

**The Real Estate Market's Impact on
State & Local Pension Plans:
Some Observations**

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September 24, 2010
Federal Reserve Bank of Atlanta

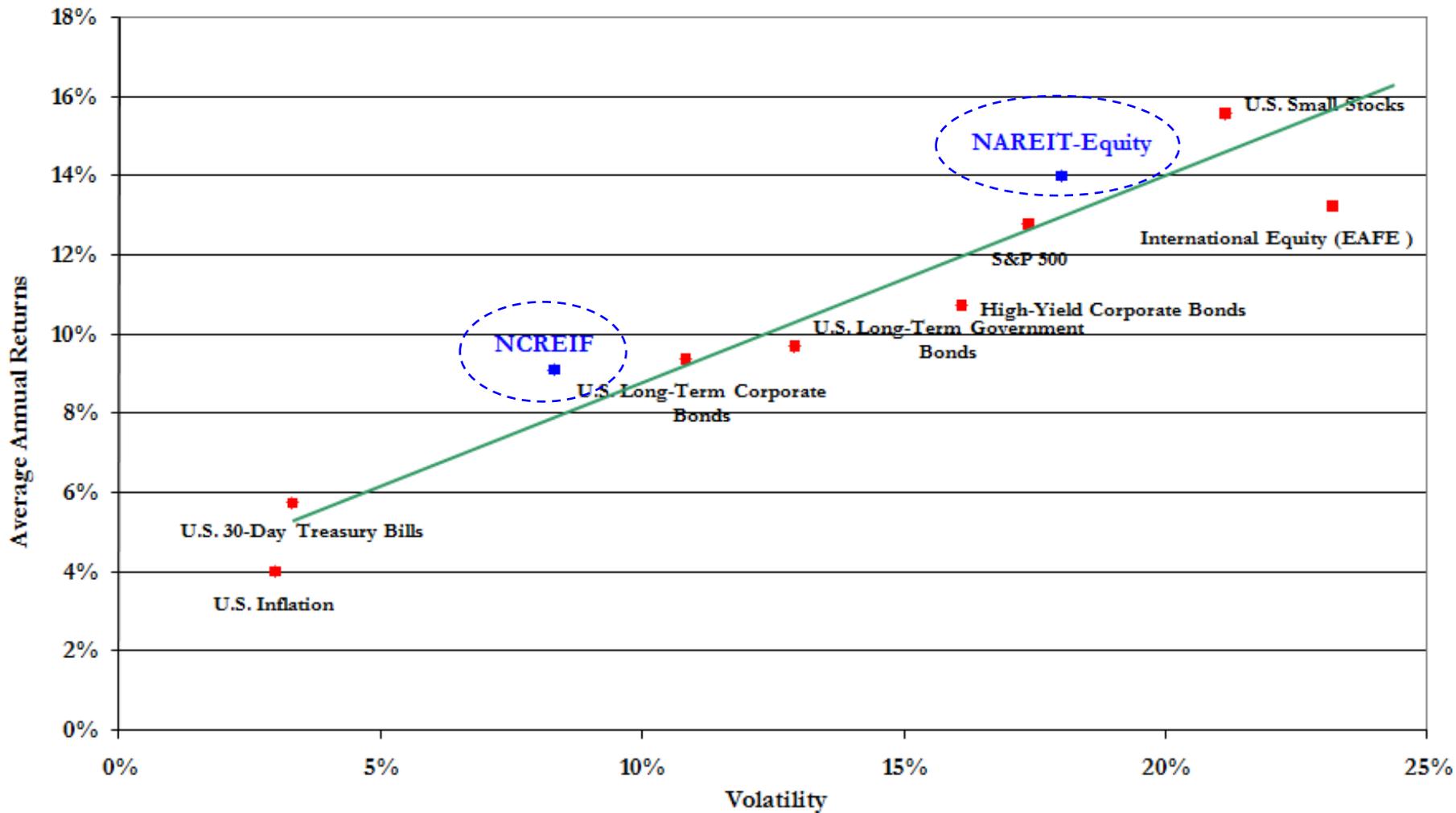
Real Estate's Impact on Pension Funds

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- **Why Commercial Real Estate?**
 - Historical multi-asset returns
 - Increasing allocations to “alternatives” – including real estate
 - Large funds tend to have higher real estate allocations
- **A Return to Core Real Estate**
 - Traditionally, pension plans were “core” investors
 - In a reach for return, explosive growth in non-core funds
 - Then, a correction and return to core. Why?
 - Examining disappointing non-core performance.
- **Private-Market Commercial Real Estate Spillover:**
 - Public Real Estate Equities
 - Commercial Real Estate Lending
- **Feedback System: Housing ↔ Commercial Real Estate**
- **Conclusions**
- **Appendices**

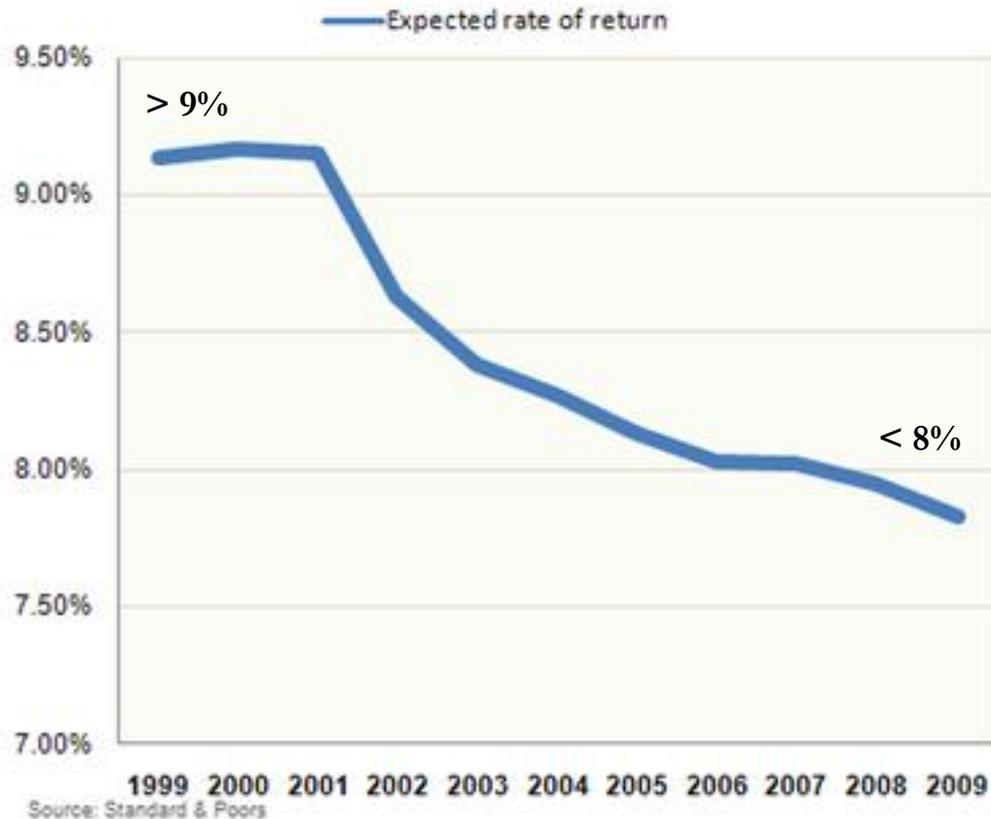
Why the Interest in Real Estate?

Performance of Major Asset Classes for the Period 1978 through 2009



Declining Expected Portfolio Returns

- The increased allocation to alternative investments is at least partly attributable to the decline in the assumed rate of return on (defined-benefit) pension assets.

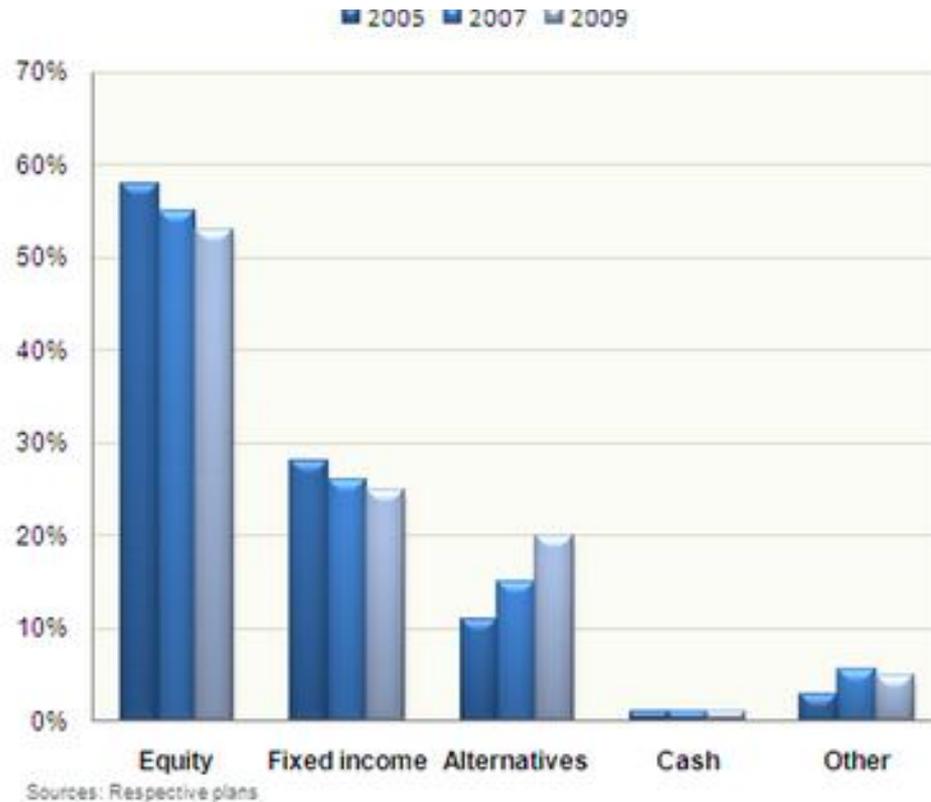


Source: *Pension & Investments*, August 23, 2010

Public Pension Fund Increase Alternatives

- “The largest public pension plans have almost doubled their target allocations to alternative investments in the past five years. The median allocation now stands at 20%”

Aaron Cunningham, *Pension & Investments*, August 23, 2010



Who Are the Large Pension Fund Investors?

Top 20 Public Pension Funds Based on Real Estate Holdings as of September, 2009 based upon Defined-Benefit Holdings

	<u>Total Assets</u>	<u>Real Estate Holdings</u>	<u>Real Estate Holdings as a Percentage of Total Assets</u>
	(in \$millions)		
1. California State Teachers' Retirement System	\$130,257	\$12,711	9.8%
2. California Public Employees' Retirement System	197,610	12,554	6.4%
3. State Board of Administration of Florida	110,050	6,585	6.0%
4. New York State Common Retirement Fund	125,692	6,150	4.9%
5. New York State Teachers' Retirement System	77,640	5,679	7.3%
6. State of Michigan Retirement Systems	46,425	4,577	9.9%
7. State Teachers' Retirement System of Ohio	57,896	4,335	7.5%
8. Oregon Public Employees Retirement Fund	50,556	4,030	8.0%
9. Ohio Public Employees Retirement System	67,321	3,855	5.7%
10. Pennsylvania Public School Employees' Retirement	45,740	3,835	8.4%
11. Teachers' Retirement System of the State of Illinois	31,326	3,312	10.6%
12. Teacher Retirement System of Texas	91,358	3,152	3.5%
13. Los Angeles County Employees' Retirement Association	33,363	3,107	9.3%
14. Massachusetts Pension Reserves Investment Management Board	41,757	3,054	7.3%
15. North Carolina Retirement Systems	65,881	3,035	4.6%
16. Virginia Retirement System	46,912	2,838	6.0%
17. State of Wisconsin Investment Board	70,925	2,377	3.4%
18. Public Employees' Retirement Association of Colorado	32,151	2,200	6.8%
19. Retirement Systems of Alabama	23,624	2,090	8.8%
20. Alaska Retirement Management Board	<u>13,710</u>	<u>1,702</u>	<u>12.4%</u>
Total/Average - Top 20	<u>\$1,360,194</u>	<u>\$91,178</u>	<u>6.7%</u>
Total/Average - Top 50	<u>\$1,997,644</u>	<u>\$115,874</u>	<u>8.8%</u>

Source: *Pensions & Investments* and author's calculations.

Note: Real estate figures exclude REITs, timber and agriculture.

More Broadly, Consider Plan's RE Holdings

- The allocations of defined-benefit plans to (commercial) real estate have been generally increasing over the last 15 years or so.
- This increase has generally come at the expense of bond allocations (and, to a much lesser extent, cash allocations).
- As compared to other types of plans, public plans' allocations to real estate is typically:
 - higher than corporate plans, but
 - below endowment/foundations and union plans.

Exhibit 2: Plan Sponsor Asset Allocation 1996–2009

Plans Reporting Real Estate Equities for All Years—Sample Group. Percentage Allocation—Major Asset Type

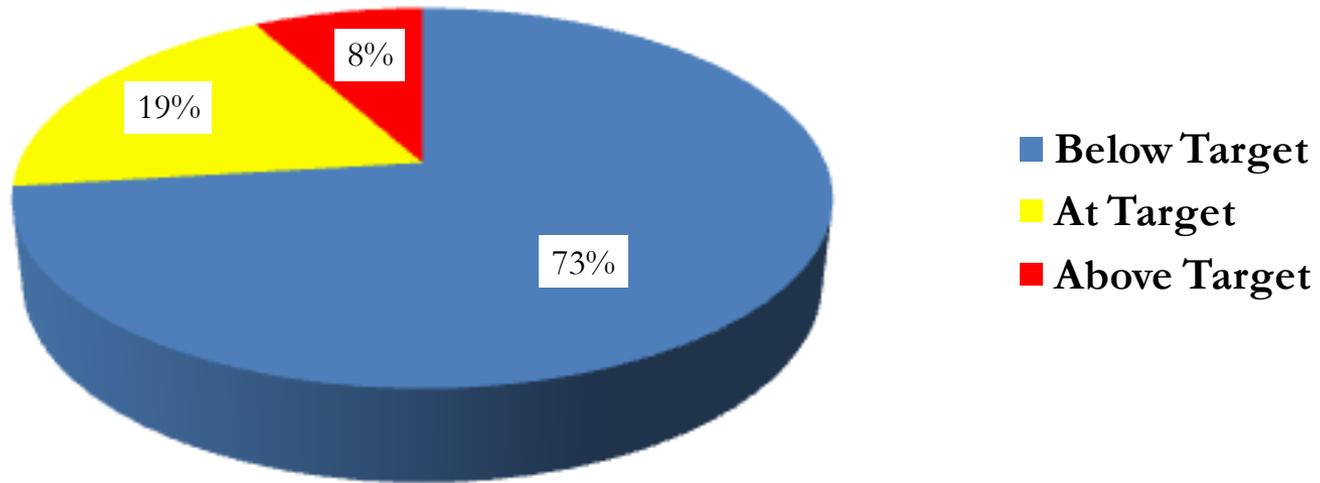
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Real Estate Equity														
All Plan Sponsors	4.9	4.8	4.5	4.6	4.4	4.9	5.6	5.7	5.7	5.7	6.2	7.5	7.8	7.9
By Type														
Public	4.9	4.8	4.5	4.8	4.7	5.3	6.0	6.1	6.1	6.1	6.7	8.2	8.7	8.4
Corporate	4.5	4.0	3.6	3.1	2.9	2.7	3.1	3.4	3.4	3.4	3.3	3.9	3.9	4.5
Endowments/ Foundations	6.4	6.9	7.0	7.3	7.1	6.7	7.5	7.5	6.8	7.3	8.1	8.7	9.2	9.7
Unions	5.0	5.8	6.1	4.9	4.9	6.0	6.6	6.7	7.1	7.4	7.6	11.6	11.6	12.5

Source: PREA | *Investor Report*, August 2010.

Most Plan's Under-Allocated to RE

- Since most institutional investors are beneath their targeted real estate allocation, real estate is likely to remain an important part of pension plan portfolios:

Current Level of Real Estate Allocations Compared to Target Allocations



Source: Preqin

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Increasing Allocations to Non-Core Real Estate

- Public plans have aggressively rebalanced their portfolios over the last 5-10 years:
 - Went from a 75/25 mix between core and non-core real estate
 - Presently, approximately a 50/50 mix
 - Implies the majority of new investment dollars went into non-core funds

Exhibit 8: Distribution of Private Real Estate Investments by Strategy—All Plans

Excludes debt and investments not readily allocable by strategy

	\$ Millions	2009 % of Private RE Equity	\$ Millions	2008 % of Private RE Equity	2004 % of Private RE Equity
Core	57,847.9	52.4	67,510.0	53.9	70.4
Value-Added	25,442.1	23.0	27,515.7	22.0	17.4
Opportunistic	27,128.6	24.6	30,120.2	24.1	12.2
Total	110,418.7	100.0	125,145.9	100.0	100.0
Breakdown by Fund Type					
State or Municipal					
Core		49.9		51.6	72.2
Value-Added		20.6		20.7	17.4
Opportunistic		29.5		27.7	10.4
Total		100.0		100.0	100.0

What is “Core” Real Estate?

- Core real estate are those properties, located in top-tier markets, that are built and “fully” leased in the following property types:
 - apartments,
 - industrial,
 - office,
 - retail, and
 - (perhaps?) hotels.
- Everything else is “non-core”:
 - development and extensive renovation/rehabilitation (including core property types (*e.g.*, under-construction office building))
 - non-core property types:
 - condominiums,
 - golf course communities
 - senior-living facilities
 - student housing
 - vineyards,
 - *etc.*

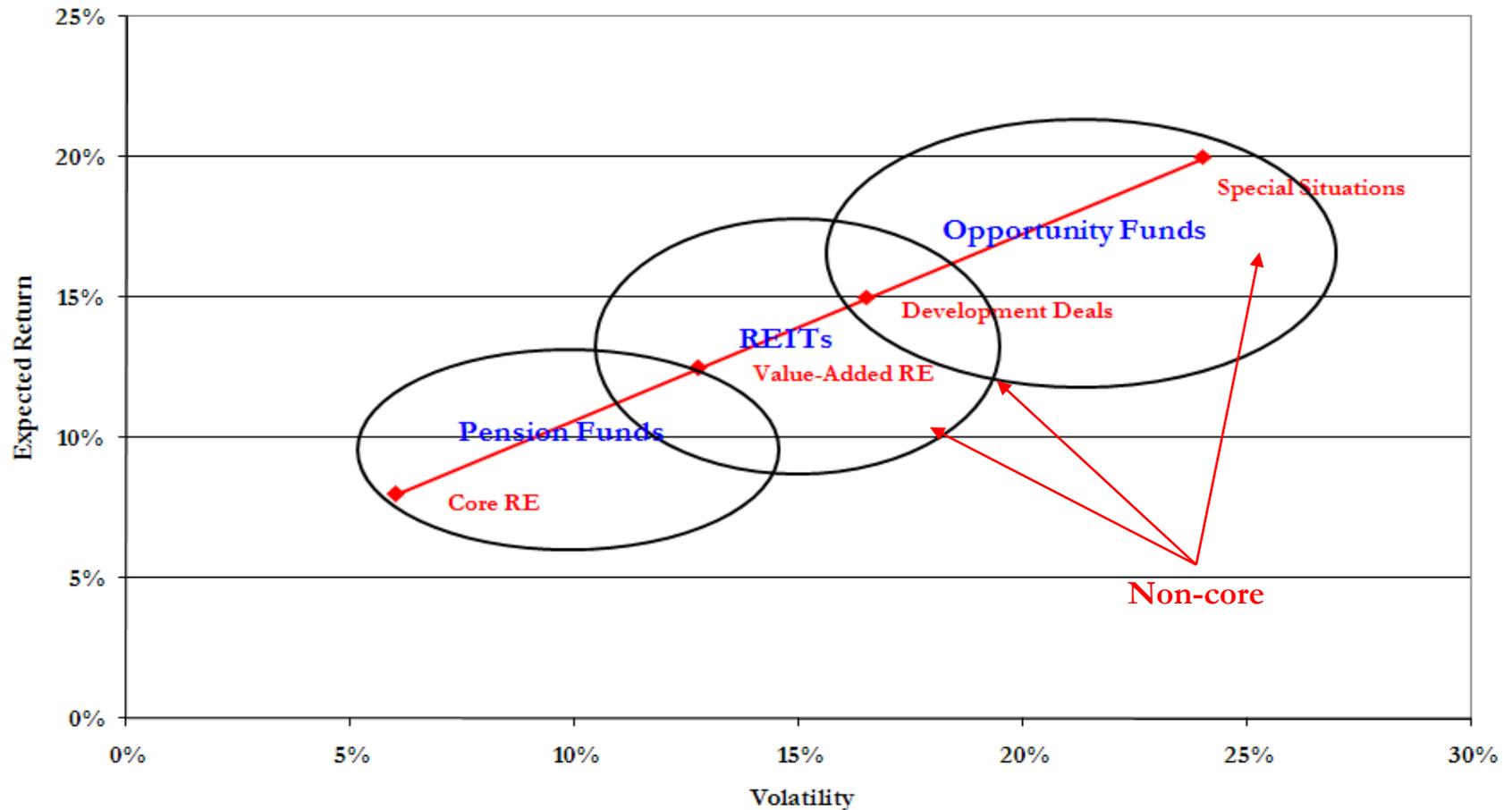
- Non-core has been “where the action is”
- Consider the explosive growth of RE-oriented private equity firms:
 - Apollo,
 - Blackstone
 - Colony Capital,
 - \vdots
 - Walton Street
 - Whitehall Funds
- 2007 was a watershed year – consider the dramatic tilt in institutional investors’ allocations:
 - \$44.5 billion targeted to domestic real estate
 - \$36.3 billion (~80%) to private real estate
 - \$24.7 billion (~70%) to non-core (*i.e.*, value-added and opportunistic),
 - \$11.6 billion (~30%) to core (*i.e.*, stabilized apartment, industrial, office & retail)

Source: Kingsley Associates and Institutional Real Estate, Inc.

Non-Core ← Generally Higher Returns

- Non-core strategies offer higher expected returns – but with greater risk.

