

# REAL ESTATE FINANCE AND INVESTMENTS: RISKS AND OPPORTUNITIES

Edition 5.2

Peter Linneman, PhD  
Bruce Kirsch, REFAI®



Celebrating  
20 years of  
publishing

"This book brings a much needed blend of theory and  
practice to the analysis of real estate finance and

Samuel Zell

Chairman

Equity Office Properties and Equity Residential Properties

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# REAL ESTATE FINANCE AND INVESTMENTS: RISKS AND OPPORTUNITIES

In circulation for 20 years, and originally authored by Dr. Peter Linneman, the book earned the nickname "the Blue Bible of real estate" from students. The book was based on Dr. Linneman's Wharton classes, and it reflects his frustration with texts that concentrate excessively on theoretical detail and literature, while ignoring important aspects of financial analysis and the challenging ambiguity of decision making. The book

balances the "real world" aspects of real estate finance without compromising key theoretical underpinnings. It is an exploration of the key concepts of real estate finance and investment strategy, not a mere formulaic analysis of numbers designed to give students "the answer" to any and all real estate investment decisions.

## What's New In Edition 5.2

- An expanded Key Terms glossary, and it now is accessible in spoken form through Amazon's Alexa app
- New commentary in multiple chapters addressing important pandemic-related impacts on the real estate market
- Consolidated Course Notes and Figures slides sets so you only have to reference a single PowerPoint for each chapter
- Expanded Prerequisites slide sets
- **For book adopters, 200 new chapter and quiz questions with answers.**

# REAL ESTATE FINANCE AND INVESTMENTS

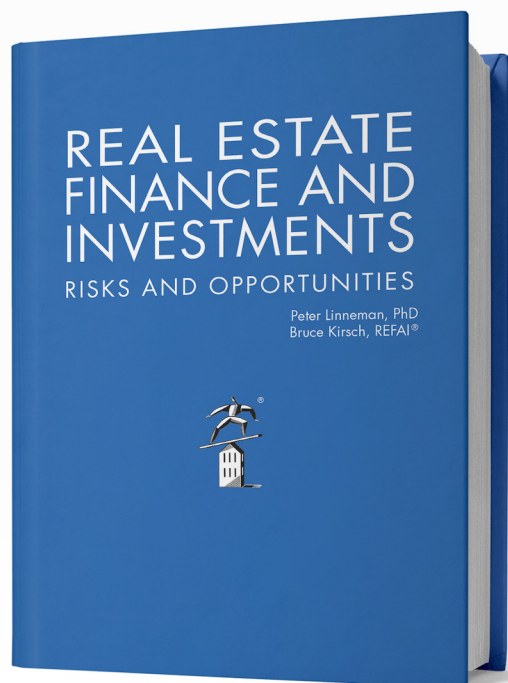
## RISKS AND OPPORTUNITIES

Peter Linneman, PhD  
Bruce Kirsch, REFAI®





# FAST FACTS ABOUT THE BOOK



**Current Edition:** 5.2

**Authors:** Peter Linneman, PhD and Bruce Kirsch, REFAI®

**Length:** 467 pages

**Chapters:** 26

**Additional Sections:** 9

**First Published:** 2003

**University Adoptions:** 125+

**Unique Features:**

- Chapter 1 available as an audiobook
- Hands-on Excel modeling exercises integrated throughout
- Chapters on Due Diligence and Corporate Real Estate
- ARGUS platform overview
- Available REFAI® Certification program.

## SELECT CORPORATE TEXTBOOK ADOPTERS

Blackstone Group  
CBRE Global Investors  
Freddie Mac  
Goldman Sachs International  
JBG SMITH  
Lubert-Adler Real Estate Funds  
Macerich Company  
Morgan Stanley  
Related Companies  
Tishman Speyer  
USAA Real Estate Company

"I have been using Peter's and Bruce's book for several years and they do an excellent job of combining the theory and practice of real estate finance and investments."

**Will McIntosh, Ph.D.**

**UTSA**



## SELECT UNIVERSITY TEXTBOOK ADOPTERS

The Wharton School  
University of California Los Angeles  
New York University  
Columbia University  
Georgetown University  
University of Michigan  
Ohio State University  
University of Arizona  
Villanova University

Drexel University  
University of Georgia  
Clemson University  
University of Toronto  
Arizona State University  
College of Charleston  
York University  
University of Alabama  
University of Memphis

Brigham Young University  
Southern Methodist University  
University of Hawai'i  
University of California Irvine  
Roosevelt University  
University of Illinois at Chicago  
Yale University  
University of Washington  
Texas A & M University



# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS



"The on-line support materials, Excel sheets and exam questions are great. The course has become more rigorous but the students are better positioned to succeed."

**Mathew Avrhami, Faculty Associate**

**W.P. Carey School of Business  
Arizona State University**



## ONLINE COMPANION SITE

The screenshot shows the 'Chapter 1 | Introduction: Risks and Opportunities' page. The top navigation bar includes links for 'FREE CH. 1 AUDIOBOOK', 'ONLINE COMPANION MENU', 'KEY TERMS GLOSSARY', 'WHO ARE YOU?', and a 'BUY NOW' button. The main content area is divided into three columns: 'PREREQUISITES & CHAPTERS 1-7', 'CHAPTERS 8-17', and 'CHAPTERS 18-26 & INDEX'. The 'Audio Interview' section features a waveform player for 'Risks and opportunities' with a timestamp of 2:35. Below the audio player is a link to the 'Audio Transcript'. The 'Additional Multimedia' section includes a video titled 'Las Vegas Population Growth Time Lapse'.

The screenshot shows the 'Glossary of Commercial Real Estate Terms' page. The top navigation bar is identical to the previous page. The main content area features a 'works with alexa' logo, a 'Spoken Glossary Available FREE On Amazon Alexa' section, and a 'Download the free Alexa app below, and then add the free "Commercial Real Estate Glossary" skill' button. The 'Glossary of Commercial Real Estate and Commercial Real Estate Finance Terms' section includes a paragraph about the glossary's purpose and a 'To search, scroll down, or use Ctrl+F or Cmd+F.' instruction. The 'Prerequisite I: Discounted Cash Flow & Net Present Value Analyses' section is visible, along with a 'Time Value of Money' section. The bottom right corner features a 'Download on the App Store' button and a 'GET IT ON Google Play' button.



# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

## CHAPTER SUMMARIES, QUESTIONS AND ANSWERS

Real Estate Finance and Investments: Risks and Opportunities  
Peter Linneman, PhD and Bruce Kirsch, REFAI®

### QUESTIONS

1. Alexis Development Corp. was recently given the opportunity to bid on an attractive development site in the financial district in downtown Philadelphia. The executives at Alexis believe there is growing demand for high-end office towers due to the growing demand by pharmaceutical companies in the area. The investors at Alexis expect to achieve an 11% return on development projects and do not wish to begin developments if such return cannot be achieved. Doug is the Head of Development at the firm who was given the task of assessing the feasibility of the Alexis Office Tower project.

Below are the cost and income data Doug has collected for the project:

Expected Development Cost and Operating Assumptions for Alexis Office Tower	
Land Cost	\$37 per GSF (building gross square foot)
Hard Costs	\$73 per GSF
Soft Costs	\$35 per GSF
Total Development Cost	\$145 per GSF
Rent	\$38 per Leasable Square Foot
Operating Costs	\$12 per GSF
Stabilized Occupancy	94% of Leasable Square Footage
Loss Factor	30% of GSF

- a. Calculate the expected return on cost (build to return/yield on cost/going in cap rate) for the Alexis Office Tower development project.
- b. Does the expected return meet the investors' threshold of 11% return on cost?
- c. What is the minimum replacement rent per gross SF and per leasable SF that Doug must expect for the development to meet the investors' expected return?
- d. Given that FAR for this site is 5, how much should Doug be willing to pay **per acre** of land and still meet the return threshold set by the investors of Alexis Development Corp.?
- e. How can Doug increase the expected return on the site? Give 3 ideas.

A. Expected Return on Cost = Expected Stabilized NOI / Expected Total Cost per SF

I. Total Cost per SF = **\$145**

II. Effective Rent per Leasable SF = Market Rent per Leasable SF \* (1 - Stabilized Vacancy %)

$$= \$38 * (1 - 0.06) = \$38 * 0.94 = \$35.72$$

AVERAGE

=C16\*D16

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## SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

# LECTURE SLIDES IN POWERPOINT

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File Home Insert Draw Design Transitions Animations Slide Show Record Review View Help Acrobat

Record Share

Undo Paste New Slide Layout Reset Section Font Paragraph Drawing Editing Adobe Acrobat Voice Designer

The logo for 'Real Estate Finance and Investments' is set against a blue background. It features a stylized white icon of a person running up a set of stairs. To the right of the icon, the text 'REAL ESTATE FINANCE AND INVESTMENTS' is written in a white, sans-serif font, with 'REAL ESTATE' on the first line, 'FINANCE AND' on the second, and 'INVESTMENTS' on the third. Below this, the phrase 'RISKS AND OPPORTUNITIES' is written in a smaller, white, sans-serif font.

Celina Gardens, 250-unit spec condominiums



Real Estate Finance and Investments:  
Risks and Opportunities

Chapter 10

Peter Linenman, PhD  
Bruce Krauth, BEA®

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[illegible]

## Figure 10.2

Property Type	Schedule
Warehouse	9-18 months
Garden Apartments	1-2 years
Suburban Office	18-36 months
CBD Office and Highrise Residential	2-4 years
Strip Center	18-30 months
Regional Mall	3-6 years

Real Estate Finance and Investments:  
Risk and Opportunity

Chapter 10

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Peter Linsmeier, PhD  
Bruce Kinosh, REFAA®

# 1

## Two Business Phases of Development

- Phase I: the negative cash flow business
  - planning, land acquisition, design and construction
  - lower uncertainty of outcome as far as cash flow goes
    - Discount rate:  $\sim$  2-year Treasury + small risk premium
- Phase II: the positive cash flow business
  - operating or selling out the property

Real Estate Finance and Investments:  
Risks and Opportunities

Chapter 10

Peter Lemmings, PhD  
Bruce Knott, REA®

# 5

## Forecasting Phase II revenues

- Difficult to forecast future NOI or property sale proceeds
- Study supply and demand for competitive space
- Pre-leasing / pre-sales (solvency risk)
- Higher discount rate should be used for positive cash flow business phase than for the negative cash flow phase

Real Estate Finance and Investments:  
Risks and Opportunities

Chapter 10

Peter Linneman, Ph.D.  
Bruce Smith, ESQ. JIA

# Hard Costs

- Construction contractors
  - Labor
  - Equipment and materials
  - Contractor fees
- Bell curve profile over time, accumulating into an S-curve profile

Real Estate Finance and Investments: Risks and Opportunities Chapter 10

Peter Linsmeier, PhD  
Bruce Kirsch, REFAA®

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### Figure 10.3

Figure 10.3 consists of two bar charts. The left chart, titled 'Monthly Construction Cost Spend', displays the monthly spend over 23 periods. The y-axis ranges from \$0 to \$23,000,000 in increments of \$1,000,000. The spend starts at approximately \$1,000,000 in period 1, rises to about \$4,000,000 by period 5, then increases more sharply to a peak of approximately \$23,000,000 in period 12, before declining to about \$5,000,000 by period 23. The right chart, titled 'Cumulative Construction Cost Spend', displays the cumulative spend over the same 23 periods. The y-axis ranges from \$0 to \$25,000,000 in increments of \$5,000,000. The cumulative spend starts at approximately \$1,000,000 in period 1 and increases steadily, reaching a total of approximately \$225,000,000 by period 23.

Monthly Construction Cost Spend

Cumulative Construction Cost Spend

Real Estate Finance and Investments:  
Risk and Opportunity

Chapter 10

Reber, Linneman, PhD  
Bruce Kinzler, BEAFA®

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## Soft Costs

- Architecture and engineering
- Project management
- Legal and accounting
- Construction loan interest
- Learning commissions

## Figure 10.4

## Revenue Risk Mitigation

- Pre-leasing
- Pre-sales
- Certificate of occupancy unlocks the cash stream

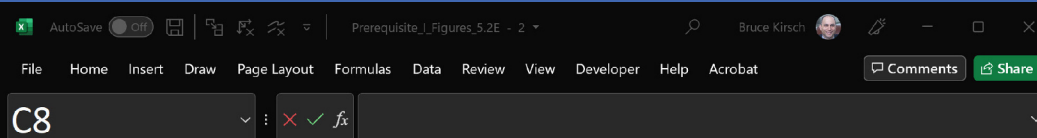
## Delay Risk

- Causes:
  - Regulatory approvals
  - Vendor availability
  - Weather
  - Financing
  - Environmental



# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

## BOOK FIGURES IN UNLOCKED EDITABLE EXCEL FILES



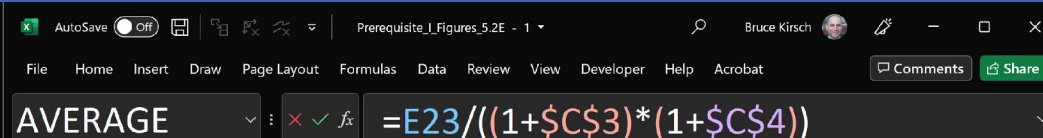
# REAL ESTATE FINANCE AND INVESTMENTS

## RISKS AND OPPORTUNITIES

Peter Linneman, PhD  
Bruce Kirsch, REFAI®



Prerequisite I Figures  
The Basics of Discounted Cash Flow  
& Net Present Value Analyses



The peach-shaded cells are those the students are asked to fill in for the Hands On Exercise.

