

Commercial Real Estate Equity Returns

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When they make portfolio allocation decisions, investment managers seek to learn from past experience. This is not to say that relative past performance should be the sole determinant of contemporary allocations, only that past returns are a useful starting point.

In this endeavor, they have access to quite reliable and easy to understand historical return indices for the largest investment categories such as public equity (all, large-capitalization versus small-capitalization, growth versus equity, domestic versus foreign, developed versus emerging, and so on) and public debt (all, government versus corporate versus municipal, and so on). While there are numerous conceptual and accounting issues with respect to development of these indices, most have been fully vetted over time in both the academic and the professional literature. Most important, these return indices can at least purport to be “the universe” (as opposed to a sample), and most can be purchased.

Commercial real estate has long been a problem for those charged with making asset allocation decisions. Its heterogeneous nature implies that one office building sale does not represent all office buildings, and each building sells only infrequently. Commercial real estate is also an asset group of some size. In 1994, the value of all commercial real estate roughly equaled the value of the Wilshire

5000; it is still about 40% of the value of all publicly traded stock.¹

We use newly available data to construct a real estate return series that “tells the story” on historical commercial real estate returns for institutional investors. The all-equity index comprises appropriately weighted samples from core private holdings, non-core private holdings, and publicly traded real estate equity. The traditional appraisal problem is explicitly dealt with by relying primarily on sales data. Likewise, the well-known lag issue and the potential smoothing of returns are both explicitly addressed in an effort to provide a timely and comprehensive view of commercial real estate.

EFFORTS TO DOCUMENT COMMERCIAL REAL ESTATE RETURNS

By 1991, there was enough of a real estate returns literature for Salomon Brothers to publish a monograph titled “Real Estate as an Asset Class: A 25-Year Perspective” (see Miles [1991]). The literature begins with a famous Wendt and Wong article [1965], then proceeds with an excruciating lack of pace for two and a half decades. The bright spots are establishment of the National Council of Real Estate Investment Fiduciaries (NCREIF) in 1982 and evolution of the already-established National Association of Real Estate Investment Trusts (NAREIT).

As valuable as these two associations have been for producing consistent numbers over time, neither return series was without serious limitations. NCREIF is based on appraisals; was very limited in early years; represents only certain property types; and is not available for research at the property level. NAREIT was very small until 1993; comparability suffers from legislative changes (REIT rules have evolved significantly over time); and experienced big sector weight changes as companies went from C Corporation to REIT status and back again to C Corporation status. None of these problems is individually fatal, but in combination they gave asset allocation decision-makers far less confidence in these returns than in comparable stock and bond return series.

Most important, lack of confidence in the completeness of historical returns has caused one particular component series (often NCREIF) to be used as the overall real estate proxy in the mixed asset allocation decision. Subsequently, as the resulting investment strategy was implemented, other components of commercial real estate *not included in NCREIF* were employed. As demonstrated by the alternative return series that we develop, this can lead to large tracking errors and less portfolio risk reduction than anticipated in the original asset allocation decision.

Today, both NCREIF and NAREIT are quite large. Further, NCREIF is in the process of purchasing the IPC database, which provides fund level information going back to the early 1970s.² This additional dataset includes not only the funds that hold the “core” properties reported by NCREIF, but also funds that hold the “non-core” property types such as raw land and development. These institutional ownerships now constitute around 20% of the value of all privately held commercial real estate.³ While this set of databases is far from the universe, it is a sample large enough to tell the story if properly used.

With an accelerating rate of change in society and ever-more-frequent portfolio reevaluations, the need for an accurate picture of past performance has never been greater. Fortunately, a combination of technological progress and industry cooperation now allow creation of a timely, comprehensive return series that is reasonably comparable to stock and bond return series. It may not be perfectly apples-to-apples, but it is a great improvement over what we are accustomed to.

