# Moody's/REAL Commercial Property Price Indices, April 2008

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## OVERVIEW

The Moody's/REAL Commercial Property Price Indices (CPPI) measure the change in actual transaction prices for commercial real estate assets based on the repeat sales of the same assets at different points in time. In this April 2008 report, based on data through the end of February, the Moody's/REAL CPPI measures 191.24, an increase of 2.1% over the previous month, 4.2% over the same period of the previous year, and 12.9% over two years.

*Figure 1*
**Moody's/REAL Commercial Property Price Index (CPPI)**
**National -- All Property Type Aggregate**

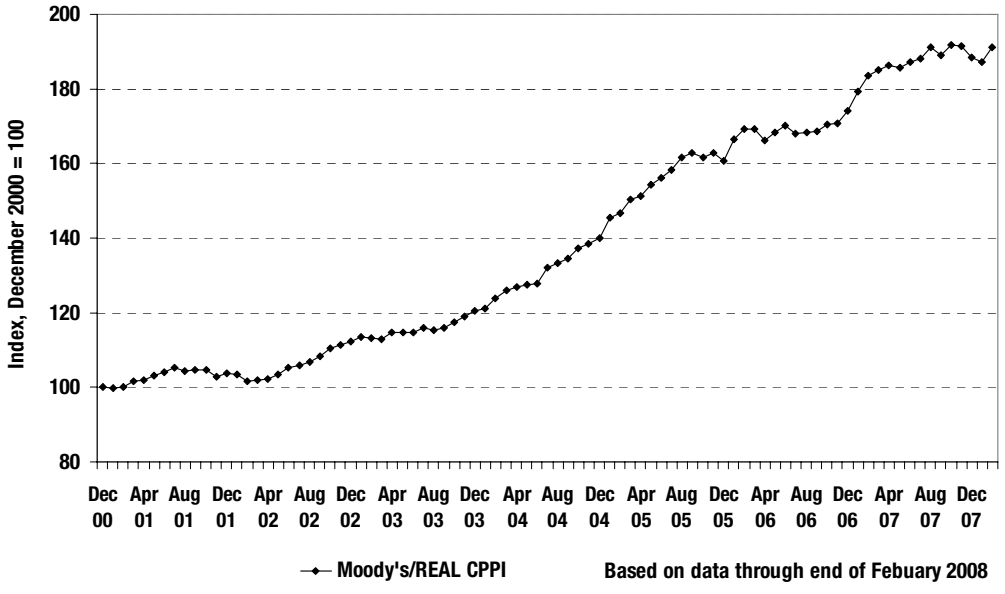


*Figure 2*

**Current Moody's/REAL CPPI and Change from Earlier Periods**

**New This Period: National All Property Type Aggregate**

Repeated: National - Four Property Types
Top 10 MSAs - Four Property Types
West - Four Property Types

**New This Period: East - Four Property Types**
**South - Four Property Types**
**Southern California - Four Property Types**
**MSA Office Markets - New York, San Francisco, and Washington DC**
**MSA Apartment Market - Florida**

| | Current Index[M] | 1 Month Earlier | 1 Year Earlier | 2 Years Earlier |
|---|---|---|---|---|
| **National All Property Type Aggregate** | **191.24** | **2.1%** | **4.2%** | **12.9%** |

| | Current Index[Q] | 1 Quarter Earlier | 1 Year Earlier | 2 Years Earlier |
|---|---|---|---|---|
| National - Apartments | 182.96 | -4.9% | -2.9% | 2.6% |
| National - Industrial | 192.51 | 1.0 | 10.2 | 21.7 |
| National - Office | 176.07 | -0.4 | 8.6 | 21.7 |
| National - Retail | 188.31 | -3.5 | 4.3 | 8.1 |
| Top 10 MSAs[1] - Apartments | 214.98 | -3.5 | 2.3 | 10.1 |
| Top 10 MSAs - Industrial | 200.32 | 1.2 | 7.9 | 21.8 |
| Top 10 MSAs - Office | 171.01 | 0.0 | 5.1 | 19.4 |
| Top 10 MSAs - Retail | 199.04 | 1.3 | 9.7 | 4.9 |
| West - Apartments | 196.67 | 2.8 | 5.5 | 15.6 |
| West - Industrial | 181.39 | 0.6 | 10.3 | 15.5 |
| West - Office | 171.01 | -1.5 | 12.5 | 25.9 |
| West - Retail | 197.10 | -0.8 | 5.8 | 9.4 |

| | Current Index[A] | 1 Year Earlier | 2 Years Earlier |
|---|---|---|---|
| East - Apartments | 229.79 | 6.7% | 8.1% |
| East - Industrial | 192.29 | 9.3 | 18.5 |
| East - Office | 194.43 | 10.4 | 28.1 |
| East - Retail | 236.63 | 11.8 | 17.8 |
| South - Apartments | 160.40 | -3.1 | -11.6 |
| South - Industrial | 207.19 | 13.9 | 32.2 |
| South - Office | 179.80 | 7.8 | 14.3 |
| South - Retail | 198.38 | 9.8 | 15.8 |
| So. California - Apartments | 248.17 | 5.4 | 8.1 |
| So. California - Industrial | 213.74 | 13.6 | 30.2 |
| So. California - Office | 203.61 | 12.8 | 19.8 |
| So. California - Retail | 244.98 | 12.6 | 15.5 |
| New York - Office | 235.93 | 10.6 | 32.7 |
| San Francisco - Office | 135.96 | 10.7 | 22.0 |
| Washington DC - Office | 191.66 | 6.0 | 16.3 |
| Florida - Apartments | 209.82 | -3.3 | -5.7 |

M Monthly series. Most recent data is through Feb. 29, 2008.
Q Quarterly series. Most recent data is through the end of the 4th quarter 2007. Analysis is based on data from that 4th quarter.
1 Top Ten MSAs refers to the ten MSAs with the most transactions by dollar volume, in each property type.
A Annual series. Most recent data is through the end of the 4th quarter 2007. Analysis is based on data from four quarters (1Q07, 2Q07, 3Q07, and 4Q07). Given that the measure is of a rolling four-quarter period, data as of the end of the 4th quarter can not be compared with that from the end of the previous quarter.

