Whether Listed or Private, What's Real Is Real

Vince Childers, Senior Vice President and Portfolio Manager

As interest in real assets continues to grow, some investors are holding on to the perception that private, illiquid investments are somehow "more real" than publicly traded (listed) real assets. We examine almost a quarter-century of data to show that both listed and private real assets offer similar potential for diversification, expected returns and inflation sensitivity—supporting the case for a balanced approach that diversifies across real asset categories and markets.

Highlights

- **A framework for real assets analysis.** We emphasize three criteria for a real assets allocation: prospective diversification, expected returns and inflation sensitivity. Historical data from 1992 to 2015 shows that private and listed real assets generally scored well across each of these factors.
- **Effective diversifiers.** Since 1973, both stocks and bonds have underperformed their respective long-term averages in 22% of rolling 12-month periods. Over our study period since 1992, most real asset categories delivered strong, positive inflation-adjusted returns during such periods, helping investors mitigate the effects of adverse conditions for stocks and bonds.
- **Strong return potential.** Listed and private real assets have generally produced returns similar to broad equities over the long run. These strong returns since 1992 occurred in an era lacking in meaningful inflation (2.3% on average), dispelling the notion that real assets only perform well in an environment of high inflation.
- **Positive inflation sensitivity.** Listed and private real asset categories generally demonstrated a positive relationship with changes in inflation relative to consensus estimates, reinforcing their value as a potential inflation hedge. By contrast, stocks and bonds have reacted negatively on average when inflation is higher than expected.
- **The commodities outlier.** The notable anomaly among real assets over our study period is commodities, whose significant underperformance in recent years negatively impacts the entire return series back to 1992. However, the full return history for commodities (in our data, extending back to 1973) shows a much more attractive annualized total return of 7.1%. Commodities also demonstrated the highest sensitivity to unexpected inflation.
- **Impact of smoothing in private returns.** The infrequent appraisal-based methods used to value private real assets result in artificial smoothing, which understates true volatility and correlations. We believe real assets are best defined by their underlying economics and not by their ownership structures or frequency of valuations.
- **Complementary benefits.** We see far more similarities than differences in the potential for listed and private real assets to diversify a portfolio of stocks and bonds. In our view, an approach that includes both listed and private real assets offers distinct advantages over private allocations alone, providing enhanced liquidity, global asset diversification and a complementary opportunity set.

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Background

The Lesson of Lincoln's Riddle

How many legs does a dog have if you call the tail a leg?

The endless parade of new alternative investment vehicles, strategies and structures over the past decade generally reflect a shift in investor attitudes toward diversifying risks and achieving long-term return targets. Long gone are the days of relying on a traditional 60/40 portfolio. Investors today must now contend with a broad and loosely defined alternatives market that spans public and private investments, and both directional and non-directional, or market-neutral, strategies.

With the focus on alternatives, more investors are carving out a distinct real assets "bucket" as part of their strategic allocation policies. This class of investments includes things you can touch such as real estate, infrastructure, timberland, farmland, commodities and natural resource equities. These assets have inherent value due to supply constraints, while some also generate predictable contract-based income. Because of their distinctive investment attributes and economic sensitivities, real assets can be complementary to each another, as well as to a portfolio concentrated in stocks and bonds.

Despite the growing attention on real assets, there has been a vigorous debate about something that has nothing to do with the assets themselves—the issue of ownership structure. Investors generally agree that privately owned real assets qualify as "real," but there is less consensus around listed real assets, where the assets are owned and operated by publicly traded companies.

Listed and private real assets use different structures to invest in many of the same types of assets, resulting in generally similar behavior over full market cycles.

The argument generally comes down to volatility—or rather, the perception of volatility. Listed securities, by nature, provide more frequent data and are priced in real time, so losses (and gains) are experienced immediately. With private investments, investors generally experience a smoother ride due to infrequent appraisal-based valuations. So the question is: Does the liquidity of publicly traded securities make listed real assets less real?

Our analysis suggests that real asset investments are best defined through the economics of the underlying assets rather than the vehicle through which investors own them. To us, the notion that real assets are somehow made "more real" by virtue of a private ownership structure calls to mind the story told by Abraham Lincoln, in which a boy asks how many legs his dog would have if he called the tail a leg.

Four. Calling a tail a leg doesn't make it a leg.

In our view, we can no more alter the underlying economics of real asset investments by changing the ownership vehicle than we can rewrite canine anatomy by relabeling appendages.

For 30 years, Cohen & Steers has helped institutions and individuals understand how to make allocations to real assets through listed securities. Throughout this process, we have performed extensive analysis on the investment attributes of listed real estate, infrastructure and other real assets. With the passage of time and the growing size and scope of the listed real assets landscape, we have data to provide substantial quantitative-based conclusions.

In the sections that follow, we provide insight on the behavior of various listed and private real asset categories, as well as the role of real assets as diversifiers in a broader investment portfolio.

