

PPHA 32530 - Fundamentals of Municipal Bonds

Winter 2024

M and W 9:00-10:20am (CT), Keller Center 0001
<https://canvas.uchicago.edu/courses/53685>

Justin Marlowe
jmarlowe@uchicago.edu
Keller Center 3061
773.899.3443

Office Hours: M and W, 10:30am-noon (CT)
and by appointment

Grader: Pengyu Ren
pren00@chicagobooth.edu

Office Hours: TBD

Description and Objectives

Public organizations borrow money to finance their capital investments and to pursue other long-term strategic objectives. That borrowing usually happens through financial instruments known as “municipal bonds.” Today there are roughly \$4 trillion in municipal bonds issued by more than 50,000 unique entities, including municipalities, state governments, public utilities, universities, NGOs, and many other public organizations. This is a course about how and why these entities borrow money, the challenges and opportunities they face when accessing the municipal bond market, and what it means for them to borrow money “effectively.”

This course is organized around the borrower’s experience. We’ll start with foundational knowledge of how municipal bonds work, who buys them, and why. After that we’ll pivot toward the conceptual frameworks and analytical tools issuers use to evaluate and anticipate municipal bond market dynamics. As part of that you’ll learn about the policy and regulatory factors that shape when and how issuers go to the market. Perhaps most important, you’ll apply many of the same analytical tools that debt management specialists and other municipal market participants use in their work. By the end of the course you’ll have a portfolio of applied work and broad exposure to the market’s key institutions and principal actors.

Our approach to this material is best captured by the title of the book: *Public Debt Management: Strategy and Evidence* (Note: I wrote this book, and it’s based in part on the lecture notes for an earlier iteration of this course). Public debt management is a series of tactical choices. Borrowers have to determine how much money they can borrow; how to structure the coupons and maturities of their bonds to maximize investor interest and realize the lowest possible borrowing costs; when and how to engage market participants like financial advisors and bond underwriters; and so forth. Ideally, those choices are guided by a clear statement of that borrower’s near-term and long-term policy goals, and an evidence-based understanding of how to navigate all possible market conditions to achieve those goals.

Academic researchers and market practitioners have studied at length the incentives, institutions, external forces and other factors that shape the supply and demand for municipal bonds, and in turn, how much borrowers will pay to access their requisite capital. Fortunately, many of those market dynamics are similar to those you've studied elsewhere in the Harris School curriculum. They have also studied how investors' perceptions of a borrower are shaped by that borrower's bond rating, governance structure, unfunded pension obligations, financial disclosure practices, and myriad other factors. But to date, no one has integrated and marshalled all that evidence toward the issuer's experience. This course is an attempt to do just that - to bring the best available evidence to bear on the practice of developing and executing public debt management strategy.

That said, by the end of this course, you will be able to:

- Apply key concepts of fixed income mathematics, including: yield-to-maturity, price, duration and convexity, among others.
- Identify the technical, macroeconomic, and idiosyncratic factors that drive investor demand for municipal bonds.
- Apply traditional term structure and bond pricing models to municipal bonds.
- Identify the unique public policy and regulatory/quasi-regulatory institutions that shape the municipal bond market, including and especially the tax exemption.
- Discern the factors that drive credit quality for different types of municipal bonds, and apply empirical models of those factors.
- Understand the institutions and procedural mechanics of the municipal bond issuance process.
- Size and structure a prospective municipal bond issue.
- Describe recent municipal bond market innovations in areas like derivatives, financial technology, investor relations, and financial disclosure practices.

The course will be especially useful for anyone who wants to work in in the public capital markets. This includes: the public and non-profit sector divisions of the major credit rating agencies; the municipal trading desks of investment banks and bond funds; independent public finance advisors; state agencies responsible for oversight of public agency debt management; relevant federal regulatory agencies like the Securities and Exchange Commission and the Internal Revenue Service; quasi-regulatory groups like the Municipal Securities Rulemaking Board or the Securities Industry and Financial Markets Association; interest groups that work on issues related to public debt; and many others. Consultants such as utility rate specialists, environmental impact analysts, elections and referenda consultants, and others are also directly involved in the public capital markets. Moreover, students who would like to work in the parallel of any of the above institutions in another country will also find the course valuable, as the US public capital market is, for better or worse, the model for sub-national public capital markets around the world.

You'll also find this course relevant if you intend to work in fiscal policy or financial management for a municipality, school district, public authority, large non-profit institution, or other public entity that issues debt. MPP graduates who go to work as budget analysts, capital projects analysts, and other entry-level positions in budgeting and financial management often find it useful to know the fundamentals of the public capital markets. Many capital-intensive public and non-profit organizations - such as Chicago Public Schools, the Illinois Department of Transportation, the Art Institute of Chicago, and many others - will assume entry-level budgeting/finance staff know where municipal bonds come from and why investors buy them.

