

TECHNICAL PAPER REFLATION, RISING RATES AND REAL ESTATE

How Might U.S. Commercial Property Perform in this New Environment?

EXECUTIVE SUMMARY

- The nascent signs of a new economic pattern marked by higher interest rates and increased inflation has begun to show. This “reflation” environment will have direct implication for U.S. property markets and the economy as a whole.
- Commercial property has long been considered to be an asset class that provides some degree of protection from the pernicious effects of inflation, and historically, in rising interest rate environments, investors have been willing to allow the yield spread to compress for some period of time.
- Property sector performance is likely to reflect underlying property market fundamentals more than capital market changes as long as the economic and property market fundamentals do not change significantly.

Changing Investor Expectations Post Election

The outcome of the U.S. presidential election triggered a seismic shift in investor sentiment with the Dow Jones Industrial Average stock index rising more than 10% and the yield on the U.S. Treasury bond rising roughly 60 basis points between election night and year-end. Investors are now clearly pricing in stronger economic growth, higher inflation and a faster pace of Federal Reserve tightening of monetary policy than had been anticipated prior to the election result. In part, this change in expectations is based on campaign rhetoric calling for significant increases

in government spending on infrastructure and defense, proposed radical changes in U.S. tax rates and policies, and promises of meaningful reductions in government regulations, notably in the finance and energy sectors. At the same time, investors were also recognizing that economic growth was already accelerating during the second half of 2016 even without any of the stimulative measures listed above. Consequently, the nascent signs of a new economic pattern marked by higher interest rates and increased inflation has begun to show. This “reflation” environment will have direct implication for U.S. property markets and the economy as a whole.

(Figure 1) The Dow Jones Industrial Average and the 10-Year Treasury Yield

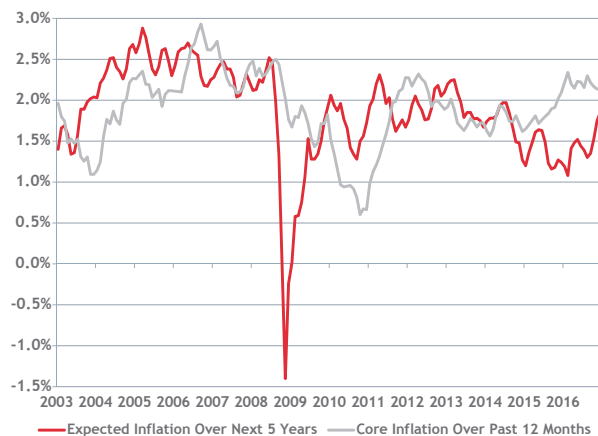


Source: Bloomberg

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With respect to U.S. inflation, there is now clear evidence that wage pressures are building across most parts of the domestic labor market with the Atlanta Federal Reserve Bank reporting year-over-year growth in wages of approximately 3.9% through November 2016, the highest level since the financial crisis¹. Similarly, core inflation (excludes food and energy) has been running above 2% on a year-over-year basis since the beginning of 2016 and is finally being reflected in investor expectations for future inflation (Figure 2). Taken together, we conclude that higher growth and reflation sentiment was already building, and the unexpected election result acted as a catalyst.

