

Theory and Evidence...

A Pricing Model for Master Leases in Real Estate

by

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Abstract

Using a sample of 40 lease agreements made by W.P. Carey's unlisted real estate investment trusts (REITs,) I examined whether a real estate pricing model for master leases can be developed. I find that when given the cost of the property in the lease, the high yield spread at the time the lease was created, and certain financial information of the lessee, the properly priced lease spread can be calculated.

Introduction

Firms in the real estate investment industry make a return on their investments in real estate either from lease payments, the interest they charge on the mortgage they have loaned to their tenants or gains from the sale of their investments. However, most real estate investment trusts (REITs) earn a return on their investments based on the lease agreements they have with their lessees. The purpose of this paper is to examine if a general pricing model for these master leases can be developed. Such a model could be used to test if a lease agreement between a real estate investment firm and its lessee is accurately priced.

In the pricing model for real estate leases I assumed the relationship between the cost of real estate and the price of real estate lease payments is clear and obvious. However, I examined other factors such as risk free and high yield interest rates and the credit worthiness of lessees to determine what their impact on the pricing of real estate lease payments might be. Although there may be market forces that affect the price of real estate leases, it is assumed that the information on specific real estate markets is already incorporated into the cost of the real estate itself.

My hypothesis is that a significant pricing model for master leases on real estate can be developed utilizing information on real estate costs, interest rates, and the credit worthiness of lessees.

Industry

General investors tend to be more informed about stocks and bonds than about real estate. They can read articles in the *Wall Street Journal* about the latest happenings in the stock or bond markets, but real estate investing has not received the same kind of

publicity. Investors may still perceive the industry to have many barriers to entry. In the past, investing in commercial real estate required large amounts of capital, much more than most general investors could afford. For those few who could afford to own even one commercial property, it required most of them to concentrate their capital in that one investment, making it very risky. In addition, it takes time for commercial real estate to appreciate and up to a few years to sell, making the investment very illiquid.

REITs

However, in the 1960s a simple concept was launched. The development of real estate investment trusts (REITs) made it possible for small investors to invest in commercial properties.¹ Small investors can now buy shares in REITs, allowing the REITs to raise large amounts of capital. REITs then use this capital to acquire many different commercial properties. This allows REITs to diversify their risk across the many expensive properties they hold. REITs are also free from income tax at the enterprise level, making it a high yield and very liquid method for investing in real estate.

There are many types of REITs. There are equity REITs that invest in and own properties and their revenues come from their properties' rents. There are also mortgage REITs that invest in and own property mortgages and their revenues come from the interest that they earn on their mortgage loans. Hybrid REITs are a combination of both equity and mortgage REITs. REITs can also be further broken down by industry, such as healthcare REITs, hotel and motel REITs, industrial REITs, land REITs, leisure and entertainment REITs, office REITs, residential REITs, and retail REITs. There are also REITs that do not specialize in any certain industry.

¹ Downs (2004)

Another point of difference among REITs is whether they are listed or unlisted. Listed REITs are the REITs that are liquid because they are traded on an exchange. Unlisted REITs, on the other hand, are a special kind of REITs because they issue shares at a fixed price that does not fluctuate. Their shares are not traded on an exchange and thus insulated from the public market's volatility. They offer investors yields of 6% to 8%, making them very attractive investments. However, critics claim they are expensive and illiquid investments when compared to public REITs.² Nevertheless, investors are pouring capital into unlisted REITs.

The aggressive marketing unlisted REITs use to attract retail investors has been working because many unlisted REITs are flushed with capital. In 2003 alone, the four largest unlisted REITs raised over \$6 billion in 2003, half of which was raised by Wells Real Estate Funds. The other unlisted REIT sponsors were W.P. Carey, CNL Real Estate Advisors, and Inland Real Estate. In addition, a total of ten unlisted REITs registered in 2003 with the Securities & Exchange Commission, expecting to raise an estimated total of \$17 billion worth of offerings in 2004, compared to only five unlisted REITs registered in 2002 expecting to raise \$1.9 billion in 2003.³

In this paper, I examined the \$5 billion W.P. Carey Group, which manages Carey Institutional Properties (CIP) and the Corporate Property Associates (CPA) series of publicly held unlisted REITs. It specializes in providing companies with real estate financing solutions through its corporate net lease or sale-leaseback financing structures. A sale-leaseback transaction is when a company raises capital by selling its property to an investment trust like one of W.P. Carey's unlisted REITs and then leases back that

² Chapman (2003)

³ Chapman (2004)

property. The lease agreement is usually a long-term triple-net lease that ranges from 15 to 20 years. A triple-net lease is a lease that requires the lessee to be responsible for real estate taxes, maintenance fees, and insurance costs. Therefore, the lessee maintains operational control of the property as well.

