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Part I

Scope and Methodology of Economics

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HISTORY OF ECONOMIC THOUGHT

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Like economic history, the history of economic thought (HET) investigates economic issues in long-run perspective. Yet the two fields are distinct and should not be confounded: HET does not study economic *facts* such as the 1929 financial crisis but rather economic *theories* and economic *literature.* It focuses on the historical roots of economic ideas and takes into account a wide array of schools of thought; in conjunction with pure theory and the history of facts, it constitutes part of a comprehensive approach to the study of the economic bases of modern societies. Examples of research questions in HET include how economic issues (say, unemployment or growth) have been dealt with at different points in time, what intellectual debates they have stimulated, and what solutions have been concocted; how the meaning and interpretation of economic concepts such as involuntary unemployment or market equilibrium may have changed over time and how they have affected policy debates; and whether and how exchanges with neighboring disciplines or with currents of thought in philosophy have exerted an impact on the development of economics.

A variety of approaches to the study of HET coexist, but it is possible to identify two broad tendencies into which most of them would fit: one more "theory oriented," the other more

"history oriented." The theory-oriented approach, often referred to as *history of analysis,* emphasizes *continuity* between present and past reflection, so that earlier writers are seen as a source of inspiration that may assist today's researchers in devising new solutions to current theoretical questions. Because economics is an approach to the study of society that endeavors to look beneath context-specific factors to discover underlying regularities in the behavior of individuals and communities, older economists who have already identified some of these regularities can provide useful insight despite the time distance that separates them from us. Earlier ideas have remained partly underdeveloped, and getting back to them can potentially suggest new directions for research. For some scholars, this means reviving alternative explanations and interpretations of economic phenomena, in a critical perspective with respect to any consensus that might exist today. In line with this methodological stance, historians of analysis primarily rely on the conceptual tools of contemporary economic theory.

In contrast, the history-oriented approach emphasizes *discontinuity* between different stages of development in economics and the specificities of each of them. The idea is that an economic theory is embedded in its historical, sociopolitical, and institutional environment and constitutes a response to the problems of the day, so that it is incorrect to understand it in abstraction from them. Specifically, a "retrospective" interpretation of past economic theories in light of the knowledge that has been subsequently acquired is impoverishing as it tends to present them all as imperfect, preliminary drafts of today's supposedly superior models. Instead, it is essential to detail the context in which an older theory emerged, and useful insight may come from historical techniques such as archival work, biographies, and oral history. This approach emphasizes the relative character of economic theories and their connections to politics and society at large. Among scholars who work along these lines, a large group has developed a close association with, and adopted methods of, science studies, in some cases with a critical perspective toward economics.

While the two above-outlined approaches are the object of recurrent and sometimes lively controversies within the HET community,[1] many scholars are in fact aware that each has both strengths and weaknesses and try to combine the two in their research. Still other approaches may be occasionally present, particularly the case of research at the crossroads between HET and the

philosophy or methodology of economics.

What follows is a brief overview of the main areas of research in HET that also correspond to a classic division of phases of development of the economics discipline from its origins to its present state. Following the *Journal of Economic Literature* classification, the evolution of economics has been subdivided into two phases—namely, HET through 1925 and HET since 1925; a shorter third part on recent developments has been added to this basic scheme.

There is obviously insufficient room to cover *all* aspects of the intellectual reflection in economics over such a long time span. For this reason, the presentation is limited to a sketch of what each period contributed to the study of three foundational issues in economics—namely, the theory of individual economic behavior, the market mechanism as a coordinating device, and the respective roles of markets and governments in the regulation of economic systems. Reflection on these issues has progressively formed economists' understanding of society and presently allows applications to a broad range of social phenomena, from monetary and financial matters to health and the environment. Furthermore, these very issues have been the object of major controversies that have divided economists into different schools and have ultimately shaped the history of the discipline. While a long tradition of thought has contributed to developing economic models of individual behavior, dissenting groups have recurrently pointed to its neglect of other important motives of human action; while most economists since a very early stage have promoted a conception of the market as a self-adjusting social mechanism capable of coordinating individual actions at best, critics have often raised doubts on its merits; and while a majority has often supported pro–free market arguments against government intervention, the opposite position has sometimes prevailed. In outlining these developments, similarities and differences between past and present theories will be emphasized whenever possible, with the help of HET literature and in an effort to stress the insight that may come from both of the above-outlined approaches.

