**Economics 40357**
**University of Notre Dame**
**Financial Econometrics**
Fall 2022

**Instructor:**Professor Nelson Mark
**Office:** Jenkins-Nanovic 3040.
**Office Hours:** Tuesdays and Thursdays, 2:00-3:30 and by appointment, in my actual office or by zoom.
**E-mail:** nmark@nd.edu
**Website:** https://www3.nd.edu/~nmark/FinancialEconometrics/2022FinancialEconometrics.htm
You can also access the course site through Canvas.

**Class Time and Location: 12:30–1:45 Tuesdays and Thursdays, Jenkins-Nanovic Hall B044**

**Your instructor** is the Alfred C DeCrane Jr. Professor of Economics. He was an economics major at UC Santa Barbara and got his PhD at the University of Chicago where he wrote his dissertation under the direction of the great Michael Mussa. Professor Mark worked as an economist at THE Ohio State University for 20 years, and came to Notre Dame in 2003. He is a Research Associate at the National Bureau of Economic Research, has been a consultant to the Federal Reserve Board, the Federal Reserve Bank of St. Louis, the International Monetary Fund, and a fellow at the Hong Kong Monetary Authority. He was Acting Director for the Liu Institute for Asia and Asian Studies from 2013-2015.

Academics are ranked and assessed on the number and quality of their peer-reviewed research publications and citations to their work. Prof. Mark currently has **11,395** Google Scholar citations– the second highest in the ND economics department. Of particular relevance to this course, Prof. Mark has published applied econometrics research on finance and international finance topics and two theoretical econometrics papers, one of which is an estimator that has been programmed up in Eviews (see Eviews User's Guide II section on panel Cointegration Estimation).

**Textbook:** *Introductory Econometrics for Finance*, 4th edition, by Chris Brooks, Cambridge University Press. Buy the paperback version online, either from Cambridge University Press or Amazon. It is *not* available at the ND bookstore.

**Course Description**: This course covers statistics and econometric methods used in financial economics. We focus on applications and intuition. We will do most of our computations in **Eviews,** which is very good for time-series econometrics. Probably, you've been indoctrinated to believe that Stata is the best and only econometrics software that is worth using, but that is not true. Eviews is used extensively by central banks around the world including the Federal Reserve, the IMF and the World Bank. Robert Engle uses it (he's an econometrician who won the 2003 Nobel Prize). Eviews is also widely used in the private sector (see https://www.eviews.com/general/about_us.html.

There is a student version of Eviews, called the University Edition, available for $49.95 that runs on Mac or Windows. This is the same as the full version except the license expires in 6 months. The **full version** of Eviews is installed on **university computers** around campus.

I will use a class session to give an Eviews tutorial to get you started. To follow along on your laptop, install the free student version of Eviews Student Version Lite. http://www.eviews.com/EViews11/EViews11Univ/evuniv11.html. This capacity of this free version is limited and probably not sufficient for the serious work in this course.

**Professor Mark does not read minds**. If you don't understand something, **SPEAK UP!** Otherwise Prof. Mark will never know if you are getting it or not. The objective is for you to learn financial econometrics and to have fun in the process (yes, it absolutely can be fun!). If you do not understand something, be brave and ask for help or another explanation. It is true, that we are afraid to seem 'stupid' for asking questions. I'm saying, have no fear!

**Grades and Assignments**

| Assignment | Due | Weight |
|---|---|---|
| Problem sets | Approx. every 2 weeks | 25% |
| Midterm 1 | Thursday 13 October | 25% |
| Group Paper | Tuesday 29 November | 25% |
| Midterm 2 | Thursday 8 December | 25% |

Your course grade is based on the scale,

| | |
|---|---|
| A | $93.333 - 100$ |
| A- | $90.0 - 93.332$ |
| B+ | $86.666 - 89.99$ |
| B | $83.333 - 86.665$ |
| B- | $80.0 - 83.332$ |
| C+ | $76.666 - 79.999$ |
| C | $73.333 - 76.665$ |