Historical Analysis

A Framework for Assessing Real Asset Characteristics

We approach real assets as a coherent asset class, emphasizing three attributes that we believe are central to a real assets allocation:

1. **Diversification:** The potential to perform well when stocks and bonds underperform their respective long-term averages at the same time
2. **Expected returns:** The ability to generate attractive full-cycle returns
3. **Inflation sensitivity:** A tendency to react positively when inflation exceeds expectations—a condition that has historically been difficult for broad equities and fixed income

Among listed real assets, we focus on the "Core Four" categories: real estate securities, commodities, natural resource equities and listed infrastructure. What we find is that no single category offers a "silver bullet" that excels across each of the three criteria due to the inherent tradeoffs of the assets. By diversifying across listed real assets, investors may be able to better navigate those tradeoffs (Exhibit 1). In our analysis, we represent this Diversified Real Assets Blend through an equally weighted mix of the four core categories.

Any effort to incorporate private, illiquid real assets into our analytical framework must acknowledge certain issues such as survivorship, selection and backfill biases.[1] There is also the challenge of the private market's limited historical data. Commercially recognized index data for private indexes only extends back to the early 1990s for real estate, timberland and farmland, and to the late 2000s for natural resources and infrastructure. By contrast, our research on listed real assets stretches back to the early 1970s, providing a snapshot of behavior during a period of extreme U.S. inflation.

Importantly, our conclusions about listed real assets hold up whether we begin the analysis in the 1970s or the 1990s, giving us comfort that similar conclusions may be drawn for their private market counterparts. Moreover, while investors have often focused on real assets' inflation-hedging potential, our analysis suggests that real assets offer meaningful potential benefits regardless of the inflationary backdrop.

The following sections provide an overview of our research covering the risk and return profiles of various listed and private real asset categories over the period for which listed index data is available for most categories, from 1992 to 2015.

(1) Survivorship bias occurs when a manager is excluded from a database because they are out of business or no longer reporting results. Selection bias occurs when index providers restrict which managers to include in their benchmarks or return series (e.g., minimum assets under management requirements). Backfill bias occurs when a fund or manager is added to an index and its historical returns are "backfilled" into the return data. Each of these biases may lead to overstated index returns and understated risk.

Exhibit 1: The "Core Four" Listed Real Assets

	Global Real Estate	Commodities	Global Natural Resource Equities	Global Infrastructure and MLPs	Diversified Real Assets Blend
Diversification Potential	◑	●	◕	◑	◕
Total Return Potential	◑	◔	◑	◕	◕
Inflation Sensitivity	◔	●	◕	◔	◕
Characteristic Feature	• Strong in most periods of economic growth • Dividend growth outpacing inflation	• Periods of rising levels of economic activity • Generally linked to demand/supply	• Forecasts of rising economic activity • Lead/lag relationship with commodities	• Monopolistic and regulated structures • Defensive	
Primary Portfolio Benefits	• Total return • Income	• Low equity correlation • Inflation sensitivity	• Diversification • Total return	• Total return • Stable cash flows	

High ● ◕ ◑ ◔ ○ Low

At June 30, 2016. Source: Cohen & Steers.

There is no guarantee that any historical trend illustrated above will be repeated in the future, and there is no way to predict precisely when such a trend will continue. See page 11 for additional disclosures.

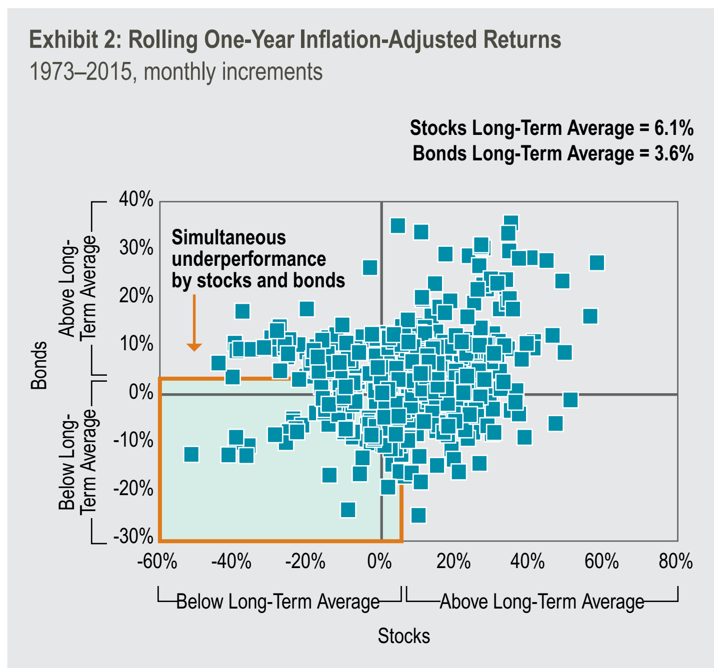
1. Diversification

Historically, the four core real asset categories have exhibited low correlations with each other and with stocks and bonds due to their distinct performance drivers. However, since correlation only measures the average relationship over an arbitrary look-back period, we believe it offers little insight into particular market regimes. Specifically, we believe investors can benefit from asset classes that may perform well when both stocks and bonds lag.

This scenario is illustrated in Exhibit 2, which plots inflation-adjusted returns for stocks (X axis) and bonds (Y axis) over rolling 12-month periods. The lower left area indicates periods when both stocks and bonds underperformed their long-term averages at the same time. Such regimes have historically been relatively common, occurring in 22% of observations since 1973.

