

MACROECONOMICS (II)

This course is concerned with the application of dynamic programming to the study of various macroeconomic problems, such as asset pricing, risk and uncertainty, efficient market, economic growth and development, and information theory. The *Smith-Coase framework* is useful, and will be used repeatedly in the study of these problems.

Requirements

Four homework assignments: 20%; Midterm/Final exam: 40% for each

Office Hours

Tuesdays, 2:00-3:00 p.m. (Social Sciences Building 302); otherwise, by appointment

Web: <https://web.ntpu.edu.tw/~guan>

Course Outline

Introduction to Dynamic Programming

Nancy L. Stokey, Robert E. Lucas, Jr., and Edward C. Prescott, *Recursive Methods in Economic Dynamics*, Harvard University Press, 1989, Ch. 3.

Efficient Market Hypothesis and the Kelly Criterion

Robert E. Lucas, Jr., “Asset Prices in an Exchange Economy,” *Econometrica*, 1978, 1429-1445.

Robert J. Shiller, “Speculative Asset Prices,” *American Economic Review*, 2014, 1486-1517.

Daniel Bernoulli, “Exposition of a New Theory on the Measurement of Risk,” *Econometrica*, 1954, 23-36.

John L. Kelly, Jr., “A New Interpretation of Information Rate,” *Bell System Technical Journal*, 1956, 917-926.

Harry M. Markowitz, *Portfolio Selection*, 2nd edition, Wiley, 1991.

William Poundstone, *Fortune’s Formula*, 20th anniversary edition, Picardo, 2025.

Nassiam N. Taleb, *Skin in the Game*, Random House, 2018.

The Smith-Coase Framework in Economics

Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, 5th edition, 1789; Modern Library, 1994, Bk. I; Bk. III, Ch. III, and Bk. IV, Ch. II.

Ronald H. Coase, *The Firm, the Market, and the Law*, University of Chicago Press, 1988, Ch. 2, 4, and 5.

--- “Durability and Monopoly,” *Journal of Law and Economics*, 1972, 143-149.

De-Xing Guan, *The Nature of Economics: Smith, Coase, and the Substitution Structure of Production*, World Scientific, 2025, Ch. 1-2.

Midterm Exam

Growth, Development, and International Trade

Paul Romer, “New Goods, Old Theory, and the Welfare Costs of Trade Restrictions,” *Journal of Development Economics*, 1994, 5-38.

Robert E. Lucas, Jr., “What Was the Industrial Revolution?” *Journal of Human Capital*, 2018, 182-203.

Joel Mokyr and Guido Tabellini, “Social Organizations and Political Institutions: Why China and Europe Diverged?” *Economica*, 2024, 347–382.

Paul Bouscasse, Emi Nakamura, and Jón Steinsson, “When Did Growth Begin? New Estimates of Productivity Growth in England from 1250 to 1870,” *Quarterly Journal of Economics*, 2025, 835–888.

De-Xing Guan, *The Nature of Economics: Smith, Coase, and the Substitution Structure of Production*, World Scientific, 2025, Ch. 10.

Cost Disease and Artificial Intelligence

William J. Baumol, “Macroeconomics of Unbalanced Growth: The Anatomy of Urban Crisis,” *American Economic Review*, 1967, 415-426.

William D. Nordhaus, “Are We Approaching an Economic Singularity? Information Technology and the Future of Economic Growth,” *American Economic Journal: Macroeconomics*, 2021, 299–332.

Charles I. Jones, “The AI Dilemma: Growth versus Existential Risk,” *AER: Insights*, 2024, 575–590.

Final Exam