Discount Rates	
Year 1	11.50%
Year 2	13.00%
Year 3	13.00%
Year 4	13.00%
Year 5	13.00%

Discounted Cash Flow Valuation of The Anderson Apartments					
	Year 1	Year 2	Year 3	Year 4	Year 5
CF from Operations	\$3,000,000	\$5,000,000	\$6,500,000	\$8,750,000	\$9,000,000
CF from Sale					\$83,454,545
Total Cash Flow	\$3,000,000	\$5,000,000	\$6,500,000	\$8,750,000	\$92,454,545
Total Cash Flow	\$3,000,000	\$5,000,000	\$6,500,000	\$8,750,000	\$92,454,545
Discount Factor	$(1+11.5\%)$	$((1+11.5\%) * (1+13\%))$	$((1+11.5\%) * (1+13\%)^2)$	$((1+11.5\%) * (1+13\%)^3)$	$((1+11.5\%) * (1+13\%)^4)$
Value of Property	\$67,518,857				

	Time 0	Year 1	Year 2	Year 3	Year 4	Year 5
Cash Flow	-40,000,000	3,000,000	5,000,000	6,500,000	8,750,000	92,454,545
PV	-40,000,000	2,690,583	$\$C\$4)$	4,565,429	5,438,734	50,855,699
PV Total	\$67,518,857					
NPV	\$27,518,857					

**STUDENT INSTRUCTIONS GIVEN:**  
Use the SUM function to sum the PV Total of the property's cash flows, and then add that to the Time 0 negative cash flow to get the NPV.

**STUDENT INSTRUCTIONS GIVEN:**  
Using arithmetic, solve for the present values of the property's annual cash flows. Since the discount rate varies, you must discount using the combination of rates for specific future values. For example, the Year 2 value discount factor by which you divide to get the Year 2 PV is:  $((1+\text{Year1 Rate}) * (1+\text{Year2 Rate}))$ .

# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

## QUIZZES AND EXAMS

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### CHAPTER 9 | THE USE AND SELECTION OF CAP RATES

- Circle all of the true statements:
  - A cap rate is the reciprocal of a multiple
  - A multiple is the reciprocal of a cap rate
  - A multiple is the reciprocal of a cap rate plus one
  - Multiples and cap rates, absent any other information, tell you the property value
  - NOI multiplied by the cap rate plus one equals value
  - None of the above
- Why might the reported cap rates for a transaction differ from buyer to seller? (circle all that apply)
  - The seller may be lying in the course of bragging about how much they made
  - The buyer believes there are different capital needs associated with the property than the seller does
  - They may be using the NOIs of different years
  - Different people classify different costs as operating and non operating
  - One party may not believe the property is stabilized at sale
  - None of the above
- What makes real estate valuation different than most industries?
  - Long term contracts with tenants
  - Long term contracts with maintenance firms
  - Real estate is tangible
  - Leases have more legal enforcement rights
  - Most industries do not have hard assets for collateral
  - All of the above
  - None of the above
- Income multiple analysis is (circle all that apply)
  - A difficult standard valuation method
  - A simple standard valuation method
  - Estimates a property by multiplying next year's stabilized NOI by the price-to-NOI multiple
  - Estimates property income
  - None of the above
- True or False: The real estate industry's usage of cap rates reflects its historic linkage to the equities market.
  - True
  - False

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1 2 3 4 5 6

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### FINAL EXAM #2

- React:** Becoming a publicly-traded real estate company in the form of a REIT makes a real estate company 5-10% more valuable than if it remains private.
- React:** Corporate real estate ownership is greater in European than in the U.S. because European managers have bigger egos.
- React:** A mortgage is more valuable as part of a CMBS offering than as a non-securitized mortgage.
- React:** Real estate analysis uses cap rates to determine values rather than multiples because real estate is a physical, rather than financial, asset.
- React:** If a shopping center has 70% of its space leased for the next 30 years to a supermarket anchor, the owner does not have to worry very much about local market conditions because 70% of their available space will be off the market for the next 30 years.
- React:** Debt always enhances the returns on equity because the borrowing rate is lower than the cash yield and properties go up in value.
- You are working for an active investment group, which is very interested in an office property in Tokyo. The property is 16 years old, well (but not spectacularly) located, with good floor plates, and meets earthquake standards.

The property is available for \$100 million (all payments will be in yen, but I'll express them in dollars to ease your headaches), which is a mere 20% of the value placed on the property in 1991. The property needs about \$20 million in improvements to make it competitive with new properties. The property is currently vacant, as it was the headquarters of a recently liquidated bankrupt company. At the all-in-cost of \$120 million the property would have a cost equal to roughly 90% replacement cost, though since land costs are 50-60% of replacement costs, and land prices continue to fall, it is hard to be precise on this estimate.

The local rental market for quality properties is fairly strong in spite of the weak Japanese economy, as tenants continue to take advantage of low rents by moving out of poorly located and designed properties into better properties. Leases in Tokyo are only two years in duration, and the tenant typically pays triple net rents. Property values are at levels not seen since the early 1980s. Sales are relatively frequent, but pricing is unpredictable, with American buyers paying 6-8% cap rates, and occasionally Japanese firms paying 3-5% cap rates. Two REITs recently did IPOs at roughly 6% cap rates, but their prices have fallen substantially since their IPOs.

Rents in Tokyo for quality properties continue to fall by 1-2% per year, as new construction continues to generate a modest supply/demand imbalance. This situation, and the general Japanese economic malaise, is expected to continue for the next several years.



# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

## CASE STUDIES WITH TEACHING NOTES AND SOLUTION EXCEL FILES

Case Study Title	Length of Case / Solution (pages) *	Subject Asset Type	Transaction Type	Recommended Format
Build-to-Suit	2 / 8	Single-tenant Outparcel Retail	Pre-Leased Development and Sell	Individual
The Condo Case	5 / 5	Residential Condominiums	Spec Development and Sell Out	Individual
The London Location	1 / 6	Commercial Office	Corporate Real Estate Strategy	Individual
The Upzoning Decision	11 / 7	Residential Condominiums	Spec Development and Sell Out	Individual
Welcome To The Big Leagues	4 / 7	Convertible Note on Mall Property	Equity Option on Loan Collateral	Team
Westwood Plaza	8 / 25	Multi-tenant Strip Retail	Repositioning of Owned Asset	Team
The Mexican Maquiladora Case	5 / 5	Industrial	Pre-Leased/Spec Development and Hold	Individual

\* All Solutions include narrative discussion in a Word document that contains graphics suitable for use in lectures, as well as a fully-dynamic Excel model.