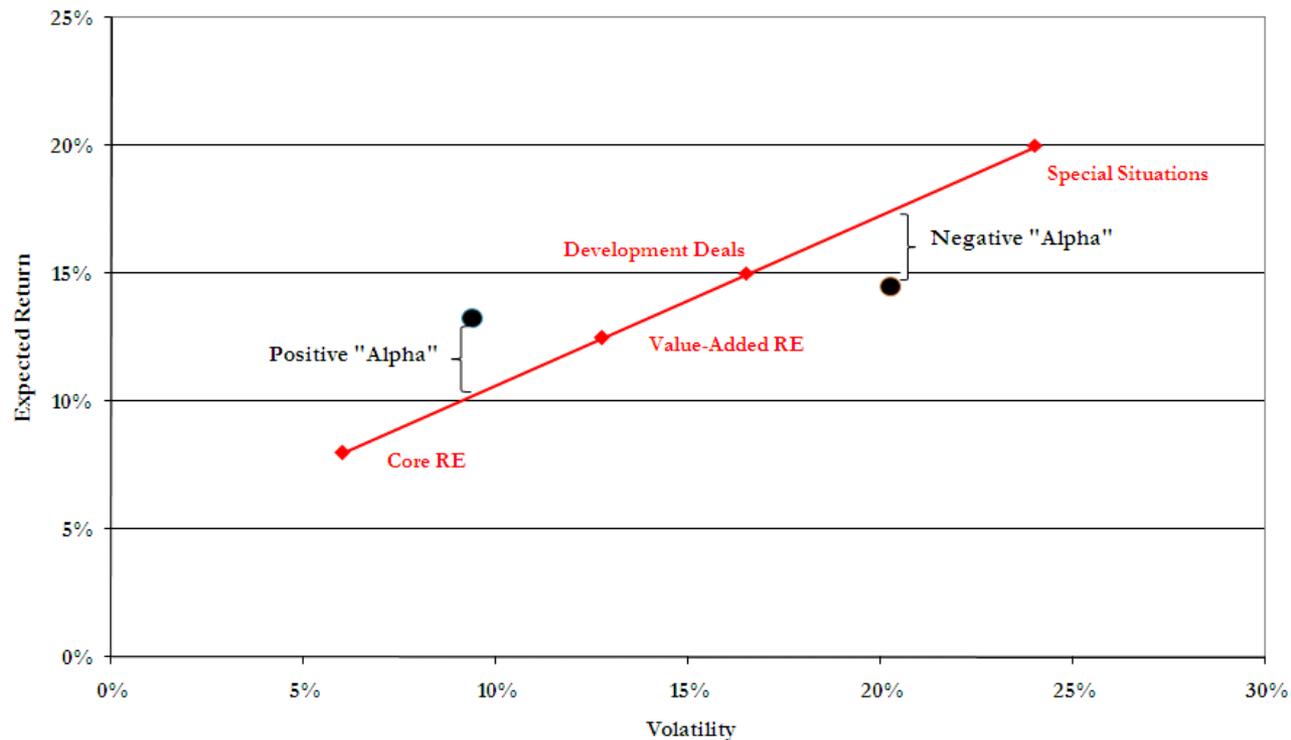
Illustration of Risk/Return Continuum



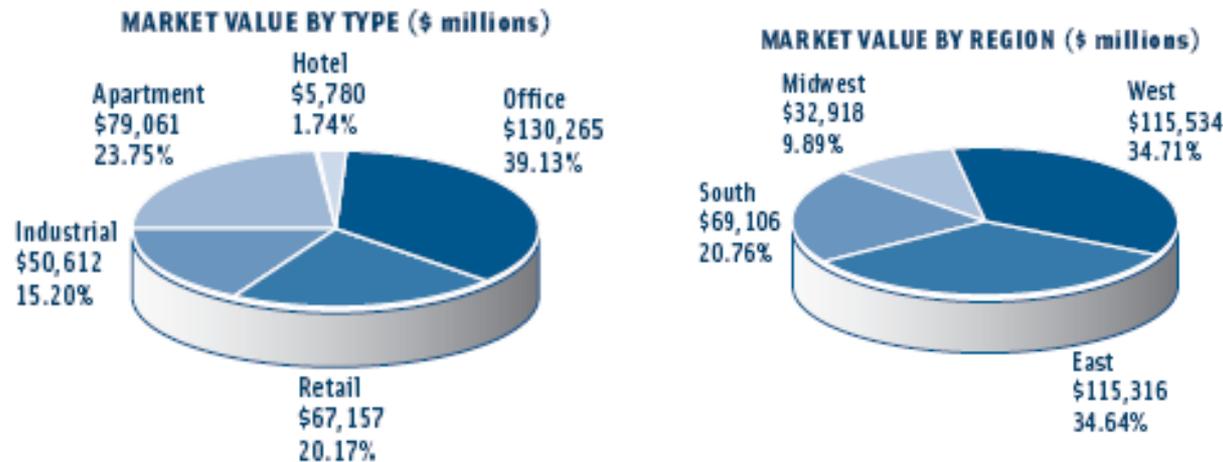
Institutional Investors Searching for Higher Returns | “Pitched” as Positive Alpha

- Investors seeking higher real estate returns
(to help offset declining expected returns elsewhere in the portfolio).
- Higher $E[\text{Returns}]$ pitched as (positive) “alpha” (α).
- However, alpha is often misunderstood/abused in practice
- Regardless of understanding, difficult to estimate alpha *ex ante*

Illustration of "Alpha": Risk-Adjusted Returns



- **NCREIF = National Council of Real Estate Investment Fiduciaries**
 - An index of privately held, institutional U.S. core real estate
 - Approximately 6,100 properties, worth \$330 billion

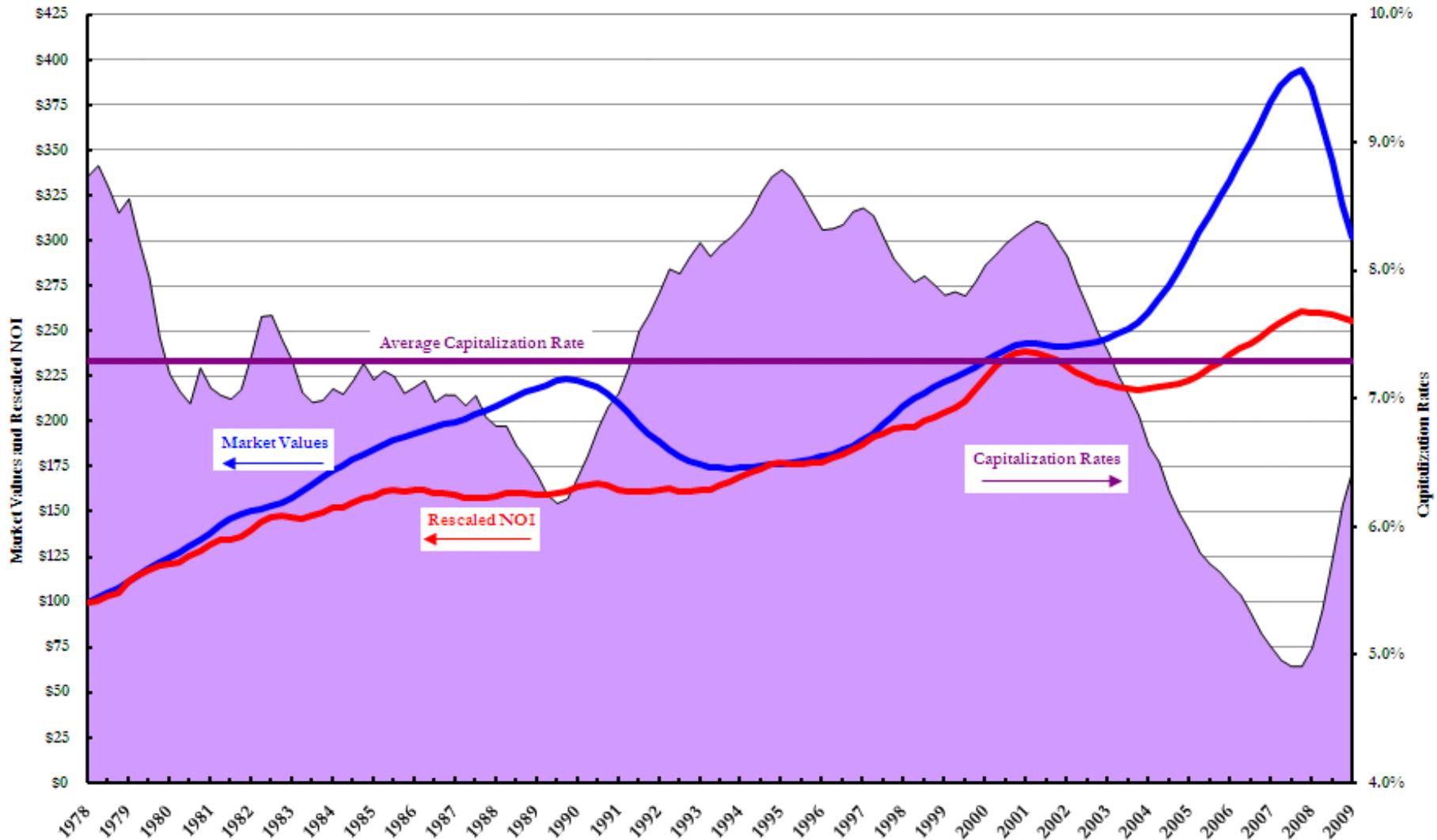


- Income and appreciation returns are reported quarterly – since 1978
 - Caveat: appreciation returns are primarily appraisal-based
- **IPD = Investment Property Databank**
 - Serves the same purpose in other developed countries
 - However, for most countries, the time series is less than 10 years old

Then Came the Correction:

Path of NCREIF Market Values, Incomes & Cap Rates

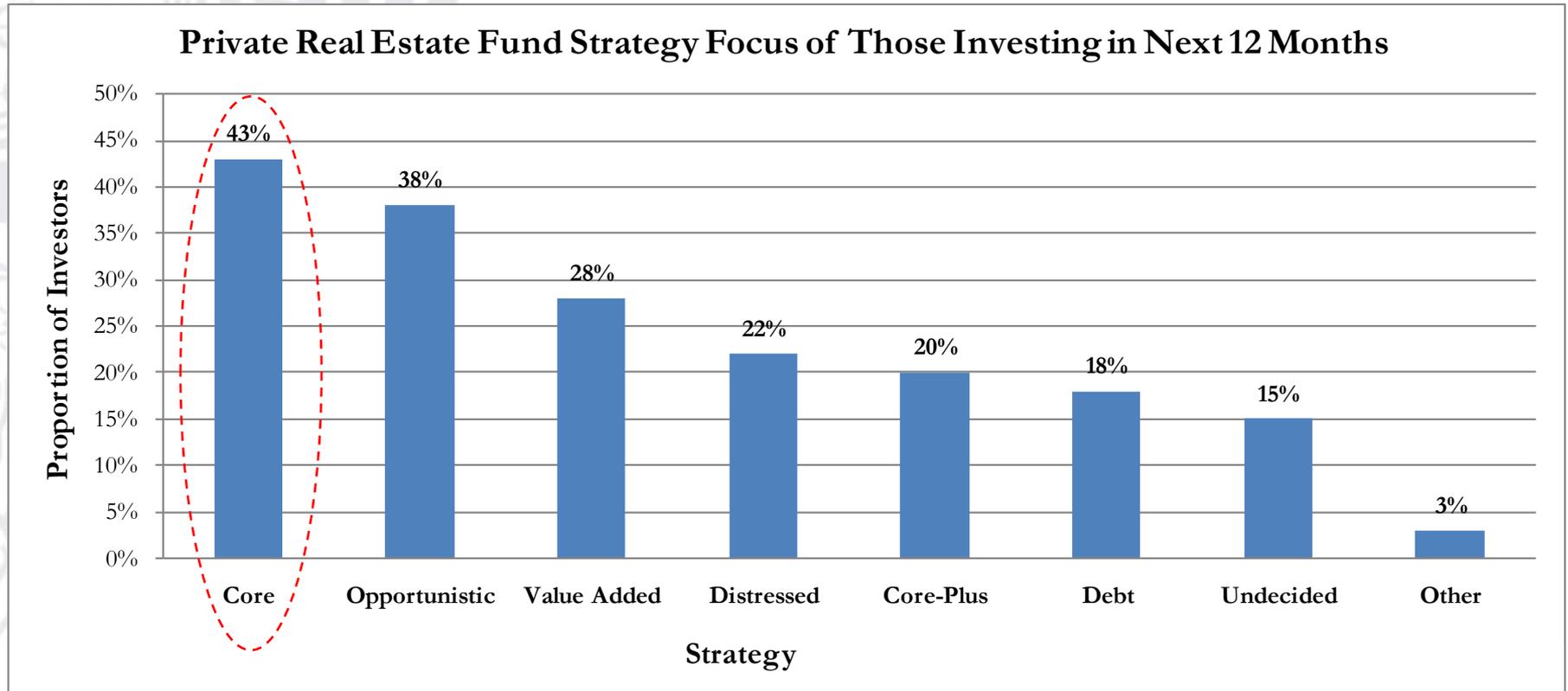
NCREIF Property Index: Market Values, Rescaled NOI and Capitalization Rates
Based on a \$100 Investment for the Period 1978 through 2009



•Sources: NCREIF, BlackRock Realty and instructor's calculations.

Real Estate Investors Return to “Core”

- A trend reversal, core funds again most popular:



Source: Prequin, Ltd.: *Real Estate Spotlight*, September 2010

Investor Preferences Observed in Transaction Volume

17

- Despite all the talk of “distress,” recent core acquisition activity is about twice non-core:

2010 ALL CORE INCLUDING HOTEL ACQUISITIONS



All data 2010 YTD;
in contract; all values in billions

Source: Real Capital Analytics, September 2010

- The last two (calendar) years (2008 & 2009) witnessed average fund performance of:

•Core ~<35>%

•Value-Added ~<45>%

•Opportunistic ~<55>%

- The renewed institutional investor appetite for core real estate is due to:

•Flight to quality, and

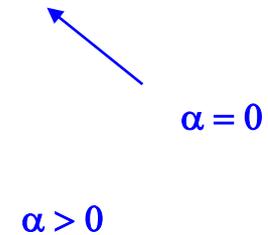
← Likely to be short-term

•The disappointment with non-core returns
• to be analyzed subsequently.

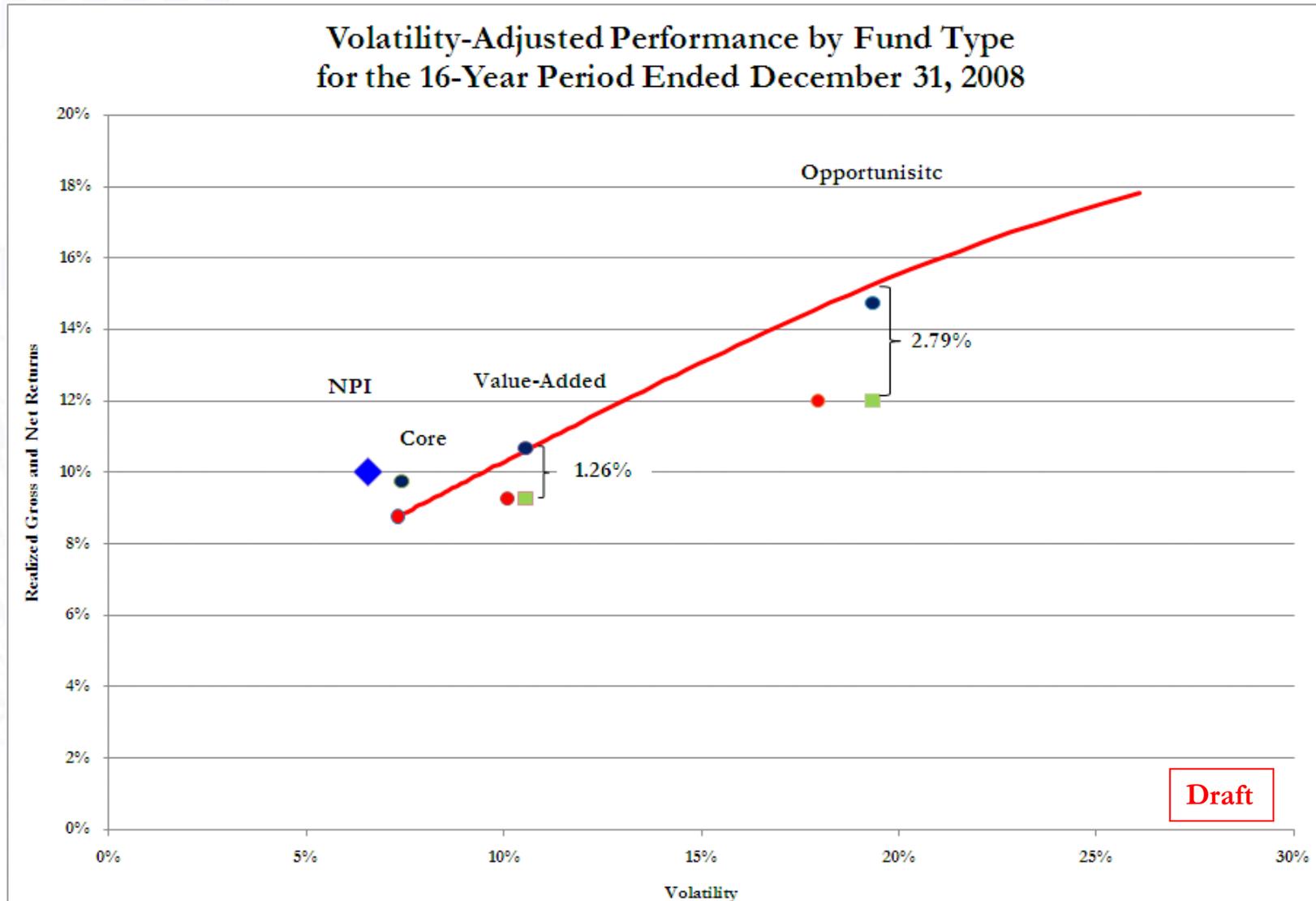
← Likely to be longer-term

How Should We Think about the Performance of Non-Core Real Estate?

- The opportunity for high returns is what makes these non-core deals attractive.
- How should we think about the pricing of non-core real estate funds?
 - Is the high expected return compensation for high risk (*i.e.*, market efficiency)?
 - Or, does the high expected return represent a market inefficiency?
- The answer involves understanding:
 1. leverage and the law of one price,
 2. the nature of incentive fees (*e.g.*, joint ventures (JVs)), and
 3. the “drag” of fees and costs.



- Non-core funds have under-performed (will revisit this analysis)

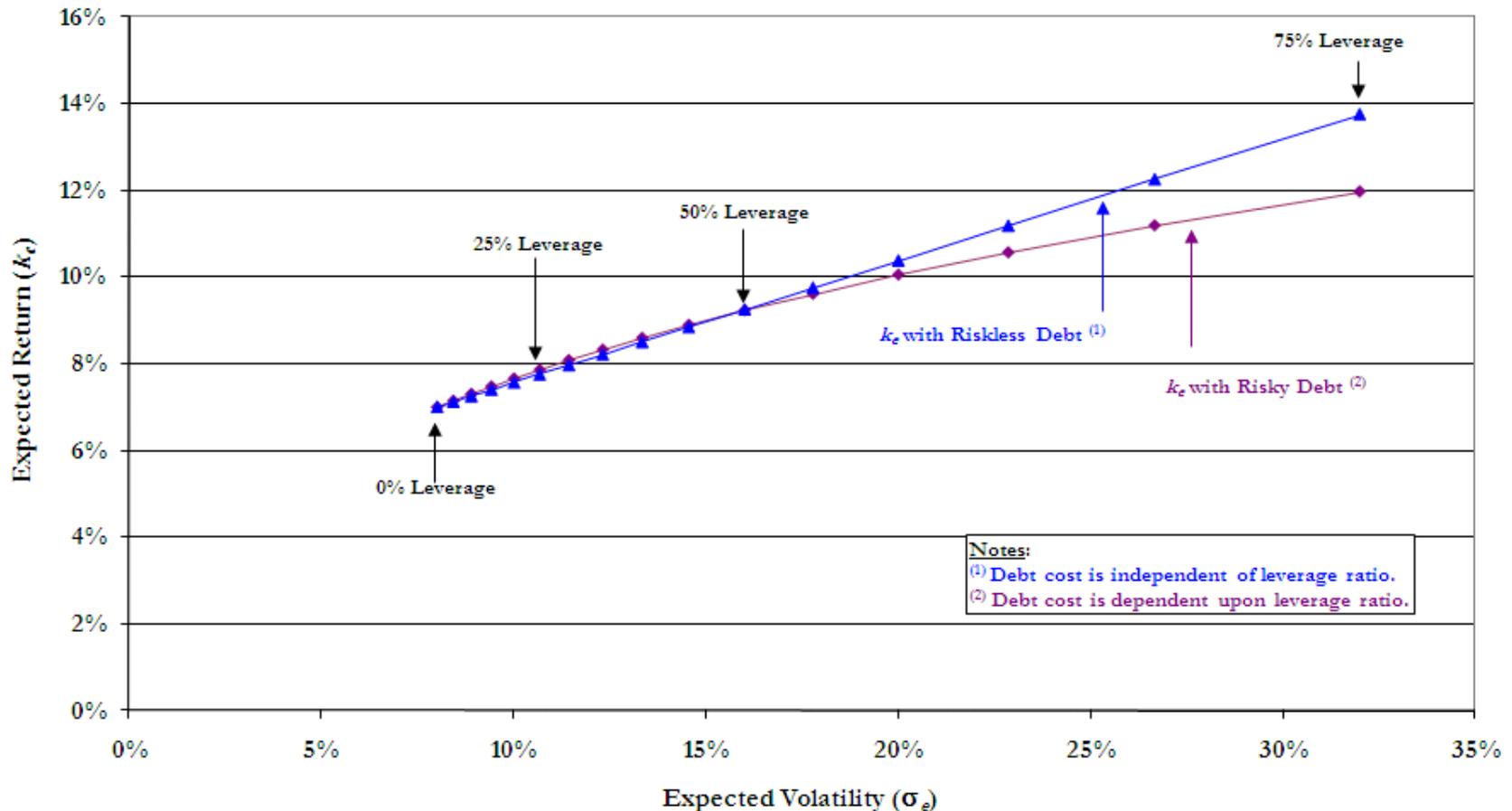


Source: NCREIF/Townsend and authors' calculations

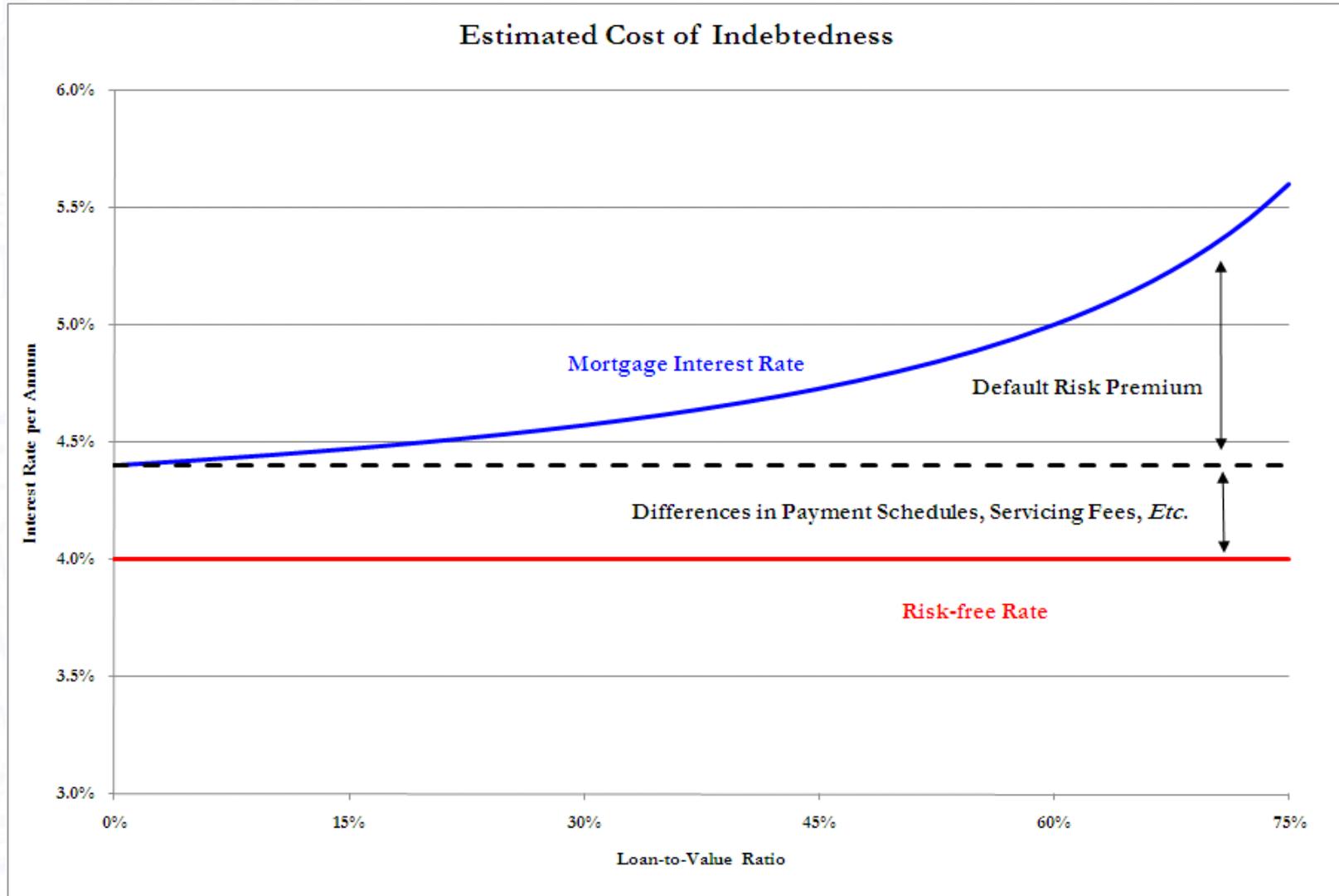
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Levered Equity, with and without Risky Debt

