



# BOMA International's Asset Management Series:

## Measuring Financial Returns

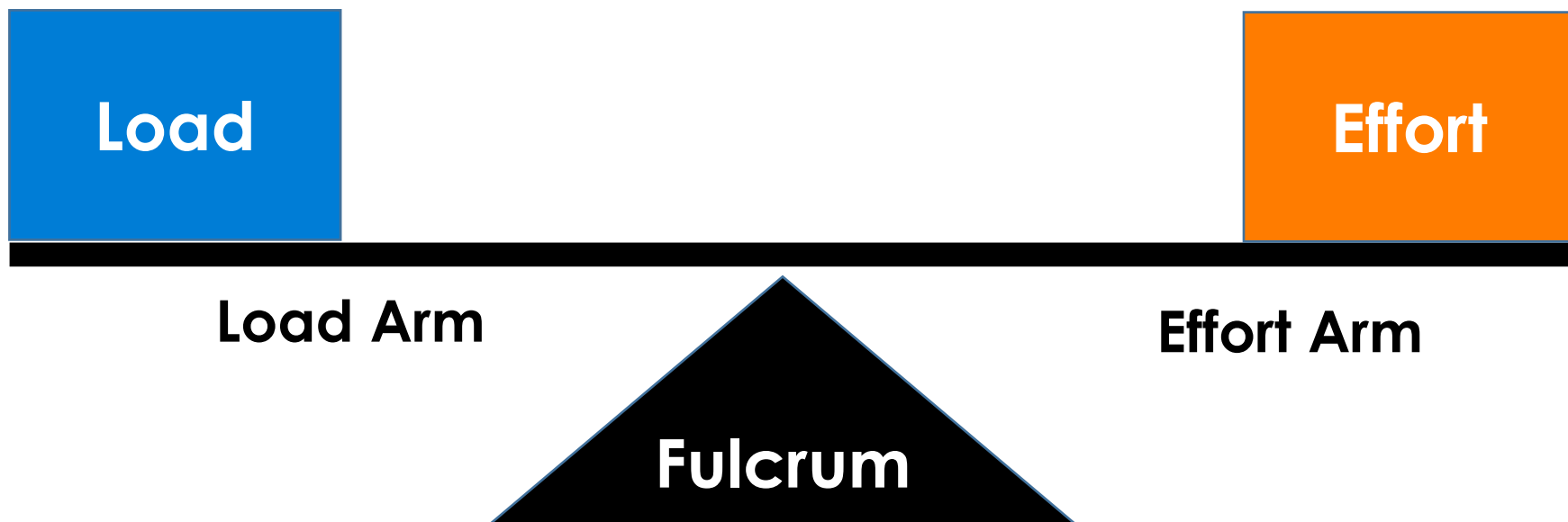


# BOMA International's Asset Management Series:

## Case Study

# Leverage

**Lever** = simple machine used to gain mechanical advantage



# Leverage

Moving the fulcrum changes the mechanical advantage

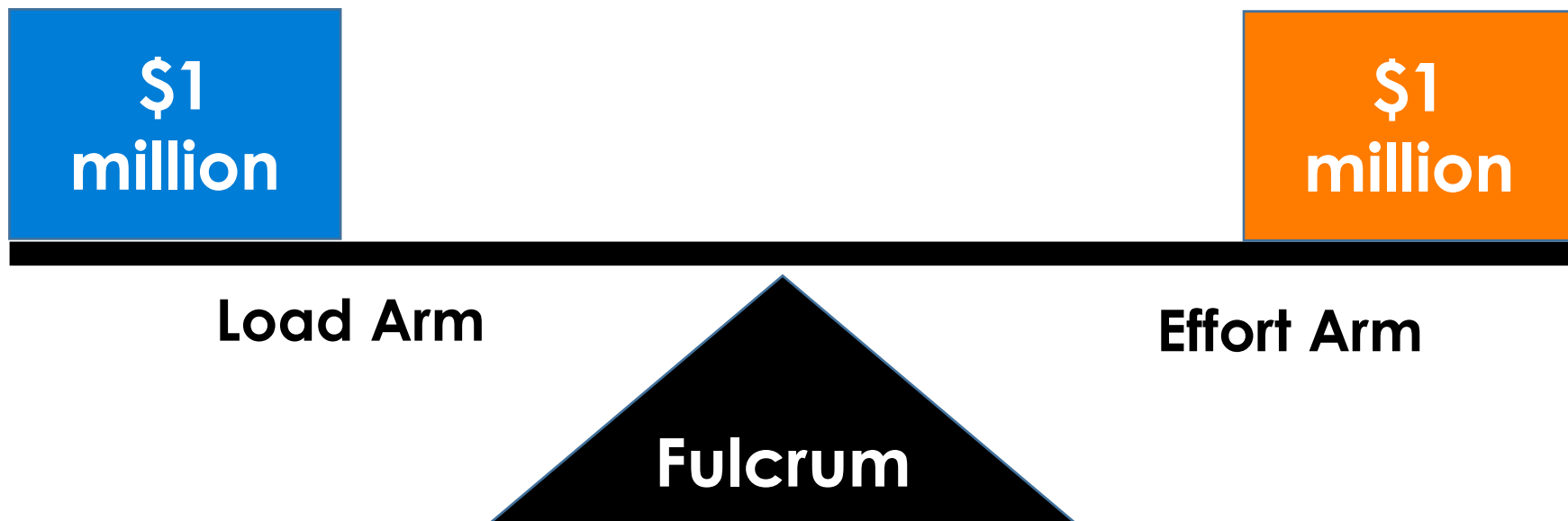


# Leverage in CRE

Use of various financial instruments or borrowed capital to increase an investment's potential return

