



Econometrics II
Topics in Financial Econometrics
B30.3352

Professor Robert F. Engle
Fall 2000
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FINANCIAL ECONOMETRICS
FALL 2000
ROBERT ENGLE

Course Description: The course is designed to introduce the econometric tools most used in finance and to gain understanding of the sources and characteristics of financial data. We will use *Datastream* or other vendors as a source for financial data, and *EViews* software to build ARCH and other time series models. There will be *homework* and a *paper* but no exam. There is a lot of reading. The homework assignments will frequently be computer exercises which will be presented in class. *EViews* is available in the computer lab but I recommend that you buy a copy or upgrade to version 3.1 which has ARCH software as well as GMM, cointegration etc. This course presumes familiarity with finance as well as a course in graduate econometrics.

Time: Tues 10:00-12:50, Office Hours: Tues. 2:00-3:00 or appt.

DATE	TOPIC	READINGS
	<u>INTRODUCTION TO FINANCIAL DATA</u>	
9/12	Forecasting and the Efficient Market Hypothesis	CLM Chapters 1 and 2, 12.1
	Data Snooping	[24],[26]
	<u>TIME SERIES ECONOMETRICS</u>	
9/19	Models and their Properties	Hamilton 3,4,5, Granger&Newbold 1,10
9/26	Estimation and Testing	Hamilton 5,7,8,14
	<u>FORECASTING VOLATILITY</u>	
10/3	No Class – to be rescheduled	
	Volatility	CLM 12.2, Engle Chapters 1,3,4,5,7,8
10/10	Volatility	[5]
10/17	Stochastic Volatility	Engle 2,4,6 [22]

PRICING AND HEDGING OPTIONS

10/24	Options	CLM Chapter 9
	Implied Vol	[10]
10/31	Options with Stochastic Volatility	[20], Engle 9, 17, [13],[23], [7]

MODELING CORRELATIONS

11/7	Multivariate GARCH	Engle 11,13,14 [14], [11]
11/14	Multivariate GARCH	[27]
11/21	Value at Risk	[22], [6], [17],[25]

MARKET MICROSTRUCTURE

11/28	Market Microstructure	O'Hara Chapter 1,2,3
12/5	ACD	[12],[9]
12/12	Liquidity	[18], CLM,[8],[15],[16]

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2. Engle Robert(ed), **ARCH: SELECTED READINGS**: (1995) Oxford University Press(Chapters 1 to 18)
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11. Engle, R.F. and Joseph Mezrich, (1996) "GARCH for Groups", *Risk*, August Vol 9 , No 8: pp36-40
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16. Engle and Cho,(1998) "Modeling the Impacts of Market Activity on Bid-Ask Spreads in the Option Market", UCSD Manuscript
17. Lo,-Andrew-W.and Craig A.- MacKinlay, (1990),An Econometric Analysis of Nonsynchronous Trading, , *Journal-of-Econometrics*; 45(1-2), July-Aug., pages 181-211.
18. Hasbrouck, J. "Measuring the Information Content of Stock Trades", *Journal of Finance*, 66,pp179-207
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22. **RISK MANAGEMENT FOR FINANCIAL INSTITUTIONS**, Advances in Measurement and Control, *RISK*,1997, Chapter 1, 3,6,7
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FINANCIAL ECONOMETRICS

HOMEWORK I

Due Tuesday September 19 in Class

1. From Datastream or other source, download a daily time series of some asset price and convert it to a daily return. This should be at least a thousand observations and preferably more. Every student should have a different asset.
2. Learn exactly how this series is measured and what the asset is and on what exchange it is traded.
3. Check for simple violations of EMH by looking at the Ljung Box statistic, possibly over different subperiods.
4. Using all but the most recent 252 days, fit non-linear regression models to determine predictability for some weak form EMH tests.
5. Report skewness, kurtosis.
6. Discuss these findings in light of the different types of Efficient Market Hypotheses and explanations for anomalies.
7. Does this model make profits out of sample? Be clear on your trading rule and honest on how many things you tried.
8. Simulate a set of i.i.d. returns and look for predictability. Can you find it?