Further readings include classic works such as Robert Heilbroner's (1999) *The Worldly Philosophers,* Joseph Schumpeter's (1954) *History of Economic Analysis,* and Mark Blaug's (1997) *Economic Theory in Retrospect,* together with recent reference books such as *A Companion to the History of Economic Thought* (Samuels, Biddle, & Davis, 2006) and *The*

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[1]For an overview of methodological debates in HET, readers may wish to consult Weintraub

History of Economic Thought: A Reader (Medema & Samuels, 2003). The main scholarly journals in the field are *History of Political Economy, European Journal of the History of Economic Thought,* and *Journal of the History of Economic Thought.* The Web site of the History of Economics Society[2] and the HET page of the New School for Social Research[3] also offer information. Finally, Liberty Fund has republished at affordable prices many of the great books that have made the history of the discipline, providing some of them online at its Library of Economics and Liberty.[4]

HET Through 1925

Scholars in the Antiquity and the Middle Ages thought a great deal about trade, money, prices, and interest rates, but an autonomous discipline only developed toward the late seventeenth to early eighteenth centuries. The early designation of *political economy,* proposed by Antoine de Montchrestien in 1615, was later replaced by *economics* and refers today to a specific subfield only, but it has the merit of stressing a persisting feature of the discipline as a whole—namely, its linkages with public policy and the role of the economist as an adviser to the policy maker. This specificity still matters and distinguishes economics from other social sciences.

Despite the interest of the early literature (see, e.g., Hutchison, 1988), a detailed account of it would be beyond the scope of this chapter, and the more traditional convention of starting from the late eighteenth century will be followed. Focus will be on Adam Smith (1723–1790), who is widely regarded as one founder of the discipline; the remainder of this section will outline the development of economic thought in the nineteenth and early twentieth centuries, with the emergence of the so-called classical and then the neoclassical schools.

Adam Smith

In his 1776 *Wealth of Nations,* Smith laid the foundations of what would become basic principles of economists' understanding of individual behavior, the market mechanism, and the

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(2002b).
[2]http://historyofeconomics.org/
[3]http://cepa.newschool.edu/het/
[4]http://www.econlib.org/

role of markets vis-à-vis governments. Smith was the first to explicitly characterize individual economic behavior as *self-interested behavior,* admitting that it is people's desire for a gain that explains work, production, and ultimately the existence of an economic system:

> It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages. (Smith, 1776/1981, pp. 26–27)

Self-interest was initially thought to be at odds with another principle that Smith had developed in his *Theory of Moral Sentiments* (1759/1982)—namely, sympathy between human beings who, by putting themselves imaginatively in the place of others, understand their feelings and expectations and are moved to act accordingly (e.g., to give to those who are in need). This apparent contradiction, known in the literature as *Das Adam Smith Problem,* has been largely resolved by recent scholarship that has rather stressed how self-interest and sympathy emphasize different aspects of human nature, whose relative importance varies depending on the situation. They constitute two instances of a unique framework for thinking about human behavior, in which the individually centered, self-interested component is accompanied by an interpersonal dimension, so that it becomes possible to account for various forms of behavior, from trade and profit-seeking actions to philanthropy. Reconciliation of these two aspects of Smith's thought makes him the father of economics in a broad, comprehensive sense: While the discipline was long viewed as the systematic analysis of the behavior of self-interested individuals, today's research (especially in behavioral economics) tends to integrate forms of prosocial behavior into economic analysis.

Smith's work also contributed to shaping economists' view of the market as a coordinating device in a world in which private property and freedom enable individuals to make self-interested decisions autonomously, without ex ante coordination by some outside (political) authority: The market is a social mechanism that ensures, ex post, that individual decisions are consistent with one another and generate an orderly result. Smith's "invisible hand" metaphor has often been recognized as an effective representation of this mechanism:

> by directing […] industry in such a manner as its produce may be of the greatest

> value, he [man] intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. (Smith, 1776/1981, p. 456)

Because individuals are not isolated but part of a larger human community, their actions have unexpected or *unintended consequences* at the system level. Individuals take into account only their self-interest, yet their choices affect others and trigger a chain of interactions that eventually affect society as a whole, well beyond their original intentions. Strikingly enough, Smith argues that this spontaneous process does not lead to chaos but to harmony: Self-interest may not seem a noble motivation, yet it triggers consequences that benefit society even more than those arising from benevolence. Thus, there is no need for a strong state power that would impose social order from above, as argued by Thomas Hobbes (1651/1996). The idea of unintended consequences and the possible reconciliation of individual self-interest and social good, first articulated by Smith, have been at the core of subsequent economic reflection—which is another reason why Smith is credited as a founder of the discipline.