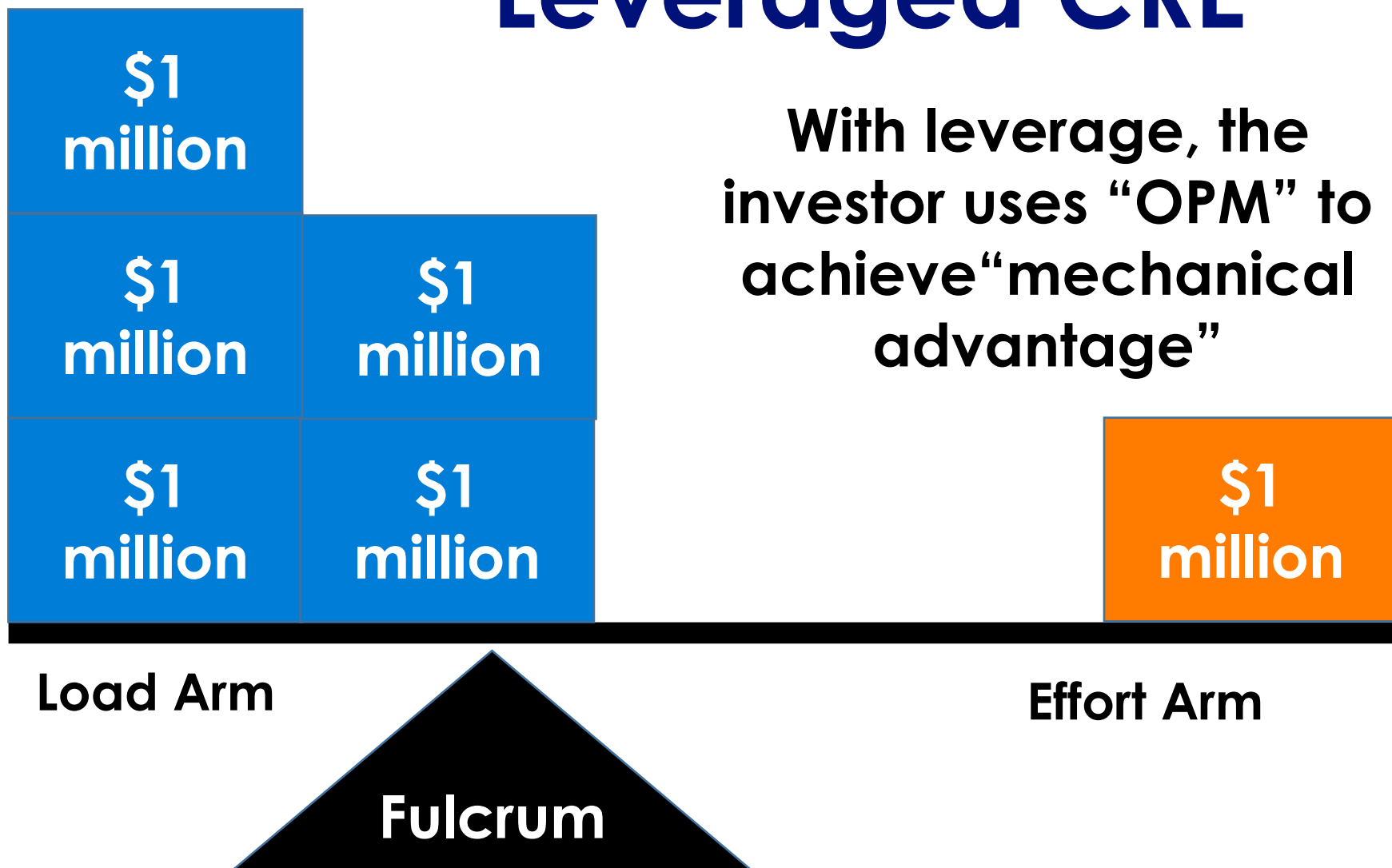
# Unleveraged CRE

Without leverage, the investor does not achieve a “mechanical advantage”



# Leveraged CRE

With leverage, the investor uses “OPM” to achieve “mechanical advantage”





# Leverage Works When

The cost of debt financing  
*is less than*  
the unleveraged returns  
a property is expected to generate



# As an Example

Assume an investor has  
\$1 million to invest

- With 50% leverage, \$1 MM → \$2 MM
- With 75% leverage, \$1 MM → \$4 MM

# As an Example

Assume an investor has  
\$1 million to invest

- With 50% leverage, \$1 MM → \$2 MM
- With 75% leverage, \$1 MM → \$4 MM

*What happens if these investments appreciate by 10%?*

# With 50% Leverage

## 20% Leveraged ROI

$\$2 \text{ million} \times 10\% \text{ return} = \$200,000$

$\$200,000 / \$1 \text{ million initial investment} = 20\% \text{ ROI}$



# With 75% Leverage

## 40% Leveraged ROI

$\$4 \text{ million} \times 10\% \text{ return} = \$400,000$

$\$400,000 / \$1 \text{ million initial investment} = 40\% \text{ ROI}$

# Compare | Without Leverage

## 10% Unleveraged ROI

**\$1 million x 10% return = \$100,000**

**\$100,000/\$1million initial investment = 10% ROI**

# Leveraged v. Unleveraged

| Investor's Contribution | Leverage | Return on Investment (%) | Return on Investment (\$) |
|-------------------------|----------|--------------------------|---------------------------|
| \$1,000,000             | None     | 10%                      | \$100,000                 |
| \$1,000,000             | 50%      | 20%                      | \$200,000                 |
| \$1,000,000             | 75%      | 40%                      | \$400,000                 |

# What About Costs of Borrowing?

## Borrowing Costs for Borrower

**Mortgage payments**  
**Loan origination costs**  
**Closing costs**  
**Transaction fees**  
**Pre-payment penalties**  
**Loan termination costs**



# Impact of Financing

| Investor's Contribution | Leverage | 5% Interest                               | Return on Investment (%) | Return on Investment (\$)            |
|-------------------------|----------|---|--------------------------|--------------------------------------|
| \$1,000,000             | None     | None                                      | 10%                      | \$100,000                            |
| \$1,000,000             | 50%      | \$50,000<br>Based upon<br>\$1MM borrowed  | 15%<br>20% - 5% = 15%    | \$150,000<br>\$200K - \$50K = \$150K |
| \$1,000,000             | 75%      | \$150,000<br>Based upon<br>\$3MM borrowed | 25%<br>30% - 5% = 25%    | \$250,000<br>\$300K - \$50K = \$250K |

