

US PRIVATE CORE REAL ESTATE INVESTING

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Executive Summary

Core real estate can play an important role in a long-term investment program. Defined as institutional-quality commercial real estate that generates a return primarily from rental income (current income) with some capital appreciation, this asset class has generated average annual returns of 8%–9%¹—with income returns approximately 250–300 basis points (bps) higher than comparable Treasury yields. Core real estate can offer diversification benefits, has low historical correlations to other asset classes, provides current income and the potential for capital appreciation, and can be a partial inflation hedge.

Time Horizon: Investments in core real estate should be viewed as long-term investments (i.e., long-term hold periods). Over shorter time periods, core investments can experience volatility in asset valuations that shifts the investment from income driven to capital appreciation dependent.

Property Characteristics: Core real estate assets are typically well occupied with high-quality tenants. They have staggered leases at market-rate rents, are well maintained with little deferred maintenance, and are located in high-quality, high-barrier-to-entry markets. In the US, core property locations include top urban markets such as New York, Washington D.C., Boston, San Francisco, Los Angeles, and other large metropolitan areas where space is scarce and new development is difficult. The main property types include office, retail, multifamily, and industrial.

Benchmarks: The most commonly used core benchmarks are the National Council of Real Estate Investment Fiduciaries (NCREIF) Property Index (NPI) and NCREIF Fund Index Open-end

Diversified Core Equity (ODCE) Index. The NPI is unlevered and is based on a large pool of institutional-quality assets. The ODCE is levered and is based on a composite of open-end core commingled funds.

The Use of Leverage: Core real estate investment strategies generally use low leverage—typically less than 30%. However, during rapidly declining real estate markets (such as 2008 and 2009), leverage levels for some core strategies increased to above 50% due to the decline in asset values.

CORE REAL ESTATE CAN PLAY AN IMPORTANT ROLE IN A LONG-TERM INVESTMENT PROGRAM.

Risks: There are various risks associated with investing in core real estate. These include investment illiquidity (particularly during falling markets), asset value volatility (over shorter time periods), asset valuation inaccuracies (due to the use of estimates/appraisals for determining asset values), and leverage amplifying negative performance during falling markets. Regarding leverage, rolling returns for the NPI (which is unlevered) have historically exceeded the ODCE (which is levered). This indicates that, on average, higher leverage in core real estate has not increased returns over long time periods.

Investment Vehicles: For many investment programs, open-end funds are the most suitable vehicle for investment in private core real estate. Open-end funds allow for smaller investments

¹Unless otherwise noted, returns data provided in this document are shown before fees (i.e., “gross returns”).

(generally \$1 million or more) in large diversified asset pools and provide investors with mechanisms for adding and withdrawing capital at their discretion (dependent on fund liquidity restrictions determined by the fund manager). Separate accounts and direct investment also provide access to core real estate; however, they are mostly applicable to larger programs. Closed-end funds are not ideal vehicles for long-term investment in core real estate due to the defined life of the fund, which may not align to the ideal holding period for an asset based on market cycles.

General Commercial Real Estate Overview

Institutional-quality commercial real estate (CRE) is rental property intended to generate a return from rental income and/or capital appreciation. Property types include office buildings, apartments, shopping centers, and industrial buildings, but do not typically include for-sale residential housing. In the US, the commercial real estate market has an estimated value of approximately \$4.1 trillion².

Given the potential for both rental income (current income) and capital appreciation, real estate has characteristics of both fixed income and equity. Current income is derived from tenant rents or leases, which are generally the main return drivers for “core” investment strategies. Capital appreciation is derived from the increase in the value of an asset between acquisition and sale that typically results from lease-up, repositioning, renovation, or rental growth—often the

main return drivers for more “opportunistic” investment strategies. Leverage is used to varying degrees by real estate investment managers and can amplify (positively and negatively) both the income and appreciation return streams.

Commercial real estate has many benefits as part of an overall investment program. It can provide diversification benefits, has low historical correlations to other asset classes, provides current income and the potential for capital appreciation, and can be a partial inflation hedge. Commercial real estate also offers a spectrum of investment strategies with different expected risk/return profiles that can be combined based on investor objectives (i.e., core, value-add, opportunistic, and debt-related). There are also multiple risks associated with investing in commercial real estate including: investment illiquidity (particularly during falling markets), asset value volatility (over shorter time periods), asset valuation inaccuracies (due to the use of estimates/appraisals for determining asset values), leverage-amplifying negative performance during falling markets, and limited/imperfect benchmarks to gauge closed-end fund performance.

Commercial real estate offers a broad range of investment options, shown in Figure 1, that define an overall strategy. These are broken down by

² Source: Holliday Fenoglio Fowler (HFF, Inc.) as of December 31, 2010.

Figure 1: Commercial Real Estate Investment Options			
Investment Styles		Typical Fund Return Targets	Typical Fund Leverage
	Core	8%–9%	15%–30%
	Value-Add	14%–17%	50%–70%
	Opportunistic	>18%	>60%
	Debt-Related	Varies	Varies
Property Type Focus	Core Property Types		Non-Core Property Types
	Office		Hotels/lodging
	Retail		Healthcare/Senior housing
	Multifamily		Self-storage
	Industrial		Other niche sectors
Geographic Focus	Core Property Locations		Non-Core Property Locations
	High-barrier-to-entry urban locations		Lower-barrier-to-entry locations
	Primary markets		Secondary/tertiary markets
	Developed countries/markets		Developing countries/markets

Source: NEPC, LLC.



investment style (strategy), property type focus, and geographic focus³.

While real estate funds tend to invest in a single investment style (i.e., core, value-add, opportunistic, and debt-related), many funds invest in multiple property types in an attempt to create a diversified portfolio of investment properties.

In addition to the above considerations, real estate also offers a variety of vehicle structures through which to invest. These are outlined in Figure 2 and grouped by expected vehicle liquidity.

Figure 2: Vehicle Structure	
Liquid/Semi-Liquid Structures	Illiquid Structures
Publicly Traded REIT Funds Separate Accounts Direct Investments Open-End Funds	Closed-End Funds Secondary Funds Fund-of-Funds

Source: NEPC, LLC.

US Core Real Estate Strategy

Strategy Definition

The strategy for core real estate is to invest in stable income-producing properties that are well leased, well maintained, and located in high-quality, high-barrier-to-entry markets (commonly referred to as “primary markets”). The main property types include office, retail, multifamily, and industrial assets (and select high-quality non-core property types such as hotels, senior living, self-storage, etc.). Properties typically have stable tenants (ideally investment grade), with long-dated, staggered leases (for office, industrial and retail properties) and market-rate rents. In the US, core property locations include top urban markets

³ Appendix 1 provides additional information regarding real estate investment styles. Appendix 2 provides additional information regarding real estate valuation metrics.

such as New York, Washington D.C., Boston, San Francisco, Los Angeles, and other large metropolitan areas where space is scarce and new development is difficult. Properties generally require little or no near-term capital investment (other than normal recurring maintenance). Core real estate investment strategies typically use low leverage—generally around 15%–30% loan-to-value (LTV)—although some core real estate funds experienced levels of leverage in excess of 50% during rapidly declining real estate markets. Historical fund returns have averaged 8%–9% per year before fees (7%–8% after fees), with the majority of return generated from current income. The hold period is typically long term (10 years or longer), and shorter-term investments should be viewed as more of an opportunistic strategy to capitalize on the mispricing of an asset (as opposed to a yield play on a long-term investment).

Benefits of Core Real Estate Investing

Core real estate can play an important role as part of an overall investment portfolio. The benefits of investing in core real estate include:

- Diversification and low historical correlations to other asset classes
- Current income and the potential for capital appreciation
- A partial inflation hedge

Diversification and Low Correlation

Historically, returns from US private core real estate have had low correlations to other asset classes. From 1980 through 2010, the NPI had correlations of 0.06 with the S&P 500, -0.05 with the Russell 2500, and -0.02 with the Barclays Capital US Aggregate Bond Index (US Bond Index), based on five-year rolling averages. This is shown in Figure 3 and Figure 4.

Current Income and Capital Appreciation

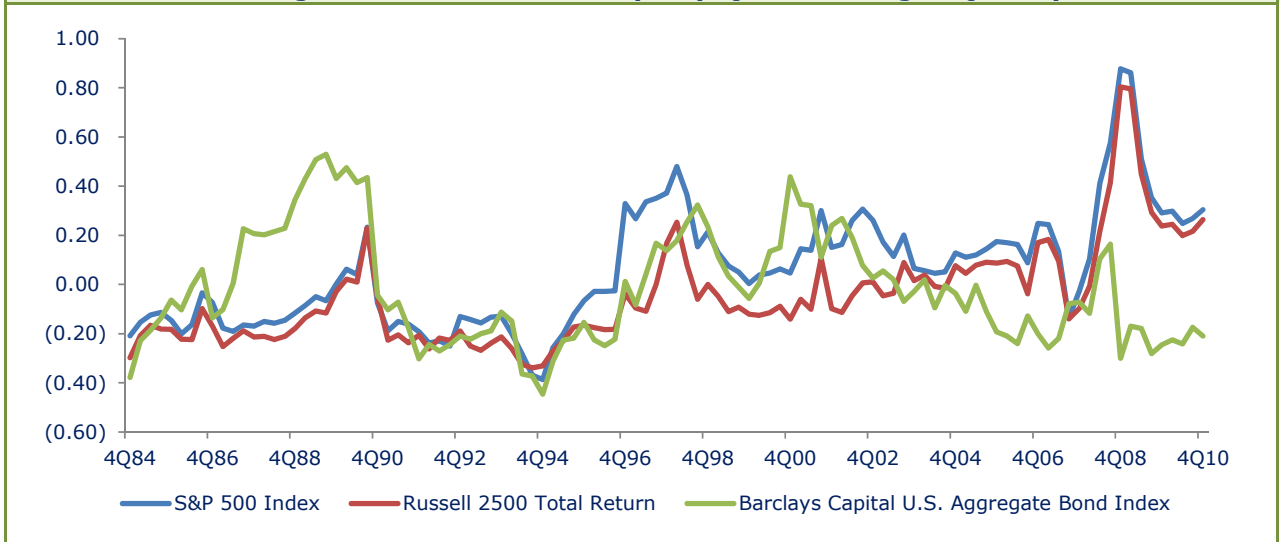
Core real estate has two return components: current income and capital appreciation. Current income has historically been the main return driv-

Figure 3: NCREIF Property Index (NPI) Rolling Five-Year Correlation Analysis				
	NPI	S&P 500 Index	Russell 2500	US Bond Index
NPI	1.00	0.06	(0.05)	(0.02)
S&P 500 Index	0.06	1.00	0.90	0.04
Russell 2500	(0.05)	0.90	1.00	(0.02)
US Bond Index	(0.02)	0.04	(0.02)	1.00

Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1980 through 4Q 2010.