While acknowledging the merits of the market, Smith did not deny the need for a solid government. In particular, he insisted that government should ensure the basic conditions that allow markets to function properly, primarily protection of private property and enforcement of contracts (Smith, 1776/1981, p. 910). The government should also be in charge of surveillance against what we would call today unfair competition and other abuses (Smith, 1776/1981, p. 145).

The Smithian Heritage and the "Classical" School

Smith's seminal work stimulated much reflection. On individual behavior, the idea that individuals act to satisfy their self-interest gradually developed into the individual optimization principle that is at the basis of today's textbook microeconomics (see below). This principle has often been criticized as restrictive, not taking into account the multifaceted motivations that drive human behavior. Yet historians of economics have highlighted that in the nineteenth century, the economic model of individual behavior had the merit of supporting an egalitarian perspective that

had great impact on political debates. If the same scheme holds for all individuals, they are all equal and have the *same capacity for decision making;* observed differences, if any, depend only on incentives, chance, and history. This egalitarian view was shared by most economists of the time and strongly contrasted the (then also widespread) hierarchical stance that regarded the lower classes of society and supposedly "inferior" ethnic/racial groups as less capable of making decisions and thus in need of guidance (Peart & Levy, 2005). Interestingly, the infamous "dismal science" designation of political economy was originally an accusation against economists' antislavery orientation, which resulted from their belief that all humans are equal (Levy, 2001).

On the coordinating mechanism, reflection was motivated by the questions that Smith had left open as well as by the socioeconomic transformation brought by the Industrial Revolution. David Ricardo (1772–1823) provided one of the finest analyses of the relationship between prices and quantities; although he did not use mathematics, his compelling arguments raised the level of rigor in the subject and set basic standards for later modeling. His *On the Principles of Political Economy and Taxation* (1817/2004) offers an in-depth analysis of the effects of scarcity on price formation. Suppose some quantity of produce (say, a ton of corn) can be obtained with a given amount of labor and other inputs (seeds, water, fertilizers) on a fertile land. Production of a ton of corn on less productive terrain requires larger amounts of inputs, so production costs are higher. Hence, self-interested producers will exploit fertile lands first and will extend production to lower quality lands only when demand is so strong that there are no spare high-quality lands to satisfy it. In such cases, high consumer demand pushes up the market price of corn until it covers production costs on the worst fields; consequently, price exceeds the cost of producing corn on the best fields and earns a "rent" to their landlords. While this description is highly simplified and does not take into account potentially relevant factors such as technological progress, it still allows applications to present-day natural resource economics. An example is oil, whose extraction costs differ in different areas, so the worst oil fields are only profitable when global demand is strong and prices rise.

Prices and quantities also vary depending on the competitive conditions that prevail in a market. It was already known that in monopoly situations, prices are higher and quantities are lower than in cases in which several firms compete, but no rigorous explanation of this phenomenon was available until Augustin Cournot (1801–1877) with his *Researches Into the Mathematical Principles of the Theory of Wealth* (1838/1927). A pioneer of the use of

mathematics to guide economic reasoning in times when few did so, he illustrated how the sole seller of a good is able to control the entire market and hence extract a monopoly rent. In the case of two or more sellers, Cournot highlighted the importance of strategic interactions, so that each seller's decision depends on other sellers. The market is in equilibrium when each firm's output maximizes its profits given the output of other firms—a notion of equilibrium that has been acknowledged to prefigure that of (pure-strategy) Nash equilibrium in game theory. The author also thought that the weight of strategic interactions declines as the number of sellers increases, so when many of them compete, no one is capable of exerting any influence on market prices. Cournot was the first to prove that under competitive conditions, the quantity produced is such that its market price equals (what we would call today) its marginal cost.

Economists of this time period are often referred to as "classical" economists. Other prominent classical writers include Thomas Malthus (1766–1834) and John Stuart Mill (1806–1873). There have been controversies on the definition of the classical school, its timeframe, and scope: Smith and Ricardo are considered among its main contributors, while Cournot is less frequently included, although there are similarities and differences between all three. On the whole, these writers were mainly interested in production/supply forces, working conditions, and the relationship between wages and profits, while they placed relatively less emphasis on utility, consumption, and demand. Although Ricardo's rent theory relied on demand to determine whether less productive resources could be profitably used, and Cournot went as far as to draw supply-and-demand diagrams, these writers did not derive demand from utility; even Cournot with all his mathematics regarded it only as an aggregate relationship calculable from expenditure data. Arguably, it is not that their arguments were underdeveloped but that the classical school primarily pointed to the influence of the whole economic system on individual behavior, rather than the other way round, and focused on the differential impact of conditions of production on individuals according to their position as workers, capitalists, or landowners. This viewpoint had the merit of calling attention to problems related to income distribution and the possible tension between wages and profits.

