

Investment Focus

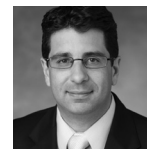
Frozen on the Rates: Impact of Interest Rates on Capitalization Rates

Introduction

Growing up in Canada, hockey was consistently a big part of my life (and still is). With the winter Olympics coming, 2014 is a big year in the hockey realm as twelve nations will compete for a gold medal in Sochi, Russia. In hockey, there are many ingredients: stick, skates, pads, ice, net, but none more important than the puck. The puck is a frozen disc of vulcanized rubber that every player is chasing, passing, shooting, defending and anticipating its next location. In fact, in the 1990s, Fox Television devised a system which had internal electronics allowing television viewers to track the position of the puck with a blue glow on the screen. Its purpose was to aid viewers to better follow and understand the action of the game.

In today's investment realm, the puck, arguably, is interest rates. Since the Global Financial Crisis (GFC), we have experienced an unprecedented period of low interest rates combined with low inflation. Public equities, real estate, agricultural land and private equity investments have enjoyed strong returns since 2009, which has largely synced up with the Quantitative Easing (QE) program introduced by the Federal Reserve (the Fed). In real estate, office capitalization rates, or cap rates, as measured in the NCREIF Property Index, have fallen by approximately 160 basis points to 5.6 percent since 2Q 2012 (as of September 30, 2013).¹ As such, many investor eyes are focused on the actions and words of policymakers as to what may or may not happen to interest rates.

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¹ Equal-weighted, current-value cap rates on office properties held in the NCREIF Property Index ("NPI"). The NPI is a property-level, time-weighted return index of institutionally-owned U.S. real estate. The NPI includes property investments at 100% ownership and does not account for leverage (i.e., returns do not reflect each fund's actual asset ownership position (if not 100%) or financing strategy). The NPI is a broad index which includes investments with both core and non-core orientations.

With the Fed first hinting in May 2013 at “tapering” and now actually beginning to cut back on QE, the rate on the ten-year U.S. Treasury note has risen to approximately 3 percent today (an increase of approximately 150 basis points from the nadir in July 2012).² This has caused considerable unease with investors, particularly in real estate, where some fear that cap rates may be about to rise, signaling the beginning of a real estate correction.

Our analysis, however, suggests a singular focus on the connection between interest rates and cap rates is one that requires much more consideration and perspective. We have looked at the issue first from a technical point of view, and then drawn inferences on what we may experience from a more sustained increasing-rate environment going forward. We believe this paper may serve to provide investors with some key indicators to monitor and potentially act accordingly.

Focusing solely on how interest rate rises may trigger cap rate increases in a vacuum can be potentially dangerous. Just like in hockey, a player should not be fixated on, or frozen by, the puck alone and must be aware of several other variables in any game situation. In fact, a player may only touch the puck for about a minute in a game of hockey, making his/her play *away* from the puck of greater importance than his/her play *with* the puck. Thus, investors must be cognizant of other variables in formulating their investment decisions in today’s environment.

Technical Analysis

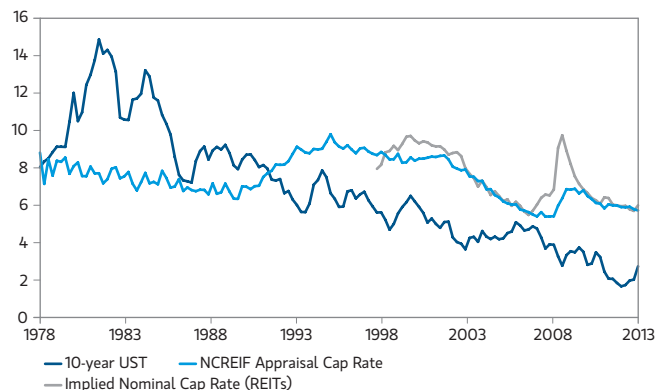
The logic behind a connection between cap rates and interest rates makes sense, both intuitively and theoretically. As the “risk free” alternative, the rate on ten-year U.S. Treasury notes generally serves as the baseline for expected returns. From a historically observed point of view, however, studying the correlation of cap rates and U.S. Treasury rates is somewhat unwieldy. There are timing disconnects, appraisal lags, and other exogenous variables that influence the bond market and real estate market differently. The most obvious technical impediment is that the U.S. economy has had essentially a “bond bull market” for the past 32+ years where interest rates have been on a broad downward trajectory. Thus, studying the impact of U.S. Treasury rates on cap rates is somewhat challenging.

The broad and sweeping conclusion based on a pure technical/quantitative point of view is that there is very little correlation historically between cap rates and changes in the 10-year U.S. Treasury rates. As shown in *Display 1*, there have been various episodes where cap rates have not moved in the same direction as U.S. Treasury yields.