The real estate indices and their underlying databases are also useful for benchmarking and performance evaluation, but the methodologies appropriate for those tasks are different from those that we discuss. Our purpose is to tell the story, and this means we are subject to some lim-

itations and also some freedoms that are not available in the case of either benchmarking or performance evaluation. In benchmarking, for example, any restatement is a serious problem, as incentive fees may have already been paid. When telling the story, on the other hand, it is essential to include as many components of the universe as possible, even if the particular investment at issue is confined to a narrow segment.⁴

A TIMELY APPROACH TO CORE REAL ESTATE

The basic NCREIF index (produced from the database) has over time come to be both the benchmark and the way to tell the story for most institutional investors in private commercial real estate. While we feel that it is usually inappropriate to use the same index for both purposes, the underlying database is a wonderful tool for both. Given our story-telling purpose, the NCREIF index is flawed because 1) it is lagged, and 2) it does not represent even the entire private spectrum of institutional commercial real estate.⁵

The figures for the NCREIF index come from the audited records of pension fund money managers. The income is the actual income received from a property, but the value change is based on the change in appraised value. (As most properties sell only infrequently, this is fully appropriate for NCREIF.) Interestingly, there are now over 3,000 sales of properties in the NCREIF database.⁶ By using only those sales, rather than the appraised values, we are able to significantly ameliorate the timeliness (or lag) problem.

The appraisal is a function of comparable sales in several previous periods, and there is a significant administrative lag in getting the appraisals done and reviewed. Consequently, the value change NCREIF reports in any quarter is really the value change in some preceding quarter. (Estimates of the extent of the lag range from one to four quarters.) Using only real sales significantly reduces the problem.

Sales are usually negotiated in the quarter before the quarter when they actually close. When prices move significantly, however, one or the other of the parties to a sale often finds a way to get out of the deal. Even when the market moves only slightly, the final settlement terms often reflect the stronger bargaining position of the party on the right side of the market move. Consequently, while even a sales index will lag, it won't lag by much.

The first step in creating a timely return series from the NCREIF database is to use the well-established repeat

EXHIBIT 1 NCREIF, NCREIF Sold Property, and Repeat Sale Total Returns

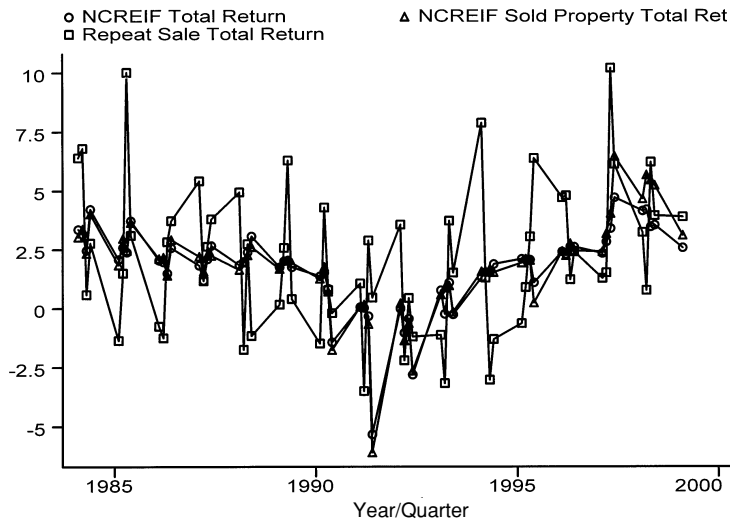
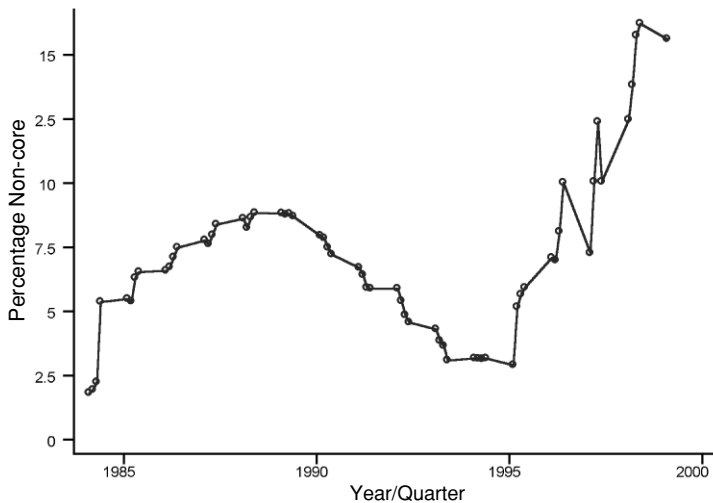


