

“Professor’s Comments”

(For the March 2010 Moody’s/REAL Index returns.)

This is a periodic commentary which will generally be posted monthly on the “RealIndices” web site, offering the perspective on the indexes of Professor David Geltner (or occasional guest commentators). Geltner was a leader of the team at MIT that developed the methodology for the Moody’s/REAL Indexes.

Essentially flat in March, bouncing along the floor ...

The CPPI posted its second negative month in a row in March, but just barely, at -0.5%. This puts the first quarter at negative 2.1 percent, placing the index at 111.16, still some 2.9% above the bottom set last October at 107.98.

I do not regard these latest results as suggesting a renewal of a major downturn in transaction prices. Rather, I take them as consistent with a market that is “bouncing along the floor”, essentially headed sideways. Of course prices could resume a downward trajectory, particularly if the bad news in Europe or other factors nip the nascent and still fragile U.S. economic recovery in the bud. But on the other hand, prices could move up modestly if the news turns better and the vulture capital that has been raised begins to pounce in earnest. In essence, what I think the CPPI first quarter results are telling us is that, despite some very strongly priced deals that got some headlines this past winter, average prices in closed deals during the first quarter do not suggest that the broad market was moving strongly up from the floor it reached last fall. This is also consistent with RCA cap rate data, which suggests that first quarter cap rates for “major assets” (\$5,000,000+) were near 8% on average, broadly similar to where they were in late 2003 when the index was around 120.

This message of a “sideways market” is confirmed by the “entrails” that we typically examine in this column: the role of distressed property sales. In essence, the first quarter was dealing with too much distressed property sales to enable a broad market upturn. As seen in the following charts, distressed property sales were arguably the main reason why March was a negative month in the CPPI. An otherwise similar index based only on “healthy” properties would actually have been slightly positive that month. Even though distressed property sales dropped back down to around 25% of the total March CPPI deals (from 32% in February), they turned in sufficiently worse results compared to February so as to bring the overall index into negative territory (slightly). This may be a repeating story: a market that would perhaps like to put some positive price growth under its belt, but is prevented from doing so by the effect of distressed sales. (And in the real world there is not such a “bright line” between the market for distressed assets and those that are not “distressed” – capital is ultimately fungible, and the supply of distressed assets can hold down the overall market to some extent.) On the other hand, the distress selling remains sufficiently disciplined so that it is not actually bringing the

