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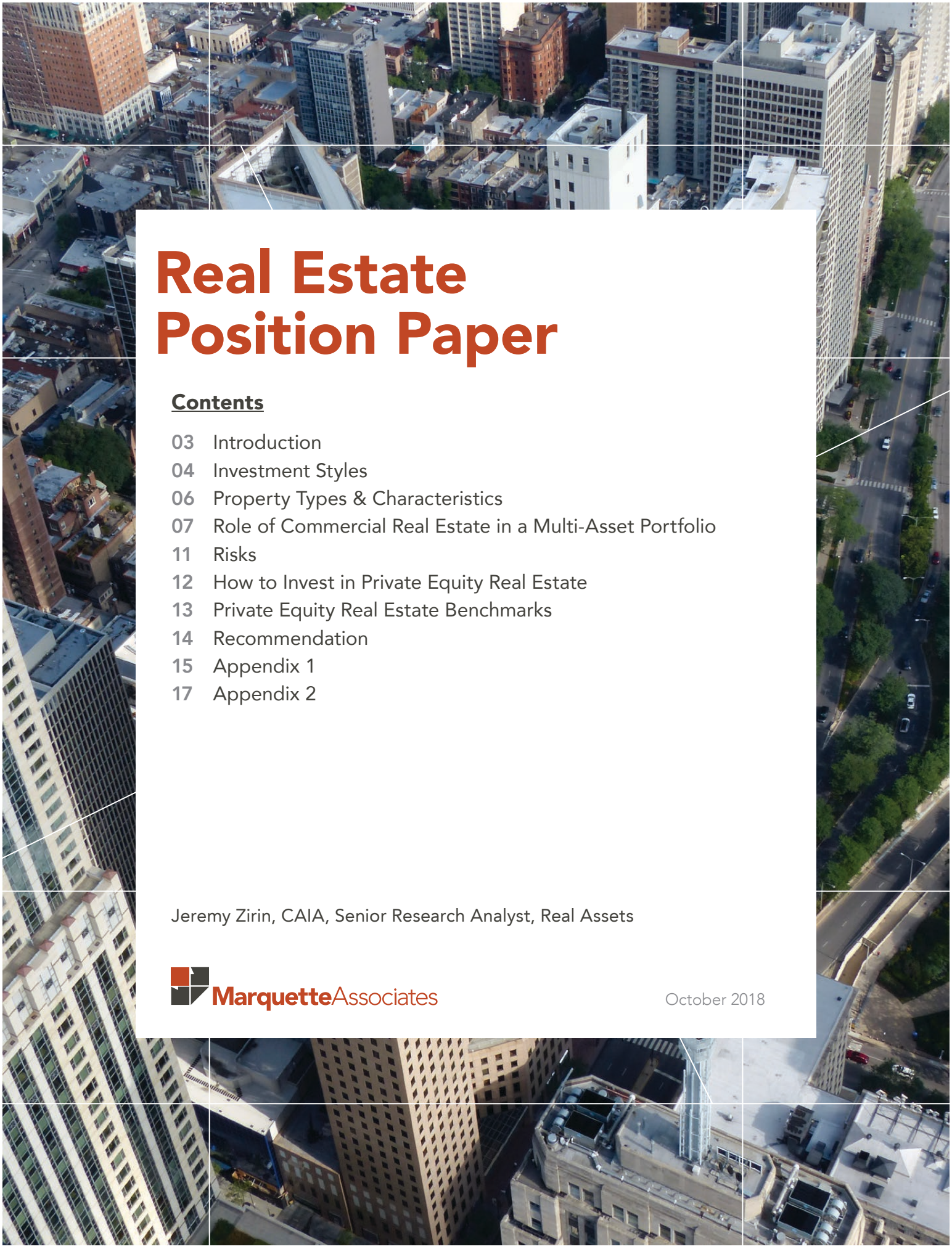
Real Estate Position Paper

October 2018



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Contents

03 Introduction
04 Investment Styles
06 Property Types & Characteristics
07 Role of Commercial Real Estate in a Multi-Asset Portfolio
11 Risks
12 How to Invest in Private Equity Real Estate
13 Private Equity Real Estate Benchmarks
14 Recommendation
15 Appendix 1
17 Appendix 2

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This real estate position paper seeks to establish a fundamental understanding of the asset class. More specifically, the various styles, benefits, risks, mechanics, and benchmarks relevant to commercial real estate investments are examined, with an emphasis on quantitative and qualitative illustrations. Recommendations as well as guidance towards making an allocation to the asset class are also included.

INTRODUCTION

With a market value[1] of assets over $8.4 trillion, commercial real estate is a key component for many institutional portfolios and has greatly evolved as an asset class over the last 45 years. Unfortunately, its widespread inclusion in institutional portfolios does not mean that it is always well understood by investors. The following paper covers the fundamental aspects of investing in commercial real estate; among the topics covered are investment styles, property types, its role in an institutional portfolio, risks, the mechanics of investing, and relevant benchmarks for measuring performance. Throughout the paper, quantitative and qualitative evidence are used to create the case for commercial real estate's inclusion in client portfolios.

The evolution of commercial real estate has created a diverse array of investment opportunities, and the universe can be broken into a variety of structures and investment vehicles. The four-quadrant model below illustrates the different channels by which institutional investors can access the commercial real estate market. Investments can be made through public or private vehicles, and throughout the capital stack (i.e. debt or equity).

