

Problem Set 2: *Backdoor-Frontdoor*¹

Objective: The objective of this assignment is to introduce students to how developers and real estate investors such as the Reichmanns initially examine the financial feasibility of a deal. This is known in the trade as the “back of the envelope” approach. Alternatively, this method is referred to as the backdoor-frontdoor approach. The intuition underlying this static approach is that an investor seeks solvency (breakeven) in the short run and profitability in the long run.² It is also a useful method to test the initial cash flow assumptions that create the yield. This is important because if the initial cash flow in year one is faulty, by simply doing discounted cash flow analysis, an investor is first compounding the errors into the future and then discounting these errors back to the present. Consequently, a second objective of this problem set is to teach students how to stress test (perform sensitivity analysis) a deal from a static perspective.

Assignment: Please prepare a spreadsheet to answer the following questions. Please highlight your answers in yellow and turn in a hard copy of your results. In addition to this, turn in with your spreadsheet on a disk with your name on the disk so that we can check your work and also to make sure that you didn't copy someone else's assignment. ***This is an individual assignment***

The deal: **399 Park Avenue, NY, NY.** This 1.68 million square foot, 40 years old investment grade³, trophy office building occupies the entire block from Park Avenue to Lexington Avenue between 53rd and 54th Streets in Midtown Manhattan. The significance of the building occupying an entire block is that it has 95,000 square feet floors at the lower levels, which is an extremely important and attractive feature for large financial services firms that need large-scale floors. The building is considered to be one of the most prestigious office buildings in New York City.

399 Park was the subject of a bidding war. Sources close to the auction said that Boston Properties was bidding against Brookfield Properties Corp., which owns the World Financial Center in lower Manhattan. Brookfield's offer, those sources said, "was not off by that much." Randi Kahn and others from Salomon Smith Barney Inc., a Citigroup unit, had been marketing the property for only about two weeks. By seeking assurances that the interested bidders could seal the deal by Sept. 25, 2002 Salomon effectively



¹This case is copyrighted©. No reprinting or reproduction in whole or part is allowed without written permission from the author.

²This is the philosophy that used to be taught at the University of Wisconsin by the late Professor James A. Graaskamp, my mentor. Graaskamp coined the phrase backdoor-frontdoor.

³Office towers, such as 399 Park Avenue, are described as "investment-grade" because they retain tenants and command premium rents over the long term.

narrowed the field to those two finalists, plus perhaps another bidder, according to sources.

On August 29, 2002, Boston Properties, Inc. (NYSE: BXP), a real estate investment trust, and Citibank, N.A. announced that they had signed a contract for Boston Properties to acquire 399 Park Avenue from Citibank. Although BXP was the successful bidder, they were informed that they were not the highest bidder. The transaction was consummated through a newly formed Delaware limited liability company, of which BPLP⁴ is the managing member. The purchase price of \$1.06 billion was the largest single-asset real estate deal during 2002. The property interest purchased was the freehold estate; there is no land lease on the property. BXP financed the acquisition in part with a \$1.0 billion unsecured bridge loan from JP Morgan Chase & Co., Citigroup's Salomon Smith Barney unit and Banc of America Securities that matures in September 2003. The interest rate on the bridge loan is currently Eurodollar + 125 basis points (somewhere at sub 4%) and matures in September 2003. The interest rate and loan covenants with respect to the bridge loan are similar to those of the Company's unsecured line of credit. The bridge loan

may be prepaid any time prior to its due date without penalty. The balance of the acquisition cost was paid in cash. To permanently finance the acquisition of 399 Park Avenue such that the transaction will impact the Company's balance sheet in a leverage neutral manner, the REIT's Operating Partnership on January 21, 2003 closed a private offering under Rule 144A⁵ of \$750.0 million in aggregate principal amount of its 6.25% senior unsecured notes due 2013. The notes were priced at 99.65% of their face amount to yield 6.296%. Earlier, on December 5, 2002, Standard & Poor's Ratings Services



assigned a 'BBB' rating to these senior unsecured notes. The Company used the net proceeds to pay down its unsecured bridge loan incurred in connection with the acquisition of 399 Park Avenue. In addition to this, BXP sold some of their existing non-core properties at lower cap rates⁶ to keep the leverage in the same range that the REIT had prior to them purchasing 399 Park Avenue. In particular, Boston Properties Inc. sold 875 Third Avenue, a 719,000-square-foot building on Manhattan's east side, to Global Holdings