(Figure 2) Core Inflation and Expected Inflation Over Next Five Years



Source: Bureau of Labor Statistics, Federal Reserve

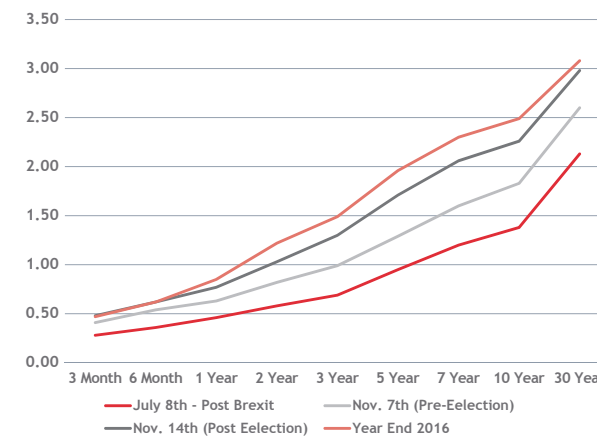
As a result, we expect that the Federal Reserve will likely follow through on the policy rate expectations indicated at their December 2016 meeting and will attempt to raise the Federal Funds rate (overnight borrowing rate) 2-3 times during 2017. Movement in the long end of the yield curve will not keep pace with movement at the short end for two reasons. First, the long end of the U.S. yield curve has already moved more than 100 basis points since the low yield point of July 2016 (post Brexit). Second, the yield spread between U.S. Treasury bonds and other major foreign bonds has widened significantly. In particular, German and Japanese 10-year government bond spreads to the U.S. 10-year Treasury bond have widened by 60-80 basis points since the November election, and this is creating additional buying pressure for longer duration U.S. sovereign debt that will dampen continued upward pressure on the long end of the yield curve for U.S. Treasuries.

As a result, we see the U.S. yield curve likely flattening slightly during 2017 with the 10-year Treasury yield perhaps reaching 3% by year-end but unlikely to move beyond this level in the very near-term. It should be noted that there is the possibility that long yields actually fall from today's level if growth in the U.S. slows abruptly. This would most likely be the direct result of the rapid increase in the U.S. dollar relative to other currencies that has accelerated post-election. Ironically, the Trump-reflation dollar rally could result in a substantial decline in U.S. export competitiveness and,

subsequently, lead to weaker aggregate growth creating a nascent stagflation environment. More significantly, various calls during the campaign to restrict global trade, particularly trade with China and Mexico, also hold the potential to significantly slow near-term economic growth in the U.S. and more broadly. While we believe the likelihood of an all-out trade war is small, it cannot be ruled out.

Despite the renewed enthusiasm for future growth exhibited in post-election market pricing, we do not currently anticipate any significant changes to our U.S. macroeconomic outlook for 2017. Indeed, the Federal Reserve's December assessment of 2017 growth was revised up by only 0.1% relative to their September projections.

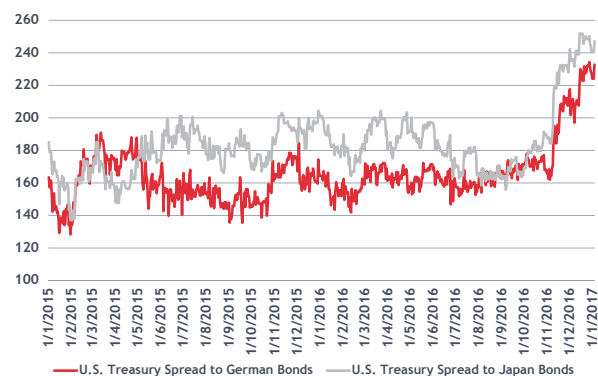
(Figure 3) U.S. Treasury Yield Curve (% Yield)



Source: Bloomberg

¹ <https://frbatlanta.org/chcs/wage-growth-tracker/?panel=1>

(Figure 4) Yield Spread with U.S. Treasury Bonds



Source: Bloomberg

(Table 1) Federal Open Market Committee Assessment of U.S. Economy – December 2016²

	2016	2017	2018	2019	Longer Run
Change in Real GDP	1.90	2.10	2.00	1.90	1.80
September Projection	1.80	2.00	2.00	1.80	1.80
Unemployment Rate	4.70	4.50	4.50	4.50	4.80
September Projection	4.80	4.60	4.50	4.60	4.80
PCE Inflation	1.50	1.90	2.00	2.00	2.00
September Projection	1.30	1.90	2.00	2.00	2.00
Federal Funds Rate	0.60	1.40	2.10	2.90	3.00
September Projection	0.60	1.10	1.90	2.60	2.90

Most of the proposed pro-growth economic measures currently being discussed in Washington will largely be a story for 2018 and beyond, if at all. The most significant limiting factor on near-term job growth will be labor supply, not business demand for labor, particularly in high skill job categories and in gateway markets. U.S. interest rate changes in 2017 will be driven, as always, by expectations for inflation and investors' required return premium. On the inflation front, the broad deflationary pressures

that have vexed the global economy remain in place today and will only be slowly reversed by the implementation of expansionary monetary policy flowing from populist election results in the U.S. and Italy in 2016 and (possibly) additional European countries in 2017 and 2018. In their most recent assessment, the World Bank is projecting global real GDP growth of 2.7% for 2017 compared with estimated growth of only 2.3% in 2016, a post-financial crisis low³.