## NATIONAL - ALL PROPERTY TYPE AGGREGATE INDEX OFFSETS LOSSES OF RECENT MONTHS

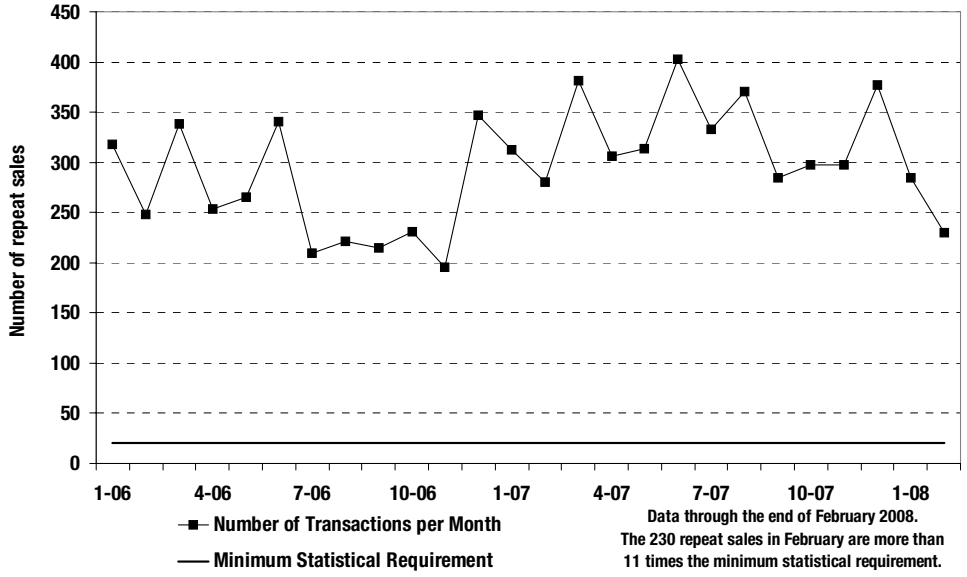
The National - All Property Type Aggregate is a monthly series, and this report is based on data through the end of February 2008. Aggregate prices increased from the previous month, offsetting most of the losses since October. (Refer back to *Figure 1*, page 1.)[1] We see this as a continuation of the process of price discovery, which is likely to continue over a protracted period, possibly a few more quarters. Few foreclosures or other forced sales at market clearing prices have occurred to help tease out the impact of the credit crunch on current property prices.

### Repeat Sales Transaction Volume Is Down But Not Out

February saw fewer completed repeat sales transactions than previous months, although at a level of frequency well within the tolerance for maintaining the statistical viability of calculating the index, and not even to the lowest level seen in the last two years (see *Figure 3*).

*Figure 3*

**Moody's/REAL CPPI: Number of Transactions per Month Relative to Minimum Requirement**




### So Why Is the Moody's/REAL CPPI Up This Month?

Moody's/REAL CPPI measures the change in prices of completed transactions. The index does not represent or track market sentiment that is not embedded in prices of completed deals.

As noted above, fewer repeat sales were completed in February than in recent months. However, the loudest and strongest voices of market sentiment typically come from market participants who are transaction-driven. Originators, investment advisors, and brokers who depend on transaction fees see a horrible market - *because* there are fewer deals.

Volume is most likely down *because* prices have not yet adjusted. Anecdotal evidence abounds of wider bid-ask spreads, which corresponds to a slowdown in volume. Indeed, wide bid-ask gaps represent disagreement between buyers and sellers, or between buyers and lenders, neither willing to acknowledge the other's view of value.

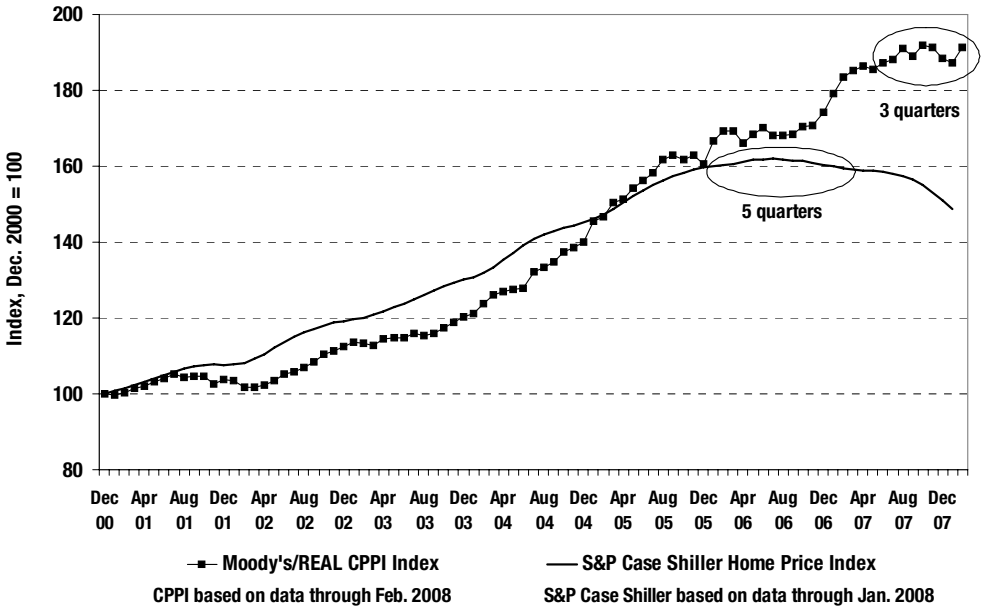
1 A summary or short version of the repeat sales methodology is available in a Moody's Special Report. *US CMBS: Moody's Publishes the First Commercial Property Price Indices Based on Commercial Real Estate Repeat Sales Data*. Sept. 19, 2007. This is available on Moodys.com > Structured Finance > Commercial MBS > CRE Indices. A very detailed and complete explanation of the methodology is available in a White Paper from MIT. David Geltner and Henry Pollakowski. *A Set of Indexes for Trading Commercial Real Estate Based on the Real Capital Analytics Transaction Prices Database.* MIT Center for Real Estate. Sept. 26, 2007.

For the time being, a large gap persists between what buyers are willing to pay and what sellers are willing to accept, with little or no pressure on sellers to buckle. If sellers were forced to sell, as can occur when banks foreclose on loans and subsequently sell off the collateral property, a more dramatic drop in prices would likely result.