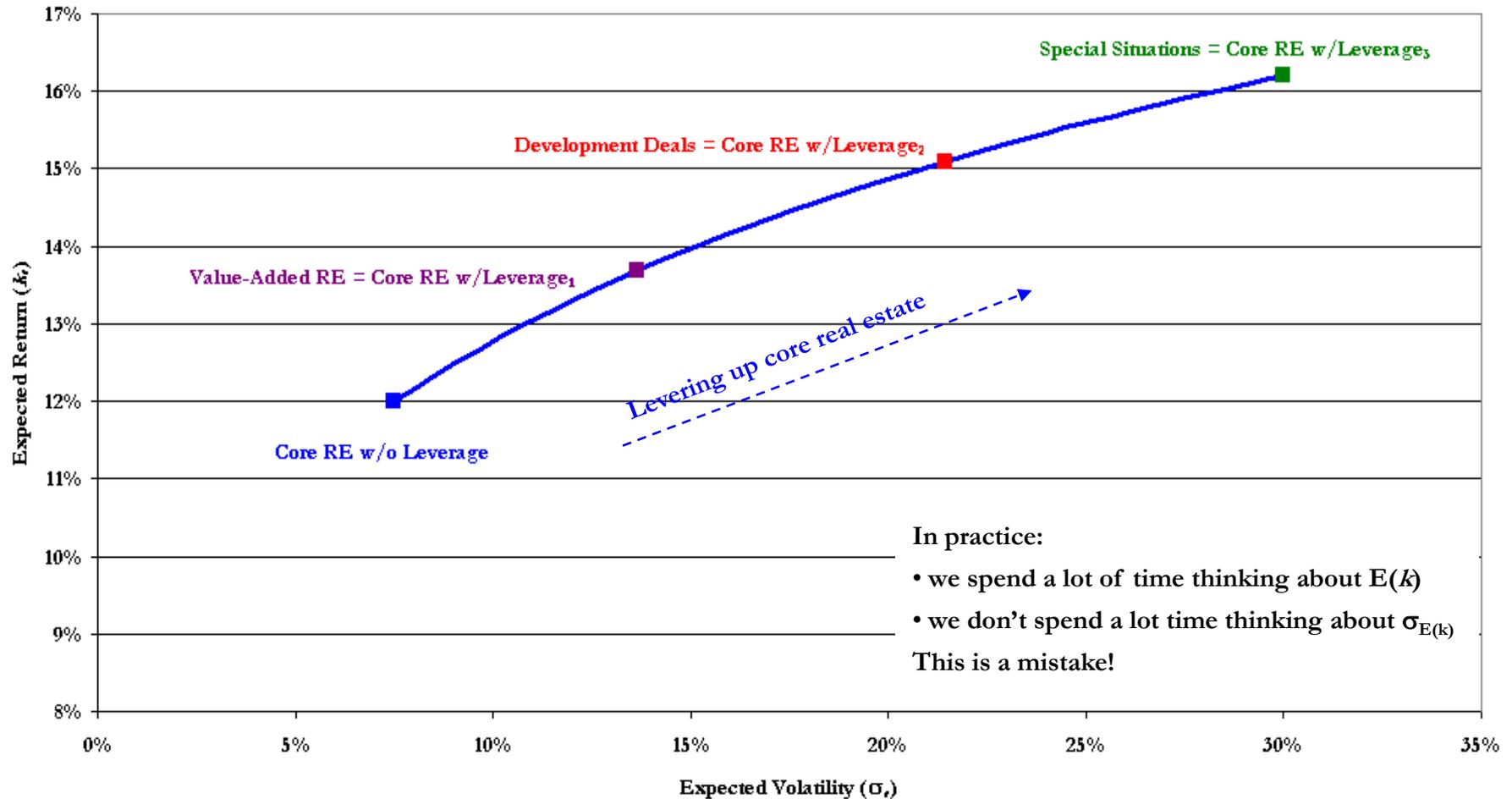
Illustration of the Expected Return and Volatility of Levered Equity as Leverage Increases:
Risky v. Riskless Debt



Why Risky Debt? Lenders Need to be Compensated with Higher Expected Returns as Leverage Ratio Increases



- Two assets with the same pattern of cash flows ought to have the same price.



Incentive Fees & Principal/Agent Issues: Numerical Example

- **Fund-Level Return Distribution:**
 - **Average Return:** 12.5%
 - **Volatility** 15.0%
- **Fund Incentive Structure:**
 - **Ongoing fees** 0.5%
 - **Investor's Preference** 12.0%
 - **Residual Split:**
 - **Investor** 50%
 - **Operating Partner** 50%
- **Notes:**
 - The operating partner's "promoted" interest creates an option-like return for operator.
 - The value of the option reduces the investor's upside.

Think of Fund as a Joint Venture: Fund-Level Returns & Operator's Promote

Illustration of Venture-Level Returns and Operating Partner's Participation

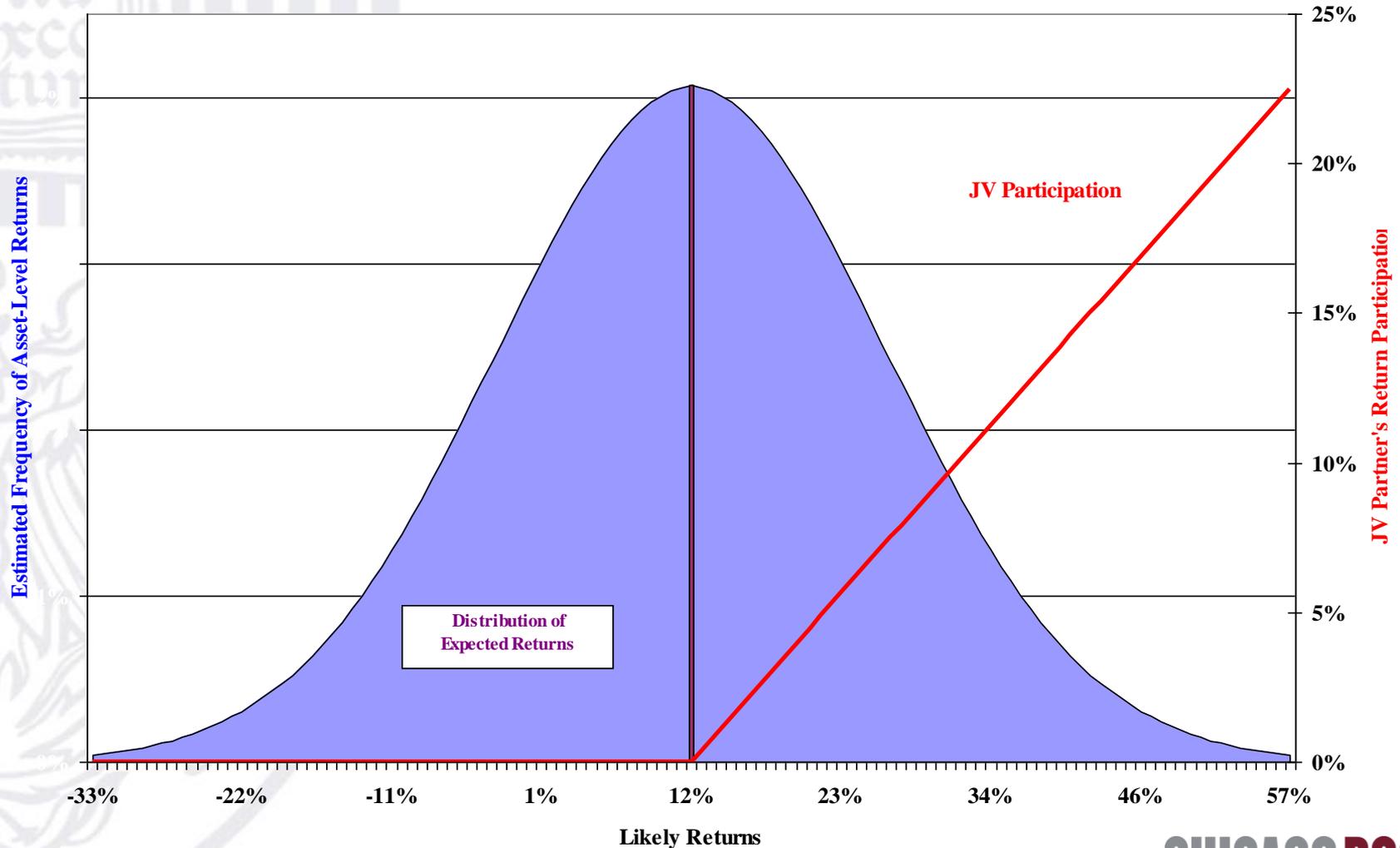
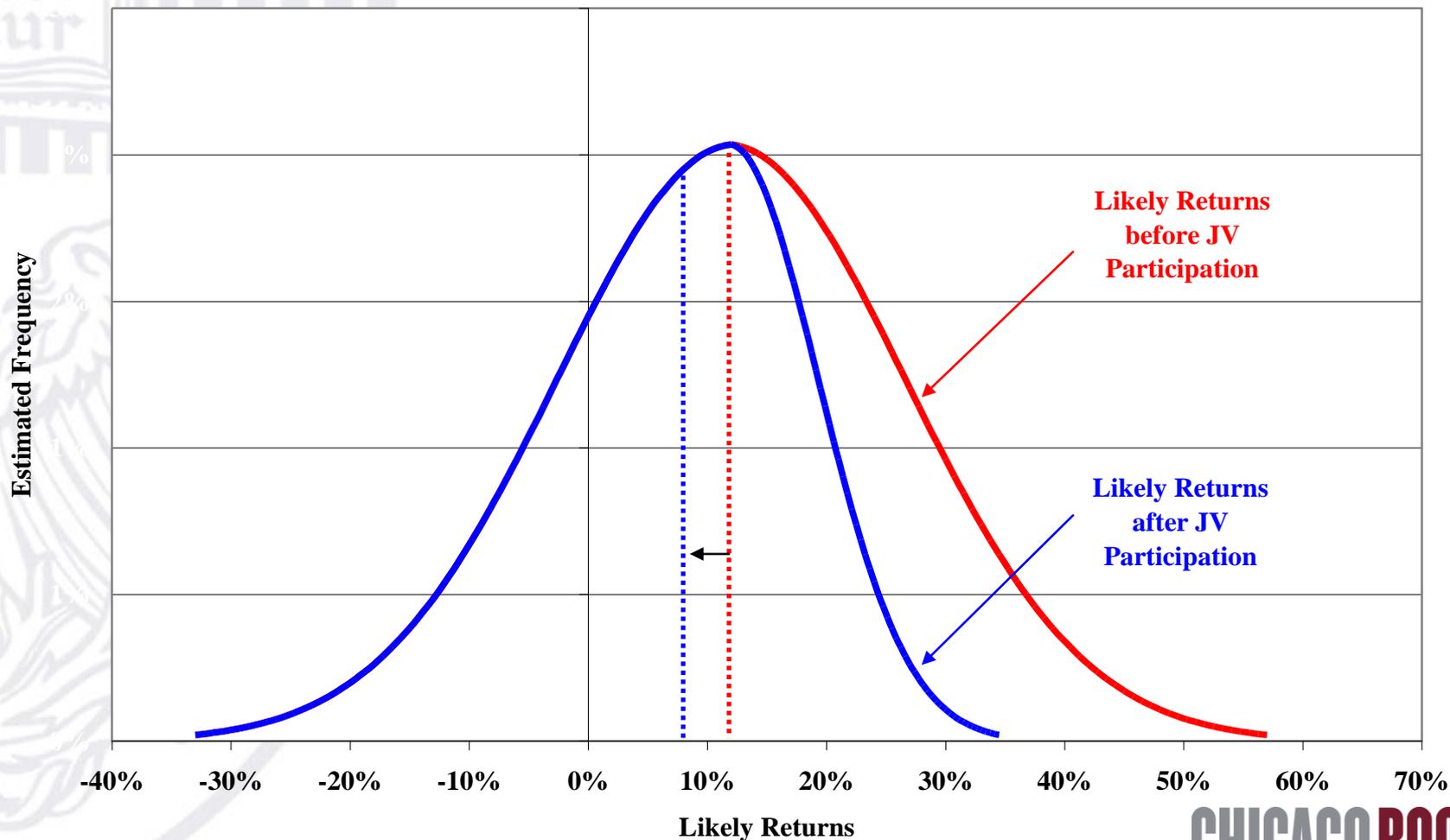


Illustration of Venture-Level Returns
before and after the Venture Partner's Participation



Incentive Fees and Principal/Agent Issues: Numerical Example (continued)

- **Fund-Level Returns after Operating Partner:**

- Likely Returns:

• Fund-Level Returns before Operating Partner	12.5%
• Ongoing (Monitoring) Fees	0.5%
• Operating Partner's Participation	<u>3.0%</u>
• Investor's Net Return	<u>9.0%</u>

- Volatility (Standard Deviation):

• JV Deal before Operating Partner	15.0%
• Operating Partner's Participation	<u>3.5%</u>
• Investor's Net Return	<u>11.5%</u>

- **Notes:**

- The operating partner's "promoted" interest reduces the investor's net return by 300 bps:
 - Even though the value of the promote equals zero at the most likely return,
 - This is attributable to operating partner's asymmetric participation in returns.
- The reduction in the investor's standard deviation is a statistical illusion:
 - The investor still receives 100% of the economic downside.

Incentive Fees and Principal/Agent Issues :

Numerical Example (continued)

- A simple way to think of the average promote:

<u>Probability</u>	<u>Outcomes</u>		
	<u>Gross Returns</u>	<u>Promote</u>	<u>Net Returns</u>
50%	24.0%	6.0%	18.0%
50%	0.0%	0.0%	0.0%
Average	<u>12.0%</u>	<u>3.0%</u>	<u>9.0%</u>

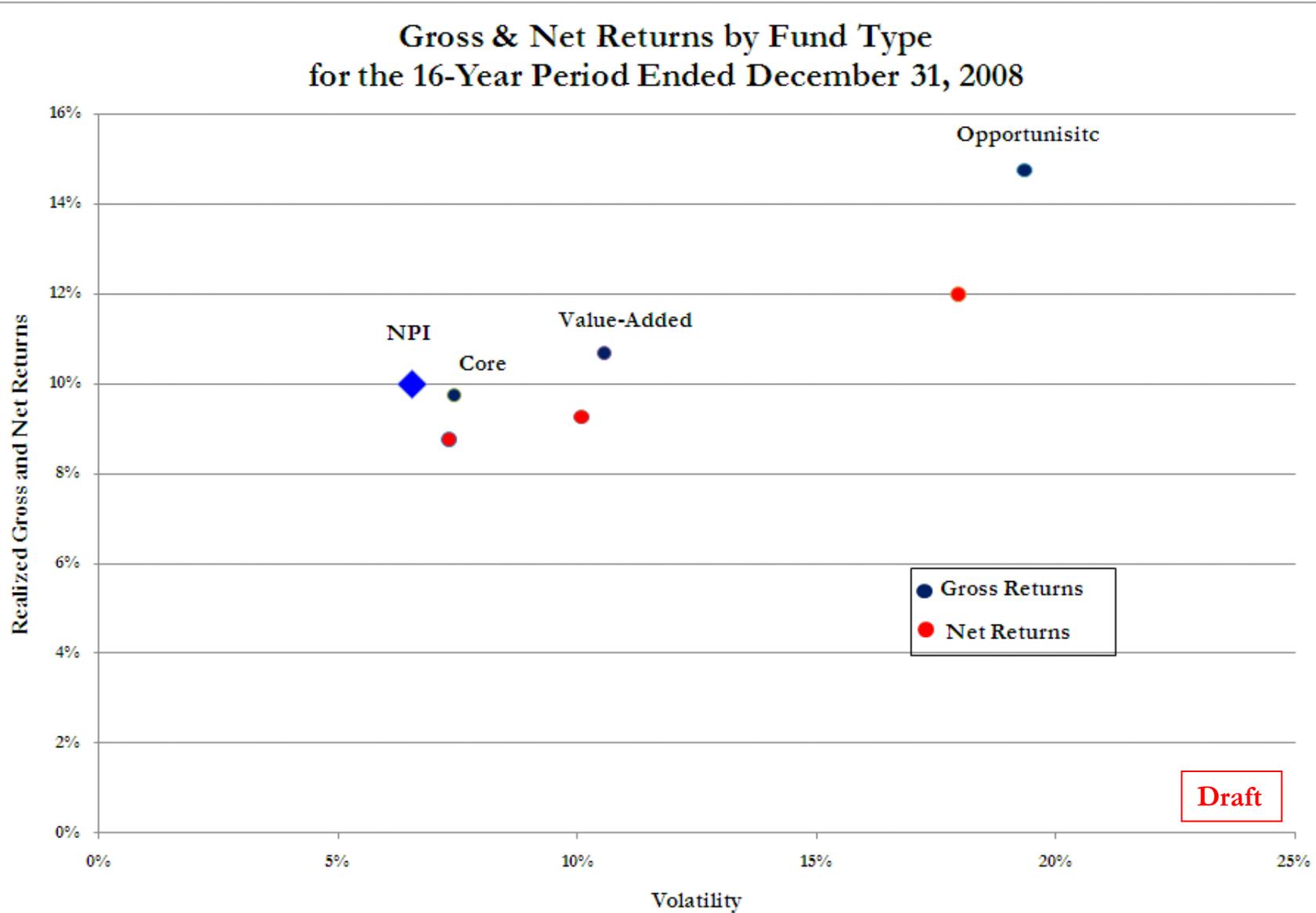
- Note: The appropriate way to calculate the expected promote: $E(\pi) = \int_{\psi}^{\infty} \kappa(x - \psi)f(x)dx$

where: π = the “promote”, κ = operating partner’s participation in the excess profits,
 ψ = investor’s preference, and $f(x)$ = the distribution of venture-level returns, x .

- Because of the operating partner’s asymmetric participation:
 - The average expectation does not equal the expectation of the average :

$$E(\pi) = \int_{\psi}^{\infty} \kappa(x - \psi)f(x)dx \neq \kappa(\bar{x} - \psi)$$

So, What's Fund-Type Performance Looked Like?