² Source: <https://www.federalreserve.gov/monetarypolicy/fomcprojtabl20161214.htm>

³ <http://www.worldbank.org/en/publication/global-economic-prospects>

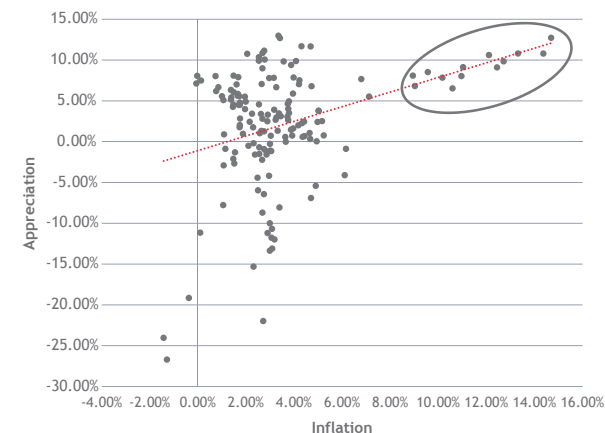
Real Estate and Reflation

Commercial property has long been considered to be an asset class that provides some degree of protection from the pernicious effects of inflation. Much of the academic research on the relationship between commercial property and inflation was conducted quite some time ago when inflation was much higher and the interest in it was much greater. For example, studies such as Wurtzback, Mueller and Machi (1991) examined the ability of landlords to pass higher operating costs during periods of high inflation to tenants either directly or through higher rents. The ability to do so was, of course, discovered to be tempered by the degree to which the market was in or out of balance with respect to supply. Overall, real estate was deemed to be a reasonably effective inflation hedge assuming levels of vacancy were not extreme⁴. More recently, studies have focused on property return characteristics more related to capital market conditions and expectations with respect to

inflation. For example, Huang and Hudson-Wilson (2007) examined, among other things, the impact of inflation on future property replacement cost as one of the ways that rising cost levels protect current property owners from future competition⁵. Put simply, if future replacement cost is higher, the newly delivered property will require higher rents to achieve the same investment return as existing property.

A simplistic comparison of actual inflation and aggregate property price appreciation in the NCREIF⁶ universe is shown in Figure 5. Overall, the relationship is upward sloping (i.e. higher inflation is associated with higher property appreciation) but over the nearly 40-year period for which data are available, the relationship appears somewhat tenuous except for the most extreme periods of inflation (circled).

(Figure 5) Year-Over-Year Change Property Price Appreciation and Inflation 1978 Q1 – 2016 Q3



Source: NCREIF, Bureau of Labor Statistics

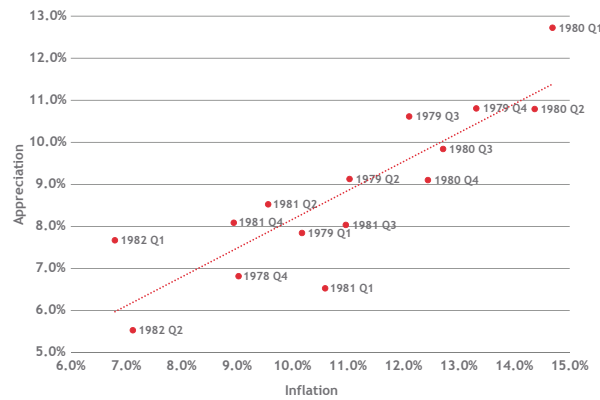
⁴ Wurtzback, Charles H., Mueller, Glenn R. and Machi, Donna. The Impact of Inflation and Vacancy on Real Estate Returns. The Journal of Real Estate Research. Summer 1991. Pages 153-168.