**Figure 4: NCREIF Property Index (NPI)
Rolling 5-Year Correlation Analysis (1Q 1980 through 4Q 2010)**



Source: NCREIF and NEPC, LLC analysis.

er for core investment strategies, providing over 85% of the total return (based on rolling annual average returns from 1Q 1978 through 4Q 2010). It has also provided a relatively stable return component of 7.7% per year before fees with a 1.0% standard deviation. Capital appreciation returns have averaged 1.3% per year and have historically been significantly more volatile than current income returns, with a 7.5% standard deviation.

Partial Inflation Hedge

Core real estate can provide a partial long-term hedge against inflation. This is driven by two main factors:

1. Rent or lease payments typically increase with inflation in growth markets.
2. Land values and building costs typically rise with inflation.

It is important to note that real estate's ability to provide an inflation hedge is market specific and exhibits volatility. In locations with long-term oversupply, lagging GDP growth, and declining populations, asset values do not necessarily track inflation.

The following analysis provides a comparison of core real estate capital appreciation returns relative to inflation by comparing the MIT/CRE Transactions-Based Index (MIT/CRE TBI or MIT Index) to the US Consumer Price Index (CPI). The MIT Index is based on transaction data from the NCREIF Property Index. It measures the capital appreciation of properties that have been bought and sold within the index based on actual transactions versus appraised values. This index does not include income returns and is therefore less applicable for comparing total return performance.

As shown in Figure 5, CPI outpaces the MIT/CRE TBI index by 30 bps on a rolling five-year basis. However, Figure 6 illustrates that the results from the analysis are mixed: in certain time periods, real estate capital appreciation outpaces inflation, and in other time periods it lags inflation. Figure 6C shows the five-year rolling correlation analysis, which averaged 0.06 from 1989 through 2010. Given the low correlation, inflation hedging should be viewed as a long-term factor when investing in core real estate.

Geographic Characteristics

Core real estate geographies typically include high-barrier-to-entry major market locations such

Figure 5: Real Estate Capital Appreciation and Inflation

	MIT/CRE TBI	CPI
5-Year Average Annualized Rolling Return	2.7%	3.0%
Standard Deviation	4.9%	0.7%

Source: MIT/CRE TBI (data available from 1Q 1984) and NEPC, LLC analysis.



Figure 6: Rolling 5-Year Annualized Growth Comparison

Figure 6A: MIT/CRE TBI and CPI Index Returns

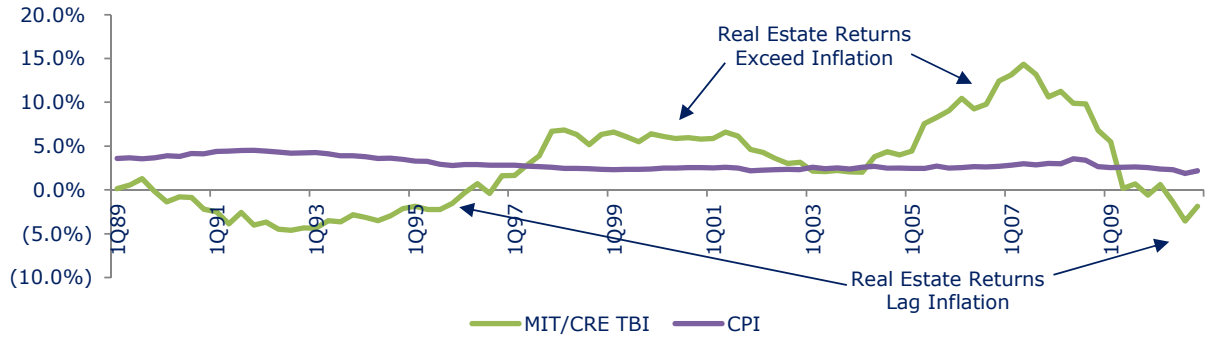


Figure 6B: Net Difference Between Indexes
(MIT/CRE TBI Index minus CPI Index)

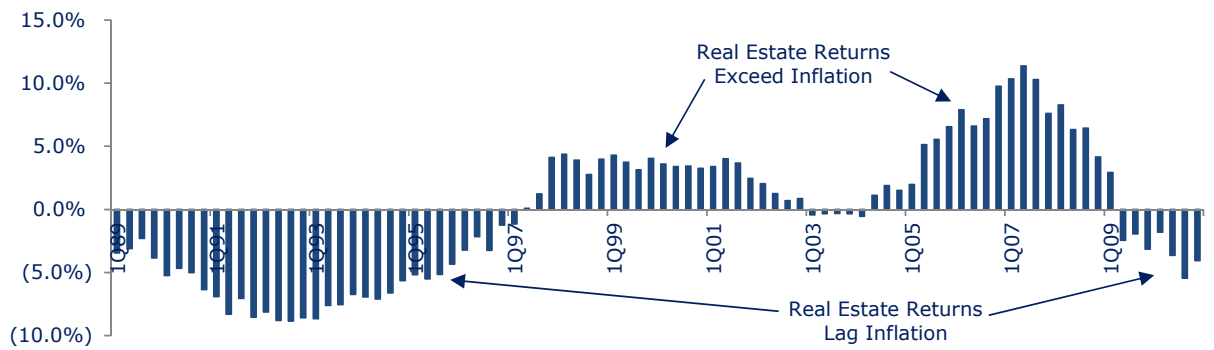
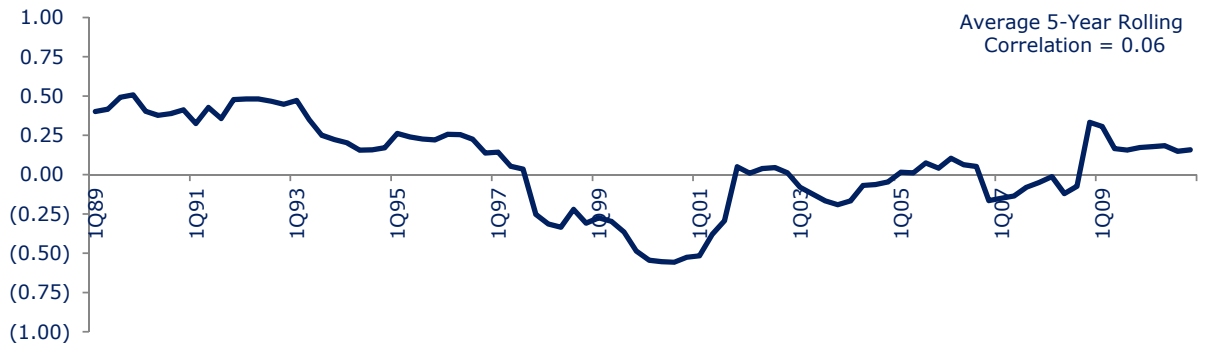


Figure 6C: Correlation Analysis
(5-Year Rolling Correlations for MIT/CRE TBI Index and CPI Index)



Source: MIT/CRE TBI (data available from 1Q 1984) and NEPC, LLC analysis.



as New York, Washington D.C., Boston, San Francisco, Los Angeles, and other large metropolitan areas in the US. These markets are viewed as having more stable demand characteristics (both from tenants and investors) and more liquidity as compared to secondary or tertiary markets (non-core markets). Core markets also typically have lower risk/return expectations than non-core markets.

Property Types

Real estate property types can be divided into two categories: core and non-core. It should be noted that the word “core” can be used interchangeably to describe both an investment strategy (i.e., target risk/return profile) and the four main property types. Core real estate is typically defined as office, multifamily, retail, or industrial properties. A core investment strategy can sometimes include a small component of non-core real estate subsectors (generally only in very high-

quality locations). The non-core property subsectors include self-storage, hotels/lodging, healthcare, senior housing, and other more niche-oriented sectors. These sectors typically are more operationally intensive and have higher risk/return expectations compared to the core real estate subsectors.

Investment Vehicle Structures

Investment Vehicle Summary

There are multiple investment vehicles that invest in private real estate. The main vehicles include open-end funds, closed-end funds, separate accounts, and direct property investments. (Public REIT funds also provide access to core real estate; however, the focus of this paper is private ownership structures, and Public REIT funds are not discussed here.). Open-end funds are the most suitable investment vehicle for the majority of plans investing in private core real estate (this

Figure 7: Core Real Estate Subsectors		
Office		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> Central business district office Suburban office 	<ul style="list-style-type: none"> Employment growth Productivity rates 	<ul style="list-style-type: none"> Longer-term leases that can lag current market lease rates which produces step-ups or step-downs at lease maturity Credit quality of tenants/lease lengths Shadow vacancy in a market
Multifamily		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> High-rise apartments Garden style apartments 	<ul style="list-style-type: none"> Demographic trends Home ownership/household formation Employment growth 	<ul style="list-style-type: none"> Leases are typically 1–2 years and adjust quickly to current market conditions
Retail		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> Regional malls Strip malls Lifestyle centers Factory outlet centers 	<ul style="list-style-type: none"> Consumer spending Employment growth 	<ul style="list-style-type: none"> Leases frequently contain a base rent plus percent of the gross sales Longer-term leases that can lag current market lease rates which produce step-ups or step-downs at lease maturity
Industrial		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> Warehouse/distribution Flex industrial R&D space 	<ul style="list-style-type: none"> Inventory levels Import/export volumes Employment growth 	<ul style="list-style-type: none"> Longer-term leases that can lag current market lease rates which produce step-ups or step-downs at lease maturity Releasing requires smaller or minimal tenants improvements Build-to-suit facilities that can be hard to re-tenant

Source: NEPC, LLC.