However, when sellers are not compelled to sell, prices do not or can not adjust. In fact, prices can hover at some level in nominal terms for an extended period before responding to a changed market environment. Indeed, US housing prices hovered at approximately the same level for over a year throughout 2006 before turning decidedly down, as illustrated in *Figure 4*.

*Figure 4*

**Moody's/REAL Commercial Property Price Index (CPPI) and S&P Case Shiller Home Price Index**




The fact that there are very few distressed assets in the marketplace is an indication of few compelled sellers; witness delinquencies in CMBS of 50 bp or less, and among life insurance companies of 10 bp or less. Even banks are experiencing less than 1% delinquency rates, and those portfolios include development projects and new construction that are likely to be among the riskier assets.

But few sellers *are* forced to sell, and sellers who are dissatisfied with pricing or loan terms simply pull assets off the market. Accordingly, evidence is accumulating of an increasing number of "busted" deals, where negotiations were started but never completed, most commonly for lack of agreement between buyer and seller on a "fair" price and/or the buyer's inability to access capital.

In the meantime, those deals that are completed/executed - and are therefore captured in Moody's/REAL CPPI - inherently involve stronger buyers who can get loans at terms they consider viable and prices that usually embed price appreciation.

## No Obvious Sources of Upward Bias

Moody's reviewed various factors that could shift the composition of the data that might create any upward bias and therefore account for the unexpected results. For example, could results be skewed by a disproportionate number and dollar value of sales in a certain area or property type that had experienced above-average appreciation? The parameters that we examined included the following:

- Region
- Property type
- Sales price
- Rate of return
- Seller base
- Buyer base
- Year built
- Year renovated
- Existence of assumed debt
- Frequency of portfolio sales

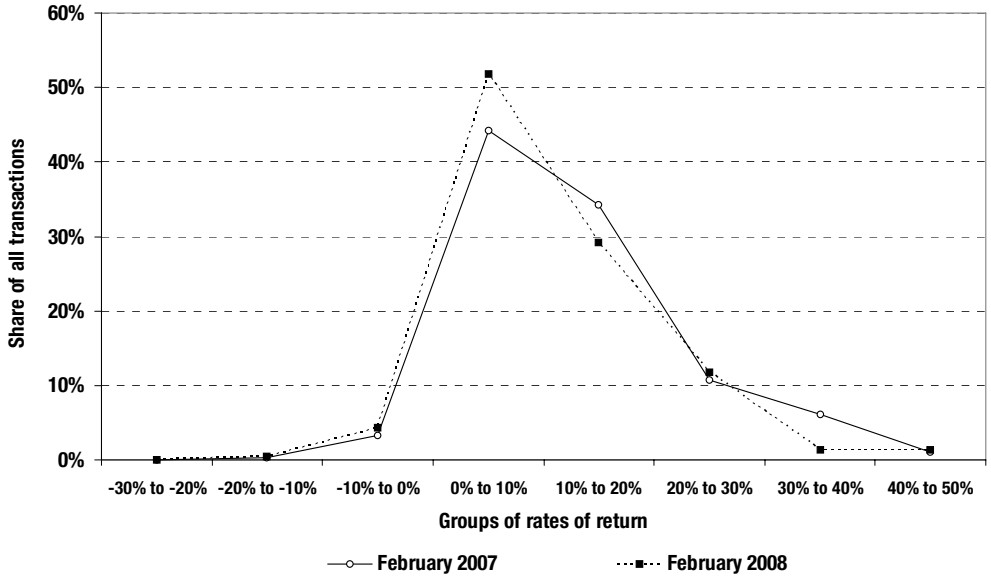
None of these or other factors demonstrated a disproportionate share of repeat sales that could distort the measure of price changes.

## Distribution of Rates of Return Shifting Slightly Lower

Although no factors could be discerned that accounted for an unexpected increase in prices, the distribution of rates of return actually provided more intuitively-appealing results. Specifically, the distribution of annualized rates of return has shifted downward in the February 2008 data relative to that from the same month of the previous year (see *Figure 5*). Note that in the most recent period, a larger share of all repeat sales transactions (slightly more than 50%) experienced annualized rates of return between zero and 10% than in the same month of the previous year (approximately 45%). Similarly, in the most recent month, slightly fewer than 30% experienced rates of return between 10% and 20%, down from approximately 35% of all transactions a year earlier. Finally, only a tiny fraction of the most recent transactions benefited from rates of return over 30% compared to approximately 7% of all repeat sales in February of 2007.

*Figure 5*

**Moody's/REAL CPPI: Distribution of Rates of Return**
**February 2008 vs. February 2007**

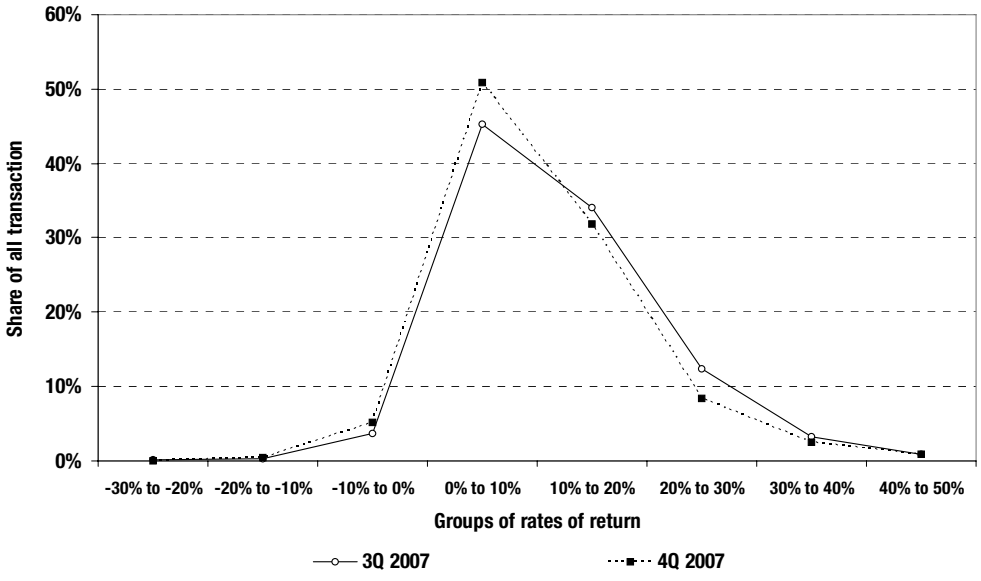


Furthermore, the shift from the third to the fourth quarter of 2007, with data embedding more transactions and spanning a slightly different time frame, evidenced the same pattern (see *Figure 6*) - a larger share of more recent transactions have drifted down the scale in terms of rates of return.