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**SOLUTION: WESTWOOD PLAZA**

case is “modeling intensive” and designed to provide students some experience with Excel. In the framework file that is provided for the students, there are more than 100 inputs to be made on the Assumptions tab and more than 200 lines of formulas to consider and construct across the Projection, Financing Options, and Amortization tabs. As such, it is a good introduction to the complexity of modeling a multi-tenant commercial property, and it serves as a backdrop to the use of Argus Enterprise by institutional-level real estate stakeholders.

ould be stressed to students that the assumed input values they make in the template need to have underlying hard data and/or rationale behind them. In other words, no input in their model should be a guess. In the working world, carrying an unsubstantiated assumption value in a model that is going to be used by investment or credit committee is a serious offense, possibly even grounds for dismissal.

is a good case after students have read the Prerequisite I: The Basics of Discounted Cash Flow & Net Present Value Analyses, Prerequisite III: Amortization Fundamentals, and the chapters on The Fundamentals of Commercial Leases, Property-Level Pro Forma Analysis, Financial Modeling, and on The Fundamentals of Debt and Mortgages. It is an eye-opener to the many moving parts in multi-tenant commercial real estate, in that it attacks the common misconception that real estate investment analysis is merely a matter of plugging numbers into a spreadsheet. Moreover, variations of this case scenario are occurring throughout the United States with the expansion of Walmart.

with all pro formas, the two main modeling challenges are:

- Getting the operating cash flows to reflect the business realities of the property, and
- Simulating the debt financing cash flows accurately to get to levered cash flow.

modeling aspect of this case can cause students to be hopelessly engrossed in modeling detail, while completely ignoring the conceptual analysis of what’s going on with the property. Also, if students do not understand the interactions between the numbers (e.g., increase in vacancy will decrease base rent, decrease in base rent will decrease overage income, alter leasing commissions, and TIs, etc.) they will construct a poor model. Below is an illustration of an in-line tenant space cash flow stream over three 5-year lease terms separated by 9 months of re-leasing. Similar cash flow valleys from the re-tenanting events for both anchors and in-line tenants should be present in the students’ models.

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**Numbers**

A comment on the numbers is in order. This case is intentionally silent on some elements, so that students are not spoon fed the assumptions and merely left with the mindless task of creating a spreadsheet. Students are expected, either through research or common sense, to make reasonable assumptions about items such as TI costs, leasing commissions, and re-lease timing, among many other variables. This will lead to slightly different numbers for each student. As an example, if students pick 6 months versus 9 months (which are both reasonable) for leasing vacant space, it will impact their calculation outputs.

The massive amounts of free market data available online from the major brokerages can expose students to some sample levels for TI costs in the central Florida market (although it might take some digging, or not be possible, to find the most recent data). But individual historical data points, or reported averages, are just that. Our own research turned up some lease transaction data that shows no TIs at all, some where TIs are higher than the year 1 base rent PSF, and some where TIs that are lower than the year 1 base rent PSF. So what should the students have chosen for TIs in constructing their model? There is no right answer, but it is instructive for the students to have been required to back up their selections with data/rationale. In reality, as the owner, we would have the leases, which would have the previous TI amounts documented, and those would serve as a guide. Nonetheless, on the margin, students would be wise to conservatively carry some dollar amounts for TIs, instead of nothing at all, even if their research turns up all data with \$0 for TIs.

It is beneficial to reinforce that every lease is a “snowflake” i.e., totally unique. In some instances, retail landlords would prefer to give free rent to tenants instead of TI allowance. In other cases, it’s the reverse. In some deals, neither TI allowance nor free rent are given to the tenant. Students must keep in mind that landlords are always balancing the economic elements below when negotiating the terms in a lease, and there is no “right decision database” against which they can verify their offered terms.

Real Estate Finance and Investments: Risks and Opportunities  
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**Annual NOI in Scenarios 1 and 2**

If Publix Does Not Go Dark Nor Extend Term

If Publix Goes Dark in Year 1 and CVS Leaves in Year 2

**DSCR in Scenario 1**

If Publix Does Not Go Dark Nor Extend Term

If Publix Goes Dark in Year 1 and CVS Leaves in Year 2

**CAM Recovery % in Scenarios 1 and 2**

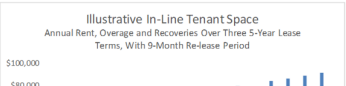
If Publix Does Not Go Dark Nor Extend Term

If Publix Goes Dark in Year 1 and CVS Leaves in Year 2

**TIs and LCs in Scenarios 1 and 2**

If Publix Does Not Go Dark Nor Extend Term

If Publix Goes Dark in Year 1 and CVS Leaves in Year 2



# SUPPORTING MATERIALS FOR FACULTY AND TEACHING ASSISTANTS

## SAMPLE SYLLABI FROM ADOPTERS



**BUSINESS FINANCE #: 4410 COURSE NAME: Real Estate Finance**

### COURSE DESCRIPTION:

This course will continue the examination of real estate as an asset class in Real Estate and reinforce the position that real estate continues to be a diversified portfolio. The course's goal is to provide students with a solid understanding of real estate finance. The course will start with a review of the major real estate sectors: Residential, Commercial, Industrial, and Public Finance. It will move on with an overview of the Capital Asset Pricing Model (CAPM) and the real estate finance concepts such as Capitalization Rate (Cap Rate), Discounted Cash Flow (DCF) and Mortgage Amortization. The class will review the real estate of equity and debt in the financing of real estate. The course will then move into the financing of real estate along with the current market conditions. The course will conclude with the underwriting of real estate debt from construction to permanent financing along with the underwriting of equity and debt in the financing of real estate. The course will conclude with the underwriting of real estate debt from construction to permanent financing along with the underwriting of equity and debt in the financing of real estate. The course will conclude with the underwriting of real estate debt from construction to permanent financing along with the underwriting of equity and debt in the financing of real estate.

At the completion of the class, students should be able to demonstrate the following:

- Real estate as an asset class in a well-diversified portfolio.
- Real estate capital stack – equity and debt financing
- Various real estate debt structures along with current underwriting
- Alternative financing structures including sale-leasebacks, participating preferred, and other structures
- Real estate due diligence, financial modeling (DCF) and basic real estate valuation

### PREREQUISITES:

BusFin 3400 – Intro to Real Estate.