⁵ Huang, Haibo and Hudson-Wilson, Susan. Private Commercial Real Estate and Equity Returns. The Journal of Portfolio Management. 2007, Vol. 33, No. 5: pp. 63-73.

⁶ National Council of Real Estate Investment Fiduciaries

While we certainly do not expect a return to the very inflationary environment of the late 1970s and early 1980s, Figure 6 focuses specifically on this period of extreme inflation and identifies the specific quarters in question (1978 Q4 through 1982 Q2). Clearly, in this particular period, real estate provided a very effective hedge against rapid inflation. Tables 2 and 3 provide some additional insight into the differences in the relationship between inflation and specific property type returns over the entire period (1978 – 2016). The correlation of property appreciation and inflation was positive but relatively low, with office and apartment properties showing the strongest correlations and retail properties the weakest, a result also documented by Huang and Hudson-Wilson (2007). Over the high inflation period (1978-1982), the correlations between inflation and property type appreciation are significantly stronger, again with apartment and office properties showing the strongest correlation and retail showing the weakest.

(Figure 6) Year-Over-Year Change Property Price Appreciation and Inflation 1978 Q4 – 1982 Q2



Source: NCREIF, Bureau of Labor Statistics

(Table 2) Correlation of Annual Property Appreciation and Inflation (CPI) 1978 Q1 – 2016 Q3

	Apartment	Industrial	Office	Retail	Total	CPI
CPI	0.450	0.304	0.427	0.104	0.357	1.000

Source: NCREIF, Bureau of Labor Statistics

(Table 3) Correlation of Annual Property Appreciation and Inflation (CPI) 1978 Q4 – 1982 Q2

	Apartment	Industrial	Office	Retail	Total	CPI
CPI	0.737	0.601	0.683	0.209	0.859	1.000

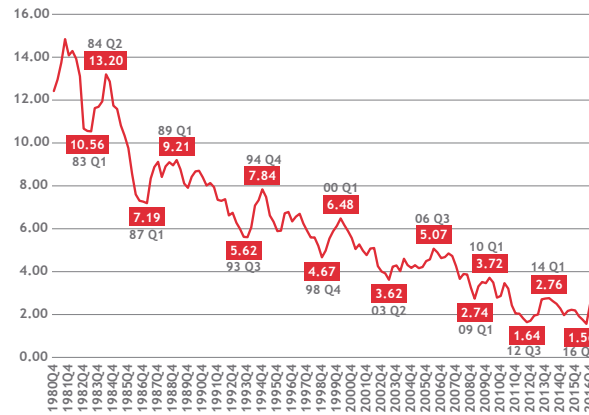
Source: NCREIF, Bureau of Labor Statistics

Real Estate and Rising Interest Rates

Given the rise in interest rates that occurred over the second half of 2016, particularly post-election, many investors are wondering what will happen to property pricing going forward if interest rates continue to rise. In general, this is a difficult question to answer as interest rates in the U.S. have largely declined continuously since 1980, with only brief periods of increases that typically lasted for only one to two years. Figure 7 illustrates the general downward trend in the U.S. 10-year Treasury bond yield since 1980, as well as identifies seven specific periods where interest rates rose during the broader 35-year decline.

In Table 4, we examine each of these seven periods and highlight the changes that occurred in interest rates, property yields (cap rate), the spread between property yields and Treasury bond yields, growth in property income (NOI) and the change in property value. The most significant takeaway from the information provided in Table 4 is the significant decline in the spread between property yields (cap rates) and Treasury bond yields in each of the seven periods. In each of these cases, investors were willing to allow the yield spread to compress for some period of time, either in reaction to strong property income growth (e.g. 1993, 1998, 2012) or perhaps due to an expectation that interest rate increases would only be temporary (e.g. 2009). More significantly, in five of the seven periods of rising interest rates, the average property capital value increase over all seven such periods was 4.6%.

