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MIT commercial property price index continues fall -Gauge declines nearly 6 percent in first quarter; demand sentiment in record drop

CAMBRIDGE, Mass., May 10 — Transaction prices of commercial property sold by major institutional investors fell by almost 6 percent in the first quarter of 2009, according to an index developed and published by the MIT Center for Real Estate.

The 5.8 percent drop in the transactions-based index (TBI) for the first quarter is the fourth consecutive quarterly drop and the sixth in the past seven quarters. The index is now 21 percent below where it was a year ago and 26 percent below its mid-2007 peak — comparable to the 27 percent drop the index experienced in the previous major commercial property downturn in the late 1980s and early 1990s.

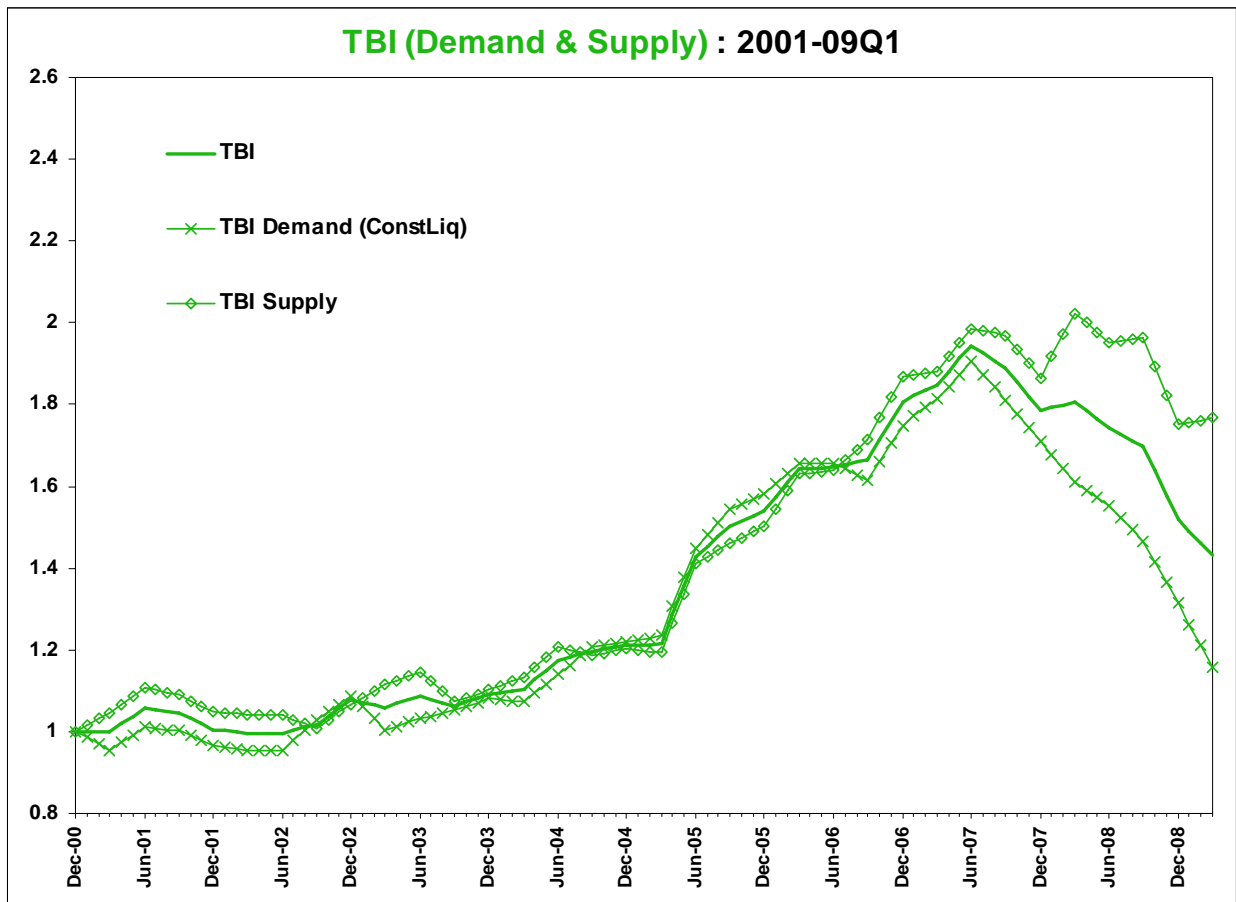
“It’s possible that the first quarter of 2009 was the nadir in market sentiment” said Professor David Geltner, director of research at the MIT Center for Real Estate. “Sales volume is down almost to nothing, as reflected in our demand index that indicates the prices buyers are willing to pay fell a record 12 percent in the first quarter and is now 28 percent below a year ago and 39 percent below its mid-2007 peak,” Geltner noted.

