1 Introduction

- Economics is a broad-ranging discipline, both in scope and in the methods been used; see Becker (1992) on this point.

- What is Economics?
  - **Functional Definition**: the study of a specific set of phenomena we call ‘economic;’ demand and supply of commodities, market equilibrium and prices, [......]
  - **Methodological Definition**: the study of aggregate phenomena as outcomes of individual choices.

The functional definition is very narrow: Economists actively study phenomena which are traditionally attributed to sociology, anthropology, political science, law, and even biology. Examples include: crime, family, fertility, primitive societies (like hunter-gatherers), voting, comparative analysis of political and legal institutions, genetic evolution of preferences.

The methodological definition is more appropriate. Individual choice is at the core of any economic analysis of whatever issue. Economists will not accept group behavior as an explanation of an aggregate phenomenon; they will not stop at ”piercing is part of ‘youth culture’,” or ”altruistic behavior is a socially accepted norm of behavior,” but will rather try to identify what drives individuals to act in accordance to a specific culture or to abide to a specific norm.

1.1 The Economic Method

[...] the difference between economics and sociology is very simple. Economics is all about people make choices. Sociology is all about why they do not have any choices to make. (James S. Duesenberry).
• Most (but not all) economists will accept the following as fundamental characters of the economic method:

– *Individual choices are rational.* Individual agents respond optimally to changes in costs and benefits: they will choose the best bundle of goods for their money; they will sell assets they know are over-valued and will buy assets they know are over-valued; they will engage less in criminal activities if the probability of detection is higher, if punishment is more severe, if more alternatives to crime are offered ex-ante.

– *Aggregate phenomena result from equilibria.* Agents in an economy or society interact through markets and through different institutions (families, firms, schools, peers). Choices of different agents are connected in the economy, and an economic analysis of a specific phenomenon considers all the relevant connections, the direct and indirect effects of a change in the determinants of such phenomenon, for example. This is what economists call equilibrium. For instance, a preference shift of young people in favor of electric scooters over taxi rides transportation will have an effect in their demand of scooters, which will in turn have an effect on the relative price of scooters and taxi rides, which will have an effect on the demand of all people, on the supply of scooters and on the offer of taxi licences. An equilibrium is the level of demand of young and old people, the price, the supply of scooters and taxi licences after all these effects have been taken into account. Another example of equilibrium analysis: a technological change which changes the demand for skilled workers will have an effect on their wage, and on the wage of un-skilled workers too; in turn this will have an effect on their supply (e.g., because more people will acquire the demanded skills following an increase in the wage rate for skilled workers). Equilibrium analysis is not only appropriate for economic questions: many of the early forecasts of the effect of Aids mistakenly did not consider the effects of the advent of the disease on sexual practices and norms (‘safe sex’).

• Often the notion of *economic equilibrium* is criticized by other social scientists (and even by some economists who should know better) on the grounds that modern economies should be better represented as
in a sort of “permanent disequilibrium.” This critique is based on a fundamental misconception of what an economic equilibrium is, a misconception induced by the meaning that the word “equilibrium” has in common parlance (but not in economics!). An economic equilibrium is not in any sense a state in which economic variables are constant or slowly moving or anything like that. It is in fact possible to show that the notion of economic equilibrium, even when combined with individual rationality, is perfectly consistent with any sort of complex dynamics of e.g., aggregate capital or GNP. Even chaotic dynamics, that is dynamics which do not converge to a constant not a cyclical state and which depend greatly from initial conditions, are possible.\footnote{The word “chaotic” also has a precise meaning in the mathematics of dynamical systems that is not well represented by its meaning in common parlance. Disciplines have jargons!}

\section*{1.2 Theory and Models}

An economist is the only professional who sees something working in practice and then seriously wonders if it works in theory (Ronald Reagan).

- Models are theoretical exercises of abstraction. Abstraction - ignoring many details in order to focus on the most important elements of the problem. There is no such thing as the right degree of abstraction for all analytic purposes. The proper degree of abstraction depends on the objective of the analysis. A model that is a gross oversimplification for one purpose may be needlessly complicated for another.