Figure 8: Non-Core Real Estate Subsectors

Self-Storage		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> • General storage • Boat storage • Container storage 	<ul style="list-style-type: none"> • Consumer spending • Business spending • Housing market 	<ul style="list-style-type: none"> • Operating expertise/business • Leases are typically short term (monthly) and rental rates for new renters are adjusted on a daily/weekly basis relative to market conditions
Hotel/Lodging		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> • Full-service • Limited service • Extended stay 	<ul style="list-style-type: none"> • Business spending and travel • Consumer spending and leisure travel • Employment growth 	<ul style="list-style-type: none"> • Operating expertise/business • Leases are nightly and hotels have high fixed operating costs • Property net operating income more volatile than other sectors given nightly leases, high fixed operating costs and relation to discretionary spending • Asset/property management is critical and typically involves third-parties
Healthcare		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> • Medical office • Life science • Hospitals 	<ul style="list-style-type: none"> • Healthcare spending • Demographic trends 	<ul style="list-style-type: none"> • Government medical spending/reimbursement • Proximity to hospitals for medical office • Longer-term leases that can lag current market lease rates which produce step-ups or step-downs at lease maturity
Senior Housing		
Example Properties	Economic Drivers	Considerations
<ul style="list-style-type: none"> • Independent living • Assisted living • Dementia care • Alzheimer's care • Skilled nursing 	<ul style="list-style-type: none"> • Demographic trends • Healthcare spending • Home prices (specifically for entrance fee models and independent living) 	<ul style="list-style-type: none"> • Operating expertise/business • Leases vary per product type/care level • Private pay versus government subsidized • Entrance fee models for certain product types where an incoming resident provides an "entrance deposit" which is fully or partially refundable at move-out
Other Niche Sectors		
Example Properties	Economic Drivers/Lease Considerations	
<ul style="list-style-type: none"> • Manufactured homes • Data centers • Student housing • Ski resorts 	<ul style="list-style-type: none"> • Vary per property type 	

Source: NEPC, LLC.



will be discussed further in this section). Closed-end funds are not ideal vehicles for long-term investment in core real estate due to the defined life of the fund, which may not align to the ideal holding period for an asset based on market cycles. Separate accounts and direct investment are more appropriate for large plans.

Open-End Funds

Open-end funds are the most suitable investment vehicle for the majority of plans. Funds typically own quality assets in high-barrier-to-entry infill locations with low leverage. They provide broad

OPEN-END FUNDS ARE THE MOST SUITABLE INVESTMENT VEHICLE FOR THE MAJORITY OF PLANS.

diversification across geographies and property types (office, industrial, multifamily, and retail assets). Many of the larger funds have gross asset values greater than \$5 billion and own more than 150 properties, which helps decrease concentration risk for individual markets/assets.

Funds are typically structured as trusts, private REITs, or insurance company separate accounts that allow investors to commingle capital. There may be entrance and exit queues for commitments to or withdrawals from the fund. Fund commitments are called at the discretion of the fund manager when the fund has a use for the capital. Withdrawals (redemptions) are usually permitted quarterly, subject to available cash and at the discretion of the fund manager. Commitments and withdrawals are made at the most recent fund net asset value (NAV). Open-end funds typically provide investors with annual audited financials, quar-

terly unaudited financials, annual meetings, quarterly conference calls to review fund performance, and additional disclosure regarding fund investments. Open-end funds also typically provide investors with quarterly income distributions (dividends) that can be automatically reinvested in the fund at the current NAV.

Fund financial reports use mark-to-market or fair-value accounting and include NAVs based on regular appraisals of fund assets. Although the specific appraisal process varies between funds, most funds appraise assets at least annually, and often quarterly, using third-party firms. Fair value accounting has been a part of Generally Accepted Accounting Principles (GAAP) in the US since the early 1990s. Most funds adhere to FAS 157 (the Statements of Financial Accounting Standards No. 157, Fair Value Measurements). Funds typically include asset management fees that average about 1% or 100 bps.

Closed-End Funds

Closed-end funds are structured like private equity funds, in which investors make a commitment that is drawn down over time as the fund makes investments. Liquidity is defined by the life of the fund. Funds can be focused or diversified by property type and geography. Funds are typically smaller in size (\$100 million-\$1 billion) with 10-year terms. Funds typically include asset management fees and incentive fees.

The closed-end fund structure is not an ideal investment vehicle for long-term investment in the core space. This is due to the defined life of the fund, which may not align to the ideal holding period for an asset based on market cycles. Closed-end funds are most applicable for shorter-term

Figure 9: Private Real Estate Investment Vehicle Summary

Vehicle Type	Minimum Commitment Amount	Investment Liquidity	Investor Control	Typical Fund Investment Style
Open-End Funds	Small (\$1M+)	Semi-Liquid	Low	Core Value-Add
Closed-End Fund	Small (\$1M+)	Illiquid	Low	Value-Add Opportunistic Debt-related
Separate Accounts	Large (\$100M+)	Semi-Liquid	High	All (though typically Core and Value-Add)
Direct Investments	Large (\$100M+)	Semi-Liquid	High	All (though typically Core and Value-Add)

Source: NEPC, LLC.



Figure 10: Illustrative Example of Number of Properties a Plan Could Own Based on Plan Size/Target Real Estate Allocation				
Plan Size (\$M)	\$100	\$1,000	\$10,000	\$100,000
Target Real Estate Allocation (%)	10%	10%	10%	10%
Target Real Estate Allocation (\$M)	\$10	\$100	\$1,000	\$10,000
Average Property Size (\$M)	\$50	\$50	\$50	\$50
Implied # of Properties Owned by Plan	0.2	2	20	200

Note: analysis does not assume the use of leverage.

Source: NEPC, LLC.

opportunistic strategies and should have higher return and volatility expectations.

Separate Accounts and Direct Investments

Separate accounts and direct investment are most applicable to very large plans from a diversity and investment management standpoint. A separate account is typically an exclusive investment vehicle designed and managed by a third-party fiduciary for an individual institution (generally created to allow the institution to pursue a specific investment strategy or individual property type). A direct investment is a non-intermediated investment in an individual real estate asset. Owners have complete control over investment strategy.

Figure 10 provides an illustrative example of the number of properties a plan could own in a separate account or direct investment program based on total plan size and target real estate allocation. A \$10 billion plan with a 10% real estate allocation could own 20 properties of an average size of \$50 million (\$1 billion in total gross asset value, assum-

ing no leverage). In comparison, many of the larger open-end funds have gross asset values of greater than \$5 billion and own more than 150 properties. Plans that pursue a limited direct investment strategy should have higher return expectations given the increased concentration risk associated with smaller pools of assets and property type/geographic concentrations.

Benchmarks for US Core Real Estate

The most commonly used core benchmarks are the NCREIF Property Index (NPI) and NCREIF Fund Index - Open-end Diversified Core Equity (ODCE). The NPI is unlevered and is based on a large pool of institutional-quality assets. It is most applicable for comparing unlevered asset performance. The ODCE is levered and is based on a composite of open-end core commingled funds (26 funds have been included in the ODCE since its inception). It is most applicable for comparing levered fund performance.

Figure 11: US Core Real Estate Benchmarks		
Index	NPI	ODCE
General Description	Quarterly composite total rate of return of a large pool of real estate properties	Quarterly composite total rate of return of 18 open-end core commingled funds
Levered or Unlevered Returns	Unlevered	Levered
Index Gross or Net of Fees	Gross	Available in Gross and Net forms
Valuation Methodology	Appraised value of assets	Appraised value of underlying fund assets
Benchmark Applicability	The NPI is most applicable to gauge an investment manager's ability to make effective investment property decisions and for unlevered investment strategies	The ODCE is most applicable to gauge levered fund performance and the investment manager's use of both leverage and ability to make effective investment property decisions

Source: NCREIF and NEPC, LLC.



The MIT Index, discussed earlier, is based on transaction data from the NPI. It measures the capital appreciation of properties that have been bought and sold within the index based on actual transactions versus appraised values. This index does not include income returns and is therefore less applicable for comparing total return performance.

NCREIF Property Index (NPI)

The NPI is a composite of a large pool of individual commercial real estate properties. The index is unlevered, capitalization weighted, time weighted, reported gross of fees, and released quarterly. The index dates back to 4Q 1977. NPI returns consist of three return components: current income, capital appreciation, and total return.

OVER THE LONG TERM, THE MAJORITY OF TOTAL RETURN TYPICALLY COMES FROM CURRENT INCOME.

- **Current income** measures that portion of total return attributable to each property's net operating income (NOI) or yield. NOI is gross rental income plus any other income, less operating expenses such as utilities, maintenance, taxes, property management, insurance, etc. The income return is computed by dividing NOI by property value.
- **Capital appreciation** measures the change in market value of a property from one period to the next. Market value is determined by appraisal.
- **Total return** is equal to current income plus capital appreciation.

NCREIF Fund Index - Open-end Diversified Core Equity (ODCE) Index

The ODCE is a composite of open-end commingled funds pursuing a core investment strategy. The index is levered, capitalization weighted, time weighted, reported gross of fees (and net of fees), and released quarterly. As of December 31, 2010, the leverage ratio for the ODCE was approximately 28%. Similar to the NPI, the ODCE has data back to 4Q 1977 and includes three return components: current income, capital appreciation, and total return.

