

**Econ 525: Advanced Financial Economics
Economics Department, UNC at Chapel Hill
Spring 2024**

Class: TBD

Loc: TBD

Instructor: Christopher Roark

Email: cjroark@unc.edu

Office: 304 Gardner Hall

Office Hours: TBD

Course Site: Can be found at <http://canvas.unc.edu>

Text: Cuthbertson, Keith. Nitzsche, Dirk. *Quantitative Financial Economics*. Second Edition. Wiley. 2004

Additional Reference:

Campbell, J.Y., Lo, A.W. and MacKinlay, A.C. *The Econometrics of Financial Markets*, Princeton University Press. 1997

Prerequisites:

- 1.) Econ 425 with a grade of at least a C or better
- 2.) Econ 400, Econ 410 and Econ 420. With a grade of at least a C or better
- 3.) Taken concurrently with Econ 493

TA:

TBD

TA and ULA Office Hours are held in the EconAid Center: Gardner Hall 009

Course Description: Econ 525 builds on the theory and introduction to financial economics developed in Econ 425. Throughout the course students will be asked to test and extend findings in an empirical setting. Students will learn to find and clean financial data, understand basic properties of time series and financial econometrics, apply these skills to a novel research question concerning financial markets or instruments

Learning Goals: The purpose of this course is to allow you to build skills in financial and time series econometrics with the goal of producing analysis and research of financial time series. By the end of this course students should be able to

- 1.) Utilize time series econometrics to estimate parameters of financial models
- 2.) Test financial theories and models utilizing financial data
- 3.) Compose a novel research question in empirical finance and develop a methodology to answer that question
- 4.) Critique and Evaluate peer research questions and methods

Syllabus Changes:

The professor reserves the right to make changes to the syllabus including project due dates and test dates. These changes will be announced as early as possible.

Contact Information

Emails that have private or sensitive information or concerning your grade or performance in the course should be sent to the instructor directly at cjroark@unc.edu

Any questions relating to the material of the course or procedural questions should be posted to Campuswire. I or one of the instructional team will answer there.

Grading Scheme and Policies

Grading Scheme:	Term Paper Proposal	10%
	Problem Sets (~4):	25%
	First Draft:	10%
	Peer Review/Second Draft:	15%
	Final Term Paper:	30%
	Final Presentation	10%

I will drop your lowest problem set grade then calculate your average for each category with the remaining grades.

At a minimum your letter grade will then be given by the following table:

Aggregate Score	Letter Grade
≥ 93	A
92 – 87	A-
86 – 80	B+
79 – 72	B
71 – 68	B-
67 – 64	C+
63 – 60	C
60 – 57	C-

56 – 53	D+
52 – 50	D
≤ 49.99	F

I reserve the right to lower the cutoffs but will not raise them.

a.) Attendance

Attendance is expected for Econ 525, and will be taken for the lecture leader portion of the grade.

b.) Homework Assignments

There will be approximately 5 homework assignments throughout the length of the course. They will be posted approximately a week before each is due and will be due at 11:59 pm at night on the due date via gradescope. Submission instructions will be on the cover page of each homework. You are **strongly encouraged to** work in groups with other students, but sharing answers and looking up answers online is a violation of the honor code. In addition, each student is expected to do their own computational work and not share code or the output from answers. You are also expected to at least attempt each question before seeking help from anyone on the instructional team. **In addition, I will drop your lowest problem set in calculating your final score**

c.) Term Paper Proposal

The term paper proposal will be due TBD. In it the student should outline a research question and data they intend to use to answer that question. Students may work in pairs on the Term Paper and final approval will be up to the discretion of the instructor. Students may be asked to resubmit the proposal with more details or with new details. They can do this up to two times without penalty to the grade for the proposal. The proposal must have some degree of novelty building upon previous literature.