Exhibit 1: Four-Quadrant Investment Model

	Private	Public
Debt	Whole Loans	CMBS
Equity	Direct Property	Public REITs and REOCs

Examples of each of the four quadrants include:

- **Private Debt** – Conventional mortgages, whole loans.
- **Public Debt** – Publicly traded mortgage securities, including residential and commercial mortgage backed securities (CMBS), securities issued by Fannie Mae, Freddie Mac, and private mortgage issuers. Institutional investors typically have significant exposure to public real estate debt through their fixed income portfolios.
- **Public Equity** – Consists of real estate securities such as equity, fixed income, or hybrid REITs or publicly traded real estate operating companies (REOCs). Publicly traded real estate has historically had a high correlation to the broad stock market.
- **Private Equity** – Ownership of commercial real estate properties, either on a direct basis or indirectly through a commingled fund.

While institutional investors can access commercial real estate through any one of the four quadrants, the focus for the remainder of this paper will be on private equity commercial real estate. Historical analysis has shown that private equity real estate is the most pure "real estate" of the four quadrants and the strongest diversifier when included in a mixed-asset portfolio.

INVESTMENT STYLES

Investment styles in commercial real estate have commonly been used to describe both investment strategies and specific properties. Historically, there have been a wide range of definitions with no single industry-standard. In 2003, the National Council of Real Estate Investment Fiduciaries ("NCREIF")[2] published a working paper to define styles for private equity commercial real estate. While there still may be a number of different variations used, the style definitions provide a framework for institutional investors.

NCREIF identified three styles to help classify a direct investment in real estate at the asset level along with eight attributes that help to distinguish between the investment styles. The three investment styles are core, value-added, and opportunistic. The following provides a brief description of each investment style, highlighting key attributes at the property level and overall portfolio level. *Please refer to Appendix 1 for the complete set of NCREIF style definitions.*

Core – Core real estate investing resides at the low-risk/low-return end of the real estate risk spectrum. Core investments are existing high-quality, stabilized, income-producing office, industrial, multifamily, and/or retail properties located in major metropolitan markets. These supply constrained markets are economically diversified and generally offer better liquidity through a market cycle. Core properties are substantially leased to multiple high-credit quality tenants. Leases are long-term in nature and feature staggered lease expirations to mitigate any negative impact on the income stream during an economic downturn.

Core properties demonstrate predictable and stable income flows with a high proportion of total return attributable to current income, historically 70–80%, with a small component from appreciation. Expected total returns for core properties typically range from 7–10%. Core real estate employs relatively low to moderate leverage (0–30%), which reduces the risk to the cash flow stream and ensures free cash flow is available for distribution.

A core portfolio will be broadly diversified economically, by property type, and by geographic region to reduce the overall volatility of the portfolio, consistent with its conservative risk profile.

Value-Added – Value-added investing encompasses a wide range of strategies that fall in between low-risk/low-return core investments and high-risk/high-return opportunistic investments. Typically, value-added investments feature an improvement of the physical, financial, or operational characteristics of the underlying property in order to capitalize on the re-pricing of the property upon sale. Traditional examples of value-added investments include those that require renovation, lease-up or re-leasing, repositioning, and redevelopment of a substantially pre-leased development.

Investments are typically made in the four main property types *(see next section)* along with modest investments in specialty property types. Value-added investments tend to produce moderate income and rely more on property appreciation to generate total returns. Expected total returns from value-added investments are fairly wide and range between 12–16%. Value-added strategies use moderate leverage, typically in the range of 50–65%.

Opportunistic – Opportunistic investments represent the highest-risk/highest-return potential within commercial real estate. This is due to a variety of characteristics such as exposure to development, significant leasing risk, or high leverage, but may also result from a combination of moderate risk factors that in total create a more volatile return profile. Opportunistic strategies often invest in non-traditional property types including speculative development and land. Investments may also be in private real estate operating companies, public-to-private transactions, and international investments in developing and emerging market countries.

Opportunistic strategies typically generate most of their expected return from appreciation and may exhibit significant volatility in returns. Expected total returns for opportunistic investments are 18%+. Opportunistic strategies usually employ high levels of leverage, often greater than 65%.

Exhibit 2: Property Level Attributes

	Core	Value-Added	Opportunistic
Property type	Office, apartments, retail, industrial (major)	Major + specialty hospitality, senior living, storage	Non-traditional, speculative development, raw land
Lifecycle	Fully operating	Operating, leasing, redevelopment	Development, new construction
Occupancy	High	Moderate-to-well leased, substantially pre-leased development	Low economic occupancy
Rollover (resale) concentration	Low; held for a long period of time	Moderate	High
Near-term rollover	Low	Moderate	High
Leverage	Low	Moderate	High
Market recognition	Easily recognized institutional markets/ properties	Up-and-coming and institutional real estate markets	Secondary, tertiary, and international markets
Investment structure/control	Meaningful or direct control	Moderate control with preferred liquidation positions	Minimal control with unsecured positions

Source: NCREIF "Real Estate Investment Styles" Whitepaper

Exhibit 3: Real Estate Portfolio Characteristics

	Core	Value-Added	Opportunistic
Expected return	7%–10%	10%–15%	>13%
Property Types	4 Major	Major + Specialty	All
Property Life Cycle	80%+ Operating	Operating, leasing, redevelopment	All stages
Occupancy	80%+	N/A	N/A
Holding Period	7+ years	3-5 years	1-4 years
Markets	Primary/Domestic	Primary/Secondary/ Tertiary	Primary/Secondary/ Tertiary/International
Leverage	0%–40%	40%–70%	70%+
Income return as % of total return	70%+	40%–60%	<30%
Investment vehicles available	Generally open-end	Most closed-end, few open-end	Closed-end
Typical fees	100 bps	180–200 bps all in	2% and 20%

Source: NCREIF "Real Estate Investment Styles" Whitepaper

PROPERTY TYPES

Commercial real estate encompasses a wide array of property types and sub-property types. The institutional marketplace classifies the various property types into one of two categories: core and non-core assets. The property types in each of the two categories are listed below.