### CLASS MEETINGS:

Schoenbaum Hall; Room 330  
M,W, 5:30-6:50 p.m.

### CLASS MATERIALS:

- Real Estate Finance and Investments – Risk and Opportunity: A Practical Approach, Fifth Edition. The Fifth Edition has an on-line component available at [www.linnemanassociates.com](http://www.linnemanassociates.com).
- Business calculator – HP12C or TI BA II Plus. You will need these calculators. These will be used in class and on exams.
- Microsoft Excel.
- Course readings and Case Studies assignments will be posted on the course website.

Prof. Mariaflavia Harari

Real Estate Investment: Analysis and Financing Fall 2018



**Real Estate Investment: Analysis and Financing  
REAL/FNCE 209/721**

Fall 2018

TuTh 10.30-12.00 pm (209-401), VANC B10  
TuTh 1.30-3.00 pm (209-402), SHDH1203  
TuTh 3.00-4.30 pm (721-405), SHDH1203

17 October 2018

Professor Mariaflavia (Nina) Harari  
1467 Steinberg Hall-Dietrich Hall  
Email: [harari@wharton.upenn.edu](mailto:harari@wharton.upenn.edu)

Office Hours: Wednesday 1.30-3.00 pm  
(unless otherwise noted on Canvas)

### Course Objectives:

There are two primary goals of this class:

1. To expose you to the terms, issues, and topics in commercial real estate.
2. To give you the basic skills and intuition you need to begin to evaluate a variety of real estate investments.

Real estate is a multi-faceted field, encompassing both an operating industry and a broad category of investments. It has its own institutional features, jargon, and investment structures. As the survey course in the Real Estate Department, this class aims to provide a broad overview of the real estate field, rather than a narrow focus on any particular topic. We delve more deeply into a handful of aspects of the real estate field when they are particularly relevant or when the example provides a more general insight. Higher-level classes in the Real Estate Department examine many of the topics from this class in more detail.

### Prerequisites:

For undergraduate students, Finance 100 is a prerequisite for enrollment. By extension, the Wharton undergraduate economics sequence and Mathematics 104 are also prerequisites. In rare instances, the requirement may be waived for College, Engineering, or Nursing students with equivalent coursework in finance.

*The presumption in this class is that you have no prior real estate experience, and no pre-existing knowledge of the real estate industry is necessary to do well in this class.* If you have prior experience in the real estate industry, some topics might be familiar to you already.



**NYU Real Estate Capital Markets**

se Information:

kel, Assistant Adjunct Professor  
rva Realty Consultants, LLC  
vu.edu

number: Real Estate Capital Markets- Section 1/REBS1-UC-10

ation: Bobst LL139

re: Wednesdays 9:30am to 12:15pm- 9/5/18 to 12/19/18  
ppointment (I will try to get a room to hold office hours after c

on:  
uces students to the debt and equity real estate capital ma  
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, and investors. Also covered is real estate securitization,  
urities analysts and agents.

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comes:

se, students will be able to understand when to use all fac  
viders, with a particular focus on commercial real estate  
istory of securitized real estate debt and equity  
of CMBS and roles of the major participants  
structure, valuation and performance measurements of  
t trusts (REITs)  
formats

ate all classes as capital markets is a fluid subject; thus,  
n/capital markets crisis will be discussed and its result. Th  
Industry Trends – past and present; Overview of Real Esta  
Alternative Investments (CMBS, REITs, high yield, syn  
al and Ownership Structures; Rating Methodology; Bankrup  
s.



# TEXTBOOK CONTENTS

## CHAPTER 1 | INTRODUCTION: RISKS AND OPPORTUNITIES

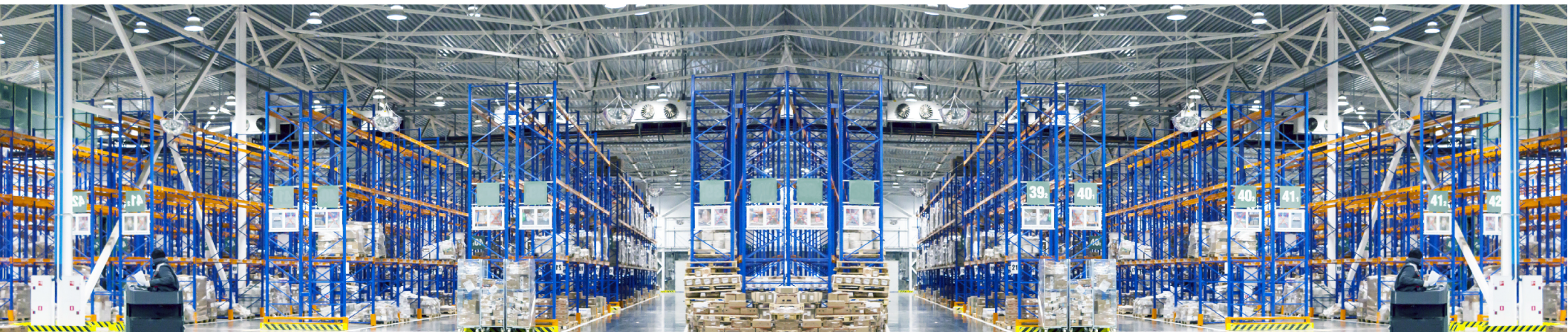
"Saying 'no' is as important as saying 'yes,' only tougher."

- Risks and Opportunities: That's What It's All About
- The Risks
- Operating Expenses
- Vacancy
- Natural Disaster
- Leasing
- Liquidity
- The Opportunities
- Operating Expenses
- Terminal Value
- Rental Growth
- Where You Should Focus Your Analysis
- Market Research
- Personal Decision
- Risk Parameterization

## CHAPTER 2 | WHAT IS REAL ESTATE AND WHO OWNS IT?

"Overnight success almost always took 10-25 years."

- Real Estate is About Space
- Land
- Retail Properties
- Warehouse and Industrial Properties
- Office Properties
- Multifamily
- Hotels
- Self-Storage
- Real Estate is Many Different Industries
- Gross Versus Net Leasable Square Footage
- Occupancy and Vacancy
- Stacking Plan
- Who Owns U.S. Commercial Real Estate?



# TEXTBOOK CONTENTS

## CHAPTER 3 | INTERNATIONAL REAL ESTATE INVESTING

"You don't have to go far from home to lose a lot of money."

- Great Potential is Only That
- The Capital Shortage Myth
- The Land of the Rising Sun
- A Risky World
- The Old Soviet Empire
- South of the Border
- The United States of Europe
- India
- China
- Brazil

## CHAPTER 4 | THE FUNDAMENTALS OF COMMERCIAL LEASES

"Analyze first; then leap."

