THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

# BUSFIN 4410 – Real-Estate Finance
# Spring Semester, 2018-2019
# Professor Itzhak (Zahi) Ben-David

**Class Schedule**

Section 1: Tuesday and Thursday 2:20pm – 3:40pm (Schoenbaum Hall 215)
Section 2: Tuesday and Thursday 3:55pm – 5:15pm (Schoenbaum Hall 215)

**Instructor**

Prof. Itzhak Ben-David
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Teaching assistant:     Mark Johnson johnson.7095@osu.edu

**Course Description**

This course covers advanced topics in real-estate finance. We will cover three topics in depth. First, we will examine several valuation techniques used in practice and explore their underlying assumptions. These methods include cap rates, cash flow discounting, simulation techniques, and real options. We will discuss financing of real estate properties through debt and equity. Second, we will discuss how real-estate assets are integrated in capital markets through Real-Estate Investment Trusts (REITs), private equity, and securitization vehicles. Third, we will discuss the role of the real-estate market in the macro economy, and in particular in the financial crisis of 2008.

**Prerequisites**

The only prerequisite is BUSFIN 3400 (Intro to Real Estate) or an equivalent (upon the instructor's approval). Knowledge in finance (e.g., corporate finance) is preferable. This is a quantitative class and you will need to have basic knowledge of microeconomics, statistics, and math. You will need a calculator that has a $x^y$ function. A financial calculator is not required. In addition, you will need a good command of Microsoft Excel.

**Course Objectives**

At the end of the course, students are expected to:
   (1) Master the assumptions, principles, and methodologies of valuation and financing assets in general and real estate assets in particular
   (2) Demonstrate competency in integrating tools and methods in order to analyze *new transaction-level problems* related to real estate properties and real estate financing
   (3) Demonstrate competency in analyzing *new economic problems* related to real estate properties, real estate asset class and financial markets

**Attendance**

Since the class is based on discussions, attendance is expected throughout the class from all students. Signup sheets will be circulated in all classes.
Attendance in each guest speaker and group presentations classes earns 3 points (9 x 3 = 27 points). Attendance in each class earns 1 point (17 x 1 = 17).
44 points equal to a full attendance grade.

**Evaluation**

Grades in this course will be based on the following components:
   1. Midterm exam:                   15%
   2. REITs group project:            10%
   3. Interview group project:        25%
   4. Proposal for group project:      5%
   5. Final group project:            35%
   6. Attendance:                     10%

Course grade scale matches the OSU standard grade scheme:

| Score | Letter grade |
|---|---|
| 93-100 | A |
| 90-92.9 | A- |
| 87-89.9 | B+ |
| 83-86.9 | B |
| 80-82.9 | B- |
| 77-79.9 | C+ |
| 73-76.9 | C |
| 70-72.9 | C- |
| 67-69.9 | D+ |
| 60-66.9 | D |
| Below 60 | E |

- Grade letters of C and higher reflect mastery of the material.
- Please note that there will not be any make-up exams except as required by university policy. If illness or an emergency should force you to miss an exam, please contact me **prior to** the exam date/time.

**Electronic Devices Policy**

**The use of electronic devices is prohibited in the classroom. If you wish to take notes on an electronic device (not recommended), you will need to send me a statement committing for no-personal and need my approval.** All devices should be silenced and cell phones should be put away; I recommend that you power them down. If there is a serious need to leave your cell phone on, such as a family emergency, please put it on silent mode and let me know in advance. If you leave the classroom to take a call, I will understand why.

**Regrading Policy**

All regrade requests must be made **within one week** of the day the exams or cases are returned. Any exam submitted for regrading of a question is subject to a complete regrade. As a result, the regraded score may increase, stay the same, or decrease. Note that I will not consider any regrade request after the one week deadline has passed.

**Academic Integrity**

You have affirmed to adhere to the following honor statement:

*As a member of the Fisher College of Business community, I am personally committed to the highest standards of ethical behavior. Honesty and integrity are the foundation from which I will measure my actions. I will hold myself accountable to adhere to these standards. As a leader in the community and business environment, I will pledge to live by these principles and celebrate those who share these ideals.*

In addition, the University's *Code of Academic Integrity* is designed to ensure that the principles of academic honesty and integrity are upheld. All students are expected to adhere to this Code. Please visit the following website for more information on the University's Code of Academic Integrity and possible sanctions: http://oaa.osu.edu/procedures. In accordance with University Faculty Rule 3333-5-487, all instances of academic misconduct will be reported to the Committee on Academic Misconduct which recommends appropriate sanctions to the Office of Academic Affairs. There will be no exception to this rule.

