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Finding the Optimum Point of Leverage in Real Estate Investment Trusts

Alex Stamas

This research expands on the study conducted by Sun, Titman and Twite in 2014 that developed a method of separating pure leverage from the effects of financial conditions by differentiating between debt ratios and maturity structures of debt. Using a broader data set that includes both equity and mortgage REITs and the methodology of Sun, Titman and Twite, this research aims to find the optimum degree of leverage in any set of conditions by examining the amount of pure leverage in equity and mortgage REITs and various market conditions and investment types and ratios. This optimum degree of leverage could serve as the standardization of leveraging decisions grounded in data recorded before, during and after the most recent financial crisis.

Introduction

Real Estate Investment Trusts or REITs (pronounced “reets”) for short, have in the last 30 years grown from a very small portion of investment dollars at a market cap of \$1 billion to now realizing over \$1.052 trillion in invested dollars (REIT.com). Originally created in 1960 by President Eisenhower as part of the Cigar Excise Tax Extension bill (Forbes.com), REITs have become a powerhouse in the investment world. There are two main classifications of REITs: Equity REITs (eREITs) and Mortgage REITs (mREITs). Equity REITs effectively act as an entity similar to a developer buying, selling, adding value, and building income-producing properties on a large scale. In contrast, mortgage REITs primarily act as lenders, financing various real estate enterprises and producing income from the difference (commonly referred to as the “spread”) of the interest rate they can obtain and the interest rate they can charge.

As a means of increasing returns, many REITs leverage by taking on debt. Leveraging (also called gearing) has been described as “an integral part of the REIT business model” (Rice 2012) but its effectiveness is also a source of hot debate. Many have called for this practice to be avoided by firms and cite marginal if not non-existent long-term benefits (Hutchinson 2016, Samuel and Olufolahan 2016). Yet there are indeed more who see that there may exist an optimum point of leverage where, based on the present market conditions, a firm can maximize profits through the intelligent use of leverage (Samuel and Olufolahan 2016). Finding this optimum point is the ultimate goal of my research, however this first requires understanding the degree of leverage that is exogenous from market conditions (what will be called pure leverage) and how varying degrees of pure leverage affect fund returns under different market conditions and

different firm investment structures. Therefore my research has a multi-faceted position: it will first discern pure leverage, then analyze market conditions and investment types, then use this information to converge upon the optimum point of leverage for firms acting under a myriad of conditions.

Background/Related Research

The bulk of my research will expand on the research conducted by Sun, Titman and Twite in 2014 presented in their paper entitled *REIT and Commercial Real Estate Returns: A Postmortem of the Financial Crisis*. Serving as a seminal work in how pure leverage can be discerned through the separation of debt ratios and maturity debt structures, this paper broke ground on how to find exogenous leverage. Drawing from a data set encompassing the most recent financial crisis, this study aimed to isolate the effects of pure leverage and financial distress on the REIT stock price declines seen during this time.

The work of Sun, Titman and Twite is, in many ways, a broader look at a paper written by David Brown in 2000 entitled *Liquidity and Liquidation: Evidence from Real Estate Investment Trusts*, which more generally looks at the effects of leverage on mREITs and eREITs. Brown analyzes the data on stock price declines in the 1998 financial downturns and finds many of the same trends found in the Sun, Titman and Twite paper—firms with greater leverage ratios experience greater losses in times of financial distress. Brown's analysis does not include market conditions in his analysis; however, this shortcoming in the field is remedied by the Sun, Titman and Twite paper.

Their paper elaborates on the analysis on the effects of leveraging on fund returns in two ways: 1) by distilling pure leverage and 2) by using this pure leverage calculation along with numerous other explanatory variables to give a more holistic picture of the effects of leverage on fund returns. However, even this paper falls short. It is a wonderful and insightful analysis into leverage affects on equity REITs; however, effectively no comments are made on how leverage affects mortgage REITs, which inherently are more leverage-heavy investment vehicles. This stands as one of many gaps in the field, one that my proposed research will fill. Explicitly stated, my research will discern pure leverage and use this measurement to analyze the effects of market conditions and investment types on fund returns, all of which will converge on a formula that will allow for an optimum point of leverage to be identified under any set of market conditions or investment structures.

