11.432J/15.427J: Real Estate Capital Markets
Spring 2018, MIT Center for Real Estate
Prerequisites: Either 11.431/15.426 or 15.401, or Permission of Instructor
Lectures 2:30-4:00 T,H; Recitation 5:30-7:00 T; Room 9-354.

Primary Instructor: David Geltner (Office 9-325, Center for Real Estate, dgeltner@mit.edu)
Office hours: Before/After class Tue, Thur or by appointment.
Associate Instructors: Dan Adkinson, W. Tod McGrath, Walter Torous
Teaching Assistant: Shaurya Batra (Shaurya@mit.edu)

Course description & objectives: Capital markets are where and how capital assets are traded. Capital assets are long-lived claims on
cash flows. Capital markets are therefore where and how asset prices and expected returns are determined that affect real estate
investment. Capital markets exhibit, and determine, the flow of money and the availability of financial capital for real estate projects.
This course is an introduction and survey of the capital markets as they pertain particularly to investment in real estate development
projects. This course takes a “macro” perspective. Its primary focus is on aggregates of many properties: portfolios, firms, markets,
industries. This is a complement to the “micro” perspective taken in the fall semester in the 11.431/15.426 Real Estate Investments
course, which focuses on individual properties and deals.

Though the subject matter of this course is at the macro or aggregate level, the focus of MIT’s MSRED program is on development,
which consists of individual micro-level projects. Accordingly, this course is designed to relate the macro-level capital markets topics to
the micro-level “bricks and mortar” of the real estate development project, in a direct and concrete manner. We do this by organizing
the course around the “capital stack” of an archetypical RED project. The “capital stack” refers to the different sources of money to
finance the project, in its development phase and ultimately in its stabilized asset phase. These sources of money come from, and are
governed by, the capital markets. The archetypical project we use is a hypothetical, called “Riverfront Centre”, and it is also used as the
on-going development venture in Professor McGrath’s Real Estate Ventures courses (11.351/352). Students taking this course and the
Ventures course(s) will view this project from both the financial economic perspective (this course) and the business/legal perspective
(Ventures). The elements of the “capital stack” include (in the order the developer would likely need and arrange them), first in the
RED phase: (i) External (“Institutional”) Equity, (ii) Construction Loan (1st lien), and (iii) Intermediate Financing (Mezzanine Debt &
Preferred Equity); and then in the stabilized (“take-out”) phase: (iv) Permanent Equity, and (v) Permanent Debt. We will use these
“slices” of the capital stack to link to (and from) key elements, theories, principles and tools of the understanding and practice of the
capital markets as applied to real estate, including: (1) Portfolio Theory, (2) Debt Market Economics, and (3) Securitization in the form
of REITs (equity) and CMBS (debt). (The calendar does not allow us to go into much depth on CMBS, however, Professor Torous’
course, Securitization of Mortgages, 11.353 is available for more depth.)

Students can take 11.432/15.427 without having taken 11.431/15.426 provided they have taken 15.401 or 11.455. Such students may
have to do some review of the real estate terminology presented in the earlier course if they are not already familiar with basic real
estate finance and investment terminology (see the “Key Terms” listed in the backs especially of Chs.1, 9, 11, 14, 16-18 of the text).

Sloan and other students taking this course as an elective should understand that this is a required course in MIT’s MSRED program
and, as such, is taught as a “core” subject. That is, a large body of material is covered in a short amount of time, aimed at students who
do not necessarily have much finance background. This precludes primary reliance on the case method as is done for example in the
Harvard Business School and many Sloan courses. However, we will focus on a few cases generally in greater analytical depth than is
done in the HBS. This is a rigorous, analytical course that involves intensive quantitative analysis (particularly using Excel
spreadsheets). This course involves considerable workload, and students whose time is tight should consider listener registration.

Administration/Recitations: In addition to twice-weekly lectures, there will generally be weekly recitation classes. Because of the
extremely tight constraints the calendar puts on this course, recitation periods may be used to introduce new material that could be
graded. In this sense, recitation attendance is as “required” as the class lecture periods. However, we will not formally take attendance
in either class or recitation.

Extensive use of the Stellar Discussion Forum utility is an important part of the learning process and will count in the grade.