Early nineteenth-century policy debates focused on free-market principles and the role of the state in countering potential negative effects of markets. One key controversy concerned unemployment, of which external trade was one perceived cause, to the extent that increased low-cost imports might have resulted in national workers being displaced by cheaper foreign workers;

similarly, technological innovation could be conducive to displacement of workers by machines. Would the market mechanism self-adjust to reabsorb the workers left idle by an opening of the country to external trade and/or a technological shock? These questions are important for the well-being of a country and, since then, have recurred several times in the history of economics. A prominent contributor was Ricardo, who first claimed that market adjustments would be sufficient and then admitted that consequences for the working classes were likely to be hard, at least for some time—although he still believed that restraining technical progress and free trade would have been detrimental to the country.

Like Ricardo, many supported free trade despite its possible inconveniencies and the need for government to intervene in some cases. However, this time period also saw the development of socialist ideas in reaction to the conditions of workers in the new industrial age and the classical economic thought that accompanied it. Influenced by classical authors but at the same time critical of them, Karl Marx (1818–1883) highlighted the internal contradictions of the current social relationships of production, the conflict between labor and capital, and the historical tendencies that brought about the modern economic system but also generated tensions that eventually led to its collapse. Marx's *Capital* (1867) attracted many followers in economics and also inspired political action directed at radical social, economic, and political change.

The Late Nineteenth Century and the "Neoclassical" (Marginalist) School

From the second half of the nineteenth century onwards, increased emphasis was put on consumption rather than production only, with the introduction of a notion of utility as a measure of individual satisfaction from the consumption of goods or services. Some reflections on utility had already appeared, with the idea that the problem of political economy and the ultimate purpose of all productive activities is to satisfy human wants at best. Yet it was long before utility could be fully integrated within economic models, not least because at first glance, it may have appeared as a subjective, qualitative notion devoid of any objective, let alone quantifiable, attribute. The solution came from reinterpreting utility not as an absolute but as a *relative* magnitude, varying from one individual to another and for each individual, depending on the available quantity of a good. One could thus distinguish the total amount of utility from "marginal" utility—namely, the change in the level of utility that results from a given increase in the quantity of the good. Marginal utility was thought to diminish with the quantity consumed,

reflecting the capacity of individuals to order the possible uses of successively acquired units: For instance, one would reserve the first gallons of water for drinking and the successive ones for personal hygiene, for housekeeping, and finally for watering plants. In passing, this assumption solved what earlier thinkers considered a paradox—the fact that useful goods such as water or air have low market value: The reason is their abundance, which means that the last increment in quantity generates an extremely small increase in utility. These results suggested an interpretation of self-interested behavior in terms of attempts to raise one's utility to its highest possible level and were obtained independently, in 1871–1874, by William S. Jevons (1835–1882) in Britain, Carl Menger (1840–1921) in Austria, and Léon Walras (1834–1910) in Switzerland.

The importance of thinking in terms of marginal variations rather than total magnitudes proved so useful to account for utility and demand that it was subsequently extended to supply. In fact, notions of marginal productivity and marginal cost of production, as opposed to total productivity/cost, had already been introduced (e.g., by Cournot) but were refined and generalized in the 1890s by, among others, John B. Clark (1847–1938), Philip H. Wicksteed (1844–1927), and Knut Wicksell (1851–1926). Marginal reasoning seemed so important that the economic thought of this time period is often referred to as *marginalism.*