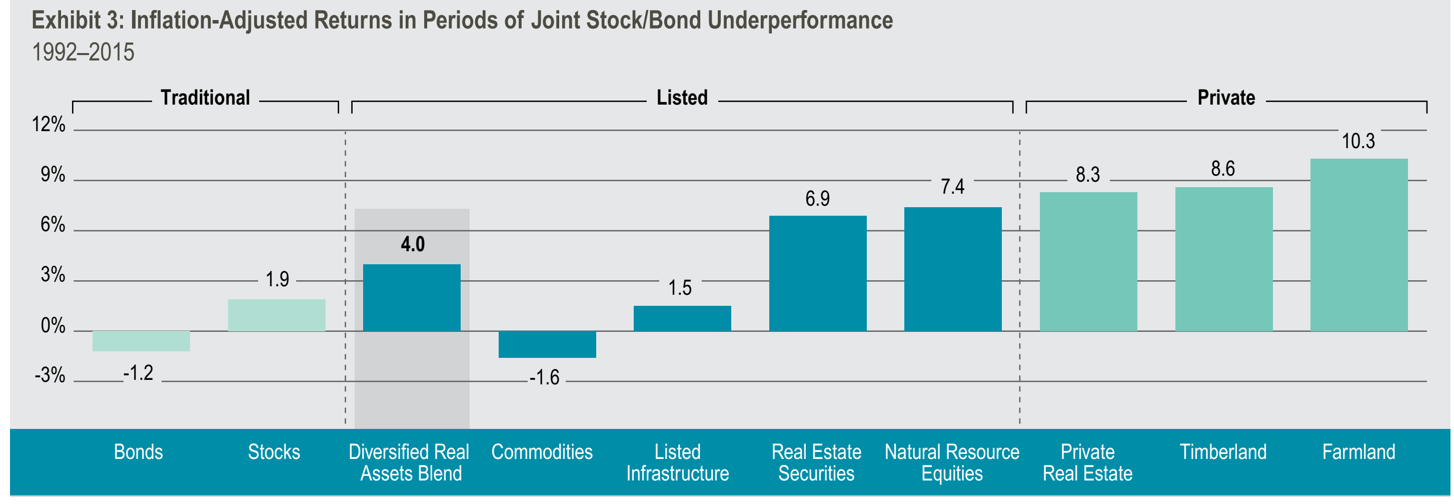
Stocks and bonds have underperformed at the same time in 22% of rolling one-year periods, shown in the shaded area of Exhibit 2. Returns in Exhibit 3 represent annualized averages for each asset class since 1992 during such periods.

Exhibit 2: Rolling One-Year Inflation-Adjusted Returns
1973–2015, monthly increments



At December 31, 2015. Source: Bloomberg, Cohen & Steers.
Data quoted represents past performance, which is no guarantee of future results. See page 11 for index associations, definitions and additional disclosures.

Exhibit 3: Inflation-Adjusted Returns in Periods of Joint Stock/Bond Underperformance
1992–2015



At December 31, 2015. Source: Bloomberg, NCREIF, Preqin, Thomson Reuters Datastream, Cohen & Steers.
Data quoted represents past performance, which is no guarantee of future results. See page 11 for index associations, definitions and additional disclosures.

Real assets have generally provided an effective buffer against periods of joint stock-and-bond underperformance. We believe this indicates that the return drivers of both listed and private real assets are distinct from broad stocks and bonds, providing potential diversification.

Since 1992, both listed and private real assets have generally delivered strong real returns during such periods of joint stock-bond underperformance (Exhibit 3). While the private real asset categories shown here outperformed listed categories over our study period, we see general alignment in their ability to diversify against adverse conditions for stocks and bonds. It is worth noting that commodities and listed infrastructure were heavily impacted by the 2014–2015 oil bear market and the broader commodity bear market in prior years, which may not be reflected entirely in the private data series due to the lag in private-market valuations.

We caution that investors should not conclude from the results that, for example, natural resource equities will always outperform commodities during such episodes. Undoubtedly, future market dynamics may differ from those of the past. As such, we believe a diversified real assets approach—represented here by the Diversified Real Assets Blend—stands a higher likelihood of meeting the first of our criteria (enhancing diversification potential) on a forward-looking basis.