⁴Boston Properties Limited Partnership (together with its direct and indirect wholly-owned subsidiaries, "BPLP"), is the operating partnership subsidiary of Boston Properties, Inc. (the "Company")

⁵ The notes will be offered only to qualified institutional buyers, as defined in Rule 144A under the Securities Act of 1933, as amended (the "Securities Act"). The notes will not be registered under the Securities Act or any state securities laws and may not be offered or sold in the United States absent registration or an applicable exemption from the registration requirements of the Securities Act and applicable state securities laws.

⁶This is an example of REIT management acting in a proactive way to recycle assets and create shareholder value. Selling assets will allow Boston Properties to keep its debt-to-equity ratio at about 50 percent, according to Mortimer Zuckerman, chairman.

Inc. for \$370 million. Other buildings sold included the 541,000-square-foot Candler Building in Baltimore for \$63 million and the \$345 million sale of One and Two Independence Square in Washington.

The building serves as the corporate headquarters of Citigroup (NYSE: C), which occupies approximately 40% of the building with over 650,000 square feet⁷. The building also includes Lehman Brothers (436,000 sqft), Bingham McCutchen (a large law firm which has over 135,000 sqft), Arnold & Porter (135,000 square feet), Wilmer Cutler & Pickering, and JP Morgan Chase among its roster of blue chip (credit quality) tenants. The building is fully leased (100% occupied) with few near-term lease expirations⁸. There are also no subleases available. This low vacancy is not unusual. For the top 75 buildings in Midtown the direct vacancy rate is under 3% with the total direct and subleases just over 6%. The top five tenants make up 86 percent of the building and the top six tenants account for 94 percent of the building's occupancy. The earliest lease, that of Arnold & Porter, the law firm expires in 2006 (four years from the date of purchase of 399 Park Avenue). No problems are foreseen in re-leasing this space since the law firm occupies the top six floors⁹ and are among the most attractive floors in the building. Approximately 77% percent of the space in the building is leased for terms in excess of ten years (i.e., 77% of the square footage expires after 2016). The major leases such as Citicorp, Lehman Brothers, Bingham, McKenzie are all 15 year leases. Given the profile of the leasing structure, BXP will not have to incur significant brokerage commissions or capital costs to fix up space (for tenant fixups) in the near or intermediate-term (for at least 10-15 years). Boston Properties has \$260 million of insurance to cover acts of terrorism against all its properties, and 399 Park Avenue will be included in the policy¹⁰.

With the purchase of 399 Park Avenue, Boston Properties will own five major office properties within a 1.5-block radius in Midtown Manhattan: Citigroup Center, 599 Lexington Avenue, 280 Park Avenue, and Five Times Square. In addition, Boston Properties has Times Square Tower currently under construction in Times Square. The Boston-based umbrella-partnership REIT is one of the nation's largest owners and developers of class A office space with a total market capitalization of \$10.1 billion (as of Sept. 30, 2002) and a portfolio of 145 properties comprising about 42.8 million square feet (sq. ft.). Boston Properties' high-quality properties are primarily concentrated in the metropolitan areas of Boston, New York City, Washington D.C., and San Francisco, with income roughly evenly split among those markets.

⁷The Citigroup lease is a 15-year lease at market rent with bump ups and no free rent.

⁸According to Mort Zuckerman, CEO of Boston Properties, the NOI yields for the property was attractive relative to its risk. BXP measures risk in terms of exposure to re-leasing and credit quality of the tenants.

⁹It's actually the top six but one.

¹⁰REIT shareholders bear some of the risk for acts of terror since as of this writing, no terrorism insurance exists to cover 100% of the cost of all of a REIT's assets.