Historic Core Returns Analysis

US core real estate returns have averaged 8%–9% per year before fees. Over the long term, the majority of total return (85% or more) typically comes from current income, with some capital appreciation. Regarding leverage, rolling returns for the NPI (which is unlevered) have historically exceeded the ODCE (which is levered). This indicates that, on average, higher leverage in core real estate has not increased returns over long time periods⁵. Going forward, for long-term holds, US core real estate should likely generate returns comparable to the historical returns, assuming comparable long-term economic growth and borrowing costs.

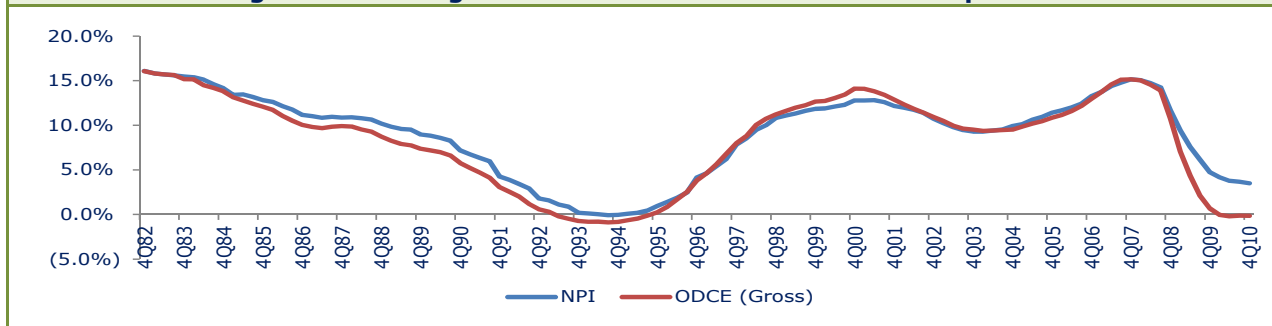
⁵ In comparing returns for the NPI and ODCE it is important to note that the composition of properties contained in each index is not identical. The NPI is comprised of a large pool of individual commercial real estate properties acquired in the private market for investment purposes only by tax-exempt institutional investors such as pension funds. As of 2Q 2011, the NPI contained 6,349 assets with a market capitalization of \$263 billion. The ODCE currently includes 18 open-end commingled funds pursuing a core investment strategy. As of 2Q 2011, the funds included in the ODCE owned 1,802 assets with a gross asset value of \$91 billion.

Figure 12: Rolling Annualized Total Return Comparison

	1-Year	3-Year	5-Year	10-Year
NPI				
Average Annualized Rolling Return	9.1%	9.1%	9.1%	8.4%
Standard Deviation	8.2%	6.2%	4.6%	3.1%
ODCE				
Average Annualized Rolling Return	8.4%	8.4%	8.4%	7.8%
Standard Deviation	10.2%	7.3%	5.2%	3.4%

Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.



Figure 13: Rolling 5-Year Annualized Total Return Comparison

Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.

Total Returns Analysis

The NPI has generated total returns of 8.4%–9.1% annually before fees, based on one-, three-, five-, and ten-year rolling averages. ODCE total returns have averaged 7.8%–8.4%. On a quarterly basis, the NPI has outperformed the ODCE in 74 quarters by an average of 73 bps, while the ODCE has outperformed the NPI in 58 quarters by an average of 50 bps.

Since inception, the difference between gross and net returns for the ODCE, on an annualized basis, has been approximately 100 bps or 1%. Therefore, approximate net returns can be calculated by subtracting 1.0% from the annualized returns that are shown (e.g., the five-year average annualized total return for the ODCE is 8.4% before fees, and the net return after fees is approximately 7.4%).

Figure 14: NPI Rolling Return Components

	1-Year	3-Year	5-Year	10-Year
NPI - Income Return (Current Income)				
Average Annualized Rolling Return	7.7%	7.7%	7.7%	7.8%
Standard Deviation	1.0%	1.0%	0.8%	0.5%
NPI - Capital Appreciation				
Average Annualized Rolling Return	1.3%	1.4%	1.3%	0.6%
Standard Deviation	7.5%	5.6%	4.2%	2.8%
% of Total Return from:				
Income	85.2%	85.0%	85.7%	93.2%
Capital Appreciation	14.8%	15.0%	14.3%	6.8%

Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.

Figure 15: ODCE Rolling Return Components

	1-Year	3-Year	5-Year	10-Year
ODCE - Income Return (Current Income)				
Average Annualized Rolling Return	7.7%	7.7%	7.7%	7.8%
Standard Deviation	1.2%	1.2%	1.0%	0.6%
ODCE - Capital Appreciation				
Average Annualized Rolling Return	0.6%	0.6%	0.6%	0.0%
Standard Deviation	9.2%	6.4%	4.5%	3.0%
% of Total Return from:				
Income	93.1%	92.5%	92.3%	99.7%
Capital Appreciation	6.9%	7.5%	7.7%	0.3%

Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.



Current Income versus Capital Appreciation Returns Analysis

Total return is the combination of two subcomponents: capital appreciation and current income. Historically, current income has provided the majority of the total return (85% or greater depending on holding period). Returns from capital ap-

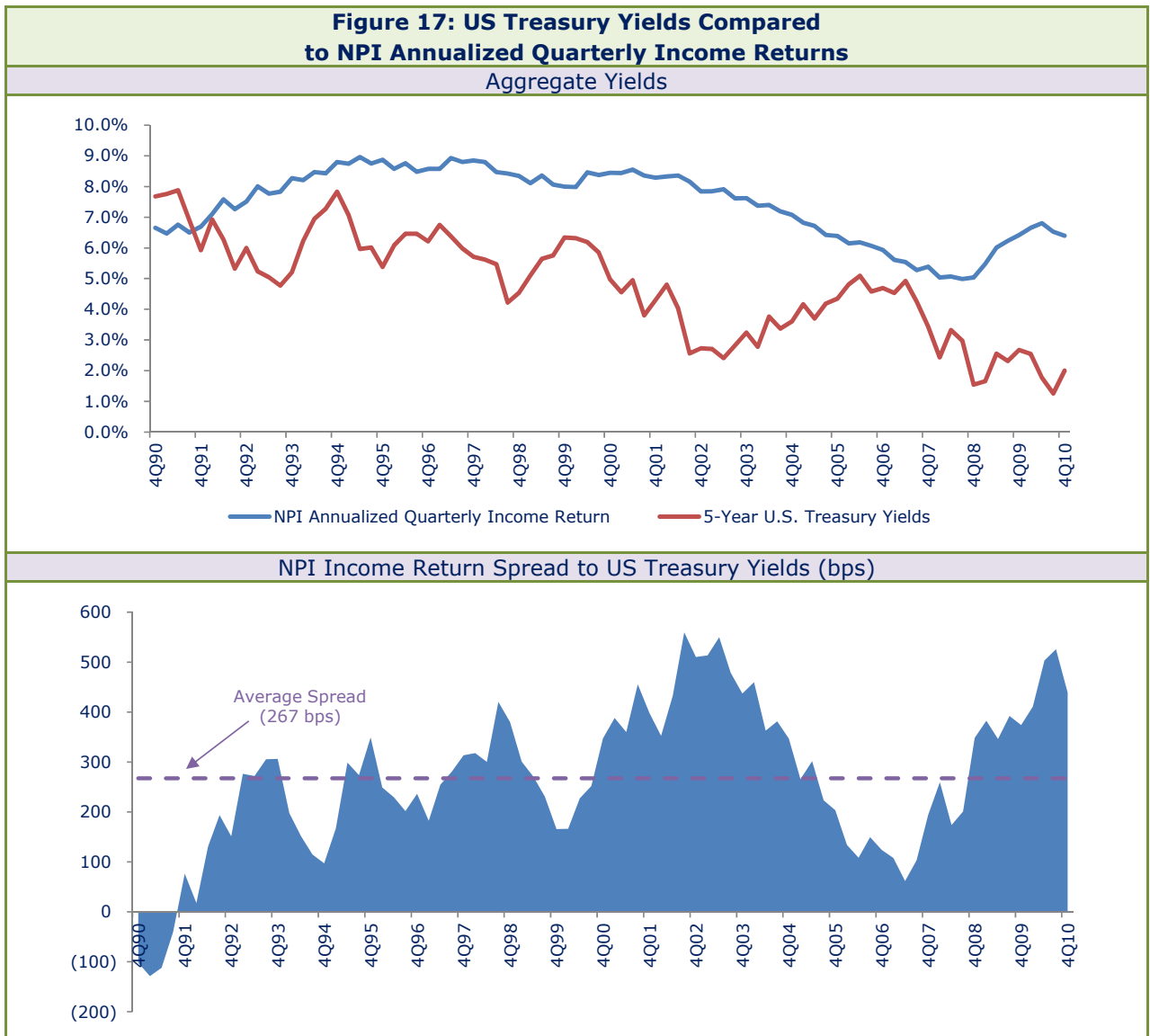
preciation are significantly more volatile than returns from current income.

Income Returns Compared to US Treasury Yields

Income returns for core real estate have historically been approximately 250-300 bps higher than comparable Treasury yields (see figure 17).

