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Cap Rates Have A Downward Bias Looking Forward

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As we mentioned in the last issue, we have recently been exploring the statistical relationship between cap rates and changes in real GDP, the unemployment rate, inflation, 10-year Treasury yields, and the flow of funds into mortgages. In order to get a feel for the magnitude of the impact of the mortgage flow of funds on cap rates versus other factors, we examined historical correlations between NCREIF cap rates and various macroeconomic factors. Based on those correlations, we simulate the impact of the simultaneous occurrence of a 5% increase in real GDP, a 200-bp rise in the 10-year Treasury yield, a 100-bp decline in the unemployment rate, stable inflation, and a relatively modest (by historical standards) 25% increase in real mortgage lending. The net simulation result is a 104-bp decline in cap rates, with apartments (which already have the greatest flow of funds) declining the least and retail declining the most. While not definitive, our empirical results are highly suggestive that the cyclical flow of mortgage funds, which is just beginning, will force cap rates downward – or at least hold them flat – even as interest rates rise substantially.

Our analysis (which in view of data quality is more suggestive than definitive) reveals that changes in real GDP and unemployment rates impact cap rates quite modestly, results which we are convinced are as expected. This is because once economic growth pushes rents to levels that justify replacement, further economic growth simply creates new supply rather than further boosting real cash flow growth. Similarly, consistent with theory, we find little empirical impact of inflation on cap rates, as higher inflation raises both alternative asset returns and perpetuity cash flow growth by roughly equal amounts, hence canceling out any significant impact on cap rates.

In terms of the impact of 10-year Treasury yields on cap rates, our research also finds little notable impact. In fact, for both REIT implied cap rates and NCREIF cap rates over the past 12 years, a decrease in 10-year Treasury yields is generally associated with rising cap

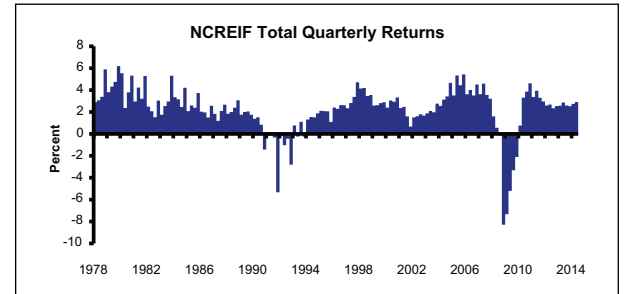
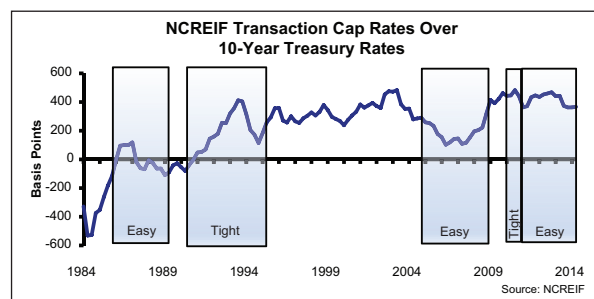
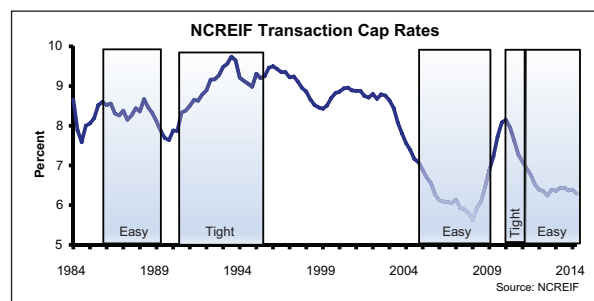


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rates. This is because large declines in Treasury yields are associated with investor “flight-to-safety,” while subsequent increases in Treasury yields reflect a return to normalcy. And over longer data periods, NCREIF cap rate data reveal little correlation with 10-year Treasury yields.

Most observers say, “But a higher Treasury yield means that real estate must provide a higher return in order to be competitive, so surely cap rates must rise with interest rates.” But the data does not support this seemingly logical position. This is partially due to periods of flight-to-safety (and subsequent reversal), creating periods of negative correlation between cap rates and Treasury yields. But even more so, the lack of a clear relationship between Treasury yields and cap rates reflects the fact that the flow of mortgage funds swamps all else in terms of impact on cap rates. That is, as mortgage funds flow – even in the face of rising interest rates – mortgage spreads narrow, loan-to-value ratios (LTVs) rise, loan covenants disappear, and payment-in-kind (PIK) lending allows borrowing in excess of cash



NCREIF Cap Rates	10-year Treasury Yield +200 bp	Linneman Index* +25%	Real GDP +5%	Unemployment Rate -100 bp	Total
Transactions	NS	(70)	7	(41)	(104)
Apartment	NS	(69)	(17)	NS	(85)
Office	36	(133)	19	(59)	(137)
Industrial	NS	(102)	NS	(25)	(127)
Retail	NS	(125)	18	(37)	(145)

* Linneman Real Estate Index measures multifamily and commercial mortgage as percent of GDP.
NS: Not statistically Significant
Source: Linneman Associates