Property Statistics:

<i>Category</i>	<i>Description</i>
Net Rentable Area	1,680,000 square feet
Market Price	According to Darcy Stacom, executive vice president and partner at real-estate services firm CB Richard Ellis in New York, excluding 399 Park Avenue, 12 trophy buildings in midtown Manhattan have been sold, with a total volume of \$2.2 billion. The average price per square foot on transactions was \$423.21
Purchase price	\$1.06 billion. This price does <i>NOT</i> include any capital expenditures or ancillary fees.
Capital expenditures	\$4 million will be put into the building within the next 12-24 months. Recurring capital expenditures (beyond the leasing costs) for the next two years are expected to be 25¢ to 49¢ a square foot on a year-to-year basis.
Title insurance and other ancillary legal fees	\$4 million
Going-In Cap Rate ¹¹	7.8% (analysts expectations for building); 8.20% (actual ¹²); 7% (market). The cap rate will go up towards the end of the 2010 to 9.6%-9.65% and increase further as mandated, step up rents occur.
Before-tax Cash on Cash	10% (general market) for trophy properties
Financing Terms	Please refer to terms of financing in the description of 399 Park Avenue
Market rent (average):	\$66 per square foot of net rentable area
Gross rent for 399 Park Avenue (actual average)	\$66 per square foot of net rentable area

¹¹Robert M. White, Jr. president of [Real Capital Analytics, Inc.](#), argues that a REIT should theoretically acquire properties with cap rates slightly higher than its dividend yield. "A REIT with an 8 percent dividend should theoretically acquire properties at cap rates higher than 8 percent. That means the acquisition will probably be accretive."

¹²For first three years of ownership. This is based on cash net operating income (NOI), not GAAP NOI.

Property Statistics:

<i>Category</i>	<i>Description</i>
Actual rental range for 399 Park Avenue	\$60 - \$80 per square foot
Operating expenses (includes property taxes)	\$17.70 per square foot of net rentable area
Escalation clauses	REIT will be able to pass through virtually 100% of all operating cost increases between now and through the end of the first lease renewal.

1. Frontdoor Approach (35 points):

- a. Rent Benchmark: Should we compare the required gross rent per square foot using the frontdoor approach to the actual "contractual" gross rent or the market rents in this particular situation (the case of 399 Park Avenue)? In general, which rental benchmark should we use - contract rents or market rents? Why? Please explain your intuition. What would be some determinants of which benchmark to use?
- b. Purchase Price: What purchase price should one use for calculating the required rent? Should the purchase price include immediate capital expenditures (hard costs)? What about title insurance and ancillary legal fees (soft costs)? Please discuss.
- c. Required Rent: What was the required gross rent per square foot around the time of the sale to BXP using the cap rate version of the front door approach? Is the deal financially feasible? Please explain.
- d. Sensitivity Analysis: What is the highest purchase price (excluding capital expenditures, title insurance and other ancillary legal fees) that you can pay and still have the deal be financially feasible all other variables remaining constant? Alternatively, what is the highest vacancy rate that the building can have and still have the investor remain solvent all other variables remaining constant including the purchase price? Is this vacancy rate lower than the direct market vacancy rate (for the top 75 buildings in Midtown) of under 3% as well as the market vacancy rate that includes total direct and subleases of just over 6%? Should the investor be worried about direct vacancy only or vacancy due to both direct leases and subleases? (Hint: who is primarily liable for paying the rent on the space if the tenant vacates the premises) Finally, what would the going-in cap rate have to be for the deal to breakeven all other variables remaining constant? (Hint: use **Solver...** subroutine located under the **Tools** submenu in Excel) Please discuss. Did Boston Properties do a good job in your opinion based on the Required Rent Approach?

2. The Brothers Reichman and the Strategy of "More is More" (5 Points)¹³: In an interview with Olympia and York's executive vice president Edward Minskoff,

"Just how well the market adapts to rent increases is the determining factor in Olympia & York's planning for new developments. The go-ahead is very much a function of projected income exceeding projected costs. 'Before flashing the green light for a new project, the developer has to tally both hard and soft costs,' Minskoff explains. 'The former refers to expenses incurred on the actual construction work; the latter includes design, legal and accounting fees, marketing, expenses and so forth.

