1 Economics without Apology

On the dubious date of 1 April 1971, after two and a half years of study, I successfully defended my dissertation in economics. Although the 2000–01 academic year marks my thirtieth year of teaching economics since the fall of 1970, I am no less enthusiastic about the subject. To impart my excitement about economics to a fresh group of students is a recurring challenge that I confront most fall semesters as I rush to my large 8 A.M. section of economic principles on the other side of campus. It must be my perverse sense of humor, or else self-punishment, that I would place before myself the supreme challenge of interesting 250–300 students in a large, overheated lecture theater with its uncomfortable seats at such an ungodly hour. As I walk down the aisle to a sea of whispers as the students give me the once-over, I ask myself if I am prepared for this. At the front of the room, I pull up my blue jeans and take a deep breath. I attach the remote microphone to my shirt, switch on the infrared receiver, remove the laser pointer from my pocket, and then my eyes scan the youthful faces before me. Every semester it is the same story: of the 300 or so pairs of eyes, no pair is looking at the same spot, and no pair is looking at me – not a one! From this nadir, I must accomplish my task – to somehow get these students to understand and appreciate the power, importance, and prevalence of economic concepts in the modern-day society that we inhabit. While I cannot claim to get through to all of them, I do manage, I believe, to convince a large percentage that economic principles have influenced our lives greatly during the last century and will have a more pronounced effect in the twenty-first century. Economics not only provides insights into social phenomena that we experience daily – for example, how prices and wages direct resources to their most valued uses – but also plays an active role in guiding policy.

In this book, I take up the same daunting task of convincing my reader that economic thinking has much to offer and remains a driving force in

society today. Its influence will grow in the new century as resource scarcity increases. Economics not only can explain how nations can collectively address the deterioration to the oceans, groundwater, rivers, forests, and atmosphere, but also can enlighten us on how best to assist developing countries.[1] A knowledge of economics can guide intergenerational choices on how decisions today affect the choices available tomorrow. Additionally, economics can help to explain the decay of urban centers, the breakdown of cartels, the need for governments, the design of contracts, the decline of trade unions, and the pitfalls of minimum wages. Economics can promote informed decisions about sustainability, globalization, and the transition to capitalism. If you choose to be ignorant about economics, then you are governed in many aspects of your daily existence by forces beyond your control that remain a mystery. With a basic understanding of economics, these forces can be harnessed to advantage.

If I were pressed to say why economics has held my attention for so many years, five things would top the list. First and foremost is its relevancy in explaining the real world. I can understand why many social interactions assume the forms that they do by applying economics and, in so doing, I am able to profit from an ability to anticipate outcomes. Second, I love the way that economics combines alternative ways of reasoning as it borrows from so many disciplines. Third, there is its beauty and elegance of expression. When economics is executed by a skilled mind, its formulation is clever and pregnant with applications. Fourth, economics is interdisciplinary in its orientation. As an offspring of moral philosophy and physics, economics requires both sides of the brain, owing to its philosophical, analytical, and visual underpinnings. Finally, and no less important than the other reasons, economics is logically rigorous. Even when it merely conceptualizes a problem, there is a rigorous framework to the argument. Given its reliance on well-reasoned and well-expressed arguments, it is no wonder that economics is an excellent pre-law degree. There is almost universal agreement among economists on the important basic postulates upon which economics rests.

Economics was perfected by Adam Smith, David Ricardo, John Stuart Mill, and Thomas Robert Malthus, from earlier writings dating back to Aristotle, in order to influence policy decisions. Smith and Ricardo were especially concerned with practices – the Corn Laws – that restricted international trade, as advocated by the mercantilists, who mistakenly believed that a nation's wealth was tied to its accumulated money and

[1] On these global problems see Helm (1991), Kaul, Grunberg, and Stern (1999), and Sandler (1997, 1998); on foreign assistance see Kanbur, Sandler, and Morrison (1999) and World Bank (1998).

gold reserves. This monetary treasury could be augmented by running trade surpluses (that is, exporting more than was imported) and placing payments for exports, not covered by imports, into the monetary reserves. The larger the trade surplus, the greater the growth of the treasury. Smith showed that the true wealth of a nation was dependent on its productive capacity and not on its monetary reserves, while Ricardo formulated trade theory and the poignant principle, no less true today, that free trade can improve everyone's well-being.[2] If a nation's trade surplus *limits* the buildup of its productive capacity, as it would if the money pool were not put to productive advantage, then mercantilist doctrine would lead to the decline of a nation. Free trade ensures that goods are available at the lowest price, with inefficient enterprises being driven out of business and replaced by more profitable ones. With these two intellectual giants and their theories, modern economics was born. Although economics has progressed greatly over the last 200 years, it remains a policy-oriented study. Young and talented economists must not lose sight of economics' concern for, or obsession with, policy.