- Economic Terms
- Rent
- Marketing Budget
- Utilities, Insurance, and Property Taxes
- HVAC – Heating, Ventilation, and Air Conditioning
- Security and Property Maintenance
- Tenant Improvements
- Free Rent
- Capital Costs
- Net Rent
- Non-Economic Terms
- Signage
- Going Dark
- Hours and Days of Operation
- Length of Lease
- Expansion Rights
- Usage Restrictions
- Sublet Rights
- Location Assignment
- Detailed Description of the Space
- Tenant Mix
- Parking
- Recourse and Security Deposit



# TEXTBOOK CONTENTS

## CHAPTER 5 | PROPERTY-LEVEL PRO FORMA ANALYSIS

"Run the numbers carefully but understand why these numbers will not occur."

- Lease-by-lease analysis
- Line Item Analysis
- Operating Income
- Gross Potential Rental Revenue
- Vacancy
- Percentage Rent/Overage
- Expense Reimbursements
- Ancillary Income
- Credit Loss/Bad Debt
- Operating Expenses
- Common Area Maintenance
- Property Taxes
- Insurance
- Utilities
- Property Management
- Net Operating Income
- Capital and Leasing Costs
- Tenant Improvements
- Leasing Commissions
- Capital Expenditures
- Unlevered Cash Flow
- Cap Ex Versus Depreciation
- Purchase Depreciation
- Depreciation of TIs and Cap Ex, Part 1
- Levered Cash Flow
- Loan Points
- Debt Service Expense
- Taxable Income
- Depreciation of TIs and Cap Ex, Part 2
- Amortization of Loan Points
- After-Tax Cash Flow to Equity
- Losses
- The Crazy 1980s





# TEXTBOOK CONTENTS

## CHAPTER 6 | FINANCIAL MODELING

"Believing a forecasted 26.24% IRR is silly; no one is 200 basis points accurate, much less 24 basis points accurate."

- What is Financial Modeling?
- Things Change for a Reason
- Leslie Court Apartments
- Base Rental Revenue
- Vacancy
- Ancillary Income
- Operating Expenses, Replacement Reserves and Cap Ex
- TIs and Leasing Commissions
- Sale Value
- Gross Sale Price, Sale Income Tax and Net Sales Proceeds

## CHAPTER 7 | REAL ESTATE DUE DILIGENCE

"It's often a foregone conclusion left unchecked that comes back to bite you."

- What is Due Diligence?
- Wrong but Useful
- Little Mistakes + Big Numbers = Big Problems
- Title, Survey, Environmental, and Legal
- Revenue, Operating Expenses, and Capital Expenditures
- Capital Expenditure Needs
- Loan Documents
- Neighborhood and Market

## CHAPTER 8 | ANALYZING METROPOLITAN LONG-TERM GROWTH PATTERNS

"Get a good pair of sunglasses and some sunblock if you want to build for the Boomers."

- A Nation of Constant Positive Population Growth
- Metropolitan County Population Growth
- 2030 Forecast
- Local Population Growth Insights
- Past Growth
- Economic Diversity
- Immigrant Presence
- Biology and Age Distribution
- Weather
- Vintage of Existing Housing Stock
- Coastal Adjacency and Zoning
- Educational Achievement
- Local Income and Sales Tax Rates
- Skilled Labor Force
- Population Density
- Regional Growth Variability
- Methodology



**REAL ESTATE  
FINANCE AND  
INVESTMENTS**  
RISKS AND OPPORTUNITIES

# TEXTBOOK CONTENTS

## CHAPTER 9 | THE USE AND SELECTION OF CAP RATES

"What is the bet?' is the critical question."

- Basic Cap Rate Valuation
- Not Everyone Agrees
- Replacement Cost
- Gordon Model: Simple Cap Rate Estimation
- Let Your Common Sense Prevail
- Market Change
- Responding to the Market
- A Look at the Past
- Contractual Information

## CHAPTER 10 | DEVELOPMENT PRO FORMA ANALYSIS

"Be prepared to adjust if you want to succeed."

- Development
- The Two Business Phases of Development
- Phase I: The Negative Cash Flow Business
- Phase II: The Positive Cash Flow Business
- Certainty of Cash Flows
- Revenue Risk Mitigation
- Pre-Leasing
- Pre-Sales
- Delay Risk
- Opportunity
- Options and Development
- The Develop Versus Buy Analysis Framework



# TEXTBOOK CONTENTS

## CHAPTER 11 | DEVELOPMENT FEASIBILITY ANALYSIS

"In the battle between fear and greed, greed wins about 80% of the time."

- Development Feasibility Assessment
- Simple Calculations
- Solve Backwards for Replacement Rent
- A Common Mistake
- Land Cost
- An Example: Anoop Court
- Hard Costs
- Forecasting Hard Costs
- Soft Costs
- Timing
- Design

## CHAPTER 12 | REAL ESTATE COMPANY ANALYSIS

"People are the ultimate assets."

- Differences Between Property- and Company-Level Cash Flows
- Company-Level Net Income Projection
- Existing Properties Revenue Growth
- Acquisitions and Developments and Rates of Return
- Dispositions During the Period
- Fees from Noncombined Affiliates
- EBITDA
- Debt Service Expense
- Amortization and Depreciation and Impairments
- Minority Interest
- Value of a Company
- Funds from Operations
- Adjusted Funds from Operations
- DCF Valuation
- Cap Rate Valuation
- Net Asset Value



# TEXTBOOK CONTENTS

## CHAPTER 13 | DISTRESSED REAL ESTATE LOAN AND BANKRUPTCY BASICS

"Have both a professional and private life to balance the ups and downs of each."

- Distressed Loan Resolution Options
- Loan Restructuring
- Dissolution Options
- Bankruptcy
- Borrowers' Rights
- Bank of America Versus La Salle Street Partners
- Section 11.11B

## CHAPTER 14 | SHOULD YOU BORROW?

"Embrace the 11th Commandment: thou shalt not take yourself so seriously."

- Sources of Debt Capital
- The Four Reasons to Use Debt in a Transaction
- Do Not Have Enough Money
- Diversification
- Interest Tax Shield
- Enhanced Equity Returns
- Capital Appreciation
- Cash Flow Return
- Positive Leverage
- Negative Leverage
- Japan and Positive Leverage
- How Much Should You Borrow?
- Mezzanine Finance



# TEXTBOOK CONTENTS

## CHAPTER 15 | THE USE OF DEBT AND MORTGAGES

"Stick to what you know but keep learning in order to expand what you know."