Core Property Types

- **Office** – Properties range from large multi-tenant buildings in major cities (i.e. Central Business District (CBD) office space) to suburban office parks and single tenant buildings.
- **Industrial** – Manufacturing plants and warehouses used by businesses for the production and storage of goods. Industrial also includes special purpose properties such as heavy manufacturing facilities and combinations of warehouse, product assembly, and office space.
- **Retail** – Properties include large regional shopping malls, strip centers, power centers, and neighborhood/community centers.
- **Multi-family (apartments)** – Multi-tenant properties, typically categorized by the size of the property (high-rise, mid-rise, or garden apartments) and by the location (urban or suburban).

Non-Core Property Types

- Hotels, self-storage, senior living, medical office, land, and other types not included herein.

The inclusion of hotels as a core property type is a commonly debated topic. While hotels are included as one of the five major property types in the NCREIF Property Index ("NPI"), they represent only 0.6% of the index.[3] Historically, institutional investors have pointed out that hotels are highly service-intensive in nature, which means that they have more in common with businesses than with other real estate investments.

PROPERTY TYPE CHARACTERISTICS

Commercial real estate can be characterized as heterogeneous in nature, simply meaning that every property is unique based on its location and physical characteristics. Local, regional, and national macro and micro economic conditions can cause real estate cycles to vary across markets and property types. The result is that returns can vary widely by property type and market.

Exhibit 4 illustrates the historical NCREIF property type returns, volatility, and return per unit of risk from inception in the first quarter of 1978 to December 31, 2017. As the chart illustrates, retail has historically produced the highest risk-adjusted returns since inception, driven in large part by the outperformance during the economic downturn. However, excluding the downturn, multi-family followed by industrial have historically produced the most compelling risk-adjusted returns. Office properties on the other hand have been the most volatile. Office tends to be much more affected by the overall movement of the economy. The higher exposure to the business cycle leads to greater volatility of returns in the office sector.

Exhibit 4: Property Type Characteristics (1Q78-4Q17)

1Q78 - 4Q17	Lease Term	Return	Risk (Std. Dev.)	Return per unit of Risk
Multi-Family	1 year	10.4%	4.3%	2.4
Industrial	3–10 years; 5-year average	9.8%	4.1%	2.4
Office	4–10 years; term linked to tenant size	8.5%	5.4%	1.6
Retail	Side-shops 3–5 years Anchors 10–20 years	9.7%	3.7%	2.6

Sources: Bloomberg, LaSalle Investment Management "Inflation and Real Estate"

The localized and heterogeneous nature of real estate indicates that a portfolio should be broadly diversified by market and property type to reduce the overall volatility of the portfolio. Exhibit 5 details the rolling four-quarter correlations between the four main property types. The lower correlations between retail and the other property types further illustrate the benefits of diversification.

Exhibit 5: Rolling Four-Quarter Correlations (1Q78-4Q17)

1Q78 - 4Q17	# of Periods	Apartment	Industrial	Office	Retail
Apartment	157	1.00			
Industrial	157	0.88	1.00		
Office	157	0.87	0.94	1.00	
Retail	157	0.71	0.78	0.70	1.00

Source: Bloomberg

ROLE OF COMMERCIAL REAL ESTATE IN A MULTI-ASSET PORTFOLIO

Commercial real estate has undergone significant developments over the last 45 years when U.S. institutional investors first began investing in the asset class. An argument can be made that real estate was even recognized as a distinct asset class as early as the mid 1980s. The evolution of commercial real estate into a more transparent asset class over the years has further fueled its acceptance among institutional investors. Academia and real estate practitioners alike commonly cite the following long-term benefits for the inclusion of commercial real estate in a mixed-asset portfolio:

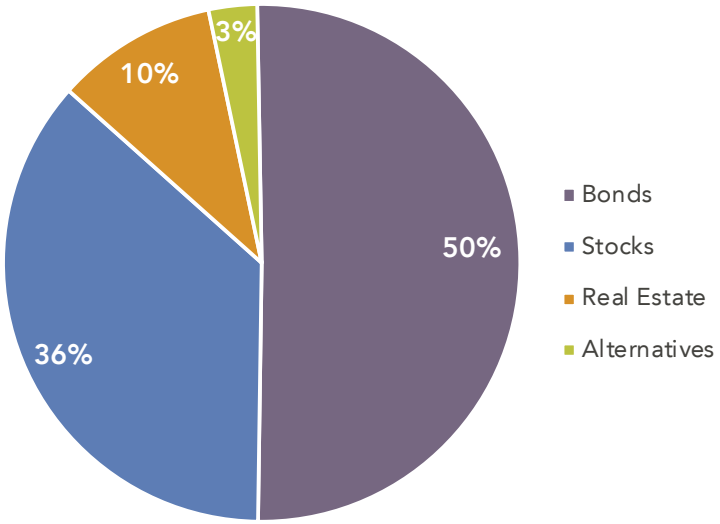
- **Large Investable Universe** – Commercial real estate represents a large portion of the investable universe on both an absolute and relative basis.
- **Diversification** – Commercial real estate has demonstrated low or negative correlation with stocks, bonds, and other asset classes over time.
- **Strong cash flow to the overall portfolio** – Commercial real estate has historically generated strong income returns relative to other asset classes.
- **Attractive risk-adjusted performance** – Historically, commercial real estate has produced superior risk-adjusted returns to those of stocks and bonds.
- **Hedge against inflation** – Commercial real estate has the potential to act as a partial hedge against inflation as properties can benefit from increasing rents and property values when inflation rises.

It should be noted that the historical empirical evidence for including commercial real estate in a mixed-asset portfolio refers to investments in core real estate and not the highly levered, riskier non-core strategies. The following aims to explore each rationale with historical empirical evidence as well as provide a framework for institutional investing in commercial real estate.