(Figure 7) U.S. Ten Year Treasury Yield (%), 1980-2016



Source: Federal Reserve

(Table 4) Property Pricing During Periods of Interest Rate Increase

	10-Year Treasury Yield (%)	Average Cap Rate (%)	Cap Rate Spread (bp)	Change in 10 Year Yield (bp)	Change in Cap Rate (bp)	Change in Spread (bp)	NOI Growth	Capital Value Change
1983 Q1	10.56	7.92	-264					
1984 Q2	13.20	7.46	-574	264	-46	-310	0.26%	8.15%
1987 Q1	7.19	7.39	20					
1989 Q1	9.21	7.01	-220	202	-38	-240	0.86%	3.18%
1993 Q3	5.62	8.11	249					
1994 Q4	7.84	8.46	62	222	35	-187	9.44%	-4.49%
1998 Q4	4.67	7.92	325					
2000 Q1	6.48	7.73	125	181	-19	-200	5.89%	3.23%
2003 Q2	3.62	7.66	404					
2006 Q3	5.07	5.57	50	145	-209	-354	2.79%	29.43%
2009 Q1	2.74	6.11	337					
2010 Q1	3.72	6.72	300	98	61	-37	-2.92%	-15.31%
2012 Q3	1.64	5.49	385					
2014 Q1	2.76	5.00	224	112	-49	-161	4.65%	7.88%
2016 Q3	1.56	4.49	293					

Source: NCREIF, Bloomberg

Where Are We Today?

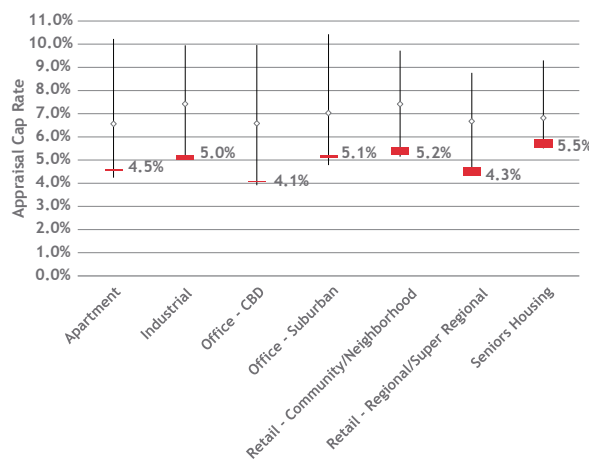
Figure 8 illustrates the current value and historic range of property yields (cap rates) in the U.S. by major property type⁷. Unsurprisingly, in nearly all cases, property yields are at or near the lowest level ever recorded and, in any asset class, the point of lowest yield will typically coincide with the point of greatest concern over future valuations.

Prior to the post-election surge in interest rates, property yield spreads to Treasury bond yields were above long-term averages and, in most cases, the spread was actually larger than the underlying Treasury yield. Since the election, these spreads have narrowed significantly and, in many cases, are now both below the long-term historical average, as well as smaller than the underlying Treasury yield (see Figure 9)⁸. Given the data presented in Table 4, we would argue that spreads are still quite healthy relative to earlier periods of rising rates and that investors are likely to allow these spreads to compress significantly more as they continue to assess the prospects for both continued strong property income (NOI) growth, as well as the likelihood that interest rates will rise over the next year or two.

