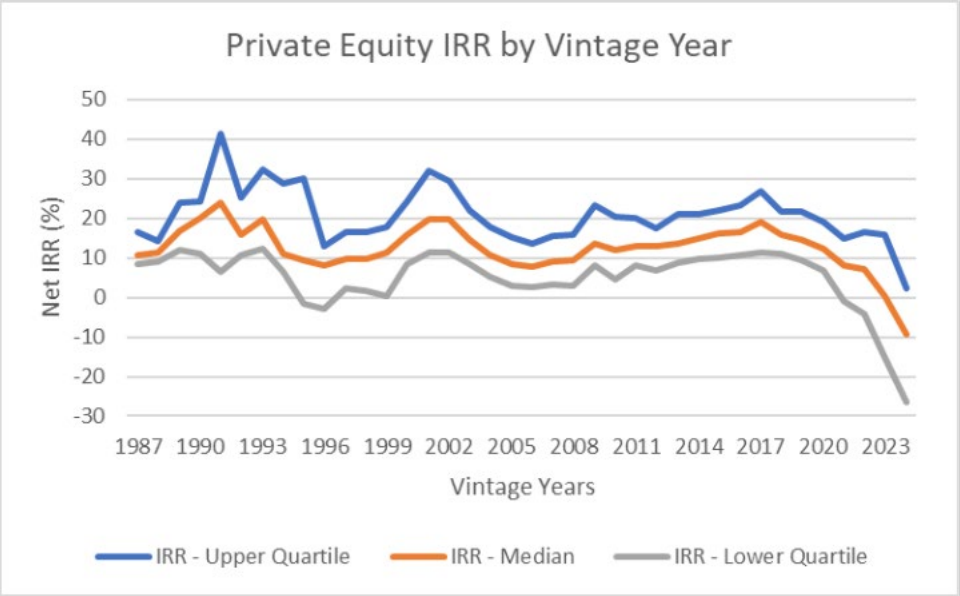
those focused on oil and gas, decreased materially (although simultaneously capital flowing into sustainable/renewable energy funds increased materially). There was even a wholesale move by several investor categories, such as many U.S. university endowments and a large percentage of European pensions and related, to not just slow investing, but in many cases stop investing and even sell their existing energy positions.

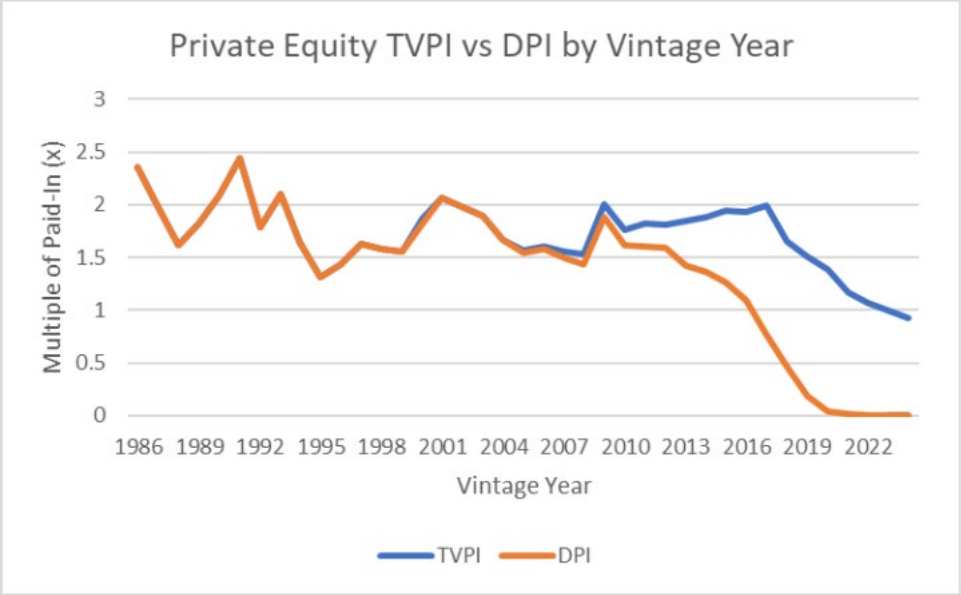
Despite this small sample size, median IRRs for even the newest vintages remain positive. The 2020 and 2021 vintages already show relatively strong median DPIs of 0.57× and 0.34×, respectively, with the upper quartile of the 2020 vintage, based on just two funds, already at 1.0× DPI. **This suggests that certain real asset strategies have been able to return capital relatively quickly in recent years, although the limited number of reporting funds makes these results less conclusive.** With 20/20 hindsight, this makes perfectly good sense. In recent years, there has been an increased recognition in the need for fossil fuels to bridge the gap on the world's current energy needs (and future needs for the "AI arms race") until technology improves to allow sustainable energy sources to shoulder more of worldwide energy demand, while simultaneously fossil fuels have been underinvested for the last decade on a relative basis. As such, **the few remaining private equity energy funds in the market have been able to have outsized performance**. The vintages of the last five to seven years as a group are likely to be the highest performing of all prior vintages, other than perhaps the brief energy boom of the early 2000s. **This is probably one of the most cogent examples of the negative correlation between fundraising and vintage year performance.**