2. Expected returns

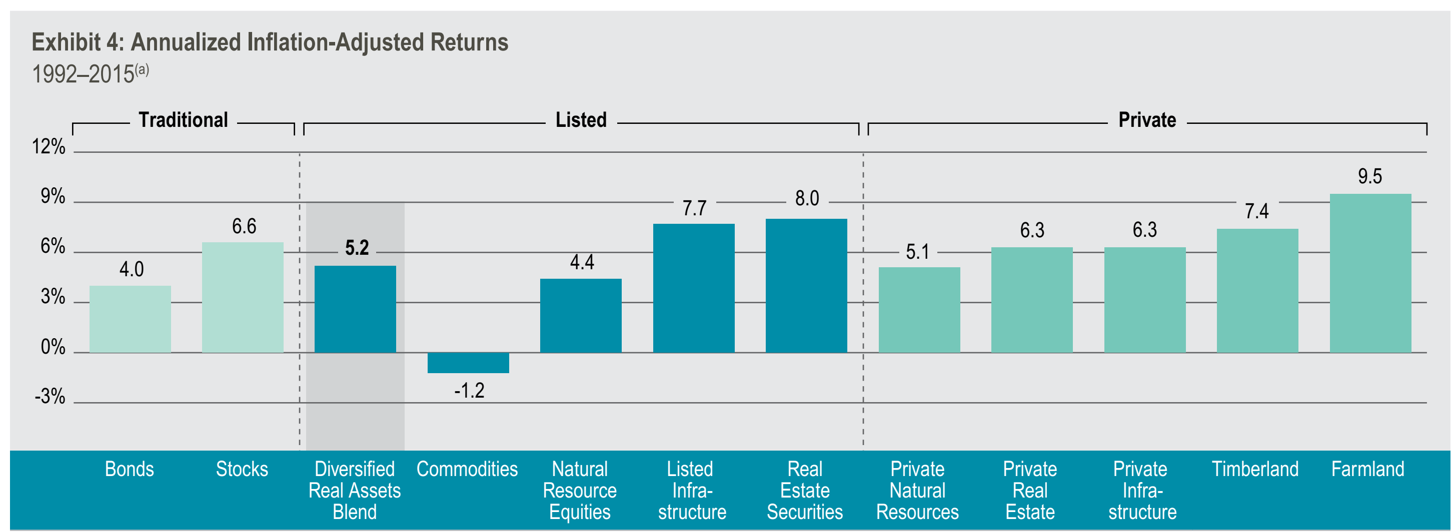
The value of potential diversification benefits should be weighed against an investment's opportunity cost in terms of foregone return potential. Most real assets have historically provided attractive returns across full market cycles. Exhibit 4 shows inflation-adjusted returns for real assets in our study. We also include the shorter return history of private natural resources and private infrastructure, beginning in 2006 and 2008, respectively, recognizing that they may not be entirely indicative of long-term return potential.

Consistent with our longer-term analysis, standalone real asset categories generally produced returns on par with broad equities. The listed markets for real estate and infrastructure outperformed their private counterparts over our study period, while the private natural resources index edged out the listed index.

The notable exception over our study period is commodities, whose significant underperformance in recent years represents an anomaly relative to the other real asset categories. In fact, the recent stretch of subpar returns negatively impacts the entire return series back to 1992. However, the full history of commodity returns going back to 1973 is far more constructive, indicating annualized returns of 7.1%.

We note that the Diversified Real Assets Blend was competitive with the S&P 500 even factoring in the negative annualized returns for commodities over the study period. In our view, this illustrates the value of a diversified approach in helping to mitigate the effects of challenging periods for individual asset categories.

Additionally, we find little evidence to justify the notion that real assets require elevated inflation to perform well. The returns in Exhibit 4 were achieved in an era characterized by the absence of meaningful inflation, with the U.S. Consumer Price Index rising just 2.3% per year on average.



At December 31, 2015. Source: Bloomberg, NCREIF, Preqin, Thomson Reuters Datastream, Cohen & Steers.

Data quoted represents past performance, which is no guarantee of future results.

(a) Beginning January 1992 for all categories except private natural resources and private infrastructure, which begin on January 2006 and January 2008, respectively, and therefore may not be entirely indicative of long-term return potential. See page 11 for index associations, definitions and additional disclosures.

3. Inflation sensitivity

Historical data shows that neither listed nor private real assets have been dependent on significant, 1970s-style inflation shocks to generate attractive full-cycle returns. However, if there is one characteristic that unites the various real asset categories together, it is their overall sensitivity to inflation.

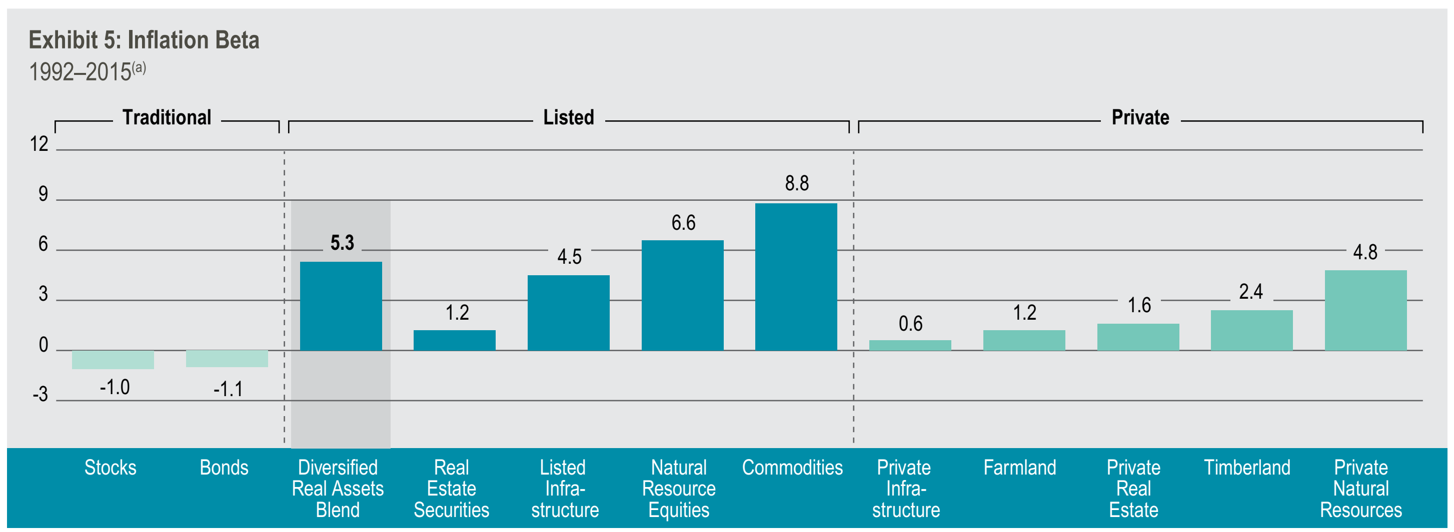
Considering that real assets have historically performed well both in periods of high and low inflation, our analysis focuses instead on how these asset classes react when the consensus inflation outlook turns out to be wrong. We find this approach to be revealing, as inflation tends to be the most damaging to stocks and bonds when it comes as a surprise.