- Models are not necessarily mathematical models. The following example (taken from Krugman, 1995) illustrates this point: Dave Fultz at the Univ. of Chicago in the late 40’s showed that a dishpan filled with water, on a slowly rotating turntable, with an electric heating device bent around the outside of the pan provides a good representation of the basic pattern of weather. The dishpan was build to model the temperature differential between the poles and the equator and the force generated by the earth’s spin (abstracting from most of the the intricacies and complexities of the earth geography) and was successfully shown to exhibit phenomena which could be interpreted as...
tropical trade winds, cyclonic storms of the temperate regions, and the jet stream.

- Most economic models are in fact mathematical models. This is in part due to the fact that math is a very efficient language for abstract arguments (especially, it facilitates the manipulation of complex logical arguments and the identification of logical and conceptual mistakes in abstract arguments). But also, mathematics, especially when coupled with fast computers, allows the constructions of models as laboratories, that is, mechanical imitation, economies that generate simulated data which can be compared with actual data from real economic systems (Lucas, 1980 develops on this point).

1.3 Economic Debates

Why does public discussion of economic policy so often show abysmal ignorance of the participants? Why do I so often want to cry at what public figures, the press, and television commentators say about economic affairs (Robert M. Solow).

- Politicians and reporters are fond of pointing out that economists can be found on both sides of many issues of public policy. If economics is a science, why do economists quarrel so much? After all, physicists do not debate whether the earth revolves around the sun or vice versa.

  The question reflects a misunderstanding of the nature of science! Disputes are normal at the frontier of any science. Clearly, nowadays physicists do not argue whether the earth revolves around the sun but they did (quite vociferously), and they do argue about the causes (and even the existence) of global warming. However the disagreements between hard scientists go mostly unnoticed to the public because only few of us understand what they are talking about. On the other hand, the economists’ disputes are aired to the public and thus all sorts of people are eager to join the economic debates.

- Unfortunately, common sense is not always a reliable guide in economics since many economic relationships are counterintuitive. Hopefully, by the end of our course we will have a better sense of when common sense works and when it fails.
1.4 An (incomplete) List of the Successes of Economics

(Most of these will be introduced, in their simplest version, in this course).

- The characterization of gains from trade in general and of international trades in particular. This is the Invisible hand result (or First Welfare Theorem).

- Risk adjusted returns in financial markets are unpredictable. This is the No-arbitrage theorem.

- Several "neutrality" or "equivalence" results (careful! these results hold under restrictive assumptions - somewhat like "in the vacuum" results in physics - and hence never in real economies, but are fundamental benchmarks that, when not recognized, induce important logical mistakes):

  Doubling the amount of money in an economy has no real effects; equivalently, dividing all prices by a third (multiplying the value of a Dollar by three) has no real effects. This is called Monetary neutrality.

  Given government expenditures in the present and future, how they are financed, e.g., by taxing now, or by taxing later, or by printing money (inflation) has no real effects. This is called Ricardian equivalence.

  Given a firm’s production plan in the present and in the future, how is the firm financed, e.g., by equity or debt, has no effect on its value. This is the Modigliani-Miller theorem.

- The Malthusian theory of fertility, that is, economies will not grow because fertility growth will eat up all income growth, is inconsistent with individual rationality.

- Evolutionary theory in biology can be accurately represented by the methods of game theory. The same for Foraging theory.

- Altruistic (or cooperative) behavior is consistent with individual rationality in a well-defined series of conditions. This is the Folk theorem.
• Value and equilibrium prices coincide (once "value" is properly defined). This is the Theory of value.

• The study of the effects of economic policy is logically and empirically flawed when not embedded in equilibrium analysis. This is called the Lucas Critique.

• Many empirical relationships and many stable correlations have been uncovered by means of statistical and econometric techniques. Examples include, the effects of taxes on labor supply, the determinants of business cycles, the determinants of asset prices, and many many many others.

1.5 References


• P. Krugman, Development, Geography, and Economic Theory, 1995, MIT Press; Ch. 3.