THE UNIVERSITY OF CHICAGO
Booth School of Business

Business 34901-50, Autumn 2022
Asset Pricing I
(Cross-listed as Economics 35050)

Mondays, 8:30-noon
Harper Center TBD

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Students in this class are required to adhere to the standards of conduct in the Chicago Booth Honor Code and Standards of Scholarship

The course will be taught in person. Students should not to publish or redistribute any course material without written consent.

GENERAL INFORMATION

Feedback

We urge you to provide us with your feedback by email or in person on a continual basis. We very much value your feedback. We take your feedback very seriously and try to make adjustments accordingly. Examples of feedback: pace of the course; adequacy of class discussion; better jokes; additional topics not covered in the course; review sessions; additional attention to diversity and inclusion (D&I).

Demands on Your Time

Please be aware that this course puts a heavy toll on your time and that you should expect to devote a major part of your time this quarter towards the course.

Required Texts (available at the bookstore)

1 *Financial Decisions and Markets,* by J. Y. Campbell; Princeton University Press, 2018, ISBN 9780691160801.

2 *Asset Pricing* by J. H. Cochrane; Princeton, 2005, 2nd edition, ISBN 0-691-121370.

Optional Texts

1. *Dynamic Asset Pricing Theory*, by D. Duffie; Princeton; 2001, 3rd edition, ISBN

0069109022X.

2. *Options, Futures, and other Derivatives*, by J.C. Hull; Prentice Hall; 2013, 9th edition, ISBN 9780133456318.
3. *Financial Asset Pricing Theory,* by C. Munk; Oxford University Press, 2015, ISBN 9780198716457.

Office Hours

You are welcome to call us, come by our offices, or send us email at all times. We respond to emails within one business day.[1]

Grades

The course grade is based on class participation, homework assignments, and a final examination in class. Students are expected to read the assigned materials in advance, participate in the class discussion, and work on extensive problem sets. Problem sets account for 20% of the grade and the final examination accounts for 80%. Class participation counts when the performance on the final examination lies between two grades.

Review Sessions

The course TAs are Filippo Cavaleri filippo.cavaleri@chicagobooth.edu and TBD. The TAs hold review sessions almost every week in 3A from 3:00-5:00 PM Tuesdays. We will announce in class whether a review session will be held on that day. During the review sessions, Filippo and TBD discuss selected problems from the last assignment. If you would like them to discuss a specific problem from an earlier assignment or something else, please send Filippo and TBD an email at least two days in advance. You may contact Filippo and TBD by email if you have specific questions. Filippo and TBD respond to emails within one business day. It is not part of Filippo's and TBD duties as TAs to offer private tutorials outside the scheduled review sessions.

Problem Sets

The problem sets are an integral part of the learning experience. We expect students registered in the course to post their assignment by the assigned due date. We do not accept late submissions. Marked problem sets are returned to class on the following week. If you do not hand in a problem set in a certain week, you earn zero points and this is recorded in the grade book as "0".

[1] In the biography of Jercy Neyman by Constance Reid, Neyman recounts that, when he was a Rockefeller fellow in Paris, he followed Borel's course in probability. He once approached Borel to ask him some questions. Borel answered: "You are probably under the impression that our relationship with people who attend our courses are similar here as elsewhere. I am sorry. This is not the case. Yes, it would be a pleasure to talk to you, but it would be more convenient if you would come this summer to Brittany where I will be vacationing." Professors have come a long way since then.

Examinations

There is no midterm. The final examination is held in class on Monday, December 5 at 8:30 AM-noon. The examination is held with closed books and notes, with the exception of one 8 1/2 x 11 "crib sheet". You may write anything you like on both sides of the crib sheet.

Accommodations

If you require any accommodations for this course, please provide me with a copy of your *Accommodation Determination Letter* (provided to you by the Student Disability Services office) so that you may discuss with me how your accommodations may be implemented in this course. The University of Chicago is committed to ensuring the full participation of all students in its programs. If you have a documented disability (or think you may have a disability) and, as a result, need a reasonable accommodation to participate in class, complete course requirements, or benefit from the University's programs or services, you are encouraged to contact Student Disability Services as soon as possible. To receive reasonable accommodation, you must be appropriately registered with Student Disability Services. Please contact the office at 773-702- 6000/TTY 773-795-1186 or disabilities@uchicago.edu, or visit the website at disabilities.uchicago.edu. Student Disability Services is located at 5501 S. Ellis Avenue.