More specifically the proposal should be between 2-4 pages in length. The specific question you intend to answer, a working title, motivation, prior literature data and a rough methodology.

d.) Term Paper

The term paper will be your capstone paper for the course. You are allowed to form research pairs for the term paper in order to make the workload more manageable. You may also submit individually if you prefer. The term paper topic must be approved via the Term Paper Proposal before submission. There will be two deliverables associated with the term paper. The first will be a methodology and estimation proposal, that will be peer reviewed by your class mates. In it you will detail your research question and the econometric method and specification you intend to utilize to answer the question. In addition, the paper should at this point have at minimum summary statistics and a data description. Ideally it also has some preliminary findings. The Instructor will also provide some feedback at this time. We will utilize some class time for peer reviews and discussion between peer review groups.

The second deliverable will be the final paper. The paper should be submitted as a pdf. In addition students will be asked to submit their code and data in a zip file. The zip file should contain a readme on how to utilize the embedded code so that results are reproducible.

Note that the grade on the final paper is not concerned about the size or publishability of your results. Rather it will be looking at utilizing proper research methods and that it is well motivated and fits within the current literature. A more detailed rubric will be published at a future date. The paper will be due by the end of final exams

e.) Peer Review – Each paper will be provided a peer review partner or triangle with which to review other papers. Students will be expected to read and critique their classmates papers in a constructive manner. As part of this students will submit a referee report that consists of constructive feedback for their peer's paper.

This feedback can include feedback on paper organization, clarity in the research question and methodology, as well as concerns about empirical validity of the potential findings. Students are expected to do this in a respectful and constructive manner!

f.) Computational Assignments and Statistical Software:

This is an empirical course and therefore we will be utilizing some empirical software. I will be exclusively utilizing Python for in class examples. That being said for your . You can utilize whatever software with which you feel most comfortable, be that Python, R, Stata, Matlab. That being said I am most comfortable with Matlab and Stata and Python and can only provide help in those languages. I will be giving assignments in Econ 493 utilizing Python.

f.) Late and/or Makeup Policy

You are allowed to with a valid excuse request one extension on problem sets. This will be administered through canvas. Additional extensions can be granted but are less likely. Your drafts and papers must be submitted on time especially your peer evaluation. You will be deducted 10 points from the final grade of the assignment for each day that it is late rounded down. (Example: If you are 12 hours late from the deadline there is no penalty, if you are 26 hours late you will lose 10 points). The late deadline on campuswire for submission will reflect the point at which you will start losing points

Exceptions can be made in the event of ongoing or severe illnesses or other events that will last greater than one week. In this event you must provide a University Excused absence and then communicate with me before or during the week you return to class so we can make a plan to help get you back on track.

g.) Extra Credit

I do not offer extra credit for the course, nor can I offer any ex-post. Once again this is a fairness issue and would need to offer it for all students.

h.) Honor Code

All students are expected to follow the guidelines of the UNC Honor Code. In particular, students are expected to refrain from “lying, cheating, or stealing” in the academic context. If you are unsure about which actions violate the Honor Code, please see me or consult studentconduct.unc.edu.

i.) Regrade Requests

All grades will be posted on gradescope and **any regrade requests must be made within one week of the grade being posted**. In addition, all regrade requests require a written justification for why you believe the assignment or question is incorrectly graded. Regrade requests will be addressed by the TA or Grader who graded the assignment. If you are still unsatisfied with the result of your regrade request you may contact me via email.

Classroom Policies/Help Resources

a.) Diversity Statement

I value the perspectives of individuals from all backgrounds reflecting the diversity of our students. I broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. I strive to make this classroom an inclusive space for all students. Please let me know if there is anything I can do to improve. I appreciate suggestions.

b.) Course Announcements and Additional Materials:

All course announcements will be conducted through the Canvas Page. Problem sets and any additional supplementary material will also be posted to Canvas. Canvas will ultimately be my main way of communicating with the class. Please ensure that you are receiving updates from Canvas via email or at the very least are checking it regularly. If you are unable to access the course on Canvas for any reason, please notify me right away.

d.) Campuswire

We will have a course site on campuswire, a free online platform. I will enroll you to it utilizing your email in the UNC directory. We will be utilizing it to answer course related questions. Please post all course related questions there. Both the TAs and I will direct you towards it if you forget. I will be checking campuswire every weekday around 5pm to answer any pending questions. The rest of the instructional team will also check it periodically to answer any questions you may have. You are also strongly encouraged to answer each other's questions. You should not utilize it or any other online resources to directly share answers.

f.) Office Hours

I'm very happy to talk with you during office hours. You can find my office hours on the calendar in Canvas and under Contact Information. I will hold my office hours in my office and will help students on a first come, first serve basis. The TA will also offer office hours, the time and location of which can be found on the canvas calendar and under contact information.

