

Problem Set 5 *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_REIT2005.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. Relative Valuation of REITs. (20 points)

- a. Value the regional mall REIT known as The Macerich Company Trust (Ticker: MAC) using Total Enterprise Value (TEV) and Equity multiples. More specifically, value MAC using data provided in the “Info on Regional Mall REITs” worksheet and the financial statements provided for each REIT¹ fill in the sections highlighted in **yellow** in the “1a. Valuation Multiples” worksheet. Is MAC overvalued, undervalued or correctly priced as of 2/24/2004? 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.
- b. Subsequent Price Performance of Macerich: Using the daily closing stock prices for MAC after February 24, 2004 located in the “MAC (Prices)” worksheet, prepare a graph of MAC using Excel’s graphing function. Does the price trend post 2/24/04 confirm your conclusions? Please discuss. Your discussion should include whether the price of MAC fluctuates within the justified price range dictated by your valuation analysis.
- c. Does the Relative Price Reflect Corporate Governance?: Prepare a graph of the ISS CGP industry index against the (Price/2004 FFO)/FFO Growth a.k.a. PEG ratio. Does the relative price (PEG ratio) appear to reflect good corporate governance (remember that we have a small sample size)?



¹The financial statements containing the annual income statement, balance sheet, and statement of cash flows for each REIT is located under its ticker symbol. For example the financial statements for Simon Property Group is located in the worksheet labeled **SPG**.

d. Is Relative Price Related to the Base Salary of the CEO?: Graph the base salary of the regional mall CEOs against the (Price/2004 FFO)/FFO Growth a.k.a. PEG ratio. Does the relative price (PEG ratio) appear to reflect CEO salary (remember that we have a small sample size). Where is Arthur Coppola, CEO of Macerich's base salary relative to the range of salaries for CEOs of regional mall REITs?



Arthur Coppola, CEO

e. Corporate Governance: Given the information reported for Macerich on corporate governance in the "Info on Regional Mall

REITs" worksheet for Macerich, what are the shareholder-friendly governance policies exercised by the company? What governance policies does Macerich have that are not shareholder-friendly? Please discuss.

2. Net Asset Value (NAV): (20 Points)

a. Value MAC using the "NAV (Min CapRate)" worksheet by filling in the sections highlighted in yellow. Cap rates are located in the "Info on Regional Mall REITs" worksheet. Is each of the regional mall REITs overvalued, undervalued or correctly priced relative to the value of their underlying properties? Do any of the REITs trade above their NAV (premium)? If so, which REIT(s)? Do any of the REITs trade below their NAV (discount)? If so, which REIT(s)? What seems to be the general trend based on your NAV analysis?



Westside Pavilion Mall (Los Angeles, CA)

b. Value MAC using the "NAV (Max CapRate)" worksheet by filling in the sections highlighted in yellow. The only difference between this worksheet and the previous worksheet is that we use the maximum cap

rate for each REIT instead of the minimum cap rate. (Note: instead of using this template you can make a copy of your NAV Min CapRate solutions and change the Min Cap Rate in Row 6 to the Max Cap Rate. Be sure to change the label from 'Assumed Cap Rate (Minimum)' to 'Assumed Cap Rate (Maximum)' as well as changing the cap rates themselves for each REIT). Is each of the regional mall REITs overvalued, undervalued or correctly priced relative to the value of their underlying properties? Do any of the REITs trade above their NAV (premium)? If so, which REIT(s)? Do any of the REITs trade below their NAV (discount)? If so, which REIT(s)? What seems to be the general trend based on your NAV analysis?

3. Regression Analysis (10 Points)

- a. Calculating Beta and the Cost of Equity: Using the slope command in Excel, calculate the beta for each REIT using the "Returns" worksheet and alternatively using SP500, NAREIT, and EREIT as the market proxy. Which "market" proxy makes more sense, a large cap market proxy such as the SP500 or an industry based market proxy such as the NAREIT or EREIT? Please explain. Next, calculate the cost of equity for Macerich using EREIT as the market proxy and assuming that the risk premium ($R_M - r_F$) = 5.5% and the risk free rate is the yield on a 10 year Treasury bond from the worksheet labeled "Treasury Rates". Remember that you will need to use the same risk free rate in your cost of debt calculations as well (see question 4). We will use the capital asset pricing model (CAPM) in calculating the cost of equity (K_{Equity}).

$$\text{Cost of Equity} = K_{Equity} = r_F + \beta(R_M - r_F)$$

The cost of equity represents the discount rate used to discount cash flows to common stockholders (equityholders). Note: The cost of equity should be higher than the cost of debt because equityholders have a residual claim on the firm e.g., they are the last to receive any payments from the firm after debtholders and preferred stockholders. As such, there is a higher uncertainty/risk associated with receiving this payment and hence a higher required return is demanded.

- b. Influence of Returns on Anchor Stores: Using the regression command located under the **Data Analysis** option of the **Tools** submenu² 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,

$$\text{SPG} = a + \beta_1 * S + \beta_2 * \text{JCP} + \beta_3 * \text{MAY} + \beta_4 * \text{DDS} + \beta_5 * \text{NMG} + \beta_6 * \text{JWN} + \beta_7 * \text{SKS} \\ + \beta_8 * \text{GPS} + \beta_9 * \text{LTD}$$

$$\text{GGP} = a + \beta_1 * S + \beta_2 * \text{JCP} + \beta_3 * \text{MAY} + \beta_4 * \text{DDS} + \beta_5 * \text{NMG} + \beta_6 * \text{JWN} + \beta_7 * \text{SKS} \\ + \beta_8 * \text{GPS} + \beta_9 * \text{LTD}$$

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$$\text{TCO} = a + \beta_1 * S + \beta_2 * \text{JCP} + \beta_3 * \text{MAY} + \beta_4 * \text{DDS} + \beta_5 * \text{NMG} + \beta_6 * \text{JWN} + \beta_7 * \text{SKS} \\ + \beta_8 * \text{GPS} + \beta_9 * \text{LTD}$$

Use the worksheet labeled "3b. Influence of Anchors" to report your results. Are the returns on regional Malls REITs affected by the stock returns on their anchor stores? If the answer to this question is yes, is the co-movement of returns always a

²If 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.

positive one e.g., as returns to an anchor increase, returns to a regional mall REIT also increase?

