

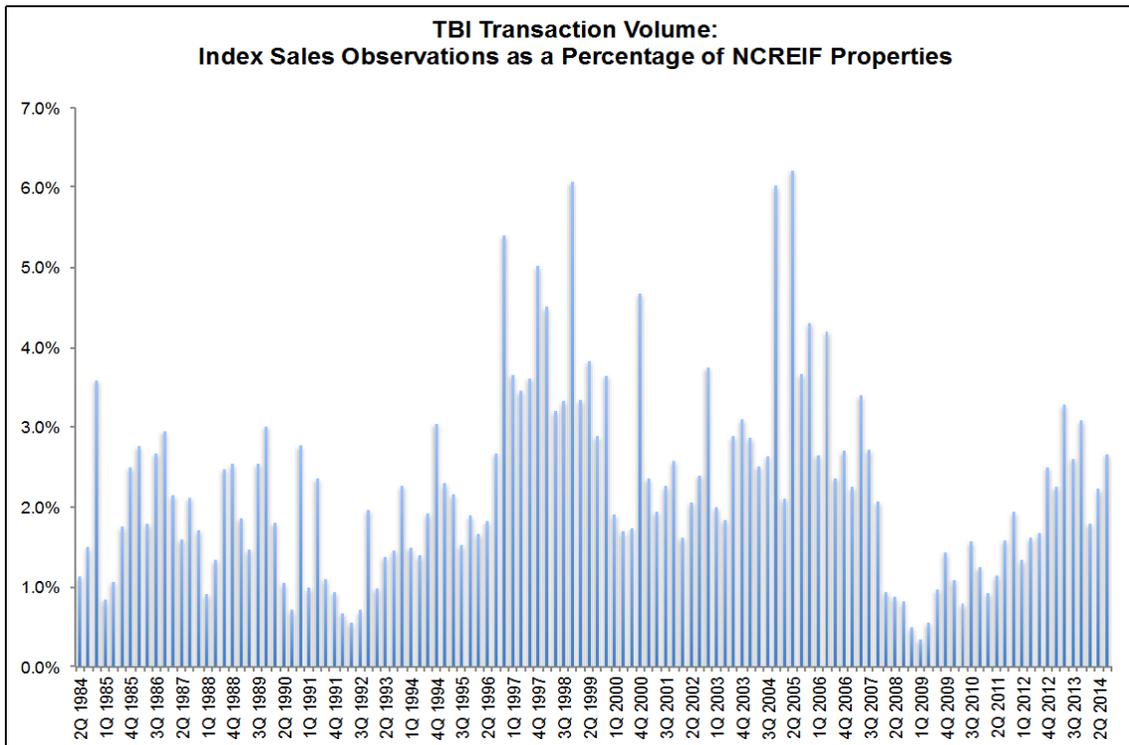


Commentary on the Transaction Based Demand-and-Supply Indices:

Sheharyar Bokhari, Dec 4th, 2014.

The capital return component of the NCREIF Transaction-Based Index (NTBI) registered a modest drop of 0.47% in the third quarter of 2014. However, the trading volume has continued to tick up this year, with 191 sales in the latest quarter. As shown in Figure 1, the third quarter sales volume as a percentage of all NCREIF properties is at 2.7%, slightly above the long-term historic average of 2.3%. This increase in the turnover ratio is also reflected in the movements on the demand and supply sides of the market. The TBI demand side index (shown in Figure 2), tracks the changes in prices that potential buyers are willing to pay, while the supply-side index measures changes in the prices property owners are willing to accept. The demand side reservation prices grew by 2.41% in third quarter 2014, while the supply side decreased their willing-to-accept prices by 3.31%. This increased the overlap between supply and demand, leading to the increase in liquidity or trading volume. Furthermore, it is worth noting that the demand index has now surpassed its 2Q 2007 previous peak level, whereas the supply index is about 16% below its previous peak in 3Q 2008. This implies that with property owners willing to accept much lower prices than they did back in 2008 and with prospective buyers willing to pay as much as they did back during the peak of the market in 2007, the market is highly liquid.