Leases

For a lessee, entering into a sale-leaseback transaction is similar to raising debt. It is a source of capital for the firm and the lease payments are similar to debt payments. Therefore, W.P. Carey must utilize both real estate underwriting and credit underwriting capabilities. In determining the required lease payments a lessee must make, W.P. Carey must take into consideration that lessee's credit worthiness. The lower the credit rating of a lessee the higher the lease payments W.P. Carey should require because W.P. Carey needs to be compensated for the added risk of entering into a sale-leaseback transaction with a riskier firm.

W.P. Carey finances its real estate acquisitions with debt. Specifically it uses limited recourse mortgage debt. The use of leverage allows W.P. Carey to more efficiently allocate its resources. I examined the relationship between the lease payments it charges its lessees and the risk free interest rates at the time the lease was made. I assumed that any increase in the risk free interest rate increases the interest rates on the mortgage loans W.P. Carey uses and thus increases the lease payment required. In addition, I also examined the relationship between general macroeconomic forces relating to the risk tolerance of lenders toward lending to non-investment grade firms and real estate lease payments. I assumed that lease payments would also be influenced by the

willingness of investors to lend money to riskier firms because W.P Carey's lessees were borderline non-investment grade firms in the sample that was analyzed.

Variables

Real Estate Lease Spread

W.P. Careys unlisted REITs, Carey Institutional Properties and the Corporate Properties Associates series, are all registered with the Securities & Exchange commission and thus file quarterly and annual reports. Information from the following annual reports was used as source material for this paper.

- CIP Inc. (1998 10K – 2002 10K)
- CPA 12 Inc. (1997 10K – 2002 10K)
- CPA 14 Inc. (1998 10K – 2002 10K)
- CPA 15 Inc. (2001 10K – 2002 10K)

The 10Ks provided information on the lease agreements each unlisted REIT entered into for that year. Information on the lease agreements that were considered important in developing the real estate lease pricing model were the date each lease was made, the term, the lessee, the cost of the property acquired, and the lease payments required. Leases agreements that were mentioned in the 10Ks, but did not have all of this information were not included in the data sample analyzed. For each lease, the lease yield was calculated by dividing the lease payments by the cost of the underlying property acquired.

Risk Free Rate

Since W.P. Carey's unlisted REITs use limited-recourse mortgages to acquire and own commercial properties, mortgage rates at the time each lease was made should be a

major factor in the determining lease payments. In addition, mortgage rates are heavily influenced by the risk free rates, so I examined the relationship between the risk free rates at the time each lease was made and the return on lease payments of each lease.

The interest rates on U.S. Treasury Bonds were used as the risk free rates (R_f), because they are generally the main drivers in the interest rates of other loans, such as mortgages. The quarterly rates of the 5 year, 10 year, and 30 year Treasury Bonds over the period between 1994 and 2003 were gathered (Figure 1.) Then the following formula was used to determine the risk free rate at the time the lease was made in order to match the risk free rate to the term of each lease agreement:

- $R_f = Y_s + (Y_l - Y_s)/(T_l - T_s)*(T_{le} - T_s)$
 - Y_s = Shorter term T-bond yield at the time lease was made
 - Y_l = Longer term T-bond yield at the time lease was made
 - T_s = Term of the shorter term T-bond
 - T_l = Term of the longer term T-bond
 - T_{le} = Term of lease

For example, to calculate the risk free rate that is matched to a 20-year lease agreement made on July 18, 1997, the necessary information would be the quarterly rate on the shorter term T-bond (10-year T-bond was 6.1%), and the rate on the longer term T-bond (30-year T-bond was 6.4%.)

