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Real Estate Research @ Penn State

Welcome to the first issue of Real Estate Research @ Penn State, a publication of the Institute for Real Estate Studies in the Smeal College of Business. The Institute for Real Estate Studies is charged with supporting the real estate research and educational efforts at Penn State and is the focal point for Penn State's "Research with Impact" in the real estate industry. In support of this mission, the Institute sponsors leading-edge scholarship on a wide variety of topics. The purpose of this Report is to highlight recent scholarship sponsored by the Institute.

Often academic scholarship appears inaccessible or irrelevant outside the academy. Thus, the goal of this report is not to simply provide summaries of the real estate articles produced by individuals affiliated with the Institute, but rather to highlight the relevant contributions and implications of this research to the broader business community.

As a securitized form of ownership for commercial real estate, real estate investment trusts (REITs) are an important vehicle for real estate investment. REITs own approximately $500 billion of commercial real estate assets, representing about 15 percent of total institutionally owned commercial real estate. As a result, REITs are an important force in the commercial real estate market and thus receive considerable interest among academic researchers.

In this issue of Real Estate Research @ Penn State, Xun Bian, in "Do REIT Shareholders Appreciate Modesty?", discusses the findings of an Institute sponsored article co-authored with Brent Ambrose titled "Stock Market Information and REIT Earnings Management." This article won first prize in a recent REIT research competition (beating entries from the University of Texas-Austin and the University of California-Berkeley) and is scheduled to be published in the Journal of Real Estate Research. In addition, this issue contains a current market commentary titled "The `Current' REIT Paradox".

Future issues of Real Estate Research @ Penn State will highlight other research contributions sponsored by the Institute. It is our hope that you find this report interesting and intellectually stimulating.

Brent W. Ambrose, Ph.D.
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The "Current" REIT Paradox

Brent W. Ambrose, Ph.D.
Smeal Professor of Real Estate
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Commercial real estate market fundamentals are terrible! It seems like almost every other day we are treated to news reports and economic studies suggesting that the commercial real estate market is in a tailspin. For example, according to a recent analysis conducted at the Federal Reserve Bank of Atlanta, national vacancy rates are at levels not seen since the 1990/1991 recession. Meanwhile, the Federal Reserve Beige Book for September 9, 2009 notes that demand for commercial space is weak in all markets. As a result of this weak demand, developers followed the lead of home builders in the residential market and have curtailed construction. Figure 1 shows the precipitous decline in commercial construction as evident by the sharp rise in deferred construction activity. Consistent with weak demand for space, the Atlanta Fed reports that commercial rents are declining in most markets. Furthermore, on the credit front, the Wall Street Journal recently reported that loan-loss reserves at commercial banks with more than half of their loans tied to commercial real estate have declined from $1.58 per $1 of bad loans in 2007 to just $0.38 per $1 of bad loans, placing significant strain on many lenders. (See "Fed Frets About Commercial Real Estate", by L. Wei and M. Tamman, The Wall Street Journal, October 7, 2009, page C1.)

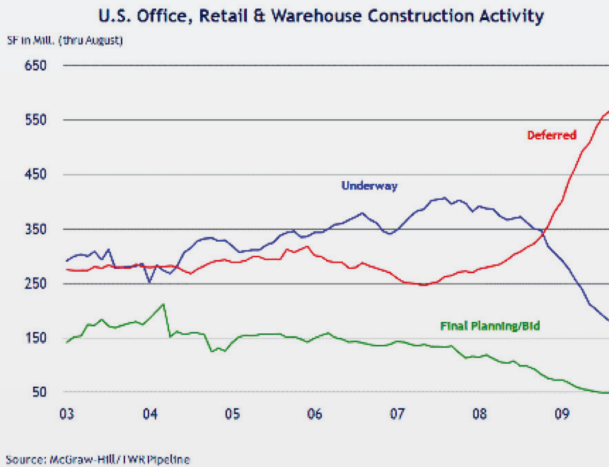

Figure 1

As a result of these weak demand fundamentals and limited credit supply, commercial property values are plummeting. For example, the national commercial property Transactions-Based Index (TBI) indicates that aggregate property values have declined over 39% from the peak in the 2nd quarter of 2007 (see Figure 2). The price decline in the commercial market mirrors the fall in the national housing market index, except we see no evidence of a bottom appearing yet.

"Commercial real estate market fundamentals are terrible!"