If for whatever reason none of the posted times work for you or there is a compelling reason you need to meet with me outside these hours I am happy to make an appointment on a very limited basis. Please email me at cjroark@unc.edu (Please make sure to have the subject line with the course you are emailing me regarding)

University Policies and Resources

University Policy: As stated in the University's [Class Attendance Policy](#), no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities: [University Approved Absence Office \(UAAO\) website](#) provides information and [FAQs for students](#) and [FAQs for faculty](#) related to University Approved Absences
2. Disability/religious observance/pregnancy, as required by law and approved by [Accessibility Resources and Service](#) and/or the [Equal Opportunity and Compliance Office](#) (EOC)
3. Significant health condition and/or personal/family emergency as approved by the [Office of the Dean of Students](#), [Gender Violence Service Coordinators](#), and/or the [Equal Opportunity and Compliance Office](#) (EOC).

Instructors may work with students to meet attendance needs that do not fall within University approved absences. For situations when an absence is not University approved (e.g., a job interview, illness/ flu or club activity), instructors are encouraged to work directly with students to determine the best approach to missed classes and make-up assessment and assignments.

Acceptable Use Policy

By attending the University of North Carolina at Chapel Hill, you agree to abide by the University of North Carolina at Chapel Hill policies related to the acceptable use of IT systems and services. The Acceptable Use Policy (AUP) sets the expectation that you will use the University's technology resources responsibly, consistent with the University's mission. In the context of a class, it's quite likely you will participate in online activities that could include personal information about you or your peers, and the AUP addresses your obligations to protect the privacy of class participants. In addition, the AUP addresses matters of others' intellectual property, including copyright. These are only a couple of typical examples, so you should consult the full [Information Technology](#)

[Acceptable Use Policy](#), which covers topics related to using digital resources, such as privacy, confidentiality, and intellectual property.

Additionally, consult the University website “[Safe Computing at UNC](#)” for information about the data security policies, updates, and tips on keeping your identity, information, and devices safe.

Accessibility Resources and Service

The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, including mental health disorders, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities.

Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information:

<https://ars.unc.edu> or email ars@unc.edu.

Counseling and Psychological Services

UNC-Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The [Heels Care Network](#) website is a place to access the many mental resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to their website <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC at <https://eoc.unc.edu/report-an-incident/>. Please contact the University’s Title IX Coordinator (Elizabeth Hall, titleixcoordinator@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at safe.unc.edu.

Policy on Non-Discrimination

The University is committed to providing an inclusive and welcoming environment for all members of our community and to ensuring that educational and employment

decisions are based on individuals' abilities and qualifications. Consistent with this principle and applicable laws, the University's [Policy Statement on Non-Discrimination](#) offers access to its educational programs and activities as well as employment terms and conditions without respect to race, color, gender, national origin, age, religion, genetic information, disability, veteran's status, sexual orientation, gender identity or gender expression. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied.

If you are experiencing harassment or discrimination, you can seek assistance and file a report through the Report and Response Coordinators (see contact info at safe.unc.edu) or the [Equal Opportunity and Compliance Office](#), or online to the EOC at <https://eoc.unc.edu/report-an-incident/>.

Undergraduate Testing Center

The College of Arts and Sciences provides a secure, proctored environment in which exams can be taken. The center works with instructors to proctor exams for their undergraduate students who are not registered with ARS and who do not need testing accommodations as provided by ARS. In other words, the Center provides a proctored testing environment for students who are unable to take an exam at the normally scheduled time (with pre-arrangement by your instructor). For more information, visit <http://testingcenter.web.unc.edu/>.