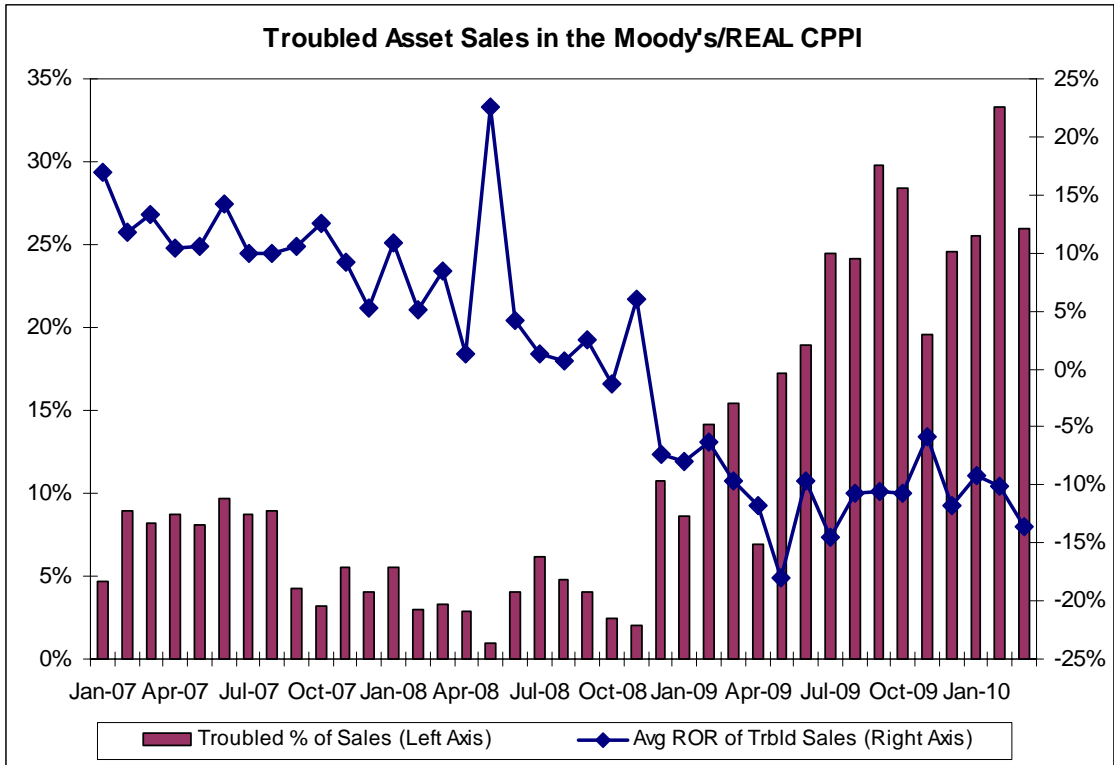


Exhibit 1

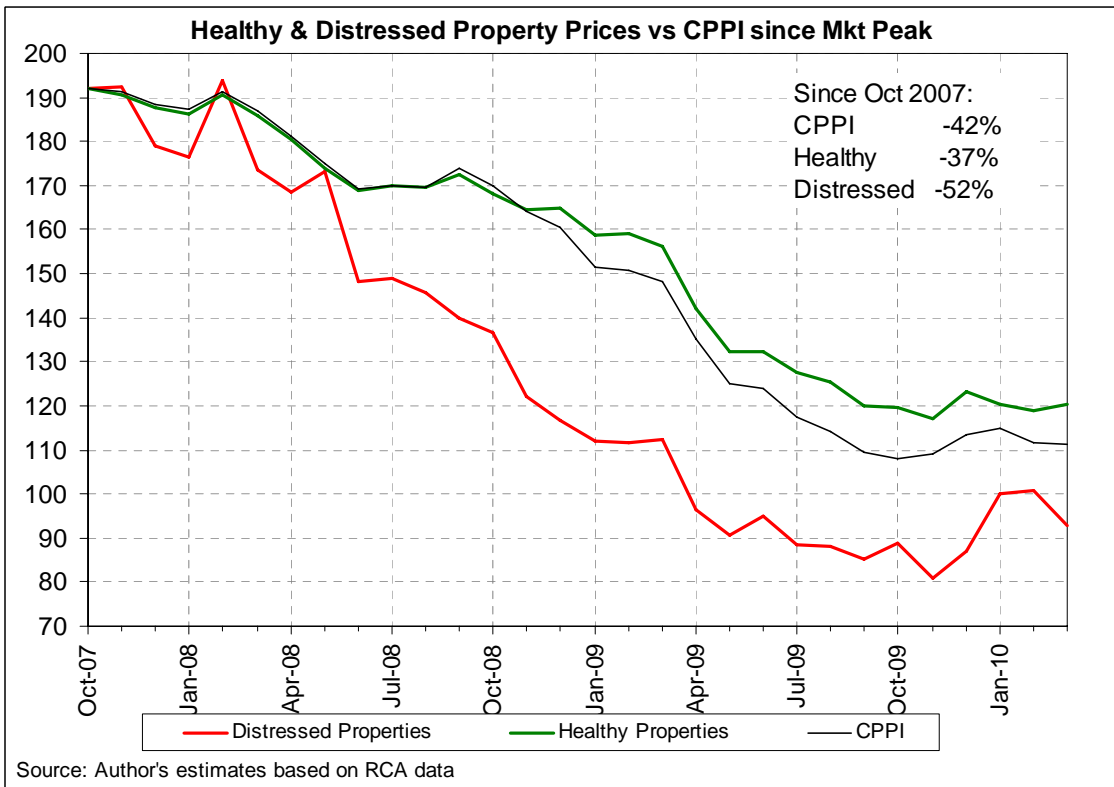


Exhibit 2

average market prices down much. In short: we're bouncing along the floor. We might be here for some time.*

Where the index is today in historical perspective...