EXHIBIT 2 Percentage Non-core for All Private Total Return



sales procedure to produce returns from the series of quarterly income flows (adjusted for capital expenditures) and eventual sales proceeds.⁷ Goetzmann [1992, 2000] has developed a commercial real estate version of Shiller's [1991] classic model. The commercial real estate version of this technology allows inclusion of periodic income in the return calculation.⁸ We perform this calculation using values of the properties as weights.⁹

We apply a simple moving average adjustment to account for the fact that real estate information is noisy. New information comes from single sales of heterogeneous properties. Consequently, any valuation such as a sales negotiation considers not just information received in the immediate period, but information flows in the preceding periods as well. Certainly lenders are critical to many transactions, and they use more than one period of history to decide on valuation for loan purposes. We use a 35%, 30%, 20%, and 15% weighting of preceding quarters.¹⁰

Exhibit 1 shows the traditional NCREIF total return from first quarter 1984 through first quarter 1999. Also shown is a series that uses the NCREIF return calculation (based on appraisals) but only properties that eventually sold (i.e., those used in the repeat sales series). The latter series tracks the traditional NCREIF well until the last few years. This is expected, since sales prices eventually replace appraised values in the NCREIF return calculation. The sales price is typically above appraised value in rising markets, as demonstrated by Fisher, Miles, and Webb [1999].

The third series in Exhibit 1 is the repeat sales total return. It clearly leads the NCREIF series, reducing the lag problem and producing a more timely private core return proxy.

PRIVATE NON-CORE RETURNS

Following the same general conventions established for core commercial real

EXHIBIT 3 Repeat Sale and Non-core Gross Total Returns

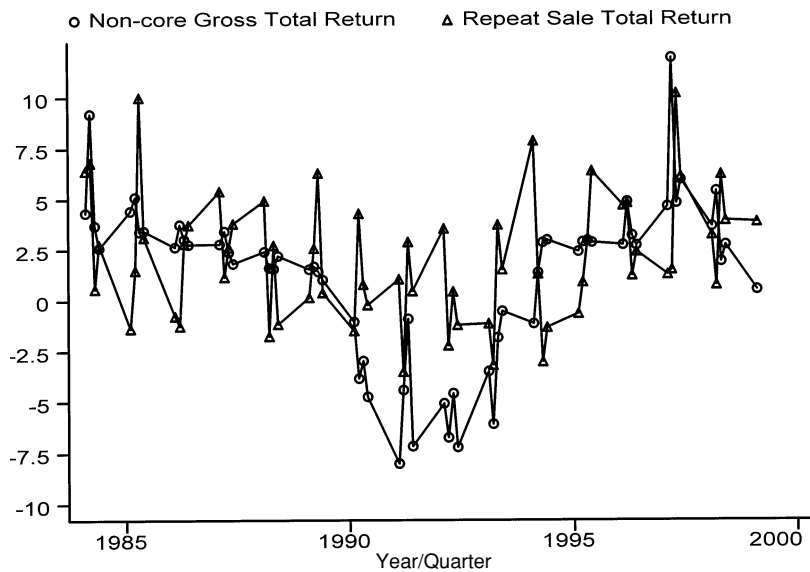
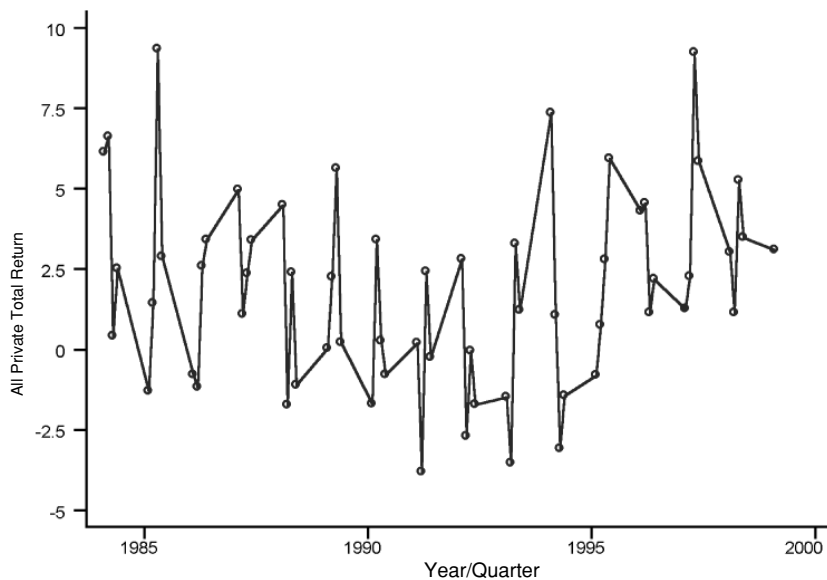


EXHIBIT 4 All Private Total Return



estate, we next use the newly available fund-level database to establish returns for non-core property. We define as non-core all funds that have investment strategies indicating ownership of properties that would not meet the NCREIF rules for inclusion. In this way, the combination of NCREIF sales as core and IPC fund returns as non-core covers the entire private institutional universe.