Notably, for all time periods, a relatively small number of transactions suffered negative rates of return. But, then, who would sell a property at a loss if they were not compelled? And one form of compulsion, foreclosure, is still extremely rare at this point.

*Figure 6*

**Moody's/REAL CPPI: Distribution of Rates of Return**
**3rd Quarter 2007 vs. 4th Quarter 2007**




The rate of return is the ratio of the money gained or lost on the sale of a property relative to the price at which the property was originally purchased. The holding period varies for each property, so annualized rates of return are calculated to give return figures that are comparable across individual assets.[2]

2 The calculation for the rate of return is as follows: $\text{Rate of Return} = \left[\left(\frac{\text{sale price}}{\text{purchase price}}\right)^{\frac{1}{\text{years held}}}\right] - 1$

## DESCRIPTION OF STATISTICAL ENHANCEMENT TO THE NATIONAL ALL-PROPERTY TYPE AGGREGATE INDEX

Based on our research into the methodology and more experience with the Moody's/REAL CPPI, last month we introduced a statistical improvement to the calculation of the national all-property type aggregate index. This refinement brings about an improvement in three ways:

- Enhances the accuracy of a high-frequency (in this case monthly) index.
- Mitigates a statistical error problem that can arise with high-frequency indices even with plentiful data.
- More closely represents the transaction realities of commercial real estate.

Details of this statistical technique are available in a Technical Report from MIT, which can be obtained on any of three web sites: MIT Center for Real Estate, Moody's, or Real Estate Analytics LLC (REAL).[3]

### The Rationale for the Improvement

Briefly, this enhancement incorporates data from an entire quarter into each monthly index without introducing an artificial index price lag bias or smoothing (as would be the case with simple smoothing techniques or rolling averages). Principally, this is a method for improving accuracy by reducing the "noise" around the monthly index. ("Noise" is here used in the statistical sense as referring to some variance around a core set of observations in any one period that depart from and therefore "distort" an assessment of the actual value of whatever is being measured.)

The tradeoff any index faces when reporting with high frequency (monthly versus quarterly, or quarterly versus annually) is having a large enough volume of data for one time period for the index results to be statistically reliable and meaningful. Simply stated, the accuracy of any index increases as the number of observations per period increases. Accordingly, the larger the dataset, the less the "noise" around the return estimate.

Thus an index based on a quarterly frequency will be superior, in a statistical sense, to a monthly index because it has approximately three times more information (in a sample of data) than a monthly index has for each index reporting period.

Another benefit of the new methodology is that it better matches the transaction cycle in commercial real estate. The time lag between when a sales price is agreed upon by the buyer and seller, and when that sale is actually executed in the marketplace, can extend to several weeks. This gap can pose a problem when directly estimating a monthly index: the data for a transaction actually completed in one month represents the market environment and economic decision-making of several weeks or even a few months earlier.[4] The transaction timetable for commercial real estate sales has little in common with the instantaneous recognition in equity markets of prices and changes in perception of "fair" current and future prices.

### The Mechanics of the Enhancement

To derive a monthly index from three staggered quarterly indices requires an additional step, a second stage regression, which is the new enhancement to our methodology.[5] This enhancement allows us to reap the benefit of a high frequency index with minimal statistical error.

Since the second stage regression is a frequency conversion from quarterly to monthly, it enables the use of a full quarter's worth of observations to derive each month's return, without injecting lagging or smoothing into the monthly returns.

For technical details of the enhancement, readers are referred to the MIT Technical Note.

3 David Geltner and Sheharyar Bokhari. "A Technical Note on Index Methodology Enhancement by Two-Stage Regression Estimation: Supplement 1 to 'A Set of Indexes for Trading Commercial Real Estate Based on the Real Capital Analytics Transaction Prices Database'." This technical report is available from any of three sources or web sites: 1) Moodys.com > Structured Finance > Commercial MBS > CRE Indices. 2) realindices.com. 3) MIT Center for Real Estate at mit.edu/cre.

4 This errors-in-variables problem is discussed in detail in the technical paper cited above.

5 A quarter is here defined as three consecutive months, not necessarily those associated with standard definitions of a quarter. For example, the three staggered quarterly blocks used to calculate the February index were December-January-February; November-December-January; and October-November-December.

## The Impact of the Enhancement

Over time, this statistical refinement should increase accuracy. However, the historical series, which is frozen using the previous methodology, would not have been profoundly different had the enhancement been incorporated earlier. *Figure 7* compares the entire time series of the CPPI using the enhanced and original methodologies, and *Figure 8* zeroes in on the last two years of the index.