By the simple direct capitalization formula, commercial property market pricing is of course a function of both the cap rate and the projected income to which that cap rate is applied. With this in mind, let's do a little simple analysis of the observations we have just made about the current level of the price index and the current prevailing market cap rates, in the historical context.

We noted that cap rates, which are now around 8%, are about where they were in late 2003. But the current index level at 111 is below where it was in late 2003 when it was at 120. So, you might think at first glance that this implies that current pricing is based on going-forward next-year income projections that are some 7.5% lower than they were in late-2003 (in nominal terms, as $111/120 - 1 = -7.5\%$). However, this is not quite true. The CPPI tracks *same-property* price evolution. (The CPPI thus reflects the asset price evolution actually experienced by property investors, who hold specific, aging assets.) "Same properties" age and depreciate in real terms over time.

Now suppose real depreciation tends to average 1% per year even after routine capital expenditures. Then depreciation alone would cause a property worth, say, \$120 million in late 2003, to have fallen to a value of just barely over \$111 million today (as $111 \approx 120 * 0.99^{6.25\text{yrs}}$). Therefore, if 1% is the correct rate of real depreciation, then the current CPPI price level (111), combined with the average RCA cap rates (8%) that are similar to late-2003, would suggest that investors are now projecting next-year property income levels similar to what they were projecting in late 2003 (in nominal terms) for an equivalent asset (not aged).[†] If real depreciation is greater than 1% per annum, say 2% on average, then the current CPPI index level combined with the RCA cap rate level suggests that investors are projecting property incomes going forward from today about 5% higher in nominal terms than they were in late 2003 (as $111 / (120 * 0.98^{6.25\text{yrs}}) - 1 = 111/106 - 1 = +5\%$).

Now consider this. Actual CPI general monetary inflation (decline in purchasing power) from December 2003 through March 2010 totals 18% cumulative. Therefore, the CPPI and RCA cap rate evidence combined suggests that investors must effectively be projecting lower real property income levels today than they were back in late 2003, by at least 10%, for equivalent constant-quality properties (as $105/118 - 1 = -11\%$).[‡] Perhaps this makes sense, as the extent of the current economic recovery is not yet clear, and a weak recovery could keep property incomes depressed for some time. While 2003 was

* Although, as I've said in previous editions of this column, if REIT share pricing is a leading indicator of where the private market will go (as historically it tends to be, usually but not always), then we have a modest upturn ahead of us this year in private market pricing.

[†] That is, a building otherwise identical to our \$111 million property but without the real depreciation attributable to the extra 6.25 years of building age since late-2003 would be worth nearly \$120 million today (at today's 8% cap rates which are equivalent to those of late-2003).

[‡] On the other hand, cap rates by late 2003 were already quite a bit below where they had been just a couple years earlier. Perhaps 8% is not a long-run equilibrium level...

also a period when the economy was recovering from recession, it was a much milder recession, and the recovery was farther along by that time. Nevertheless, asset prices did take off after 2003...

To put the index in even longer-term perspective, the chart below updates a picture I have presented in past “Professor’s Corner” commentaries. It shows an estimate of a 40-year history of same-property price evolution based on an extension of the CPPI. It also juxtaposes this history on a price path that equals the Consumer Price Index minus 1% to 2% of real depreciation, with everything indexed like the CPPI to 100 in the year 2000.