We measure the impact of unexpected changes in inflation using a metric we call "inflation beta." This statistic quantifies the relationship between an asset class's real returns and unexpected inflation (the difference between the current year-over-year inflation rate and the year-ago consensus inflation estimate).[1] An inflation beta of 1 indicates that an asset class outperformed its long-term inflation-adjusted average by 1% for every 1% that inflation exceeded its prior-year estimate. A positive inflation beta signifies that unexpected inflation has typically had a beneficial effect on performance, and vice versa.

Based on historical data since 1992, stocks and bonds have roughly exhibited a one-for-one inverse sensitivity to unexpected inflation. By contrast, real asset categories in both listed and private markets have demonstrated a positive sensitivity to inflation surprises on average. In the case of commodities, that relationship has typically been substantial. In fact, the large and reliable inflation sensitivity of commodities is perhaps the group's most significant diversification advantage.

While such inflation betas represent statistical expectations rather than definitive point estimates, the positive inflation sensitivities of liquid and illiquid real asset categories—as well as the Diversified Real Assets Blend—indicate a tendency to deliver above-average returns precisely when inflation surprises are likely to weigh on stock and bond returns.

An inflation beta of 5.3 for the equal-weighted Diversified Real Assets Blend signifies that for every 1% that inflation exceeded estimates from a year ago, the asset class generally outperformed its long-term average by 5.3%.



At December 31, 2015. Source: Bloomberg, NCREIF, Preqin, Thomson Reuters Datastream, Cohen & Steers.

Data quoted represents past performance, which is no guarantee of future results. (a) Beginning January 1992 for all categories except private natural resources and private infrastructure, which begin on January 2006 and January 2008, respectively. See page 11 for index associations, definitions and additional disclosures.

(1) Our measure of expected inflation reflects median inflation expectation from the University of Michigan Survey of 1-Year Ahead Inflation Expectations. Inflation beta was determined by calculating the linear regression beta of 1-year real returns to the difference between the year-over-year realized inflation rate and lagged 1-year ahead expected inflation, including the level of the lagged expected inflation rate. Linear regression is a statistical method that models the relationship between a dependent variable and one or more explanatory variables.

What do these findings mean for listed and private real assets?

Analysis of real asset characteristics around the three objectives of diversification, total returns and inflation sensitivity suggests that ownership structure and liquidity profiles have little bearing on the key economic attributes of these assets. There are certainly differences in their historical results, but we find far more similarities than differences in the potential for both listed and private real assets to diversify a portfolio of stocks and bonds. As such, we believe investors are best served by including both listed and private assets in a real asset allocation.