Private Equity (Buyout and Growth Equity)

The historical data for the darling of private markets asset classes generally indicate a good balance of MTM IRR and DPI, at least for older vintages. **This ever-important asset class has generally had a higher IRR than PERE and higher and certainly more consistent DPI than venture.** While PE should certainly be a meaningful portion of any institutional investor's portfolio, it has not been all unicorns and rainbows.

Private Equity (PE) has one of the largest reporting samples in private markets, with fund counts rising to 44 by 1994 and peaking at 160 in 2007. After 2007, the number fell sharply to 53 in 2010, underscoring the **self-reporting bias** in this dataset since managers with weak vintages often choose not to report. The sample size rebounded as performance improved, reaching 151 funds in 2021, but dropped again to only 33 in 2024. Because PE funds typically run one to two years longer than real estate, infrastructure, or energy, often 10 years plus extensions, performance is analyzed in two groups: 1986 to 2014 and 2015 to 2024.





For 1986 to 2014 vintages, median IRRs averaged 13.36% with a range from 7.96% in 2006 to 19.75% in 2001. Upper quartile IRRs averaged 20.55%, with the widest spreads versus median occurring in top performing vintages such as 2001 and 2009 to 2010. Median DPIs ranged from 1.31× in 1995 to 2.06× in 2001, while upper quartile DPIs averaged 2.15×. **For 2012 to 2014 vintages, which should now be fully realized, average TVPI remains 1.84×, but DPI averages 1.46×, meaning managers still report 0.38× of value left to distribute**. The 2014 vintage shows the largest gap in this group with 1.88× TVPI versus 1.36× DPI. These funds **should have been fully liquidated, so TVPI ≈ DPI; that this gap remains suggests either a few straggling investments or overly optimistic residual valuations.**

For 2015 to 2024 vintages, median IRRs have averaged 10.11%, with a range from negative 9.22% in 2024 (J-curve a major factor) to 19.13% in 2017. Median TVPI stands at 1.46×, but DPI is only 0.38× on average, highlighting the large proportion of unrealized value in recent funds. Upper quartile

performance is stronger, averaging 18.46% IRR, 1.72× TVPI, and 0.57× DPI. Only 2015 and 2016 have median DPIs above 1.0×, with the upper quartile exceeding 1.0× DPI also in 2017. The 2015 vintage still shows a 0.68× gap between TVPI at 1.94× and DPI at 1.26×, almost a decade after inception.

Admittedly, when one looks more into buyout v growth equity, buyout indicates both higher and more consistent performance; however, there is so much crossover between the two, it is harder to differentiate performance with a high degree of certainty.

Overall, PE should be a significant portion of a portfolio given its return potential, but it will be interesting to see if the historically wide spread of TVPI and DPI for the asset class over the last decade of vintages decreases materially over time as underlying portfolio companies mature and market liquidity improves, or if many positions will remain unrealized and disconnected from current fair market value reality.