Figure 16: Income Returns Compared to US Treasury Yields				
	NPI Annualized Quarterly Income	Average US Treasury Yields		
		2-Year Yields	5-Year Yields	10-Year Yields
Average (1991–2010)	7.44%	4.14%	4.76%	5.25%
Standard Deviation	1.16%	1.94%	1.67%	1.42%
Average NPI Spread (bps)	--	330	267	218

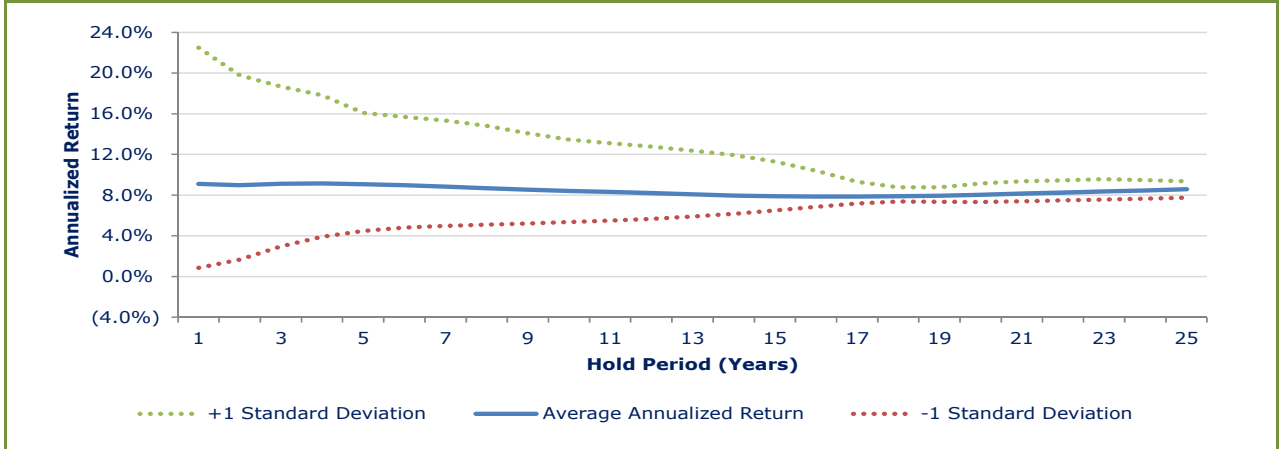
Source: NCREIF, the US Department of the Treasury and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.



Source: NCREIF, the US Department of the Treasury and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010. In the graph above, "Spread" is equal to the "NPI Annualized Quarterly Income Return" minus "5-Year US Treasury Yields".



Figure 18: NPI Holding Period Analysis



Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.

Holding Period Analysis

Over the long-term, core real estate can provide a stable source of investment returns. Figure 18 shows the average annualized rolling returns for holding periods ranging from one to 25 years. It also shows the one standard deviation variance from the average annualized rolling return. The variance of return possibilities (indicated by the standard deviation lines) is much greater for shorter holding periods than for longer holding periods.

As an example, for the NPI, the average annualized rolling return for a one-year holding is 9.1% with a standard deviation of 8.2%. This means that approximately 68% of the time, for a one-year hold, the return is between 0.9% and 17.3%, which is a large variance. The majority of this volatility (almost 90%) is attributable to capital appreciation. Given this, for short holding periods, the vintage year in which an investment is made is very meaningful.

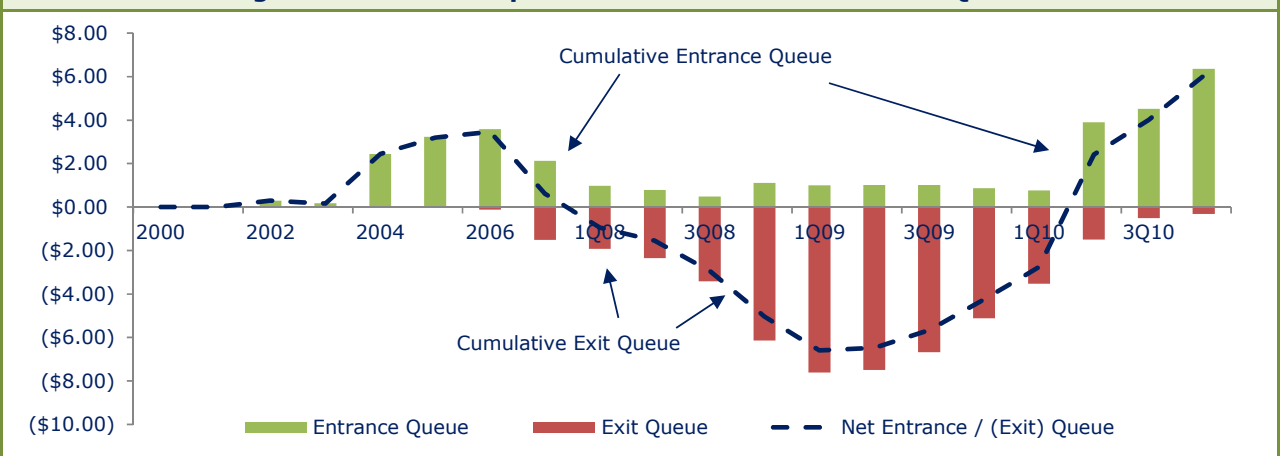
In comparison, the average annualized rolling return for a 10-year holding is 8.4% with a standard deviation of 3.1%. This means that approximately 68% of the time, for a 10-year hold, the return is between 5.3% and 11.5%. So, for longer holding periods, the specific vintage year in which an investment is made starts to become less important on a relative basis. The same trends apply for the ODCE.

Potential Risks of Investing in Core Real Estate

There are multiple risks associated with investing in private core real estate including:

- Investments can be illiquid, particularly during falling markets.
- Core real estate can be volatile over short time periods.
- Valuations are estimates based on appraisals.
- Leverage amplifies negative performance.

Figure 19: US Core Open-End Fund Entrance and Exit Queues



Source: NEPC, LLC compiled data from 13 US core open-end funds.



Illiquidity

Open-end funds are semi-liquid. Investors can partially control the decision of when to add or withdraw capital, but the ultimate deployment or return of capital is subject to fund manager constraints. In normal markets, liquidity (e.g., ability to withdraw amounts) is typically available on a quarterly basis. However, during times of distress (either market-level distress or fund-level distress), funds can be entirely illiquid based on the discretion of the fund manager. In 2008 and 2009, most open-end funds had significant exit queues that halted liquidity, prohibiting investors from withdrawing amounts from core funds during a period of rapidly declining valuations. Figure 19 shows the cumulative entrance and exit queues for the US core open-end fund universe since 2000.

CORE REAL ESTATE CAN BE VOLATILE OVER SHORT TIME PERIODS.

Closed-end funds are illiquid. Beyond specific fund provisions, the length of time to exit an investment is dictated by the life of the fund and the general partner. Separate accounts and direct investments are semi-liquid. Investment control rests with the investor and the time to exit an investment is dictated by the time to find a buyer and negotiate a sale.

Volatility

Core real estate can be volatile over short time periods. Volatility is largely driven by the capital appreciation component of total return. Figure 20 shows the average quarterly return and standard deviation for total return, income return, and capital appreciation for the NPI.

Volatility in core real estate is further illustrated in Figures 21 and 22, which show the quarterly gross return distribution for total return, income return, and capital appreciation for the NPI and ODCE. The quarterly distribution of income returns is fairly concentrated while the distribution for capital appreciation is broadly distributed.

Valuations are Appraisal Based Estimates

Appraisals are estimates based on analysis of projected income and of comparisons to transactions of similar properties. Appraised values can lag

Figure 20: NPI Quarterly Gross Returns

	Total Return	Current Income	Capital Appreci-
Average Return	2.18%	1.87%	0.31%
Standard Deviation	2.27%	0.25%	2.20%

Source: NCREIF and NEPC, LLC analysis. Data since 1Q 1978.

real-time market values and may differ from the price an unrelated party might be willing to pay for an asset in a sale. As such, appraisals do not represent the definitive worth of the asset. Figure 23 shows the percent difference between sales prices and last appraised values for recent transactions (data is based on 76 recent sales by US open-end core funds). In more than 38% of recent transactions, the sales prices were $\pm 10\%$ different from the last appraised value, and in only 10.5% were the sales prices the same as the last appraised values.

Leverage Amplifies Negative Performance

Leverage in real estate amplifies negative performance as debt holders have a first-priority claim to cash flows and the principal value of an asset. As the cash flow and value of an asset drop, the debt service and principal balance due remain the same, and the equity cash flows and equity value decrease. Figures 24 and 25 provide an illustrative example of the impact of leverage on equity value and levered yield⁶. As can be seen in Figure 24, a 20% drop in the value of an asset that is 40% levered causes a 33% decline in equity value.

Figure 25 shows the impact of a 20% decline in net operating income, which, if the asset is 40% levered and has all-in debt service of 6% (interest plus principal), decreases the levered yield from 7.7% to 5.3%.