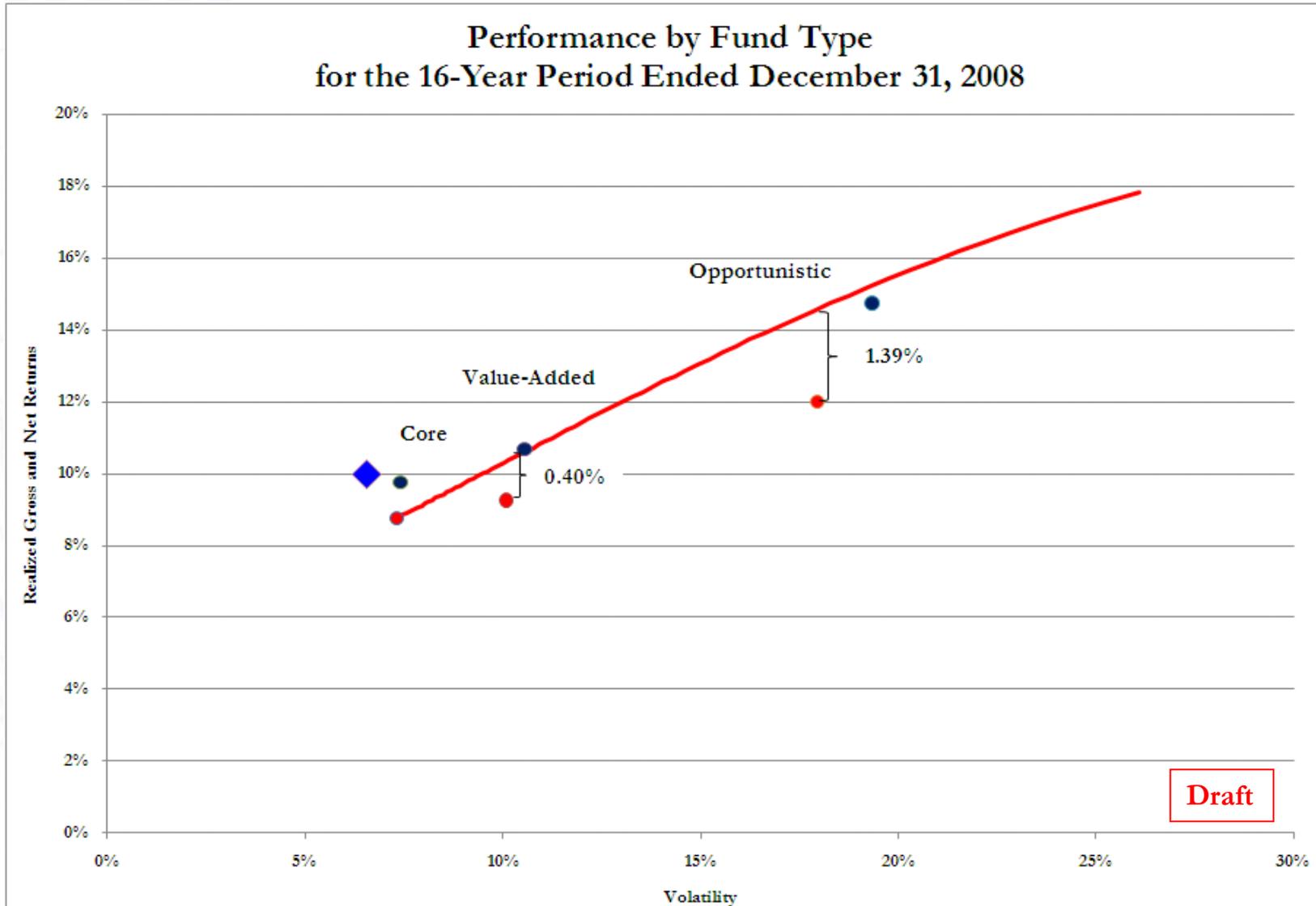


Source: NCREIF/Townsend - *Real Estate Fund Indices and Vintage Period Performance Report*

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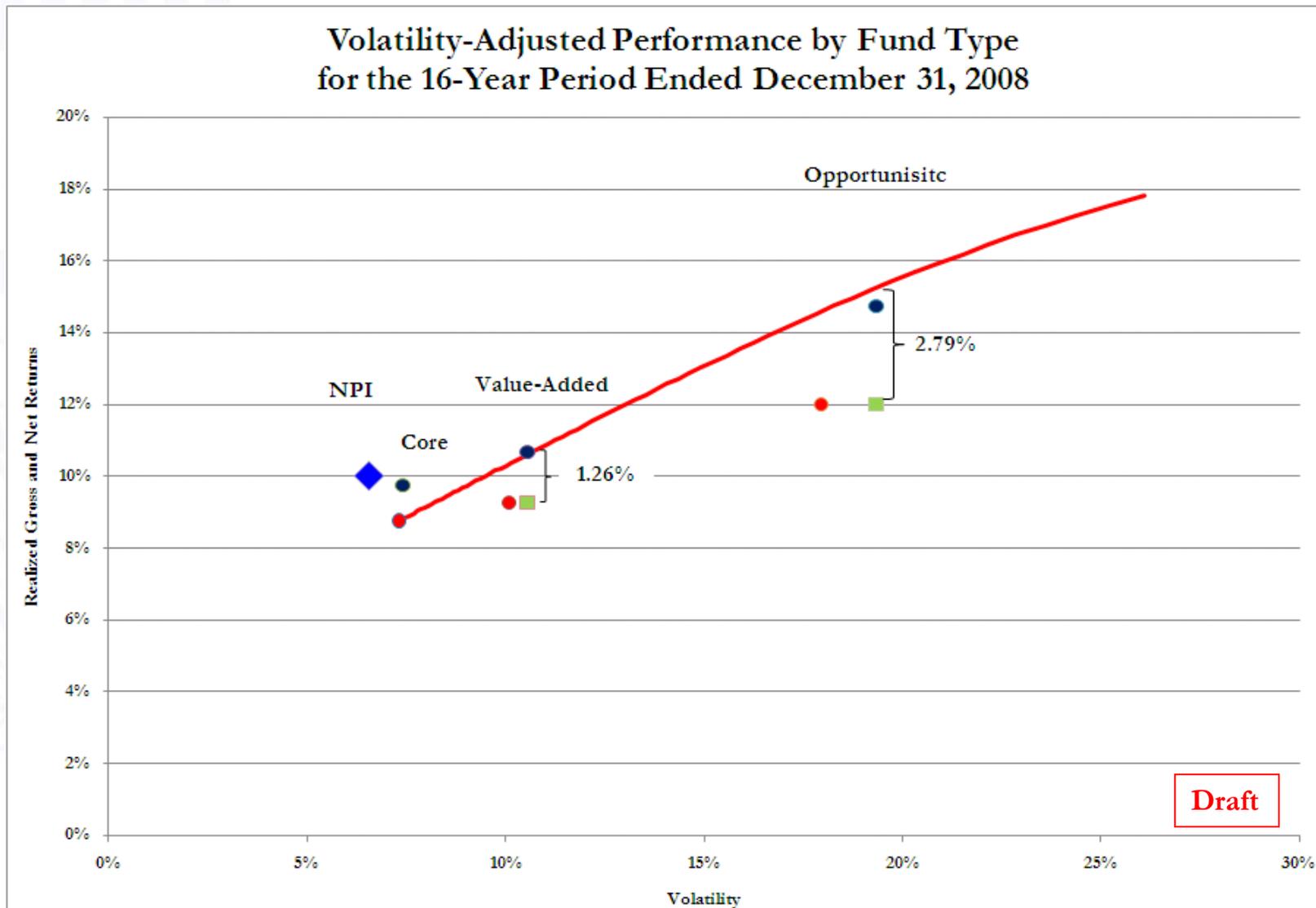
How Should We Measure Performance?

- Apply the law of one price by levering up core funds:



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- Recall: The volatility of net returns understates the investor's true risk exposure

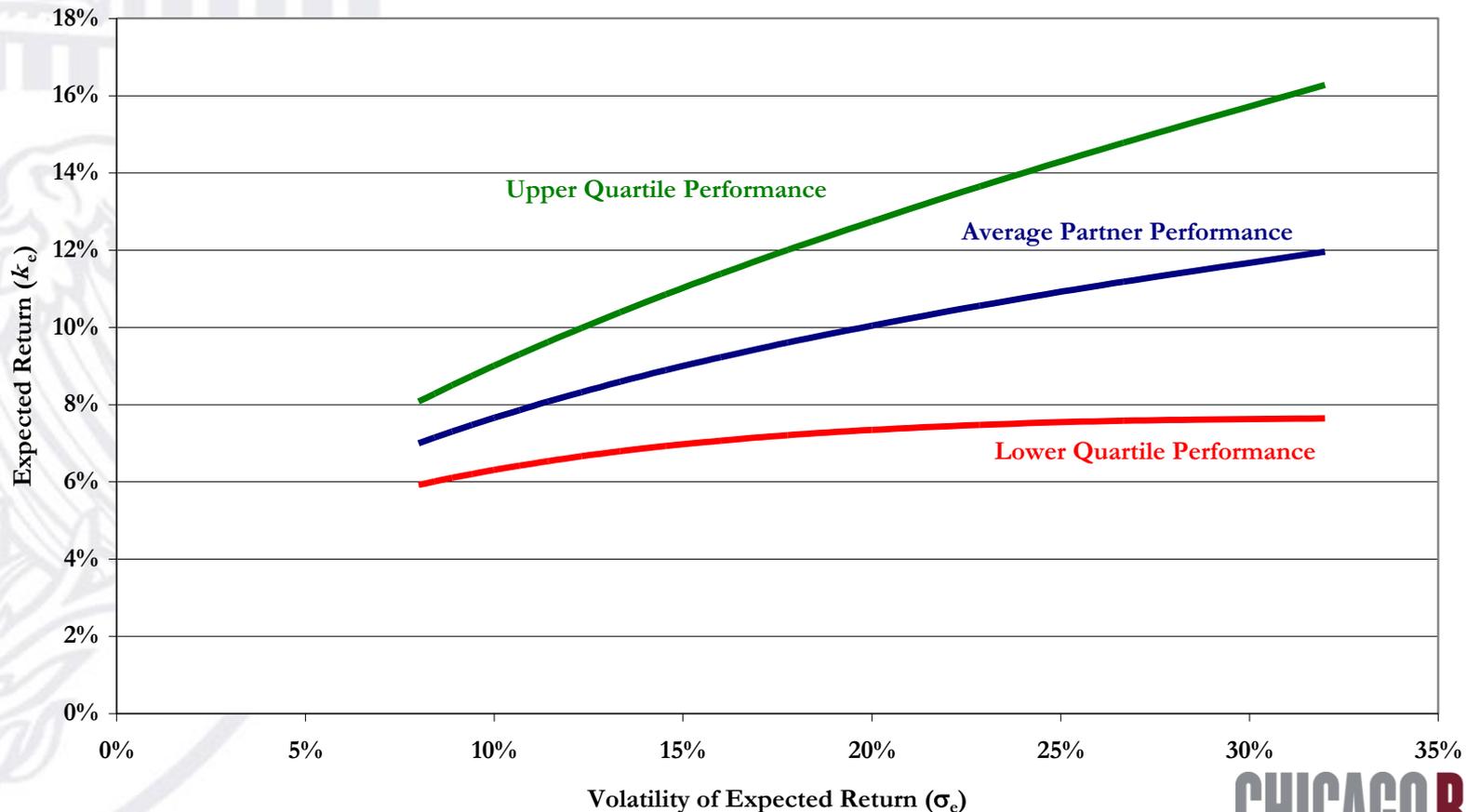


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Joint Ventures: Betting on Emerging Partners (continued)

- Some partners will out-perform and others will under-perform their peers
- Underperformance generally worsens with riskier strategies:

Illustration of Partner Risk
as a Function of Investment Strategy

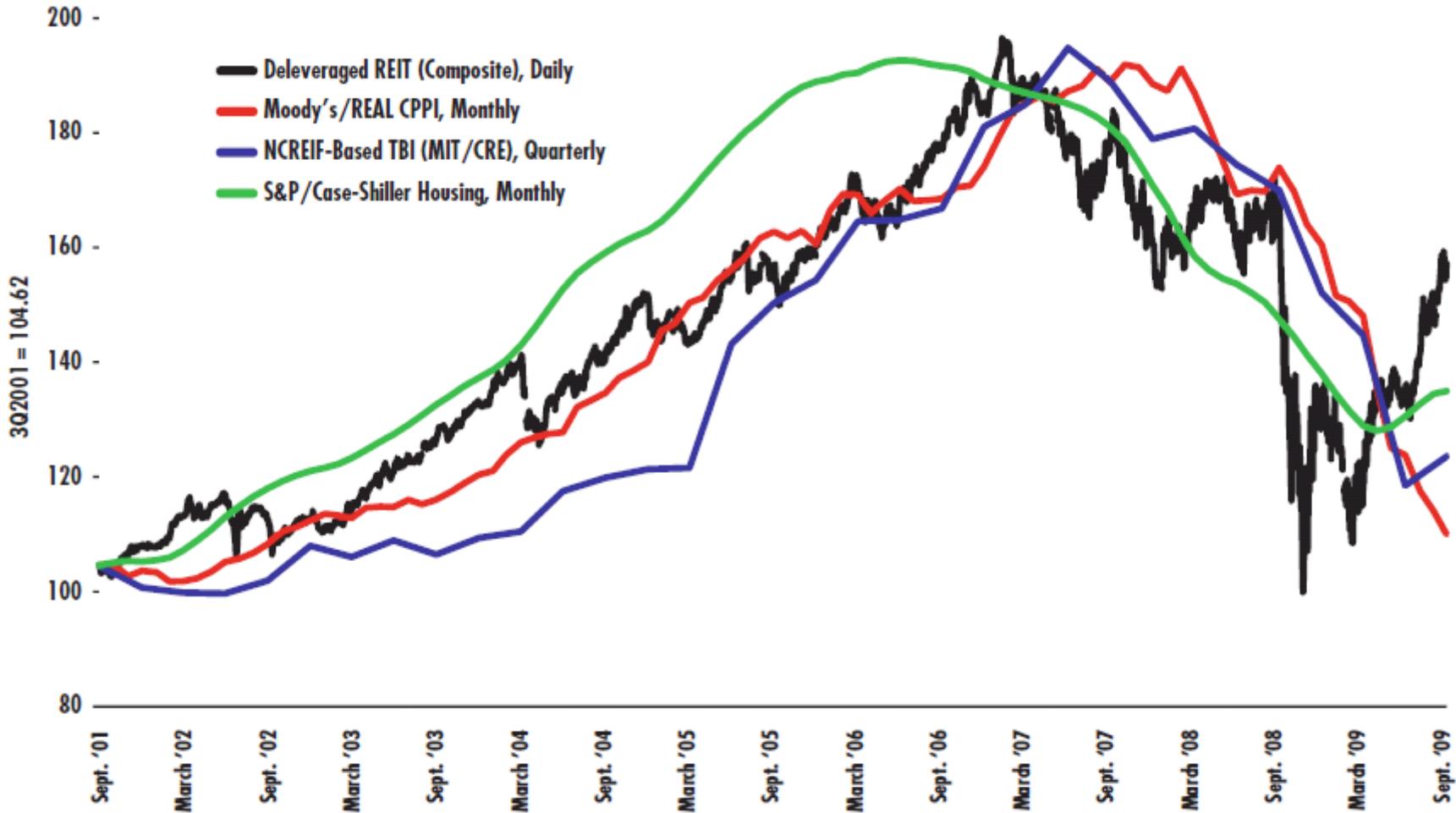


- Fee pressures on core and non-core funds alike.
- But, given the poor risk-adjusted performance of (some) value-added and opportunistic funds, institutional investors are more circumspect about future financial arrangements:
 1. preferred returns are going up,
 2. “promotes” are going down, and
 3. governance/control provisions are swinging back towards the “money” partner.

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Other Real Estate Indices Show Similar Recent Experience:

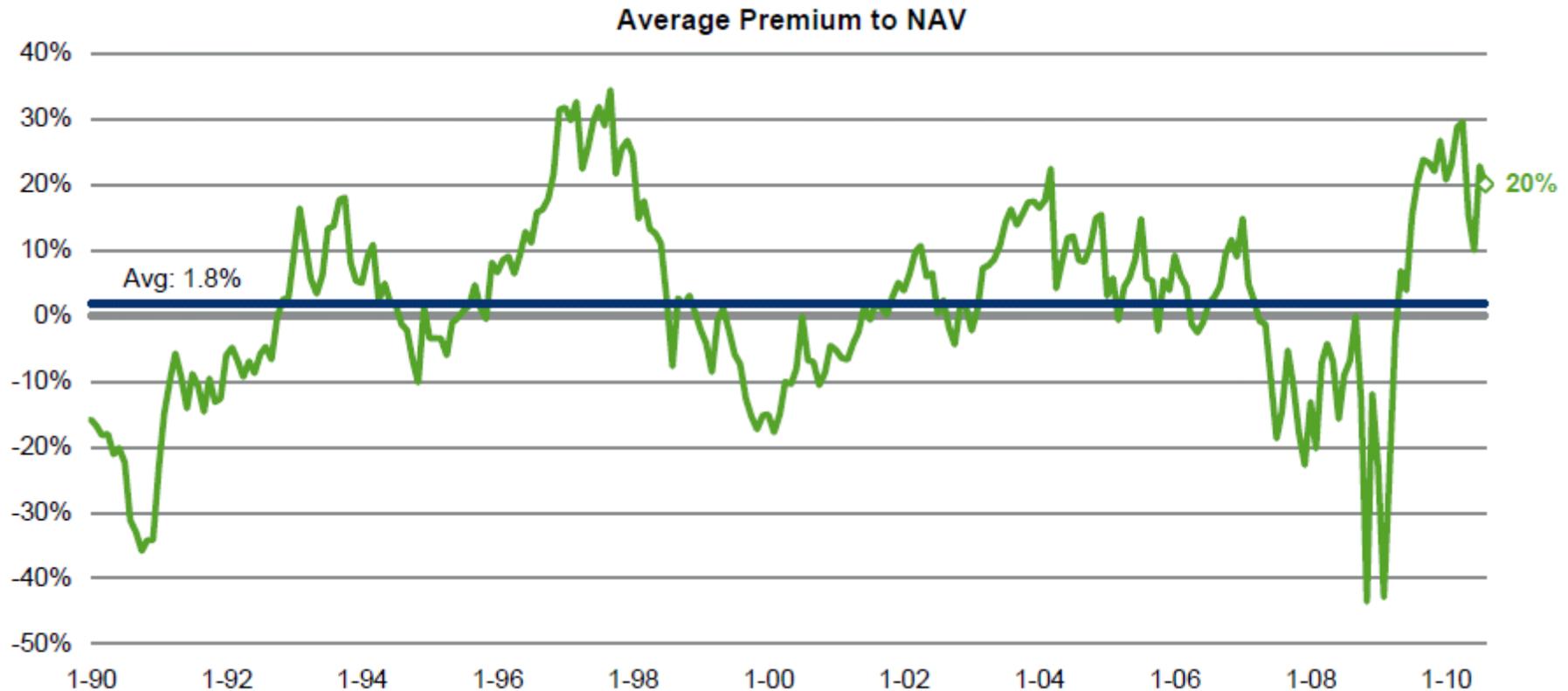
- Most indices already showed a similar correction – both commercial and residential



Sources: Moody's/REAL, MIT, MacroMarkets

•See: “The US Property Market in 2010,” David Geltner, *PREA Quarterly*, Winter 2010.

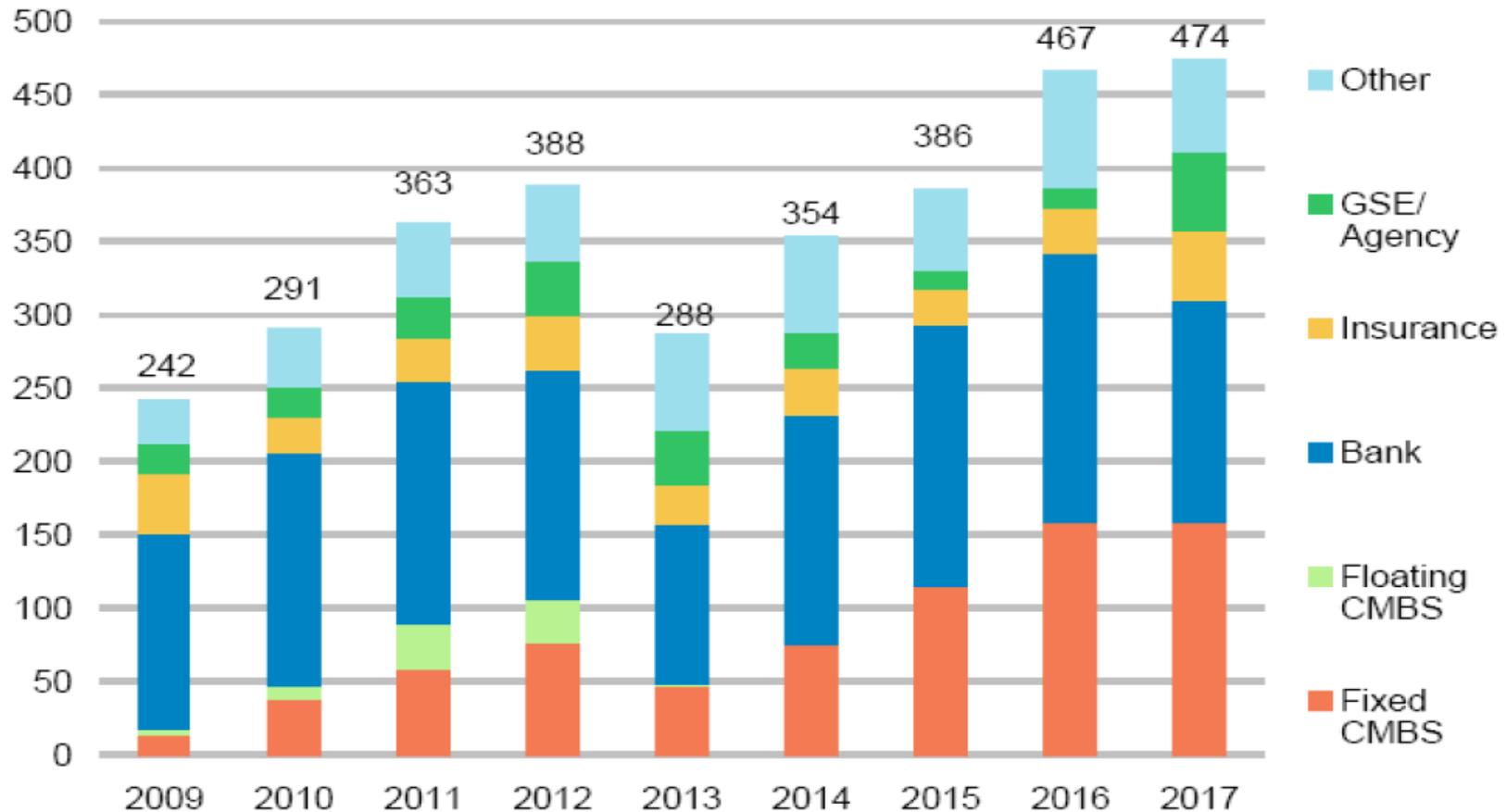
- The long-term premium to NAV (*i.e.*, REIT share prices compared to private-market alternatives) ought to be positive (reflecting an illiquidity premium for private real estate).
- The public (REIT) market is widely thought to lead the private real estate market.
- The current premium to NAV may portend an increase in private-market pricing ?



Source: Green Street Advisors | *Property Sector Valuation*, September 2010.