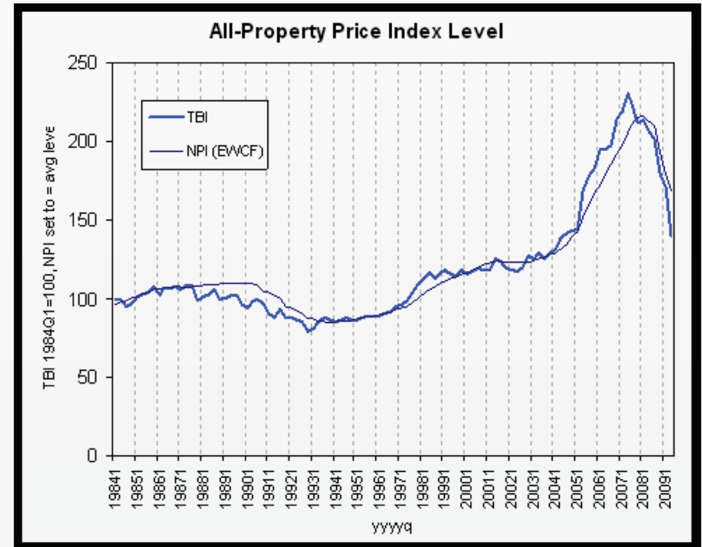

Figure 2

Thus, the overall outlook for the commercial real estate market is not encouraging: The US economy remains weak, the unemployment rate continues to increase and is now about 10%, vacancy rates in commercial real estate are rising, rents are falling, bank credit remains tight, and property values are falling. And yet, with all of this bad news about commercial real estate, we have a paradox in the world of real estate investment trust (REIT) stocks – REIT prices are up.

Since hitting bottom on March 6, 2009, the SNL US Equity REIT Index has increased approximately 93% while the S&P 500 has increased about 57% implying that securitized real estate investment has outperformed the broader market by about 36% (see Figure 3). So, what explains this seeming paradox of significant REIT performance in the face of bleak fundamentals?

Figure 3

To create a framework for analyzing the situation, consider the classic real estate valuation formula:

$$V_t = \frac{y_{t+1}}{R}$$

where Vt is the real estate value today, yt+1 is the property's net operating income (NOI), and R of course is the cap rate. Decomposing the cap rate into its components, we have

$$R = \left(r_f + r_i + r_P\right) - g$$

where rf is the risk-free rate, ri is the inflation premium, rP is a credit risk premium, and g represents the expectations for future growth. Thus, to explain the increase in REIT prices (V), either REIT investors are revising upward their expectations of future NOI or implied cap rates are falling. As we noted above, current market fundamentals are weak with little expectation for near-term improvement. Thus, we can discount the possibility that expectations of higher NOI next year are driving the increase in REIT values. So, if we rule out an increase in the numerator as the explanation, then that means we need to look to the cap rate.

> "And yet, with all of this bad news about commercial real estate, we have a paradox in the world of real estate investment trust (REIT) stocks – REIT prices are up."

One possible "optimistic" explanation for the rise in REIT prices comes from the view that the stock market is a leading indicator of future economic activity. The rationale behind this view is that investors in the stock market look to future (or expected) earnings to justify today's values. Thus, the significant increase in the stock market since March may reflect the belief that the current economic crisis will resolve soon and that we are about to enter a period of economic expansion. According to this view, the REIT performance relative to the broader market suggests that we are near the bottom of the business cycle and commercial real estate valuations will improve faster than the overall economy. In other words, under the "optimistic" view the market has increased its expectations of real estate's growth rate (g). Although it makes a good story, how realistic is this explanation? Consider that if we hold all else constant at October 2009 values, we would have to assume that the market's assessment of the real estate growth rate increased by approximately 250 percent since March in order to produce the observed doubling of equity values (assuming an average REIT leverage ratio of 50%). (For the purpose of this analysis, we assume that the risk-free rate (rf) equals 37 basis points, inflation expectations are 290 basis points, the risk-premium is 450 basis points, and the initial future growth estimate is 100 basis points.) Given the current weakness in the commercial real estate market, this optimistic assessment of future growth seems unreasonable.

However, an alternative, more "pessimistic" interpretation of the recent REIT performance suggests that all may not be well with the economy and that the run-up in REIT values reflects the temporary interest rate and fiscal stimulus policies being pursued in Washington, DC. Under this interpretation, we need to look at the roles of current interest rates, inflation expectations, and risk premiums in the cap rate for an explanation of the rise in REIT value.