This last century has witnessed significant refinements and advances in economic thought.[3] Much of the revolution in economic thinking during the twentieth century was in terms of the enhanced awareness of how markets are tied together. *General-equilibrium* analysis, whereby market interdependence is taken into account, has displaced the practice of examining isolated markets.[4] Policy prescriptions involving trade, foreign assistance, taxation, government spending, the environment, and labor practices now must recognize the influence that actions in one market have on other markets. Another important innovation is economics' enhanced emphasis on strategic behavior, whereby economic agents (for example, firms, individuals, governments) anticipate the responses of others to their own actions. For example, a firm that lowers its price must judge this decision in light of the expected reactions of others. A government that installs metal detectors in airports should not be surprised when terrorists respond by abducting hostages at other

[2] When extolling the virtues of free trade I emphasize that it "may" improve everyone's well-being, which is different from saying that it will make everyone better off. The gains from trade are often unevenly distributed and can impoverish some in sweatshops while adding to the wealth of the rich. Globalization and the increased trade that it brings may skew incomes, thereby accentuating inequality. It is this perceived widening income gap that has brought demonstrations against the World Trade Organization, the World Bank, the International Monetary Fund, and multinational firms (for example, Starbucks Coffee) to the streets of Seattle, Washington, D.C., Geneva, and elsewhere.

[3] For up-to-date and excellent treatments of the history of economic thought, see Blaug (1997) and Heilbroner (1986).

[4] On the importance of general-equilibrium analysis, see Starr (1997) and Arrow (1974a).

venues. Similarly, neighborhoods taking actions against the sale of crack cocaine should anticipate that dealers will relocate to the nearest neighborhood not taking action. With the importance of strategic behavior comes an increased interest in information. To anticipate other agents' actions, you must know not only what they know about themselves, but also what they know about you, and even what they know that you know about them. Information is no longer assumed to be costless and pervasive. Another crucial innovation in economic thought involves the role of institutions. Once regarded as given and outside of economics, institutions are now viewed by economists as an integral part of the analysis. The design of institutions can affect allocative efficiency, the distribution of income, growth, and stability – all four basic economic problems.

The purpose of the current chapter is to set the stage for the rest of the book. Thus, I am interested in addressing the role of economics in modern-day society. In particular, I want to identify the pressing issues of the day and how modern economics can enlighten us on these issues. This chapter also introduces some exciting and influential economic concepts that will be studied in greater detail in the later chapters. A crucial question involves which of these concepts and methods will have staying power and why.

ECONOMICS AND SOCIETY

We live in a world of contrasts. A few nations have accumulated vast wealth in the form of physical and human capital, while the majority have relatively little. In 1997, the richest fifth of all nations earned 86% of world income, leaving about 14% for the other 80% of nations.[5] Some of these poor nations possess tremendous natural resource wealth, but have little means to exploit this wealth. Many nations' environments are severely polluted, while others are still pristine. Select societies are technological marvels, while others have not progressed much beyond the Iron Age. Some countries dream of colonies in space and journeys to neighboring planets, while others do not dream at all, worrying instead about how to feed their teeming populations today and tomorrow. The most technologically sophisticated countries can easily protect their people against most disease-causing viruses, which can decimate less-developed countries; while these same advanced countries can be stopped in their tracks by insidious computer viruses, which have little impact in less-developed countries. Even among the rich countries, contrasts are dramatic – for example, the importance of

[5] United Nations Development Program (1999) and other years of the *Human Development Report*.

the military-industrial base, the percentage of gross domestic product (GDP) devoted to research and development (R & D), the size of the public sector, the rate of unemployment, and the nature of institutions. These contrasts, and many others, pose interesting questions about income distribution, resource allocation, and growth that economics can help to explain. When economics addresses such issues, it assumes a relevancy.