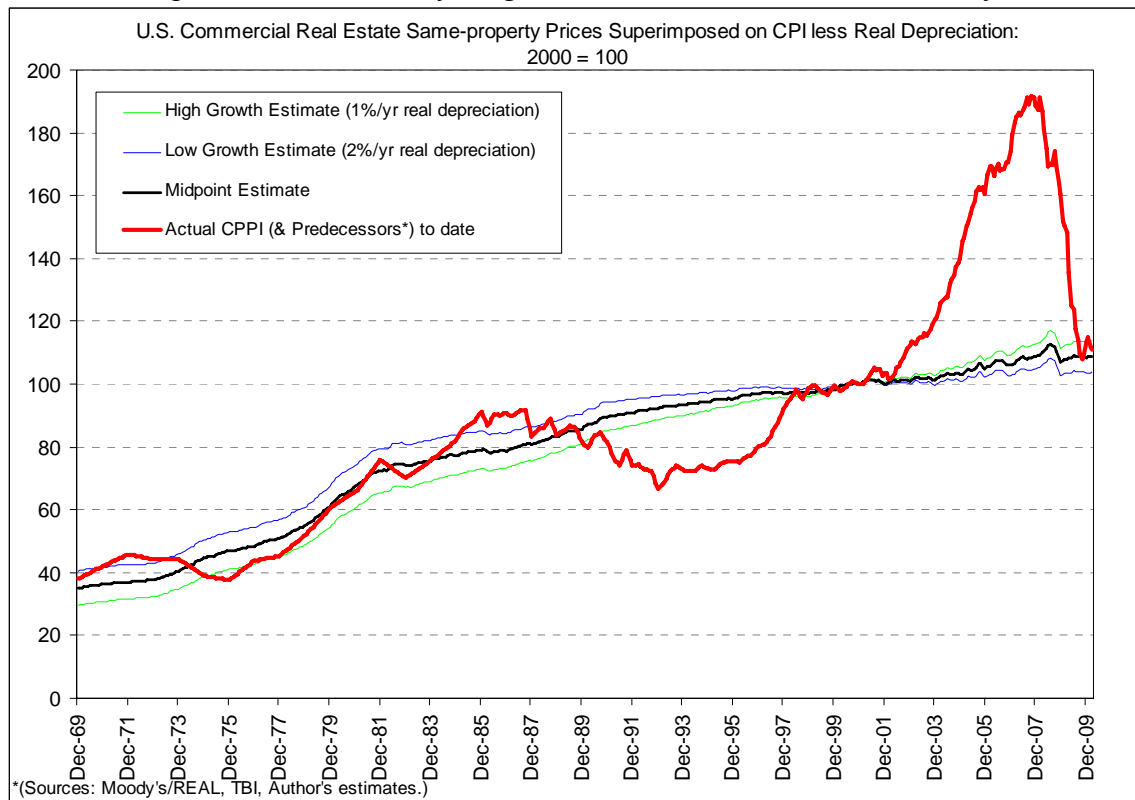


Exhibit 3

We should be careful about reading too much into a chart like this. But to me it suggests some caution to those who think the market is poised for major and sustained price growth. We may currently be pretty near a long-run equilibrium and sustainable price level. The “sideways bouncing” might last for quite a while (give or take 10%).

Behavioral economics & “loss aversion” in the commercial property market...

In the latter part of this column I usually like to do something a little different that is of some intellectual interest. This month I would like to report on some academic research I have recently been involved with that I think commercial real estate investors might find intriguing. The research was based on transactions and asking price data donated by

RCA, to study the role in the commercial property marketplace of “loss aversion”, a famous phenomenon of “behavioral economics”.*

A major component of behavioral economics is what is known as prospect theory, a framework for modeling economic preferences that supersedes classical economics’ utility theory. According to prospect theory economic decision makers are governed by a value function that is anchored on a reference point. Things are not valued in absolute terms or in isolation, but relative to some reference point, such as how much of something you started out with, or the price you originally paid for a thing. Furthermore, the prospect theory value function is asymmetrical and kinked at the reference point, steeply rising and convex below the reference point, less steeply rising and concave above the reference point (i.e., diminishing marginal sensitivity to larger deviations from the reference point). A major empirical prediction of prospect theory is *loss aversion* behavior, which refers to the tendency to more strongly prefer avoiding losses than to acquiring gains, relative to a reference point for the decision maker. In particular, in a real estate asset market loss aversion can cause property owners to effectively set a higher asking price or reservation price when the value of their property has fallen since they purchased it, as they seek to avoid realizing a loss relative to their purchase price.