With respect to the outlook for property NOI growth, property market fundamentals (average rents, occupancy rates, levels of new construction, etc.) continue to suggest positive, albeit somewhat slower, levels of NOI growth during 2017 and 2018. As shown in Figure 10, the current NOI expansion cycle has been atypically long, reflecting

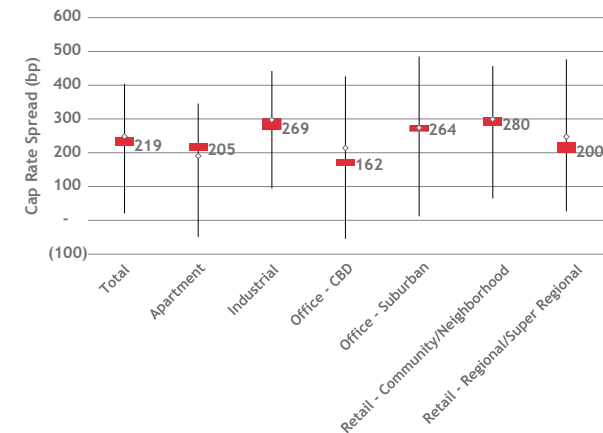
both the extended period of positive job growth since 2010, as well as the muted supply response of this particular cycle. The property supply response in this cycle has been slower, in part, to the heightened regulatory environment following the Global Financial Crisis. While there have been calls to reduce financial sector regulation by the new administration, we do not expect that to have a significant near-term impact on the lending environment for new construction. If the post-election, pro-growth sentiment imbedded in broader asset market pricing is correct, we would expect a comparable extension of the property NOI expansion cycle.

(Figure 8) Average Property Yields by Property Type 1983 Q1 - 2016 Q3



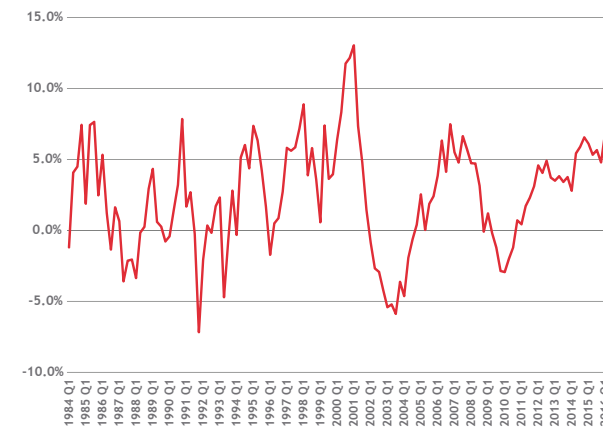
Source: NCREIF

(Figure 9) Average Property Yield Spreads by Property Type 1983 Q1 - 2016 Q3⁸



Source: NCREIF

(Figure 10) Year-Over-Year Average Property NOI Growth



Source: NCREIF

⁷ For each property type, the vertical line represents the historic range, the diamond represents the average over the entire period, the number represents the current value and the red rectangle represents the change over the four quarters.

⁸ For each property type, the vertical line represents the historic range, the diamond represents the average over the entire period, the number represents the current value and the red rectangle represents the change over the four quarters. In the cases of yield spread, we held the 2016 Q3 cap rate constant for 2016 Q4 and calculated the spread relative to the year-end Treasury bond yield to highlight the post-election change.

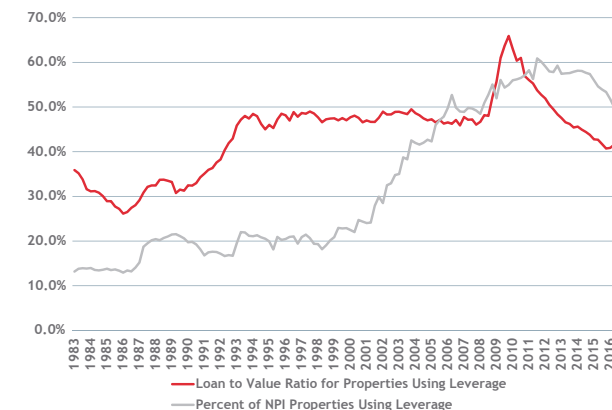
Leverage and Rising Rates

Commercial property is an asset class with strong cash flow characteristics that lends itself particularly well to the use of financial leverage. As such, many property investors choose to employ leverage to enhance return or broaden their diversification by deploying a fixed sum of capital across more individual assets. Figure 11 illustrates the current application of financial leverage across the institutional investment universe as defined by the NCREIF membership. As shown, roughly 50% of U.S. institutionally owned properties currently use financial leverage and among those properties the average loan-to-value ratio (LTV) is about 40%, significantly lower than the average of 50% LTV prior to the Global Financial Crisis. During the financial crisis, average LTV ratios rose to nearly 70% as values declined sharply.