Figure 1.





A summary measure of the liquidity in the institutional property market is the TBI Liquidity Metric, which is akin to a bid-ask spread. As shown in Figure 3, the liquidity metric closed the third quarter of 2014 at +17.5%. This means that a combination of buyers' pulling back (lowering) their willing-to-pay prices and/or sellers pulling back from their side (increasing) their willing-to-accept prices totaling 17.5 percent of the average transaction price, would be necessary to bring the NCREIF members' trading volume back down to its long-term average level (relative to the size of the stock of properties held). It should be noted that, though the Liquidity Metric is highly correlated with the direct turnover ratios shown in Figure 1, the Liquidity Metric shown in Figure 3 differs modestly in its relative movements over time from that of the turnover ratios because the Liquidity Metric is based on a sales probability model that controls for variation in property characteristics across time, while the simple turnover ratio does not account for such differences. In other words, from a statistical perspective, the current market is even more liquid, relative to long-run averages, than appears merely from looking at the current turnover ratio.

Figure 2.

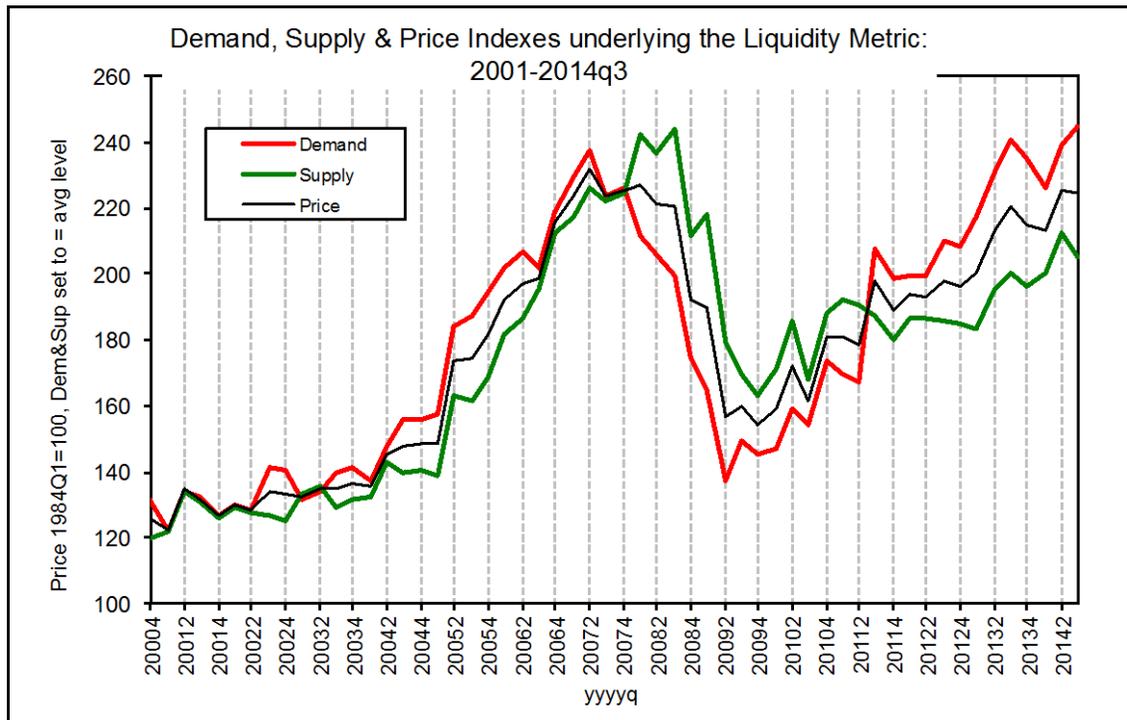
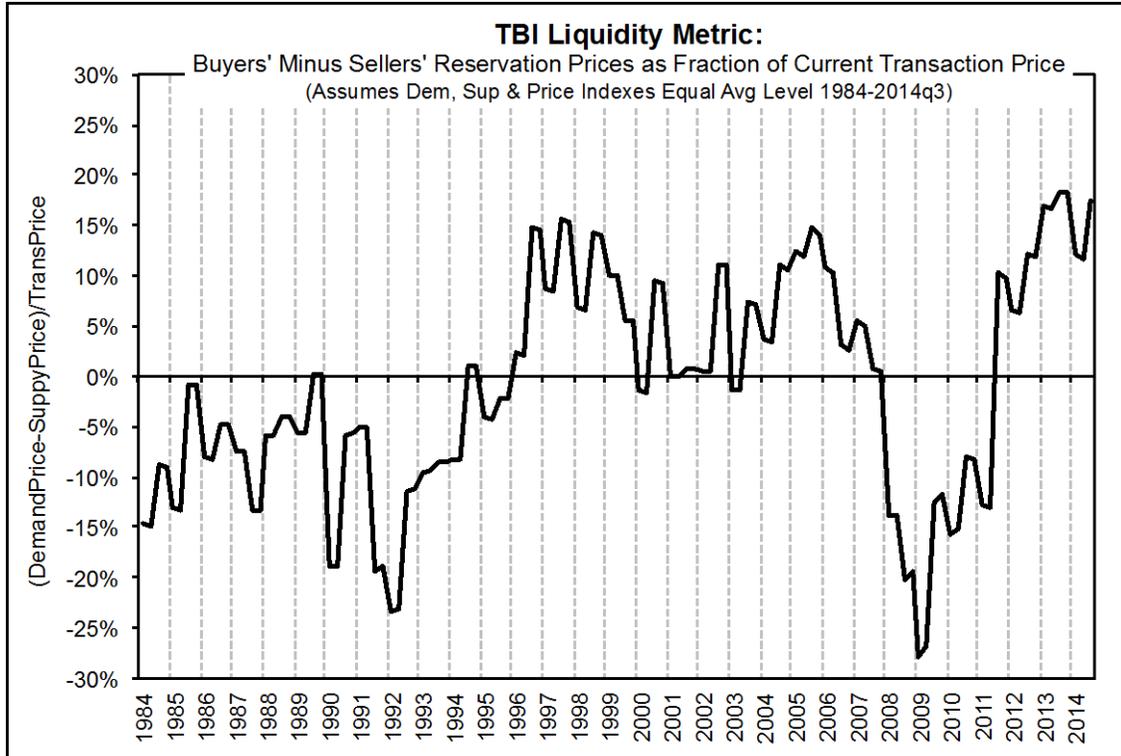