The MIT/CRE publishes not only the price index based on closed deals, but also compiles indices that separately gauge movements on the demand side and the supply side of the market that it tracks. The demand-side index tracks the changes in prices that potential buyers are willing to pay (sometimes called a “constant-liquidity” index of the market, because it tracks how much prices would have to change to keep a constant ability to sell as many properties at the same rate of trading volume). That index has now fallen steadily for all of the past seven quarters. In contrast, the supply-side index reflecting what deep-pocket institutional owners of commercial properties are willing to sell for, actually rose slightly, by about 1 percent, in the first quarter. “This type of disconnect between the supply and demand sides of the market, with demand-side sentiment plunging and property owners refusing to sell into such losses, is greater than we have ever seen before, and is very nearly removing every bit of liquidity from the market”, said Geltner.

“As is generally the case, the results posted by our index are corroborated by recent evidence from another commercial property price index whose methodology was developed at the MIT/CRE, the Moody’s/REAL Commercial Property Price Index produced by Moody’s Investors Service,” said MIT/CRE Research Technician Holly Horrigan, noting that Moody’s March results were scheduled to be published May 19. “The Moody’s was already down 22 percent as of February”, Horrigan noted.

The TBI tracks the prices that institutions such as pension funds pay or receive when transacting commercial properties like shopping centers, apartment complexes and office towers. The MIT

Center's TBI is based on prices of National Council of Real Estate Investment Fiduciaries (NCREIF) properties sold each quarter from the property database that underlies the NCREIF Property Index (NPI), and also makes use of the appraisal information for all of the currently 6,000 NCREIF properties. Such an index — national, quarterly, transaction-based and by property type — had not been previously constructed prior to MIT's development of it in 2006. NCREIF supported development of the index as a useful tool for research and decision-making in the industry.



Geltner Commentary on 1Q2009 TBI Results...

-David Geltner, May 7, 2009.

The TBI this quarter continues to faithfully track the historic fall in the commercial property market which began in the third quarter of 2007. Perhaps most prominent this quarter is the continued collapse of the demand-side sentiment in the market. As noted in the press release, potential buyers' reservation prices (aka "constant-liquidity prices") fell a record 11.9% in the first quarter. (The previous record had been -10.7% in the first quarter of 1990.) This brings the demand index down to 28% below a year ago and 39% below its 2Q07 peak. Almost equally fascinating (to me) is the extent to which the supply side, the NCREIF property owners, are holding firm in their determination not to sell into this down market, in effect not to adjust their own reservation prices to follow the demand. The supply-side index is actually up slightly this quarter, and is only down 11% since its peak (also in 2Q07). Reflecting this massive disconnect between the two sides of the market is the plummeting transaction volume, which included only 19 sales this quarter (with only a single retail sale). Nineteen sales represent only 0.31% of the NCREIF property population, smashing the previous record low sales percentage of 0.61% set in 2Q1992 at the bottom of the previous downturn. We are now at only *half* that prior historic nadir of volume! We are at 1/10th the average volume and 1/20th the peak volume of the recent bull market. We have reached levels of illiquidity in the institutional commercial property market that I would never have imagined possible in the 21st century.