If interest rates continue to increase, one specific area of concern over the next year or two will be the relationship between borrowing costs and property yields to the degree to which financial leverage is accretive to current yield and, ultimately, total return. Figure 12 shows a simplistic illustration of this relationship. In this exhibit, we show the average NCREIF property cap rate, the average fixed rate borrowing cost as reported by the National Council of Life Insurers

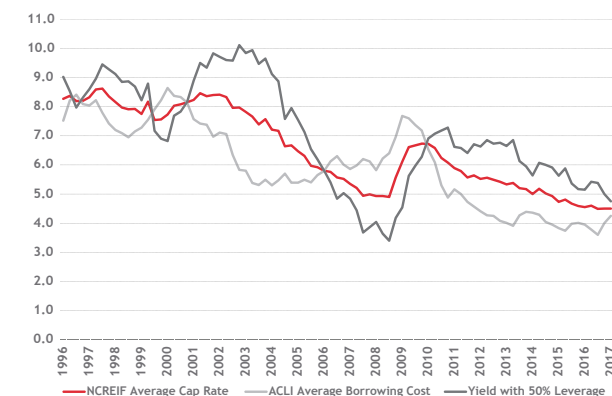
(ACLI) and the leveraged property yield assuming 50% loan-to-value. Borrowing costs have clearly risen post-election, typically by nearly the same amount as comparable term Treasury yields (i.e. lenders holding spreads near constant). As shown, the positive effect of leverage on yield is clearly narrowing as well and leveraged buyers are, on the margin, being put at a disadvantage relative to unleveraged buyers. Investors can react to this in several ways. First, borrowers can switch from fixed rate borrowing to lower cost floating rate loans to preserve accretive leverage. This tactic does present obvious risks in an environment where the Federal Reserve appears committed to raising short-term interest rates. Second, buyers can demand higher property yields (i.e. lower prices) to offset higher borrowing costs. The risk here is that sellers do not capitulate and the bid-ask spread widens and transaction volume slows. While it is too soon to make any definitive conclusions, a recent review by CBRE found that slightly more than one-third of the transactions that have closed since the election received a price reduction of 3%⁹. Obviously, continued strong NOI growth or a return to flat or declining interest rates would also help maintain a positive leverage environment.

(Figure 11) Percentage of NCREIF Properties Using Financial Leverage and Average Loan-To-Value (LTV)



Source: NCREIF

(Figure 12) Percentage of NCREIF Properties Using Financial Leverage and Average Loan-To-Value (LTV)¹⁰



Source: NCREIF, American Council of Life Insurers (ACLI)

⁹ See "Post-election interest rate rise modestly impacts commercial property pricing". U.S. Market Flash. CBRE Capital Markets Leadership. January 20, 2017.

¹⁰ As with the illustration of property yield spreads in Figure 8, we have held property cap rates constant at the 2016 Q3 level and have increased year-end borrowing costs by the change in Treasury yields post-election to accentuate the point being discussed.

Conclusion

Investors are correct to question how property investments will perform in a reflationary and rising interest rate environment, if for no other reason than it has been a long time since they have encountered either. Given the lack of historical experience, the past is not a particularly useful guide to the future for these questions. The limited historical precedent that we have available to examine suggests that property sector performance is likely to reflect underlying property market fundamentals more than capital market changes as long as the economic and property market fundamentals do not change significantly for the worse from where they are today and the capital market changes are not extreme. Specifically, if new construction continues at or near current levels and job growth does not deteriorate significantly, we expect U.S. property to continue to offer a competitive total return and yield profile. If the growth and reflation sentiment driving equity market valuations higher and bond market valuations lower is correct, there is no reason to believe that U.S. property will not share in future good fortune.

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