*Figure 7*

**Moody's/REAL CPPI: Enhanced Method and Previous Method**

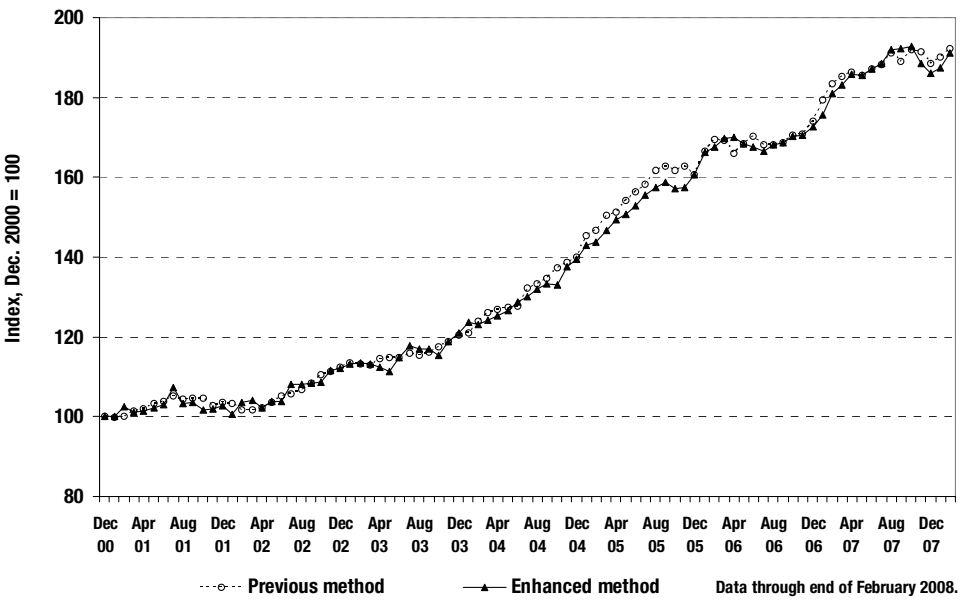
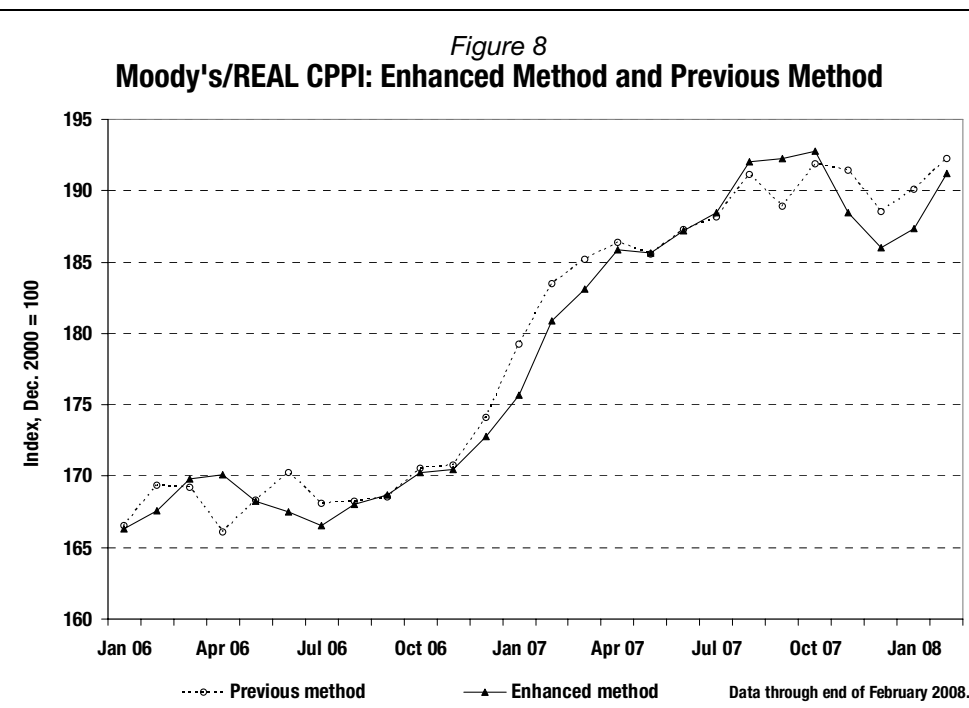



*Figure 8*

**Moody's/REAL CPPI: Enhanced Method and Previous Method**




The attached Appendix includes the following:

- A calendar summarizing the report cycle, i.e., which indices are recalibrated in which month. The calendar also indicates the precise release dates for Moody's/REAL Indices for the balance of 2008 and the first quarter of 2009 (*Figures 9*, *10* and *11*).
- Charts for the 28 sub-indices that were not recalculated for this report. These are repeated from the previous report so that both data and charts for all indices, whatever the most recent calculation, are included here in one document for investors' convenience (*Figures 12 - 19*).

## APPENDIX

*Figure 9*

**CPPI: Report Release Cycle, 2008 - 2009**

| | APRIL | MAY | JUNE |
|---|---|---|---|
| | April 21, 2008 | May 19, 2008 | June 19, 2008 |
| Report to be released: | Aggregate | Aggregate | Aggregate |
| For period: | February | March | April |
| Based on data through: | February 28/29 | March 31 | April 30 |
| Report to be released: | | 12 Quarterly Indices (A) | 16 Annual Indices (B) |
| For period: | | 1st Quarter | 1st Quarter |
| Based on data through: | | March 31 | March 31 |

| | JULY | AUGUST | SEPTEMBER |
|---|---|---|---|
| | July 21, 2008 | Aug. 19, 2008 | Sept. 22, 2008 |
| Report to be released: | Aggregate | Aggregate | Aggregate |
| For period: | May | June | July |
| Based on data through: | May 31 | June 30 | July 31 |
| Report to be released: | | 12 Quarterly Indices (A) | 16 Annual Indices (B) |
| For period: | | 2nd Quarter | 2nd Quarter |
| Based on data through: | | June 30 | June 30 |

| | OCTOBER | NOVEMBER | DECEMBER |
|---|---|---|---|
| | Oct. 20, 2008 | Nov. 19, 2008 | Dec. 22, 2008 |
| Report to be released: | Aggregate | Aggregate | Aggregate |
| For period: | August | September | October |
| Based on data through: | August 31 | September 30 | October 31 |
| Report to be released: | | 12 Quarterly Indices (A) | 16 Annual Indices (B) |
| For period: | | 3rd Quarter | 3rd Quarter |
| Based on data through: | | September 30 | September 30 |

| | JANUARY | FEBRUARY | MARCH |
|---|---|---|---|
| | Jan. 20, 2009 | Feb. 19, 2009 | March 19, 2009 |
| Report to be released: | Aggregate | Aggregate | Aggregate |
| For period: | November | December | January |
| Based on data through: | November 30 | December 31 | January 31 |
| Report to be released: | | 12 Quarterly Indices (A) | 16 Annual Indices (B) |
| For period: | | 4th Quarter | 4th Quarter |
| Based on data through: | | December 31 | December 31 |

*Figure 10*

**(A) 12 Quarterly Indices include the following:**

| APARTMENT | RETAIL | OFFICE | INDUSTRIAL |
|---|---|---|---|
| National Apartment | National Retail | National Office | National Industrial |
| Top 10 MSAs Apartment | Top 10 MSAs Retail | Top 10 MSAs Office | Top 10 MSAs Industrial |
| West Apartment | West Retail | West Office | West Industrial |

