

Real Estate Investment Trusts (REITs)

Objective: The objective of this assignment is to introduce students to how to analyze real estate investment trusts aka REITs (pronounced R-E-E-T-s). In particular, we will look at valuing REITs and analyzing key drivers of REIT performance such as corporate governance and executive compensation, the relationship of anchor tenants to a particular REIT, and lease expiration schedules among other things.

Assignment: Download the real estate data from my website (recapmkt_REIT2006.xls) and use the downloaded spreadsheet to answer the following questions. Please highlight your answers in **yellow** and turn in a hard copy of your results. ***This is an individual assignment.***

1. Net Operating Income. (10 points) Calculate the net operating income (NOI), net management & development fees, NOI from Unconsolidated Joint Ventures (JV), and hotel income (if applicable) for SL Green and its primary competitors. The primary competitors for SL Green include Boston Properties (BXP), Equity Office Properties (EOP), HRPT Properties (HRP), Mack-Cali (CLI), and Reckson Associates Realty (RA). To calculate NOI, use the worksheet labeled “1. NOI” worksheet and fill in the cells **highlighted in yellow**. Information on each REIT can be found in the various 10K worksheets and the “Office REITs (GenInfo)” worksheet.



2. Present Value of Off-Balance Sheet Debt: (10 points) Calculate the Present Value of Operating Leases for SL Green and its primary competitors using the worksheet labeled “2. PV OpLease” and the

“Operating Leases” worksheet. Information on operating leases (typically includes ground rent in the case of REITs) is found in the footnotes to the financial statements. In doing your calculation, assume for purposes of ascertaining the default spread which is reported in the “Bond Spreads” worksheet, that the maturity is 10 years. Also, assume that

SL Green buys One Madison for \$921M

- we use the risk free yield¹ on a 10 year Treasury bond as the risk free rate (r_F)
- all operating leases are paid at the end of the year. This is the assumption that is traditionally made in finance with all cash flows e.g., cash flows are received at end of year.

¹The difference between the yield and the contract rate is that the yield also includes price fluctuations. Recall from finance that the yield = contract rate only if the bond is priced at par. If the bond is priced either at a discount or at a premium, then the differential from par also has to taken into account and hence we look at the yield rather than the contract rate.

- the leases expire at various times through the year 2079. If a lease expires prior to 2079, put a zero in all cells up to year 2079.
- The **Thereafter** amount (stated in 000s) represents the sum of all remaining lease payments from year 2010 onwards e.g.

$$\text{Thereafter} = \text{OpLease}_{2010} + \text{OpLease}_{2011} + \dots + \dots$$

- An equal amount of operating lease is paid in each year from year 2010 onwards Mathematically speaking,

$$\text{OpLease}_{2010} = \text{OpLease}_{2011} = \dots = \text{OpLease}_{20xx}$$

To calculate the operating lease payment from year 2010 onwards, we will first divide the Thereafter amount by the operating lease payment made in year 2009. This results in the number of years remaining after year 2009. Note: Please use the =ROUND(xxx,0) function in Excel to round the number of years. Next, divide the number of years into the Thereafter amount to obtain the operating lease payment per year.

Since an operating lease is a type of debt financing we use the pre-tax² cost of debt (K_{Debt}) as the appropriate discount rate. Following is the pre-tax cost of debt formula:

$$K_{\text{Debt}} = \text{risk-free rate} + \text{Default Premium (Spread)}$$

Hint: To calculate the present value of operating leases, use the NPV function in Excel.

Example: Arden Realty (ARI), which is not listed as a competitor to SL Green since its properties are located on the west coast has the following operating leases and ground leases as of December 31, 2004³:

Year	Ground Leases	Operating Leases	Total Off-BalSht Leases
2005	1,815	2,020	3,835
2006	1,840	2,020	3,860
2007	1,865	2,020	3,885
2008	1,865	2,020	3,885
2009	1,865	2,020	3,885
Thereafter	109,056	8,240	117,296

²It is pre-tax because payments to debt holders are made *before* any taxes are paid. Recall from your accounting class that Earnings **Before** Interest and Taxes (EBIT) – Interest = Earnings Before Taxes (EBT).

³Arden Realty, 2004, 10K, page 38

To calculate the present value of ARI’s off-balance sheet leases we first need to calculate the pre-tax cost of debt which we will use as the discount rate. According to Moodys (<http://www.moodys.com>), the senior debt of ARI has a Baa3 (BBB-) rating. Assuming that ARI’s debt has a 10 year maturity, then from the “Bond Spreads 20050725” and “Treasuries 20050725” worksheet the pre-tax cost of debt is as follows:

Default Premium (Baa3, 10 years)	1.78%
<u>+ Risk-free Rate (r_F, 10 years)</u>	<u>4.23%</u>
Pre-tax Cost of Debt (k_{Debt})	6.01%

Next, we calculate the number of years remaining on the off-balance sheet leases (stated in 000s) in aggregate

Thereafter Amount	117,296
<u>÷ 2009 Off-BalSht Leases</u>	<u>3,885</u>
Number of Years Remaining	30 years

Consequently, the off-balance sheet lease payment per year from year 2010 through year 2039 is

Thereafter Amount	117,296
<u>÷ Number of Years Remaining</u>	<u>30 years</u>
Off-Balance Sheet Lease per year	3,910

Thus, the total off-balance sheet lease payments are as follows:

Year	Amount
2005	3,835
2006	3,860
2007	3,885
2008	3,885
2009	3,885
2010	3,910
2011	3,910
.....
2038	3,910
2039	3,910



Consequently, the present value of off-balance sheet leases (000s) is approximately \$56,447.