Investment Universe

PGIM Real Estate estimates that the total size of the investable commercial real estate market in the U.S. has an approximate market cap of $8.4 trillion, making it the third largest asset class in the U.S. after fixed income and public equity.[3] As of March 31, 2018 the sector accounts for approximately 10% *(see Exhibit 6)* of the total investable universe in the U.S. The sheer size of the commercial real estate market on both an absolute and relative basis warrants significant consideration for inclusion in a multi-asset portfolio.

Exhibit 6: U.S. Investable Universe by Asset Class:



Sources: Wilshire, Securities Industry and Financial Markets Association; PGIM Real Estate, as of March 2018

Diversification

The goal of diversification in any mixed-asset portfolio is the inclusion of asset classes that react differently to expected and unexpected events. Core real estate has historically shown significant diversification benefits due to its historically low correlations with stocks, bonds, and other asset classes over time.

Exhibit 7 outlines the rolling four-quarter correlation coefficients over the period January 1978 through December 31, 2017.[4] Over this period, commercial real estate, represented by the NCREIF Fund Index – Open End Diversified Core Equity ("NFI-ODCE") had a 0.18 correlation with the broad stock market (S&P 500) and a -0.20 correlation with the fixed income market (BarCap Aggregate). These low correlations illustrate the benefits of diversification over time by adding commercial real estate to a mixed-asset portfolio.

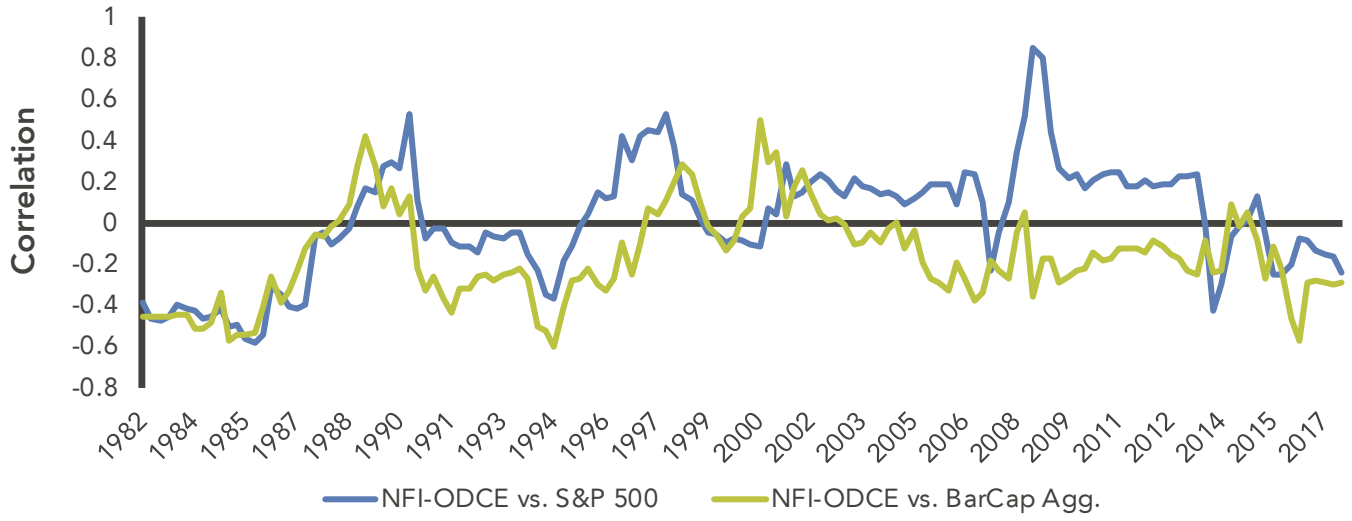
Exhibit 7: Rolling Four-Quarter Correlations (1Q78–4Q17)

	# of Periods	NFI-ODCE	NAREIT Equity REITs	S&P 500	BarCap Agg	MSCI EAFE	HFR FoFs	DJ/UBS Commodity
NFI-ODCE	157	1.00						
NAREIT Eq. REITs	157	0.17	1.00					
S&P 500	157	0.18	0.56	1.00				
BarCap Agg	157	-0.20	0.22	0.22	1.00			
MSCI EAFE	157	0.14	0.44	0.69	0.11	1.00		
HFR FoFs	112	0.09	0.44	0.55	0.09	0.57	1.00	
DJ/UBS Commodity	107	0.24	0.42	0.25	-0.01	0.43	0.52	1.00

Source: Bloomberg

A further analysis of the historical correlations between commercial real estate and the broad stock and bond markets can be seen in Exhibit 8. The chart depicts the rolling five-year correlations from the inception of the NFI-ODCE in the first quarter of 1978 (start period of first quarter 1983) through December 31, 2017. Over this time period, commercial real estate has averaged five-year rolling correlations of 0.02 and -0.16 with the broad stock and bond markets, respectively. Over this history, the correlation range between real estate and equity is -0.58 through 0.86, while real estate and fixed income is -0.60 through 0.50.