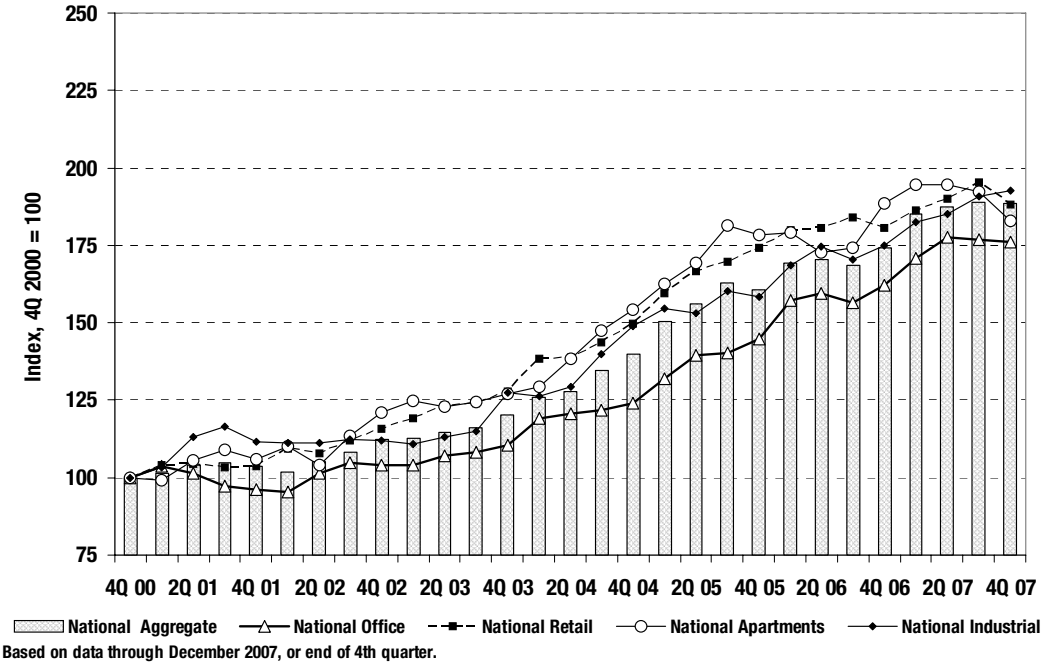
*Figure 11*

**(B) 16 Annual Indices with Quarterly Releases include the following:**

| APARTMENT | RETAIL | OFFICE | INDUSTRIAL |
|---|---|---|---|
| East Apartment | East Retail | East Office | East Industrial |
| South Apartment | South Retail | South Office | South Industrial |
| So. California Apartment | So. California Retail | So. California Office | So. California Industrial |
| Florida Apartment | | New York Office | |
| | | San Francisco Office | |
| | | Washington DC Office | |

*Figure 12*

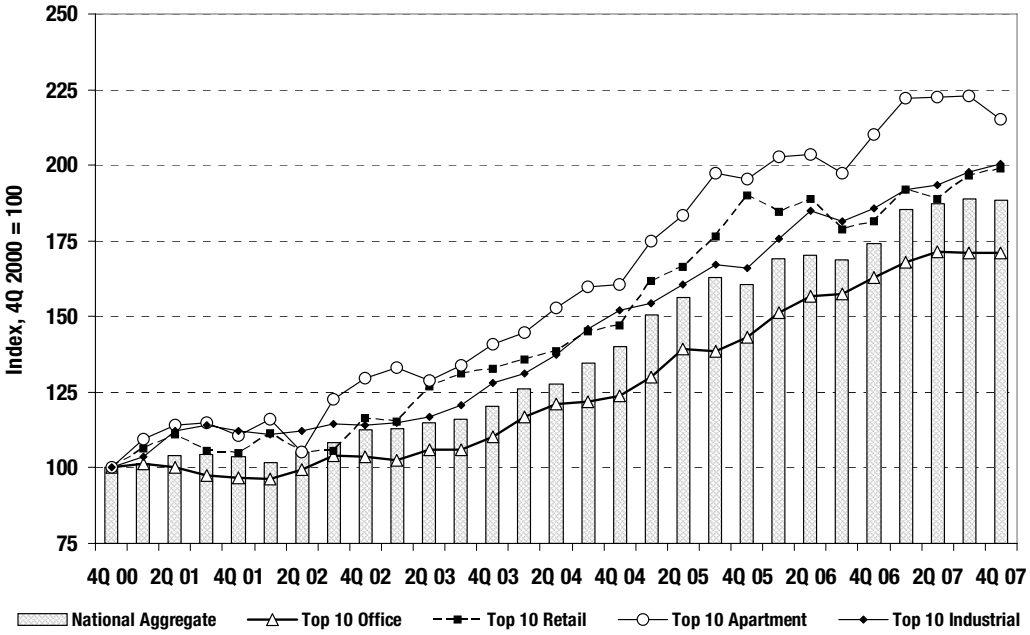
**Moody's/REAL CPPI: National - Property Type Indices**




Based on data through December 2007, or end of 4th quarter.

*Figure 13*

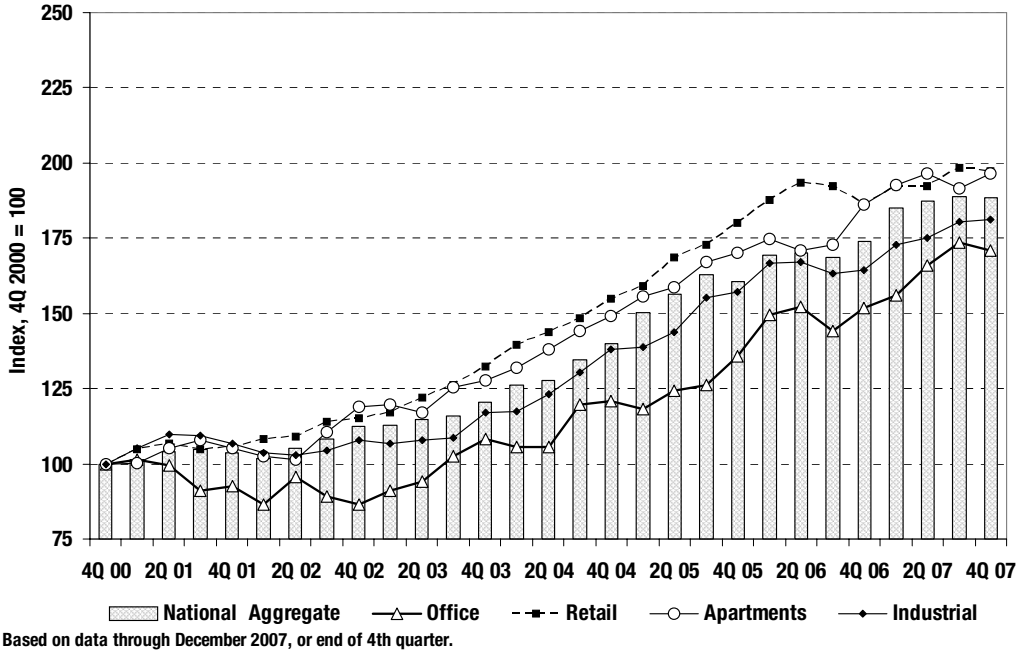
**Moody's/REAL CPPI: Top Ten MSAs -- Property Type Indices**