In between the two sides of the market and reflecting both, the equilibrium prices (reflected by actually closed transactions) are down 5.8% this quarter, 20.7% in the past year, and 26.4% since the mid-2007 peak. In the previous "great crash" of commercial property prices the TBI fell a cumulative 27.3% from the 3rd quarter of 1987 to the 4th quarter of 1992. Clearly the present downturn will exceed the magnitude of that drop two decades ago, probably substantially, as measured by peak-to-trough relative drop. However, the peak this time was very high and sharp, and it remains to be seen whether commercial property prices will fall down as low in absolute terms as they hit in the early/mid-1990s. Even after adjusting for inflation, the TBI is currently down only to its price level of early 2005, which as I recall seemed pretty high to most of us at that time. Even the demand-side index is at its level of early 2003 (after removing inflation). These are levels that in real terms are substantially above the mid-1990s lows. In inflation-adjusted terms the TBI price index is currently 29% above its low-point (which in inflation-adjusted terms occurred in 1Q1995) and the demand index is 22% above its 1992 low-point, measured relative to the current index levels. (Recall that the TBI reflects prices, not pure market movements, that is, the TBI indexes include the value-preserving effects of capital expenditures.) And it is important to keep in mind that those mid-1990s lows were arguably "too low", that is, they may have represented a sort of "negative bubble", in that from those mid-90s levels commercial property prices rebounded sharply by 15% or more by 1997 and then held those real values persistently through the financial crisis of 1998 and the recession of 2001-02 (and then went on to further real growth even without counting the frothy peak of 2006-07).

Another interesting feature of the current behavior of the indexes is the speed with which the drop is being registered. Not only is the current downturn happening much faster and sharper than the previous one in the late 1980s/early 1990s, but the NCREIF Property Index in particular

is registering the downturn much quicker. The recently-past first quarter is the first time since the downturn began that the TBI has fallen less far than the NPI. It's probably too soon to say this represents the first hint of an approaching bottom in the market, but it clearly indicates how seriously NCREIF's data-contributing members are taking their responsibility to mark their assets to market. We at MIT would be nothing but pleased if the new transactions-based measures such as the TBI and the Moody's/REAL CPPI have been helpful in this process. Analysis of the price model that underlies the TBI suggests that as of the first quarter the average self-reported valuations in the NPI were only 3% to 4% above the average transaction prices in that same quarter (equally-weighted). This is much less difference than existed in the previous downturn in the early 1990s when transaction prices were sometimes as much as 14% below contemporaneous NPI-reported valuations. The NPI is now down 17.3% from its peak (in 1Q08) measured by the equally-weighted cash-flow basis that is most comparable to the TBI.

Effect of small samples:

Speaking of transactions, many readers may wonder how accurate the TBI can be with only 19 transactions (and only one in retail!) in the current quarter. Indeed, the standard errors on the price model's time-dummy coefficients are in the 4% to 8% range (and have always been that high). But this is not an accurate gauge of how the TBI works. If we were trying to predict individual property prices we would have substantial error for any one property. But we're only trying to track the market average. And we get most of the power we need for that in the regularly-updated manager-reported valuations of the properties, which are based on appraisals and are known for their stability and conformity (they may have some characteristics of "herd behavior" or informal "mass appraisals"). And the indexes are estimated on pooled databases that include thousands of historical transactions as well as the current ones, and all of these data-points come into play in the models' estimations of the implications the current transactions have for the current difference between transaction prices and the reported valuations. I do not know how to calculate what the formal confidence boundaries would be around the TBI returns. But the relatively smooth nature of the TBI indexes, as well as the minimal backward-adjustments which they display, suggests that these indexes are surprisingly free of random noise, even in the current epoch of extremely sparse transactions data. Nevertheless, the TBI indexes surely have some noise or random error, and especially at the level of the individual property type sectors I would not bet the farm on any given quarter's return number being exactly correct (no matter how one might define "correct" or "exactly").

Technical improvements in the indexes:

Users will note some changes in the TBI this quarter. If the MIT Center for Real Estate had financial support for our maintenance and production of the TBI, we could consider undertaking a comprehensive review of these indexes, which I think would be warranted. It has been four years since we did the original research and development work for the TBI, and we have gained some very interesting history since then. As it stands, however, our resources only allow us to service these indexes as best we can in our spare time as a sort of "labor of love" (weird as that may sound). Nevertheless, we have taken the opportunity presented by the end of the first full calendar year of a major turning point in the commercial property markets to implement what we believe are some modest improvements in the TBI. First, the indexes will now be "frozen" as of the end of each calendar year (beginning with 2008). Return reports during the year will be preliminary and subject to subsequent change, but only up through the fourth quarter of each

year, after which the returns and index levels will not be further changed either to reflect the effect of new data or changes in index construction methodology. We understand that this will facilitate the practical usage of the indexes (and as noted, backward adjustments have anyway been minimal and not of economic significance). Second, we have made some minor technical adjustments in the index construction methodology, including tweaking the noise-filter and re-setting the starting values of all of the TBIs to equal 100 at their inception dates (1Q1984 for the all-property and 1Q1994 for the sectoral indexes).