# Can You Have Too Much Leverage?

## Risky for Lender

**What if property value declines?**

**What if a major tenant moves out?**

**What's the risk if the borrower does not have much "skin in the game?"**

# What if the Property Loses Value?

| Investor's Contribution | Leverage | Return on Investment (%) | Return on Investment (\$) |
|-------------------------|----------|--------------------------|---------------------------|
| \$1,000,000             | None     | -10%                     | -\$100,000                |
| \$1,000,000             | 50%      | -20%                     | -\$200,000                |
| \$1,000,000             | 75%      | -40%                     | -\$400,000                |

# Mitigating Risk

**Core**  
**Core+**

- **Lenders might be willing to allow a higher amount of leverage**

**Value Add**  
**Opportunistic**

- **Lenders are likely to require more equity from investors**

# Common Financial Ratios

- Debt coverage ratio
- Loan-to-value ratio
- Break even ratio
- Debt ratio
- Debt-to-equity ratio
- Equity ratio
- Interest coverage ratio



# Debt Coverage Ratio (DCR)

**Measures the degree to which the property's projected Net Operating Income (NOI) will support payment of the property's debt service obligations**

# Debt Coverage Ratio (DCR)

$$\frac{\text{Net Operating Income}}{\text{Total Debt Service}}$$



# Debt Coverage Ratio (DCR)

$$\frac{\$200,000}{\$130,000} = 1.5384$$

**1.54x**

# DCR: What Does it Mean?

**DCR > 1.0**

**Sufficient cash flow to meet debt service**

**DCR < 1.0**

**Insufficient cash flow to meet debt service**

**Many lenders require DCR of 1.20x to 1.40x  
or contribution into Debt Service Reserve Account**

# Loan-to-Value Ratio (LTV)

**Measures ratio between loan amount and assessed value of property**



# Loan-to-Value Ratio (LTV)

$$\frac{\text{Loan Amount}}{\text{Assessed Value of Property}}$$

# Loan-to-Value Ratio (LTV)

$$\frac{\$750,000}{\$1,000,000} = 75\%$$

**Higher LTV = more risk for lender**

**Riskier investment = higher interest rate  
charged to borrower**

# Combined Loan-to-Value Ratio (LTV)

$$\frac{\textit{Combined Value (All Loans)}}{\textit{Assessed Value of Property}}$$

**Includes all mortgage loans  
associated with the property**



# Breakeven Ratio (BER)

Measures the percentage of the property that needs to be leased in order to cover **operating expenses** and **debt service**



# Breakeven Ratio (BER)

$$\frac{\text{Annual OEs} + \text{Annual Debt Service}}{\text{Gross Potential Rental Income}}$$

# Calculating Breakeven Ratio

## Gross Potential Rent

Theoretical income a property would generate if 100% leased

## “Grossed Up” Operating Expenses

Theoretical expenses a property would generate if 100% leased/occupied (sometimes listed in lease as 95%)

# “Grossing Up” OEs

## Fixed Expenses (No Change Needed)

Window cleaning | Roof repairs  
Fire alarm/sprinkler monitoring/repair  
Elevator R&M | Management salaries

## Variable Expenses Tied to Occupancy

Janitorial | Management fees | Utilities  
Trash removal



# “Grossing Up” OEs

**Variable Expenses**

**Potentially Tied to Occupancy**

**(When building is largely/entirely unoccupied)**

**Snow removal | Maintenance salaries**

**Maintenance supplies**

# Think of Breakeven Ratio as:

*Annual “**Grossed Up**” OEs + Annual Debt Service*  

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*Gross Potential Rental Income*

