**American University of Beirut**
**Faculty of Arts and Sciences**
**Department of Economics**
**ECON 343-Econometrics of Financial Markets**
**Course Outline and Readings**

## 1. Course Learning Outcomes

This course will cover topics in applied financial time-series and cross-section methods. It covers selected topics in statistical financial analysis of financial data and dynamic asset pricing models. The econometric methods include linear time series models, properties of financial data, and discrete time linear financial models. It has to be emphasized that the econometric theory will not be rigorously covered, and intuitive understanding and practical ability in implementing the financial econometric methods are the main objective. The objective of this course is also to enable students to measure market efficiency and financial integration associated by applying various econometric techniques.

## 2. Resources Available to Students

### TEXTBOOKS

J. Campbell, A. Lo, and C. Mackinlay, *The Econometrics of Financial Markets*, Princeton University Press, 1997.
W.H. Greene, *Econometric Analysis*, 3rd edition, Prentice Hall.
F. Hayashi, *Econometrics*, Princeton University Press.

### OTHER TEXTBOOKS

T. MILLS*, The Econometric Modeling of Financial Time Series* Cambridge University Press.
E. FAMA *Foundations of Finance* Basic Books Inc.
B. MALKIEL A *Random walk Down Wall Street.*
R. DAVIDSON AND J.MACKINNON *Estimation and inference in econometrics* Oxford University Press, 1993.
J. JOHNSTON *Econometric Methods* 3rd edition. McGraw Hill.
G. JUDGE ET AL. *A course in econometrics.* Wiley, 1998.
G. MADDALA *Econometrics.* McGraw Hill, 1977.

Some books on statistics which may also be useful

A. MOOD, F. GRAYBILL, And D. BOOS. *Introduction to the Theory of Statistics.* McGraw Hill. 2001.
J.A. RICE. *Mathematical Statistics and Data Analysis* [2nd edition]. Duxbury Press.2002.

**TOPICS TO BE COVERED**

1.Stationary ARMA Models
2.Multivariate Processes
3.Nonstationarity in Mean
4.Cointegration
5.ARCH, ARCH-M, TARCH and other models of time-varying conditional variances.
6.Models with Binary and Multiple Discrete Outcomes
7.Vector Autoregression VAR
8. Vector Error Correction Models
9. Impulse Response Function
10. Variance Decomposition

**JOURNAL ARTICLES**

Akdogan, H., and Edward Elgar.1995. "*The Integration of International Capital Markets*", Working Paper, Bilkent University and Boston University.

Azzam, Henry T.: The Emerging Arab Capital Markets*, Kegan Paul International* 1997, London.

Bekaert G. and Harvey C.R.: Emerging equity market volatility. *Journal of Financial Economics* 43, 403-444, 1997.

Bekaert, Geert. 1993. "Market Integration and Investment Barriers in Emerging Equity Markets". In Stijn Claessens and Sudarshan Gooptu, ed. *Portfolio Investment in Developing Countries*. The World Bank.

Brennan M. and Schwartz E.: A Continuous Time Approach to the Pricing of Bonds, *Journal of Banking & Finance* 3, 133-55, July 1979.

Civelek M.A.: Stock Market Efficiency Revisited: Evidence from the Amman stock exchange. *The Middle East Business and Economic Review*, Vol. 3, No. 2 (1991).

Cox J., Ingersoll J., and Ross S.: A Theory of the Term Structure of Interest Rates, *Econometrica* 53, 385-407, 1985.

De Santis G. and Imrohoroglu S.: Stock Returns and Volatility in Emerging Financial Markets. *Journal of International Money and Finance* Vol. 16, No. 4 pp. 561-579, 1997.

De Santis G. and Gerard B.: International Asset Pricing and Portfolio Diversification with Time Varying Risk, *Journal of Finance* 5, v. 52, Dec 97, p 1881. 1.

Dickey, D., and W. Fuller, (1979), "Distribution of the Estimators for Autoregressive Time Series with a Unit Root," *Journal of the American Statistical Society,* 74, 661-692.

_______________, (1981), "Likelihood Ratio Statistics for Autoregressive Time Series With a Unit Root," *Econometrica*, 49, 1057−1072.

Eken, S, Cashin, P, Erbas, S.E., Martelino, J and Mazarei, (1995), *Economic Dislocation and Recovery in Lebanon,* IMF Occasional Paper, No.120, Section VI.

El-Erian, Mohamed A. and Manmohan S. Kumar, 1995."Emerging Equity Markets in Middle Eastern Countries. "*International Monetary Fund Staff Papers* v. 42(2), 313-343.