Risk-Return Perspectives

Volatility and Correlation Considerations

Risk reducers vs. efficiency enhancers

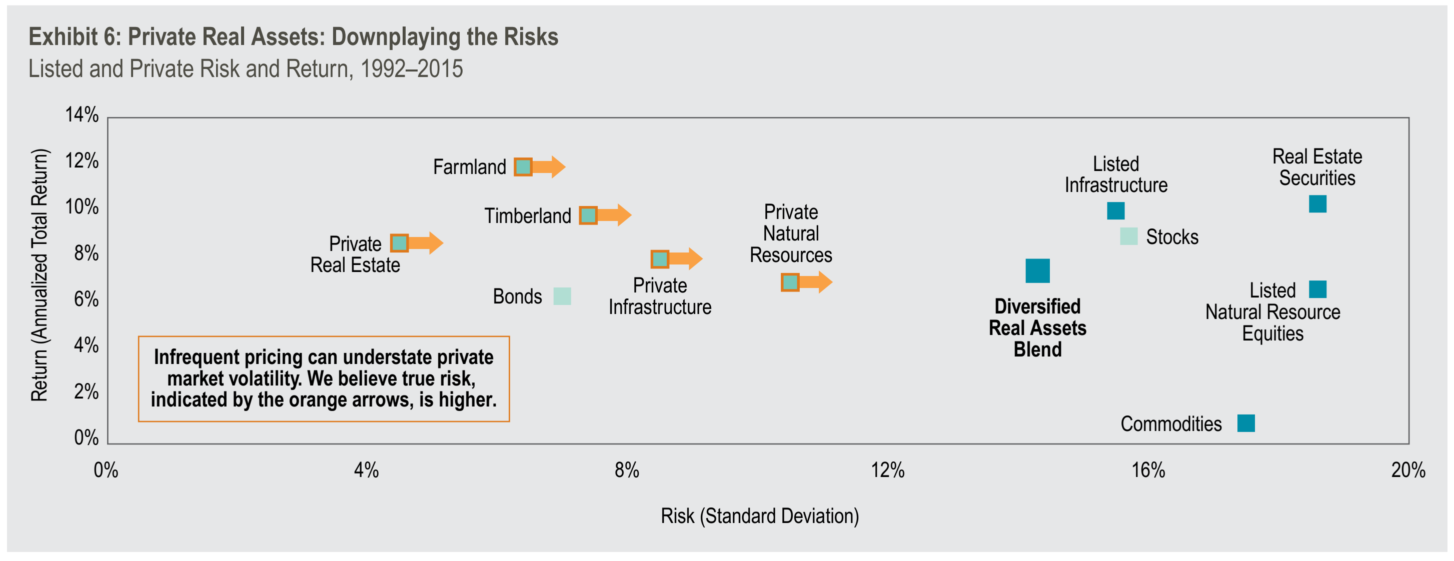
Just as investors have been inconsistent in their views of which categories should be considered to be real assets, they also seem divided on what asset classes and strategies are properly considered alternatives. By some definitions, real assets fit the bill because of their expected returns, diversification potential and inflation sensitivity. Others reserve the alternatives label for strategies explicitly designed to deliver very low correlations with stocks and bonds. Unfortunately, it appears that investors pursuing these non-directional alternatives are seeking the ever-elusive experience of bond-like risks with equity-like returns.

It is important not to confuse low beta (designed to reduced volatility) with true diversification (designed to improve portfolio efficiency, or risk-adjusted returns). Whether an asset's correlation is deemed to be high or low may depend on where it sits on the spectrum of expected risk and return. Higher-return assets—including directional, risk-premium-generating alternatives like real assets—may have greater exposure to broad market risks, yet still be meaningfully diversifying. By contrast, non-directional strategies with low correlations may offer little value to investor portfolios if they cannot deliver reasonable returns.

Understanding the smoothing of private returns

Investors considering a real assets allocation will likely have seen risk-return comparisons similar to what is shown in Exhibit 6. Perhaps some of these investors have envisioned

Exhibit 6: Private Real Assets: Downplaying the Risks
Listed and Private Risk and Return, 1992–2015



	Traditional		Listed					Private				
	Bonds	Stocks	Diversified Real Assets Blend	Com-modities	Natural Resource Equities	Infra-structure	Real Estate Securities	Natural Resources	Infra-structure	Real Estate	Timberland	Farmland
Annualized Return	6.4%	9.0%	7.5%	0.9%	6.7%	10.1%	10.4%	7.0%	8.0%	8.7%	9.9%	12.0%
Volatility (Standard Deviation)	7.0%	15.7%	14.3%	17.5%	18.6%	15.5%	18.6%	10.5%	8.5%	4.5%	7.4%	6.4%

At December 31, 2015. Source: Bloomberg, NCREIF, Preqin, Thomson Reuters Datastream, Cohen & Steers.

Data quoted represents past performance, which is no guarantee of future results. (a) Beginning January 1992 for all categories except private natural resources and private infrastructure, which begin on January 2006 and January 2008, respectively. (b) Private real asset volatilities based on smoothed appraisal valuations, which result in understated volatility. See page 11 for index associations, definitions and additional disclosures.

an alternative pathway to the holy grail of equity-like returns with bond-like risks through investments in private real asset categories. Indeed, we suspect that many investors have favored private over listed real assets with the belief that illiquid categories are superior alternatives due to their historically high returns, relatively tame volatilities and very low correlations to the broad equity market.

Based on the data above, we wonder why anyone would want to hold anything other than a portfolio of private real assets. The fact that few, if any, investors actually pursue this course of action speaks volumes.

In the display, we mark private real assets with arrows pointing right, indicating our view that the true investment risk of these assets is higher than their measured volatilities.

The problem is not with the long-term returns realized with private real assets, as these are reasonably reliable, in our view. The issue is the unusually low measured volatilities and correlations, which seem to indicate a "free lunch" for the illiquid categories. This is a widely recognized problem with private investments, resulting from the artificial smoothing associated with infrequent or actuarial valuations, contrasting with the listed market's real-time auction pricing.

Smoothing bias in private investments tends to drive down both correlation and volatility statistics to understated levels.

Listed markets may serve as an effective proxy for overcoming illiquidity bias

Academic and practitioner literature is replete with methods for adjusting return series for illiquid investments. It is not uncommon for these unsmoothing techniques to suggest that volatility estimates for illiquid investments should be adjusted higher by as much as two or three times. However, such adjustments can be difficult for investors to implement effectively.

