

# Asset Pricing

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## Prf. José Fajardo

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# You

- Msc and Ph. D students
- Background?

# Objective

- Present asset pricing models, problems and methodologies to deal with them
- Understand how market risk and credit risk is quantified by banks and other financial institutions
- Discuss problems related to financial regulation

# Course Outline

1. Mechanics of Financial markets
2. Properties of options
3. Bitcoins and derivatives
4. Volatility smiles, The Greeks and Machine Learning
5. Value at risk
6. Estimating volatilities and correlations
7. Credit derivatives, and Financial Crises
8. New Financial Instruments: Pricing, Risk and Regulation
9. Term Paper Presentations

# Bibliography

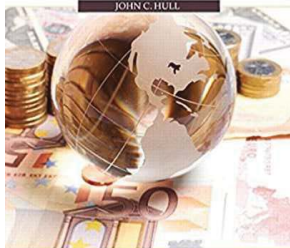
“Options, Futures and Other Derivatives ”, John Hull, Pretince Hall (2017), 10th edt

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Options, Futures, and Other Derivatives

FIFTH EDITION

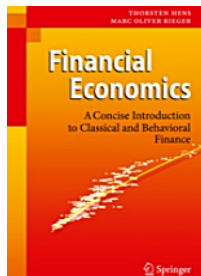
JOHN C. HULL



 Pearson

# Bibliography

“Financial Economics: A Concise Introduction to Classical and Behavioral Finance”. T. Hens and M. Rieger. Springer-Verlag, 2010.



## Additional Bibliography

- “Asset Pricing”, J. Cochrane. Princeton University Press, 2005.
- “The Handbook of Hybrid Securities: Convertible Bonds, CoCo Bonds and Bail-In”. Spiegeleer, J., Wim Schoutens, Van Hulle, C. Wiley-Finance. 2014.
- “Finance and the Good Society”. Robert Shiller. Princeton Press. 2013.
- “Virtual Currency Schemes”. European Central Bank (ECB), 2012.
- Related articles and slides available at:

<http://www.josefajardo.com/teaching/ap2019.htm>



# Assignments

- Assignment 1 : (due Class 3)
- Assignment 2 : (due Class 6)
- Assignment 3 : (due Class 9)

# Grading

- Readings and Class Participation (15%)
  - Assignment 1 (10%)
  - Assignment 2 (15%)
  - Assignment 3 (20%)
  - Term paper (40%)
- \* Academic Finance Profession

## Term Paper

- For most students, the most difficult part of the program is the search for a research topic
- To acquire some experience selecting research topics, a main course requirement is to prepare a proposal for a project concerning issues we discuss in class
- I hope that a set of research ideas will come to you as the course progresses
- At the end of the quarter, you should target writing down and presenting a document containing:

## Term Paper

1. One or two pages motivating the idea/research question. You want to identify a question, explain why it is important that we know more about
2. Once you motivate your research question, you need to think about the economics of your inquiry. This would probably take a page or two. For example, what are the tradeoffs involved? Should we expect to verify proposed effects using real world data? What are the exact methods we should use and why?
3. Anticipating the results: Based on priors, what results should be expected? (What if you find something else?) Discussing this should take a few paragraphs.

## Term Paper

4. Add a literature review. In this profession, it is important that you recognize (and give due credit to) those who did prior research in the area you want to do your first paper. Do a fair (not aggressive, but still critical) review of the literature in no more than three pages. The emphasis should be on establishing your case that the “void” in the literature is worth pursuing. Try to organize the papers in a compare/contrast format. Like all you do in the paper, use this to motivate the importance of your research question.
5. Take a page or two to discuss “implementation issues” such as data availability, sample construction, programming needs, replicability, etc.

## Term Paper

6. Have some preliminary results in the manuscript. These can be empirical results, simulations/calibrations, or anything that gives me hope that this is more than a bunch of nicesounding paper ideas that will never see the light of day.
7. A final, polished manuscript should be sent to me about one month after the class ends (deadline July 16th, 2019).

## Questions

- Determinants of Portfolio Heterogeneity
- Impact of Blockchain Technologies
- Cryptocurrencies and new Regulatory Environment
- Big Data and Machine Learning in Finance Models
- Climate Changes and Finance
- Political Institutions and Financial Markets
- Finance and Welfare

# Calendar

- April: 25
- May: 02 — 06\* — 09 — 20 — 23\* — 30
- June: 06 — 13\* — 17\*\*
- July: 16\*\*\*

\*Assignments deadlines

\*\* Term paper presentations

\*\*\*Written paper deadline