In New York today (1983), hard and soft costs to develop new properties range from \$150 to \$250 per square foot depending on the cost of the land. For argument's

¹³from Mark Stevens, *Land Rush: The Secret World of Real Estate's Super Brokers & Developers*, 1984, McGraw-Hill

sake, let's figure \$150 as the average cost. With financing at 15 percent, interest would be \$22.50 per square foot, add another \$7 per square foot for taxes and \$7 for maintenance and you have a breakeven figure of \$36.50 per square foot. Projected market rent levels will have to be at a minimum \$38 to \$40 per square foot level to make the development economically feasible. We also figure our rent adjustments this way. They should reflect replacement costs to develop similar buildings in the current market.

The same kind of thinking applies to property purchases, as well. One of the reasons we bought the Uris buildings was that calculations showed the asking price to be about a third of replacement costs. We'd have had to spend three times as much to build comparable properties.' ”



Paul Reichman

Given what we have learned about the frontdoor and backdoor approaches, please discuss how the Reichmans approach compares to the approach in question #1 above. What is the implicit assumption(s) that is being made? Notable buildings that the Reichmans have developed include the World Financial Center and Canary Wharf.

3. Backdoor using Debt Coverage Ratio Approach (35 points):

- a. Which Loan and Loan Terms to Use: Should you use in terms of the bridge loan or the permanent loan in doing your backdoor calculations? How does the type of permanent financing that BXP used differ from obtaining a traditional mortgage financing from a bank or insurance company? What is the true cost of financing? Please explain.
- b. Justified Price with Senior Unsecured Note: What is the justified price per square foot (excluding capital expenditures, title insurance and ancillary legal fees) of net rentable area for 399 Park Avenue assuming a 3% vacancy rate and a 1.3 debt service coverage ratio? Is the deal financially feasible from a backdoor perspective? Please explain. Is the justified price also greater than the average price of \$423.21 per square foot for the 12 trophy buildings in midtown Manhattan that sold around the same time as 399 Park Avenue?
- c. Justified Price with Different Method of Financing (Mortgage): If BXP decided to use mortgage financing with an amortization period of 20 years, and monthly payments based on the same true borrowing cost as that which exists on the senior unsecured loan, what is the justified price per square foot (excluding capital expenditures, title insurance and ancillary legal fees) of net rentable area for 399 Park Avenue assuming a 3% vacancy rate and a 1.3 debt service coverage ratio? Would the deal still be financially feasible from a backdoor perspective? Why or why not? If the deal is not financially feasible, what interest rate is required for breakeven to occur? Please use the Data Table command in Excel (click on **Data** submenu on the Excel toolbar → **Table** ...) and set up a one-way table showing the justified purchase price at various incremental interest rates (i.e., 4%, 4.1%, 4.2%,..., 4.9%, 5%, 5.1%,..., 6.9%,7%).

4. Backdoor using Default Point Approach (20 Points):

- a. Justified Price: What is the justified price per square foot (excluding capital expenditures, title insurance and ancillary legal fees) of net rentable area for 399 Park Avenue assuming a 3% vacancy rate and a .85 breakeven ratio? Is the deal financially feasible from a backdoor perspective? Please explain?
- b. Relationship of DSCR and Breakeven Ratio: What would the default point have to be to equal the same required rent obtained using a 1.3 debt coverage in question 3.b. above?
- c. Default Point Necessary for Breakeven: What default point is necessary for the justified price per square foot (excluding capital expenditures, title insurance and ancillary legal fees) to equal the actual price per square foot (excluding capital expenditures, title insurance and ancillary legal fees)? In other words, what is the highest vacancy rate that the property can have (using the default point) and still be solvent?

5. The Art of the Deal (5 Points): From a backdoor-frontdoor perspective, did Boston Properties whose CEO is Mortimer a.k.a. Mort Zuckerman make a good deal or bad deal in purchasing 399 Park Avenue in August 2002? Why or why not?

Restatement of assignment Please highlight your answers in **yellow** and turn in a hard copy of your results. In addition to this, turn in with your spreadsheet on a disk with your name on the disk so that we can check your work and also to make sure that you didn't copy someone else's assignment. ***This is an individual assignment.***