Secondaries

The secondary market for private fund interests has grown rapidly in recent years, becoming a key liquidity source for investors in funds that extend well beyond their stated terms. While a secondary market now exists in all private market asset classes, by far the vast majority of transactions historically have been for PE funds, especially buyout. Only in the last decade have you seen the rise of secondaries managers in PERE, with even fewer secondaries managers focusing on venture, natural resources, and especially infrastructure. They exist today, but very few have track records more than a few years. Secondaries as an institutional asset class is still quite new, even though sales of secondaries fund interests date back to the 1980s. While it is perhaps past the toddler stage, **it is still a ways from being a mature asset class overall, thus making performance conclusions more difficult**. However, the individual players in the asset class, the underlying secondaries fund managers, tend to be quite sophisticated as financial investors. They perhaps do not have the same domain expertise or ability to get into the weeds as a typical primary fund manager, but the capabilities and information advantage successful secondaries managers have can provide a substantial edge.

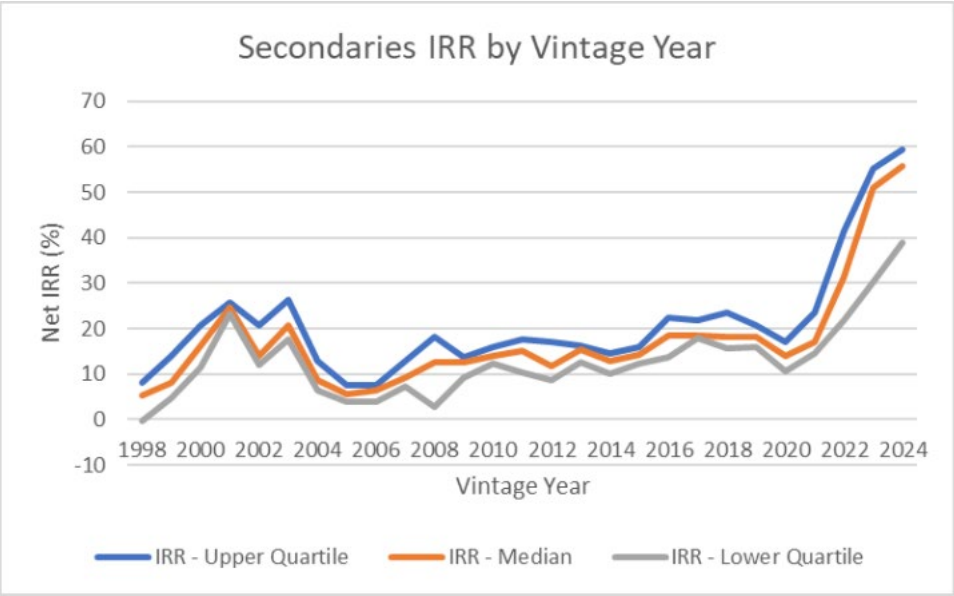
Fund counts in the dataset remain relatively low, ranging from only two funds in some early vintages to 21 funds at the peak in 2016, with most years reporting fewer than 15 funds. In a secondary transaction, a secondary fund buys an existing investor's position in a private market fund, often at a discount to the fund's reported NAV. This allows the seller to get cash now rather than waiting years for the fund to fully realize its holdings. Admittedly, secondaries funds today have expanded into all kinds of transaction

types beyond LP-led fund positions purchases, such as GP-led secondaries, like continuation vehicles ("CVs") and recaps, co-investments, directs, structured payments, forward purchases, etc.