Grading:
• There will be one in-class quiz near the end of the course (3/15), totaling 45% of the total course grade. It will cover the first
10 classes (through March 13).
• There will be three cases on which written homework assignments and in-class (or recitation) discussions will be based: one
on basic project economics and portfolio theory (the institutional equity slice of the capital stack), another on intermediate
financing, and the third on REITs. (Our brief coverage of CMBS will not allow an assignment on this topic, though it will be covered on the quiz.) These written assignments (which may be Excel workbooks) will be graded on a check/check-minus/incomplete basis (primarily based on apparent effort) and in total will count for 30% of the course grade. Students may work in groups of up to 4.

- The final 25% of the course grade will reflect in-class participation and contributions in the course Stellar Discussion Forum. At a minimum, each student is expected to post one question or “topic” to the forum.

**Special Optional Session:** On Friday March 23 students in this class are invited to attend the Commercial Mortgage Loan Underwriting Program that is part of the 11.352 RE Ventures II course. This program is hosted by MIT at the law offices of Nutter McClennen & Fish in the Seaport, where MIT students will team up with Columbia and NYU students to determine—and then present to industry professionals—the best business terms they can offer to finance the development of Riverfront Centre from the perspective of a commercial bank, a life insurance company, and a debt fund.

**Required Text:** D.Geltner, N.Miller, J.Clayton & P.Eichholtz, “Commercial Real Estate Analysis & Investments, 3rd Edition”, OnCourse Learning, 2014 (ISBN# 1-133-10882-2). Available in the Coop or from the publisher or Amazon (be sure to get the 3e with CD):


<table>
<thead>
<tr>
<th>Four Quadrants of the Capital Markets:</th>
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<tbody>
<tr>
<td>1. Private Equity</td>
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<tr>
<td>2. Private Debt</td>
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<tr>
<td>3. Public Equity</td>
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<tr>
<td>4. Public Debt</td>
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</table>

Three modules in the core of the course:

1) Traditional Equity & Debt (Classes 1-4)
2) Intermediate Finance (Private Equity) (Classes 5-6)
3) Equity & Debt Securitization (Classes 7-10)
<table>
<thead>
<tr>
<th>Class</th>
<th>Capital Stack Component &amp; Academic Topic (“Quadrant”)</th>
<th>Date</th>
<th>Lead Instructor</th>
<th>Assignments/Recitations</th>
<th>Text Ref (GM3e)</th>
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<tbody>
<tr>
<td>1</td>
<td>Money Partner/Institutional Equity: Portfolio Theory (1.Priv Equity)</td>
<td>2/06 T</td>
<td>Geltner</td>
<td>Intro Riverfront Ctr &amp; MPB Case</td>
<td>Ch.21</td>
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<tr>
<td>2</td>
<td>Money Partner/Institutional Equity: Capital Asset Pricing Theory (1.Priv Equity)</td>
<td>2/08 H</td>
<td>Geltner &amp;/or Torous</td>
<td></td>
<td>Ch.22</td>
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<tr>
<td>3</td>
<td>Money Partner/Institutional Equity: Investment Mgt/Benchmarking (1.Priv Equity)</td>
<td>2/13 T</td>
<td>Geltner</td>
<td>MPB Case Parts I &amp; II</td>
<td>Ch.26 (26.1&amp;2 only)</td>
</tr>
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<td>4</td>
<td>Construction Lender (1st lien): Bond Mkt Basics &amp; Fin Instn Economics (2.Priv Debt)</td>
<td>2/15 H</td>
<td>Geltner &amp;/or Adkinson</td>
<td></td>
<td>Ch.19</td>
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<td>5</td>
<td>Mezzanine Debt, Stretch Senior Loans and Leveraged Lending: Closing the Funding Gap – Recommendations from Case 2A Measuring Risk/Modeling Losses: Business Models in Real Estate Finance (1.Priv Equity, 2. Private Debt)</td>
<td>2/22 H</td>
<td>Adkinson</td>
<td>MPB Case 2A</td>
<td>Parts of Chs.18,19,20 (pp. 430-442 467-478, 486-492). Lender Considerations – Commercial Bank, Mortgage REIT and Debt Fund</td>
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<tr>
<td>7</td>
<td>Permanent Equity: REITs (industry) (3.Publ Equity)</td>
<td>3/01 H</td>
<td>Geltner</td>
<td></td>
<td>Ch.23</td>
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<td>8</td>
<td>Permanent Equity: REITs (acquisition valuation) (3.Publ Equity)</td>
<td>3/06 T</td>
<td>Geltner &amp;/or McGrath</td>
<td>Intermediate finance case (Adkinson)</td>
<td>Ch.12 (12.3 only)</td>
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<td>9</td>
<td>Permanent Debt: CMBS (basics, industry, structure) (4.Publ Debt)</td>
<td>3/08 H</td>
<td>Geltner</td>
<td></td>
<td>Ch.20</td>
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<td>10</td>
<td>Permanent Debt: CMBS (B-piece role) (4.Publ Debt) (3.Publ Equity) (1.Priv Equity)</td>
<td>3/13 T</td>
<td>Adkinson (&amp;/or Geltner or Torous)</td>
<td>REIT acquisition case (McGrath)</td>
<td>Ch.18</td>
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<tr>
<td>11</td>
<td>Quiz (Modules 1&amp;2), in class</td>
<td>3/15 T</td>
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<tr>
<td>12</td>
<td>TBA (Sloan SIP week, non-graded material)</td>
<td>3/20 T</td>
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<td>13</td>
<td>TBA (Sloan SIP week, non-graded material)</td>
<td>3/22 H</td>
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<td>14</td>
<td>OPTIONAL: Commercial Mortgage Underwriting Event</td>
<td>3/23 F</td>
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PPT lecture notes will generally be available on Stellar just prior to (and possibly revised after) each lecture.
### Schedule of Learning Objectives & Topics (10 classes on quiz)…