One possible effect of loss aversion in a property market is that it could cause transaction prices of completed deals (those on which price indices are based) to be “sticky” or fail to register much of a drop during the early phases of a sharp downturn in the market, as compared to movements on the demand side of the market (“constant-liquidity” prices). Sellers may trade off liquidity against loss recognition, even though the loss is actually “already there” (in a realistic sense).

Our research explores the extent to which loss aversion and reference point based pricing behavior has been manifest in the U.S. commercial property market for major assets (at least \$5,000,000 value) during the 2001-09 period. We try to quantify the nature and magnitude of such behavioral pricing effects at both the disaggregate (individual property) level and the aggregate (market-wide) level. We consider to what extent loss aversion behavior may have led to average transaction prices hanging up in the early phase of the 2008 downturn, preventing realized prices from falling as far or as fast as they otherwise would have, and thereby exacerbating the illiquidity that occurred in the marketplace.

We find very strong statistical evidence that significant loss aversion pricing behavior exists in the major-asset commercial property market. We estimate that, holding all else constant, the typical posted asking price was higher for sellers facing a loss (relative to

* Behavioral economics refers to a fusion of traditional economics and psychology that has revolutionized the economics discipline in the past generation. Behavioral economic theories have received recent prominence as a source to provide some insight and understanding about some of the causes of the great financial debacle of 2008. My colleague and co-author in the research described here is Sheharyar (Schery) Bokhari, who is a doctoral candidate in the MIT Urban Studies Department. Schery’s passion for behavioral economics was the driving force behind our research, which was sponsored by the Real Estate Research Institute. Our working paper and executive summary are available from RERI, and the paper is also available on the web at www.ssm.com.

their prior purchase price) than for sellers facing a gain, with the difference on average equal to about 38% of the magnitude of the loss exposure (defined as the difference between the prior purchase price minus the current likely sale price).^{*} This is a magnitude of loss aversion behavior similar to what has been previously found in the housing market, even though major-asset commercial market participants are presumably rational and experienced business professionals while most housing market participants are consumers or relative novices as real asset investors. The effect is not just in posted asking prices, but exists also in the transaction prices of closed deals, where loss aversion causes sellers facing a loss to achieve higher prices, with the difference averaging 25% of the loss exposure (somewhat less than the difference in asking prices, but still significant). Such sellers take significantly longer to sell their properties, and pull their properties off the market before selling at all more frequently. This suggests that sellers facing a loss really do manifest higher reservation prices and suffer a loss of liquidity at the individual property level (i.e., it's not just an asking price phenomenon).

The nature and magnitude of the effect of reference point based pricing is illustrated in the chart in Exhibit 4 below. The solid black line is the Moody's/REAL CPPI all-property index of average realized transaction prices at the quarterly frequency. The purple line shows, in proportion relative to the average price level, how much higher