Required Materials

1. Marlowe, Justin (forthcoming). *Public Debt Management: Strategy and Evidence* (Cambridge University Press). This book is in draft. You will receive updated versions throughout the quarter.
2. Course lecture notes.
3. Pre-Recorded Lectures, available on Canvas/Panopto.
4. Other occasional materials from the *Bond Buyer*, the Public Money Pod(cast), *Governing* magazine, classic academic articles, and trade publications. Watch the Announcements section of the course Canvas site throughout the quarter.

Course Structure and Expectations

This course is organized around three main components. Think of them as a sequence of steps that you'll repeat for each topic. We'll cover most topics, although not all, in a single class meeting:

1. The textbook explains the core concepts in detail.
2. Each topic/class meeting is accompanied by a prerecorded lecture where I re-introduce the core concepts and offer some additional applications. Some lectures will track the readings quite closely, while others will not. Be sure to watch these lectures - several times, if necessary - before class.
3. I'll spend most of our class meetings answering your questions about the material. Please post questions in advance to the Discussion thread on the course Canvas page. In addition to your questions, we'll also spend class time discussing additional topics, cases and examples designed to extend your understanding of the material. Where applicable, I also walk through the application of any relevant analytical tools in Excel or R.

Grading

Assignments and exams are weighted as follows:

Assignment/Exam	% of Your Grade
Practice Problem Set	10%
Bond Structuring Analysis	30%
Credit Analysis	30%
Refunding Analysis	30%

Details for the assignments will be available on the Canvas page.

The Practice Problem Set is an early opportunity for you to demonstrate you grasp of the “bond math” concepts. It is a short pass/fail assignment. You will complete this assignment on your own.

The Bond Structuring exercise is also a group assignment. Here you will take on the role of underwriters in a forthcoming competitive general obligation bond sale. You and your group will develop prices and yields on the bonds in question and bid on the bonds as a participant in the competitive sale. You will then compare your results to the actual auction results. This exercise is an opportunity to apply the tools and concepts of municipal market dynamics, bond pricing, and bond sizing.

The Credit Analysis is a group assignment. You and your group will evaluate the credit quality of a general purpose local government using the ratings agencies’ credit criteria, a series of benchmark financial performance indicators, and comparisons to other similar credits. After evaluating that credit, your group will decide if that government is a good candidate for a credit rating upgrade or downgrade. Your deliverable for this exercise is a two-page memo explaining your recommendation. This exercise is an opportunity to apply the tools of credit analysis. Grading criteria will include the comprehensiveness of your analysis and participation of all group members.

In the Refunding Analysis you will evaluate a municipal bond refunding opportunity for a specified issuer. You will evaluate potential interest cost savings and option value. This analysis will culminate in a yes/no recommendation on the decision to go forward with a refunding. You will complete this assignment on your own, and the deliverable is a two-page memo outlining your recommendation.

I will follow the University of Chicago’s standard letter grade to GPA scale. The final course percentages that correspond to each grade are listed here. I may adjust the final course percentage ranges if necessary:

Grade	GPA	Final Course %
A	4.0	93 and above
A-	3.7	90-92
B+	3.3	87-89
B	3.0	82-86
B-	2.7	76-81
C+	2.3	70-75
C	2.0	64-69
F	Fail	<64
Inc.	Incomplete	

Diversity and Inclusion

The Harris School welcomes, values, and respects students, faculty, and staff from a wide range of backgrounds and experiences, and we believe that rigorous inquiry and effective public policy problem-solving requires the expression and understanding of diverse viewpoints, experiences, and traditions. The University and the Harris School have developed distinct but overlapping principles and guidelines to insure that we remain a place where difficult issues are discussed with kindness and respect for all.

- The University’s policies are available here. Specifically, the University identifies the freedom of expression as being “vital to our shared goal of the pursuit of knowledge, as is the right of all members of the community to explore new ideas and learn from one another. To preserve an environment of spirited and open debate, we should all have the opportunity to contribute to intellectual exchanges and participate fully in the life of the University.”
- The Harris School’s commitments to lively, principled, and respectful engagement are available here and are summarized as follows: “Consistent with the University of Chicago’s commitment to open discourse and free expression, Harris encourages members of the leadership, faculty, student body, and administrative staff to respect and engage with others of differing backgrounds or perspectives, even when the ideas or insights shared may be viewed as unpopular or controversial.” We foster thought-provoking discourse by encouraging community members not only to speak freely about all issues but also to listen carefully and respectfully to the views of others.

