

FIRN MASTER COURSE TITLE

FIRN Masterclass – Asset Pricing – Theory and Empirics

COURSE COORDINATOR

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COURSE VENUE

Zoom Meetings Wednesdays 9:30am-1pm (AEDT) on 3 Nov, 10 Nov, 24 Nov, 1 Dec, and 8 Dec 2021

COURSE DESCRIPTION

This course is meant to provide a foundation in current issues in asset pricing research including both theoretical and empirical topics. Our focus is on how theory and empirical works are complements of each other as we need both to better understand how financial markets work. Theoretical topics covered will include heterogeneous investors, long-run risk, habit formation utility, uncertainty, heterogeneous beliefs, and possibly ambiguity aversion, production, or intermediation-based asset pricing. Empirical topics covered will build from the theoretical topics with possible topics including cross-sectional asset pricing puzzles and explanations, and pitfalls of empirical asset pricing work.

COURSE OBJECTIVES

A little over a month of course meetings is clearly too short to give every topic as much time as it deserves. Instead, I want you to come away with an appreciation of the current issues in asset pricing research and the tools used to do such research. For the topics we will not have time to cover (possible optional topics), you will have a better perspective where they fit in the literature.

The target audience for the class is a Ph.D. student with aspirations to be either an empirical corporate or asset pricing researcher. For those who would like to see the class material in greater depth from a theory perspective, please just ask. I am happy to provide you with more readings, etc.

COURSE CONTENT

The outline below is a tentative roadmap for the course. Please note that the course topics are subject to change based on interests. A more extensive reading list will be provided closer to the date of the course.

3 November 2021

- Back to School Asset Pricing 101
 - Dynamic Security Markets, Pricing Kernels, Continuous-time Math, Portfolio Choice, Representative Agent Economies, and Campbell-Shiller Decompositions

10 November 2021

• Stylized Facts/Habit Utility Models

• Pricing Puzzles, Habit Utility Preferences

24 November 2021

- I Can See for Miles Long-Run Risk Models with Epstein-Zin Preferences
 - Recursive Preferences, Long Run Risk, and an Empirical Investigation of Habits relative to Long Run Risk

1 December 2021

• Heterogeneous Beliefs and Uncertainty

8 December 2021

- Optional Topics
 - P-Hacking and Replication
 - Production-Based Models
 - Cross-Sectional Puzzles and Explanations
 - o Ambiguity Aversion
 - o Intermediation-Based Asset Pricing

COURSE PRE-REQUISITE KNOWLEDGE

Students in the course should have a good understanding of a Ph.D. level Microeconomics course as well as the first Ph.D. level Asset Pricing Theory course. Students should also have knowledge of statistics and econometrics at the Ph.D. level.

ASSESSMENT

There are two components to the assessment. The first is a series of daily review exercises on selected papers. For each day of class except the first, you should prepare a write-up of 2-3 pages of one of the papers marked with in bold from the reading list, for a total of five. These should be prepared prior to each day's class except the first day. When doing your review exercises, you should be able to broadly answer the following:

- What is the problem being studied?
- Why is it important (or not important)?
- How is the problem solved including a description of the data, technique, or model?
- What results are delivered?
- Do the results seem plausible?
- What questions are still left open by the paper?

The course grade will be based on these reports, at a weighting of 15% each for a total of 75%. The remaining 25% will be based on a 1250 word research paper proposal about an unanswered research question in the area of asset pricing. The proposal should motivate the topic in relation to the literature and discuss what approach would be used to address the question. We will discuss further details in class.

FIRN COURSES GRADING POLICY

A standardised grading system has been implemented across all FIRN endorsed PhD courses and applies to ALL PhD students undertaking the course. Course presenters are asked to calculate final assessment grades using a percentage basis which can then be converted to a grading of 1-7 as follows:

7	- 85% +	– Pass with High Distinction/H1 Honours
6	- 75-84%	– Pass with Distinction/H2 Honours

5	- 65-74%	– Pass with Credit/H3 Honours
4	- 50-64%	– Weak Pass
3	- < 50%	– Did Not Pass/Fail
2		- Did not complete all assessments
1		- Did not complete course

LIST OF TEXTS AND READINGS

Please see the attached reading list for additional information.

