

MA 535
HA 266 MWF 1:30 - 2:20
Fall 2003

**OPTIMAL CONTROL OF THE GROWTH
OF WEALTH OF NATIONS**

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In this course we shall derive the dynamics of the key economic variables of gross national product, interest rate, employment, value of capital, prices (inflation), and balance of payment. The derivation is based on market principles.

Using the economic time series of several countries, we shall attempt to validate the models. With the models constructed we shall study the mathematical optimal control of wealth of nations. The control variables consist of taxation, government outlay, money supply, tariffs, etc., and the part of private firms, strategy, autonomous consumption, investment, net export, money holding, wages, production, etc.

We shall explore how much government intervention should be in the economy to allow for the controllability of the economy. Optimal control instruments will be studied and compared with historical control strategies.

Simple MATLAB (or MAPLE) programs will be used. The first five chapters of the book “Optimal Control of the Growth of Wealth of Nations” by E.N. Chukwu, Taylor and Francis, ISBN 0-415-26966-0, London 2003 will be used in the course. It will be supplemented by “Stability and Time Optimal Control of Hereditary systems” by E.N. Chukwu, World Scientific, NJ USA. Homework and tests will be in the form of projects. The final will be a defense of the final project.