Engle, R., and C., Granger, (1987) "Co–Integration and Error Correction: Representation, Estimation and Testing," *Econometrica ,* 55, 251–276.

Fuller, Wayne, (1976), "Introduction to Statistical Time Series," New York: John Wiley and Sons.

Granger, C., (1986), "Developments in the Study of Co-integrated Economic Variables," *Oxford Bulletin of Economics and Statistics,* 48, , 213-228.

Granger, C., and Newbold P., (1974), "Spurious Regressions in Econometrics," *Journal of Econometrics,* Vol. 2, 111-120.

Joen B.N. and Von Furstenberg G.M.: Growing International Co-Movement in Stock Price Indexes, *Quarterly Review of Economics and Business*, 30, pp 15-30, 1990.

Johansen, D., (1988), "Statistical Analysis of Co-integration Vectors," *Journal of Economic Dynamics and Control*, 12, 231-254.

Kim S.W. and Wadhwani S.: Transmission of Volatility Between Stock Markets, *Review of Financial Studies* 3, pp 5-33, 1990.

Korajczyk, R., (1996), "A Measure of Stock Market Integration for Developed and Emerging Markets: *The World Bank Economic Review* Vol. 10, No. 2.

S. Neaime and S. Hakim, Price Linkages and Integration of MENA Stock Markets, *The International Review of Comparative Public Policy.* Elsevier Science Press, Vol. 13, pp. 63-86, 2002.

Neaime S., 2000, "Mean-Reversion Across MENA Stock Markets: Implications for Portfolio Allocations," *The Economic Research Forum*, *Seventh Annual Conference*, Amman Jordan.

Oyama, Tsuyoshi. 1997. "Determinants of Stock Prices: the case of Zimbabwe " . *IMF working paper*. Washington D.C.: wp/97/117.

Papaioannou Michael G. and George Tsetsekos. *Emerging Markets Portfolios,* 1997.

Phillips, P., and P., Perron, (1988), "Testing for a Unit Root in Time Series Regression," *Biometrika*, 76, 335–346.

Sargan., D. (1984), "Wages and Prices in the United Kingdom: A Study in Econometric Methodology." In D.F. Hendry et al eds., *Quantitative Economics and Econometric Analysis*, Basil Blackwell, Oxford.

William N. Goetzmaun and Philippe Jorion. *Re-Emerging Markets. NBER Working Paper No.5906*, January 1997.

### 3. **Grading Criteria**

Students are supposed to have some background in statistics and econometrics. Econometrics 305 is a pre requisite. The final course grade will be compiled from the following. A final econometrics term paper using EVIEWS to count for 30% of the final grade; bi-weekly assignments to count for 30% of the total mark, class participation and attendance 10%, and a final exam to count for 30% of the total mark.

### 4. **Schedule**

1. Probability and Algebra Review [Greene, ch 2 and 3]

   (a) Probability Theory
   (b) Distributions
   (c) Matrix algebra

2. Statistics Review [Greene, ch 4 and 5]

   (a) Maximum Likelihood Estimation
   (b) Hypothesis Testing
   (c) Asymptotic Theory

3. Linear Regression [Hayashi, ch 1; Greene, ch 6,7,8]
   (a) Linear Model
   (b) Properties of OLS

4. Linear Regression [Hayashi, ch 1; Greene, ch 6,7,8]
   (a) Optimality
   (b) Hypothesis Testing

5. Generalized Method of Moments [Hayashi, ch 3;Greene, ch 10,11 and notes
   (a) Specification
   (b) Computation
   (c) Properties of Estimators in i.i.d. Environments

6. Stationary Linear Time Series [Hayashi, ch 6; Greene, ch 13,17,18]

   (a) Stationarity and Mixing
   (b) ARMA models
   (c) Estimation

7. Generalized Method of Moments [Hayashi, ch 3,4,6; Greene, ch 10,11,13]

    (a) Specification in dependant environments
    (b) Properties of Estimators in dependant environments

8. Systems of Equations [Hayashi, ch 4; Greene, ch 15,16]

    (a) Seemingly Unrelated Regression
    (b) Simultaneous Equations
    (c) Vector Autoregression

9. Nonstationary Linear Time Series [Hayashi, ch 9,10; Greene, ch 18]

    (a) Unit Roots
    (b) Cointegration

10. Nonlinear Stationary Time Series [Greene, ch 18]

    (a) GARCH models
    (b) Diffusions

**5. Course Policy**

Class attendance is compulsory. Absence from exams should be supplemented by a medicated excuse. Failure to submit class assignments and final paper on time is subject to a penalty. Cheating and plagiarism during exams or writing term papers will be dealt with according to the university policies.