The role of financial leverage and market in the performance of US Real Estate Investment Trusts

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Abstract

We analyze a specifically designed dataset in order to measure the performance of a sample of 129 US REITs in Equity property sector over the most recent property cycle (2001–2013). We adopt a multi-factor asset pricing model to examine the impact on the REITs' total excess returns, investment decisions measured by Jensen's alpha and leverage. Investment decisions are reflected by timing leverage decisions based upon the expectation of future market trends. Our analysis results are in support of the hypotheses that i) REITs performance is highly correlated with the return on the broad US market, ii) there is evidence for systematic underperformance as measured by Jensen's alpha, iii) leverage strategy can make contributions to the performance of US REITs as a whole, but its benefit effect is not evident in sectors including healthcare, industrial and residential, and iv) timing leverage strategies to the anticipated future market conditions has positive effect on the performance of US REITs.

Key words: Real estate investment trusts; performance analysis; financial leverage

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Introduction

Real estate investment trusts (REITs) provide investors the opportunity to invest in income-producing real estate in a manner similar to invest in stocks and bonds through mutual funds. Income-producing real estate refers to land and the improvements on it – such as apartments, offices or hotels. REITs may invest in the properties themselves, generating income through the collection of rent, or they may invest in mortgages or mortgage securities tied to the properties, helping to finance the properties and generating interest income. In our report , we focus on analyzing equity REITs for the reason mortgage REITs function more like banking and their profit model is very different from equity REITs. The stockholders of a REIT earn a share of the income produced through real estate investment – without actually having to go out and buy or finance property. Equity REITs invest in many different property types, bringing investment diversification by property to investor portfolios.

Among the researched listed real estate sector, there not exist many studies focusing on drivers of the return-generating process in US REITs fund. Specifically the role of leverage as a potential approach of contributing to operating performance in the long or the short run remains unclear. For listed real estate, Shilling [1994] argues that REIT value is maximized for equity-only financing, raising the question of the suitability of leverage to enhance equity value in private equity real estate funds. In US REITs, the role of leverage in fund performance is less clearly established. In this study, we examine the performance of a large sample of US REITs, and especially the role of leverage as well as timing leverage strategies in making leverage choices.

The results of our study have a number of important practical implications for investors, fund managers and for transparency in the US REITs industry as a whole. First, our study helps assess the contribution of managerial investment skill to REITs performance, and in particular their ability to deploy leverage to good effect. Second, our analysis helps investors in understanding the value of managerial skill, and enables a clear distinction between returns achieved through risk-taking via financial leverage and performance generated on the basis of genuine investment skill. Third, our analysis of the drivers of private equity fund performance further contributes to improved transparency in the analysis of fund performance in US REITs industry. Transparency in the drivers of performance is crucial, as regulation and the need for disclosure and managerial accountability become increasingly important.

Specifically, we analyze a specific constructed data set composed of 129 US REITs investing in different property types over an extended period of time (2001-2013), covering an entire property cycle. We examine the performance of these equities, focusing on the extent to which their excess returns are driven by the broad market performance as opposed to managerial skill, measured by Jensen's alpha. We then employ this framework to place particular emphasis on two separate but related aspects of the potential contribution that financial leverage can make to fund performance across sub sectors. Baum, Fear and Colley [2011, 2012] suggests that leverage may not be viewed as a suitable long-term strategy for delivering returns in excess of core returns. However, this result is based on a relatively small sample of funds observed over a limited period of time.

We re-examine this proposition using a significantly larger sample observed over an entire property cycle in order to establish robust evidence for the potential suitability of financial leverage as a long-term strategy to generate value for investors in terms of excess returns. In addition, we raise the complementary question of whether, in the short term, managerial market timing skills (Baker and Wurgler [2002]) in determining fund leverage may be able positively to contribute to excess returns. For the first time, we explicitly examine the hypothesis that private equity real estate fund managers are able to time the market in their financing choices, and that this skill can contribute to fund performance.

In doing so, we also contribute to the existing literature on the performance of US REITs by unifying prior research and establishing a clear link between studies on the relative performance of funds across different property sectors, and by examining the role of leverage in determining equity performance in the long run as well as evidence of market timing skills when making financing choices.

Literature Review

The questions of whether different leverage contributes to REITs performance have long been the interest of Economists. For listed real estate, Howe and Shilling [1988] assert that in the absence of tax benefits, REITs cannot compete for debt and will prefer to use equity. Shilling [1994] argues that REIT value is maximized for equity-only financing.