Above commentary reflects the opinion of the author only, not of MIT or the Center for Real Estate.

Frequently Asked Questions about the TBI...

Excerpts from email discussions with index users...

Question (Meaning of Price vs Demand Indexes):

"My interpretation is that [the price index] metric represents the average value of all US core real estate [in the subject sector]. Data is also provided for the "Demand" and "Supply" indices. Is it an oversimplification to presume these indices suggest the trends in Seller's v. Buyer's asking price?"

Response (DG):

I would say that your interpretation is essentially correct. The (variable-liquidity) price index reflects the changes in prices in realized transactions, closed deals, and each of those deal prices of course reflects an agreement between parties on both sides of the market (supply as well as demand), and therefore the price index reflects the market "equilibrium" price (such as it was at the end of the time period reported by the index). Equilibrium prices are arguably the most important single measure because they do represent a sort of "agreement" between the two sides of the market and they represent actual money changing hands. However, in real estate transactions prices must be interpreted in the context of trading volume (or "liquidity") that is highly pro-cyclical in nature, with far less trading in a down market, especially in the early stages of a sharp downturn. Thus, you can't expect to be able to sell as many properties as quickly or easily at the equilibrium price in a down-market as at the equilibrium price in an up-market. (Maybe this matters to you, maybe it doesn't.)

So, to add depth and perspective to the picture, we produce the demand and supply side indexes. The demand-side ("constant-liquidity") index reflects systematic changes in what economists call the "reservation price" (or "private valuations") that potential buyers are willing to pay. This is not exactly the same thing as a "bid price", which in real estate may only represent an opening bid where deals are negotiated or put through multiple-round auctions. The same thing is true on the supply side, only from the perspective of the property owners, the potential sellers. Posted asking prices (if they even exist) are meant as a signal and perhaps a starting-point for negotiations. In contrast, the "reservation price" is the price at which the party will stop searching for an opposite party, stop negotiating, and do the deal. By looking at these two indexes reflecting reservation price movements on each side of the market you can get a deeper picture of what is going on underlying the transaction price changes in the market. Keep in mind that the indexes only reflect the relative changes across time *within* each index. You cannot relate the absolute level of any index with that of any other index as of any given time.

As noted, the TBI indexes are "statistical products", which means they can contain some estimation error, and also they are limited by some simplifying assumptions in their structure. For example, the underlying econometrics forces the model to assume the same magnitude of price-elasticity on the demand side and on the supply side. You will note that the difference between the variable-liquidity price index and the two reservation-price indexes (demand and supply) is always the same magnitude (just opposite sign) between those two sides of the market. This reflects the simplifying assumption of equal-elasticity magnitude (always equal across the two sides, but not constant over time).

Question (Sufficiency of Number of Observations):

"The MIT website indicated transaction volume was extremely low in Q408, which calls into question whether there was sufficient data available to support the current index value, particularly at the asset-class level."

Response (DG):

Regarding your question about the number of transactions, in effect, the sufficiency of the sample size, we are getting scarily low. My sense (this is based on my experience and judgment, not formal statistical science) is that we are still OK at the aggregate level, for the all-property index. I have less confidence in the individual sectoral indexes. As I suggested on the web site, I would recommend consulting the Moody's/REAL Commercial Property Price Index for a transactions-price index that is based on a broader population and hence much larger sample of transactions, particularly for looking at the sectoral level. The Moody's/REAL CPPI is comparable to the variable-liquidity (equilibrium) price index version of the TBI, only the Moody's index tracks a much larger, broader population of commercial properties based on the Real Capital Analytics database. (You can download the Moody's data from either

<http://web.mit.edu/cre/research/credl/rca.html>

or

<http://www.realindices.com/real/index.htm>

as well as from Moody's).