STATEMENT ON PLAGIARISM

Plagiarism is a broad term referring to the practice of appropriating someone else's ideas or work and presenting them as your own without acknowledgment. Plagiarism is literary or intellectual theft. It can take a number of forms, including:

- copying the work of another student, whether that student is in the same class, from an earlier year of the same course, or from another tertiary institution altogether
- copying any section, no matter how brief, from a book, journal, article or other written source, without duly acknowledging it as a quotation
- copying any map, diagram or table of figures without duly acknowledging the source
- paraphrasing or otherwise using the ideas of another author without duly acknowledging the source.

Whatever the form, plagiarism is unacceptable both academically and professionally. By plagiarising you are both stealing the work of another person and cheating by representing it as your own. Any instances of plagiarism can therefore be expected to draw severe penalties.

Cheating means to defraud or swindle. Students who seek to gain an advantage by unfair means such as copying another student's work, or in any other way misleading a lecturer about their knowledge or ability or the amount of work they have done, are guilty of cheating. Students who condone plagiarism by allowing their work to be copied will also be subject to severe disciplinary action.

Reading List for Asset Pricing

Outline (subject to change)

The outline below presents a tentative roadmap for the asset pricing portion of the course. We may deviate from it depending on interest and time. **Optional Readings are meant for after the class, not during! In other words, there are NOT over 50 readings for the course!**

The two books referenced in the readings are:

- K. Back. Asset Pricing and Portfolio Choice Theory. Oxford University Press, second edition, 2017
- J. Y. Campbell. Financial Decisions and Markets. Princeton University Press, 2018

Asset Pricing Review / Pricing Kernels

(Lecture 1 - 3 November 2021

- Back to School Asset Pricing 101
 - 1. Asset Pricing Review
 - (a) Dynamic Security Markets
 - (b) User's Guide to Continuous-Time Processes
 - (c) Portfolio Choice
 - i. Dynamic Programming
 - ii. Martingale Methods
 - (d) Representative Agent Economies
 - 2. Pricing Kernels and "M-Speak"
 - 3. Campbell-Shiller Decompositions and Predictability
 - 4. Asset Pricing Puzzles Through the Lens of a Lucas Economy
 - Readings:
 - * J. H. Cochrane. Macro-finance. *Review of Finance*, pages 945–985, 2017 up to and including Section 3.
 - * J. H. Cochrane. Presidential address: Discount rates. *Journal of Finance*, 66(4):1047– 1108, 08 2011. Note that we will be discussing this in the next class, but you should read it before the course starts.

- Optional Review Readings:
 - * Back Chapters 8, 9, 11, & 12 and Campbell Chapters 3, 4, & 6.1-6.3

Stylized Facts / Habit Utility Models

(Lecture 2 - 10 November 2021

• Just the Facts – What does the Data Look Like?

- Readings:
 - * B. Larrain and M. Yogo. Does firm value move too much to be justified by subsequent changes in cash flow. *Journal of Financial Economics*, 87(1):200–226, January 2008. Read this with an eye toward how it differs with the evidence in [20].
- Optional Readings:
 - * J. Y. Campbell. Asset pricing at the millennium. *Journal of Finance*, 55(4):1515–1567, 08 2000.
 - * J. Cochrane. Financial markets and the real economy. NBER Working Papers 11193, National Bureau of Economic Research, Inc, Mar. 2005.
 - * R. S. Gurkaynak and J. H. Wright. Macroeconomics and the term structure. *Journal of Economic Literature*, 50(2):331–67, June 2012.
 - * M. Piazzesi. Affine term structure models. In Y. Ait-Sahalia and L. Hansen, editors, *Handbook of Financial Econometrics*. North Holland, 2009.
- Kicking the Habit Habit Utility Preferences
 - Readings:
 - * J. Y. Campbell and J. H. Cochrane. By force of habit: A consumption-based explanation of aggregate stock market behavior. *Journal of Political Economy*, 107(2):205–251, 1999.
 - * **C. Heyerdahl-Larsen. Asset prices and real exchange rates with deep habits.** *The Review of Financial Studies*, **27(11):3280–3317, 2014**. This is a recent application of a type of habit utility, deep habits. You do not have to read it as thoroughly as [17].
 - Optional Readings:
 - * Back Chapter 11.1
 - * Campbell Chapter 6.7