This is the second critical element. To function properly as a real estate proxy in the mixed asset allocation decision, a series must be inclusive as well as timely. Until recently, most private institutional real estate investments have been “core,” but the rapid growth of the opportunity funds in the 1990s has caused the non-core component of private commercial real estate to approach 20% of the total as shown in Exhibit 2.

Unfortunately, the majority of these new funds have not experienced enough liquidations to use the repeat sales approach.¹¹ To make the non-core as timely as the core, we use the lag between the NCREIF traditional and the repeat sales series shown in Exhibit 1. When we regress NCREIF returns on lagged repeat sales returns, the highest percentage of explained variation is for a two-quarter lag.¹² Consequently, we move the non-core fund series forward by two quarters to make it as timely as the core series.¹³

Exhibit 3 shows the non-core returns in comparison to the core returns. The related statistics are shown in Exhibit 8. Note that the non-core funds themselves are, as expected, more volatile.

The combination of the two private series shown in Exhibit 4, is after fees. This is essential, as the fees on some of the non-core funds are considerably higher than on the core funds. We use the actual fees paid on the non-core funds (from the IPC database). For the core funds, we assume a 100 basis point annual fee.¹⁴

The total private institutional return series in Exhibit 4 is a weighted

EXHIBIT 5 Wilshire Total Return

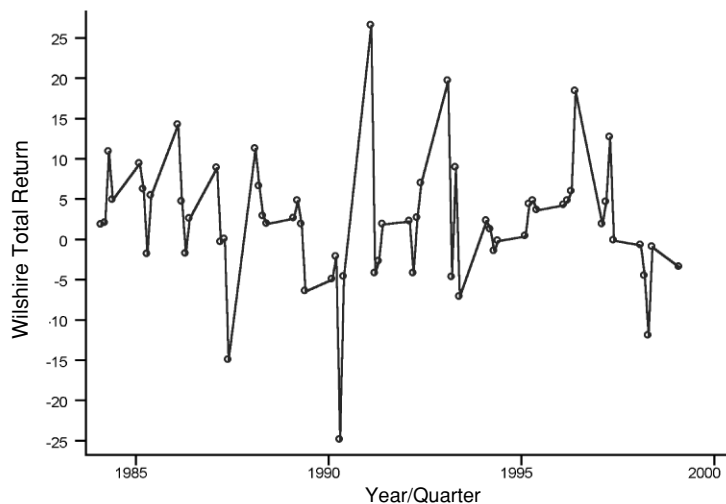
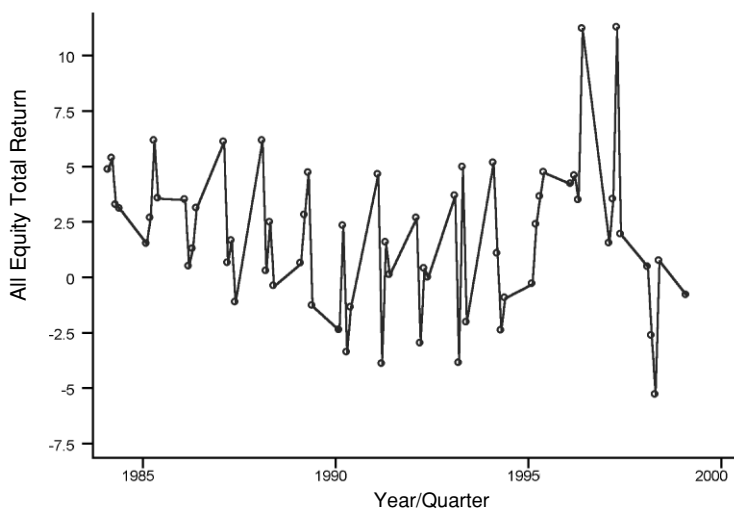


EXHIBIT 6 All Equity Total Return



combination of the core and non-core. The weights shown are the total value of all the NCREIF index properties (not just those that sold) and the aggregate value of all non-core funds.¹⁵

Combining the two now timely components, Exhibit 4 allows an inclusive look at total private institutional commercial real estate. Importantly for asset allocation purposes, the series is considerably more volatile than NCREIF (standard deviation of 2.97 versus 1.70) and far less lagged. (See Exhibit 8 for correlations.)