- $R_f = 6.1\% + (6.4\% - 6.1\%)/(30 - 10)*(20 - 10)$
- $R_f = 6.25\%$

Since the date and term of each lease agreement is found in the 10Ks, the risk free rate at the time each lease was made can be calculated. It is a significant factor in

determining lease payments because of its influence on mortgage rates and since mortgage rates are the cost of borrowing money, the higher the mortgage rate the higher the acquisition costs for W.P. Carey. Furthermore, the higher acquisition costs, the greater the lease payments it will require to meet its required return. The lease spread was then determined by the difference between the lease yield and the matched risk free rate. The lease spread of each lease agreement is therefore the required return the unlisted REITs need to be compensated for their investments.

High Yield Spread

In addition to the risk free rate, the supply of funds available for investment should also be taken into consideration, specifically the market's risk tolerance and subsequent supply of funds available to invest in non-investment grade firms. Since W.P. Carey enters into leases with borderline non-investment grade firms, its required return on the lease payments it charges its clients should be highly correlated with what the return in high yield market is at the time the lease was made. Therefore, in order to take into account the general market conditions at that time, quarterly yields on the Citigroup High Yield Index were gathered for the time period of 1994 – 2003 (Figure 2.) The high yield spread is then calculated by the difference between the quarterly high yield rate at the time the lease was made and the matched risk free rate (Figure 3.)

I examined the relationship between the high yield spread and the lease spread because the required return for W.P. Carey's investments should be dependent on W.P. Carey's level of risk tolerance at that time. Their risk tolerance was assumed to be equivalent to the general risk tolerance of the market at the time the lease was made, which is captured by the quarterly yield in the high yield index at that time.

Lessee's Credit Profile Variables

I also examined the relationship between the credit profile of the lessee in each lease and the required lease payments. This should be examined because W.P. Carey is in effect lending money to the lessee in sale-leaseback transactions. Since companies can sell their property and lease it back from W.P. Carey, the sale-leaseback transaction is a source of financing for these firms, a source that might be easier to obtain financing from than a bank or the bond or stock markets. Therefore, W.P. Carey's credit underwriting ability should be reflected in the lease spread because the higher the credit risk profile of a lessee the higher the return that W.P. would require from that lessee.

In order to determine the risk profile of the lessee in each lease agreement, a modified approach of the established Altman Z-Score model was used.⁴ Information on the financials of each lessee on the year it entered into the lease agreement was gathered from Compustat, a database of financial information. The financial information of each lessee was then used to compute the following three variables that were taken from the Altman Z-Score model:

- Book value of equity / Total liabilities
 - This variable measures a company's ability to suffer a decline in assets.
- Working capital / Total assets
 - This variable measures the net liquid assets of the firm in relation to total assets and thus measures how long a company can survive if it is operating at a loss.
- EBIT / Total assets

⁴ Altman (1968)

- This variable measures the profit of a firm in relation to its total assets.

Since profit is the principal objective of all businesses, it is the force that eventually determines the vitality of a firm. Interest is also added back to the earnings because interest expense does not hinder the earning power of the firm as a whole.

Since the credit profile of a lessee should be a significant factor in determining the pricing model for real estate leases, I used the three variables mentioned above as determinants of risk for each lessee.

EM Score Variables

Data was gathered to calculate the EM Score of each lessee. The EM-Score model is also based on the Altman Z-Score model, but it is used to classify the debt of emerging markets as to its stand along U.S. bond rating equivalents. The EM-Score should be a better variable to represent the credit worthiness of each lessee than the original Altman Z-Score model because the score can be applied to non-manufacturing companies as well as manufacturing companies and is relevant to privately held and publicly owned firms. Altman designed the original Z-Score model to be applied only to manufacturing firms and publicly owned firms.

The EM Score should also be a good representation of the credit worthiness of each lessee in the data sample because the sample includes non-manufacturing firms. Furthermore, the Book value of equity / Total liabilities calculation was used to calculate the EM Score instead of the Market value of equity version because each lessee was treated as if it was privately held to remove market biases from each calculation.