1. You should form a study group to work on problem sets and the group semester project. Groups should be made up of 4 people. These groups should form endogenously, but if they don't I'll randomly assign people to form them. The groups need to be formed by the first problem set. Your group will submit **one copy** of the problem set write-up and an **appendix** where each member attaches his or her copies of the Eviews code (when applicable) and output/results. Everyone needs to do the econometric analysis. In other words, it is not allowed to have one person do the econometrics and to send in only this one set of results. Also, it is not allowed to split up the assignment and have various people do separate parts. Everyone has to do the work for their own learning and to verify/double check the group's computations. The problem sets are an important learning device. If you just free-ride on the work of others and don't learn the material, you will suffer on the exams. To reduce the free-rider problem, you will confidentally grade your other group members on their effort and contribution. We will plan for you to submit the problem sets electronically through **Canvas.** Let me know if certain conflicts arise whereby a particular group is not working well. In that event, we can move people around.

2. **Midterms** are open note in the sense that you can bring a cheat sheet. You can bring whatever you can write on one sheet of paper (front and back). The current plan is for you to write the exams on your laptop and submit electronically on **Canvas**. The paper (discussed next) will substitute for a final exam.

3. **A short paper** that does an econometric analysis of some finance issue. Topic must be cleared by me first. The paper will be a group project, presumeably with your problem set study group. Use your imagination and work on a problem you agree to be interesting (and hopefully fun). Some examples of topics from earlier classes: (1) How does Notre Dame Football Perform Against the Spread? (2) The Effect of a Plane Crash on Airline Stocks (3) The Effect of Federal Funds Surprises on the Chinese Stock Market (4) Does Stock Market

Volatility Matter for Economic Growth? (5) Which Firms Are Most Affected By Trump's Tweets On Trade? (6) Is the Madden Curse real?

**3 class** sessions are reserved for groups to give a 20 minute in-class presentation of the projects. Let's plan to submit the paper on Canvas.

**What I expect from the paper:**

- Introduction: Background and description of the problem
- Data Description
- Empirical specification. Write out the equations you are estimating.
- Results: report in tables
- Conclusion
- This is **not** a full-blown academic term paper. It is a short, to the point, econometric analysis of a finance-related question. It is like the analysis behind a newsletter a financial firm would send to its econometrically savy (ha!) clients. Body of paper not to exceed **8 pages** in length, 11 point font, 1.5 line spacing (not including tables, figures, and bibliography) The format includes a separate title page with an abstract summarizing the paper; a complete list of references and a list of data sources. The presentation should be explicit enough for someone to to replicate all results. Data sources must be documented and modeling choices should be defended. You must clearly explain the question being addressed, why it is interesting, and what you have learned. We are aiming for short, polished papers. Don't try to use the same paper to satisfy requirements for multiple courses. Paper is due Thursday **1 December** before class.

4. **Special Dates**

   - **Thursday 1 September. Eviews tutorial.** We might want to do this by zoom where I can share screen.
   - **Tuesday 6 September, no class.** Personal medical issue.
   - **Thursday 22 October, Mark Robinson** our interim economics librarian, will talk to us about the available data resources at the Hesburgh libraries. He will tell us how to access and use the data. Most likely, you will need this information to do the term project.

Here is a brief list of **course topics**. Detailed descriptions and assignments will be posted on the course web page as we proceed.

1. Review of Concepts and Some Preliminaries
2. Review of least squares
3. Regression with time-series data
4. Eviews tutorial
5. ARIMA models
6. Information criteria for model selection
7. Predictive regression

8. The event study method
9. Time-varying volatility–ARCH and GARCH models
10. The beta-risk model and the time-series method
11. Some necessary matrix algebra
12. The Fama-MacBeth method.
13. Fama and French's three factor model
14. Vector Autoregressions
15. Local projections
16. Forecasting and forecast evaluation
17. Statistical factor analysis with principal components
18. Value at Risk (VaR)
19. Unit-root processes