Exhibit 8: Rolling Five-Year Correlations (1Q83-4Q17)



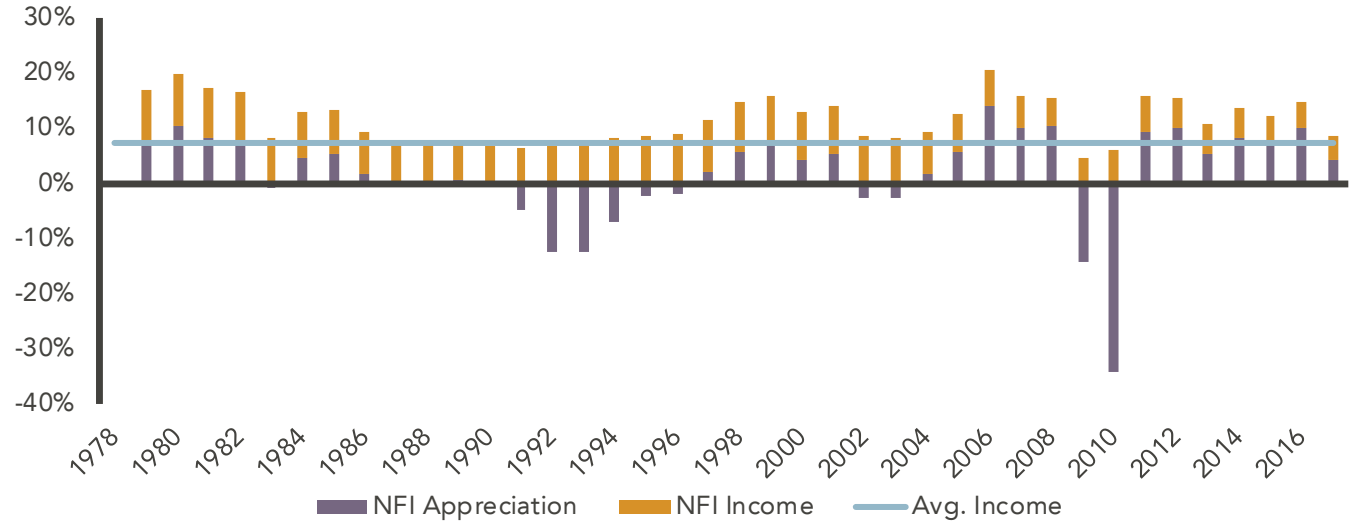
Source: Bloomberg

Strong Current Income

Institutional investors have historically been attracted to commercial real estate due to its ability to generate strong and consistent income returns over time. Well occupied commercial properties with staggered long-term leases provide predictable cash flows that translate into stable bond-like income for the investor.

Exhibit 9 below illustrates the two components of total return, income and appreciation, for the NFI-ODCE on a historic annual basis. The income return for core real estate has remained stable over the long-term, averaging 7.2% since inception in 1978.

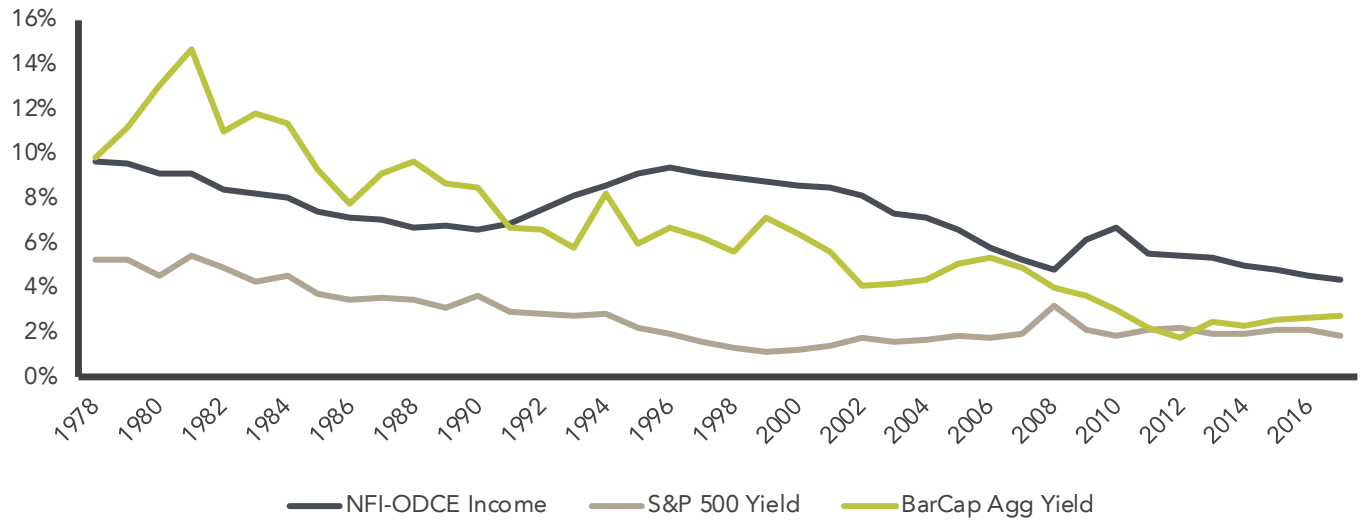
Exhibit 9: NFI-ODCE Annual Total Returns



Sources: NCREIF, Bloomberg

Exhibit 10 compares the historical relative income returns of commercial real estate to stocks and bonds. The average annual income return of 7.2% for commercial real estate outpaces both stocks and bonds.

Exhibit 10: Annual Historical Yields



Sources: Bloomberg, MSCI

Attractive Risk-Adjusted Performance

Commercial real estate has historically produced competitive absolute returns as well as superior risk-adjusted returns compared to stocks and bonds. Exhibit 11 provides average returns and risk (standard deviation) for private and public equity real estate, stocks, and bonds over the period of first quarter 1978 through 2017. Private real estate has delivered an 8.7% annual return over this period with a volatility of 5.3%. On a risk-adjusted basis, private real estate outperformed both stocks and bonds. Over the long-term, core real estate should perform somewhere between stocks and bonds in terms of returns and volatility.

Exhibit 11: Historical Returns (1Q78 –4Q17)

	Avg Return	Risk (Std. Dev.)	Return Per Unit of Risk
NPI	9.2%	4.2%	2.2
NFI-ODCE	8.7%	5.3%	1.6
NAREIT Eq. REIT	12.4%	17.5%	0.7
S&P 500	8.7%	15.4%	0.6
BarCap Aggregate	7.4%	6.4%	1.2

Sources: NCREIF, Bloomberg

Real Estate as an Inflation Hedge

Commercial real estate has the potential to provide a partial hedge against inflation as properties can benefit from increasing rents and property values when inflation rises. A majority of property leases include annual increases in income. These increases can either be fixed rent bumps or tied to a specific inflation index, with the later providing for a better hedge. Furthermore, periodic lease renewals provide opportunities for the investor to adjust rents based on inflation and prevailing market levels. Different property types offer inflation hedging

protection as lease terms vary by property type. The table below provides a general guide to property lease terms and their overall inflation protection.