As a general rule, researchers often recommend relying on publicly traded proxies to overcome reporting biases, providing a better estimate of the potential diversification benefits. Considering the difficulty in developing perfect volatility and correlation estimates from unreliable private market data, the idea is that it is better to be roughly right than precisely wrong. This approach dovetails nicely with our view that there is no reason why investors should receive extra credit for not marking their positions to market. We believe risk should be understood as a function of underlying asset economics, not ownership structure or the vagaries of private-market valuation assumptions.

When considering an optimal real assets allocation, investors should test the impact of varying assumptions about risks, returns and correlations. In general, we believe a 50/50 split between listed and private real assets is a reasonable starting point. It must be remembered, though, that opting for an allocation to private real assets includes a certain level of liquidity risk. That risk should come with some expected return premium, as investors should get something in return for having their capital tied up. Historical returns in commercial real estate and infrastructure raise questions about whether investors are consistently realizing this premium.

Structural Characteristics

Listed and Private: Complements, not Competitors

Considering the common investment attributes of listed and private real assets, we believe investors may benefit from a dual allocation that includes both types of strategies. This approach offers distinct advantages over private allocations alone, in our view, providing the potential for enhanced liquidity, global asset diversification and a complementary opportunity set.

Some investors have utilized a core-satellite approach, using listed strategies to achieve a diversified global core exposure together with private vehicles, which allow for more opportunistic investments. Indeed, many themes favoring listed real assets revolve around breadth and liquidity, whereas themes associated with private markets tend to emphasize control, vintage selection and access to more concentrated or opportunistic investments.

The universe of real asset-based investments is highly segmented and may provide large efficiency gains from diversifying across listed and private markets. Nevertheless, we recognize that there are a number of investor-specific needs and preferences that may justify a tilt towards or away from one or the other.

For example, private investments may be well suited for defined benefit plans and other investors with limited liquidity needs. By contrast, listed strategies are ideal for defined contribution plans due to liquidity requirements. Whenever possible, however, we believe investors should embrace the potential efficiency gains from combining listed and private real assets together as a unified asset class.

Exhibit 7 highlights some of the advantages and limitations of each. Furthermore, the appendix on page 11 outlines additional considerations specific to the four core real asset categories discussed earlier in this paper.

The breadth and liquidity of listed markets support a core allocation to listed investments, while more opportunistic investments can be pursued through private markets.

Key Takeaways

Listed Real Assets Belong in a Real Assets Allocation

Focus on asset class economics and sensitivities

Considering the characteristics of both listed and private real assets across the dimensions of 1) diversification, 2) expected returns, and 3) inflation sensitivity, we cannot conclude that private investments are somehow "more real" than their listed counterparts. In our view, real assets are best defined by their fundamental performance drivers rather than by their ownership structures. This means that investors may be best served by utilizing a dual-allocation approach to real assets that integrates both listed and private investments.

Exhibit 7: Advantages and Limitations of Listed and Private Real Assets

	Listed Real Assets	Private Real Assets
Diversification	Broad portfolio diversification may improve risk-adjusted returns	Concentrated investments may be tailored to specific investor needs
Liquidity	Investments can typically be bought and sold at any time	Holding periods generally last six to ten years
Volatility	Real-time auction pricing drives the perception of greater volatility, although daily marked-to-market values enable accurate portfolio pricing	Infrequent appraisal pricing can understate the real risk of underlying investments (particularly in periods of market stress), artificially smoothing performance
Financing	Access to equity and debt capital markets as well as low-cost funding sources	Greater use of leverage may enhance total-return potential, but may also increases downside risk
Opportunity Set	Access to global equity and futures markets; includes some companies that hold assets not readily accessible through private funds	Ability to invest in niche markets that are not available in public markets
Control	Real asset exposure without owning or managing the underlying assets, although investors may target (or exclude) specific asset categories or geographies	Increased management oversight of assets may drive excess investment returns
Governance	Board of directors or trustees and corporate governance standards generally create alignment of interests between management and shareholders	Less regulatory oversight may reduce overall transparency and alignment of interests
Minimums	Generally feature low investment minimums	Generally feature significant capital requirements
Management Fees	Typically associated with lower fees and no ongoing operating costs	Typically associated with higher fees and ongoing costs of maintaining investment
Other Considerations	Global franchises and value-added management in general	Vintage year may have a meaningful impact on investment returns

Source: Cohen & Steers.

A diversified multi-strategy approach to real assets

Our analysis shows that listed real assets may be effective in enhancing the risk-return profile of portfolios concentrated in stocks and bonds. However, no single real assets category offers a "silver bullet" solution that excels across all three criteria of prospective diversification, expected returns and potential inflation protection. A diversified portfolio of real assets may help investors better navigate the tradeoffs of individual categories. Based on our analysis of almost 25 years of data, an equal-weighted diversified real assets blend exhibited:

- Outperformance in periods of simultaneous stock/bond underperformance
- Attractive annualized returns with lower volatility than stocks and individual real asset categories
- Positive sensitivity to unexpected inflation, differentiating from the typically negative impact of inflation surprises on stocks and bonds

There is no "free lunch" with private vehicles

It is understandable that investors may be attracted to the equity-like returns and lower measured volatilities and correlations generally experienced with private real assets. However, we believe investors do themselves and their constituents a disservice by ignoring the smoothing of illiquid private investments and the resulting measurement biases. A conservative first step in judging the diversification benefits of real assets is to evaluate the impact of a diversified allocation to listed, liquid real assets on the broader portfolio. Such analyses have suggested substantial allocations to real assets in an effort to improve risk-adjusted returns.