Investing in Core US Real Estate Funds

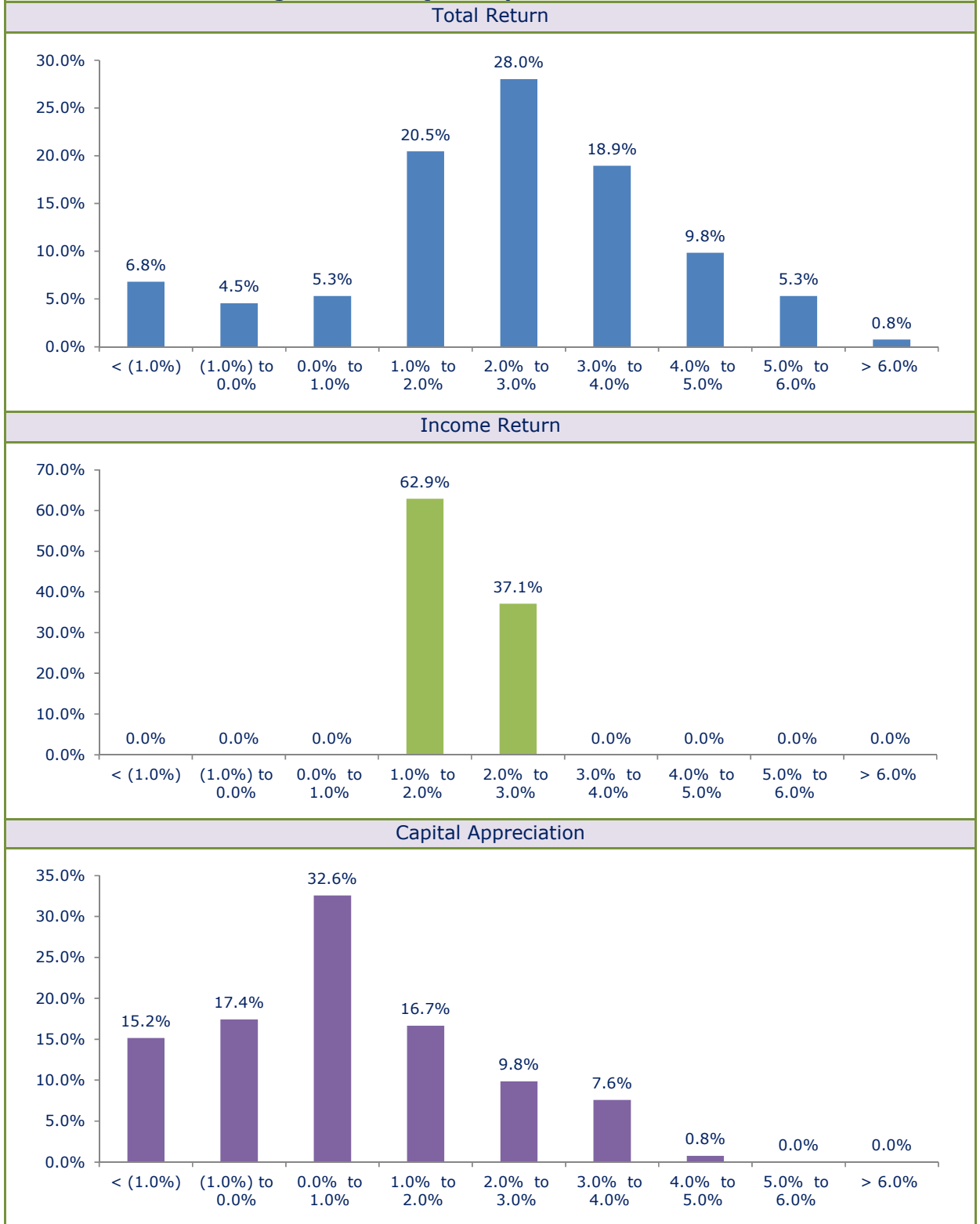
Portfolio Structure

Core real estate should be considered with other real estate investment styles or strategies as part of an overall real estate allocation (i.e., value-add, opportunistic, and debt-related). Figure 26

⁶ For purposes here, levered yield is calculated as NOI less debt service; this is not a true levered yield as it does not include items such as recurring capital expenditures.



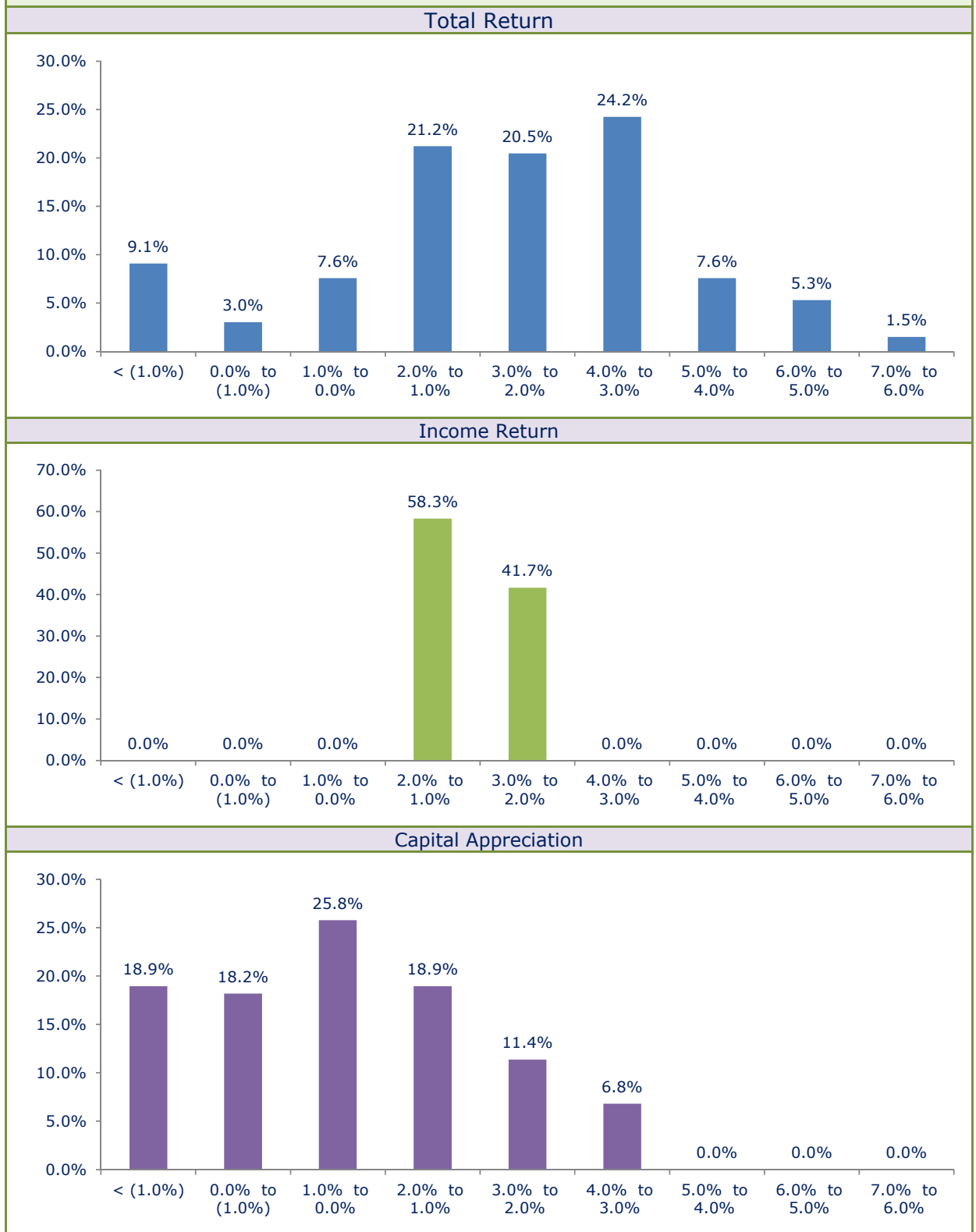
Figure 21: NPI Quarterly Return Distribution



Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.



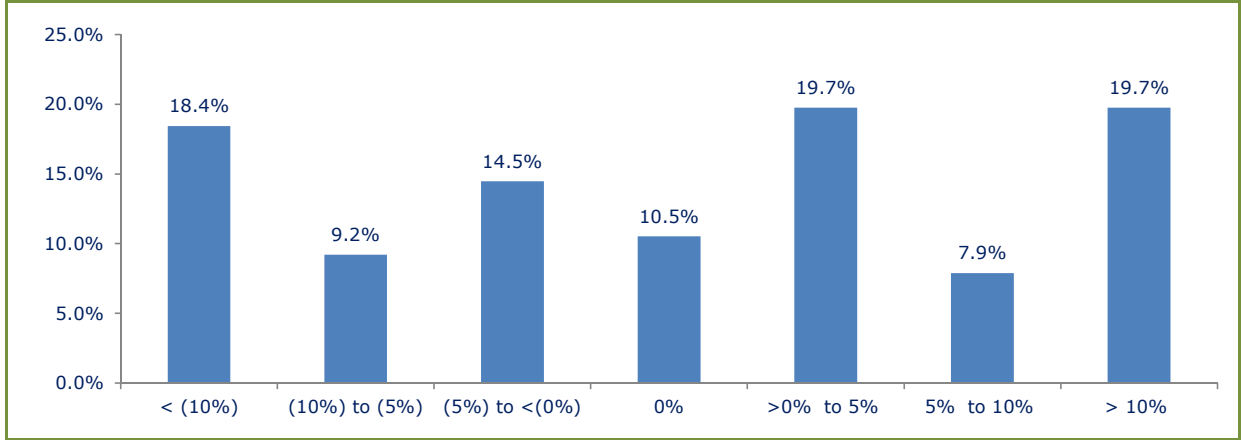
Figure 22: ODCE Quarterly Return Distribution



Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.



Figure 23: % Difference between Asset Sale Price and Last Appraised Value



Source: NEPC, LLC compiled data. Based on 76 recent transactions from select core open-end funds.

CORE REAL ESTATE SHOULD BE CONSIDERED WITH OTHER REAL ESTATE INVESTMENT STYLES OR STRATEGIES AS PART OF AN OVER-ALL REAL ESTATE ALLOCATION.

shows three illustrative plans and sub-allocations across real estate strategies. Debt-related strategies are included as either value-add or opportunistic based on target returns/expected risk of the underlying fund. In general, income/yield-focused plans with lower risk/return expectations should be more heavily weighted toward core real estate (in Figure 26, shown as example plan type 1, “Income Focused”). Plans that seek higher returns from real estate should be more opportunistic/capital appreciation focused (in Figure 26, shown as example plan type 3, “Appreciation Focused”). Ultimately, the specific sub-allocations within real estate should be made in conjunction with total plan investments, plan return and risk expectations, and plan liquidity requirements.

Portfolio Construction

Once a specific portfolio allocation to core real estate has been determined, there are four main considerations that drive underlying portfolio construction: vehicle structure, number of investments, investment/manager selection, and investment pacing.