Accounts of the market mechanism of this time period place emphasis on the *symmetry* of supply-and-demand factors and on the resulting equilibrium. Individual demand and supply are derived, respectively, from agents' calculations of utility (for consumers) and profit/cost (for firms), and market supply and demand are obtained by aggregating all individual values. When market supply equals demand, the market is in equilibrium—that is, the decisions of all households and all firms are consistent with one another. These common traits can be combined with different assumptions to give rise to various models of the market. Alfred Marshall (1842–1924) is renowned for developing a "partial equilibrium" approach, focusing on the study of a single competitive market and illustrated with the help of price-quantity diagrams in which demand decreases and supply increases with price. The intersection of the supply-and-demand schedules identifies equilibrium—a price at which supply equals demand and the market clears (Marshall, 1920). The partial equilibrium approach provides a tractable framework to study the relationship between price and quantity; however, it is based on the restrictive assumption that changes in the price of a good have repercussions on the quantity of that good only, ruling out the possibility that a variation in the price of a good will have an impact on the demand and supply of

substitutes and/or complements. Hence, it can be taken at most as an approximation, not as a rigorous analytical device. In contrast, interdependencies among markets were a key concern for Walras (1874/1977), who tried to model agents who allocate their budgets to the purchase of multiple goods so that changes in the market price and/or quantity of one good are likely to have repercussions on the markets for other goods. His notion of "general equilibrium" is directly derived from this view and corresponds to a situation in which supply equals demand *on each market,* so that all clear simultaneously.

A closely related, though distinct, question is whether and how actual trade practices will drive prices and quantities toward equilibrium. Again, Marshall and Walras provided different answers. Walras (1874/1977) proposed a model of auctions in which at given prices, all traders declare the quantity of each good that they wish to buy or sell at those prices; if with these quantities, supply equals demand on each market, then this is the general equilibrium and trade takes place; if not, prices are adjusted in such a way that they diminish where supply exceeds demand and increase in the opposite case; at the new set of prices, traders announce again the quantities that they wish to buy or sell, and the process (which he labeled *tâtonnement,* a term still used in the literature) starts again, until equilibrium is reached. In short, transactions take place simultaneously, at equilibrium only, so that the same prices apply to all traders. Instead, Marshall (1920) had in mind a sequence of bilateral transactions on a single market, in which each pair of traders negotiates a price and each transaction withdraws some units from the market so that lesser quantities are available for later trades—in other words, the conditions under which traders negotiate are altered at every step. Such changes gradually dampen price adjustments until they reach the level that corresponds to the intersection of supply and demand. Here, transactions occur sequentially, in disequilibrium, at prices that may differ from a pair of traders to the other.

Is there continuity or rupture between the classical school of thought and the marginalist—also known as "neoclassical"? The emergence of the latter current of thought used to be referred to in HET as a "revolution," thus suggesting a major change, which some argue is primarily due to the postulated symmetry between supply-and-demand conditions rather than to the use of marginal concepts, yet important features of neoclassical thought and elements of reflection on utility and demand were anticipated by earlier authors. Today's HET scholars mostly believe that there was no such thing as a sudden transformation of the discipline but a long, slow transition; key marginalist concepts appeared early, but it took long before they were

systematized into a coherent, comprehensive framework. In turn, neoclassical economics does not constitute a single theory but rather a family of approaches: The market models of Marshall and Walras are examples of such differences.

Openness to more rigorous thinking and increased use of mathematics have been often thought to characterize neoclassical theories; an indication of this tendency is the renaming of the discipline in the late nineteenth century from *political economy* to *economics,* primarily at the initiative of Marshall. However, qualifications should be introduced to the extent that some earlier writers such as Cournot had already used some mathematical tools in their analysis (Theocharis, 1993); conversely, late nineteenth-century economists were not unanimous on the desirability of using mathematics, and Marshall himself limited his quantitative expressions to a minimum. It took long before the use of mathematics became standard in the profession, and debates on the legitimacy of using mathematical tools in the study of human behavior and society have been recurrent since then.

HET Since 1925

This section outlines the development of neoclassical economics in the twentieth century, with focus on its two hallmarks of individual optimization and market equilibrium. The section also includes an overview of the emergence of macroeconomics and how it gradually came to incorporate the principles of optimization and equilibrium.

Neoclassical Economics: Individual Optimization and Market Equilibrium

The neoclassical concept of utility was refined over time, and mathematical models of utility maximization under a budget constraint saw the light. Progressively, the constrained maximization model was extended to the study of all individual decision units, on both the demand and the supply side of the market, and became the basis of all analyses of individual economic behavior. It gradually came to be understood as rational behavior—choosing the best possible means to achieve one's ends. This opened the way to a conception of economics based on two pillars: optimizing behavior of agents (both consumers and firms with, respectively, utility and profit as objective functions) and equilibrium of markets. The contribution of Paul Samuelson (born 1915) was essential to these developments and mainly consisted in rewriting

many problems of economics as maximization problems, with extensive use of mathematics. From the 1940s onwards, Samuelson's effort to show that apparently diverse subjects have the same underlying structure and can be treated with the same mathematical tools gave unprecedented unity and coherence to the discipline.