Most real estate investors understand the importance that interest rates play in real estate valuation. Figure 4 shows the 1-year Treasury bill rate (our proxy for the risk-free rate) and the 10-year Treasury note rate from October 2006 through October 2009. It is evident from the graph that various Federal Reserve policies designed to stabilize the economy during the financial crisis have led to a significant reduction in interest rates. In the fall of 2006 and early 2007, the short-term Treasury bill rate hovered near 5 percent. However, as the magnitude of the housing and financial crisis became clear, the Federal Reserve began a series of actions that dramatically lowered the short-term rate to about 1.3 percent by March 2008. Following a short increase in the 1-year bill rate in the spring of 2008, the Federal Reserve again intervened and drove the 1-year Treasury bill rate even lower to 0.36 percent at the end of 2008. Then, between January and February 2009, the short-term rate rose back to hit 0.75 percent on February 25, 2009. During the spring and summer of 2009, as the economy continued to show signs of significant weakness, the 1-year Treasury rate fell to 0.36 by early October 2009.

Figure 4

Clearly, a reduction in the risk-free rate will cause a decline in the overall cap rate, producing an increase in property valuations. For example, using the 38 basis point reduction in the 1-year Treasury bill rate from February 25, 2009 to October 6, 2009 and holding all else constant would produce a 6% increase in average REIT equity values. However, it is also clear that even a 100 basis point drop in the risk-free rate (rf) is not sufficient to result in a doubling of property valuations.

> "Obviously, more than one factor changed between February and October and it is the combination of these factors that resulted in the REIT stock Performance."

Obviously, more than one factor changed between February and October and it is the combination of these factors that resulted in the REIT stock performance. For example, many investors consider that the combination of the massive monetary intervention in the market by the Federal Reserve and the fiscal stimulus packages are highly inflationary. Using the difference between the 10-year Treasury bond yield and the yield on the 1-year Treasury bill as a proxy for investor inflation expectations, we see that the market's assessment regarding future inflation has increased significantly. The difference between the long-term and short-term rates averaged approximately 2% in January and February but had increased to approximately 3% by September and October. Thus, combining the 38 basis point decline in the risk-free rate with a 100 basis point increase in inflation expectations actually results in a 9% decline in equity REIT values (again, holding all else constant). Clearly, the combination of declining interest rates and rising inflation expectations did not lead to the observed increase in REIT equity values.

The third interest rate component in the cap rate is the risk premium. Research clearly shows that corporate risk premiums are not constant over time. At first, one would think that the negative news regarding commercial real estate fundamentals would suggest that the risk premium should be increasing during 2009, leading to even lower market valuations (higher cap rates). However, we must remember that the capital markets effectively shut down during 2007 and 2008 leading to significant spikes in CMBS spreads. For example, Figure 5 shows the dramatic spike in CMBS spreads in 2008. We can approximate the change in the risk premium by taking the difference between the AAA tranche and the BBB tranche spreads. From the graph, it appears that this difference declined from approximately 600 basis points in late 2008 to about 500 basis points in October 2009, suggesting a decrease in the risk premium of 100 basis points. Thus, by combining the change in risk premium with the changes in inflation expectations and the risk-free rate, we return to an approximate 5% increase in levered equity valuations.