PUBLICLY HELD REAL ESTATE EQUITY

The publicly held component of the comprehensive commercial real estate returns series is more straightforward. There are several real estate equity return indices in the public markets. We use the overall Wilshire index because it 1) includes C Corporations and is thus most inclusive, and 2) ignores very small REITs, which is consistent with the desire to show a universe for the institutional investor.¹⁶

Exhibit 5 graphs the returns. As shown in Exhibit 8, this is a more volatile return stream. It has some opportunistic investing and considerable leverage like the opportunity funds. In addition, it is priced daily so the annualized standard deviation is higher.¹⁷

TIMELY AND COMPREHENSIVE COMMERCIAL REAL ESTATE EQUITY RETURN SERIES

Exhibit 6 shows the combination of the three components of the index with the public-to-private weighting in Exhibit 7.¹⁸ (The Wilshire returns are reduced by 50 basis points annually so that all three series are after fee.) This is the return that institutions on average received over the first quarter 1984 to first quarter 1999 period, essentially one complete cycle in the commercial real estate markets.

EXHIBIT 7

Percentage Public in All Equity Total Return

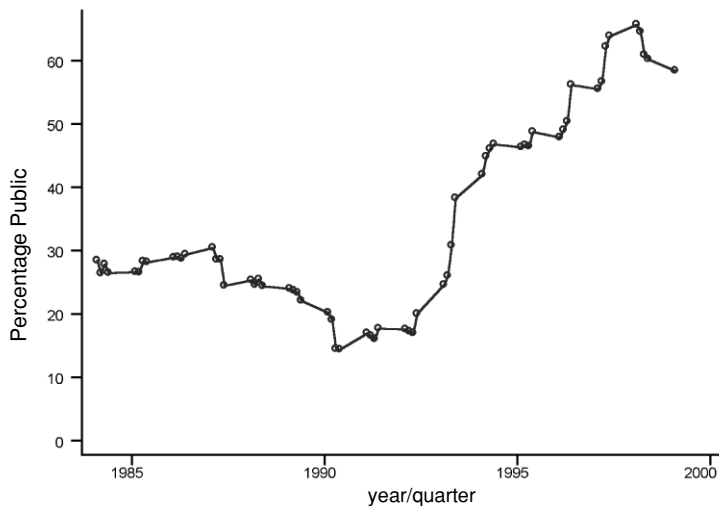


EXHIBIT 8

Component Series in the Commercial Real Estate All Equity Index, 1984-1999-1

	Mean	Std.	G. Mean
1. NCREIF Total Return	1.72	1.70	1.71
2. NCREIF Sold Property Total Return	1.85	1.98	1.83
3. Repeat Sale Total Return	2.17	3.10	2.12
4. Non-core (IPC) - gross	1.25	3.97	1.17
5. All Private Total Return (after fee)	1.84	2.97	1.80
6. Securitized Returns - Wilshire Total Return	2.14	7.83	1.84
7. All Equity Total Return (after fee)	1.79	3.29	1.73

Correlations							
	1	2	3	4	5	6	7
1.	1.00						
2.	0.97	1.00					
3.	0.39	0.39	1.00				
4.	0.79	0.73	0.35	1.00			
5.	0.44	0.44	0.99	0.43	1.00		
6.	0.04	-0.02	0.03	0.06	0.04	1.00	
7.	0.26	0.17	0.62	0.34	0.63	0.70	1.00

In the early years, holdings are largely privately held core properties, because this is the bulk of what institutions held over this period. However, it also includes a little higher-risk private activity and, eventually, significant public equity. The exhibits make it clear that real estate returns (for institutional holders) have varied by component over time. In big up markets, it clearly paid to hold more of the higher-risk non-core properties.