- * G. M. Constantinides. Habit formation: A resolution of the equity premium puzzle. *Journal of Political Economy*, 98(3):519–43, June 1990.
- * A. B. Abel. Asset prices under habit formation and catching up with the joneses. *American Economic Review*, 80(2):38–42, May 1990.
- * J. A. Wachter. A consumption-based model of the term structure of interest rates. Journal of Financial Economics, 79(2):365–399, February 2006.
- * L. Menzly, T. Santos, and P. Veronesi. Understanding predictability. *Journal of Political Economy*, 112(1), 2004

Recursive Preferences / Long-run Risk (Lecture 3 - 24 November 2021)

- Now We Are Dangerous A User's Guide to Recursive Preferences
 - Readings:

* Back Chapter 25, Chapter 11.3

- Optional Readings:
 - * D. K. Backus, B. R. Routledge, and S. E. Zin. *Exotic Preferences for Macroeconomists*, pages 319–414. MIT Press, April 2005.
- I Can See for Miles Long-Run Risk Models with Epstein-Zin Preferences
 - Readings:
 - * R. Bansal and A. Yaron. Risks for the long run: A potential resolution of asset pricing puzzles. *The Journal of Finance*, 59(4):1481–1509, 2004.
 - * Campbell Chapters 6.4-6.5
 - Optional Readings:
 - * Back Chapters 11.3-11.4
 - * L. G. Epstein and S. E. Zin. Substitution, risk aversion, and the temporal behavior of consumption and asset returns: A theoretical framework. *Econometrica*, 57(4):937–69, July 1989.
 - * L. G. Epstein and S. E. Zin. Substitution, risk aversion, and the temporal behavior of consumption and asset returns: An empirical analysis. *Journal of Political Economy*, 99(2):263–86, April 1991.
 - * R. Bansal, R. F. Dittmar, and C. T. Lundblad. Consumption, dividends, and the cross section of equity returns. *Journal of Finance*, 60(4):1639–1672, 08 2005.

- * L. P. Hansen, J. C. Heaton, and N. Li. Consumption strikes back? measuring long-run risk. *Journal of Political Economy*, 116(2):260–302, 04 2008.
- Fight! Fight! Empirical Investigation of Habit and Long-Run Risk Models
 - Readings:
 - * J. Beeler and J. Y. Campbell. The long-run risks model and aggregate asset prices: An empirical assessment. *Critical Finance Review*, 1:141–182, 2012.
 - * R. Bansal, D. Kiku, and A. Yaron. An empirical evaluation of the long-run risks model for asset prices. *Critical Finance Review*, 1:183–221, 2012.

Heterogeneous Beliefs / Uncertainty (Lecture 4 - 1 December 2021)