Implied Cap Rates of REITs	10-year Treasury Yield +200 bp	Linneman Index* +25%	Real GDP +5%	Unemployment Rate -100 bp	Total
Total REITs	(76)	258	NS	NS	183
Apartment	(87)	335	NS	NS	248
Office	(112)	228	NS	NS	116
Industrial	(152)	347	NS	NS	195
Shopping Center	(88)	247	NS	(25)	134
Regional Mall	NS	259	NS	(16)	244
Self Storage	NS	298	NS	NS	298
Manu. Housing	NS	NS	(59)	23	(37)
Triple Net	NS	455	(117)	103	441
Health Care	NS	(242)	(158)	31	(369)

* Linneman Real Estate Index is calculated based on multifamily and commercial mortgage as percent of GDP.
NS: Not statistically Significant
Source: Bank of America, Linneman Associates

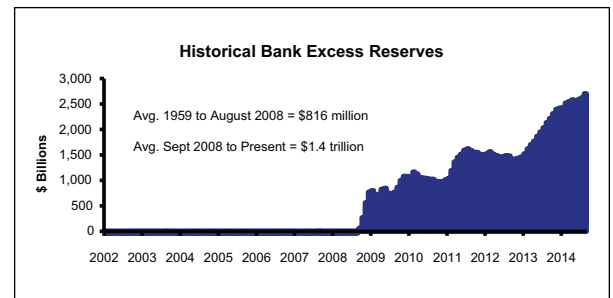
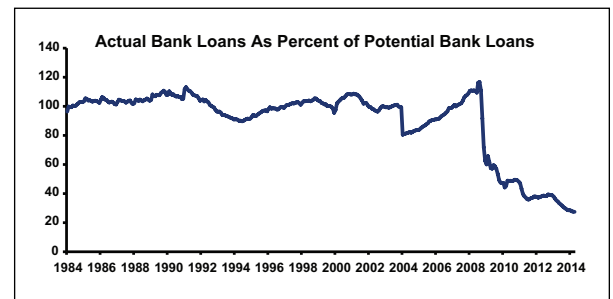
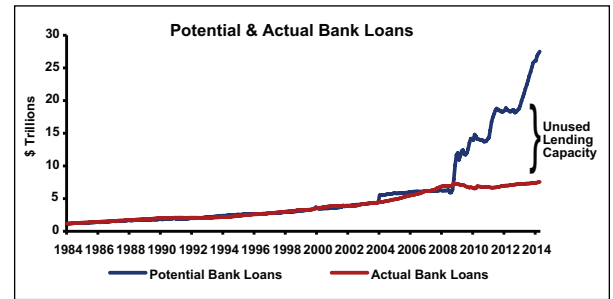
coverage. In fact, as LTVs rise due to large mortgage flows, real estate equity becomes more akin to the purchase of an option rather than ownership per se. The result of massive mortgage lending flows is to reduce the weighted cost of capital for real estate for highly leveraged buyers, even at higher Treasury rates. This tends to drive low leveraged buyers from the market, in turn lowering cap rates. Hence, the statistical finding is that cap rates are primarily driven by the flow of mortgage funds, rather than the state of the economy or interest rates.

It is important to realize that while there is plenty of debt currently available for the best properties in gateway markets (New York, Los Angeles, San Francisco, Boston, and Washington, D.C.), the overall flow of mortgage funds is still at a cyclical low. For example, total outstanding mortgage debt for commercial real estate is 5.7% below its 2008 peak in nominal terms and nearly 15% in real terms. Further, outstanding mortgage debt has only risen by 4% since its trough in 2012. And the Linneman Index, which measures outstanding mortgage debt relative to GDP, is 20% below its peak in 2009, and appears to have finally stabilized. Despite increased lending, GDP has grown faster than commercial mortgage flows to date, resulting in continued declines in the LREI. However, the current LREI appears to have bottomed as has been essentially flat for the last six quarters. In short, U.S. real estate is near the bottom of a mortgage flow of funds cycle; but as lending ramps up, the LREI will eventually increase. And as this cycle swings upward, the pressure will be to notably lower cap rates, even if (as we anticipate) 10-year Treasury rates rise.

The last three mortgage flow of funds cycles saw real increases in outstanding mortgages from their respective troughs of 43% (1985-1990), 43% (1996-2001), and a staggering 60% (2003-2008). And this cycle could dwarf previous cycles in light of the staggering amount of unused lending capacity – nearly \$20 trillion based on \$2.7 trillion currently in excess reserves – that the Fed has created at money center banks.

Banks, the dominant real estate lender, have historically pushed real estate lending aggressively with a lag to corporate lending. We are

Commercial/Multifamily Mortgage Debt Outstanding	
Total Outstanding Most Recent	\$3.5 trillion
Percent Change in Total Loans 1985-1990	43% (real)
Percent Change in Total Loans (1996-2001)	43% (real)
Percent Change in Total Loans 2003-2008	60% (real)



already seeing extremely loose bank credit for corporate buyouts and corporate refinancing, as banks attempt to put nearly \$20 trillion of unused lending capacity to work. Never before has the U.S. banking system possessed so much unused lending capacity. Current real estate bank loans are \$3.5 trillion (27% of all mortgage debt outstanding) versus estimated unused bank lending capacity of \$20 trillion. Thus, it is hard to conceive that the forthcoming cycle in the flow of mortgage funds will not exceed the 60% real increase from 2003-2008. And remember that cap rates fell during that period in spite of high (and rising) Treasury yields.