For privately held real estate, Anson and Hudson-Wilson [2003] find that leverage is an important determinant of private equity real estate fund performance and that it should be used, albeit in moderation and accountably, in order to contribute to performance. Further, Shilling and Wurtzebach [2010] classify a set of direct real estate funds on the basis of their realised returns into core, value-add and opportunistic funds and then conduct a principal component analysis to identify the factors that significantly differentiate the performance of the funds in the three style categories. They find that leverage and market conditions were the two most significant determinants of positive relative performance. Further, Fairchild, MacKinnon and Rodrigues [2011] find that leverage plays a key role in determining the market exposure of OECFs.

Baum, Fear and Colley [2011, 2012] establish that leverage and market beta are highly significant in the explanation of the cross-section of fund returns, but that leverage overall appears to make a negative contribution to fund performance. However, these examples of studies examining the role of leverage implicitly focus on a long-term, average perspective on the impact of financial leverage on fund performance.

In this study, we consider the distinction between the long-term, average and short-term, more immediate effects of using leverage in private equity real estate investment funds. We specifically draw on the argument put forward in the corporate finance literature that financing decisions are informed by the state of the market, allowing the manager to issue debt when the economic environment is most favourable (Baker and Wurgler [2002]).

Prior research finds the market timing rationale to be a significant determinant of leverage choices in listed US REITs (Boudry, Kallberg and Liu [2010]; Li, Ong and Ooi [2008]). However, to date, managerial timing abilities in financing choices in REITs and their potential implications for firm performance have not been comprehensively analyzed. We contribute to filling this gap.

Hypothesis development

We primarily examine to what extent market affect the excess return of US REITS and then examine the impact of leverage (measured as total debt to total assets) on the performance of US REITS. Some prior research suggests that leverage can make a positive contribution to fund performance and therefore should be used (Anson and Hudson-Wilsono [2003]). Other studies suggest that leverage is not a long-term strategy for improving excess returns (Baum, Fear and Colley [2011, 2012]). Based on this background, we find the evidence that leverage positively contributes to fund performance.

Further, we depend on the statement in Goetzmann, Ingersoll, Spiegel and Welch [2007] who suggest that managers employ leverage to modify the market exposure of their funds to enhance performance. Alcock, Glascock and Steiner [2012] find evidence consistent with this hypothesis in a sample of US REITS firms. We examine the evidence of capital structure market timing in US REITS. We hypothesise that managers form a view on the likely strength of the underlying market in the future and optimize their fund's exposure to the market return accordingly by choosing the appropriate lever of leverage. We test the following hypotheses:

Hypothesis 1: Fund performance has high exposure to the market

Hypothesis 2: The level of leverage held by a fund on average makes a positive contribution to excess fund returns.

Hypothesis 3: Timing variable successfully makes a positive contribution to excess fund returns.

Description of the Data

We analyze the leverage and timing effect on the performance of 129 US REITS over the period of 2001 to 2013. The fund data including leverage, monthly return and three month US government bond yield are extracted from Bloomberg and US REITS market return is from NAREIT (the National Association of Real Estate Investment Trusts), the worldwide representative voice for REITS and publicly traded real estate companies with an interest in US real estate and capital markets. Nowadays, US REITS contain two major investment styles: Equity and Mortgage. Moreover, there are sectors of diversified, healthcare, industrial, residential, resort, retail, and self storage in Equity investment style. We study the leverage, timing effect on each small category respectively and analyze them as a whole. The results of our study have series of practical implications for portfolio managers and outside investors.

We measure leverage as total debt (long term debt plus short term debt) to total assets, consistent with Billett, King, and Mauer (2007); Datta, Iskandar-Datta, and Raman (2005); Stohs and Mauer (1996).

Figure 1 shows the variation of total number of US REITS and the number of each investment style over the period of 1971 to 2012. From the graph we can see that the total number of US REITS has an overall increasing trend from 34 in 1971 to 172 in

2012. In figure 2, it illustrates the trend of total number of each investment style. There is significant growth in the number of US equity REITS and slightly rise in the number of US Mortgage REITS, which means US equity REITS has already been critical component in US REITS. However, from 2010 on, US hybrid investment fund decreased to zero. So from then on, there were only two investment styles in US REITS.

Table 1 presents the proportion of each investment style and sector in all 230 US REITS in 2013 that we study in our paper. We find that equity style still accounts for the majority, with 78% of the total US REITS and mortgage style only has 22%. Within the equity investment style, Diversified (27%) has the highest proportion, followed by Retail and Industrial, with 20% and 16% respectively, which suggests that so far shopping center and warehouse are the main concentration of investment for US corporations and it might imply the high expectation of the appreciation in these fields.