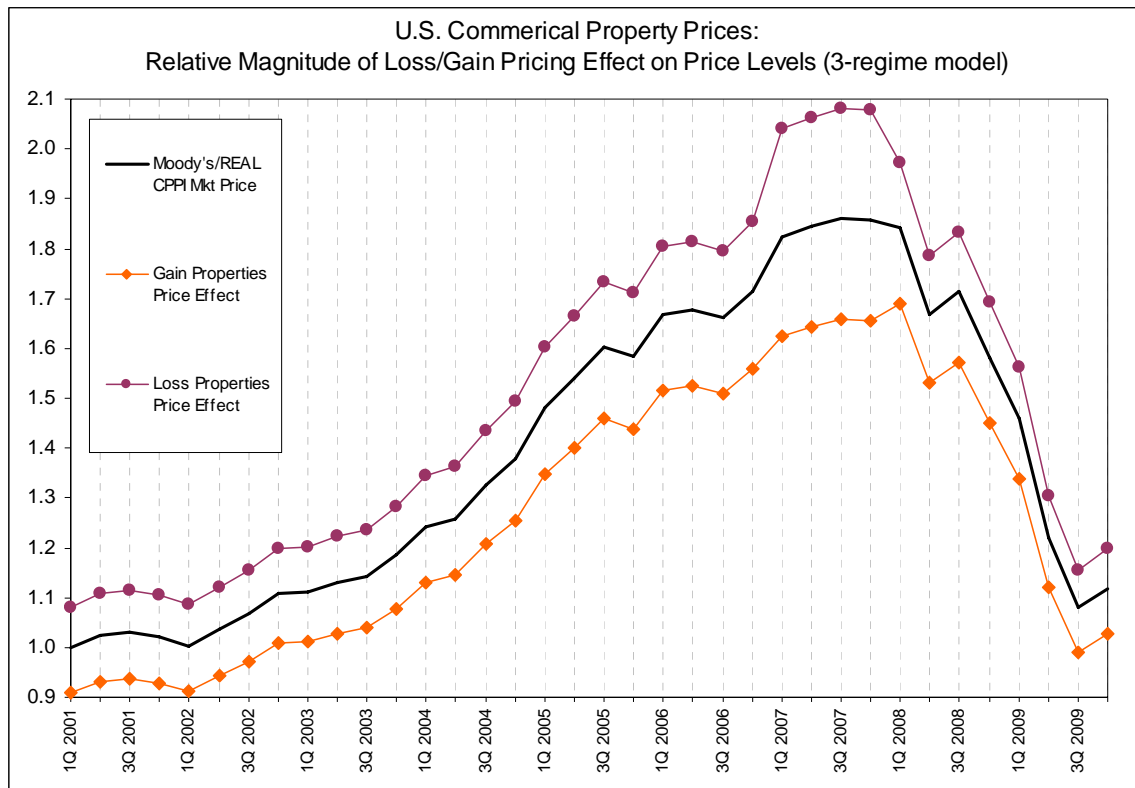


Exhibit 4

^{*} This type of pricing behavior is consistent with a phenomenon known as the “disposition effect”, selling “winners” and holding onto “losers”, a behavior that has been documented in several studies of asset markets of various types. Some such behavior can be “rational” or profit-maximizing and consistent with classical economic theory, but the asymmetrical component of reference point based pricing is less able to be reconciled with classical theory, but is consistent with prospect theory.

were the average prices obtained in closed transactions by sellers facing a loss. The orange line shows how much lower were the average prices obtained by sellers facing a gain. Exhibit 4 suggests that reference point based pricing behavior is a major characteristic of commercial property behavior at the individual property level. But what about the impact at the aggregate level, in the market as a whole, where the effect of gainers and losers nets out?