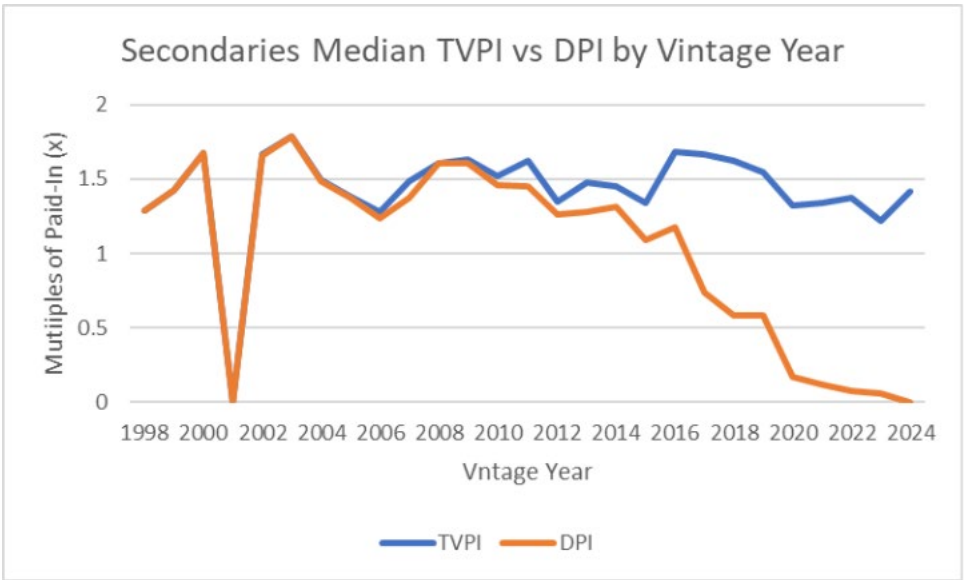
From an investor's perspective in secondaries funds, the strategy makes good sense on one hand to purchase mid-cycle fund positions, because the J-curve can be mitigated or even removed altogether, and time to realization and DPI can be shortened. However, the risk is that there is selection bias in what remains in a fund. **Often, the best performers in any given fund tend to run early and often get sold early, making it harder for a secondaries manager to participate in these early winners. The corollary is also generally true, in that the worst performers in a given fund get held longer, hoping for brighter days.** In fact, the dregs of a typical fund are often held the longest, often at the most inflated marks compared to real fair market value. A secondaries manager's investment universe is mostly comprised of these longer-duration assets. **Therefore, it is essential that the secondaries manager has the ability to look through to the underlying positions of the targeted fund, and the ability to underwrite and diligence those positions to determine their real value, and make an appropriately priced bid for the position.** This may be a tall order, especially because data around underlying positions is obfuscated, and the primary fund manager is less incentivized to share detailed information, unless the fund manager is getting something out of the transaction, hence one of the reasons CVs have become so popular.

However, secondary fund performance metrics, particularly **MTM IRR and TVPI, can be misleading.** Because these positions are often purchased below NAV, managers can mark the value up to par in the next quarter's reporting. This boosts reported returns immediately, even if the assets could not actually be sold for NAV in the open market. **As a result, short-term MTM IRRs can look inflated**. This is one of the biggest risks of investing in this asset class. **All things being equal, a secondaries manager is incentivized to purchase positions at the biggest discount to NAV, because when they mark the position up to NAV (at par to where the primary fund manager marks it), often as early as the following quarter, it <u>appears</u> there is a massive gain**, which is great for marketing, especially when a secondaries manager is fundraising. However, the positions with the greatest discount to NAV are often the poorest quality assets, and that gain may never be realized. **That is why a talented secondaries manager needs to know how to find the positions that are at a positive inflection point on their performance trajectory, and/or they buy the position cheap enough that there is still value to be realized.** The difficulty is that a secondaries manager is often, albeit not always, purchasing a fund position with a bevy of assets in it, some good and some bad. This is why it is paramount for a secondaries manager to look through to the underlying assets to best determine risk and opportunity.

This is also why investors should rely more heavily on DPI over the full holding period to gauge real performance, rather than MTM IRR, which is far less relevant in this asset class than any other.



Not surprisingly, DPI was solid in the distant past and has been lackluster more recently, although the sample set is small during both periods. Because secondaries funds should have a shorter duration to liquidity, one would generally expect realizations and DPI to be significantly faster than primary fund commitments. **This should mean that an investor in a secondaries fund should expect higher IRRs, both MTM and realized, albeit with lower DPI.** The sample set is admittedly small, making it difficult to draw conclusive outcomes, especially because the few fund managers participating are mostly focused on purchasing PE interests in the secondaries market, especially buyout. As mentioned above, there are fewer managers targeting secondaries interests in PERE, venture, and especially infrastructure and natural resources.