A Wave of Refinancings: \$3.0 trillion Coming Due

Commercial Mortgage Maturities (\$Bn)

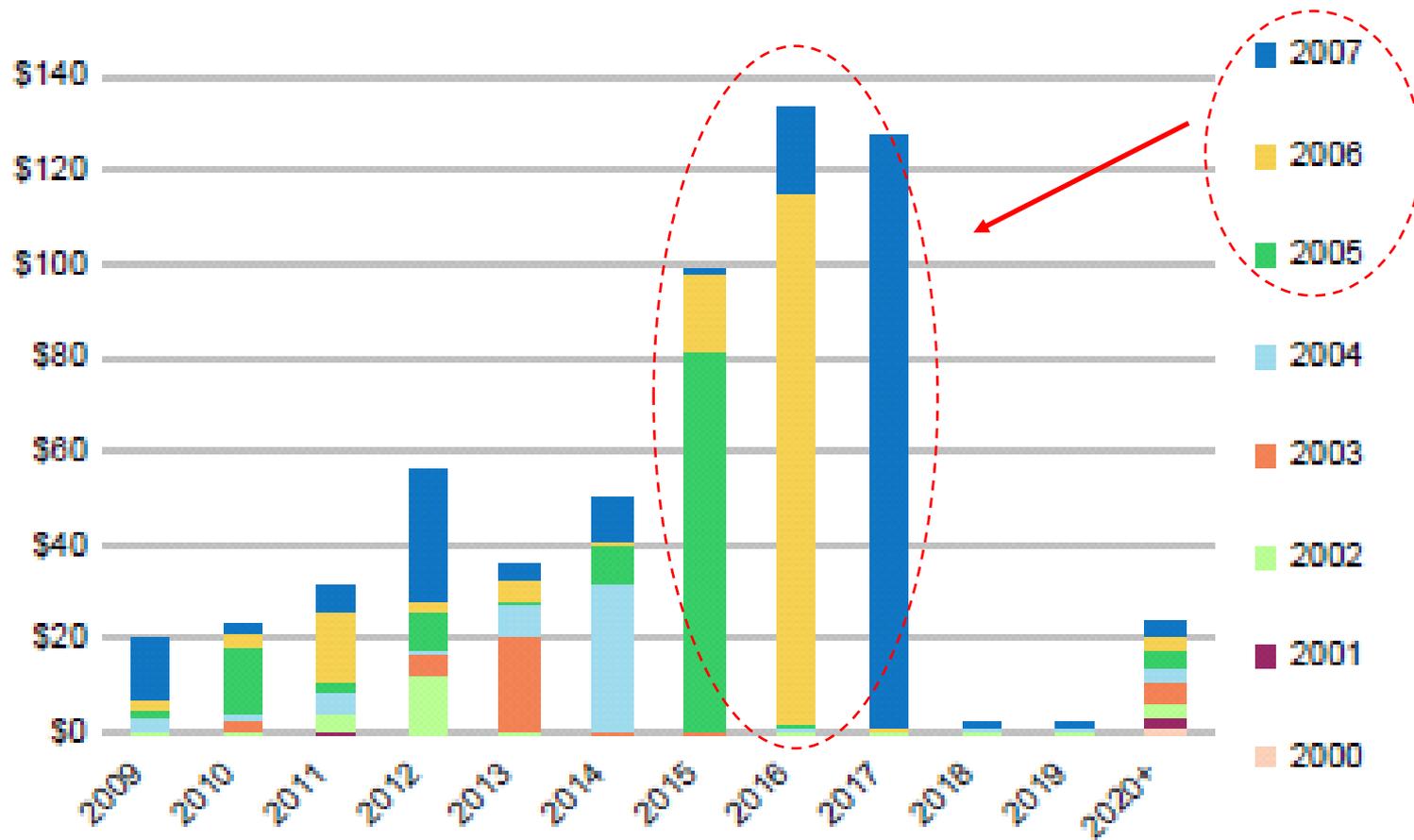


Floating-rate CMBS run to maximum extension
Source: Morgan Stanley Research estimates

See: "PPIP: Secondary Becomes Primary," Morgan Stanley Research, March 31, 2009.

•The Aggressive Vintages Coming Due Later

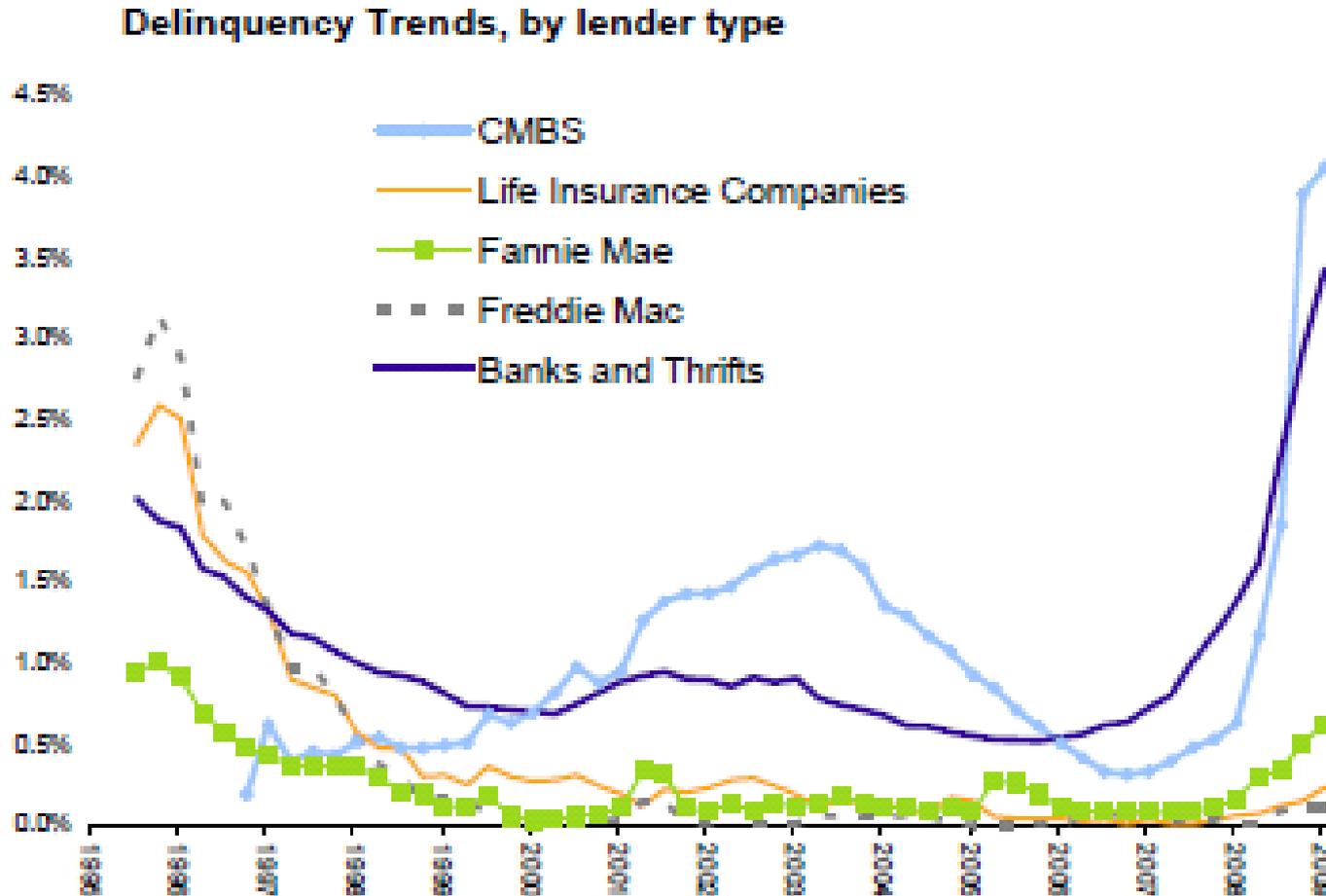
CMBS Annual Maturities (\$Billion)



Source: Trepp, MIT, Morgan Stanley Research. Includes Conduit and Floating Rate CMBS Transactions

•Source: Morgan Stanley Research, "Commercial Real Estate 2010."

CRE Loan Delinquencies by Lender Type

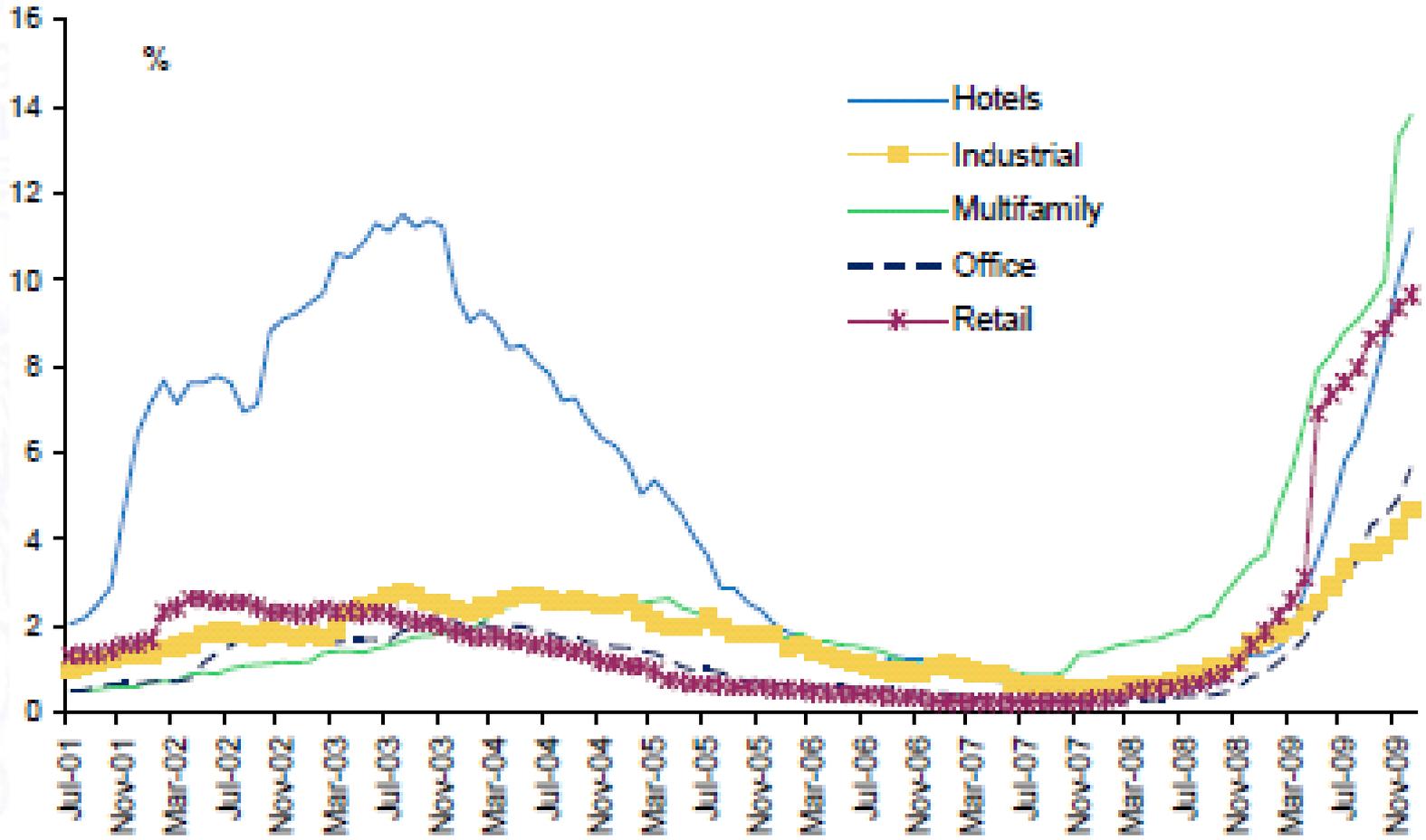


Source: Mortgage Bankers Association, Morgan Stanley Research

•Source: Morgan Stanley Research, “Commercial Real Estate 2010.”

CRE Loan Delinquencies by Property Type

Share of CMBS Loans in Special Servicing, by property type



Source: Trepp, Morgan Stanley Research

•Source: Morgan Stanley Research, “Commercial Real Estate 2010.”

- Over \$42 billion in real estate-related write-downs

Commercial Real Estate Net Writedowns

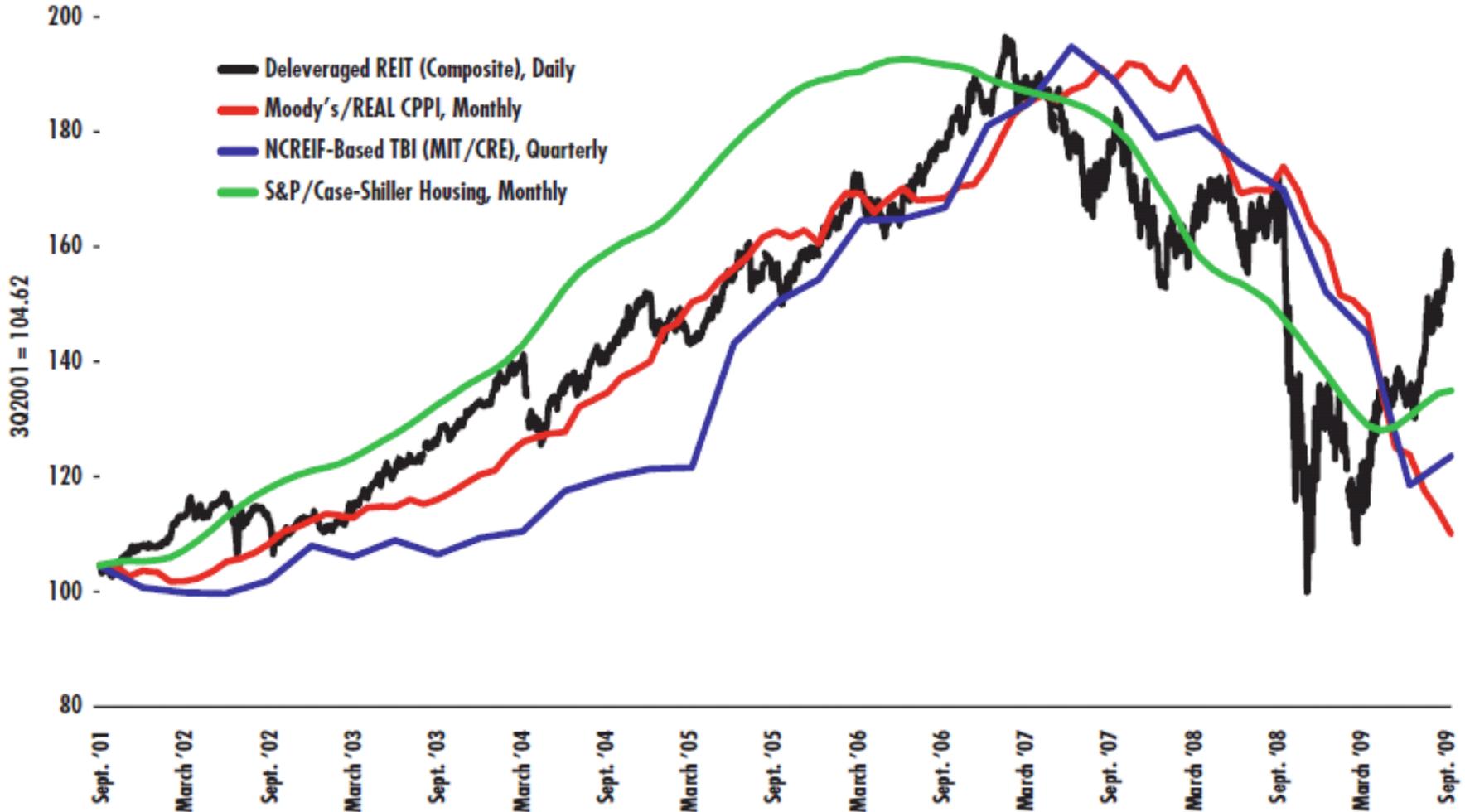
	4Q-07 (\$Mil.)	1Q-08 (\$Mil.)	2Q-08 (\$Mil.)	3Q-08 (\$Mil.)	4Q-08 (\$Mil.)	1Q-09 (\$Mil.)	2Q-09 (\$Mil.)	3Q-09 (\$Mil.)	4Q-09 (\$Mil.)	TOTAL (\$Mil.)
Lehman Brothers	\$900.0	\$1,000.0	\$1,300.0	\$1,600.0	\$2,545.0	\$2,545.0	\$2,545.0	NR	NR	\$12,435.0
Credit Suisse	340.0	850.0	470.0	900.0	926.0	1,229.0	283.0	282.0	64.0	5,344.0
Citigroup	NR	573.0	545.0	518.0	991.0	186.0	386.0	574.0	154.0	3,927.0
Bank of America	134.0	191.0	263.0	182.0	853.0	324.0	571.0	538.0	837.0	3,893.0
Goldman Sachs	NR	0.0	375.0	325.0	700.0	1,325.0	700.0	200.0	(100.0)	3,525.0
Wachovia	1,088.0	521.0	209.0	347.0	NR	26.0	99.0	242.0	525.0	3,057.0
Bear Stearns/NY Fed	450.0	150.0	0.0	1,600.0	530.0	NR	NR	NR	NR	2,730.0
Deutsche Bank	564.0	697.0	487.0	230.0	298.0	64.0	278.0	97.0	0.0	2,715.0
Merrill Lynch	230.0	NR	37.0	854.0	1,131.0	(181.0)	0.0	0.0	0.0	2,071.0
J.P. Morgan	NR	266.0	190.0	365.0	723.0	223.0	(94.0)	(20.0)	(33.0)	1,653.0
RBS	NR	NR	187.0	NR	139.0	74.0	41.0	NR	NR	441.0
Morgan Stanley	400.0	(500.0)	100.0	(200.0)	(200.0)	(400.0)	200.0	420.0	434.0	254.0
UBS	116.0	443.0	(318.0)	(29.0)	NR	NR	0.0	0.0	0.0	212.0
TOTAL	4,222.0	4,191.0	3,845.0	6,692.0	8,636.0	5,415.0	5,009.0	2,333.0	1,881.0	42,257.0

Figures are for global capital-markets operations, except for UBS and RBS, which show U.S. operations. Parentheses indicate net gain. NR means not reported. Writedown figures for Goldman, J.P. Morgan and Morgan Stanley are actually losses (or profits). Writedowns are estimated for Credit Suisse in 3Q-09 and 4Q-09. Writedowns by Goldman and Morgan Stanley in 1Q-09 include December 2008. Lehman's writedown in 4Q-07 is actually for full-year 2007. Some \$7.6 billion of writedowns reported for Lehman from 4Q-08 to 2Q-09 were divided evenly. UBS transferred \$8.2 billion of assets since mid-2008 to a fund owned by Switzerland's central bank without specifying the associated writedowns. Wachovia's 4Q-07 writedown includes \$488 million taken in 3Q-07. Wachovia's writedowns for 3Q-09 and 4Q-09 are estimated, based upon previous proportion of writedowns by parent Wells Fargo. Exposures are for last day of quarter. Exposures are estimated for Lehman and Wachovia in 4Q-08 and J.P. Morgan in 4Q-07. Credit Suisse's exposure figures are on a gross basis. Lehman's figures include equity investments.

- **Why Commercial Real Estate?**
 - Historical multi-asset returns
 - Increasing allocations to “alternatives” – including real estate
 - Large funds tend to have higher real estate allocations
- **A Return to Core Real Estate**
 - Traditionally, pension plans were “core” investors
 - In a reach for return, explosive growth in non-core funds
 - Then, a correction and return to core. Why?
 - Examining disappointing non-core performance.
- **Private-Market Commercial Real Estate Spillover:**
 - Public Real Estate Equities
 - Commercial Real Estate Lending
- **Feedback System: Housing ↔ Commercial Real Estate**
- **Conclusions**
- **Appendices**

Other Real Estate Indices Show Similar Recent Experience:

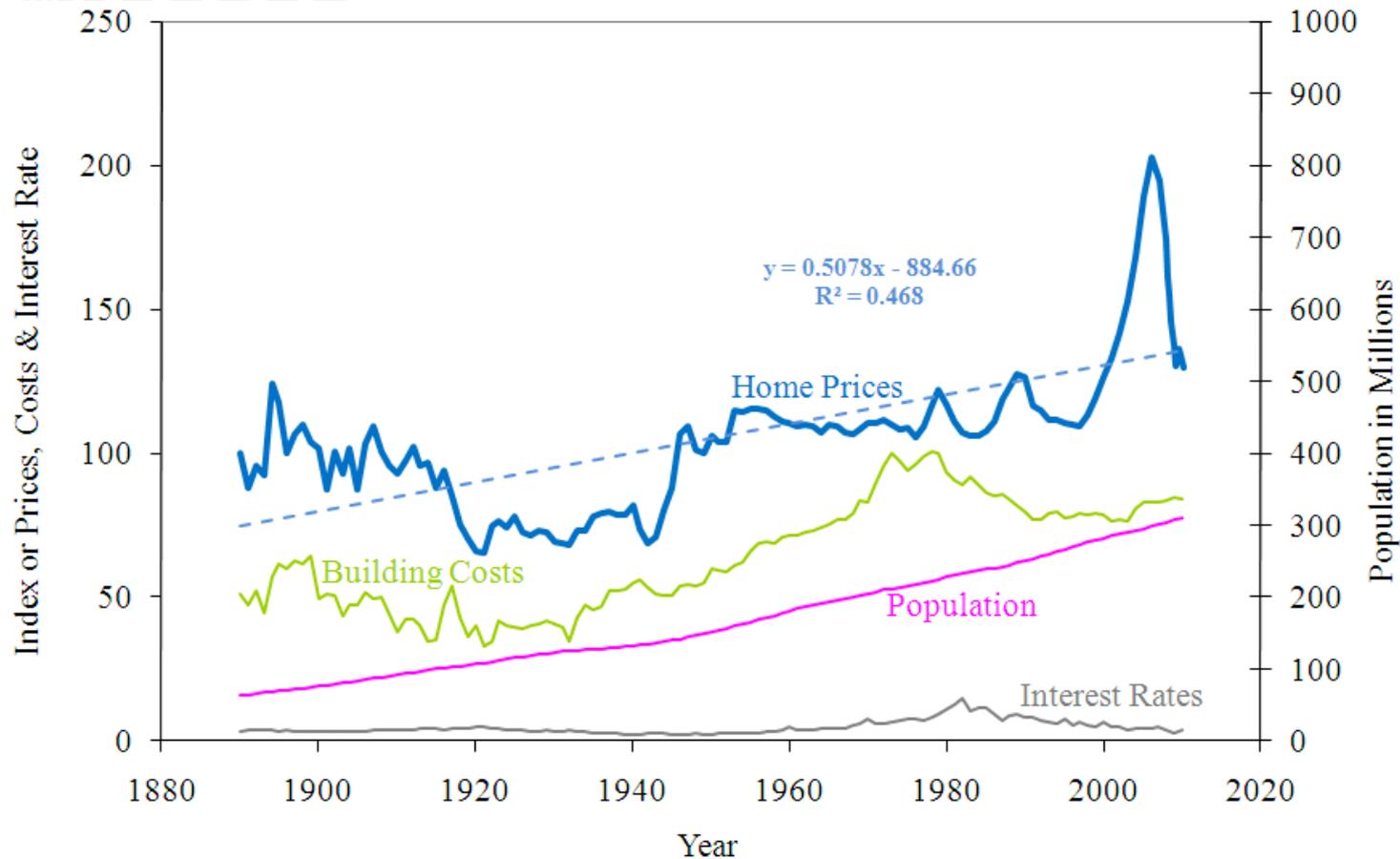
- Most indices already showed a similar correction – both commercial and residential