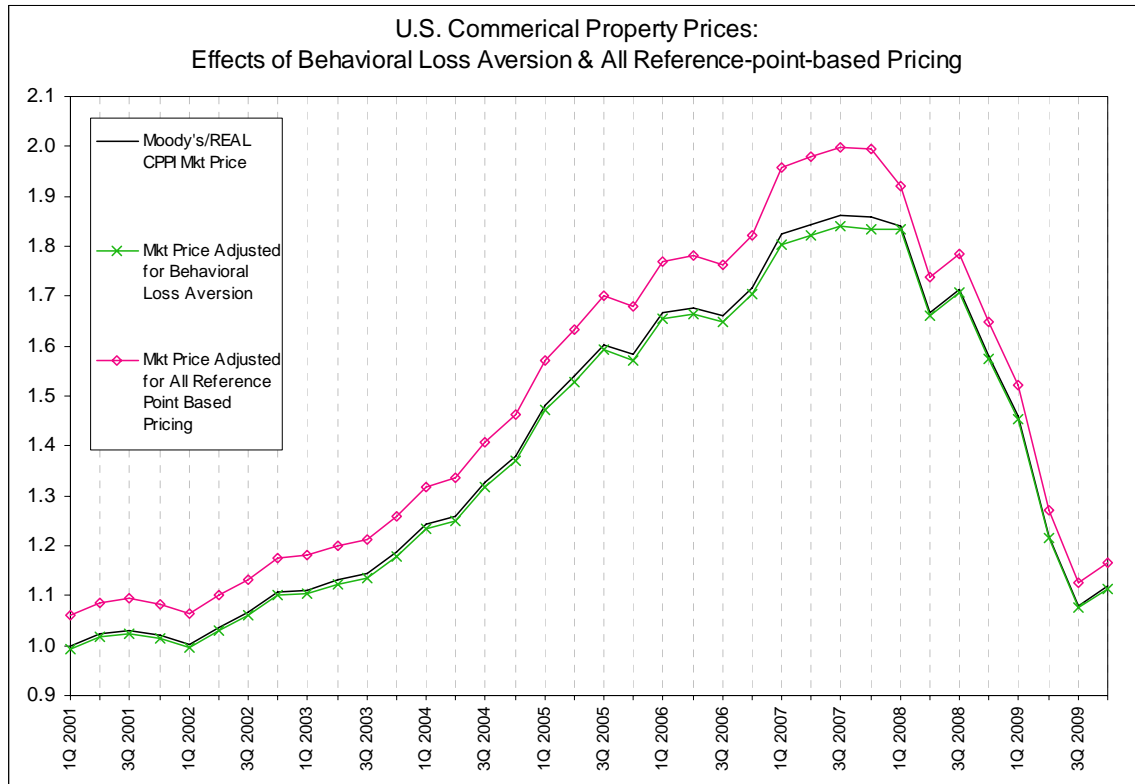


Exhibit 5

In Exhibit 5 the difference between the plain black line (the Moody's/REAL CPPI) and the purple-diamonds line shows the net affect of all reference point based pricing (both symmetric and asymmetric, on gainers and losers). Without reference point based behavior, prices on average would have been about 6% higher than they were, a bit more so during the peak period and turning point of 2007, and somewhat less so during the crash of 2008-09. The net effect is that reference point based pricing dampened the peak-to-trough downturn, but only by about 2% (of the peak value). On the other hand, the difference between the green-Xs line in Exhibit 5 and the plain black CPPI line shows the pure effect of behavioral loss aversion *per se*, the net effect in the aggregate market of the *asymmetric* component of pricing behavior by sellers facing a loss (i.e., the excess magnitude of the reference point based pricing effect on sellers facing a loss over and above that on sellers facing a gain). This effect results in average prices being slightly higher than they would otherwise be: less liquidity in the market (as potential sellers seek to avoid realizing losses by charging higher prices than they otherwise would). But the effect is very small, though it was a bit greater during the peak and virtually nonexistent

during the crash, resulting in a slight *increase* in the amplitude of the fall (by less than 1% of the peak value).*