The third quarter of 1998 presents an interesting conceptual issue. With the global problems precipitated by the crash of Long Term Capital Management, all markets were affected. In commercial real estate there was both a price drop and a very dramatic slowing of transaction volume as buyers tried to renegotiate. For our purposes, should the returns show what property would have sold for; or, since there were few sales, do we say that no transactions mean no price drop?

We have chosen a middle road, by using the sales that did close. Clearly most came from hard contracts negotiated before the crash, but even these show some impact from the buyer's drastically improved negotiating position.

Exhibit 9 shows real estate in its various institutional components relative to the major stock and bond indices. As expected, the risks rise from T-bills through bonds to stocks, as do the returns. The traditional NCREIF is closer on the basic risk measure (standard deviation) to bills than bonds, which is clearly not intuitive. Our all-equity total return is in between the other two large asset classes in terms of risk. Similarly, the correlation with stocks is a more believable 0.33. Using this more timely and inclusive

EXHIBIT 9
The Commercial Real Estate All Equity Index
Compared to Other Indices, 1984-1999.1

	Mean	Std.	G. Mean
1. Treasury Bill Rate	1.47	0.45	1.47
2. Government-Corporate Bond Rate	2.45	2.94	2.41
3. Standard and Poor's Index	4.48	7.45	4.20
4. NCREIF Total Return	1.72	1.69	1.71
5. All Equity Total Return (after fee)	1.79	3.29	1.73

Correlations					
	1	2	3	4	5
1.	1.00				
2.	0.26	1.00			
3.	0.02	0.19	1.00		
4.	0.34	0.09	0.04	1.00	
5.	0.13	0.06	0.33	0.26	1.00

measure for the covariance matrix in asset allocation is an easy decision.¹⁹

Now we can consider the potential benefits of real estate in the institutional portfolio. Using the NCREIF series, the correlation with stocks and bonds is so low that real estate fits, almost whatever the return. This would be fine if investment managers believe the near-zero reported correlation. It is very difficult to believe, however, that a large asset class could be so completely divorced from the overall economy. With the dampened volatility from appraisals, the NCREIF standard deviation is also far too low, again putting real estate in the portfolio almost regardless of prospective returns.²⁰

SUMMARY

This is preliminary research. As NCREIF makes fund-level information available, much more will be possible. Further, the continued growth of NAREIT, NCREIF, and opportunistic investing will mean more property sales, and hence more refined repeat sales proxies.

Still, this current effort clearly demonstrates that commercial real estate for institutional investors is far broader than NCREIF. It also demonstrates that it is possible to use the NCREIF database to produce more timely core returns. Ignoring either of these possibilities in mixed asset allocation work is suboptimal. A timely and comprehensive view is now possible.

ENDNOTES

The authors appreciate the assistance of NCREIF, IPC, and Wilshire in the preparation of this article. However, any errors are solely the responsibility of the authors.

¹Miles and Tolleson [1997] present various estimates of the value of all commercial real estate that give us some confidence in these relative values.

²While several of the major real estate consulting firms have developed extensive return databases, the IPC database is by far the longest. The authors are grateful to the creators of the database and NCREIF for making it available for this research.

³NCREIF is building a timber and an agricultural fund-level database. In future work, these two subcomponents can also be included in "non-core."

Opportunity funds raised (if not yet fully invested) have constituted nearly 50% of the new money in recent periods. Over time, their share has risen to nearly 20% before considering agriculture and timber (two groups not included in this work).

⁴The Spring 2000 Issue of *Real Estate Finance* contains a trilogy of articles on Benchmarking and performance evaluation. The work in this article is distinct from that work by Professors Geltner and Fisher. Maturity in an industry requires both 1) the ability to clearly and succinctly "tell the story," and 2) the technical skills to benchmark managers and evaluate performance within the investment management firm.

⁵NCREIF is a peer universe for pension fund investment managers offering a "core" commercial real estate product. Consequently, it is quite appropriate as a benchmark for

such managers, whose reported returns are smoothed and lagged in a similar manner.

⁶Unfortunately, there are relatively few sales before 1984. Further, all three of the components of the final index were quite small in the early 1980s. Consequently, we begin this series in 1984, not at the start of NCREIF data in 1978.

⁷This process requires a careful evaluation of the 3,000 NCREIF sales. A few of the properties are really “flips” from package purchases, while others involve extensive renovations, which is inconsistent with our definition of core. Hotels are considered non-core as are properties that appeared to change uses over the holding period. Such “unusual” sales are eliminated leaving a final count of 2,814.