COURSE OUTLINE

Classification of the readings: **R**-*read*: you are responsible for this material. **S**-*suggested*: read this material to the extent that it relates to the class discussion. On the final exam, we give you a list of suggested readings and ask you to discuss a subset of them. **O**-*optional*: you are not responsible for this material. The readings list below is tentative. Every week we finalize the readings for the following week.

WEEKS 1-4 taught by John Heaton

1. **Overview: Basic conceptual framework, continuous- and discrete-time settings**
   Chapter 1 of Cochrane provides a good overview of asset pricing and some empirical issues ***Please review this before the start of class***.

2. **Static Portfolio Theory**
   (R) Campbell Chapters 1 and 2
   (R) Cochrane Chapter 1

3. **General Equilibrium, Contingent Claims Pricing, No Arbitrage and Discount Factors**
   (R) Cochrane Chapters 2, 3 and 4
   (R) Campbell Chapter 3 and 4

4. **Single and multi-factor models, mean-variance frontiers**
   (R) Cochrane chapters 5, 6, 9
   (R) Campbell Chapter 2

WEEKS 5-9 taught by George Constantinides

5. **Tests of Equilibrium Models and the Equity Premium / Risk Free Rate / Predictability / Excess Volatility Puzzles**
   (R) Constantinides LN 8.
   (R) Campbell, chapter 4.3.2, 4.4 up to page 107, and 6.1-6.2.
   (R) Cochrane, chapter 21.
   (R) Cochrane, J. and L. P. Hansen, 1992, "Asset Pricing Explorations in Macroeconomics," NBER Macroeconomics Manual.
   (S) Constantinides, G. M., 2002, "Rational Asset Prices," *Journal of Finance* 57, 1567-1591.
   (O) Ghosh, A., C. Julliard, and A. Taylor, 2016, "What is the Consumption-CAPM Missing? An Information Theoretic Approach for the Analysis of Asset Pricing Models," *Review*

of Financial Studies 30, 442–504.

(S) Hansen, L. and R. Jagannathan, 1991, "Implications of Security Market Data for Models of Dynamic Economies," *Journal of Political Economy* 99, 225-262.

(O) Hansen, L. P. and K. J. Singleton, 1982, "Generalized Instrumental Variables Estimation of Nonlinear Rational Expectation Models," *Econometrica* 50, 1269-1286.

(S) Mehra, R. and E. C. Prescott, 1985, "The Equity Premium—A Puzzle," *Journal of Monetary Economics* 15, 145-161.

6. Suggested Explanations—Consumption Mismeasurement

(R) Campbell, chapter 10.2.

(S) Brav, A., G.M. Constantinides, and C. Geczy, 2002, "Asset Pricing with Heterogeneous Consumers and Limited Participation: Empirical Evidence," *Journal of Political Economy* 110, 793-824.

(O) Savov, A, 2011, "Asset Pricing with Garbage," *The Journal of Finance* 66, 177–201.

(O) Vissing-Jorgensen, A., 2002, "Limited Asset Market Participation and the Elasticity of Intertemporal Substitution," *Journal of Political Economy* 110, 825-853.

7. Suggested Explanations—Epstein-Zin Preferences and Long-Run Risks

(R) Constantinides LN 10.

(R) Campbell, chapter 6.

(R) Bansal, R. and A. Yaron, 2004, "Risks for the Long Run: A Potential Resolution of Asset Pricing Puzzles," *The Journal of Finance* 59, 1481-1509.

(S) Constantinides G. M., and A. Ghosh, 2011, "Asset Pricing Tests with Long-Run Risks in Consumption Growth," *Review of Asset Pricing Studies* 1, 96-136.

(O) Epstein L. G., E. Farhi, and T. Strzalecki, 2014, "How Much Would You Pay to Resolve Long Run Risk?" *American Economic Review* 104, 2680-2697.

(O) Epstein, L. and S. Zin, 1991, "Substitution, Risk Aversion and the Temporal Behavior of Asset Returns, an Empirical Analysis" *Journal of Political Economy* 99, 263-286.