If you compare performance of PE primaries to secondaries for the vintages immediately after the GFC and all the way up until COVID, 2009 - 2019, (which happened to be the best performing period especially for secondaries, likely because it was a good buying environment for much of that period for disenfranchised LPs trying to exit their pre-GFC funds positions) **PE median IRR averaged 14.78%, and secondaries edged out primaries with a 15.42% average IRR for median performers. Median DPI for PE primaries averaged 1.20x, while secondaries averaged 1.14x. Perhaps to be expected with secondaries having higher IRR but lower ROI.**

The jury is still out on whether secondaries funds will ultimately deliver the desired outcomes. It will likely be similar to all the other asset classes, whereby manager selection is paramount to compelling risk-adjusted returns. **Having said that, secondaries should play a role in a mature institutional portfolio because they can provide greater ballast to a portfolio during challenging vintages. This is because a capable secondaries manager can take advantage of periods of lower market liquidity,** including when an LP might overreact to current market headwinds and sell prematurely. Or especially when an LP may be a forced seller because of factors having nothing to do with concerns for the underlying fund position, such as an above target allocation due to denominator effect, the need for current liquidity, or a change in investment policy, such as the example given above when many investors began selling their fossil fuel positions due to ESG objectives. **In sum, if you think of the life-cycle of a typical primary investment, a secondaries investment can play the other side of the cycle. This is good for diversification and smoothing volatility for the portfolio overall.**

Bringing It All Together

There is clear evidence that to optimize total portfolio performance, regardless of which portfolio construction methodology is utilized (strategic asset allocation, risk parity, liability driven, etc.), private markets asset classes should be a significant part of the portfolio, both to enhance returns and to mitigate total portfolio risk. However, there is a wide range of private alternatives with differing risk/reward ratios for each asset class, and the benefits each asset class can provide to a total portfolio. For example, PE seems to provide a good balance of total returns and realizations, albeit with a longer duration. PERE, on the other hand, delivers on yield and DPI better than other asset classes, with lower risk and more inflation protection, but does not have as high of ongoing MTM IRR as PE or venture. **While PE and PERE seem to provide the best risk/reward ratios when considering benchmark performance data, outcomes can vary widely across and within each asset class, especially when you get down to the manager, vintage, and fund levels.** For example, in this author's passive portfolio, the top two performing funds in recent years for both MTM and especially

DPI have been an energy fund and an early-stage venture fund, despite underwhelming benchmark performance, especially for venture. While benchmark data can very much influence allocation decisions and the benefits of having a robust and mature private markets portfolio are clear, asset class selection, manager selection, and vintage targeting are more challenging, even if performance measurements were on equal footing.

However, **performance measurement in privates is very difficult to normalize across asset classes,** let alone individual positions, because there is a wide range of methodologies utilized across asset classes and even within asset classes, especially when it comes to valuing unrealized positions, and this is further exacerbated because individual managers can choose to opt in or out at their discretion, based on performance of their respective fund(s).

What this means is that for an investor to access the enhanced return benefits that privates can deliver, their diligence efforts on determining real return potential for a given asset class and individual funds or positions they may select, must be significantly greater than for liquid asset classes. **In particular, an investor should have a keen eye on differentiating reality from rhetoric, especially when it comes to measuring the potential for realized returns and ultimately DPI back to their portfolio.** At the end of the day, this is what should matter most to a pension, endowment, sovereign, insurance company, or individual investor, because they ultimately need realized returns to support their stakeholders' financial requirements.

However, **the market seems more concerned with measuring quarterly or generally ongoing returns**, which are primarily comprised of MTM IRR statistics, such as those reported by Cambridge. **Unfortunately, this is where there is the widest spread between the rhetoric and reality, given that much of that performance is tied to highly variable inputs and selection set biases.** It's hard to blame an investor for being concerned with mark to market performance, because they want to know how they are performing in the here and now (and across a broader portfolio with publicly traded securities that have at least daily reporting), not just during the harvest period of a typical fund, seven to twelve years out. Moreover, there can be some misaligned incentives for those making the investment decisions. For example, many investment professionals who work for institutional investors have variable bonus compensation that is tied to how well their asset class does in a particular year relative to its benchmark as measured by MTM IRR. That investment professional helps select a fund, but they may or may not be there when the fund ultimately harvests its assets and distributes realizations back to their investors. Or there are tax consequences when it comes to realized returns for, let's say, an individual taxable investor, or more recently, the changes that came