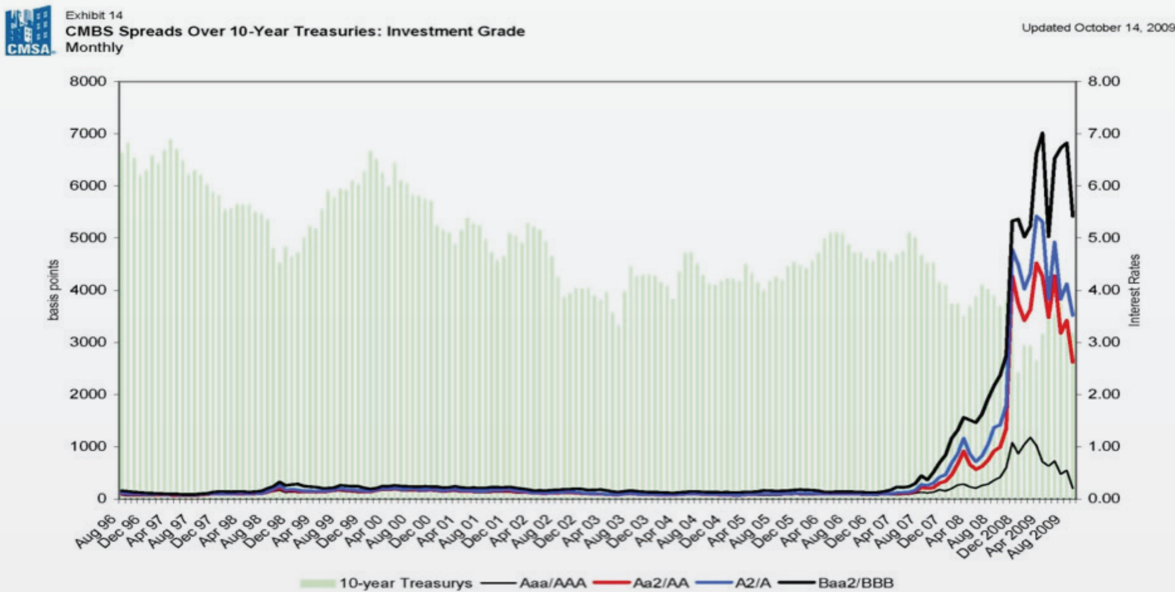

Figure 5

Finally, consider that during 2008 and 2009, REITs actively engaged in a deleveraging policy in order to reduce the risks associated with financial distress. The average debt-asset ratio for the REITs comprising the SNL US Equity REIT index declined from 67% in the 4th quarter of 2008 to 52% at the end of the 3rd quarter of 2009. Thus, combining the decline in interest rates with a systematic REIT deleveraging (from say 67 percent debt-asset ratio to 50 percent) results in a 66% increase in equity REIT value -- going a long way toward explaining the increase in REIT equity valuations. Furthermore, we can observe this increase in value without making any "optimistic" assumptions about future improvements in real estate fundamentals.

"So, what does this analysis imply about REIT valuations going forward? Unfortunately, the future does not look bright."

So, what does this analysis imply about REIT valuations going forward? Unfortunately, the future does not look bright. With current 1-year Treasury bill rates already close to zero, we can expect future increases in short-term interest rates as the Federal Reserve acts to counter the inflationary pressures created by the monetary and fiscal policies implemented during the financial crisis. The weak economic outlook implies that commercial real estate will face higher vacancy rates and lower rents in the future, implying lower asset values. Thus, the recent run-up in REIT equity values has created the situation where REIT net asset values are trading at a premium to "fundamental" values. Unfortunately, the economic conditions do not appear to support the hypothesis that the recent REIT stock market performance is a leading indicator of a brighter future for commercial real estates.

Do REIT Shareholders Appreciate Modesty?

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Manager discretion plays an important role in revealing firm performance to the public. The exercise of such discretion in financial reporting and in structuring transactions at a permissible level (e.g. defined by Generally Accepted Accounting Principles (GAAP)) is referred to as "earnings management". Earnings management can arise from a number of motivations. First, because positive accounting statements boost stock prices, overstating earnings may generate higher proceeds from equity offers (e.g. IPOs and SEOs) and reduce costs associated with stock financed acquisitions. On the other hand, "modest" earning reports reduce cash outlays for management buyouts and stock repurchases. Moreover, earnings management may also help managers meet market expectation (e.g. analyst forecasts). Second, earnings management may also impact contractual outcomes. Managers often have incentives to maximize their compensation by managing earnings. In addition, firms can strategically use earnings management to avoid the violation of debt covenants. Finally, earnings management may allow firms to increase regulatory benefits or to decrease regulatory costs. We provide evidence that real estate investment trust (REIT) investors prefer "modest" earning reports, which help REITs preserve cash and provide enhanced flexibility to take growth opportunities rather than more aggressive earnings management practices.

We are interested in two questions. First, are REIT shareholders able to detect and understand the impact of earnings management? Unlike most other corporate decisions, such as investment and financing activities, earnings management decisions are not publicly announced. Thus, to discover earnings management, shareholders need to have substantial knowledge about accounting standards, tax rules, and the company's underlying business activities. Moreover, because earnings management often involves complicated trade-offs, it is challenging to understand the implications of earnings managements on current and future firm performance. Thus, our first research question examines the information transparency of the equity REIT market by testing investor ability to synthesize and price information. If earnings management is indiscernible to investors, then information asymmetries may arise and hinder efficient corporate decisions. For instance, the desire for higher share prices could push managers to sacrifice growth potential in order to boost current earnings. However, our analysis indicates that investors do detect this manipulation. Thus, this leads to our second research question: Do shareholders like "modest" or "bombastic" financial reports? More importantly, do managers care about shareholders' preference?