Exhibit 12: Property Lease Terms and Inflation Protection Characteristics

	Lease Term	Rent Indexing	Tenant Inflation Correlation	Overall Protection
Apartment	1 year	Rents renegotiated annually	Tenant wages moderately correlated to inflation	High
Industrial	3-10 years, 5 year avg.	3% rent bumps	Tenants have limited leverage to raise prices	Moderate
Office	4-10 years; term linked to tenant size	1-3% rent; bumps common	Tenants have moderate pricing power	Moderate
Mall Retail	Side-shops 3-5 years; anchors 10-20 years	Bumps common; flat leases	Tenant sales moderately correlated to inflation	Low to Moderate
Strip Retail	Side-shops 3-5 years; anchors 10-25 years	Fixed rent bumps	Tenant sales highly correlated to inflation	Low to Moderate

Source: NCREIF "Real Estate Investment Styles" Whitepaper

Inflation also affects the net operating income of commercial properties through potential increases in expenses. The important determinant to consider is who bears the cost of those increased expenses, the investor/landlord or the tenant. "Net" lease terms that pass the risks of rising expenses on to the tenants can insulate the investor from inflationary increases.

Commercial real estate also benefits as it is perceived as an inflation-hedging hard asset. As more investors become concerned about inflation, capital flows into hard assets, such as real estate, can drive down cap rates and increase the relative value of the asset class.

In summary, fully-leased real estate provides a strong, but imperfect, hedge against both expected and unexpected inflation. However, academic research suggests that supply-demand dynamics trump inflation protection as a determinant of performance in the short-run.[5]

RISKS

Institutional investors investing in commercial real estate must also understand the risks. The following list highlights the major risks of investing in the asset class:

- **General real estate risk** – Investments in real estate are subject to varying degrees of risk. Factors affecting the value of real estate include: general national and local economic conditions, demographics, financial condition of tenants, buyers and sellers of properties, changes in supply and demand, availability of financing, and changes in interest rates.
- **Financial risk** – Investment in commercial real estate is capital intensive and relies heavily on the capital markets. Funds may employ leverage at the property level and/or at the fund level. The degree of financial risk is dependent on the amount of leverage used, the structure of the debt, and the conditions of the debt market.
- **Inflation risk** – While real estate has shown to hedge unanticipated inflation over the long term, this does not hold true for all real estate investments. For example, an investment in a property with long-term fixed-rate leases will decline in value if actual inflation outpaces expected inflation.
- **Liquidity risk** – Commercial real estate assets are generally illiquid in nature. There can be no assurance that properties can be sold in a timely manner and/or on favorable terms.

- **Valuation risk** – Real estate properties are typically appraised by third-party appraisal firms on an annual basis and adjusted on a quarterly basis. Appraisals are inherently subjective and appraised values may not accurately reflect the actual market value of the underlying properties. Appraised values tend to lag the true market value of the underlying property which causes the return stream to be smoothed. The smoothing effect artificially lowers the volatility and correlations causing risk-adjusted performance measures to be inflated.

HOW TO INVEST IN PRIVATE EQUITY REAL ESTATE

Institutional investors can access private equity real estate through a variety of account structures. These account structures can either be open-end or closed-end. Generally, open-end funds focus on core and core-plus strategies, while value-added and opportunistic funds are closed-end. The following provides an overview of each structure:

Open-End Commingled Fund: A pooled investment vehicle with a perpetual term. One of the most commonly cited advantages of an open-ended fund is that it is designed to allow investors to enter and exit the fund at a pre-specified frequency, typically on a quarterly basis, at the fund's previous net asset value (NAV). However, the perceived liquidity of open-end funds is not guaranteed. Open-end funds can experience contribution queues or redemption queues during periods of significant investor capital flows either into or out of a fund. These queues can last anywhere from a quarter to a couple of years depending on the environment.

The perpetual nature of open-end funds also allows the funds to reinvest and continue to grow. Consequently, these funds usually grow to a significant size becoming extremely well diversified by property type and geography. Investors can typically receive the immediate benefit of buying into an established, well diversified portfolio.

Historically, the majority of open-end commingled funds focused exclusively on core real estate. However, over the last 10 years, there has been an emergence of core-plus, value-added and sector-specific (property type) funds that have come to market. Exhibit 13 illustrates the investment universe for private open-end commingled funds.

Exhibit 13: Open-End Commingled Fund Universe

	Core	Non-Core
No. of Managers	25	29
No. of Funds	25	34

Source: NCRIEF, Marquette Associates database.
Note: "Core" represent the NCREIF-ODCE. "Non-core" includes sector-specific (property type), core-plus, and value-added funds. Non-core does not include real estate debt funds. As of October 2018.

Closed-End Fund (Limited Partnership): Private equity closed-end funds are typically in the form of a limited partnership vehicle. These funds have a fixed term which is usually seven-to-ten years with an option to extend the fund for one or two more years. The fund is managed by a general partner ("GP"), which in most cases is the real estate investment firm ("Sponsor"). The investors in the fund are known as limited partners ("LPs").

Investors in a limited partnership make capital commitments which represent their obligation to provide a certain amount of capital to the GP for fund investments. This capital commitment is then drawn down or called by the GP periodically over the investment period as properties are acquired. The investment period typically lasts two to three years and is then followed by a holding period where active management is pursued to create value.