We have made no attempt to look at locations of sold properties or differences in property type by quarter. As all the data sources become more sophisticated, it will eventually be possible to do hedonic adjustments for all the unique features of the properties that actually sell each quarter. There will also soon be enough sales for a repeat sales methodology by property type. Such work will become important as analysts seek to tell the story by subcategory of commercial real estate.

⁸Shiller eliminates major improvements, much like our elimination of sales with very large capital expenditures.

⁹Since this is an extension from a sample, rather than an entire universe, one could use either a value-weighted or an equal-weighted approach. We choose to use the value-weighted approach because we believe there is more market information in a large sale than in a small sale. If properties are no more than a basket of leases plus an option to release those spaces, the larger property tends to imply more leases and thus provide more information. (In fairness to the equal-weighted argument, it is true that many high-value buildings have a single tenant and that very high-value buildings trade in a narrow market.)

¹⁰One of our primary objectives in telling the story is an easily understandable approach. We considered more complex statistical techniques such as ridge regressions or neural networks. However, the simple moving average worked well and is easy for anyone to understand. Even appropriate tradeoffs of biased estimators for reduction in variance hurt the intuitive appeal of the story. In a companion piece in this issue of *Real Estate Finance*, Jeffrey Fisher shows that the ridge regression and moving average techniques produce quite similar results.

A primary reason for using the moving average is that the percentage of sold properties each quarter varies by property type. In one quarter, apartments may represent 50% of the sales and then in the next quarter only 15%. Since the different property types change value at different rates, this is a problem that the moving average can ameliorate. Given the increasing number of sales, it should soon be possible to evaluate repeat sales by property type, reducing the importance of the moving average adjustment.

¹¹Appraisal policies vary considerably, particularly for the opportunistic funds. Some funds hold properties at cost until

they sell. Others hold them at cost until something major happens. (Definitions of major vary.) Finally, some firms have a going-in internal rate of return, and appreciate the property at that rate until something happens.

¹²While coefficients on one-, two-, three- and four-quarter lags are all significant, the two-quarter lag has the largest coefficient and is the most significant. A two- to three-quarter lag in appraisal/NCREIF returns is consistent with both conventional wisdom and much prior econometric work.

¹³This causes our series to end in 1999-1, as the most recent IPC report on the opportunity funds is 1999-3. More timely reporting is in the offing with the combined efforts of FRC and the new IPC.

¹⁴On some of the opportunity funds, there are heavy rear end performance fees that are not recorded until earned. Consequently, our work slightly understates the fees for those funds that have not yet liquidated. Standards require that incentive fees be accrued, but until a property is not marked to market, the incentive fee isn't shown.

While the fees charged by the core managers vary across managers and depend on the amount invested with a particular manager, 100 basis points is a fair approximation of the annual charge over the sample period.

¹⁵Since our purpose here is to proxy for U.S. real estate returns, funds with primarily foreign holdings like Cadillac Fairview and Randsworth are excluded.

¹⁶The totals are for market capitalization not including the value of “upreit” partnership interests.

¹⁷The annualized standard deviation is roughly twice the mean return, a roughly “normal” situation for small-capitalization value stock series.

¹⁸The weight given to REITs is a debatable issue. Clearly shares are owned directly by individuals, not just institutions (pension funds and mutual funds). Still, REITs are themselves institutions, and measures of institutional REIT ownership are far from perfect. Consequently, we have chosen to use total REIT equity capitalization (not the larger value of real estate assets owned) as the appropriate proxy.

¹⁹The choice of a mean return for the forward-looking asset allocation decision is more complex. Most people would agree that public real estate returns are near the bottom of their relative pricing cycle. Likewise, our non-core returns are understated due to the unique nature of certain opportunity funds reporting. Consequently, many would suggest a pro forma real estate return slightly closer to stocks and at least higher than bonds.

²⁰Using the mixed asset covariance matrix for this period (all-equity real estate proxy) and longer-term stock and bond returns as the proxy for future expected returns on those asset classes (longer-term returns are thought to be more reflective of the future expectation), one sees real estate as a component of the optimal portfolio at several points along the efficient frontier. Commercial real estate, though, never appears as an unreasonably large percentage of the mixed asset portfolio.

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