In addition to the three variables taken from the Altman Z-Score model mentioned above, the EM Score also includes the Retained earnings / Total assets variable. I examined the relationship between the EM Score of a lessee and its lease payments because the EM Score is another perspective of the firm's credit profile. The EM Score is calculated using the following formula⁵:

- EM Score = 3.25 + 6.56(Working capital/ Total assets)
+ 3.26(Retained earnings/ Total assets)
+ 6.72(EBIT/ Total assets)
+ 1.05(BV of equity/ Total liabilities)

Furthermore, I calculated the EM score of each lessee for each year of the three years prior to the date the lease agreement was made. Their relationship to lease payments was also examined to see how influential the historical financials of a lessee is on its lease agreement.

Sample

A total of 40 observations were gathered to create the data sample that was used for analysis. Each observation included the details of individual lease agreements, relevant rates at the time each lease agreement was made, and the relevant financials of the lessee at that time. A total of six observations were left out of the data sample because of incomplete information. Five of which had financials that could not be retrieved from Compustat and thus the variables that represented the credit worthiness of each of those firms could not be computed. The other observation that was not included had incomplete lease information. That specific lease agreement involved a change to the terms of the original agreement. It added a new property to the lease agreement, but the

⁵ Altman (1995)

original cost of the existing lease was unknown. Therefore the portion of the new lease payments that involved the newly added property could not be separated out from the lease payments that involved the old property.

Results

After running regression analyses on the data set, the following pricing model for real estate leases was developed.

- Lease spread = $0.0373 + 0.267(\text{High yield spread})$
 - $0.00298(\text{BV of equity/ Total liabilities})$
 - $0.0129(\text{Working capital/ Total assets})$
 - $0.0245(\text{EBIT/ Total assets})$

The analyses revealed this model to be most significant. This model contains an adjusted R-squared of 37.0% and P-test of 0.000. Although this model also revealed four unusual observations based on standard residuals and leverage values, a further analysis of those observations provided the reasoning for their differences.

The lease agreements W.P. Carey made with Federal Express Corp. (FedEx), Exodus Communications Inc. (Exodus), and Clear Channel Communications (Clear Channel) on December 6, 2000, December 27, 2000, and December 12, 2002, respectively, are observations with large residual errors in this model. The FedEx observation is a special case because the lease agreement in that observation was probably under priced. W.P. Carey may have placed greater emphasis on FedEx's growth potential when the lease was made and thus giving FedEx a discount on required lease payments. Another possibility is that FedEx was much more persuasive at negotiating their lease agreement than the average W.P. Carey client.

The Clear Channel observation was also under priced, but W.P. Carey assumed that lease agreement when it purchased the property. Therefore, that property was deemed valuable enough to purchase by W.P. Carey, even though it also acquired an under priced lease agreement that went along with the property. In the last unusual observation with a high residual error, Exodus, the purchase price had to be estimated when that lease agreement was made. Therefore, since there was no other covenant in this lease agreement relating to the construction costs, it can be assumed that the higher than expected lease yield for this observation was to protect W.P. Carey from the risk of unexpected increases in construction costs after the lease was made.

The lease agreement W.P. Carey made with Nortel Networks Corp. (Nortel) on December 19, 2001, is an unusual observation that contains a variable, which has a large influence on the model. Nortel has the lowest EBIT / Total assets ratio among the 40 observations and thus its affect on this model is most influential for the EBIT / Total Asset variable. A further analysis of this observation reveals that this observation point is a good leverage point because when removed the model's significance was lowered.

Although the EM Scores were not found to be significant, the Book value of equity / Total liabilities, Working capital / Total assets, and EBIT / Total assets were all found to be significant. Their inclusion in the pricing model for real estate leases was due to their significance in the EM-Score model.

Conclusion

The pricing model for real estate leases was developed through the linear regression analyses of 40 lease agreements made by the unlisted REITs of W.P. Carey during the period starting from 1997 to 2002. The predictor variables in the model that

are used to calculate a properly priced lease spread in a lease agreement are the high yield spread at the time the lease is made and the variables that measure each lessee's credit worthiness, which are the Book value / Total liabilities, Working capital / Total assets, and EBIT / Total assets.

Although this pricing model is based only on data gathered from the unlisted REITs of W.P. Carey and can only be used to determine whether W.P. Carey's real estate leases are over or under priced, it can also be further developed to incorporate other REIT sponsors and thus become a pricing model for the REIT industry. That model can then be used to determine whether any real estate lease agreement in the entire industry is over or under priced.

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