**Topics**

## Direct Holdings of Real Estate

1. Equity-financed properties
   a. Annuities
   b. Perpetuities
   c. Gordon model
   d. Risk and return: CAPM
   e. Alternative valuation methods: replacement cost, comparable assets

2. Economics of mortgages
   a. Amortization schedules
   b. Types of mortgages: fixed and variable (adjustable, floating) rates
   c. Types of mortgages: interest only, negative amortization, option ARM, prepayment penalty
   d. Advantages and risks of leverage

3. Equity- and debt-financed properties
   a. Cost of capital
   b. Valuing properties with debt
   c. Debt and mezzanine
   d. Rent vs own
   e. Corporate real estate
   f. Moral hazard and adverse selection

4. Private equity and partnerships
   a. Contractual structure
   b. Valuing properties with debt, equity general partner, equity general partners

5. Real estate and behavioral finance

## Real Estate and Financial Markets

6. Real estate investment trusts (REITs)
   a. REITs history, tax treatment, and market analysis
   b. REITs and market sentiment

7. Securitization
   a. Mechanism of securitization

8. Institutional investors
   a. Goals of institutional investors
   b. How do institutional investors invest in real estate

## Real Estate Cycles, Real Estate Crises

9. Financial crisis
    a. Incentives in the real estate market
    b. What caused the crisis? Theories of real estate cycles

## Speakers

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| Development and deal making: | Frank Kass (Continental) |
| Corporate real estate: | Chuck Digiovanna and Lauren Kirk (Macy's) |
| Real estate and banking: | Tayfun Tuzun (CFO of Fifth Third Bank) |
| REITs: | Seamus Brennan (Washington Prime REIT) |
| Institutional investment: | Ed Schwartz (ORG Portfolio Management) |
| Financial crisis: | Robert Schottenstein (M/I Homes) |

| Tentative Course Calendar | | | | |
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| **Class Number** | **Date** | **Topic & Readings** | | **Assignment Due** |
| 1 | 1/8 | **Introduction + Cap rate**<br>Big question: How does industry practice (cap rate) relate to the fundamentals of finance?<br>Classroom Discussion:<br>• Introduction and class expectations<br>• Valuation building blocks: Annuities, perpetuities, DCF, Gordon model<br>• Sources of uncertainty in estimating NOI<br><br>Objectives:<br>• Valuation in practice: value = NOI/cap rate<br>• Review the building blocks of valuation: Annuities, perpetuities, DCF, Gordon model<br>• The relation between cap rate relates to the Gordon Model<br>• Growth assumptions embedded in cap rate valuation<br>• Value is an expected value, and the sources of uncertainty | | |
| 2 | 1/10 | **Discounting rate**<br>Big question: How does cap rate account for risk?<br>Classroom Discussion:<br>• The relation between cap rate and risk<br>• Valuation building blocks: Risk and return, Portfolio Theory, Capital Asset Pricing Model (CAPM)<br><br>Objectives:<br>• Purpose of the discounting rate<br>• Review fundamentals of investment in risky assets and risk-return relationship<br>• Cap rate reflects both risk and growth components<br>• Issues with implementing CAPM in real estate: lack of diversification, short selling constraints, transaction costs | | |
| 3 | 1/15 | **Valuation in the real world**<br>Big question: How cap rate is actually calculated and what are the pitfalls in implementing cap rate?<br>Classroom Discussion:<br>• What are the components of cap rate? NOI, value<br>• Valuation: Cash flow proforma<br>• Solve valuation problems on the board<br>• Behavioral biases in estimating cash flows<br><br>Objectives:<br>• Become familiar with the components of NOI and the logic behind them<br>• Practitioners account for greater cash flow uncertainty through higher discount rate<br>• Behavioral biases in estimating cash flows: optimism, overconfidence, biases in estimating probabilities<br>• Be able to construct proforma | | |