• Are You Thinking What I am Thinking? – Differences in Beliefs

- Readings:
 - * Back Chapter 21
 - * P. Ehling, M. F. Gallmeyer, C. Heyerdahl-Larsen, and P. K. Illeditsch. Disagreement about inflation and the yield curve. *Journal of Financial Economics*, forthcoming, 2017. Now, I really did not want to teach my own work, but there are a lot of nuances in taking a model to the data in the context of differences in beliefs. Our paper tries to be as upfront about these issues as possible.
- Optional Readings:
 - * Campbell Chapter 11.4
 - * S. Basak. Asset pricing with heterogeoneous beliefs. *Journal of Banking & Finance*, 29:2849–2881, 2005.
 - * S. Basak. A model of dynamic equilibrium asset pricing with heterogeneous beliefs and extraneous risk. *Journal of Economic Dynamics and Control*, 24:63–95, 2000.
 - * J. Detemple and S. Murthy. Intertemporal asset pricing with heterogeneous beliefs. Journal of Economic Theory, pages 294–320, 1994.
 - * M. Harris and A. Raviv. Differences of opinion make a horse race. *Review of Financial Studies*, 6(3):473–506, 1993.
 - * J. Cvitanić, E. Jouini, S. Malamud, and C. Napp. Financial market equilibrium with heterogeneous agents. *Review of Finance*, 2011.
 - * M. F. Gallmeyer and B. Hollifield. An examination of heterogeneous beliefs with a short-sale constraint in a dynamic economy. *Review of Finance*, 12:323–264, 2008.

- Everything in Life is Luck Uncertainty
 - Readings:
 - * I. Drechsler and A. Yaron. What's vol got to do with it. *The Review of Financial Studies*, **24(1):1–45**, **2011**. Once upon a time, "uncertainty" was called stochastic volatility. We are trendier now I guess. I could have used several other papers, but this one well represents this literature.
 - * K. Jurado, S. C. Ludvigson, and S. Ng. Measuring uncertainty. *American Economic Review*, 105(3):1177–1216, March 2015.
 - Optional Readings:
 - * N. Bloom. Fluctuations in uncertainty. *Journal of Economic Perspectives*, 28(2):153–76, May 2014.
 - * S. R. Baker, N. Bloom, and S. J. Davis. Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4):1593–1636, 2016.

Optional Topics

(Lecture 5 - 8 December 2021)

- Let's Build Something Production Models
 - Readings:
 - * Back Chapter 20
 - * Campbell Chapter 7
 - Optional Readings:
 - * J. B. Berk, R. C. Green, and V. Naik. Optimal investment, growth options, and security returns. *Journal of Finance*, 54(5):1553–1607, 1999.
 - * J. H. Cochrane. Production-Based Asset Pricing and the Link between Stock Returns and Economic Fluctuations. *Journal of Finance*, 46(1):209–237, March 1991.
 - * J. Gomes, L. Kogan, and L. Zhang. Equilibrium cross section of returns. *Journal of Political Economy*, 111(4):693–732, 2003.
 - * L. Kogan and D. Papanikolaou. Economic activity of firms and asset prices. *Annual Review of Financial Economics*, 4:361–384, 11 2012.
- Puzzling Evidence Momentum, Carry, and Value
 - Readings:

- * C. S. Asness, T. J. Moskowitz, and L. H. Pedersen. Value and momentum everywhere. *The Journal of Finance*, 68(3):929–985, 2013.
- * R. S. Koijen, T. J. Moskowitz, L. H. Pedersen, and E. B. Vrugt. Carry. *Journal of Financial Economics*, forthcoming, 2017.
- * R. S. Koijen, H. Lustig, and S. V. Nieuwerburgh. The cross-section and time series of stock and bond returns. *Journal of Monetary Economics*, 88:50 69, 2017.
- Optional Readings:
 - * K. Hou, H. Mo, C. Xue, and L. Zhang. q^5 . Working Paper, Ohio State University, 2018.
- Optional Readings on Dividend Strips:
 - * J. van Binsbergen, M. Brandt, and R. Koijen. On the timing and pricing of dividends. *American Economic Review*, 102(4):1596–1618, June 2012.
 - * F. Schulz. On the timing and pricing of dividends: Comment. *American Economic Review*, 106(10):3185–3223, October 2016.
 - * O. Boguth, M. Carlson, A. Fisher, and M. Simutin. Leverage and the limits of arbitrage pricing: Implications for dividend strips and the term structure of equity risk premia. University of British Columbia, September 2012.
 - * J. H. van Binsbergen and R. S. Koijen. The term structure of returns: Facts and theory. *Journal of Financial Economics*, 124(1):1 21, 2017.