Sources: Moody's/REAL, MIT, MacroMarkets

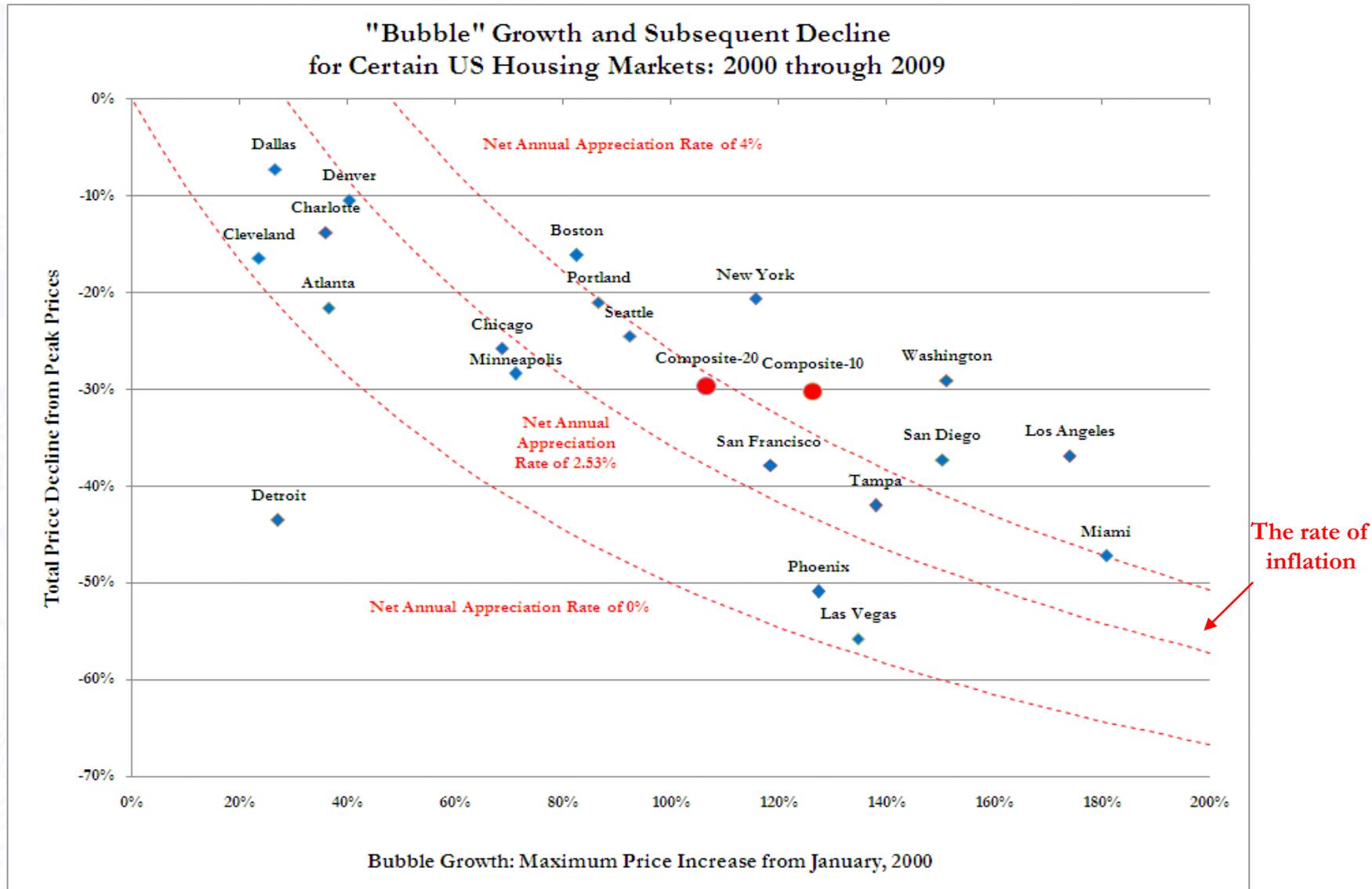
•See: “The US Property Market in 2010,” David Geltner, *PREA Quarterly*, Winter 2010.

- The rise and fall in home price [and (pro-cyclical) volume] contributes to the current strain on state and local budgets
- In order to cope, state & local authorities consider a range of service cuts &/or tax increases ← adversely affects commercial real estate values



The Residential Real Estate Is Highly Localized

- In addition to the average appreciation rate, volatility matters.



Source: S&P/Case-Shiller and instructor's calculations.

- **Why Commercial Real Estate?**
 - Historical multi-asset returns
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- **A Return to Core Real Estate**
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- **Appendices**

- Substantial losses (35 → 55%, on average) in 2008 & 2009.
- The previous enthusiasm for value-added and opportunistic funds has subsided with the “correction” in real estate prices.
- As in most any market downturn, there has been a flight to quality.
- However, institutional investors have also been disappointed by the long-term, risk-adjusted performance of their investments in value-added and opportunistic funds.
- The problems of the private commercial real estate market are also found in allied areas:
 1. publicly traded REITs (prices may portend a rebound in private-market valuations), and
 2. commercial real estate lending market (though the most aggressively underwritten loans generally don't mature for several years | can current debt-service obligations be met?)
- A feedback loop to the residential market:
 1. those municipalities with financial difficulties represent additional risks to commercial property owners,
 - a) cuts in services, and/or
 - b) increases in property-related taxes,
 2. falling commercial prices may contribute to municipality's woes.

Real Estate's Impact on Pension Funds: Appendices

1. **Conventional Arguments for Real Estate's Inclusion in the Institutional Mixed-Asset Portfolio**
2. **Public Plans' Historical Portfolio Allocations**
3. **Annual (Gross & Net) Returns by Fund Strategy**
4. **Additional Thoughts on Incentive Fees**
5. **Property-Market Fundamentals**
6. **Capital-Market Activities**

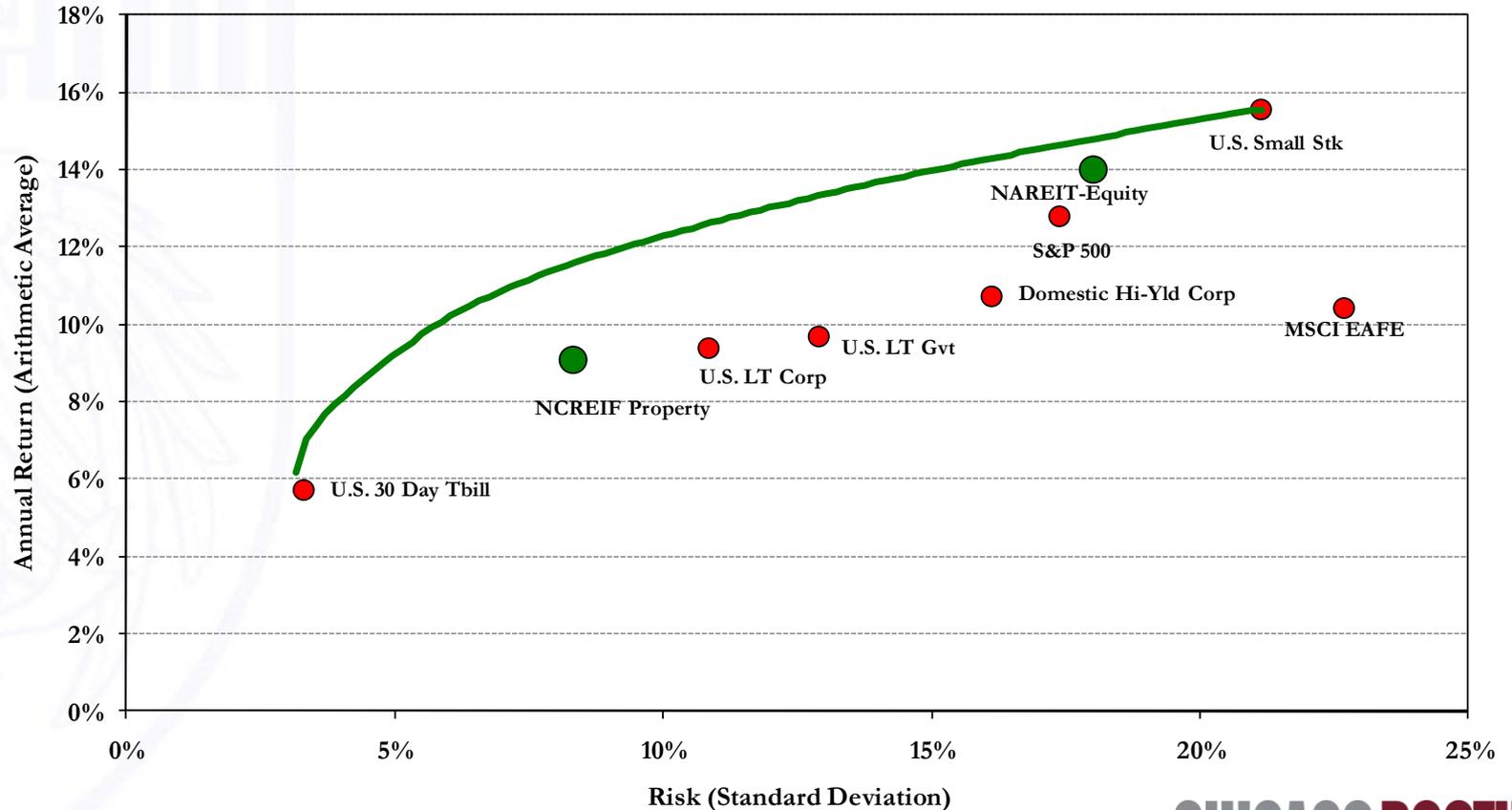


**Appendix #1:
Conventional Arguments for Real Estate's Inclusion
in the Institutional Mixed-Asset Portfolio**

Appendix: Mixed-Asset Portfolio's Efficient Frontier

- Without making any adjustment to the volatility of the appraisal-based NCREIF returns, the “efficient frontier” based on 1978-2009 looks like:

Efficient Frontier and Selected Asset Classes
for the Thirtytwo-Year Period 1978-2009

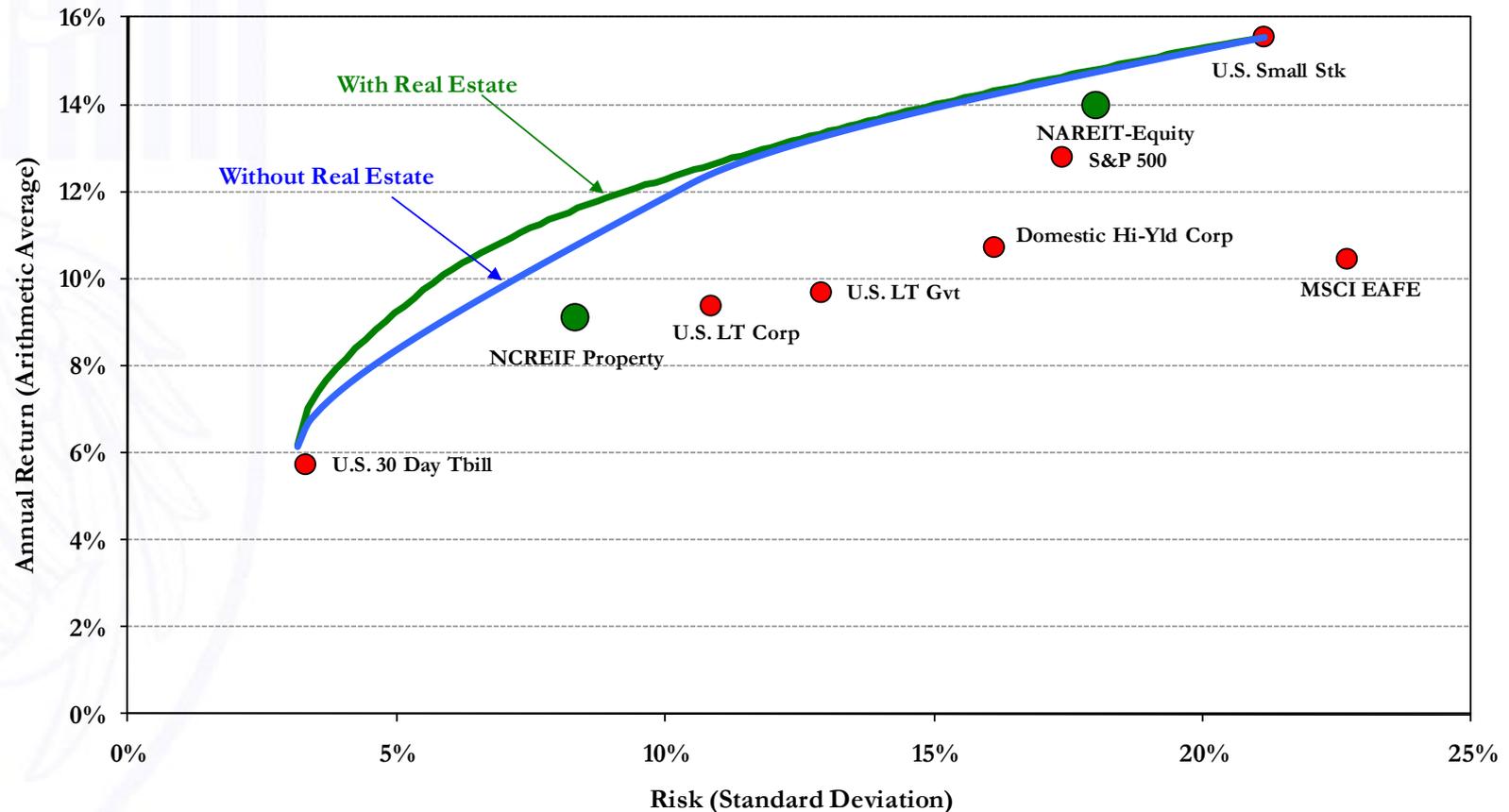


Source: Morningstar & author's calculations.

Appendix: Mixed-Asset Portfolio's Efficient Frontier

- Efficient frontier with and without (commercial) real estate, based on 1978-2009:

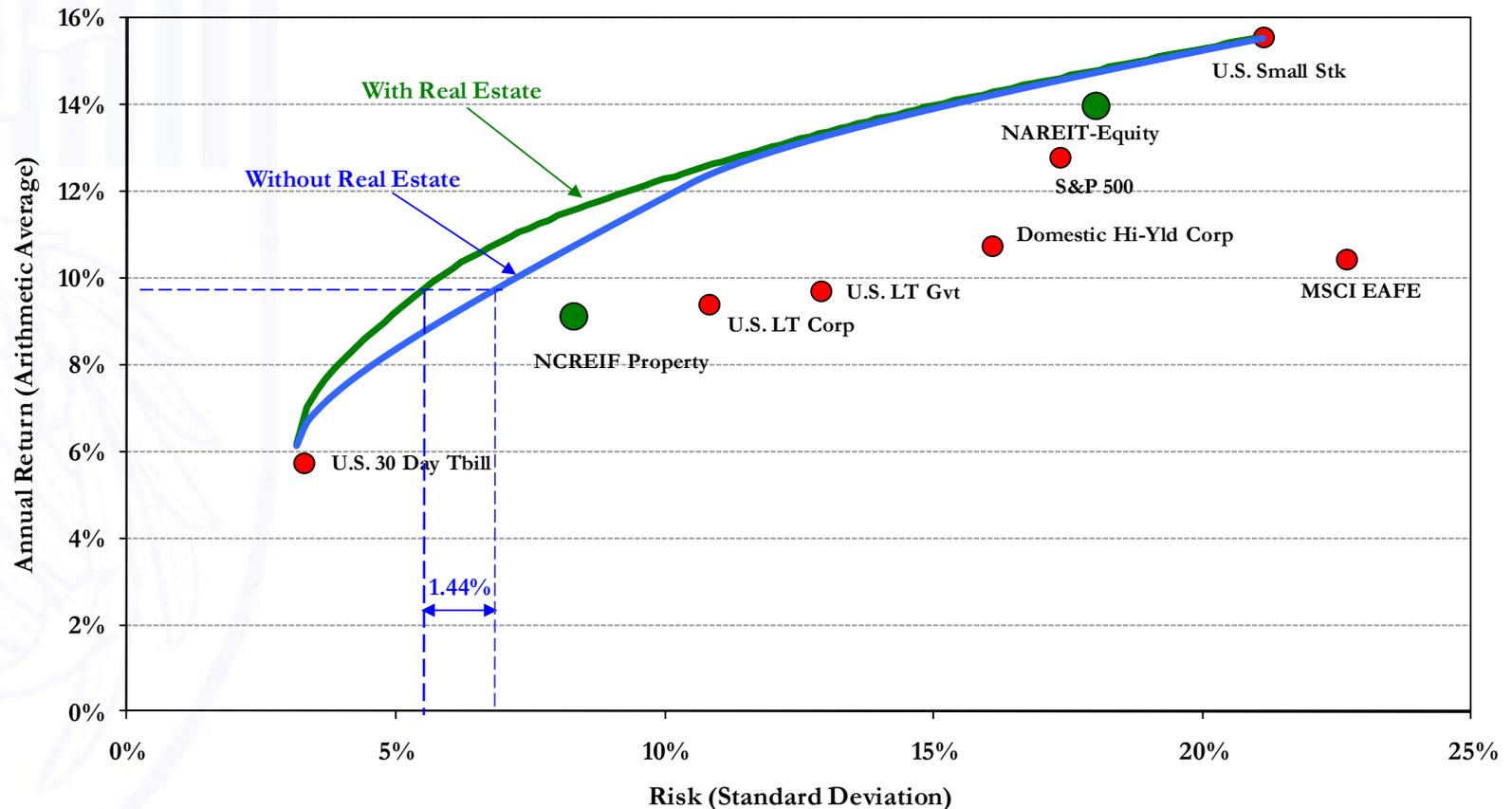
Efficient Frontiers with and without Real Estate
Selected Asset Classes for the Thirtytwo-Year Period 1978-2009



Source: Morningstar & author's calculations.

- Risk-reduction characteristics with (commercial) real estate, based on 1978-2009:

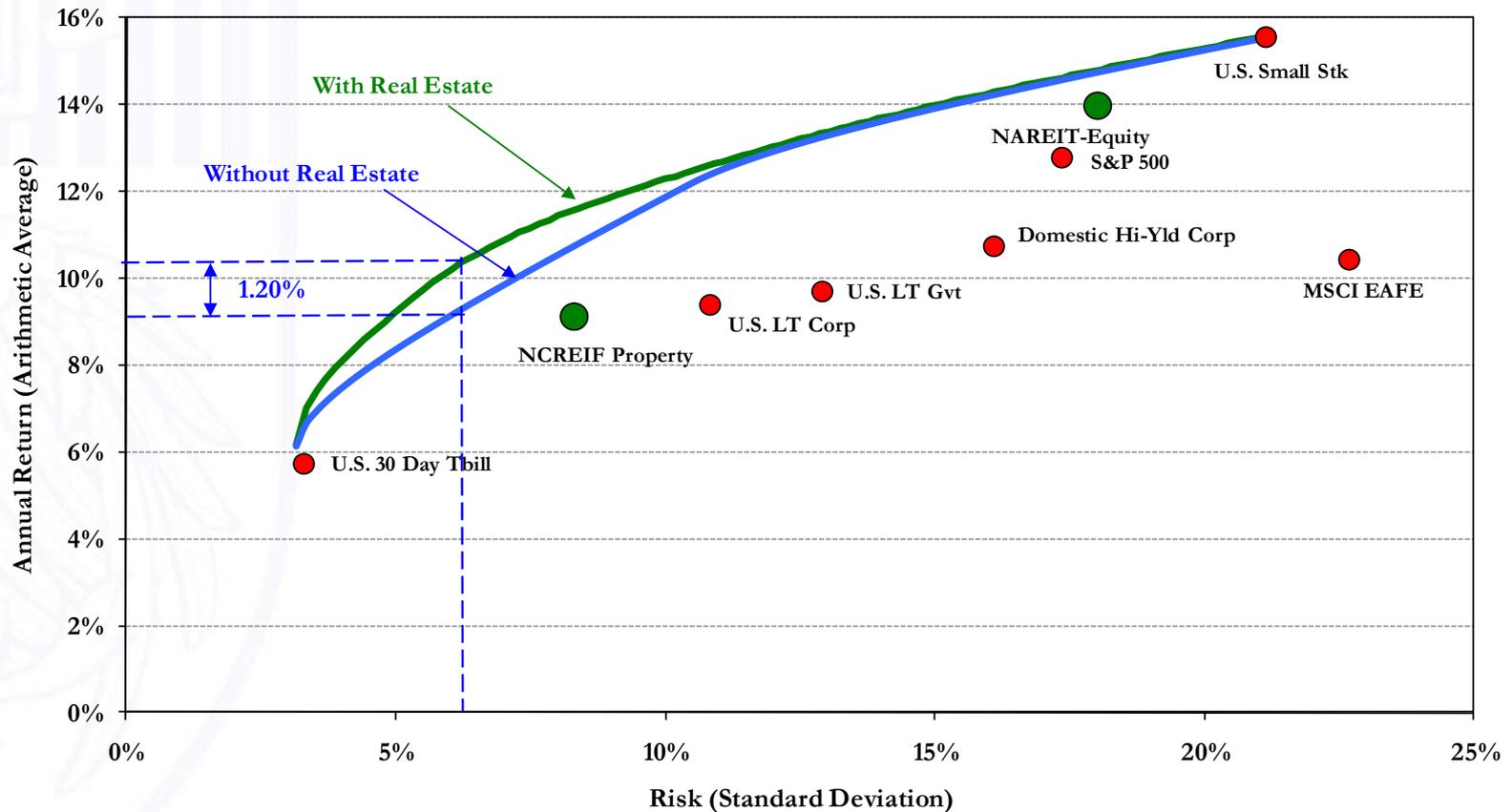
Efficient Frontiers with and without Real Estate
Selected Asset Classes for the Thirtytwo-Year Period 1978-2009
An Illustration of Risk Reduction



Source: Morningstar & author's calculations.