Schedule (Subject to Change)

Date	Topic	Assignment Due
Before Class	Course Introduction/Overview	
Before Class	What is Public Debt Management?	
Wednesday, January 3	What are Municipal Bonds?	
Friday, January 5	What are Municipal Bonds?	
Monday, January 8	Municipal Bond Analytics	
Wednesday January 10	Municipal Bond Analytics	
Friday, January 12		Problem Set
Wednesday, January 17	Municipal Bond Demand Structure	
Friday, January 19	Municipal Bond Demand Structure	
Monday, January 22	Municipal ESG	
Wednesday, January 24	Municipal ESG	
Monday, January 29	Debt Affordability	
Wednesday, January 31	Debt Affordability	
Friday, February 2		Bond Structuring
Monday, February 5	Municipal Credit Quality	
Wednesday, February 7	Municipal Credit Quality	
Monday, February 12	Selling Municipal Bonds	
Wednesday, February 14	Selling Municipal Bonds	
Friday, February 16		Credit Analysis
Monday, February 19	Guest Presenter: TBD	
Wednesday, February 21	After the Sale	
Monday, February 26	Guest Presenter: TBD	
Wednesday, February 28	After the Sale	
Wednesday, March 6		Refunding Analysis

Note: Per UChicago requirements, we will meet on two Fridays - January 5 and January 19 - in lieu of not meeting on Monday, January 1 (before the quarter begins) or on Monday, January 15 (MLK Day).

Course Policies

- Attendance is not mandatory but please do let me know at least a week in advance if you know you need to miss a class. We'll move quickly through a lot of material, and you can easily fall behind. If you have to miss a class, whether it's a planned or unplanned, I'll be happy to meet with you during office hours or some other mutually agreeable time to answer your questions and concerns about what we covered during the class you missed.
- I do not plan to record or live stream class sessions. If you have to miss a class, be sure to ask a classmate for the notes on what we covered. I'm also happy to meet during or outside of office hours to cover anything you might have missed.

- Please submit all assignments in PDF format through Canvas by 11:59pm on the due date. Some assignments will also require that you submit an Excel workbook through Canvas at the same time. I'll also share feedback on your assignments through Canvas.
- A late assignment will be penalized by a 10% grade reduction if it is submitted within 24 hours of the due date/time, and an assignment submitted 24-48 hours after the due date/time will be penalized by a 20% grade reduction. I cannot accept assignments more than 48 hours after the due date/time without prior notice. If you know you won't be able to complete an assignment by the deadline, please let me know immediately and we'll see if we can work out an alternative deadline.
- If you would like to contest a grade, you must do so in writing within one week of receiving your grade for that assignment or exam. Please follow the following process for contesting a grade:
 - E-mail the teaching assistant and include your reasoning for why you are requesting a re-grade referencing the suggested solutions.
 - I will respond by re-grading your entire assignment according to the grading rubric. Note that this could result in your grade going up, going down, or staying the same.
- There is no required citation style or other requirements for written assignments.
- If you have questions about the readings, lectures, or practice problems, you'll likely find it helpful to first consult the discussion thread on Canvas. I'll monitor that thread and add to it periodically throughout the week. There's a good chance someone else has the same question and has posted it to that thread. That said, you should feel free to e-mail me at any time on anything related to the course, and I'll do my best to reply quickly.
- The University has developed specific policies and procedures regarding the use of video/audio recordings. According to those policies and procedures, by attending course sessions, you acknowledge that:
 - You will not: (i) record, share, or disseminate University of Chicago course sessions, videos, transcripts, audio, or chats; (ii) retain such materials after the end of the course; or (iii) use such materials for any purpose other than in connection with participation in the course.
 - You will not share links to University of Chicago course sessions with any persons not authorized to be in the course session. Sharing course materials with persons authorized to be in the relevant course is permitted. Syllabi, handouts, slides, and other documents may be shared at the discretion of the instructor.
 - Course recordings, content, and materials may be covered by copyrights held by the University, the instructor, or third parties. Any unauthorized use of such recordings or course materials may violate such copyrights.
 - Any violation of this policy will be referred to the Area Dean of Students.

Academic Integrity

All University of Chicago students are expected to uphold the highest standards of academic integrity and honesty. Among other things, this means that students shall not represent another's work as their own, use un-allowed materials during exams, or otherwise gain unfair academic advantage.