4. Debt Analysis of Macerich (10 Points)

a. Off-Balance Sheet Debt: Calculate the Present Value of Operating Leases for Macerich using the worksheet labeled “4a. MAC (OpLeases)”. 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. The intuition for this is that on commercial properties, most mortgages have a ten year term with a 30 year amortization period. The loan is thus repaid at the end of the 10th year with a balloon payment. Also, assume that

- we use the risk free yield³ on a 10 year Treasury bond as the risk free rate
- 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.
- the leases expire at various times through the year 2069
- The **Thereafter** amount of \$74,825 (stated in 000s) represents the sum of all remaining lease payments from year 2009 through year 2069 e.g.

$$\text{Thereafter} = \text{Ground Rent}_{2009} + \text{Ground Rent}_{2010} + \dots + \text{Ground Rent}_{2069}$$

- An equal amount of ground rent is paid in each year from year 2009 through year 2069. Mathematically speaking,

$$\text{Ground Rent}_{2009} = \text{Ground Rent}_{2010} = \dots = \text{Ground Rent}_{2069}$$

Since operating leases arising from ground rent is a type of debt financing we use the pre-tax⁴ cost of debt (K_{Debt}) as the appropriate discount rate.

b. Total Macerich Debt: Calculate the Total Debt and Total Capital for Macerich using the worksheet labeled “4b. MAC (Debt)”. Notice that total debt includes debt reported on the balance sheet such as bank debt, capital leases⁵, notes payable,

³The 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.

⁴It 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).

⁵A **capital lease** is a lease that meets one or more of the following criteria, meaning it is classified as a purchase by the lessee: the lease term is greater than 75% of the property's estimated economic life; the lease contains an option to purchase the property for less than fair market value; ownership of the

and mortgages payable as well as off-balance sheet debt such as operating leases. Does off-balance sheet financing represent a significant portion of Macerich's debt? In addition to this, calculate the weights for debt and equity using alternatively the book value of stock holders' equity and the market value of stockholders equity. Recall from financial management that the market value of stockholders equity is equal to the price per share multiplied by the number of shares outstanding.

- c. Rollover of Debt: Inspecting Macerich's Debt Repayment Schedule: Calculate the percentage and the cumulative percentage of the proportion of debt that matures in each year starting in year 2004 through year 2009 and beyond. What does Macerich's debt maturity schedule look like? Are there any years within the next 10 years where a large portion of Macerich's debt will rollover? Why are we concerned with when debt rolls over or matures?

5. Off-Balance Sheet Assets of Macerich (10 Points): Calculate the present value of Macerich's future rental revenues using the "5. PV of MAC (Future Rents)" worksheet in conjunction with the worksheet labeled "MAC (Future Rents)". In doing your calculations assume that

- the leases associated with future rental revenues expire at various times through the year 2013. This is to be consistent with Macerich's lease expirations (see worksheet labeled "MAC (Lease Expirations)")
- The **Thereafter** amount of \$ 239,439 (stated in 000s) represents the sum of all remaining future rent payments from year 2009 through year 2013 e.g.

$$\text{Thereafter} = \text{Ground Rent}_{2009} + \text{Ground Rent}_{2010} + \dots + \text{Ground Rent}_{2013}$$

- An equal amount of future rent is paid in each year from year 2009 through year 2013. Mathematically speaking,

$$\text{Rent}_{2009} = \text{Rent}_{2010} = \text{Rent}_{2011} = \text{Rent}_{2012} = \text{Rent}_{2013}$$

Since revenue is a cash inflow to the **firm**, revenue is discounted at the **firm's** discount rate. The discount rate of the firm reflects the weighted average borrowing costs that their respective suppliers of capital require, namely debtholders (K_{Debt}) **and** equityholders (K_{Equity}). Hence, we use the before-tax⁶ weighted average cost of capital (WACC) to discount back future revenues to the firm. Does the present value of Macerich's off-balance sheet assets exceed the present value of its off-

property is transferred to the lessee at the end of the lease term; or the present value of the lease payments exceeds 90% of the fair market value of the property. Any lease that is not a capital lease is an **operating lease**. In an operating lease, the lessee acquires the property for only a small portion of its useful life.

⁶It is **pre-tax** because revenue is received before any taxes are paid. Recall from accounting that Revenue is the top line item in the income statement. For example, Revenues – Cost of Goods Sold (COGS) – Selling General and Administrative Expenses (SGA) = EBITDA (Earnings **Before** Interest, **Taxes**, Depreciation and Amortization).

balance sheet debt (implication: off-balance sheet equity is positive)? Please explain.

6. Lease Expiration Analysis (10 Points): Based on the information reported in the "MAC (Lease Expirations)" worksheet, to what extent is Macerich's lease expiration schedule balanced? Are there any years within the next 10 years where a large portion of their leases will rollover? Why are we concerned with when leases roll over? Please discuss.

Please turn in a hard copy of your work and your disk. 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.