The optimization model has not been beyond dispute, though: At least since the 1950s, Herbert Simon (1916–2001) and others contended that actual decision makers lack the cognitive capacities to solve maximization problems and rather content themselves with "satisficing" behavior, choosing options that are not optimal but make them happy enough. Along these lines, they developed a "bounded rationality" approach as an alternative to the seemingly strong rationality requirements of the individual maximization model.

Regarding market models, Marshall's partial equilibrium approach continued to be used in applied economic studies, but it was the general equilibrium model that most attracted the attention of economic theorists during this time period. Its extraordinary development after World War II was largely due to the introduction into economics of highly advanced mathematical tools and of a new way of thinking about mathematics (Weintraub, 2002a). The new tools allowed for a sophisticated refinement of Walras's approach, named the Arrow-Debreu-McKenzie model after its main contributors. A major achievement in the 1950s was a formal proof of existence of equilibrium. The difficulty was that it was not enough to show that the system of simultaneous equations representing equality between supply and demand in all markets has a solution: For this solution to be meaningful economically and not only mathematically, it was also necessary to prove that equilibrium prices and quantities are nonnegative. By demonstrating that it is indeed the case, it was established that the notion of a set of prices that clear all markets is consistent (i.e., that the notion of equilibrium of a system of interrelated competitive markets is not void).

Another success for general equilibrium theory was the mathematical proof of the so-called two theorems of welfare economics—a modern reinterpretation of Smith's "invisible hand." The first theorem states that a general equilibrium corresponds to a socially optimal allocation of resources, and the second states that, under some conditions, any socially optimal allocation of resources can be sustainable by a general equilibrium. These results shaped policy discussions for long: They amounted to rigorously establishing the properties of the free-market mechanism that earlier economists had put forward intuitively—namely, the idea that a market-based solution to the problem of allocating scarce resources produces a desirable outcome for all

and cannot be superseded by any other alternative. The two theorems made a strong case for the free market but also enabled clear identification of cases where government intervention is legitimate: Whenever the assumptions that support the two theorems (e.g., competitive conditions) are not met, the market may fail to yield efficient outcomes ("market failures"), and the government should step in.

In the 1950s and 1960s, such progresses put the Arrow-Debreu-McKenzie model at the center of the stage and increased confidence in its potential to provide the whole of economics with rigorous mathematical foundations. However, problems started with attempts at proving two other key properties of equilibrium—namely, stability and uniqueness. The question of stability was meant to ensure that after an exogenous shock, the market mechanism is capable of generating endogenous forces that bring it back to equilibrium; if equilibrium exists but the market cannot find it, then arguments for free markets are harder to make. In addition, if uniqueness is not guaranteed, it is unclear where an adjustment process might drive the system after a shock; besides, some equilibriums may be unstable. It became soon clear, though, that formal proofs of stability and uniqueness could be obtained only under very restrictive, unrealistic assumptions. Critics stressed that these results reveal that with all its mathematical underpinnings, general equilibrium theory did not truly succeed in improving knowledge of how the market mechanism works and how prices adjust in response to variations of supply-and-demand conditions (Ingrao & Israel, 1990). Today the theory is still part of economists' education, but research in this field has entered a phase of relative decline.

Keynes and the Emergence of Macroeconomics

In the aftermath of the Great Depression, macroeconomics also entered the scene. John Maynard Keynes (1883–1946), one of the fathers of the new approach, is among the most influential economists of the twentieth century. His *General Theory of Employment, Interest and Money* (1936/1997) proposed a new way to look at economic systems, one that placed emphasis on quantity adjustments at given prices, rather than on the supposed capacity of price adjustments to equilibrate markets, and focused on aggregate relationships rather than on individual behavior. The new approach was rooted in the belief that the macrolevel of analysis differs in nature from the microlevel and contented itself with the use of simple behavioral assumptions that do not require optimization: Consumers spend a fraction of their income and save the remaining part,

and firms' investment decisions depend inversely on the interest rate. In this way, it hoped to tackle the question of unemployment that was crucial at the time. The neoclassical conception was ill-suited to explain why some people could be involuntarily unemployed for long: It regarded labor as hardly different from any other good, so that market price adjustments should in principle bring the system back to its full-employment equilibrium after a temporary shock. In contrast, Keynes stressed the specificity of labor relative to other goods and suggested that the level of employment may depend less on prices than on aggregate demand (i.e., the total expenses of an economic system). In this perspective, an economy may be unable to deliver full employment, even if all markets for goods clear in the long run: Underemployment may be its normal state. In this sense, the book challenged the idea that markets are capable of self-regulation and built a theoretical framework that legitimated increased government intervention to stimulate the economy. Policy measures could take various forms, ranging from increased public spending to lower interest rates to encourage investments and thus raise demand for labor.