Economics is often unfairly characterized as the "dismal science," because some early classical economists warned of worsening conditions for humankind. For example, Malthus hypothesized that population grows at a geometric rate while the food supply grows at a much slower arithmetic rate, thus portending famine and pestilence – not a promising destiny. Fortunately, his calculations were faulty and, most important, technological advances in agriculture have continued to ward off these scenarios, except in the poorest countries. Ricardo's theory of rent predicted that landlords would assume an ever-increasing share of income as population pressures made us turn to less productive land – surely a depressing prediction to everyone but landowners! This hypothesis also was never realized because of technological advances in agriculture that have allowed an acre to feed ever-greater numbers of people. Landlords now receive a small share of national income – just one-half of one percent in the United States in 1993.

Economics not only can warn of pending crises, it also can lead to the sought-after result of lessening the effects of these crises or forestalling them completely. Modern economics not only identifies when intervention may be needed, but also indicates when policy is not required: in some instances, incentives may mean that the problem is self-correcting. Medicine identifies diseases, some of which can be cured and others not; but medicine is not labeled dismal. Economics is particularly promising when it helps guide society to better outcomes, such as full employment without inflation – an outcome thought impossible twenty years ago, but which has characterized the prosperity of the United States during the 1990s and beyond. While some of this prosperity may be serendipity, economic principles have been applied by the Federal Reserve to raise interest rates at appropriate points, so that inflation has not taken off during these halcyon times.

Sometimes, slight alterations in institutions and their implied incentives can have extremely favorable consequences with only modest costs. Economics' new focus on institutions and their incentive structures has allowed its methods to be applied to an ever-widening set of social and economic problems. Consider the behavior of political officeholders. A relatively new field of economics, known as public choice, views these politicians as acting to pursue their own well-being, sometimes to the

detriment of their constituents' welfare.[6] In order to win and maintain office, politicians cater to special interests, trade votes or logroll, ignore long-term consequences of their decisions, and assume centrist positions. Changes to campaign financing, term limits, election procedures, and information dissemination can influence these practices and, by so doing, can make politicians more responsive to the electorate.

As a discipline that studies optimizing behavior in the face of constraints (for example, getting the most satisfaction from your budget), economics lends itself to the study of a wide variety of social interactions and problems. Economic methods can be applied to questions in sociology (for example, group formation and actions), political science (for example, the behavior of parties in elections), history (for example, the profitability of slavery), and ecology (for example, biodiversity and species preservation). With their large bag of theoretical and empirical tools, economists are particularly adept at infiltrating other fields. This extension of economics to diverse areas has led some to complain about an economic imperialism. Edward Lazear (2000) defends this imperialism and attributes economics' successful invasion to its emphasis on rational behavior, equilibrium, and competition. Recent economic insights and methods should further the application of economic ideas to issues in other disciplines.

ISSUES OF THE DAY

We inhabit a "brave new world" where allocative decisions today can have consequences that transcend political and generational boundaries. For example, the lamp beside you that illuminates this book may use electricity generated by a nuclear power plant, whose by-products include plutonium that can pollute the planet for millennia to come. Genetic engineering raises a host of issues that range from ownership of genetic codes to inefficiencies stemming from the benefits and costs of unintended side effects. Even the choice by doctors of how often to prescribe antibiotics has an intergenerational consequence, as their use allows bacteria to acquire a tolerance, leading to more virulent forms that can threaten current and future generations. Increasingly, technologies place in our hands consumption goods that affect the unborn, who have no say in these far-reaching decisions. A related notion concerns the now-popular concept of economic sustainability, whereby the current generation's actions do not limit the options available to subsequent generations.[7] Are generations sufficiently motivated through altruism or

[6] The classic works in public choice include Black (1958), Buchanan and Tullock (1962), and Downs (1957). The field is surveyed by Mueller (1989).

[7] On sustainability, see the World Commission on Environment and Development (1987), Solow (1986), Howarth (1995), Pearce and Atkinson (1995), and Doeleman and Sandler (1998).

other interests to achieve sustainable development? The answer to this question is not very promising.