Having said that, I must say that the three TBI sectoral indexes that we were able to produce this time (as noted, we couldn't do retail due to complete lack of sales), look fairly reasonable to me. This despite that they have only about a dozen transactions each. We don't have a policy of not publishing a TBI just because of few data observations, but one certainly does need to keep that in mind. In general I have been pleased with how reasonably the indexes seem to perform even with surprisingly few observations. We employ a noise filter that seems to be very effective. Nevertheless, as I said, I would take the sectoral indexes especially with a grain of salt.

Response Update (DG, 1Q09):

With even fewer observations in the indexes this quarter, I need to reiterate the above points. However, I should also say that I continue to be impressed (even more so) with the reasonable and relatively stable nature of the index returns in the face of less data than I expected we would ever have when we initially developed the TBI methodology. This has caused me to re-think how the indexes are working, and to see a strength in their structure that I did not originally consider. As noted in my commentary this period, I believe the TBIs' stability in the face of scarce data results from two main factors: (i) the quality of the main hedonic explanatory variable in our price model, the regularly-updated manager-reported valuations of the properties; and (ii) the pooled nature of the estimation database, which enables the thousands of transaction prices in the historic data to all be used in the model estimation process each period. This stability (smoothness in the indexes), as well as the prima facie reasonableness and believability of the index results, speaks to the accuracy of the indexes. Their ability to register turning points in the market prior to the appraisal-based NPI speaks to their ability to discover transaction-price-based information about market movements ahead of the NPI. Nevertheless, the TBI's price models' standard errors are quite large relative to the size of typical quarterly returns or quarterly volatility. There is certainly some noise in the indexes, though apparently much less than would be implied by a simplistic application of the time dummy-variable coefficient standard error magnitudes in the price regressions (which are in the range of 4% to 8% each period).

Question (Role of Appraisals in the TBI):

“While the information provided on the MIT website seems to suggest that the index is impacted only by actual transactions, your research paper on the topic also discusses the use of appraised values as reported by the NPI in the TBI. I would appreciate knowing exactly how the TBI incorporates appraised values, if at all.”

Response (DG):

Regarding your question about how the appraised values are used in the transaction price index, the appraised values are just a right-hand-side variable in the regression to control for qualitative differences cross-sectionally across the properties (such as size, quality of location, age, etc). The dependent variable in the regression is only the actual transaction price (per SF), hence, the index is truly a transaction price based index, not appraisal based. (Maybe I should clarify, the index measures "longitudinal" movements, changes through time, and it does so based purely on changes in transaction prices, not appraised values.)

Response Update (DG 1Q09):

As discussed in the 1Q09 update of my response to the previous question, I would now say that the above answer does not give full credit to the role of the “appraisals” in the TBI. (I put “appraisals” in quotes because, more accurately, the values we use as the main hedonic variable in the TBI models are the manager-reported “official” valuations of the properties that are reported into the NPI each quarter. These manager-reported valuations have traditionally been largely based on independent fee appraisals or in-house appraisals of the properties.) The NCREIF appraisals are updated regularly and frequently, even if not always every quarter for every property. The frequency, and “seriousness”, of the updating process seems to have gotten greater in recent years. And during the 2007-09 market collapse the updating process has become even more aggressive (especially starting in 4Q08). Thus, the main hedonic variable in the TBI price model is not just cross-sectional in nature, but has an important longitudinal component as well.

Question (Backward Adjustments, 4Q08):

“We have noticed significant historical revisions in the price series. Were the revisions larger than normal, and is there a story behind them?”

Response (DG):

Regarding backward-adjustments, they may have been a bit larger than normal this time, probably due to the sharp turn in the market during calendar year 2008. As noted on the web site, we consider the "TBI" to be "preliminary" through the first three quarters of each year, then "finalized" (though there can still be further backward adjustments) with the 4th-quarter report. This is due to technical reasons which I will briefly explain here...

We use a ridge regression noise filter in the index. This is a Bayesian technique that works by biasing the return estimates towards an "anchor". The anchor is the transactions-based index estimated at the annual frequency at the end of every calendar year. By estimating at the annual frequency we have much more data in each period and hence less noise. (We also control for temporal aggregation at the annual frequency, so we avoid lag bias.) But we can only update that transactions price based anchor at the end of the calendar year. During the interim (other three quarterly indexes) we use the appraisal-based NCREIF Index as the anchor. The appraisal-based index is lagged, and that made an especially large difference during 2008 because of the sharp turn in the market. This is probably why the backward-adjustments were larger in 4Q08 than

they usually are. The most recent index should be considered to be the most up-to-date and accurate for the historical returns.