Vehicle Structure

For the majority of plans, open-end funds are the most suitable investment vehicle. Open-end funds allow for smaller investments in large diversified asset pools. They also provide investors

with mechanisms for adding and withdrawing capital at their discretion (dependent on fund liquidity restrictions determined by the fund manager). Additionally, many funds provide the option to reinvest dividends to manage core real estate exposure. As previously discussed, closed-end funds are not ideal vehicles for long-term investment in core real estate. Separate accounts and direct investment are mostly applicable to large plans.

Number of Investments

For plans investing in open-end funds, two to three funds are preferable to provide asset diversity and decrease manager specific risk. One diversified fund is also adequate; however, investing in only one fund increases manager-specific risk.

Investment/Manager Selection

There are multiple US-focused open-end core funds available for plans investing in open-end funds. A specific recommendation of each fund is not provided as part of this survey.

Investment Pacing

Over shorter time periods, core real estate experiences volatility, which impacts investment pacing considerations. The main options for pacing are: dollar-cost average over multiple years to build to a target allocation, or make a one-time investment (commitment) to reach a target allocation. Figure 27 shows the historical five-year internal rate of return (IRR) for dollar-cost averaging versus a one-time investment. Figure 27A shows the five-year IRRs for each option and Figure 27B shows the net difference in IRR between the two options. As the charts illustrate, from 1978 through 2002, on average, the returns for dollar-



Figure 24: Asset Value Decline and Impact on Equity Value		
% Change in Asset Value	0%	(20%)
Asset Purchase Price	\$100	\$100
% LTV at Purchase	40%	40%
Equity at Purchase	\$60	\$60
Debt at Purchase	\$40	\$40
Adj. Asset Value	\$100	\$80
Adj. Equity Value	\$60	\$40
% Change in Equity Value	0%	(33%)

Source: NEPC, LLC analysis.

Figure 25: NOI Decline and Impact on Levered Yield		
% Change in NOI	0%	(20%)
Asset Value at Purchase	\$100	\$100
Equity at Purchase	\$60	\$60
Debt at Purchase	\$40	\$40
% LTV	40%	40%
NOI	\$7.0	\$5.6
Debt Service	(\$2.4)	(\$2.4)
Levered Cash Flow	\$4.6	\$3.2
Levered Yield	7.7%	5.3%

Source: NEPC, LLC analysis.

Figure 26: Illustrative Plan Real Estate Allocations						
Investment Strategy	Primary Return Driver	Returns		Example Target Allocations		
		Typical Fund Target IRR (Gross)	Typical Fund Target IRR (Net)	- 1 - Income Focused	- 2 - Balanced Plan	- 3 - Appreciation Focused
Core	Income	8 - 9%	7 - 8%	80% ± 20%	50% ± 20%	10% ± 10%
Value-Add	Income + Capital Appreciation	14 - 17%	10 - 12%	15% ± 10%	30% ± 10%	50% ± 10%
Opportunistic	Capital Appreciation	18%+	13 - 15%	5% ± 5%	20% ± 10%	40% ± 10%
Risk Expectation				Lower	Moderate	Higher
Volatility Expectation				Lower	Moderate	Higher
Weighted Average of Typical Fund Target IRRs (Net)				8.4%	9.9%	11.9%
- % of Return Expected from Income				70%	60%	30%
- % of Return Expected from Capital Appreciation				30%	40%	70%

Source: NEPC, LLC.



Figure 27: IRR Difference Between Dollar-Cost Averaging and a One-Time Investment

Figure 27A: 5-Year IRR Following Initial Investment

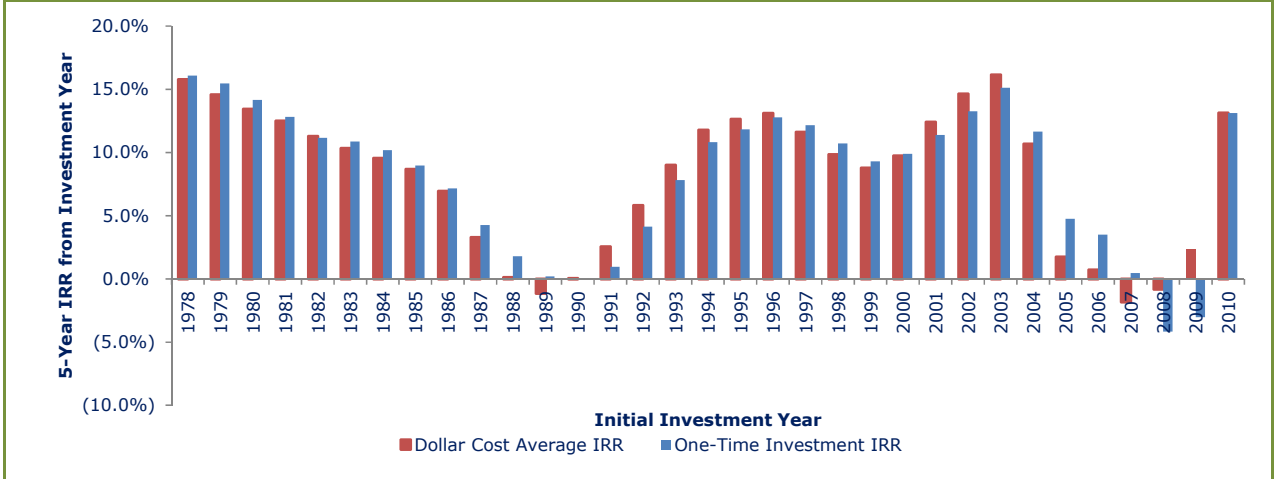
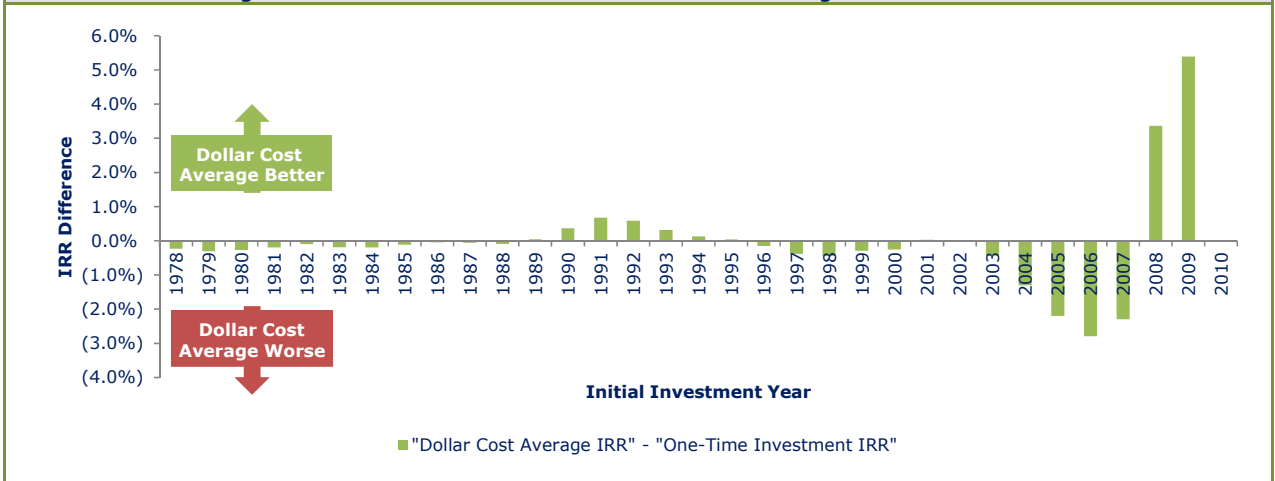


Figure 27B: Net Difference in 5-Year IRR Following Initial Investment



Source: NCREIF and NEPC, LLC analysis. Data from 1Q 1978 through 4Q 2010.

cost averaging and a one-time investment were relatively comparable. From 2003 through 2009, given the volatility of the market, the returns differed greatly. Given this data, for more conservative investors focused on minimizing downside risk, dollar-cost averaging provides the lower risk pacing option. For more opportunistic investors, less frequent larger investments based on market timing provide the best alternative for outsized returns.

Conclusion

Core real estate is institutional-quality, commercial real estate that generates a return primarily from current income with some capital appreciation. This asset class can play an important role in a long-term investment program. It can provide diversification benefits, has low historical correlations to other asset classes, provides current in-

come and the potential for capital appreciation, and can be a partial inflation hedge.

Investments in core real estate should be viewed as long-term investments. Returns from core real estate have averaged 8%–9% per year before fees. Income returns for core real estate have historically been approximately 250–300 bps higher than comparable Treasury yields. Investment strategies generally use low leverage, typically less than 30%. Regarding leverage, rolling returns for the NPI (which is unlevered) have historically exceeded the ODCE (which is levered). This indicates that, on average, higher leverage in core real estate has not increased returns over long time periods.

There are multiple risks associated with investing in core real estate including: investment illiquidity (particularly during falling markets), asset value



volatility (over shorter time periods), asset valuation inaccuracies (due to use of estimates/appraisals for determining asset values), and leverage amplifying negative performance during falling markets.

For many investment programs, open-end funds are the most suitable vehicle for investment in private core real estate. Separate accounts and direct investment also provide access to core real estate; however, they are mostly applicable for larger programs. Closed-end funds are not ideal vehicles for long-term investment in core real estate.

Appendices

Appendix 1: Overview of Real Estate Investment Styles

Real estate investment styles can be divided into four main subcategories based on strategy and expected risk profile: core, value-add, opportunistic and debt-related investments.