The book had enormous success and changed the way economists and policy makers looked at the role of governments in a market economy: Not only did it inspire a significant amount of research work, but it was also at the basis of economic policies in Western countries after World War II, so it is sometimes referred to as a Keynesian "revolution." Policies of demand stimulation along Keynesian lines were enhanced by the parallel development of macroeconometric techniques that made it possible to assess the state of an economic system and to estimate the impact of government interventions.

However, the neoclassical approach was not completely abandoned, and in particular, a group of economists tried to reconcile it with Keynes's view. A hallmark of this tendency is the model known as IS-LM, designed in 1937 by John Hicks (1904–1989) to represent key principles of the *General Theory* in the form of a system of simultaneous equations reminiscent of those of general equilibrium theory. Indeed, the model succeeded in capturing some major aspects of Keynes's thought, but at the same time, its partly neoclassical roots made it less suited to account for the possible existence of unemployment in an economy that is otherwise in equilibrium. Later, the IS-LM model was enlarged to take into account international transactions (the so-called Mundell-Fleming model) and was accompanied by a Phillips curve that explained the behavior of prices on the basis of an inverse relationship between inflation and the level of employment. Starting in the mid-1950s, a consensus emerged around this approach at least in the United States,

where it constituted a basis for descriptive economic analysis and for policy advice. It coexisted with neoclassical microeconomics and became known as the *neoclassical synthesis,* a designation commonly attributed to Samuelson.

Keynesianism came under attack after the 1973 oil crisis and the ensuing nasty combination of inflation and unemployment for which it seemed to have no remedies: Demand policies would reduce unemployment but would lead to higher inflation, while public expense cuts would tame inflation but would raise unemployment. This period saw the rise of an alternative approach, known as *monetarism* and primarily associated with Milton Friedman (1912–2006). Monetarism revived the pre-Keynesian belief that market economies can regulate themselves without any need for government intervention and brought to light a strong relationship between money creation and inflation, so that an economy may be destabilized if the authorities print too much money: It followed that the focus of economic policies should be solely on keeping the quantity of money under control and that active demand policies are useless, if not even damaging. Monetarism spread widely in the early 1980s and had a strong influence on policy making. Keynesian ideas did not completely vacate the scene, though: Many became convinced that government policies can still have a temporary effect and that the Keynesian framework of analysis holds in the short run, while the monetarist framework holds in the long run.

This compromise was challenged by Robert Lucas (born 1937), who made a strong case for unifying the foundations of economic theory through an extension to macroeconomics of the microeconomic assumptions of rational behavior of individuals and of the self-equilibrating capacity of markets. Agents make optimal choices: In particular, they form expectations about the state of the economy by taking into account all available information and by processing it in the best possible way, so that they can be called "rational expectations." More precisely, agents make consumption or investment decisions that take into account the model of the economy as well as government policies, so that they reach equilibrium immediately and their expectations are validated. If all agents behave in this way, the economy is always in equilibrium. A major implication of this view is that economic policies are ineffective even in the short run because they are anticipated by agents and are accounted for in their decisions. Only unexpected policies that take individuals by surprise can move the economy from one state to the other—but this means that to be effective, policies must be occasional and unsystematic or else they will be

detected, so the scope for governments to steer the economy becomes extremely limited. A consequence of this view is the invalidity of macroeconometric models that purported to evaluate the effects of public policies with the help of aggregate data: If agents take into account policies in their decision making, their behavior is not policy invariant so that existing observations may not predict future choices well. Only a sophisticated model of how individuals make optimal decisions based on their expectations can offer reliable predictions.

The rational expectations school of thought tried to give greater coherence to the discipline by basing both micro- and macrotheories on the two main pillars of individual optimization and market equilibrium. This choice responded to a widespread demand for more rigorous economic theorizing but also reflected renewed confidence in the functioning of the free-market mechanism and skepticism with regard to government intervention; in this sense, it represents a comeback to pre-Keynesian attitudes. Since then, most developments of macroeconomics have reflected this tendency—with the development, among other things, of the real business cycles approach by Finn E. Kydland and Edward Prescott in the 1980s.