Table 2 presents the sample statistics of fund average Return, Leverage across the whole period. The average return on a monthly basis for the whole US REITS over the period of 2001 – 2013 is 1.46%, and the standard deviation of average return is 6.3%. Furthermore, there is 50.94% leverage ratio in US REITS on average over 2001-2013, and the standard deviation of leverage ratio is approximately 1.68%.

In table 3, we divided whole period into three small sub-periods: pre-crisis (2001-2007), crisis (2008-2009) and post-crisis (2010-2013) and analyze the performance of REITS in these three periods. The leverage used by companies in US REITS is relatively high (53.8%) during the financial crisis period compared to the other two periods (50.2% from 2001-2007 and 50.8% from 2010-2013), while the standard

deviation is low (0.7%), indicating stable leverage during that period. Even though the leverage ratio is high, the average monthly return was negatively affected, which is lowest (0.84%) among the three periods. In contrast, average return during post-crisis period (1.74%) is higher than that in pre-crisis period. Furthermore, high volatility (12.8%) reflects that US REITS does not have a stable performance from 2008-2009.

Figure 3 shows the trend of average leverage and return for US REITS over 2001-2013. There is steady fluctuation in the average return over the whole period except from 2008-2009 when it fluctuates dramatically. Speaking of leverage, it remains at a high level in financial crisis, which is consistent with the number we analyzed in the table 3 above.

Table 4 presents the mean and standard deviation leverage and return for different sectors over 2001-2013. Overall, Residential REITS have highest leverage ratio (60.9%) on average, followed by Retail (57%) and Industrial (52.1%). In comparison, REITS of Self Storage investment companies do not prefer to use leverage, with only 24.5% leverage ratio averagely. However, investment in Residential with highest leverage does not produce corresponding high return, only with 1.3% average return that is lower than most of the other sectors. On the contrary, investing in Self Storage companies use lowest leverage (24.5%) to create relatively high return (1.66%), indicating the strong efficiency of leverage usage. From the table we can see that the riskiest investment is the Resort and Lodging sectors, experiencing the lowest return (1.1%) but carrying the highest volatility (10.9%).

Table 5 presents the sample statistics of fund average return and leverage across sectors in three sub-periods. Obviously, the return in all sectors experienced downtown in the

financial crisis except Residential sector that was almost not influenced in terms of average return, while the high volatility (11.3%) still indicates the uncertainty in investing in this sector. Having a closer look at the table, we find out that diversified, industrial and Resort sectors were heavily affected by the financial crisis, with only 0.42%, 0.58% and 0.27% of average return respectively. Moreover, the volatility shows dramatic rise for all the sectors over 2008-2009.

Figure 4 and figure 5 presents the historical trend for five of seven main categories over 2001-2013. Overall, Retail sector has strongest fluctuation, especially during financial crisis, while other sectors have similar movement. With respect to leverage, Residential sector has relatively high leverage ratio historically compared to other sectors and HealthCare and Diversified sectors do not leverage them a lot.

Methodology

In order to examine our three main hypotheses, we analyze the following regression models for US REITS over the period of 2001-2013:

a) Single factor market model:

$$R_{it} = a + b_1 MKT_{it} + e_{it}$$

b) Main effect of leverage:

$$R_{it} = a + b_1 MKT_{it} + b_2 LEVER_{it} + e_{it}$$

c) Timing effect of leverage:

$$R_{it} = a + b_1 MKT_{it} + b_2 LEVER_{it} + b_3 TIMING_{it} + e_{it}$$

The dependent variable is the rate of return on an individual corporation in US REITS in month t in excess of risk-free rate. We proxy for the risk-free rate of return using the monthly total return on the three month US government bond.

In equation (a), the main predictor is MKT, the excess return of US broad market return (Russell 3000 index) over the risk-free rate. We do time-series test based on equation (a) and the cross-sectional test based on the Ordinary Least Squares (OLS) regression , where are time-series excess return on average rate of risky asset j over average rate of risk-free asset, and the 's are estimated in equation (a) for US REITS and the separate sectors. Therefore, the market predictor allows us to examine the empirical evidence consistent with hypothesis 1, that excess market return on average is highly correlated to the funds return. Evidence consistent with this hypothesis implies a significantly positive coefficient for all sectors except healthcare.