- Return-enhancement characteristics with (commercial) real estate, based on 1978-2009:

Efficient Frontiers with and without Real Estate
Selected Asset Classes for the Thirtyone-Year Period 1978-2008
An Illustration of Return Enhancement

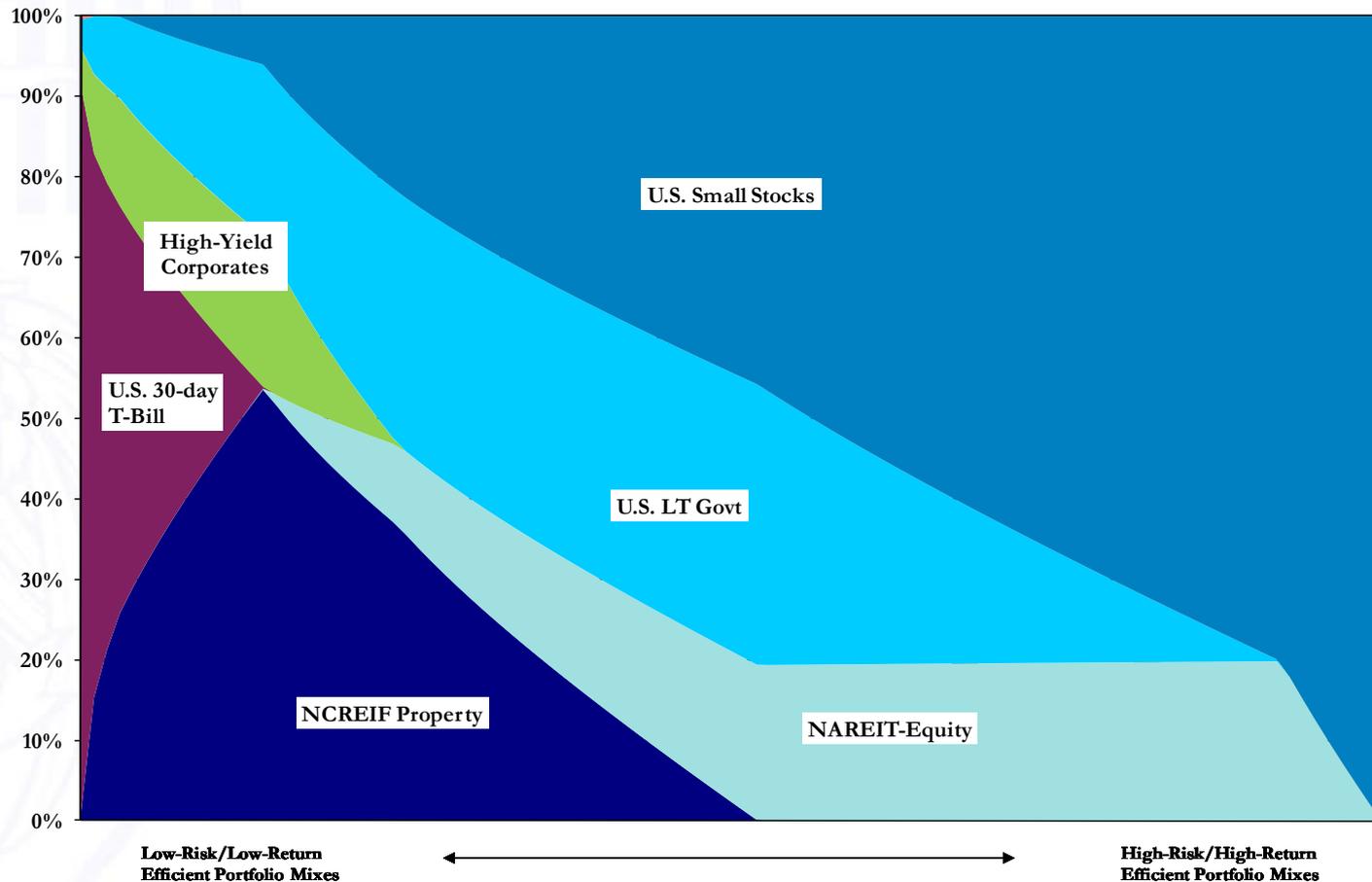


Source: Morningstar & author's calculations.

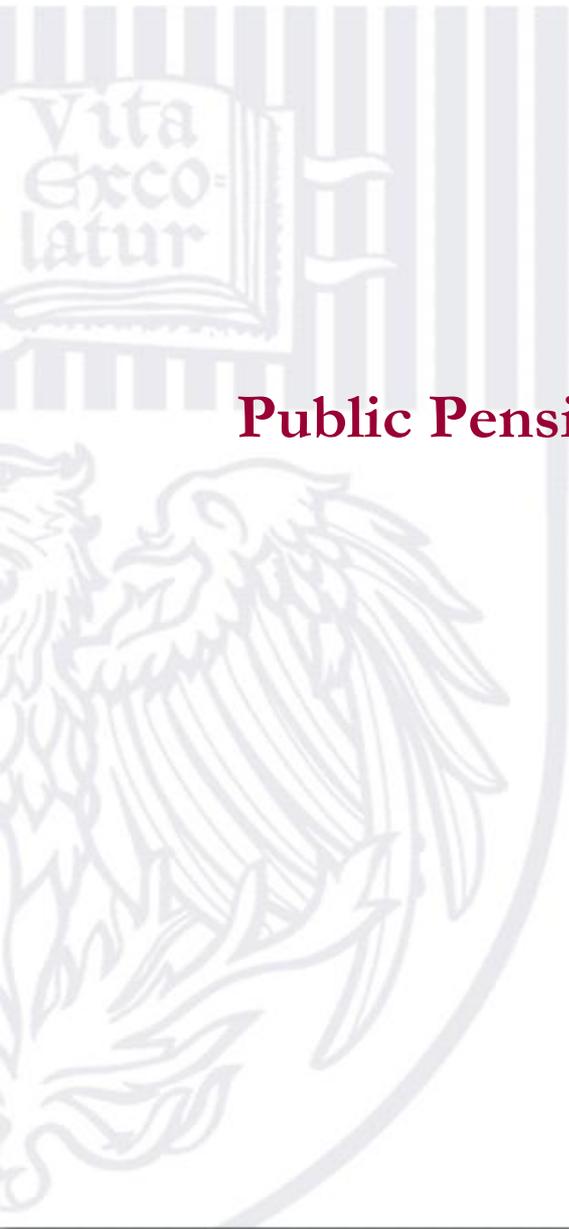
Appendix: Mixed-Asset Portfolio's Efficient Frontier

- Private and public real estate occupy a significant percentage of the efficient frontier:

Components of the (Unconstrained) Efficient Frontier
for the Thirtytwo-Year Period 1978-2008



Source: Morningstar & author's calculations.



**Appendix #2:
Public Pension Plans' Historical Portfolio Allocations**

Appendix: Detailed Public Plan Portfolio Allocations

- As noted earlier, the increased real estate allocation came at the expense of the cash and bond allocations.

Exhibit A.2
All Public Plan Sponsors—Sample Group¹

Percentage Allocation

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Cash	5.5	5.3	5.2	4.2	4.1	3.8	3.5	3.4	3.2	2.7	3.1	2.9	2.5	2.5
Stocks	49.6	52.6	54.8	57.3	59.2	60.7	57.9	55.5	59.3	60.8	60.6	56.7	56.2	53.8
Equities (unspecified)	16.2	15.1	14.5	16.0	16.9	17.5	23.6	26.3	29.7	32.4	28.7	27.1	25.3	19.9
Other U.S. Equities	12.7	13.5	14.2	13.2	11.5	11.7	9.2	8.9	7.8	6.6	8.8	6.4	6.0	4.6
U.S. Indexed Equities	12.9	14.9	15.6	17.2	19.4	17.4	13.1	6.7	6.7	4.8	1.9	3.0	3.2	4.6
International Equities	7.8	9.1	10.4	10.6	11.2	13.0	10.9	11.9	13.5	14.9	19.1	17.2	17.4	19.6
Company Stock	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Equities	0.0	0.0	0.0	0.1	0.2	0.8	1.1	1.8	1.5	2.1	2.2	2.9	4.4	5.2
Bonds	37.5	34.8	32.9	31.2	29.5	28.3	30.5	31.9	29.5	27.3	25.9	26.7	28.7	30.9
Bonds (other)	22.7	22.0	20.4	19.8	19.5	20.1	21.4	22.0	19.3	20.6	18.5	20.0	19.8	18.9
U.S. Government Bonds	7.7	7.0	6.8	5.7	4.8	4.1	5.9	6.7	5.6	3.8	4.3	4.9	5.2	7.4
Corporate Bonds	4.3	3.8	3.7	3.8	3.5	2.6	2.3	2.4	1.4	0.1	0.3	0.5	0.5	0.7
International Bonds	2.8	2.1	2.0	1.9	1.7	1.5	0.9	0.8	3.2	2.8	2.9	1.3	3.2	3.9
Real Estate Equity	3.2	3.2	2.9	3.1	3.0	3.5	4.0	4.1	4.2	4.2	4.8	5.8	6.1	5.9
Mutual Funds	0.5	0.6	0.6	0.5	0.6	0.9	0.7	0.5	0.3	0.3	0.2	0.5	0.3	0.2
Other Assets	3.5	3.6	3.6	3.7	3.5	2.9	3.4	4.6	3.5	4.8	5.4	7.4	6.3	6.8
Total Assets	100.0													

Source: PREA | *Investor Report*, August 2010.



**Appendix #3:
Annual (Gross & Net) Returns
by Fund Strategies**

Appendix: Annual Gross & Net Returns by Fund Strategy

- Performance by strategy over a full cycle?
- Performance over 2008 & 2009: -35% → -55%

NCREIF/Townsend - Real Estate Fund Indices and Vintage Report
for the Period 1989 through 2009

Year Ended	Gross (Value-Weighted) Returns							Net (Value-Weighted) Returns					
	Core			Value-Added		Opportunistic	Core			Value-Added		Opportunistic	
	NPI	All	Open-End	NFI-ODCE	All		Closed-End	All	Open-End	NFI-ODCE	All		Closed-End
2009	-16.86%	-29.75%	-29.75%	-29.76%	-40.66%	-34.86%	-29.87%	-30.16%	-30.16%	-30.40%	-41.55%	-35.88%	-30.78%
2008	-6.46%	-9.99%	-9.99%	-10.01%	-19.38%	-19.52%	-36.10%	-10.68%	-10.68%	-10.70%	-19.89%	-19.70%	-36.44%
2007	15.84%	15.92%	15.93%	15.97%	17.38%	17.30%	26.03%	14.82%	14.82%	14.84%	15.14%	14.50%	20.54%
2006	16.59%	16.46%	16.49%	16.32%	19.45%	20.03%	43.01%	15.42%	15.45%	15.27%	17.09%	17.12%	36.16%
2005	20.06%	21.18%	21.18%	21.39%	27.53%	30.42%	44.47%	19.95%	19.96%	20.15%	24.58%	26.57%	39.84%
2004	14.48%	13.68%	13.12%	13.06%	17.84%	18.70%	29.68%	12.61%	12.06%	12.00%	16.00%	16.73%	25.51%
2003	8.99%	9.45%	9.17%	9.28%	11.61%	12.47%	16.39%	8.45%	8.18%	8.28%	10.21%	11.01%	13.84%
2002	6.74%	5.87%	5.75%	5.54%	4.82%	3.82%	5.93%	4.90%	4.79%	4.57%	3.59%	2.61%	3.90%
2001	7.28%	5.63%	5.72%	5.64%	9.02%	9.09%	5.85%	4.65%	4.72%	4.64%	8.04%	8.20%	4.00%
2000	12.24%	13.57%	14.08%	14.28%	14.26%	14.98%	18.56%	12.51%	12.99%	13.19%	12.64%	13.23%	16.39%
1999	11.36%	12.35%	12.37%	13.17%	12.17%	11.10%	11.61%	11.29%	11.28%	12.05%	11.03%	9.97%	9.49%
1998	16.24%	15.89%	16.05%	16.42%	10.00%	10.92%	19.89%	14.88%	14.94%	15.29%	8.86%	9.75%	16.47%
1997	13.91%	15.52%	15.10%	15.11%	22.07%	19.67%	29.87%	14.49%	13.99%	13.94%	20.60%	18.09%	26.07%
1996	10.31%	10.02%	11.13%	11.71%	12.89%	12.90%	23.28%	9.08%	10.01%	10.53%	11.83%	11.82%	20.34%
1995	7.54%	6.10%	7.05%	7.11%	11.22%	12.01%	17.71%	5.20%	5.98%	6.01%	10.05%	10.79%	15.15%
1994	6.39%	5.99%	5.68%	6.14%	8.65%	10.09%	16.68%	5.02%	4.63%	5.07%	7.56%	8.88%	15.51%
1993	1.38%	2.43%	1.76%	0.55%	-0.30%	-0.55%	-8.06%	1.39%	0.76%	-0.47%	-1.38%	-1.86%	-9.18%
1992	-4.26%	-4.89%	-4.32%	-5.49%	-11.17%	-11.84%	-11.80%	-5.86%	-5.25%	-6.43%	-12.07%	-12.97%	-12.71%
1991	-5.59%	-7.40%	-6.53%	-6.24%	-4.44%	-2.91%	-10.81%	-8.33%	-7.43%	-7.15%	-5.53%	-4.39%	-11.84%
1990	2.30%	1.25%	0.40%	1.41%	-0.15%	5.31%	0.56%	0.29%	-0.57%	0.40%	-1.77%	3.63%	-0.60%
1989	7.77%	7.48%	6.98%	6.71%	8.72%	11.44%	5.99%	6.37%	5.90%	5.59%	7.57%	10.23%	4.84%
Market Downturn:													
2008-09	-22.23%	-36.77%	-36.77%	-36.79%	-52.16%	-47.57%	-55.19%	-37.62%	-37.62%	-37.84%	-53.18%	-48.51%	-56.01%

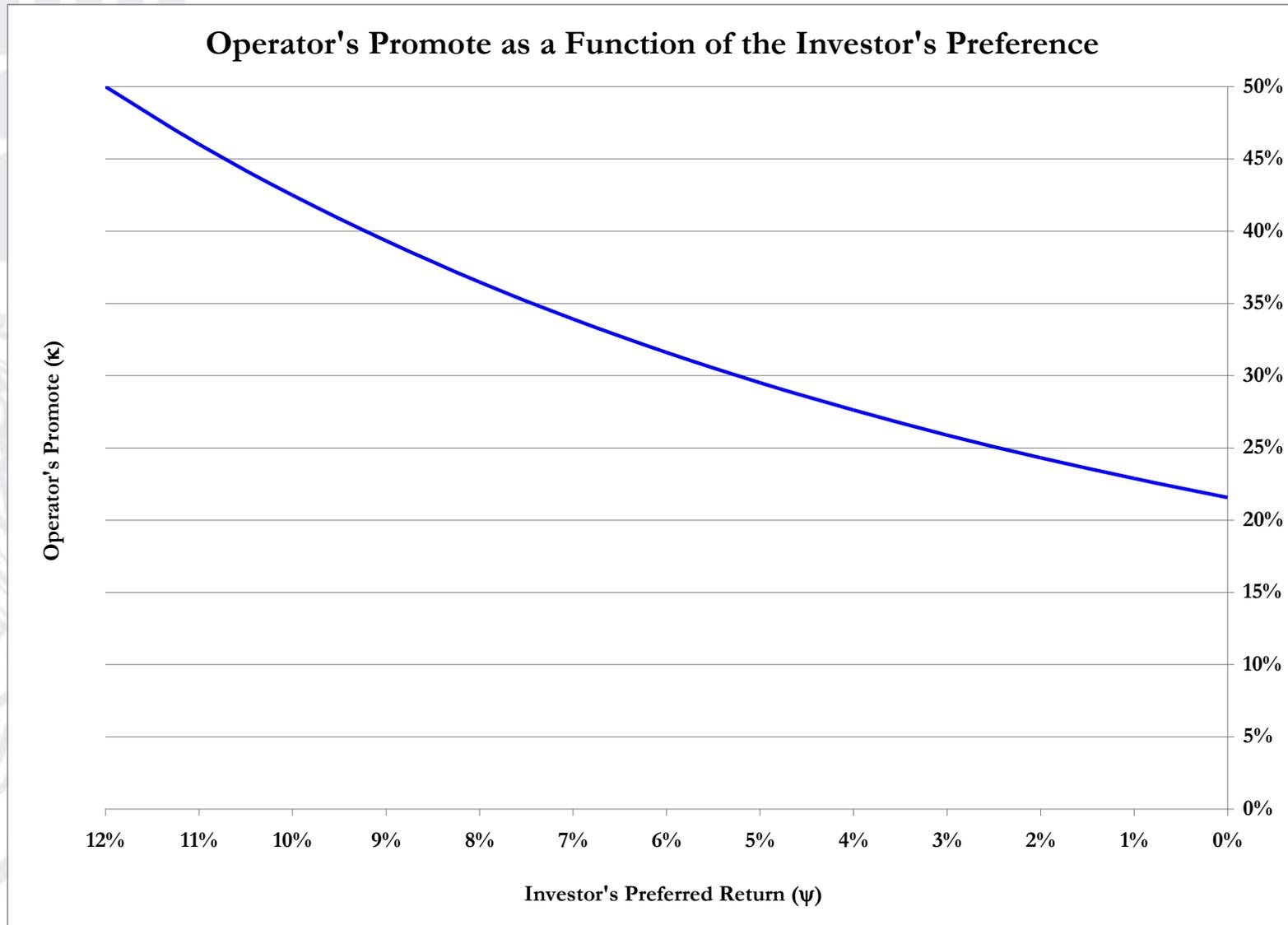


Appendix #4:
Additional Thoughts on Incentive Fees

- Assuming venture-level performance is unchanged, what's the tradeoff between the preferred return & promote?

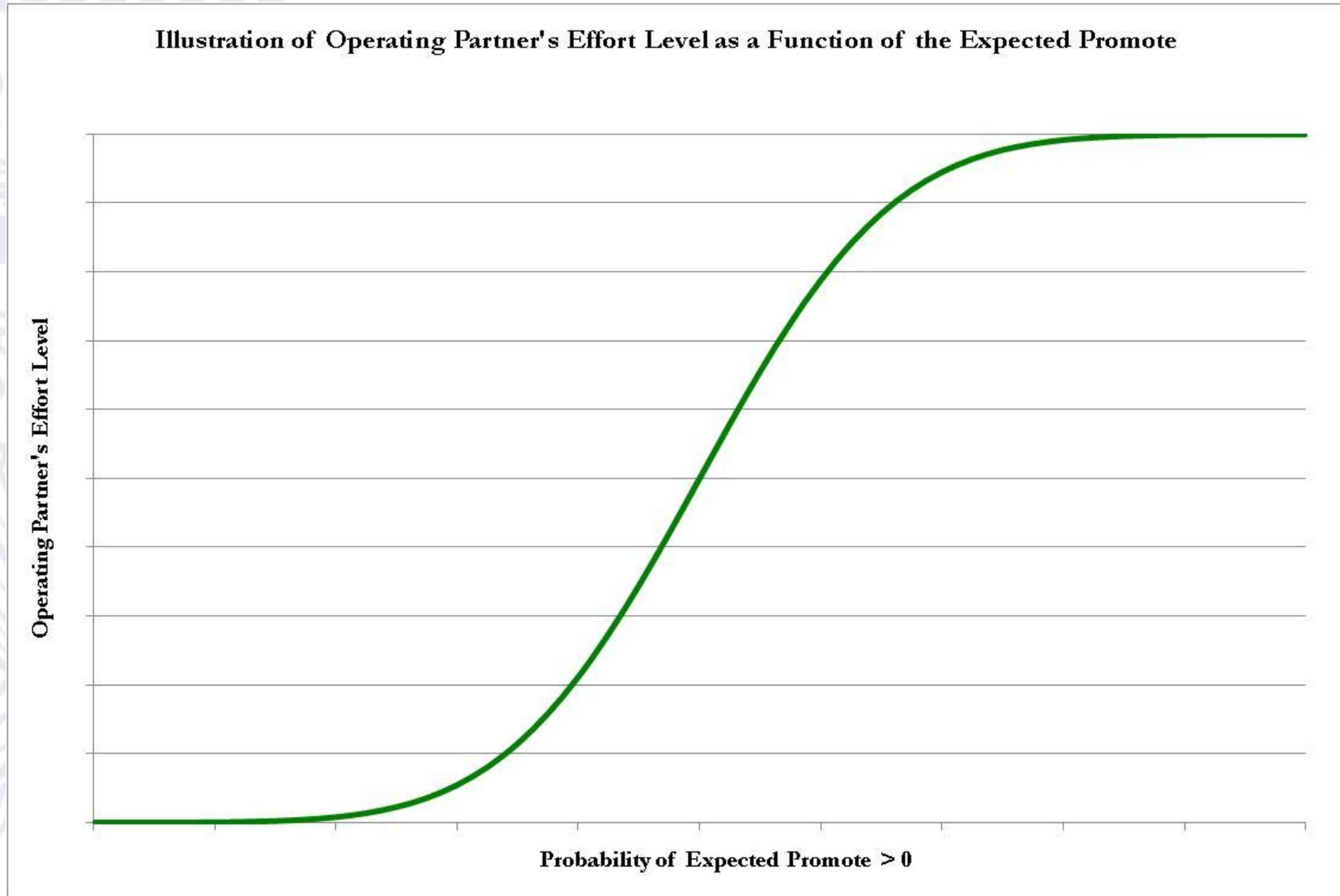
Base Case		Sensitivity of Preference & Promote Structure											
		1	2	3	4	5	6	7	8	9	10	11	12
JV Deal before Operating Partner:													
Average Return (μ_V)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Standard Deviation (σ_V)	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Investor's Preference (ψ)	12.0%	11.0%	10.0%	9.0%	8.0%	7.0%	6.0%	5.0%	4.0%	3.0%	2.0%	1.0%	0.0%
Residual Splits:													
Investor	50.0%	54.0%	57.5%	60.7%	63.5%	66.1%	68.4%	70.5%	72.4%	74.1%	75.7%	77.1%	78.4%
Operator (Promote = κ)	50.0%	46.0%	42.5%	39.3%	36.5%	33.9%	31.6%	29.5%	27.6%	25.9%	24.3%	22.9%	21.6%
JV Deal after Operating Partner:													
Likely Returns:													
JV Deal before Operating Partner:	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%
Operating Partner's Participation	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Investor's Net Return	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%	9.0%
Volatility (Standard Deviation):													
JV Deal before Operating Partner:	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%
Operating Partner's Participation	3.1%	2.9%	2.8%	2.6%	2.4%	2.3%	2.2%	2.1%	2.0%	1.9%	1.8%	1.8%	1.7%
Investor's Net Return	11.9%	12.1%	12.2%	12.4%	12.6%	12.7%	12.8%	12.9%	13.0%	13.1%	13.2%	13.2%	13.3%

- For an equivalent operating partner's expected promote, here's the tradeoff between the preferred return and the promote.