- Interest Types and Short-Term Versus Long-Term Debt
- Interest Calculation Bases
- Key Loan Sizing Ratios
- Loan-to-Value and Loan-to-Cost
- Debt Yield
- Interest Coverage Ratio
- Debt Service Coverage Ratio
- Fixed Charges Ratio
- Other Key Loan Terms
- Common Negative Covenants
- Prepayment Penalty
- Distributions
- Operating Restrictions
- Additional Debt
- Common Positive Covenants
- Deposits
- EBIT, Cash Flow, or NOI
- Leases
- Loan Terms
- Secured
- Recourse
- Guarantees
- Receivables
- Draws
- Amortization
- Insurance
- Sweep
- Loan Points
- The Refi Decision
- Repayment Penalties
- Refinancing in a Down Market



# TEXTBOOK CONTENTS

## CHAPTER 16 | SOURCES OF LONG- AND SHORT-TERM DEBT

"The machine is rarely the problem; the people operating the machine are usually the problem."

- Capital Evolution
- Follow the Money
- How is a CMBS Issuance Created?
- How Do You Sell?
- Profit from the CMBS Packaging
- It's about Specialization
- Creating Tranches
- Default Dynamics
- The Evolution of the U.S. CMBS Market

## CHAPTER 17 | GROUND LEASES AS A SOURCE OF FINANCE

"Judgment is far more important than intellect."

- Valuation of an Operating Asset Subject to a Ground Lease
- Method #1: Ground Lease Payment DCF
- Method #2: Ground Lease Payment Capitalization
- Method #3: Building Net Operating Income DCF
- Method #4: Building NOI Capitalization
- Financing of a Property Subject to a Ground Lease





# TEXTBOOK CONTENTS

## CHAPTER 18 | REAL ESTATE OWNER EXIT STRATEGIES

"Get rich slowly; it lasts longer."

- Why Exit?
- How to Exit
- Disposition
- Refinancing
- Like-Kind Exchange (1031 Exchange)
- Exchange for Public Company Shares
- Go Public

## CHAPTER 19 | REAL ESTATE PRIVATE EQUITY FUNDS

"Find out who you are and stay true to your values."

- Evolution
- A Bit of History
- Who Are They?
- Investment Banks
- Investment Houses
- Dedicated Real Estate Players
- Return Waterfall
- Investor Protections

## CHAPTER 20 | INVESTMENT RETURN PROFILES

"You don't need to be 100% right when you buy if you are invested for the long haul."

- Study #1: Investment Vehicle and Limited Partner Performance
- Qualitative Differences
- The Set-Up
- Market Scenario Comparisons
- The Impact of Sponsor Promotes
- Sensitivity Analyses
- Study #1 Conclusion
- Study #2: Property Risk and Opportunity



**REAL ESTATE  
FINANCE AND  
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RISKS AND OPPORTUNITIES

# TEXTBOOK CONTENTS

## CHAPTER 21 | REITS AND LIQUID REAL ESTATE

"It is easy to raise money if you're not the one doing it."

- History of REITs
- REIT IPO Basics
- REIT Income Tax Advantages and Operating Restrictions
- REIT Versus Publicly Traded Real Estate Company
- Public Versus Private and Large Versus Small
- Taxable REIT Subsidiary
- UPREIT Structure
- Return on Capital Versus Return of Capital

## CHAPTER 22 | THE FORCES CHANGING THE REAL ESTATE INDUSTRY FOREVER

"Those who know how and when to adapt have the best chance of thriving."

- Real Estate is a Capital-Intensive Business
- The "Forces" Which Changed Real Estate
- Force #1: Shifting of Control of Capital
- Force #2: Consolidation of Capital
- Force #3: Prevailing of Basic Economics
- The Keys to Successful Long-Term Real Estate Ownership
- Managerial Vision and Ability to Sell It
- Low Capital Costs Relative to Competitors
- Lower Operating Costs Relative to Competitors
- Lower Overhead Costs Than Competitors
- Enhanced Revenues Relative to Competitors
- Successful Risk Management
- Operating Efficiency
- Proof of the "Forces" at Work
- Growth in Company Size, Liquidity, and Prominence
- No Reversion to Excessive Leverage
- Growth in Transparency
- Is Bigger Better?



# TEXTBOOK CONTENTS

## CHAPTER 23 | CORPORATE REAL ESTATE DECISION MAKING

"Why ever do less than the best you can?"

- What Type of Space Do I Need?
- Where Should I Locate?
- How Much Space Do I Need?
- Should I Own or Rent?
- Faulty Own Versus Rent Model
- What Is The Problem?
- Corrected Own Versus Rent Model
- One Size Does Not Fit All
- Propensity for Corporate Ownership of Real Estate
- Synthetic Leases
- For How Long Should I Lease?
- The Corporation of You

## CHAPTER 24 | SOME OBSERVATIONS ON REAL ESTATE ENTREPRENEURSHIP

"When asked if real estate entrepreneurs are born or made, my answer is always Yes."

- Are There Entrepreneurial Traits?
- What Makes Sammy Run?
- Better, Faster, Cheaper
- What Are the Risks?
- Raising Capital





# TEXTBOOK CONTENTS

## CHAPTER 25 | REAL ESTATE CYCLES

"Don't lose your cool about things you cannot possibly control."

- What Are Cycles?
- Contractual Obligations and Market Frictions
- Demand Adjustments
- Structural Office Demand Headwinds?
- Permits and Regulations
- Capital Cycle
- What Led to the 2008-2009 Financial Crisis

## CHAPTER 26 | THERE ARE A LOT OF RIGHT WAYS TO DO IT

"Do the right thing simply because it is the right thing to do."

- Ethics in Real Estate?
- Right and Wrong
- Bribes
- But Everybody is Doing It!
- Perverse Incentives
- Favoritism
- Do Not Expect Thanks
- Conflict of Interest