Methods

I plan on replicating the procedure done by Sun, Titman and Twite in the previously mentioned paper with a larger data set that encapsulates both equity and mortgage REITs, which can be obtained from the SNL Financial database. This will allow my research to discern pure leverage from a holistic data set of both mREITs and eREITs while simultaneously allowing for market condition controls and firm investment structures, which will allow for an optimum point of leverage to be discovered. The methodology of Sun, Titman and Twite is a regression of the following variables:

Explanatory Variables (measured from end of financial year-end 2006):

-*Size* (firm size, as the natural logarithm of total assets)

-*Q* (ratio of firm market value to total assets)¹

-*Cash/Total Assets* (the ratio of cash to total assets)

-*Funds From Operations per Share*

-*Market Leverage*² (the ratio of total debt³ to market value of firm⁴)

-*Preferred Stock* (the ratio of book value of preferred stock (stocks that pay dividends) to total capital)

-*Variable Debt/Total Debt*

-*Debt Due in 2007/Total Debt*

-*Debt Due in 2008 or 2009/Total Debt*⁵

Indicator Variables⁶:

- *Hotel*

- *Residential*

¹ Measured as market capitalization plus total assets minus book value of equity.

² This is used as a proxy variable for pure leverage. One objective of this research is to discern pure leverage of which this variable is a proxy for.

³ This is defined as book value of short term (due in one year) and long-term interest

² This is used as a proxy variable for pure leverage. One objective of this research is to discern pure leverage of which this variable is a proxy for.

³ This is defined as book value of short term (due in one year) and long-term interest bearing debt).

⁴ This is defined as total debt plus book value of preferred stock plus market capitalization.

⁵ *Variable Debt/Total Debt*, *Debt Due in 2007/Total Debt*, and *Debt Due in 2008/Total Debt* are all used as proxies for varying maturity structures of debt. These are particularly important variables because the taking on of debt is a primary form of leveraging.

⁶ In my regression, as was the case in the Sun, Titman, and Twite study, these will be set to one when the REIT is characterized by a majority of these property types. This is particularly important, as one of the goals of this study is to discern the differing effects of leverage on different investment structures.

- *Office and Industrial*

-*Specialty or Diversified*

Supplementing this methodology, I will add a dummy variable for mortgage or equity REITs. Additionally, variables that control for both primary type of investment (core, value-add, and/or opportunistic investments) and percentage distribution of investment will be added as it has been shown that differences in leverage and returns outcomes exist between these groups (Samuel and Olufolahan 2016). These additions along with the already proven research methodology shown above will allow for pure leverage to be discerned in conjunction with market conditions and variations in firm investment structure. The optimum point of leveraging is something that will change depending on the firms' investment type and the conditions of the market. Because of this, fund returns and pure leverage along with investment type and market conditions will need to be meticulously analyzed. This will be done through identifying correlations using various regressions with varying independent and dependent variables. These correlations and their strength will allow for causal (because of the immense number of controls present in this methodology) effects to be discerned. When causality is established under the variables discussed above, the optimum point of leverage for each combination of these elements will be capable of being extracted.

Expected Results

With this methodology, I will be able to find a variety of things all of which build on each other. This research will identify the amount of pure leverage that exists in both mortgage and equity REITs that have different investment

structures, how the amount of pure leverage under various conditions equate to firm returns under various market conditions, and, using this data, I will be able to discern the optimum point of leverage for any type of firm that desires any type of investment mix. The artifact of my research will be a paper encapsulating my findings.

Conclusion

The discovery of an optimum point of leverage for any number or combination of market factors and investment type combinations has the potential to revolutionize the REIT industry and the greater commercial real estate field. This goal is reasonably achievable through the research design proposed here by first finding the degree of pure leverage in equity and mortgage REITs, then determining how market conditions and investment choices in conjunction with leverage affect fund returns, and ultimately culminating in the finding of an optimum point of leverage given market factors and investment type. This is a research subject that I am very passionate that has the possibility to add what is otherwise non-existent in this field.

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Contact Information

Please let me know if you have any questions or concerns about my research. I would be more than happy to discuss it! It is easiest to reach me by mobile phone or email. Both contacts can be found below.

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Thank you very much for your consideration!