Based on data through December 2007, or end of 4th quarter.

*Figure 14*

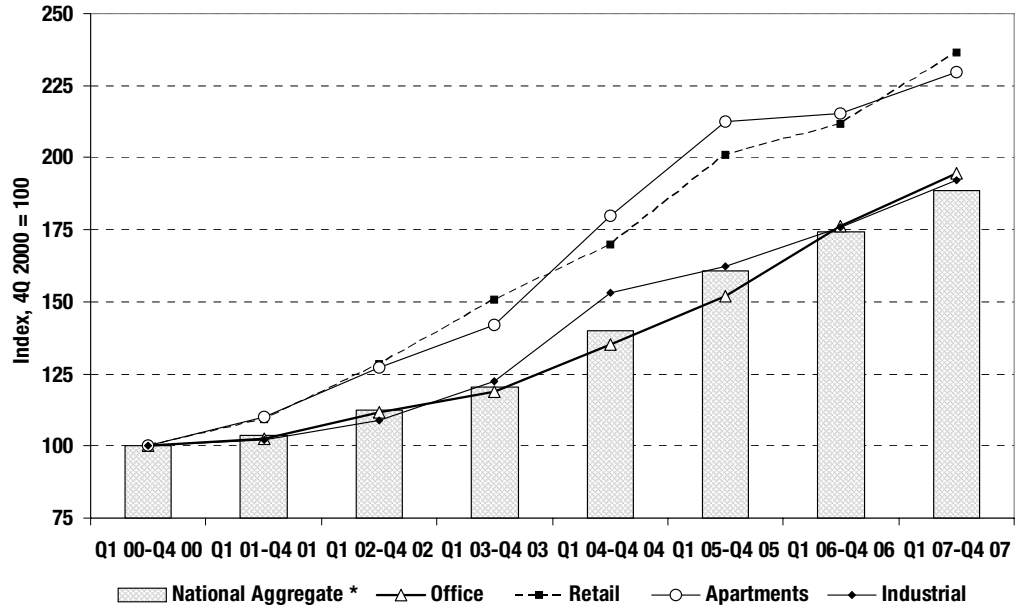
**Moody's/REAL CPPI: West -- Property Type Indices**




Based on data through December 2007, or end of 4th quarter.

*Figure 15*

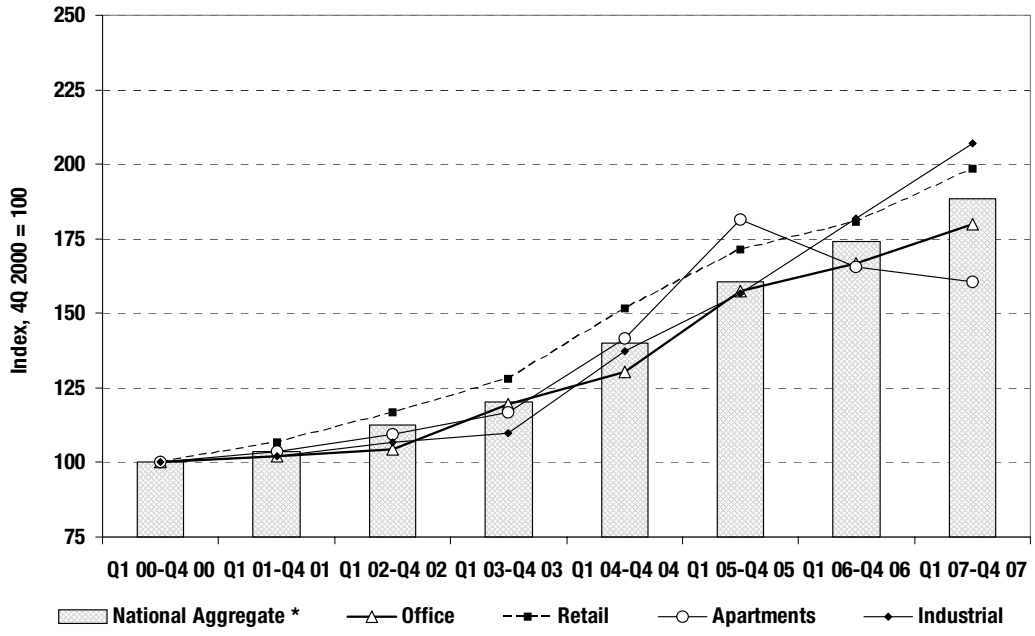
**Moody's/REAL CPPI: East -- Property Type Indices**




* National aggregate index, like the other series, is as of end of 4Q of each one-year period