Display 1: Cap Rates Show Disconnect with U.S. Treasuries

Cap Rates and U.S. Treasury Yields

1978 through 2013 Q3
Quarterly Yield, %



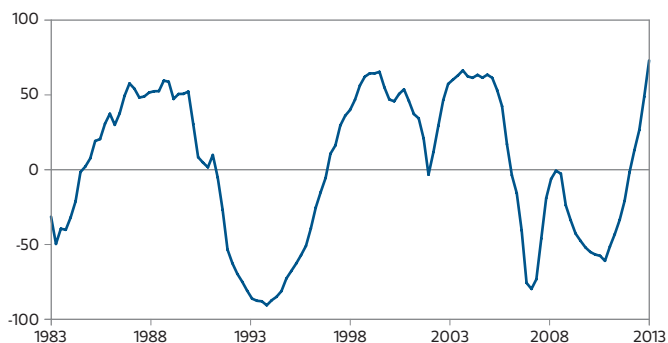
Source: Moody’s Analytics, NCREIF, Green Street Advisors, U.S. Federal Reserve Board. Data as of September 30, 2013.

In addition, digging deeper and analyzing key descriptive statistics also shows very **little consistent connection between cap rates and interest rates**. The 5-year rolling correlation varies considerably over time as shown in *Display 2*. Additionally, the static correlation coefficient calculation also demonstrates considerable dispersion over various time horizons in *Display 3*.

Display 2: Rolling 5-Year Correlation Varies Widely Over Time

Rolling 5-Year Correlation

U.S. Treasury Yield and Real Estate Cap Rate
5-Year Correlation, %



Source: Moody’s Analytics, NCREIF, MSREI Strategy. Data as of September 30, 2013.

² Moody’s Analytics, U.S. Board of Governors of the Federal Reserve System

Display 3: Statistical Relationship Depends on Time Horizon

Statistical Correlation and Beta

Cap Rates relative to 10-Year U.S. Treasury Yield

	1-YR	3-YR	5-YR	7-YR	10-YR	20-YR	SINCE 1978
Correlation	(0.82)	0.45	0.73	(0.19)	0.11	0.79	0.26
Beta	(0.18)	0.12	0.41	(0.09)	0.06	0.72	0.09

Source: Moody's Analytics, NCREIF, MSREI Strategy. Data as of September 30, 2013.

The last element of technical analysis we undertook was an episodic analysis of actual periods when the ten-year U.S. Treasury yield moved upward and how cap rates reacted.

As shown in *Display 4*, there have been eight key periods where Baa corporate rates and/or the ten-year U.S. Treasury rate has moved upward and in five of these eight historic episodes cap rates have actually moved in the opposite direction. Given the lagged nature of valuation and appraisals, this phenomenon even held true when measuring cap rates on a one-year forward basis. Only during the periods from December 1989 to October 1990, October 1993 to November 1994 and during the GFC from November 2007 to November 2008 did cap rates increase along with corporate bonds or U.S. Treasury rates.

Display 4: Past Periods of Rising Interest Rates

Episodic Analysis

CHANGE IN BASIS POINTS, OVER THE PERIOD:	10-YR U.S. TREASURY YIELD	BAA CORP. YIELD	NPI REAL ESTATE CAP RATE	NPI REAL ESTATE CAP RATE (1-YEAR FORWARD IMPACT)
Jan to Oct 1987	244	190	(13)	(26)
Dec 1989 to Oct 1990	88	92	68	150
Oct 1993 to Nov 1994	263	201	4	16
Jan to Sep 1996	118	88	(16)	(24)
Oct 1998 to May 2000	191	172	(32)	(5)
Feb 2005 to Jun 2006	94	96	(52)	(94)
Nov 2007 to Nov 2008	(62)	281	50	142
Jul 2012 to Sep 2013	128	60	(26)	nd

Source: Moody's Analytics, NCREIF, MSREI Strategy. Data as of September 30, 2013.

Thus, from the technical side, it is quite tenuous to make claims that a rise in interest rates will be met with a rise in cap rates. However, the technical analysis—particularly the episodic analysis—does provide some insight and inferences that may

be drawn from a historical perspective. Importantly, an upward movement in interest rates and cap rate changes cannot be looked at and analyzed in a vacuum.

Key Inferences

In studying the various episodes shown in *Display 4*, some key inferences can be drawn on what other factors have historically affected cap rates. The first variable is **credit availability**. The influence credit availability has on real estate values simply cannot be ignored. Actually, in the period from October 1998 to May 2000, U.S. Treasury rates increased 191 basis points while the stock of U.S. commercial real estate mortgages rose by over \$450 billion. This resulted in a fall in cap rates of 32 basis points over the same period and 5 basis points, one-year forward.³ In contrast, during the early 1990s (December 1989 to October 1990), U.S. Treasury rates increased 88 basis points, while lending stock scaled back by over \$50 billion.⁴ In this instance, cap rates increased by 68 basis points over the same period and 150 basis points, one-year forward.