From an economic viewpoint, political borders are losing their importance. This is also true from a security perspective. Technologies have created goods and bads, whose benefits and/or costs slip through political borders. Thus, coal-fired power plants produce sulfur and nitrogen oxide emissions that travel to downwind countries and fall as acid rain or dry deposits. Coolants in refrigerators and air conditioners can release chlorofluorocarbons (CFCs) that migrate to the upper stratosphere and thin the ozone layer, which protects humans and animals from harmful ultraviolet radiation.[8] The burning of fossil fuels releases carbon dioxide (CO_2), which accumulates in the atmosphere and results in a greenhouse effect, as trapped solar energy heats up the Earth. The inhospitality of Venus is due, in large part, to elevated temperatures caused by a runaway greenhouse effect. Myriad transboundary pollutants at the regional and global levels are of current concern. In the case of health, disease-causing bacteria and viruses cross borders at will, aided by modern transport. The security of national frontiers is called into question, not only because of diseases and pollutants that travel without passports, but also because of terrorism, civil unrest, criminal activities, and revolutions that traverse borders with disastrous consequences. This increased prevalence of transnational interdependencies is traceable to more than just new technologies; it is also due to expanding populations, the breakup of nations, and accumulated stresses to our planet. We are more aware of these interdependencies because we are better able to spot them using newly developed means to monitor the environment and society.

An important question of the day concerns changing from one economic system to another. In particular, the breakdown of communist regimes from 1989 to 1991 has led to "transition economies," which are in the process of introducing a greater reliance on markets. Such transition can be accomplished all at once – the so-called "big bang" – by relinquishing government controls and fiats to all transactions. Opening up the country to international trade permits world prices to discipline domestic exchange, but often at the price of great hardship to domestic industries. This wholesale institution of markets requires an infrastructure – property law, enforcement of contracts, and a banking system – that must be set up quickly at tremendous expense. An alternative pathway of transition involves more gradual changes – myriad options exist. The nature of the best transition pathway is subject to much current debate.

Another important issue involves the architecture of institutions. Consider the firm, one of the essential agents in any economic system.

[8] See de Gruijl (1995) and Environmental Protection Agency (1987a, 1987b).

Standard economic analysis – the "neoclassical" theory – does not present an explicit theory of the firm's structure and merely assumes that firms of an unspecified nature control many economic decisions. Thus, we have little guidance in choosing between, say, the Western corporate form or the less hierarchical form of the Japanese firm.[9] What should replace the Chinese large-scale state-owned enterprises, if anything, is of considerable interest. Institutional design permeates almost every current economic problem – for example, the form of environmental treaties to address transfrontier pollution problems, the design of non-market structures to address market failures, and the proper structure of government decision making to limit participants' pursuit of their self-interest.

Another area of interest concerns whether or not people really act according to the rational-choice models that dominate the landscape of economic thought. Modern-day tools and analyses – for example, game theory, rational expectations, portfolio theory, and public choice – assume a great deal of rationality by participants. Recent analyses may allow for ill-informed agents or even mistaken behavior, but these agents are still driven to seek their own self-interest and to respond in predictable and appropriate ways to changes in constraints. Recent Nobel Prizes awarded to some of the strongest proponents of rational-choice models (for instance, Amartya Sen, Robert Lucas, Ronald Coase, James Mirrlees, Gary Becker, William Vickrey, and John Harsanyi) reflect the profession's continued faith in (obsession with) the usefulness of this paradigm. Of course, the opposite case of completely irrational (mad) behavior with no predictable pattern would leave virtually nothing for economists to study. Some unpredictability or bounded rationality can be accommodated, as some recent advances in game theory demonstrate, but predictable aspects must also remain – that is, madness or restricted capabilities must have enough predictability to allow modeling to be applied, if economics is to cast some light on these kinds of behavior.