Learning Center

Want to get the most out of this course or others this semester? Visit UNC's Learning Center at <http://learningcenter.unc.edu> to make an appointment or register for an event. Their free, popular programs will help you optimize your academic performance. Try academic coaching, peer tutoring, STEM support, ADHD/LD services, workshops and study camps, or review tips and tools available on the website.

Writing Center

For free feedback on any course writing projects, check out UNC's Writing Center. Writing Center coaches can assist with any writing project, including multimedia projects and application essays, at any stage of the writing process. You don't even need a draft to come visit. To schedule a 45-minute appointment, review quick tips, or request written feedback online, visit <http://writingcenter.unc.edu>.

Important Due Dates:**Sunday Jan 28th : Problem Set 1 Due****Friday Feb 16th: Paper Proposal Due****Friday March 1st : Problem Set 2 Due****Friday March 8th: First Draft Due (Day before Dook Game)****Friday April 5th: Problem Set 3 Due****Friday April 12th: Second Draft Due****Friday April 19th: Peer Feedback Due****Sunday April 28th: Problem Set 4 Due****Final Exam: Final Paper Due****Presentations: April 23rd, April 25th, April 30th (LDOC) and the final exam time as needed (depends on number of groups)****Tentative Course Outline:****Weeks 1-3:** Finding and Cleaning Financial Data – Review of Basic Econometrics and Regression Analysis**Week 4:** Time Series Econometrics - **Chapter 2**

Unit Roots, Random Walks and Cointegration

Markov Processes

Week 5-6: Market Efficiency – Empirical Tests – **Chapters 3 and 4**

Efficient Markets Hypothesis

Predictability/Forecasting of Stock Returns

Readings:Kandel, S. and Stamburgh, R.F (1996) “On the predictability of stock Returns: An asset allocation perspective” *Journal of Finance*, **51**, 385-424Shiller, R.J. and Peron P. (1985). “Testing the Random Walk Hypothesis: Power Versus Frequency of Observation”, *Economic Letters*, **18**, 381-386**Week 7-9:** Factor Models – Estimation – **Chapter 8 and 9**

CAPM and APT Estimation

Readings:Fama, E.F. and French, K.R. (1993) “Common Risk Factors in the Returns on Stocks and Bonds”. *Journal of Financial Economics*, **33**, 3-56.Fama, E.F. and French K.R (2002) “The equity premium”, *Journal of Finance*, **57** (2) 637-659Roll, R. and Ross, S.A. (1980) “An Empirical Investigation of the APT”, *Journal of Finance*, **35**(5), 1073-1103.Smith, P.N., Sorenson, S. and Wickens, M.R. (2003) “Macroeconomic Sources of Equity Risk” *Discussion Papers* **3**, 13

Week 10-12: Stock Price Volatility and VAR/ARIMA Models – **Chapters 12-14, 23**

Rational Valuation Formula

Volatility Tests

VAR approach

Estimation of the C-CAPM and Stochastic Discount Factor

Readings:

Hamilton, J.D. (1994) *Time Series Analysis*, Princeton University Press, Princeton, NJ. (Chapters 3 and 10)

French, K.R., Schwert, G.W. and Stamburgh, R.F. (1987) “Expected stock returns and volatility” *Journal of Financial Economics*, **19**, 3-29

Lettau, M. and Ludvigson, S. (2001b) “Resurrecting the (C)CAPM: A Cross-sectional Test when Risk Premia are Time-varying”

Week 13 : Market Risk – **Chapter 28**

Measuring VaR – Parametric vs Non-Parametric

Monte-Carlo Simulation

Weeks 14: Market Microstructure and volatility (if time) – **Chapter 29**

ARCH and GARCH models

FX and high frequency trading

Readings:

Bollerslev, T., Engle R.F. and Wooldridge, J.M. (1988) “A Capital asset pricing model with time varying covariances”, *Journal of Political Economy* **96**(1) 116-131

Schwert, G.W. (1989) “Why does Stock Market Volatility Change over time?”, *Journal of Finance*, **44**(5), 1115-1153.