- The University's policies regarding academic integrity and dishonesty are described here. It is worth explicitly stating the University's approach here: "It is contrary to justice, academic integrity, and to the spirit of intellectual inquiry to submit another's statements or ideas as one's own work. To do so is plagiarism or cheating, offenses punishable under the University's disciplinary system. Because these offenses undercut the distinctive moral and intellectual character of the University, we take them very seriously."
- The Harris School's policies are available in the Harris Student Handbook Canvas site.
 - The Academic Honesty and Plagiarism section expresses the main principles.
 - Detailed guidelines for more specialized student work (e.g., problem sets including computer code) are offered in the section titled Harris Integrity Policy for Problem Sets Involving Code.
 - Harris's specific procedures for handling suspected violations of these policies are available in the section Harris Procedures for Allegations of Plagiarism, Cheating, and Academic Dishonesty and are also re-produced as an Appendix to this syllabus.
 - All students suspected of academic dishonesty will be reported to the Harris Dean of Students for investigation and adjudication. The disciplinary process can result in sanctions up to and including suspension or expulsion from the University.
 - In addition to disciplinary sanctions, I will impose a grade penalty of "X" for students who have committed academic dishonesty.
 - Other penalties for violations could be imposed instead, alone or in combination. For example:
 - * Students will receive a grade of 0 on the exam or problem set in question as well as the next lowest problem set grade. This will often result in the student earning a failing grade in the course.
 - * The student will receive a grade of 0 on the exam or problem set in question and cannot earn higher than a B- in the course, regardless of their performance on other assignments and exams.
 - * At the instructors' discretion, the student may receive a failing grade for the course regardless of their performance on elements of the course.
 - * Students found in violation of academic dishonesty will receive a failing grade in the course.

- * The student will receive a grade of 0 on the assignment or exam in question (subject to the discretion of the instructor).
- * The student may be asked to re-do the assignment or retake the exam (without credit) to ensure that the student has learned how to properly cite sources or demonstrate that he or she has command of material covered.

Disability Accommodations

The University's policies regarding students with disabilities are available here. Students who have disability accommodations awarded by the University Student Disability Services Office should inform the Harris Dean of Students office by the end of the first week of class. The Harris Dean of Students Office will work with the student and instructor to coordinate the students' accommodations implementation.

Harris students are not required to submit their accommodations letter to the instructor. Students from other divisions in the University must submit their accommodations letter to either the instructor or the Harris Dean of Students Office.

Students who do not yet have formal accommodations in place but who feel they need accommodations on a temporary or ongoing basis should contact the Harris Dean of Students Office or Student Disability Services.

Appendix: Full Harris Academic Integrity Procedures

Procedures for Allegations of Plagiarism, Cheating, and Academic Dishonesty

First Violation

If a student is accused by an instructor or teaching assistant of plagiarism, cheating, or any other form of academic dishonesty, the student will be summoned to meet with the Dean of Students and the instructor. In the meeting, the student and instructor both present information about the situation. If it is determined by the instructor and the Dean of Students that the student has, in fact, plagiarized or cheated, the following sanctions will be imposed for the first violation:

- The student will generally receive a grade of 0 on the assignment or exam in question. Please note that grading decisions are fully at the discretion of the instructor, who may decide to impose harsher grade penalties.
- The student may be asked to re-do the assignment or retake the exam (without credit) to ensure that the student has learned how to properly cite sources or demonstrate that he or she has command of material covered.
- A formal letter of finding is sent to the student stating that the student has been found in violation of the code of academic honesty and what the sanctions were. The letter, along with any evidence presented, is archived in Harris Student Affairs records until the student graduates if the student has no other violations.
- Students found in violation of the academic honesty policy are not permitted to withdraw from the course to avoid grade penalties from the instructor.
- In cases where plagiarism or academic dishonesty is egregious, the case may be referred to the Area Disciplinary Committee even on a first offense. The Dean makes all decisions about which cases will go before the Area Disciplinary Committee.

Second Violation

If a student who has already been found in violation academic dishonesty is again accused of academic dishonesty, the case will be sent to the Harris Area Disciplinary Committee. Details about the Area Disciplinary Committee procedures can be found in the University Student Manual. Information about the first violation, including the formal letter of finding any evidence, will be presented to the Area Disciplinary Committee, along with evidence of the current allegation. If the student is found in violation of academic honesty a second time, the Area Disciplinary Committee can assign sanctions including transcript notes, disciplinary probation, suspension or expulsion from the University.

Academic Dishonesty Appeals

If a student has been found in violation of academic honesty and does not believe that either the finding or the sanction is fair or correct, the student has the right to appeal the finding by requesting a hearing from the Area Disciplinary Committee. More information about the Area Disciplinary Committee is available here.