Listed and private assets offer complementary characteristics

We believe in a balanced allocation to both listed and private real assets. We recognize, however, that investors differ in terms of their risk-return objectives, liquidity needs and investment horizons. These differences further impact the particular qualitative considerations that may justify a tilt towards or away from listed or private investments, including ease of investment, geographic and sector diversification and the value of control.

We see far more similarities than differences in the potential for both listed and private real assets to diversify a portfolio of stocks and bonds.

In our judgment, investors may be best served by a dual-allocation approach that takes advantage of the complementary attributes of both markets.

The Cohen & Steers Real Assets Strategies

Index Associations and Definitions. *An investor cannot invest directly in an index, and index performance does not reflect the deduction of any fees, expenses or taxes.*

Category	Index
Bonds	BofA Merrill Lynch U.S. 7–10 Year Treasury Index, composed of U.S. Treasury Notes with a 7-10 year maturity.
Commodities	Through July 1998: S&P GSCI Commodity Index, a composite index of commodity sector returns representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. Thereafter: Bloomberg Commodity Index (formerly known as the Dow Jones-UBS Commodity Index), a broadly diversified index composed of commodities traded on U.S. exchanges, with the exception of aluminum, nickel and zinc, which trade on the London Metals Exchange.
Diversified Real Assets Blend	Equal-weighted blend of listed real estate, commodities, natural resource equities and listed infrastructure
Farmland	NCREIF Farmland Index, a quarterly time series composite return measure of investment performance of a large pool of individual agricultural properties acquired in the private market for investment purposes only.
Inflation	Consumer Price Index, a broad measure of average price changes for a diverse basket of goods and services typically purchased by urban consumers, across diverse households and geographies.
Listed Infrastructure	Through July 2008: 50/50 Blend of Datastream World Pipelines Index and Datastream World Gas, Water & Multi-Utilities Index, global indexes of companies in these sectors compiled by Thomson Reuters Datastream. Thereafter: Dow Jones Brookfield Global Infrastructure Index, which measures the stock performance of publicly listed infrastructure companies.
Listed Real Estate	Through February 2005: FTSE NAREIT Equity REIT Index, an unmanaged, market-capitalization-weighted index of all publicly traded U.S. REITs that invest predominantly in the equity ownership of real estate, not including timber or infrastructure. Thereafter: FTSE EPRA/NAREIT Developed Real Estate Index, an unmanaged market-weighted total return index consisting of many companies from developed markets that derive more than half of their revenue from property-related activities
Natural Resource Equities	Through May 2008: 50/50 Blend of Datastream World Oil & Gas Index and Datastream World Basic Materials Index, global indexes of companies in these sectors compiled by Thomson Reuters Datastream. Thereafter: S&P Global Natural Resources Index, which includes 90 of the largest publicly traded companies in natural resources and commodities businesses that meet specific investability requirements, offering investors diversified, liquid and investable equity exposure across three primary commodity-related sectors: Agribusiness, Energy and Metals & Mining.
Private Infrastructure	Preqin Infrastructure Index, calculated on a quarterly basis using data from Preqin Infrastructure Online. Index performance captures quarterly cash flow transactions and NAVs reported for more than 140 individual unlisted infrastructure partnerships, net of fees.
Private Natural Resources	Preqin Natural Resources Index, calculated on a quarterly basis using data from Preqin Performance Analyst. Index performance captures quarterly cash flow transactions and NAVs reported for more than 170 individual unlisted natural resource partnerships, net of fees.
Private Real Estate	NCREIF Property Index, a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only.
Stocks	S&P 500 Index, an unmanaged index of 500 large-capitalization, publicly traded stocks representing a variety of industries.
Timberland	NCREIF Timberland Index, a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only.

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Americas

NEW YORK

Corporate Headquarters
280 Park Avenue, 10th Floor
New York, New York 10017
Phone 212 832 3232
Fax 212 832 3622

SEATTLE

Cohen & Steers Capital Management, Inc.
1201 Third Avenue, Suite 3810
Seattle, Washington 98101
Phone 206 788 4240

Europe

LONDON

Cohen & Steers UK Limited
50 Pall Mall, 7th Floor
London SW1Y 5JH
United Kingdom
Phone +44 0 20 7460 6350

Asia Pacific

HONG KONG

Cohen & Steers Asia Limited
Suites 1201-02, Champion Tower
3 Garden Road
Central, Hong Kong
Phone +852 3667 0080

TOKYO

Cohen & Steers Japan, LLC
Pacific Century Place, 16F
1-11-1 Marunouchi Chiyoda-ku
Tokyo 100-6216 Japan
Phone +81 3 4530 4710

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