EXCITING ECONOMIC CONCEPTS FROM THE TWENTIETH CENTURY

The obvious first place to turn to predict what economic concepts will rule thought in the twenty-first century is to identify influential and exciting concepts from the last century, especially during its last quarter. As mentioned earlier, the dominant paradigm of economics during the

[9] The background for this statement comes from Aoki (1984, p. v). The form of the firm was first systematically analyzed by Williamson (1975). Also see Cauley and Sandler (1992).

previous century was that of general equilibrium, accounting for the interrelationship of markets. By far, the most Nobel Prizes in economics were awarded for studies of the interrelationship of markets; Nobel recognition was given to contributions that analyzed its foundation (John Hicks and Paul Samuelson), its existence (Kenneth Arrow and Gerard Debreu), its linear representation (Wassily Leontief and Leonid Kantorovich), its application to specific economies (Lawrence Klein), its growth (Simon Kuznets and Robert Solow), and its trade representation (Bertil Ohlin). A recent and noteworthy extension to general-equilibrium analysis concerns systems that include economic and noneconomic phenomena. For example, bioeconomic models involve biological interactions within economic systems and have been applied to study the management of renewable resources (for example, fisheries and forests – see Chapter 11).[10] Similarly, the study of environmental economics has begun to include hydraulics, atmospheric relationships, and stochastic factors.

Much interest has been shown in the role of information in economic systems. Classical economics gave little thought to information, since everyone was assumed to be perfectly well-informed. Information was also assumed to be costless. In recent years, information has come to be considered a factor to be reckoned with, and one that may be costly to acquire. Knowledge, and who possesses it and when, is an important determinant of economic outcomes (see Chapter 7). Consider investors in a stock market who foresee or have reliable information about the future prospects of a corporation. Once this knowledge is acquired, investors will act on it and, in so doing, cause stock prices quickly to reflect these prospects. When some months later the prospect is realized, the stock price hardly budges, having already incorporated the anticipated event's influence on the value of the company. A particularly fascinating analysis involving information occurs when one party to a transaction knows more than the other. This situation of "asymmetric information" is pervasive in social and economic contexts. For instance, a terrorist group knows its own true strength, while the targeted government must decide how to respond to a bombing campaign based on signals picked up from the group's actions and the manner in which the government processes these signals. Surely, a government would capitulate to the terrorists' demands if it knew immediately that the terrorists' resources were sufficient to make the political and associated costs of giving in less than those of holding firm.

The terrorist example reminds us that game theory – the study of strategic interactions – has come to dominate economics over the last

[10] The seminal work on bioeconomics is by Clark (1985).

two decades (see Chapter 3). In economics, the application of game theory is so ubiquitous that even policy decisions are often represented as strategic interactions among policy makers and other economic agents. Sometimes, these policy interactions involve addressing market failures (see Chapters 2 and 4), and, at other times, they include agents bent on influencing decisions for their own gain (see Chapter 5). Thanks to economics, governments are no longer viewed as benevolent institutions whose actions always further societal welfare. Moreover, government interventions do not necessarily remedy market shortcomings; in fact, government failures may stem from the very same factors that lead to market failures.

In a perfect economic environment in which every activity has a price, property rights are assigned, and competition is rigorous, independent agents' pursuit of their own self-interest leads to the betterment of everyone. This result was dubbed "the invisible hand" by Adam Smith. Markets fail when this pursuit results in an inefficient allocation in which resources do not gravitate to their most valued use, so that a reassignment can improve society's well-being. Market failures are associated with externalities, public goods, open-access resources, and increasing returns to scale. An *externality* is an interdependency among two or more agents that is not taken into account by a market transaction. If running your car pollutes the environment, and if, moreover, you are not charged for the resulting damage, then an externality exists. In the absence of this charge, car owners can be expected to drive too much from a social viewpoint.

Market failures may also be associated with public goods. Publicness here does not necessarily refer to government provision; rather, it means that the good's benefits possess two properties that distinguish these goods from those that can be traded in markets. First, a pure public good's benefits are nonexcludable, with both payers and nonpayers gaining from the good once it is provided. Since the provider cannot keep others from consuming the good's benefits, consumers have a natural incentive to take advantage of the public good without paying for it, which leads to a *free-rider* problem and an anticipated underprovision of the public good. If I put on a fireworks display at the city park and then request a donation from anyone who comes to watch, my collection would surely be meager no matter how spectacular the pyrotechnics. Second, the benefits of a public good are nonrival in the sense that one user's consumption of these benefits does not detract, in the least, from the consumption opportunities still in store for others. Consider the cleanup of a polluted lake and those who visit its shores or use its waters. Once the lake is cleansed, the benefits from the cleaner