REITs are particularly well-suited to address our research questions because they are constrained by a minimum dividend payout policy (at least 90 percent of taxable income). This special feature is crucial for two reasons. First, it requires that REITs frequently return to the capital market to raise external funds thereby providing outside investors with additional opportunities to collect information. Thus, one would expect REITs are more transparent in revealing firm fundamentals, and REITs investors will have a greater chance in "seeing through" earnings management. Second, this mandatory dividend payout policy results in REITs paying out a much larger percentage of their earnings than regular firms, which suggests that REITs may be more likely to have insufficient cash, an essential input when external financing is costly. Thus, to avoid being cash constrained, it may be optimal for REITs to manage their earnings downward.

"Do shareholders like "modest" or "bombastic" financial reports? More importantly, do managers care about shareholders' preference?"

Earnings management is segregated into two types, accruals management and real earnings management, based on whether or not firm economic activities are affected. Accruals management does not alter a firm's economic activities; it only involves choosing accounting methods that disguise profitability. Real earnings management occurs when managers mask true economic performance operationally, such as by manipulating the magnitude and/or timing of revenue, production costs, and proceeds from asset sales.

We use statistical models to identify firms that exhibit abnormal patterns in both earnings reporting and business transactions. Thus, to examine whether stock investors have sufficient information to detect earnings management, we compare across suspected earnings-management (EM) firms and non-earnings-management (non-EM) firms measures of the power of current stock prices to predict future earnings. Greater stock-price informativeness implies stock prices track firm fundamentals more closely. If stock investors are unable to identify earnings management, then managers could take advantage of uninformed investors by manipulating current period earnings through deceptive earnings announcements and/or sub-optimal operations. In this case, EM firms must exhibit compromised stock-price informativeness as opposed to non-EM firms, because their shares tend to be more mispriced. Alternatively, if information about earnings management is captured by investors, then stock-price informativeness should be similar across all firms.

We find that stock price informativeness is not systematically different between suspected EM firms and non-EM firms. This result is robust for two different measures

and indicates that investors appear to detect and price earnings management. We find no evidence suggesting that significant information asymmetry is attributable to earnings management.

Since we show that REIT investors can detect earnings management, we further inquire into the feedback effects of investor preferences on earnings management by examining the association between earnings management and information embedded in stock prices. We adopt a measure of private information contained in stock prices called "idiosyncratic stock return volatility". The rationale behind our measurement is that firms with stock prices less closely following the general market and industrial trends are perhaps subject to greater investor scrutiny. It is likely a larger portion of stock investors are trading based on firm-specific information rather than following market and industrial momentum. Thus, greater idiosyncratic volatility represents more private information being capitalized into stock prices. With greater transparency and scrutiny, the monitoring of investors should be stronger. If earnings management is positively correlated with idiosyncratic volatility, it is more likely to be aligned with shareholders' interest. A negative relation implies that earnings management adversely affects shareholders' interest and may be limited by more effective monitoring.

"Collectively, our study suggests that the REIT equity market is in general sufficiently transparent such that stock investors can detect earnings managements and understand its consequences."

We find that our measure of private information has a strong positive correlation with negative real earnings management. This result supports the hypothesis that negative real earnings management may increase firm value through greater retained earnings to overcome future financial constraints. Negative real earnings management reduces regulatory costs by providing a back door for REITs to circumvent the mandatory payout requirements. This result is robust to alternative proxies of earnings management as well as model specifications.

Collectively, our study suggests that the REIT equity market is in general sufficiently transparent such that stock investors can detect earnings management and understand its consequence. Furthermore, informed investors appear to promote "modest" earnings reports allowing REITs to preserve cash for future investment opportunities. Thus, REIT managers cater to such preference through negative real earnings management.

The Institute for Real Estate Studies is the focal point for Penn State's "Research with Impact" in the real estate industry. The Institute sponsors leading-edge scholarship on a wide variety of topics related to the real estate industry. Research findings are published in the top real estate, finance, and economic journals as well as in the Institute's Working Paper Series. The Institute actively sponsors research interaction between affiliated faculty and graduate and undergraduate students.

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