Shifting to today, banks in the U.S. have been showing increased appetite for real estate. Although construction financing is still hard to come by, real estate credit flows have been increasing over the past two years and the CMBS market has re-invented itself and is playing a more active role in today's real estate lending environment. The risk here, however, is that credit availability can shift rather quickly as shown during the GFC, when banks essentially stopped lending and the CMBS market came to a complete halt.

The second key variable to pay close attention to regarding the connection between interest rates and cap rates is the **supply-demand dynamic**. During the late 1980s, supply grew well ahead of potential demand. From 1985 to the end of the decade, approximately 700 million square feet of office came online versus absorption of 526 million square feet. Further, construction financing grew at a compound annual growth rate of 23.5 percent between 1984 and 1988. Looking at the lead up to the GFC, approximately 262 million square feet of office came online while absorption was only 48 million square feet. This time around, construction financing grew at approximately 18 percent between 2004 and 2008 as condo conversions and residential housing projects exploded in growth. Essentially, the glut of supply and pullback of credit led to a rise in cap rates in the early 1990s whereas, a large fall in demand (starting in 2008) coupled with little credit availability caused the most recent rise in cap rates during the GFC.⁵

³ Moody's Analytics, U.S. Board of Governors of the Federal Reserve System, *Financial Accounts of the United States*.

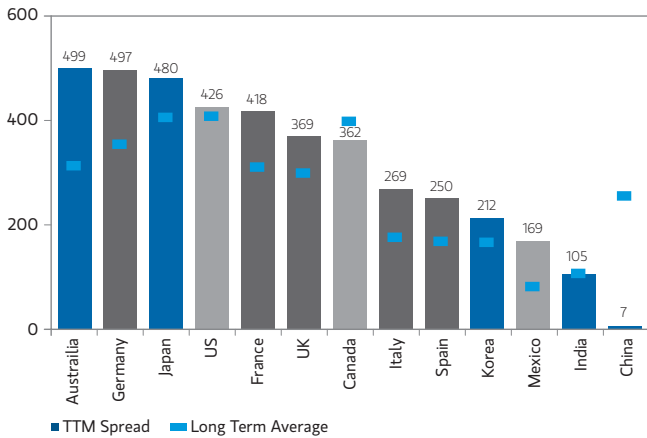
⁴ Source: NCREIF Property Index Trends

⁵ Source: CBRE Econometric Advisors, Federal Deposit Insurance Corporation, *Quarterly Banking Profile*.

Inflation is another key variable. The recent rise in interest rates since mid-2012 has largely been a change in the *real yield*. If the cause of further increases in U.S. Treasury rates emanates from an increase in inflation, real estate values may not necessarily fall materially. Real estate has the potential to offer partial inflation protection, as higher cash flow from rents or income may offset any rise in cap rates. Inflation, however, has not shown any material increase, so far. What may further mitigate a potential rise in cap rates, though, even if inflation does not increase is the fact that current cap rate spreads to sovereign bond rates in many countries are well above their historic means. This may act as a buffer for real estate value changes in a rising rate environment (*Display 5*).

Display 5: Current Cap Rate Spreads May Act as a Buffer

Office Cap Rate Spread to Sovereign Bond Yields
TTM Transaction Cap Rates to 10-Year Gov't Note Yields (bps)



Source: Real Capital Analytics, Bloomberg, Moody's Analytics, MSREI Strategy. Data as of September 30, 2013. Average since March 2007, except China and India in which data goes back to June 2010.

Conclusion

In summary, the connection between cap rates and interest rates has historically been loose. Perhaps this is merely due to the fact there has been a long downward trajectory in interest rates over the past 30+ years. However, even so, cap rates cannot be viewed in a vacuum as only being driven by changes in U.S. Treasury rates, nor as a proxy for overall real estate returns. Other variables such as credit availability, the supply-demand dynamic, inflation and spreads must also be taken into account. The picture today shows that these other variables may mitigate or potentially offset any rise in cap rates. Credit availability is growing, construction lending has been muted, demand is outpacing supply broadly and spreads have been wider than historic means. So far, inflation-led growth has been a missing ingredient.

Thus, it is not easy to draw a firm conclusion on what may happen to cap rates and real estate values should interest rates climb. It is very difficult and challenging to try to react accordingly with precision to a variable as unpredictable as interest rates. The puck has a tendency to bounce around unpredictably and randomly. To overreact or put too much focus only on rates would not necessarily serve the goals and objectives of investors. Being mesmerized or frozen by the puck may lead to being left out in the cold.

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Paul Mouchakkaa is a Managing Director of Morgan Stanley and Head of Global Research and Strategy for Morgan Stanley Real Estate Investing (MSREI). Paul was a managing director of real estate consulting services for PCA before joining MSREI. Prior to this, he served as a Portfolio Manager for real estate at the California Public Employees' Retirement System (CalPERS), where he oversaw the research, operations and analytics for CalPERS' entire real estate portfolio. Paul is an active member of various real estate organizations including NCREIF, IREI and the REIS Council. He received a BA with Highest Honors in Economics from Carleton University and an MBA in Finance from the University of Oregon.

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