(Version Feb.07, check Stellar for updates)

<table>
<thead>
<tr>
<th>Class</th>
<th>Capital Stack Component &amp; Academic Topic (“Quadrant”)</th>
<th>Date</th>
<th>Lead Instructor</th>
<th>Learning Objectives, Topics:</th>
</tr>
</thead>
</table>
| 1     | Money Partner/Institutional Equity: Portfolio Theory (1.Priv Equity) | 2/06 T | Geltner | • Motivation of instl equity investors  
• Portfolio Th (MPT, Risk Parity)  
• Role of RE in portf (divers, infla hedge)  
• Priv RE compar to Publ Secs |
| 2     | Money Partner/Institutional Equity: Capital Asset Pricing Theory (1.Priv Equity) | 2/08 H | Geltner &/or Torous | • How asset markets work  
• Equilibr Price modeling  
• Why/how they’re useful  
• RE investmt implications |
| 3     | Money Partner/Institutional Equity: Investment Mgt/Benchmarking (1.Priv Equity) | 2/13 T | Geltner | • Nature of RE inv mgt biz  
• What’s benchmarking  
• It’s role  
• RE fund/mgr “styles” |
| 4     | Construction Lender (1st lien): Bond Mkt Basics & Fin Instn Economics (2.Priv Debt) | 2/15 H | Geltner &/or Adkinson | • Duration & Yield Curve  
• Financial Instn Economics (maturity matching)  
• Motivation for construction lending (who should do it) |
| 5     | Mezz Debt & Pref Equity: “Levered Debt” Principles (1.Priv Equity) | 2/22 H | Adkinson | • Intro Mezz Dbt & Pref Eq  
• Who invests (capital sources) & why  
• “Waterfalls”, Subordination why/how  
• Differ E[r] < Coupon, “levered dbt” |
| 6     | Mezz Debt & Pref Equity: “Levered Debt” Principles (1.Priv Equity) | 2/27 T | Adkinson | • Big picture of capital stack (slices, roles, sources)  
• How providers & users view it  
• NPV<>0 in intermed slices  
• Danger of too much leverage?  
• Overview/Big picture “Private Equity” branch of capital markets |
| 7     | Permanent Equity: REITs (industry) (3.Publ Equity) | 3/01 H | Geltner | • REIT industry, history, role, purpose  
• REIT metrics (“acctg illusion”)  
• REITs as stocks (cash flow val model) |
| 8     | Permanent Equity: REITs (acquisition valuation) (3.Publ Equity) | 3/06 T | Geltner &/or McGrath | • REITs as property (asset val model)  
• Arbitrage (publ/priv)  
• REIT valuation/acquisition of prop assets |
| 9     | Permanent Debt: CMBS (basics, industry, structure) (4.Publ Debt) | 3/08 H | Geltner | • Intro, history CMBS  
• Structured finance, tranching mechanics  
• Tradl corp bonds vs Conduits,  
• Moral Hazard, “skin in game” |
| 10    | Permanent Debt: CMBS (B-piece role) (4.Publ Debt) (3.Publ Equity) (1.Priv Equity) | 3/13 T | Adkinson (&/or Geltner or Torous) | • What is “B-piece”, Role, Importance  
• B-piece as way to “buy” property  
• B-piece players, strategy  
• Current conditions in CMBS industry |