In equation (b), we additionally control for leverage using the variable LEVER that is measured as the ratio of total debt over total assets. We put particular emphasis on the LEVER variable, as it carries the overall effect of fund leverage on excess return performance. We do time-series test based on equation (b) and the cross-sectional test based on the Ordinary Least Squares (OLS) regression , where are time-series excess return on average rate of risky asset j over average rate of risk-free asset, and the 's are estimated in equation (b) for US REITS and the separate sectors. Therefore, this variable allows us to examine whether the empirical evidence consistent with hypothesis 2.

In equation (c), we create another timing variable as the multiplication between the lagged change of leverage and one period ahead actual market return to examine the evidence for hypothesis 3. The rational for timing variable: the fund managers hold a view on the prospective return on the market in the following quarter t and ensure that the leverage of their fund is optimally controlled and positioned at the end of the

previous quarter t-1 in order to benefit from the prospective variation in the market return. For example, if the managers have a strong (weak) expectation on market in quarter t, they will insure that fund leverage is higher (lower) at the beginning of that quarter t so as to maximize (minimize) exposure to this strong (weak) market and capture higher (lower) beta in this market environment. If managers possess the skill to time the market in their leverage choices, then the timing variable will be positively and significantly related to fund returns in quarter t. (Alcock, Baum, Colley & Steiner)
We do time-series test based on equation (c) and the cross-sectional test based on the Ordinary Least Squares (OLS) regression , where are time-series excess return on average rate of risky asset j over average rate of risk-free asset, and the ’s are estimated in equation (c) for US REITS and the separate sectors. The difference is that we use quarterly return and leverage here to do the regression instead of using monthly data.

Results

Table 6 presents the regression results for equation (a) over the full study period. Column 1 presents the result for the whole US REITS using the single factor market model, which explains 23% of the variation in the excess fund returns. The model constant is significantly positive at 1.1767, which reflects that overall US REITS are able to outperform the theoretical expected return. Our study further suggests that US REITS excess return are highly correlated to the excess market return, which is reflected by the high coefficient b1 (1.3368). So it might be one of the important implied factors for investors to determine whether to get into REITS market or not based on their expectation on the market return. Moreover, all of the individual sectors present a significant positive Jensen’s alpha. In terms of coefficient of market excess return for individual sector, we find out that diversified, retail and industrial group have higher

exposure to the market than other groups, with coefficient of 1.6791, 1.6644 and 0.6139 respectively, which explains the reason why the average return of these three groups were heavily affected during the period of financial crisis. In contrast, residential sector has low market coefficient (0.2398), which is consistent with the fact that mean return was not influenced a lot by the market recession for residential sector.

Table 7 presents the regression results for main effect of leverage model over the whole period. The model for whole US REITS explains 26% of the variation in fund excess returns. Leverage overall contributes positive significant correlation to the excess fund returns in our sample. Within individual sector, leverage makes positive significant contribution to excess return for diversified and retail sectors, with coefficient of 0.709 and 0.9076 respectively. This is the reason why retail sector creates high return with corresponding high leverage ratio and diversified sector has relatively low return when having low leverage ratio. In comparison, leverage makes significantly negative contribution to total fund excess return for industrial and residential, which clearly explains why high leverage used leads to low total return.

Table 8 presents the result on the timing effect of leverage model. It is evident that fund managers seem to be able to time their leverage decisions to the actual future market situation. The coefficient of timing for US REITS is significantly positive (0.7468), reflecting the strategy of timing the leverage based on expectation on market of fund managers is a critical approach of enhancing performance for US REITS as a whole. Looking further into the table, coefficient of timing variable for each sector varies from -0.0374 (diversified) to 2.7169 (industrial), implying that timing strategy is fully utilized in industrial sector to create excess return.

Conclusion

Overall, US REITS have outstanding performance within each individual property sector over the period of 2001-2013 by analyzing the total return. However, due to high exposure to market, the performance of US REITS is also negatively affected during the market recession, especially for diversified, industrial and retail sectors reflected by the high market coefficient. We also find out the systematic overperformance measured by significantly positive Jensen's alpha.

Moreover, we find out that the high leverage could be a strategy to make contribution to the positive excess return of whole US REITS, but might not be a good approach for certain sectors such as healthcare, industrial and residential. At last, we test the timing variable to examine how efficient the portfolio managers determine the change of leverage based on their expectation on market. The result shows that overall timing strategy is efficient to make positive contribution to the fund performance.

In practical application, our data analysis provides fund managers and outside investors with the reference of making investment decisions by looking at the total return and volatility factor, analyzing the relationship between fund excess return and leverage as well as the ability to time the market on the basis of their expectation, which will be helpful to have better understanding of the whole US REITS market.

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