Response Update (DG 1Q09):

This relates to the technical changes we are instituting in the TBI starting in 1Q09. From now on, there should be no backward adjustments to returns prior to the current calendar year, as we are “freezing” the indexes at the end of each calendar year as a matter of policy. This is being done to improve the practical usefulness of the indexes, and considering that backward adjustments have always been minimal and generally of no economic significance (particularly after the end of the calendar year). Also, we have adjusted the noise filter, eliminating it altogether in the aggregate all-property index. Analysis indicates that the noise filter is no longer necessary at the aggregate level, and eliminating it will increase the independence of the TBI from the NPI during the preliminary reports in the interim quarters.

Question (Index Base Period & Levels Comparisons):

“I was hoping you could tell me the base year for the transactions-based index. I think it might be 1983, but I was hoping you might be able to confirm for me.”

Response (DG):

The base period is 1Q1984 (first return period 2Q1984) for the national aggregate index, and 1Q1994 for the sectoral indexes.

The base periods’ index values for the TBI are not necessarily equal to 100. As you know, the base period value of an index (any index) is arbitrary. The meaningful information in the index is the periodic returns (relative changes starting from the base period). What our program does is to set the base period index value level to whatever level will give the TBI index levels an average value (across the entire history) equal to the average value level of the corresponding NCREIF Index in which the latter’s base period value is set (arbitrarily) to 100. (We could have done it the other way round – it’s just arbitrary we picked the NPI to set to 100.) This is done purely for visual display in the graphs. In reality there is no rigorous comparison between the index value levels between the NPI and TBI indexes. You can’t say that transaction prices were 5% above appraised values just because the TBI (capital index) happens to be, say 210 in a period when the NPI is 200. (However, if the next period the TBI moves to 189 and the NPI moves to 190 then you CAN say that period the transaction prices moved down 10% while the appraised values moved down 5%.) The reason we set the starting values as we do for visual purposes in the graphs is that, as an approximation, it does make sense to assume that appraised values and transaction prices will tend to have equal average values over the long run. While lagging and smoothing in the appraisal-based index will cause its returns to differ from the transaction-based returns over short-to-medium spans of time, over longer historical spans of time involving full “cycles” in the real estate market the differences between appraisals and transactions tend to cancel out: Appraisers tend to follow the market, just with some lag and perhaps smoothing off the peaks and valleys a bit.

Response Update (DG 1Q09):

So, we have now decided to indeed flip it around, and set the TBI indexes to all have starting values of 100 at their inception dates, and make the NPI’s starting value (in our charts) float to the value that gives it the same overall average level as the corresponding TBI. It seems to make

more sense, and to reduce confusion, to have the TBIs start at 100, since those are the indexes we are producing and publishing.

Question (Aggregate index not composite, & missing retail 4Q08):

"I am trying to retrieve data on your Transactions-Based Index and it appears as though the fourth-quarter data for the retail segment is missing. It is present for the office, industrial, apartment and composite index, however. If the composite was calculated I would assume the retail data is available. If you can provide any feedback I would really appreciate it. Thank you very much."

Response (DG):

We could not publish a retail index for 4Q08 because there were no sales of retail properties out of the NCREIF database that quarter. The aggregate index is not a composite built up from the sectoral indexes, but rather is an independently-estimated regression based on the entire data sample of sold properties as if they were all members of a single population.

Response Update (DG 1Q09):

We have now updated and "backfilled" the retail index, by "straightlining" the index from 3Q08 through 1Q09 (in effect, assuming equal returns in 4Q08 and 1Q09). This is done on the basis of only a single retail sales observation in 1Q09. Nevertheless, the result seems broadly reasonable (retail down 7.3% over the two quarters, which we have apportioned as -3.7% in each quarter, geometric: $(1 - 0.073) = (1 - 0.037) * (1 - 0.037)$, with round-off). This is consistent with our previously-stated policy of reporting an index result whenever we can calculate one. (In the future, we may nuance this policy, reserving the right to not report a result if there is very scarce data and the result seems spurious or unreasonable. However, this is not the case in the present instance.)