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| 4 | 1/17 | **Valuation exercises**<br>Big question: What are other valuation methods that people use, and how are they all related?<br>Classroom Discussion:<br>• Other valuation methods: replacement cost, comps<br>• Valuation: Cash flow proforma<br>• Solve valuation problems on the board<br><br>Objectives:<br>• Analyze the uses of the different valuation methods<br>• Understand the underlying assumptions in the different valuation methods<br>• Be able to solve valuation problems | |
| 5 | 1/22 | **Mortgage mechanics I**<br>Big question: Understanding the economics of mortgages. How calculate mortgage payments?<br>Classroom Discussion:<br>• Mortgages: Amortization schedule<br>• Mortgages: Fixed and adjustable rates, interest only, negative amortization, option ARM, prepayment penalty<br><br>Objectives:<br>• Review the fundamentals of mortgage calculations and amortization tables<br>• Understand that mortgages are annuities<br>• Get familiar with the different types of mortgage and mortgage features<br>• Be able to perform simple mortgage calculations and produce amortization tables | |
| 6 | 1/24 | **Guest Lecturer: "Deal structuring"**<br>• Frank Kass (CEO at Continental Real Estate)<br><br>Objectives:<br>• Understand how *entrepreneurs* think about valuation and borrowing | |
| 7 | 1/29 | **Mortgage mechanics II**<br>Big question: Understanding the economics of mortgages even better.<br>Classroom Discussion:<br>• Solve complex mortgage problems<br>• Advantages and risks of debt leverage<br><br>Objectives:<br>• Review amortization tables<br>• Be able to perform complex mortgage problems<br>• Be able to discuss the advantages and risks of debt leverage<br>• Understand that buying an asset using debt is the same as buying on credit and paying over time<br>• Behavioral biases: optimism, overconfidence | |

| 8 | 1/31 | **Making money in real estate**<br>Big question: Money time. So how do people really make money in real estate?<br>Classroom Discussion:<br>• How to generate value in real estate?<br>• Discuss American Dream examples<br><br>Objectives:<br>• Understand that one needs to identify sources of value creation in transactions<br>• Understand why entrepreneurs believe that debt is cheap<br><br>Be able to discuss General Equilibrium considerations | |
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| 9 | 2/5 | **Guest Lecturer: "Real Estate from a Banker's perspective"**<br>• Tayfun Tuzun (CFO of Fifth Third Bank)<br><br>Objectives:<br>• Understand how *bankers* think about valuation and borrowing | |
| 10 | 2/7 | **Leasing vs. owning**<br>Big question: Is it worthwhile to buy or lease/rent? What are the economics behind this decision?<br>Classroom Discussion:<br>• Leasing vs. owning: Residential and commercial<br>• Solve midterm<br><br>Objectives:<br>• Synthesize cash flow and value considerations to determine whether to buy vs lease<br>• Understand behavioral considerations in buying versus leasing<br>• Understand real option considerations in buying versus leasing<br>• Be able to implement analysis<br>• Understand General Equilibrium outcome in buy vs leasing (i.e., how the market organizes itself) | |
| 11 | 2/12 | **Raising equity to invest**<br>Big question: What do entrepreneurs do when they don't have enough capital?<br>Classroom Discussion:<br>• Cost of capital<br>• Sources of funding<br>• Common contracts between entrepreneurs and investors<br>• How is done in the industry: how sources of funds determine the price?<br><br>Objectives:<br>• Understand that the costs of the different sources of capital sum to the cost of capital, which is a component of cap rate<br>• Spell out the terms of the common contract for raising capital by entrepreneurs<br>• Understand that cost of capital and sources of funds are important determinants in determining prices of real estate | |

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| 12 | 2/14 | **Academic vs. Industry**<br>Big question: Why are the industry methods so different from what we teach in academia?<br>Classroom Discussion:<br>• Why methods that are taught in academia are not used in practice?<br>• Hurdle rate, payback period<br>• Industry looks at first moment only<br><br>Objectives:<br>• Understand the value of understanding the fundamentals of valuation<br>• Understand why the industry uses different methods than what is taught in the college<br>• Understand the important factors for why simple and intuitive methods stick: out-of-sample performance, ease of communication<br>• Understand how hurdle rates, payback periods arise and survive | |
| 13 | 2/19 | **Modelling uncertainty: Monte Carlo Simulations**<br>Big question: How do we model uncertainty?<br>Classroom Discussion:<br>• Modelling uncertainty<br><br>Objectives:<br>• Understand the methods to model uncertainty<br>• Be able to implement uncertainty modelling | |
| 14 | 2/21 | **Modelling uncertainty: Real options**<br>Big question: How should we think about modelling optionality in real estate?<br>Classroom Discussion:<br>• What are real options?<br>• Discuss examples of real options<br>• Discuss modelling real options<br><br>Objectives:<br>• Be able to identify options in business situations<br>• Understand the variables that determine the value of options | |
| | 2/26 | **Real Estate Investment Trusts (REITs) and Open-Ended Real Estate Funds**<br>Big question: How can real estate be traded on the stock market?<br>Classroom Discussion:<br>• What are closed-end funds?<br>• What are open-ended funds?<br>• The mechanics of REITs<br><br>Objectives:<br>• Understand what are closed-end funds<br>• Understand what is a discount and premium<br>• Understand the timing of fund issuances<br>• Understand why real estate funds appear to generate a lot of alpha and little beta | |