*Figure 16*

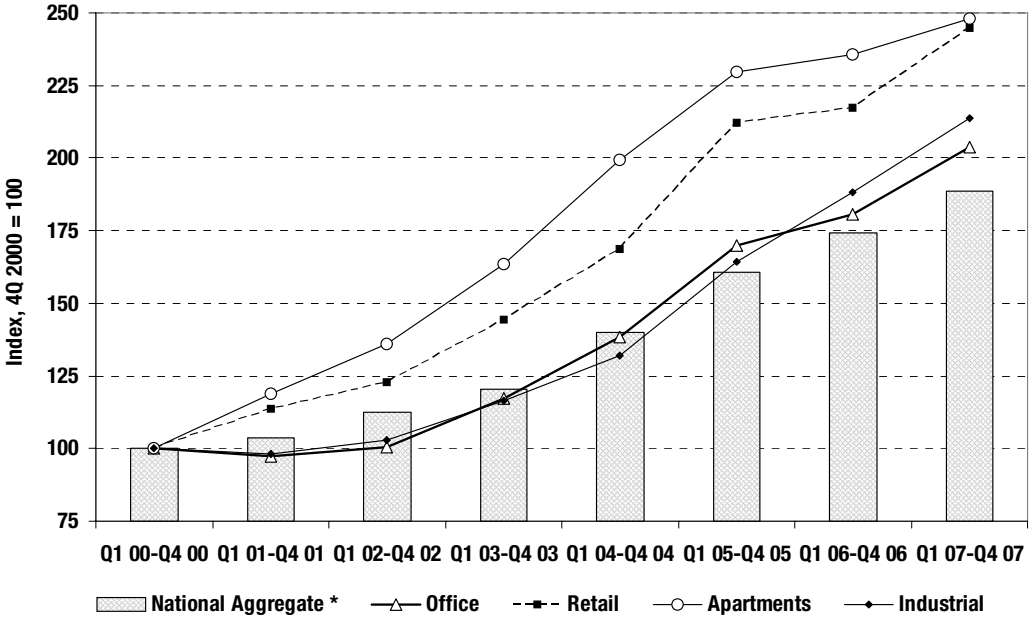
**Moody's/REAL CPPI: South -- Property Type Indices**




* National aggregate index, like the other series, is as of end of 4Q of each one-year period.

*Figure 17*

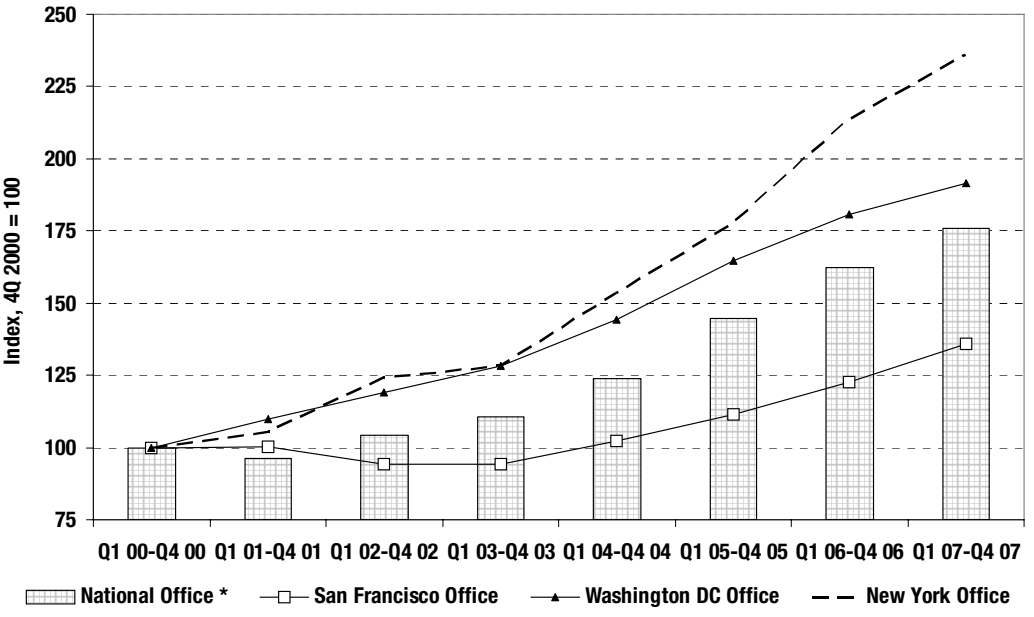
**Moody's/REAL CPPI: Southern California -- Property Type Indices**




* National aggregate index, like the other series, is as of end of 4Q of each one-year period

*Figure 18*

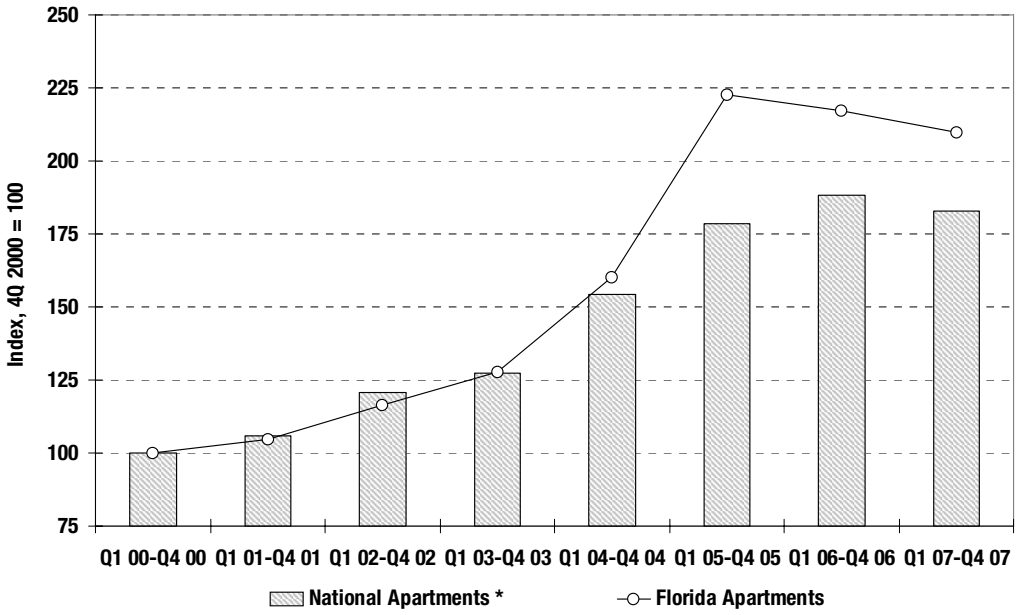
**Moody's/REAL CPPI: Major Office Markets Indices**




* National office index, like the three MSA office series, is as of end of 4Q of each one-year period

*Figure 19*

**Moody's/REAL CPPI: Florida Apartment Index**




*** National apartment index, like the Florida apartment series, is as of end of 4Q of each one-year period**

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