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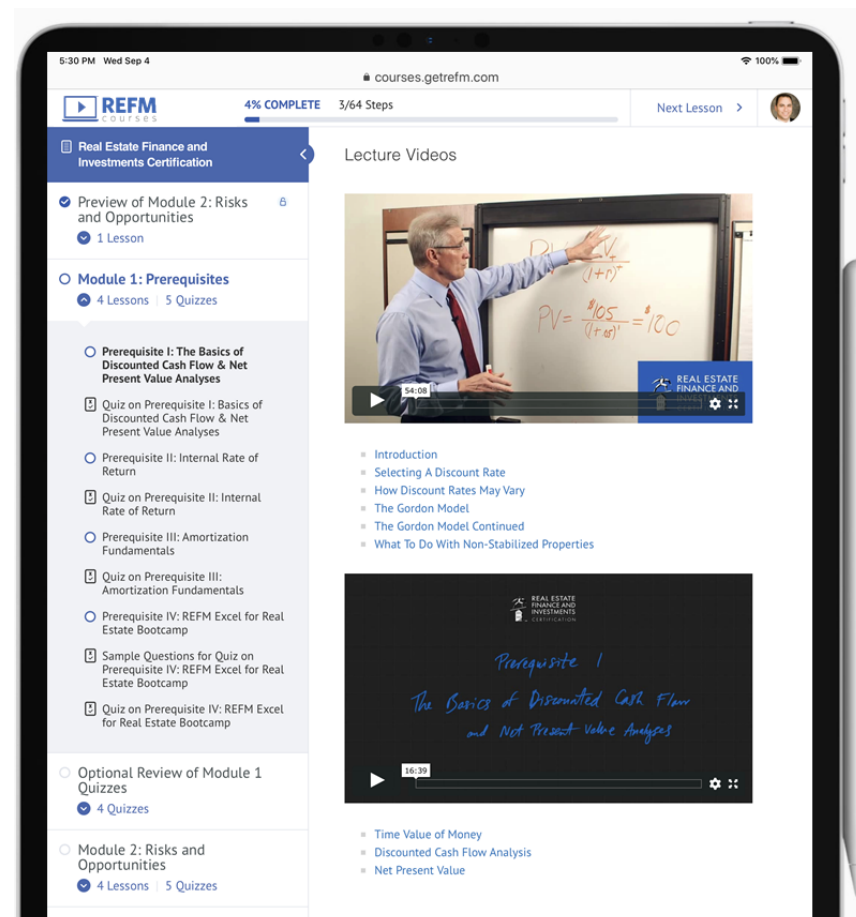


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## MEET THE AUTHOR: **PETER LINNEMAN, PHD**



Peter Linneman, PhD  
CEO of  
Linneman Associates

For over 40 years, Dr. Peter Linneman's unique blend of scholarly rigor and practical business insight has won him accolades from around the world, including PREA's prestigious Graaskamp Award for Real Estate Research, Wharton's Zell-Lurie Real Estate Center's Lifetime Achievement Award, Realty Stock Magazine's Special Achievement Award, being named "One of the 25 Most Influential People in Real Estate" by Realtor Magazine and inclusion in The New York Observer's "100 Most Powerful People in New York Real Estate".

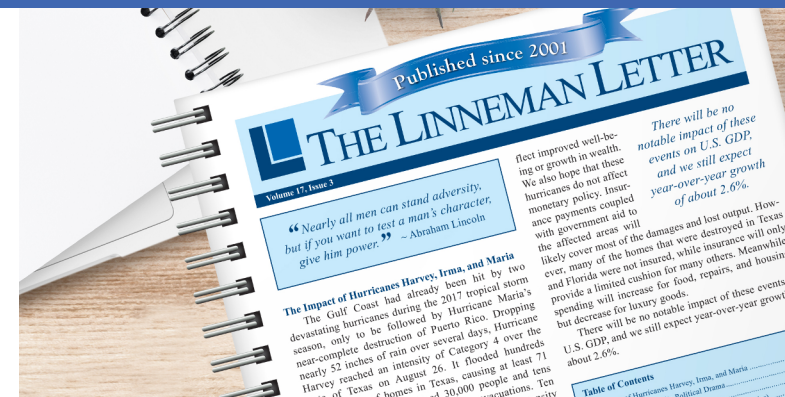
After receiving both his Masters and Doctorate in Economics under the tutelage of Nobel Prize winners Milton Friedman, Gary Becker, George Stigler, Ted Schultz and Jim Heckman, Peter had a distinguished academic career at both The University of Chicago and the Wharton School of Business at the University of Pennsylvania. For 35 years, he was a leading member of Wharton's faculty, serving as the Albert Sussman Professor of

Real Estate, Finance and Public Policy as well as the Founding Chairman of the Real Estate Department and Director of the prestigious Zell-Lurie Real Estate Center. During this time, he was co-editor of The Wharton Real Estate Review. In addition, he published over 100 scholarly articles, four editions of the acclaimed book Real Estate Finance and Investments: Risks and Opportunities, and the widely read Linneman Letter quarterly report.

Peter's long and ongoing business career is highlighted by his roles as Founding Principal of Linneman Associates, a leading real estate advisory firm; CEO of American Land Fund; and CEO of KL Realty. For more than 35 years, he has advised leading corporations and served on over 20 public and private boards, including serving as Chairman of Rockefeller Center Properties, where he led the successful restructuring and sale of Rockefeller Center in the mid-1990s.



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ASSOCIATES**





## MEET THE AUTHOR: **BRUCE KIRSCH, REFAI®**



Bruce Kirsch, REFAI®  
CEO of Real Estate  
Financial Modeling

As the founder of Real Estate Financial Modeling (REFM), Bruce Kirsch has trained thousands of students and professionals around the world in Excel-based projection analysis. In addition, REFM's self-study products, Excel-based templates and its Valuate® property valuation and investment analysis software are used by more than 250,000 professionals. Mr. Kirsch's firm has assisted with modeling for the raising of billions of dollars of equity and debt for individual property acquisitions and developments, as well as for major mixed-use projects and private equity funds. Mr. Kirsch has also maintained a blog on real estate financial modeling, Model for Success, authoring more than 500 posts.

Mr. Kirsch began his real estate career at CB Richard Ellis, where he marketed highrise New York City office buildings for re-development in the Midtown Manhattan Investment Properties Institutional Group. After CBRE, Mr. Kirsch was recruited to lead acquisitions at Metropolis Development Company, and later joined The Clarett Group, a programmatic development partner of Prudential.

While at The Clarett Group, Mr. Kirsch was responsible for making development site recommendations for office, condominium and multi-family properties in the greater Washington, D.C. metropolitan area. In addition, Mr. Kirsch had significant day-to-day project management responsibilities for the entitlement, financing and marketing of the company's existing D.C.-area development portfolio.

Mr. Kirsch holds an MBA in Real Estate from The Wharton School of the University of Pennsylvania, where he was awarded the Benjamin Franklin Kahn/Washington Real Estate Investment Trust Award for academic excellence. Prior to Wharton, Mr. Kirsch performed quantitative equity research on the technology sector at The Capital Group Companies. Mr. Kirsch served as an Adjunct Faculty member in real estate finance at Georgetown University School of Continuing Studies. Mr. Kirsch graduated with a BA in Communication from Stanford University.



Past Adjunct Faculty  
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Georgetown University



MBA in Real Estate  
The Wharton School



BA in Communication  
Stanford University





# REAL ESTATE FINANCE AND INVESTMENTS

RISKS AND OPPORTUNITIES

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