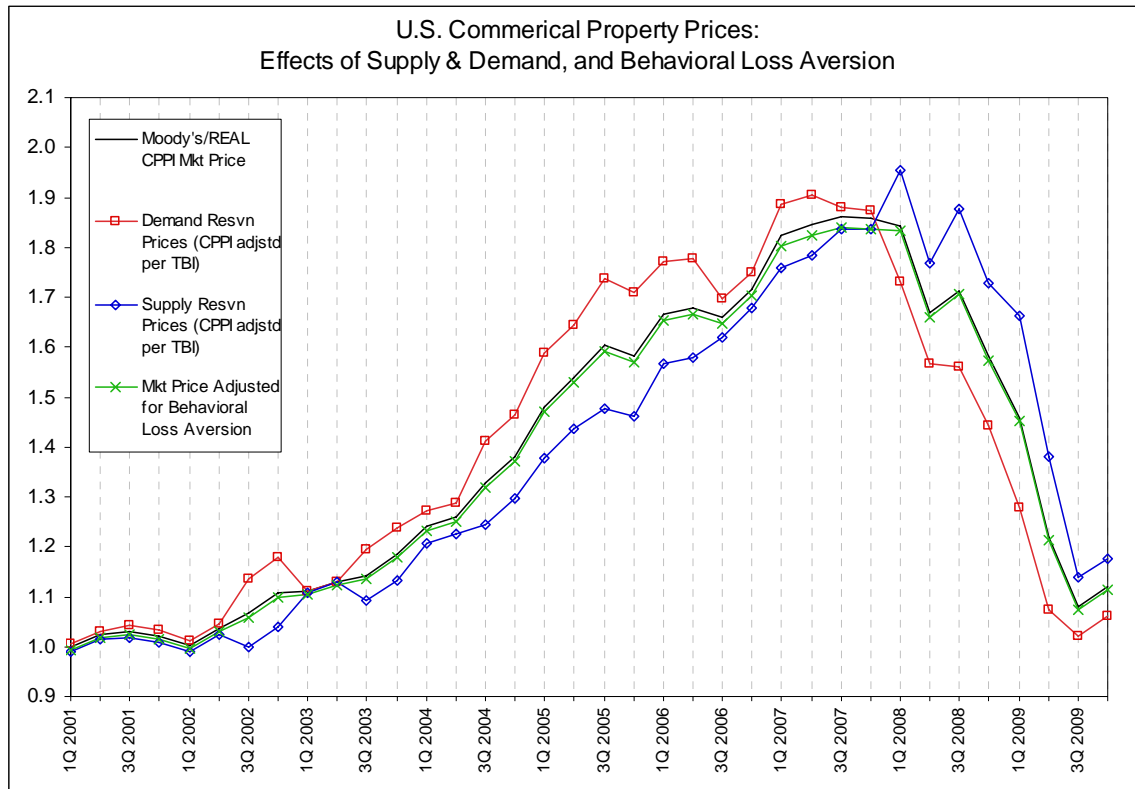


Exhibit 6

Finally, Exhibit 6 illustrates the role of behavioral loss aversion in the recent liquidity cycle. The plain black line is again the actual prices evidenced by the CPPI, and the green line as before reflects what the prices would have been if there had been no behavioral loss aversion. The red and blue lines trace indices of the relative movements of indices of reservation prices on the demand and supply sides of the market respectively, calibrated so that when those two index levels both equal the transaction price index the market is at “normal” (long-run average) liquidity (in terms of trading volume).[†] The sharp drop in the demand side reservation prices below the supply side reservation prices after 2007 opened up a gap between the two sides of the market that dried up liquidity. If loss aversion behavior were responsible for much of this gap, then we would expect to see the green-Xs index that is controlled for such behavior to run near to the red demand-side index during the downturn.[‡] But we do not see this. Behavioral loss aversion *per se*

* The fact that behavioral loss aversion was virtually nonexistent during the crash is an interesting finding. It suggests that “extreme reality” (in the form of a near total collapse on the demand side of the market) can “break through” the psychological component of pricing behavior, such that sellers facing a loss are not able to hold out for their “normal” degree of excess pricing.

[†] The demand and supply indices are based on the TBI “Liquidity Metric” as published by the MIT Center for Real Estate.

[‡] If the green index, which represents what market prices would have been if there were *not* behavioral loss aversion in the market, moved in parallel with the red (demand side) index, then that would mean that prices in the absence of loss aversion would have moved down with the demand, enabling potential buyers

appears not to have been a major cause of the liquidity crisis in the U.S. commercial property market during 2008-09, even though it is an important attribute of pricing behavior at the individual property level.

-David Geltner, May 2010.

(See www.realindices.com for an archive of past issues of "Professor's Corner".)

to find sufficient deals meeting their reservations prices so that liquidity (consummated transaction volume) in the market would not have been diminished. Instead, even controlling for behavior loss aversion (green index), the market pricing failed to move down with the demand side's (potential buyers') willingness to pay, resulting in a dearth of consummated transactions.