(O) Hansen, L.P., Heaton, J., and Li, N., 2008, "Consumption Strikes Back," *Journal of Political Economy*, 116, 260-302.

8. Suggested Explanations—Incomplete Markets

(R) Constantinides LN 9.

(R) Campbell, chapter 6.

(S) Constantinides, G. M., 1982, "Intertemporal Asset Pricing with Heterogeneous Consumers and without Demand Aggregation," *Journal of Business* 55, 253-267.

(S) Brav, A., G.M. Constantinides, and C. Geczy, 2002, "Asset Pricing with Heterogeneous Consumers and Limited Participation: Empirical Evidence," *Journal of Political*

Economy 110, 793-824.

(S) Constantinides, G. M., J. B. Donaldson, and R. Mehra, 2002, "Junior Can't Borrow: A New Perspective on the Equity Premium Puzzle," *Quarterly Journal of Economics* 117, 269-296.

(S) Constantinides, G. M. and D. Duffie, 1996, "Asset Pricing with Heterogeneous Consumers," *Journal of Political Economy* 104, 219-240.

(S) Constantinides, G. M. and A. Ghosh, 2017, "Asset Pricing with Countercyclical Household Consumption Risk," *The Journal of Finance* 73, 415-459.

(O) Guvenen, F., S. Ozkan, and J. Song, 2014, "The Nature of Countercyclical Income Risk," *Journal of Political Economy* 122, 621-660.

9. Suggested Explanations—Rare Events

(R) Campbell, chapter 6.

(S) Barro, R.J., 2006, "Rare Disasters and Asset Markets in the 20th Century", *Quarterly Journal of Economics* 121, 823-866.

(S) Constantinides, G, M., 2008, "Comment on Barro and Ursùa," *Brookings Papers on Economic Activity*, 341-350.

(O) Julliard C. and A. Ghosh, 2012, "Can Rare Events Explain the Equity Premium Puzzle?" *Review of Financial Studies* 25, 3037-3076.

(S) Rietz, T. A., 1988, "The Equity Risk Premium: a Solution", *Journal of Monetary Economics* 22, 117-131.

10. Suggested Explanations—Habit Persistence

(R) Campbell, chapter 6.

(S) Campbell, J. Y. and J. H. Cochrane, 1999, "By Force of Habit: A Consumption Based Explanation of Aggregate Stock Market Behavior," *Journal of Political Economy* 107, 205-251.

(O) Cochrane, J. H., 2017, "Macro-Finance," *Review of Finance* 21, 945–985.

(O) Constantinides, G. M., 1990, "Habit Formation: A Resolution of the Equity Premium Puzzle," *Journal of Political Economy* 98, 519-43.

(S) Ferson, W. E., and G. M. Constantinides, 1991, "Habit Persistence and Durability in Aggregate Consumption: Empirical Tests," *Journal of Financial Economics* 29, 199-240.

11. Suggested Explanations—Learning Models

(S) Ghosh, A. and G. M. Constantinides, 2019, "What Information Drives Asset Prices?" Working paper, University of Chicago.

12. Suggested Explanations—Production Models

(S) Campbell, chapter 7.
(O) Cochrane, J. H., 1991, "Production-Based Asset Pricing and the Link between Stock Returns and Economic Fluctuations," *Journal of Finance* 46, 209-237.

13. Introduction to Stochastic Calculus

(R) Constantinides LN 11.

14. The Pricing of Options

(R) Constantinides LN 11, 12, and 13.
(O) Cochrane, chapters 17 and 18.

15. Intertemporal Consumption-Investment Decisions and Asset Pricing in Continuous Time

(R) Constantinides LN 14.
(O) Breeden, D. T., 1979, "An Intertemporal Asset Pricing Model with Stochastic Consumption and Investment Opportunities," *Journal of Financial Economics* 7, 265-96.
(O) Constantinides, G. M., 1978, "Market Risk Adjustment in Project Valuation," *Journal of Finance* 33, 603-616.
(O) Cox, J. C., J. Ingersoll and S. Ross, 1985, "An Intertemporal General Equilibrium Model of Asset Prices," *Econometrica* 53, 363-84.
(R) Merton, R. C., 1973, "An Intertemporal Capital Asset Pricing Model," *Econometrica* 41, 867-887.