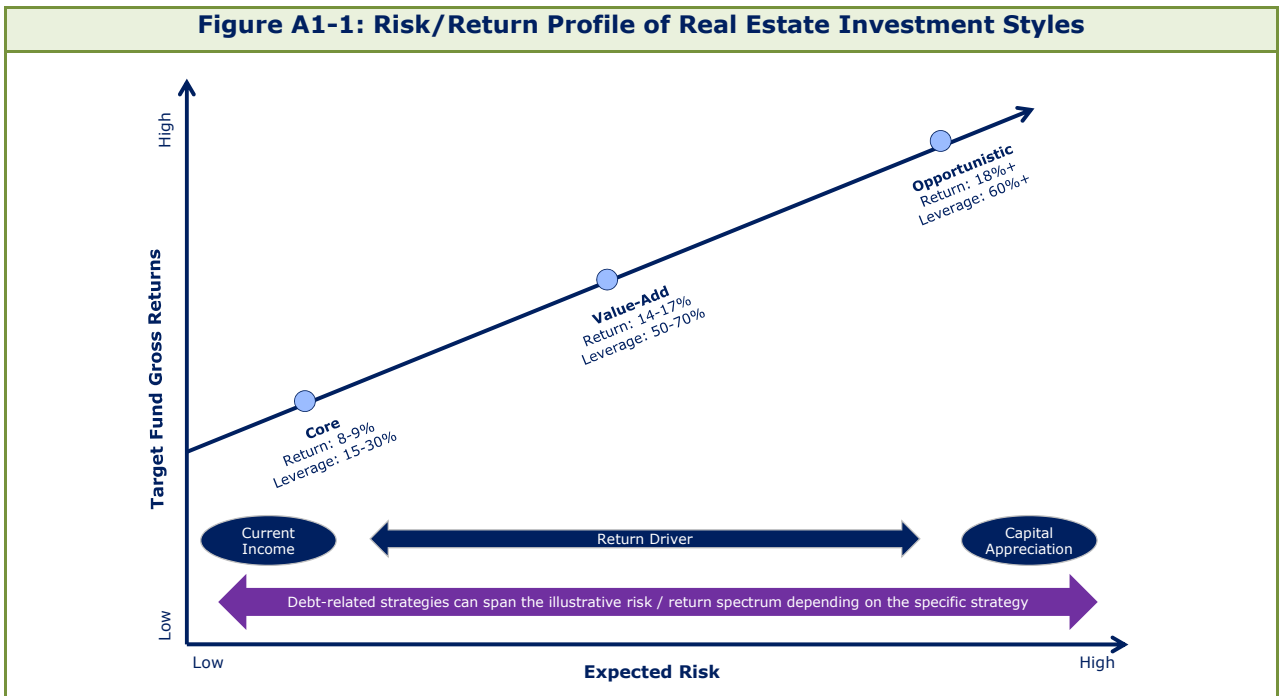
The core, value-add, and opportunistic subcategories are typically equity investments in properties in which the investor has decision-making control over the asset. Leverage is frequently used in these strategies with the goal of increasing returns. The debt-related subcategory involves non-control investments (i.e., loans) that are senior in priority of repayment to the equity holder(s). There is overlap between equity and debt strate-

gies in that some equity strategies involve investing in debt positions of assets with the goal of taking control of the assets through foreclosures or bankruptcy processes—and thereby becoming the equity holder of the assets. Figures A1-2 through A1-5 summarize each of the styles.

Appendix 2: Real Estate Valuation Metrics

The capitalization rate (cap rate) is the most commonly used valuation metric for real estate. A cap rate is the ratio of net operating income (NOI) produced by an asset divided by its value. A cap rate is similar (though not exactly equal to) the income yield of a property. NOI can be defined as nominal NOI, which does not include recurring capital expenditures necessary for the upkeep and maintenance of a property, or economic NOI, which includes recurring capital expenditures. Economic NOI (and the implied cap rate) is closer to the true unlevered cash flow yield of a property. These two NOIs produce two different cap rates (calculations shown in Figure A2-1).

In addition to cap rates, other commonly used metrics for real estate are: price per square foot for office, industrial and retail assets, and price per unit for multifamily assets (for the four main property types, similar metrics apply for the non-core property types). These metrics normalize for the size of an asset and can be somewhat related to the cost to build an asset (replacement cost). As an example, the appraised value of a 100,000-square-foot office building might be \$20 million.



Source: NEPC, LLC.



Figure A1-2: Core	
Investment Strategy/ Asset Characteristics	<ul style="list-style-type: none"> • Stable income-producing properties • High occupancy rates and market rate rents • High quality, credit tenants • Long-term leases • Very limited deferred maintenance
Main Property Types	Office, Retail, Multifamily, Industrial
Target Markets	Strong, high-barrier-to-entry, urban infill locations
Typical Leverage	15%–30% LTV
Target Fund Gross Returns	8%-9%
Primary Return Driver	Mostly current income

Source: NEPC, LLC.

Figure A1-3: Value-Add	
Investment Strategy/ Asset Characteristics	<ul style="list-style-type: none"> • Lower occupancy rates • Below market rents • Lower quality tenants • Short-term leases and/or concentrated maturities • Investments frequently require capital investment to drive rent growth/asset values including upgrading exteriors, interiors and curbing deferred maintenance
Main Property Types	Diversified
Target Markets	Mixed locations including primary, secondary and tertiary markets
Typical Leverage	50%–70% LTV
Target Fund Gross Re-	14%–17%
Primary Return Driver	Current income and capital appreciation

Source: NEPC, LLC.

Figure A1-4: Opportunistic	
Investment Strategy/ Asset Characteristics	<ul style="list-style-type: none"> • Limited current income • May include development, recapitalization, distressed investments, land investments or other opportunities resultant of unique market conditions
Main Property Types	Diversified
Target Markets	Mixed locations including primary, secondary and tertiary markets
Typical Leverage	> 60% LTV
Target Fund Gross Re-	> 18%
Primary Return Driver	Capital appreciation

Source: NEPC, LLC.

Figure A1-5: Debt-Related	
Investment Strategy/ Asset Characteristics	<ul style="list-style-type: none"> • Investments are senior to common equity • Examples include preferred equity, mezzanine debt, b-notes, and senior debt • Generally have limited upside potential
Main Property Types	Diversified
Target Markets	Mixed locations including primary, secondary and tertiary markets
Leverage	Varies depending on risk/return profile of strategy
Target Fund Gross Returns	Varies depending on risk /return profile of strategy
Primary Return Driver	Current income (and the potential for some capital appreciation depending on risk /return profile of strategy)

Source: NEPC, LLC.



Figure A2-1: Illustrative Example: Cap Rate Calculation	
Property Value	\$1,000
Property Revenue	\$100
Property Operating Expenses	(\$25)
Nominal NOI	\$75
Recurring Capital Expenditures	(\$10)
Economic NOI	\$65
Implied Nominal Cap Rate	7.5%
Implied Economic Cap Rate	6.5%

Source: NEPC, LLC.

This translates to a \$200 price-per-square-foot valuation (which includes the physical or vertical value of the building and the underlying value of the land on which the asset is located). Caution should be applied when comparing the value of an asset to replacement cost because, depending on market conditions, the two values can differ greatly (ultimately, the value of an asset should be entirely based on the present value of future cash flows that are expected to be generated from the asset). In addition, the value of an older property that is out of date and in need of refurbishment is not comparable to the replacement cost for a new, high-quality property.

Appendix 3: Leverage in Core Real Estate

Core real estate typically uses low leverage. The ODCE has a leverage maximum of 40% to be included in the index. As of December 31, 2010, the leverage ratio for the ODCE was approximately 28%.

From a risk perspective, higher leverage typically means higher risk to equity holders. This is the result of debt holders having a first-priority claim to cash flows and the principal value of an asset. As the cash flow and value of an asset change,

Figure A3-1: Illustrative Example: Single Property Leverage Ratio	
Property Asset Value	\$100
Total Property Debt	\$25
Implied Equity Value for Property	\$75
Leverage Ratio (\$25/\$100)	25%

Source: NEPC, LLC.

the debt service (interest and principal payments) and principal balance due remain the same, and the equity cash flows and equity value change. The change in equity value is amplified as leverage increases (both positively and negatively).

For a single property or group of properties, the definition of leverage is straightforward. It is the ratio of total debt outstanding against a property (or properties) divided by total asset value. Figure A3-1 provides an illustrative example:

For a fund (such as an open-end core fund), the concept of leverage becomes more complex as there are multiple options to use for the numerator and denominator, each of which provides a different view of leverage and implied riskiness of a fund. Figure A3-2 provides a short summary of important terms that can be used to describe

Figure A3-2: Fund Leverage Components (for Open-End Core Funds)		
Numerator Terms		
Total Debt	At Fair Value	Total debt (fair value) is the sum of total debt outstanding for the fund at fair market value (FMV). FMV is an estimate of the market value of the debt based on current market conditions. This value may be different from the
	At Principal Balance	Total debt (principal balance) is the sum of total debt outstanding for the fund based on the actual outstanding balance or principal balance due.
Net Debt	At Fair Value	Net debt (fair value) is equal to the total debt (fair value) less cash and cash equivalents that can be used to repay debt outstanding.
	At Principal Balance	Net debt (principal balance) is equal to the total debt (principal balance) less cash and cash equivalents that can be used to repay debt outstanding.

Source: NEPC, LLC.



leverage. Although total debt (fair value) divided by gross asset value is frequently meant when the term “leverage” is used, it is important to understand the differences between terms.

Disclaimer

- Past performance is no guarantee of future results.
- Information on market indices is received from sources external to NEPC, and other data used to prepare this report was obtained directly from the investment manager(s). While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained herein.
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In addition, it is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds, real estate, and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment.
2. Leverage and other speculative practices may increase the risk of loss.
3. Past performance may be revised due to the revaluation of investments.
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms.
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value.
6. Funds are not subject to the same regulatory requirements as registered investment vehicles.
7. Managers are not required to provide periodic pricing or valuation information to investors.
8. Funds may have complex tax structures and delays in distributing important tax information.
9. Funds often charge high fees.
10. Limited partnership agreements often give the manager authority to trade in securities, markets, or currencies that are not within the manager’s realm of expertise or contemplated investment strategy.