Figure 3.



Explanation of Indices:

What is the meaning of Price vs Demand Indexes?

Response:

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.

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.

How can the demand index exceed the supply index?

Response:

The indexes actually only quantify percentage changes over time within the given index. That is, the price index only actually tells us how much realized (closed deals) transaction prices have changed; the demand index only tells us how much the potential buyers' (average) reservation prices have changed; and the supply index only tells us how much the property owners' reservation prices have changed, between any two points in time (since the indexes began). They do not rigorously tell us the relative price levels across the indexes as of any point in time. In principle you cannot compare index levels across indexes, only within an index across time. The starting value of each index is arbitrary (set at 100). This does not imply that all the indexes (price, demand, supply, total return) were actually at the same level at the inception date of the indexes (1Q1984 for the all-property indexes).

In our chart of the demand and supply indexes we (arbitrarily) re-set the starting value of the supply index to give it the same long-run average value level as that of the demand index. This does not affect the periodic returns, but in effect, this index level adjustment calibrates the demand and supply indexes so that they will be equal (or approximately equal) in levels during times when the institutional property market is at a "normal" or "average" level of liquidity (trading volume is at a typical level, not exceptionally "hot" nor exceptionally "cold"). Formally speaking, this is an *ad hoc* calibration.

So how can the demand index ever be above the supply index? Based on the calibration just described, this would happen when the demand is relatively strong, that is, when potential buyers' are moving their reservation prices relatively higher compared to their long-run average, and relative to the reservation prices of the property owners.