Once the investment strategy has been implemented the investment manager will then seek to harvest the gains through property sales.

Investors in limited partnerships are often introduced to the J-curve effect. The J-curve effect is used to describe the tendency of limited partnership funds to deliver negative returns in the initial years and investment gains in the later years as value is harvested through property sales. Investment returns are often negative in the initial years due to the payment of management fees, which are typically paid on the entire committed capital, and under-performing investments which are identified early and written down.

The majority of value-added and opportunistic funds are structured as limited partnerships.

Separate Accounts: Due to the large capital requirements and substantial resource commitment that direct property investing requires separate accounts are only suitable for larger institutional investors with substantial resources that desire greater control over their real estate portfolio. Investors at a minimum should have a total real estate allocation in excess of $500 million (gross assets) to ensure their real estate portfolio is properly diversified. Assuming an average investment size of $20 million, a $500 million separate account portfolio would have approximately 25 properties. In comparison, the average established open-end core fund has over 80 properties. The economics of investing through a separate account structure should also be considered. The cost of a separate account is often higher than for a fund investment until the account size exceeds $500 million.

Fund of Funds: A fund of funds aggregates capital from a number of investors and instead of investing in direct properties, invests in other real estate private equity funds. A fund of funds can provide investors with limited capital access to a highly diversified fund by strategy, market, property type, manager, and vintage year. The majority of fund of funds focus on value-added and opportunistic strategies where there is significant dispersion of returns. Therefore, a fund of funds can also be utilized as a satellite approach to further diversify an existing core real estate allocation with higher risk/returning strategies in a well diversified manner.

PRIVATE EQUITY REAL ESTATE BENCHMARKS

Since its inception, the NCREIF Property Index (NPI) has become the most widely used private real estate benchmark. The NPI is commonly cited as the primary indicator of investment performance of institutionally-held commercial properties in the United States. However, the evolution of commercial real estate has increased the demand for further transparency of the asset class. As a result, a wide variety of private real estate indices currently exist. A brief description of each index is provided below.

- **NCREIF Property Index (NPI)** – an appraisal-based index of quarterly total returns of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only. All properties in the NPI have been acquired, at least in part, on behalf of tax-exempt institutional investors. The NPI is a proxy for the performance of direct investments in real property. Index is published quarterly.
- I**PD U.S. Property Index** – an appraisal-based index of properties held by real estate portfolio managers and large investors. The index seeks to measure the returns of "standing properties". Standing investments exclude any properties bought or sold in the period. As such, the index removes any value created by the manager at purchase or sale. Not appropriate for active management benchmarking. Index published annually with a smaller sample quarterly index available.
- **NCREIF Fund Index – Open End Diversified Core Equity (NFI-ODCE)** – an index of fund level investment returns reporting on both a historical and current basis the results of 37 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. As of the fourth quarter 2017 there are 24 active funds included in the index. Index is published

quarterly. This index is the most appropriate for benchmarking an investment in a core open-end real estate fund.

- **Moodys/REAL Commercial Property Index (CPPI)** – a transaction-based index that uses the repeated-sales pricing method. The index is designed to track same-property realized round-trip price changes (appreciation) based on properties sold in the Real Capital Analytics (RCA) database. Index is published monthly.
- **Cambridge U.S. Private Equity Real Estate Index** – a private real estate benchmark that includes Value-Added and Opportunistic strategies. Cambridge's quarterly returns are calculated using a horizon internal rate of return. The calculation incorporates the beginning NAV (as a cash inflow), interim cash flows and the ending NAV (treated as an outflow). In order for a fund to be included in a horizon IRR calculation, the fund must have at least one quarterly contribution, distribution or NAV during the time frame measured. Similar to the since inception IRR, the horizon IRR is annualized for time frames greater than one year.

Recommendation

The benefits of including private equity commercial real estate in a mixed-asset portfolio have been well documented over the years. The benefits to institutional investors include:

- Large investable universe
- Diversification
- Strong cash flow to the overall portfolio
- Attractive risk-adjusted performance
- Hedge against inflation

We believe an allocation to commercial real estate is appropriate for institutional investors with a long-term investment horizon and no significant liquidity constraints. Specific target allocations and investment strategies will largely depend on the investor's risk tolerance and overall objectives. As with any investment allocation decision, factors unique to each fund must be considered, including return goals, risk tolerance, and overall plan objectives. Rigorous due diligence on the asset class and managers must also be performed before making a final allocation.