out of OBBB that led to an increased taxation on certain private university endowments for income generated to the endowment, as well as realized positions. The latter is particularly unfortunate because those endowments need realized returns in order to fund part of their respective university budgets. This is where it is particularly prescient, the old phrase that you cannot eat IRR. What ultimately matters is realized ROI or DPI. Or as Will Rogers supposedly once quipped, "I am primarily concerned first with return OF capital before return ON capital." If you were to look at historical performance and the spread between TVPI and DPI for a number of the private markets asset classes referenced above, it is arguable whether the Will Rogers axiom is being delivered upon by many of those funds, given how few of them have delivered a DPI above 1.0.

In summary, all stakeholders, but especially institutional investors, should be pushing for more accurate measurement of unrealized positions held by a manager, so they have a more accurate view of real ongoing performance, as well as where they actually stand in terms of remaining value as they consider their overall asset allocation. If the entire industry could wave a magic wand, all fund managers should be held to some reasonable standard for assessing real fair market value. Simply put, if funds managers were required to value their unrealized positions by assuming they were to go through an orderly marketing process to sell their positions over some reasonable period of time, say two to three quarters, whatever the values a process like that would yield, is likely what should be used in setting current unrealized values, and hence MTM and TVPI.

In the meantime, a shrewd investor should take a keen eye to true outcomes and proper measurements of different asset classes, both along the way as well as how much real cash an underlying private market asset class delivers to the portfolio, rather than just what could potentially be erroneous figures about ongoing unrealized performance.

A Few Notes on the Authors and Their Biases

This paper was written by Terrell Gates, CEO, and Nitish Kumar, Research Specialist, of Virtus Real Estate Capital, a PERE fund manager (more on Virtus below). While Gates has been a professional investor in PERE since the 1990s, and there may be biases for the benefits of PERE in this paper, Gates has also been a long-time investor in all of the referenced private markets asset classes, both in a professional setting having been an early adopter of large university endowment portfolio construction strategies with heavy alternatives exposure since his days at Merrill Lynch back in the late 1990s, a volunteer chairing investment committees for a number of not-for-profit foundations and endowments, and also managing his family's portfolio and that of their donor advised fund.

The ethos of this paper came from the frustrations Gates experienced filtering and sourcing funds and related investments across all the asset classes discussed herein over the last three decades, both in terms of the limitation and imprecision of benchmark data and the wide divide between what many funds managers market versus what they deliver, especially with how current unrealized positions are valued. This became even more palpable in recent years as distributions fell and overall liquidity declined. While Gates remains an avid supporter and an investor in private markets asset classes now and going forward, there will be greater effort taken to determine reality versus just rhetoric, especially when considering the realized return potential of privates.

Nitish Kumar recently earned his Ph.D. in Economics from the University of California, Riverside, specializing in Macroeconomics and Housing Economics. His academic training over the last decade sharpened his ability to translate complex economic theory into practical, real-world insights. Now a Research Specialist at Virtus Real Estate Capital, Nitish leverages rigorous economic modeling and quantitative methods to evaluate opportunities across property markets. His work aims to provide investors with deeper, evidence-based perspectives on valuations, liquidity, and risk, bringing greater clarity to a sector often constrained by incomplete or imprecise data analysis.

About Virtus

Virtus Real Estate Capital is one of the longest tenured private equity real estate fund managers in the U.S., focused exclusively on cycle resilient needs-based property sectors, such as healthcare, education, storage, and middle-income workforce housing. The Firm was founded in 2003 in Austin, TX. The Firm has acquired or developed more than 300 commercial properties totaling over $7 billion throughout the U.S. Virtus is known across the industry for its deep expertise in social infrastructure sectors and its commitment to people, which is driven by a strong corporate culture around its four core values: Thoughtful Evolution, Resilience, Honorable Action, and Purposeful Work.