# Leased v. Occupied

## “Leased”

Leased to tenant

Tenant may/may not be occupying space

Tenant may/may not be paying

## “Occupied”

Leased to tenant

Tenant occupying space

Tenant may/may not be paying



# Leased v. Occupied

What is the impact of  
“leased” and “occupied” on

**Gross rent potential**

**“Grossed up” operating expenses**



# Debt Ratio (D/R)

**Compares property's debt  
(including all loans, both long-term  
and short-term) to its total assets**

# Debt Ratio (D/R)

$$\frac{\textit{Total Debt}}{\textit{Total Assets}}$$

**Higher debt ratio (meaning property is more leveraged) = higher risk for lender**

# Debt-to-Equity Ratio (D/E)

**Compares property's debts  
against its equity**

**Measures how much debt company is  
using – relative to investor's equity**



# Debt-to-Equity Ratio (D/E)

$$\frac{\textit{Total Debt Liabilities}}{\textit{Equity}}$$

**Higher D/E ratio means property is using more debt = higher risk for lender**



# Equity Ratio (E/R)

**Compares property's equity  
against its total assets**

**Measures degree to which property is  
financed by stockholders/owners  
(as opposed to creditors)**

# Equity Ratio (E/R)

$$\frac{\textit{Total Equity}}{\textit{Total Assets}}$$

**Higher E/R means property is less leveraged  
= lower risk for lender**

# Interest Coverage Ratio

**Compares NOI to interest expenses**

**Measures investor's ability to pay interest expenses on outstanding debt**



# Interest Coverage Ratio

$$\frac{\text{Net Operating Income}}{\text{Interest Expenses}}$$

**Higher E/R = lower risk for lender**



# Leveraged Return on Investment

**Measures efficiency of an investment  
or to compare various investments**

**Measures financial return relative to its cost**

**Adding leverage can dramatically increase  
(or decrease) financial return**

# Leveraged Return on Investment

*Gain on Investment*

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*Cost of Investment (Leveraged)*

# Leveraged Return on Investment Example

Investor purchased property for \$1 MM (unleveraged) & sold for \$1.2 MM

$$\frac{\$200,000}{\$1,000,000} = 20\%$$



# Leveraged Return on Investment Example

Investor purchased property for \$1 MM (financing \$500K) & sold for \$1.2 MM

$$\frac{\$200,000}{\$500,000} = 40\%$$

*(not including financing costs)*



# Leveraged IRR

**Measures financial attractiveness of a project or investment**

**The interest rate at which the NPV of a cash flow (positive and negative) = 0**

# Leveraged IRR

- Higher IRR = more desirable investment
- Good for ranking various projects
- When calculating leveraged IRR, formula changes:
  - Initial cash flow = cash used at settlement (not including any leverage)
  - Individual cash flows are net of interest expenses
  - Final cash flow will include paying off loan balance

# Impact of Leverage on IRR

- Investor purchased property for \$1 MM (unleveraged)
- Property generated \$100K annual cash flow
- Sold in Year 5 for \$1.2 MM



# Impact of Leverage on IRR

| Period | Cash Flow    |
|--------|--------------|
| 0      | -\$1,000,000 |
| 1      | \$100,000    |
| 2      | \$100,000    |
| 3      | \$100,000    |
| 4      | \$100,000    |
| 5      | \$1,300,000  |

Unleveraged  
IRR =  
**13.07%**



# Impact of Leverage on IRR

- Investor purchased property for \$1 MM (\$500K financed)
- Property generated \$100K annual cash flow
- Sold in Year 5 for \$1.2 MM

# Impact of Leverage on IRR

| Period | Cash Flow         | Notes  |
|--------|-------------------|--|
| 0      | <b>-\$500,000</b> | \$1 million purchase price less the \$500,000 mortgage   |
| 1      | <b>\$90,000</b>   | \$100,000 annual cash flow less \$10,000 interest payment  |
| 2      | <b>\$90,000</b>   | \$100,000 annual cash flow less \$10,000 interest payment  |
| 3      | <b>\$90,000</b>   | \$100,000 annual cash flow less \$10,000 interest payment  |
| 4      | <b>\$90,000</b>   | \$100,000 annual cash flow less \$10,000 interest payment  |
| 5      | <b>\$790,000</b>  | Total includes three components: <ul style="list-style-type: none"><li>• \$100,000 annual cash flow less \$10,000 interest payment</li><li>• \$1.2 million sale price of the asset</li><li>• \$500,000 balloon payment to pay off the loan</li></ul> |

**Leveraged IRR = 23.05%**