3. Net Asset Value (NAV) (30 points total; 15 points per part). When evaluating public companies, investors generally focus on price-to-book ratios as one valuation measure. However, price-to-book ratios are inappropriate for REITs since a REIT's book value, which is based on historic cost figures, might not accurately reflect the earnings capacity of otherwise well-maintained assets. Thus, many analysts prefer to use net asset value as a surrogate for book value, which is appropriate given that book value is meant to represent an entity's liquidation value.

- a. NAV based on Spot Cap Rate: Using the “3a. NAV (Spot CapRate)” worksheet, calculate the Private Market Value of Consolidated Properties, Value of Management & Development Income, Market Value of Unconsolidated Properties, Value of Hotel Income (if any), NAV per Share, and Price to NAV for SL Green and its primary office REIT competitors. The Spot Cap Rate for each office REIT is located in the “Office REITs (CapRates)” worksheet. The spot cap rate is the current cap rate at which properties are currently purchased (going-in cap rate⁴).
- b. NAV based on Long Term (LT) Cap Rate: Using the “3b. NAV (LT CapRate)” worksheet, calculate the Private Market Value of Consolidated Properties, Value of Management & Development Income, Market Value of Unconsolidated Properties, Value of Hotel Income (if any), NAV per Share, and Price to NAV for SL Green and its primary office REIT competitors. The Long Term Cap Rate for each office REIT is located in the “Office REITs (CapRates)” worksheet. The long term cap rate is the cap rate at which properties are sold (going-out cap rate⁵).

Note: In our calculation of NAV which is the formula that Wall Street most analysts use⁶, recurring capital expenditures is not subtracted from expected NOI. In theory, this is not correct since capex is necessary for the property to continue to generate and maintain the current level of cash flow. In addition to this, most analysts also do not subtract off-balance sheet debt in their calculations even though they recognize ground rent in their NOI calculations. In the current case, we do subtract off-balance sheet debt.

4. Relative Valuation of REITs (40 points). Calculate the justified price for SL Green (SLG) using the worksheet labeled “4. ValMultiples”. What multiple(s) appears to be the most reliable if you use the lowest standard deviation as the criteria? Why? Please explain. Is SLG overvalued, undervalued or correctly priced as of 7/25/2005? Are the justified values based on multiples of total enterprise value (TEV) consistent with the equity multiples? Why or why not? Please provide some economic intuition.

⁴Going-in cap rate is the rate used to price the properties when investors **go in** to the deal

⁵Going-out cap rate is the rate used to calculate the terminal value of the property (sales price) when investors **go out** of or exit the deal

⁶Some analysts such as Greenstreet do subtract capital expenditures.

5. Does the Relative Price of SLG Reflect Corporate Governance? (5 points). Calculate the correlation coefficients between the Institutional Shareholder Services (ISS) corporate governance quotient industry score and the various TEV multiples and equity multiples using the “5. ValMultiples & CorpGov” worksheet. The “Office REITs (CorpGov)” reports the corporate governance quotient for each REIT. What should the relationship be between corporate governance⁷ and the valuation multiple e.g., should it be positive, negative, or have no effect. Please discuss. Be sure to include any economic intuition that you have learned from your finance classes. Which valuation multiple(s) best reflect this theoretical relationship?

6. Influence of Tenants on SL Green’s Stock Returns (5 Points). Using the returns for SL Green (SLG) and its major tenants (Viacom (VIA), Morgan Stanley Dean Witter (MWD), and McGraw Hill (MHP)) in the “Returns (SLG & Tenants)” worksheet, perform a multiple regression of the return on SLG (the dependent or Y-variable) on the returns for Viacom (VIA), Morgan Stanley Dean Witter (MWD), and McGraw Hill (MHP) (the independent or X-variables).

Note: To perform a multiple regression using Excel, use the regression command located under the **Data Analysis** option of the **Tools** submenu⁸ in Excel and the data provided in the “Returns” worksheet, perform a multiple regression of the returns on each regional mall REIT (dependent Y variable) against the returns on the anchor stores. For example,

$$SPG = a + \beta_1 * VIA + \beta_2 * MWD + \beta_3 * MHP$$

Export your resulting output to a worksheet labeled “6. Influence of Tenants”. Are the returns on SLG affected by the stock returns on their major tenants? Are the results as expected from an economic perspective? Please explain.

Please turn in a hard copy of your work. Please use Norton Antivirus, MacAfee or some other virus protection software to scan your disk prior to submission. Remember that this is an individual assignment. Anyone caught cheating will be given an F on this assignment.

⁷Traditionally, the corporate governance refers to corporate decision-making and control, particularly the structure of the board and its working procedures. However, the term is sometimes used very widely embracing a company's relations with a wide range of stakeholders or very narrowly referring to a company's compliance with the provisions of best practices codes.

⁸If the **Data Analysis** option is not shown, go to **Tools** → **Add-Ins** And select **Analysis Toolpak**. Click the **OK** button. You should now see the **Data Analysis** option listed under the **Tools** submenu.