APPENDIX 1

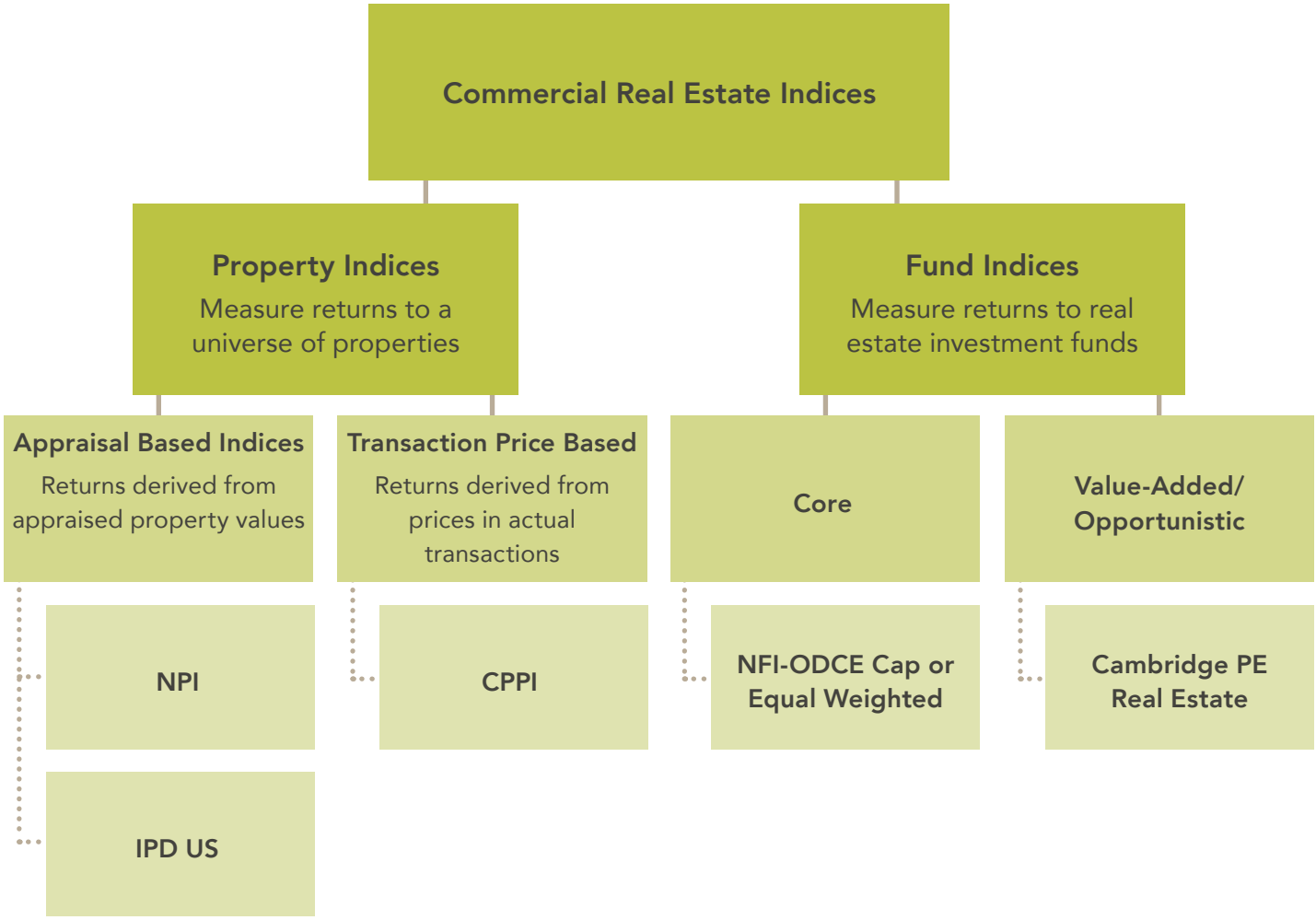
NCREIF REAL ESTATE INVESTMENT STYLES

ASSET LEVEL	
Core	**Definition** Assets that achieve relatively high percentage of return from income and are expected to exhibit low volatility. **Attributes** ▪ Major property types only – office, industrial, retail (neighborhood/ community centers, regional/super regional malls), multi-family ▪ Lifecycle: Operating ▪ High occupancy ▪ Low rollover concentration ▪ Low total near-term rollover ▪ Low leverage ▪ Institutional market/location ▪ Investment structures with significant control
Value-Added	**Definition** Assets that exhibit one or more of the following attributes — achieve a significant portion of return from appreciation, exhibit moderate volatility and/or are not currently considered core property types. However, if the overall risk level is excessive, the asset should be classified as Opportunistic. **Attributes** ▪ Major property types, plus other retail, hospitality, senior living, storage ▪ Lifecycle: Operating/Leasing ▪ Moderate to well leased, substantially pre-leased development ▪ Moderate rollover concentration ▪ Moderate total near-term rollover ▪ Moderate leverage ▪ Institutional or emerging markets ▪ Investment structures with significant or moderate control but security or preferred position
Opportunistic	**Definition** An asset that is expected to derive most of its return from appreciation or which may exhibit significant volatility of returns. This may be due to a variety of characteristics such as exposure to development, significant leasing risk, or high leverage, but may also result from a combination of moderate risk factors that in total create a more volatile return profile. **Attributes** ▪ Non-traditional property types, including speculative development for sale or rent and land ▪ Lifecycles: development and redevelopment ▪ Low economic occupancy ▪ High rollover concentration ▪ High total near-term rollover ▪ High leverage ▪ Secondary or tertiary markets and international ▪ Investment structures with minimal control, unsecured positions

PORTFOLIO LEVEL	
Core	A portfolio that includes a preponderance of core attributes. As a whole, the portfolio will have low lease exposure and low leverage. A low percentage of non-core assets is acceptable. As a result, such portfolios should achieve relatively high income returns and exhibit relatively low volatility.
Value-Added	A portfolio that generally includes a mix of core investments and others that will have less reliable income streams. The portfolio as a whole is likely to have moderate lease exposure and moderate leverage. As a result, such portfolios should achieve a significant portion of the return from appreciation and are expected to exhibit moderate volatility.
Opportunistic	A portfolio of preponderantly non-core investments that is expected to derive most of its return from appreciation and/or which may exhibit significant volatility in returns. This may be due to a variety of characteristics such as exposure to development, significant leasing risk, high leverage, or a combination of moderate risk factors.

APPENDIX 2

COMMERCIAL REAL ESTATE INDICES



NOTES

[1] Wilshire, Securities Industry and Financial Markets Association; PGIM Real Estate, as of March 2018
[2] NCREIF is a not-for-profit trade association that serves its membership and the academic and investment community's need for improved real estate data, performance measurement, investment analysis, information standards, education, and peer group interaction.
[3] Wilshire, Securities Industry and Financial Markets Association; PGIM Real Estate, as of March 2018
[4] The starting point of January 1, 1978 was chosen because the inception date for the NFI-ODCE was the first quarter of 1978.
[5] *Inflation and Real Estate*. LaSalle Investment Management.

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