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| 15 | 2/28 | **Guest Lecturer: "Corporate Real Estate"**<br>• Chuck Digiovanna (Vice President of Real Estate, Macy's Inc.)<br>• Lauren Kirk (Senior Manager, Real Estate, Macy's Inc.)<br><br>Objectives:<br>• Understand how corporations make decisions regarding buy/rent decisions<br>• Understand Macy's could benefit (or not) from breaking up the firm<br>• Recognize the role of activist shareholders | |
| 16 | 3/5 | **Guest Lecturer: "Analyzing the performance of REITs"**<br>• Seamus Brennan (Washington Prime REIT, Director, Strategic Analysis, Capital Markets)<br><br>Objectives:<br>• Discuss sources of value that REITs generate<br>• Evaluate the information content of discount/premium in valuing REITs<br>• Understand how REITs are being priced in the market | REITs assignment due |
| 17 | 3/7 | **Is real estate a good investment?**<br>Big question: Is real estate the way to build wealth?<br>Classroom Discussion:<br>• Is real estate a good investment?<br>• When to buy and sell?<br><br>Objectives:<br>• Discuss predictability; systematic vs idiosyncratic risk<br>• Understand sources of value in flipping, hidden expenses, leveraging up, development, long run investments<br>• Explain what present bias is, and that mortgage mechanics forces people to save<br>• Understand that for every buyer there is a seller. Real estate cannot be "good" investment for everyone<br>• Understand behavioral biases: optimism (Miller, 1977), disposition effect, endowment effect | Proposals for final project due |
| | 3/12 | **SPRING BREAK** | |
| | 3/14 | **SPRING BREAK** | |
| 18 | 3/19 | **CLASS CANCELLED: Interviews preps** | |
| 19 | 3/21 | **MIDTERM** | |
| 20 | 3/26 | **Securitization**<br>Big question: How do securitizations increase the supply of capital in the economy?<br>Classroom Discussion:<br>• The mechanics of securitization<br><br>Objectives:<br>• Understand how securitizations work<br>• Understand how securitizations increase the supply of capital<br>• Understand how securitizations increase the incentives for moral hazard | Interview report due |

| 21 | 3/28 | **Guest Lecturer: "The Financial Crisis of 2008"**<br>• Combined Section: Bob Schottenstein (CEO, M/I Homes)<br>    (Time to be announced)<br>    Gerlach Hall 275, 2070 Neil Ave, Columbus, OH 43210<br>• Video:<br>    https://mediasite.osu.edu/Mediasite/Play/c41d39875e4a4c5dabd99f490a6a34d71d<br><br>Objectives:<br>• Contextualize the real estate boom (2000-2006) in the organization of the U.S. residential mortgage market | |
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| 22 | 4/2 | **Guest Lecturer: "Institutional investors"**<br>• Ed Schwartz (CEO, ORG Portfolio Management)<br><br>Objectives:<br>• Understand the role of institutional investors in the commercial real estate market space<br>• Understand how institutional investors decide on which properties to buy and dispose<br>• Understand the sources of financing of institutional investors<br>• Understand the behavior of institutional investors around the real estate bubble of 2000-2006 | |
| 23 | 4/4 | **The boom and bust of the 2000s**<br>Big question: What were the factors that created the biggest recession in our lifetime?<br>Classroom Discussion:<br>• Factors that created the boom: supply of credit, expectations<br><br>Objectives:<br>• Analyze the main narratives for the real estate boom (2000-2006) and subsequent financial crisis (2007-2009)<br>• Explain why the dot.com bust created a modest recession relative to the 2008 recession | |
| 24 | 4/9 | **CLASS CANCELLED: Presentations prep** | |
| 25 | 4/11 | **Student Presentations I**<br>• 4 groups | |
| 26 | 4/16 | **Student Presentations II**<br>• 4 groups | |
| 27 | 4/18 | **Student Presentations III**<br>• 4 groups | Final project due |