While the great majority of macroeconomists have now recognized the need to firmly ground macroeconomic theorizing on sound microeconomic foundations, many disagree with the pro–free market orientation of these currents and have tried to develop alternative approaches that would still be based on rigorous microfoundations but would lead to Keynesian results, most prominently by showing the possibility for unemployment to persist in an equilibrium economy. These approaches, commonly referred to as *New Keynesian,* have brought to light characteristics of the economy that might lead to this result, ranging from implicit contracts, efficiency wages, and coordination failures to imperfect competition. An overview and an appreciation of their contributions are provided in De Vroey (2004).

Over time, a consensus gradually has been established around general equilibrium theory and macroeconomics with rigorous microfoundations, which have come to be identified as the core of the discipline—what some now call “mainstream” economics. They are now at the basis of economics education and constitute a reference for the profession as a whole. Since their introduction, training in these fields has contributed to raise the level of rigor in economics reasoning and to spread the use of mathematical and quantitative tools.

History of Recent Economics

Research in mainstream economics is still active, even if there has been a relative decline in recent years. This has paralleled a tendency to increasing diversification of approaches, methods, and topics, which has seemingly reversed the twentieth-century trend toward unification of the different parts of the discipline. Still, economists tend to have in common an enduring emphasis on mathematical tools and formal reasoning.

A detailed account of the different emerging approaches to economics would be beyond the scope of this brief account of HET, but more information can be found in other chapters in this handbook. This section instead will provide an overview some significant developments and how they are challenging established knowledge in economics.

Models of rational behavior have put the accent on the *strategic dimension* of rationality, in situations where agents make decisions whose success depends on the choices of others. This shift in emphasis results from the rise of game theory as a challenger to established microeconomics, which has been spectacular in recent years even though the origins of the theory date back to (at least) the 1940s. Applications of game theory include bargaining, imperfect competition, and questions at the interface between economics and other sciences, such as social network formation, the emergence of social norms, and voting systems.

Assumptions of individual rationality do not go unquestioned, though. The stream of research that is known as "behavioral economics" has provided substantial evidence that humans often violate some implications of optimization models and has tried to develop more realistic psychological approaches to the study of individual behavior. Some researchers, in particular, have focused on how happiness and individual satisfaction, as well as prosocial and cooperative attitudes, may be important determinants of individual behavior that were not fully accounted for in older maximization models. To do so, new sources of information have been exploited, notably experimentation and analysis of survey data with the help of increasingly sophisticated microeconometric techniques. While these fields have remained marginal for a while, they are now recognized parts of the discipline and attract an increasing number of young economists.

Models of the market have been greatly enriched by a detailed study of auctions and other mechanisms of allocating goods. Part of the motivation for these studies in the 1990s and early 2000s was the need to design trading mechanisms that would help governments to privatize companies, infrastructures, and other facilities that they previously owned. To some extent,

economists' work in this area resembles that of engineers at the service of the government—a new role that, however, still renews with the time-honored image of the political economist as an adviser to the policy maker. These studies depart from the general equilibrium tradition in a double sense: First, they highlight the importance of trading institutions to yield socially desirable outcomes, instead of abstracting them away, and second, they signal a tendency to focus less on interdependencies and rather concentrate on single markets—what Marshall modeled in a "partial equilibrium" perspective.

At the macrolevel, greater emphasis has been placed on economic governance. The conditions under which governments can ensure protection of property rights and enforcement of contracts, already emphasized by Smith as key requirements for market economies to function properly, have been studied in greater depth from the 1990s onwards. Focus on governance and institutions sometimes accompanies criticisms of pro-free-market principles but sometimes supports the free-market tradition of thought by providing a more precise definition of how the government can create conditions for markets to function properly.

Conclusion

To conclude, it can be said that the discipline advances over time with the progressive introduction of new tools, new approaches, and an improved understanding of key concepts. Yet some questions are recurrent and constitute some of the great, unresolved dilemmas of contemporary society. This chapter has emphasized the problems of individual economic behavior, the functioning of the market mechanisms, and the place of the market vis-à-vis the government. The answers provided at different epochs, though based on different arguments and different sources of evidence, often have elements in common—partly because these are issues that have major philosophical and political implications. By accounting for the circumstances in which a variety of responses have emerged in the past, HET can contribute to today's reflection on these issues. As Keynes once wrote,

> The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed, the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influences, are usually the slaves of some

defunct economist. (Keynes, 1936, p. 383)

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