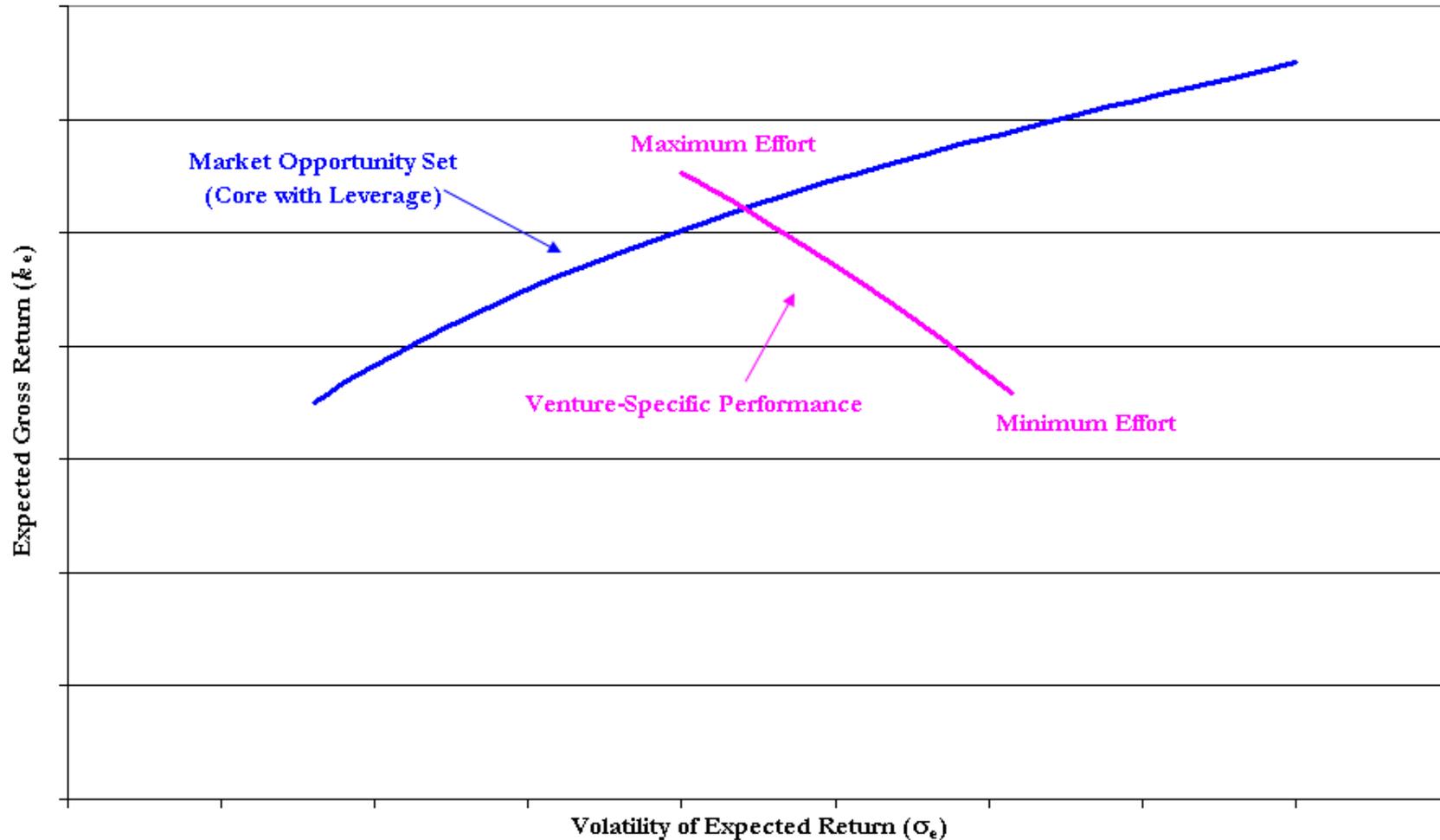
- The previous two slides suggest that the operating partner can earn the same expected promote – with less risk – by reducing its promote in return for the investor reducing its preferred return.
- In the extreme (and given our assumptions), the operating partner ought to be willing to reduce its promote to 20% provided the investor eliminates its preferred return:
 - Looks a lot like the private equity model
- Endogeneity problem: Operating partner's effort level is related to the probability of realizing the promote.
- This endogeneity problem argues – all else being equal – for a lower preference and a lower promote; so that the operating partner expends more effort and, hence, the venture earns a larger (risk-adjusted) return.
- In addition to effort, the venture-level performance is influenced by the property type and the skill of the operating partner.

- But, the operating partner's effort should be a function of the probability that the expected promote will be greater than zero (or realized).



- In turn, the venture's performance is a function of the operating partner's effort).

Illustration of Forecasted Core Real Estate Returns with Leverage





**Appendix #5:
Property-Market Fundamentals**

•Appendix: Current & Forecasted Vacancy Rates

- Vacancy rates are high (relative to 2007) across all property types.
- Many institutional investors are predicting a return to near-2007 levels.
- Construction of new supply is negligible.
- So, how long before demand growth fills the void? [= $f(\text{nature of economic recovery})$]

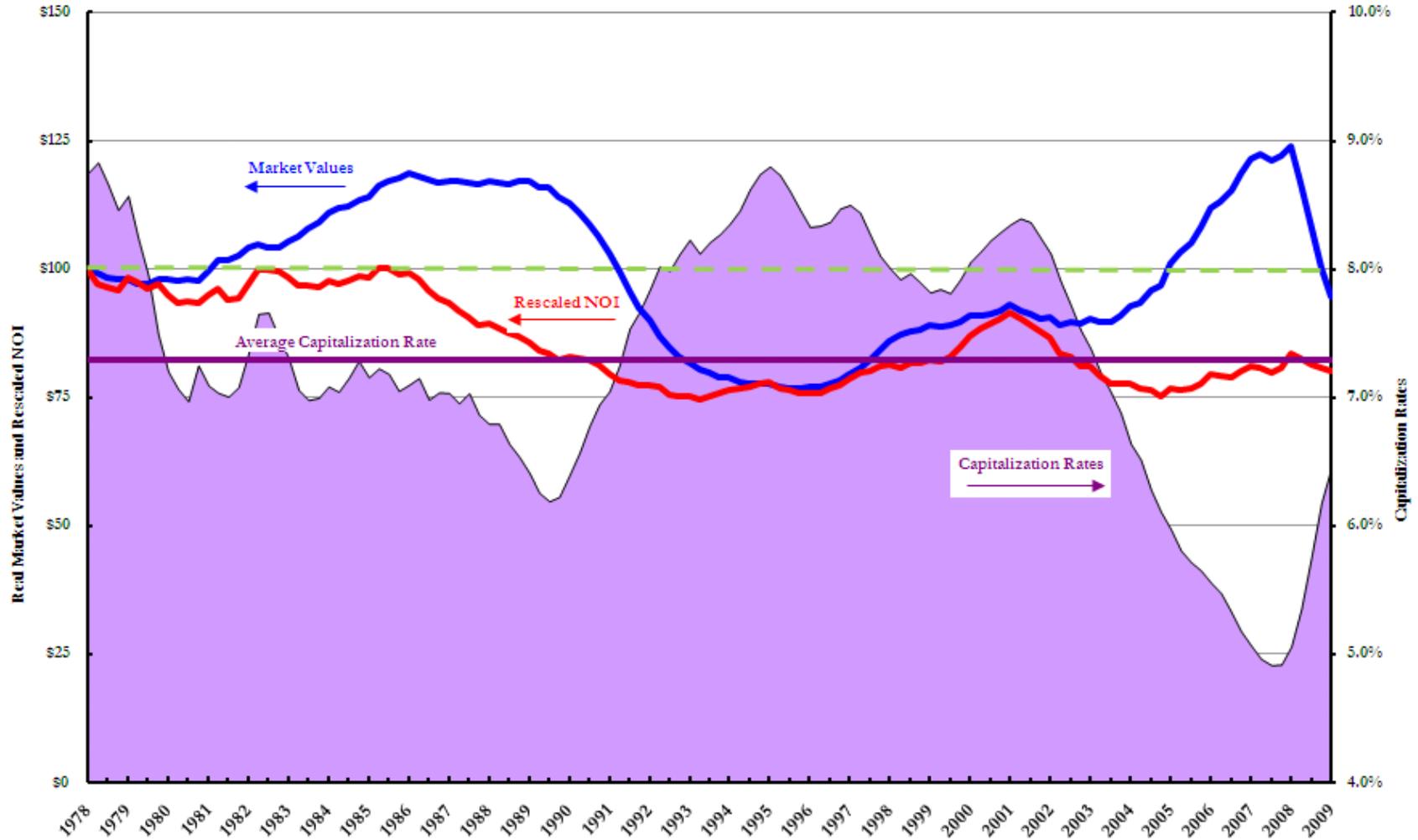
US Vacancy Rates by Property Type

	<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>Forecast</u>					
				<u>2010</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Apartment	5.7%	6.8%	8.1%	8.5%	7.8%	6.6%	5.6%	5.5%	6.0%
Industrial	9.5%	11.4%	13.9%	14.2%	13.4%	12.0%	10.8%	10.2%	10.2%
Office	12.6%	14.0%	16.3%	17.2%	16.7%	15.3%	13.7%	12.5%	12.2%
Retail	7.2%	8.7%	10.3%	10.7%	10.4%	9.8%	9.1%	8.6%	8.2%

Source: CBRE-EA, REIS (History), RREEF Research (Forecast), as of August 2010

Source: RREEF | *Investment Outlook: A Mid-Year 2010 Review*, August 2010

NCREIF Property Index: Real Market Values, Rescaled NOI and Capitalization Rates
Based on a \$100 Investment for the Period 1978 through 2009

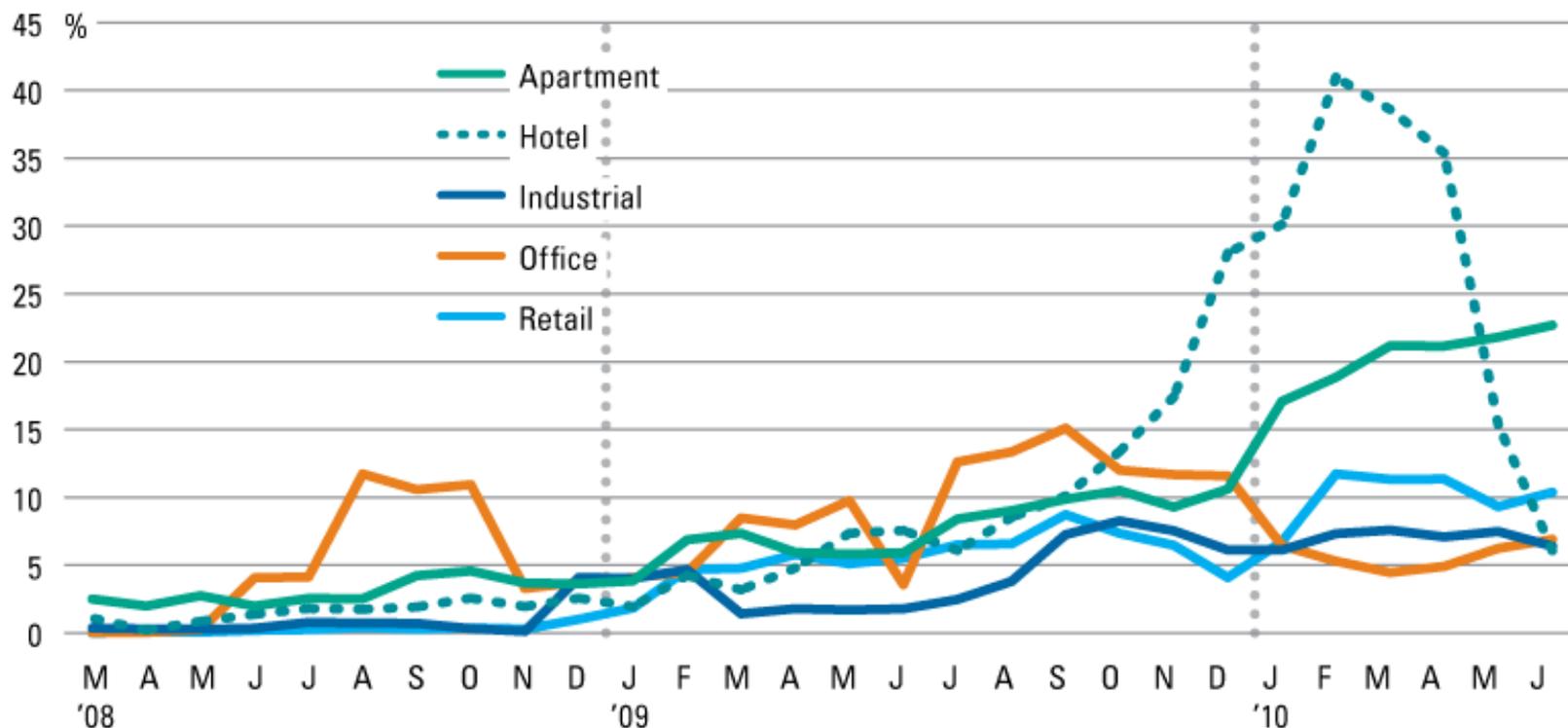


Sources: NCREIF, BlackRock Realty and instructor's calculations.

•Appendix: “Distressed” Sales

- Spike in hotel distress is startling
- In all but apartments, distress sales seem to be declining/stabilizing:

PERCENT OF SALES ASSOCIATED WITH DISTRESS
3-MONTH ROLLING AVERAGE



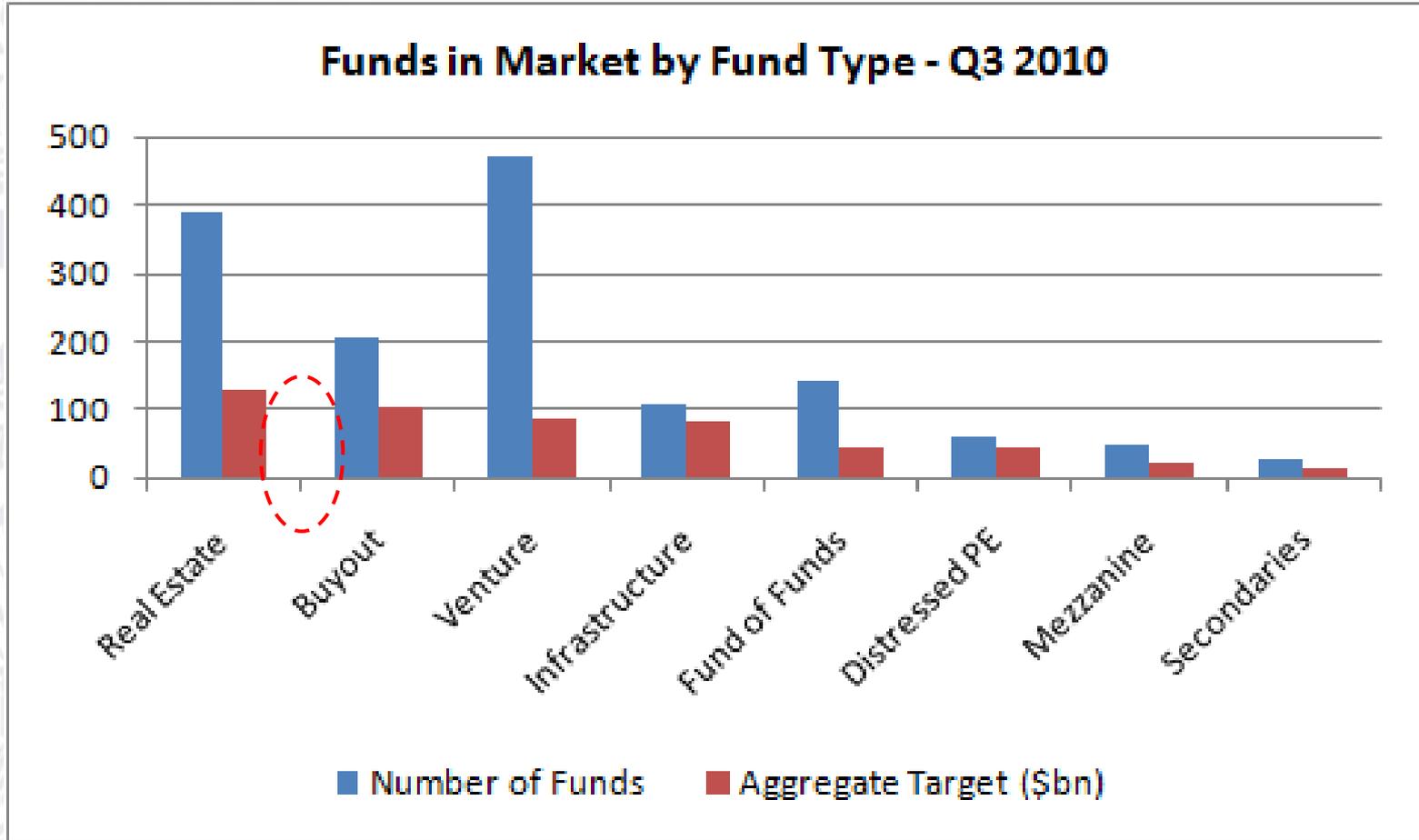
Source: Real Capital Analytics | *U.S. Capital Trends*, July 2010



**Appendix #6:
Capital-Market Activities**

Appendix: Where Do Real Estate Funds Stand?

- Real Estate funds still popular:



Source: Prequin, Ltd.: Q3 2010 Private Equity Fundraising Update

Appendix: Capital-Raising Efforts – Private Equity

- In 2010 (YTD), approximately \$20 billion already raised by the top ten funds:

Fund	Firm	Capital Raised (mn)	Fund Focus
Real Estate Turnaround Consortium	Brookfield Asset Management	5,565 USD	Global
Morgan Stanley Real Estate Fund VII Global	Morgan Stanley Real Estate	4,700 USD	Global
Fortress Credit Opportunities Fund II	Fortress Investment Group	2,600 USD	Global
Beacon Capital Strategic Partners VI	Beacon Capital Partners	2,500 USD	US, West Europe
Starwood Global Opportunity Fund VIII	Starwood Capital Group	1,800 USD	Global
Starwood Capital Global Hospitality Fund II	Starwood Capital Group	965 USD	Global
Fortress Japan Opportunity Fund	Fortress Investment Group	75,000 JPY	Japan
Mesa West Real Estate Income Fund II	Mesa West Capital	615 USD	Western US
JBG Fund VII	JBG Companies	577 USD	Washington D.C.
AEW Partners VI	AEW Capital Management	575 USD	North America

Source: Preqin Real Estate Spotlight, September 2010.

Capital-Raising Efforts – Private Equity (continued)

- In 3rd quarter of 2010, another ~\$20 billion for real estate is “on the road” by the top ten funds:

Fund	Manager	Target Size (mn)	Strategy
Lone Star Fund VII	Lone Star Funds	4,000 USD	Debt and Distressed
Lone Star Real Estate Fund II	Lone Star Funds	4,000 USD	Debt, Distressed and Opportunistic
Carlyle Realty Partners VI	Carlyle Group	3,000 USD	Debt and Opportunistic
TA Realty Associates IX	TA Associates Realty	1,850 USD	Core-Plus, Debt, Distressed and Value Added
MacFarlane Urban Real Estate F	MacFarlane Partners	1,500 USD	Opportunistic
UK Property Income Fund	Legal & General Property	700 GBP	Core and Core-Plus
Aetos Capital Asia IV	Aetos Capital Asia	1,000 USD	Debt, Distressed and Opportunistic
Forum Asian Realty Income III	Forum Partners	1,000 USD	Opportunistic
Vornado Capital Partners	Vornado Realty Trust	1,000 USD	Distressed and Value Added

Source: Preqin Real Estate Spotlight, September 2010.

Appendix: Capital-Raising Efforts – Public

- Fund-raising began in second half of 2008
- And has continued into 2010
- Equity initially dominated capital-raising (~3:1), but now < 2:1:

Summary of Capital-Market Activity for Publicly Traded REITs
as of June 30, 2010

	Common Stock			Senior Debt		
	Number of Issues	Amount	Average Size	Number of Issues	Amount	Average Size
<u>Second Half of 2008</u>						
Number of Offerings	45	\$8,248,820	\$183,307	4	\$834,799	\$208,700
Amount Raised (\$000)						
Average Raise per Offering (\$000)						
<u>2009</u>						
Number of Offerings	190	23,755,138	125,027	34	11,508,400	338,482
Amount Raised (\$000)						
Average Raise per Offering						
<u>First Half of 2010:</u>						
Number of Offerings	84	9,768,399	116,290	30	10,641,403	354,713
Amount Raised (\$000)						
Average Raise per Offering						
<u>Total:</u>						
Number of Offerings	319	\$41,772,357	\$1	68	\$22,984,602	\$338,009
Amount Raised (\$000)						
Average Raise per Offering						
		64.5%			35.5%	

Source: SNL Financial and instructor's calculations

Appendix: Dry Powder – Private Equity

- More “dry powder” than ever before.
- Lots of talk about “opportunistic/distressed situations”
- But, so far, more smoke than fire!

Private Equity Real Estate Dry Powder by Fund Strategy: 2002 - 2009

(\$bn)	<u>Core-Plus</u>	<u>Opportunistic</u>	<u>Value Added</u>	<u>Debt</u>	<u>Distressed</u>	<u>Total</u>
Dec-2002	2.1	19.7	10.0	5.1	1.3	38.1
Dec-2003	3.1	16.8	11.1	4.6	1.5	37.1
Dec-2004	4.7	20.4	18.3	5.7	0.9	50.0
Dec-2005	7.9	43.7	31.1	6.9	3.4	93.0
Dec-2006	10.9	60.9	40.9	9.2	4.5	126.4
Dec-2007	10.2	84.5	50.2	16.4	4.6	165.9
Dec-2008	8.7	84.0	48.0	24.7	5.8	171.2
Dec-2009	8.9	86.7	58.6	21.0	9.3	184.5

•Source: Preqin Ltd. (www/preqin.com) and author's calculations.