• Don't Be a Regression Running Spud Head – P-Hacking and Replication

- Readings:
 - * K. Hou, C. Xue, and L. Zhang. Replicating anomalies. The Ohio State University, 2017.
 - * C. S. Jones and L. Pomorski. Investing in disappearing anomalies. *Review of Finance*, 21(1):237–267, 2017.
 - * C. R. Harvey. Presidential address: The scientific outlook in financial economics. *The Journal of Finance*, 72(4):1399–1440, 2017.
- Optional Readings:
 - * C. R. Harvey, Y. Liu, and H. Zhu. ... and the cross-section of expected returns. *The Review of Financial Studies*, 29(1):5–68, 2016.
- Intermediation-Based Asset Pricing Readings TBA

References

- [1] A. B. Abel. Asset prices under habit formation and catching up with the joneses. *American Economic Review*, 80(2):38–42, May 1990.
- [2] C. S. Asness, T. J. Moskowitz, and L. H. Pedersen. Value and momentum everywhere. *The Journal of Finance*, 68(3):929–985, 2013.
- [3] K. Back. Asset Pricing and Portfolio Choice Theory. Oxford University Press, second edition, 2017.
- [4] D. K. Backus, B. R. Routledge, and S. E. Zin. *Exotic Preferences for Macroeconomists*, pages 319–414. MIT Press, April 2005.
- [5] S. R. Baker, N. Bloom, and S. J. Davis. Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, 131(4):1593–1636, 2016.
- [6] R. Bansal, R. F. Dittmar, and C. T. Lundblad. Consumption, dividends, and the cross section of equity returns. *Journal of Finance*, 60(4):1639–1672, 08 2005.
- [7] R. Bansal, D. Kiku, and A. Yaron. An empirical evaluation of the long-run risks model for asset prices. *Critical Finance Review*, 1:183–221, 2012.
- [8] R. Bansal and A. Yaron. Risks for the long run: A potential resolution of asset pricing puzzles. *The Journal of Finance*, 59(4):1481–1509, 2004.
- [9] S. Basak. A model of dynamic equilibrium asset pricing with heterogeneous beliefs and extraneous risk. *Journal of Economic Dynamics and Control*, 24:63–95, 2000.
- [10] S. Basak. Asset pricing with heterogeoneous beliefs. *Journal of Banking & Finance*, 29:2849–2881, 2005.
- [11] J. Beeler and J. Y. Campbell. The long-run risks model and aggregate asset prices: An empirical assessment. *Critical Finance Review*, 1:141–182, 2012.
- [12] J. B. Berk, R. C. Green, and V. Naik. Optimal investment, growth options, and security returns. *Journal of Finance*, 54(5):1553–1607, 1999.
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- [14] O. Boguth, M. Carlson, A. Fisher, and M. Simutin. Leverage and the limits of arbitrage pricing: Implications for dividend strips and the term structure of equity risk premia. University of British Columbia, September 2012.
- [15] J. Y. Campbell. Asset pricing at the millennium. Journal of Finance, 55(4):1515–1567, 08 2000.
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- [26] P. Ehling, M. F. Gallmeyer, C. Heyerdahl-Larsen, and P. K. Illeditsch. Disagreement about inflation and the yield curve. *Journal of Financial Economics*, forthcoming, 2017.
- [27] L. G. Epstein and S. E. Zin. Substitution, risk aversion, and the temporal behavior of consumption and asset returns: A theoretical framework. *Econometrica*, 57(4):937–69, July 1989.
- [28] L. G. Epstein and S. E. Zin. Substitution, risk aversion, and the temporal behavior of consumption and asset returns: An empirical analysis. *Journal of Political Economy*, 99(2):263– 86, April 1991.

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- [30] J. Gomes, L. Kogan, and L. Zhang. Equilibrium cross section of returns. *Journal of Political Economy*, 111(4):693–732, 2003.
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