

and by the 1930s Britain had retreated to a system of imperial preferences applied to the colonial empire and Commonwealth members. As early as the mid-1970s, American political leaders, business interests, and scholars expressed strong concerns over the relative decline and deindustrialization of the American economy caused by foreign competition, principally from the Japanese. Such worries produced the New Protectionism. As formal tariffs were reduced through trade negotiations, the United States erected such nontariff barriers as those embedded in the Multi-Fiber Agreement (1973), in which many nations were assigned quotas; the United States also imposed "voluntary" export restraints on Japanese products. Responding to the ballooning American trade deficit, intensifying fears of deindustrialization, and rising protectionist pressures, the Reagan Administration in the mid-1980s significantly modified America's commitment to multilateralism. It began to pursue a multitrack trade policy that has not only deemphasized multilateral negotiations but also increased unilateralism and bilateralism (especially "managed trade" with Japan) along with economic regionalism through the North American Free Trade Agreement with Canada and Mexico.

CONCLUSION

Although the science of economics is a necessary foundation for comprehension of international political economy, this book focuses attention on the interaction of markets and political actors. Economics alone is an inaccurate and insufficient tool for analysis of such vital issues as the international distribution of wealth and economic activities, the effects of the world economy on national interests, and the effectiveness of international regimes. This writer rejects the popular idea that universal economic laws and powerful economic forces now rule the global economy. Despite increasing economic globalization and integration among national economies, it is still necessary to distinguish between national and international economies. Political boundaries do and will divide the economies and economic policies of one nation from those of another; political considerations also significantly influence and distinguish economic activities in one country from the next. States, and other powerful actors as well, use their power to influence economic activities to maximize their own economic and political interests.

New Economic Theories

ALTHOUGH NEOCLASSICAL economics is extremely useful in static analysis, it does not provide an adequate conceptual framework for the analysis and understanding of economic change and the dynamics of the global economy; for example, it cannot explain the exogenous factors such as changes in taste and technology that are important in understanding the long-term dynamics of an economy. Moreover, as Paul Krugman has observed, the neoclassical approach to economic affairs lacks both a temporal and a spatial dimension and assumes that economic activities take place in an abstract universe devoid of history and geography.¹ As a consequence, it can not adequately analyze the historical development or geographical structure of an economy. Most importantly, despite general agreement in the economics discipline on the significance of technological progress for economic change and long-term growth, neoclassical economics gives inadequate attention to technology and the sources of technological change. Neoclassical economics also ignores the importance of economic and other institutions.² Although economists acknowledge that nations must establish rules to govern economic activities, provide a favorable environment for private entrepreneurs, and assist in overcoming market failures, economic analysis gives short shrift to the role of governments and other institutions.

In recent years, a number of economists have developed new theories that help to compensate for the limitations specified above. As a group, these novel and still highly controversial theories—the new growth theory, the new economic geography, and the new trade theory—challenge such fundamental assumptions of neoclassical theory as perfect competition, constant returns to scale, and complete information. These new theories emphasize the importance of oligopolistic competition, economies of scale, and technological innovation, and they also incorporate historical processes, institutions, and spatial re-

¹ Paul R. Krugman, *Geography and Trade* (Cambridge: MIT Press, 1991).

² An important analysis of the importance of institutions is Richard R. Nelson and Sidney G. Winter, *An Evolutionary Theory of Economic Change* (Cambridge: Belknap Press of Harvard University, 1982).

lations. They facilitate understanding of a world economy characterized by discontinuities, disequilibria, and profound shifts over time in the global distribution of wealth and hence of power. The world described by the new theories is one of simultaneous divergence and convergence among national economies, one in which governments can and do play a crucial role in economic affairs and in which technological innovation is a central feature. Although the new theories have certainly not displaced conventional neoclassical economics, they do challenge many of its assumptions and policy prescriptions, and in some cases have led to modification of neoclassical principles. For this writer, the new theories provide important insights into the dynamics of both domestic and international economies.

Stressing the importance in economic affairs of history, geography, and sociopolitical institutions, the new theories complement the insights and analytic techniques of a state-centric approach to political economy. They do, of course, have limitations and do not provide us with a complete understanding of economic change. As these new theories either modify or complement mainstream neoclassical economics, I shall begin my discussion with an examination of several important limitations of neoclassical economics as a tool for understanding the dynamics of the global economy.

CHANGE AND NEOCLASSICAL ECONOMICS

Because neoclassical economics does not consider history and geography when explaining economic affairs, it has limited applicability to comprehension of the functioning of the economy over time and across space. Indeed, neoclassical theory generally ignores the changes in economic, political, and other social structures that inevitably result from economic growth. The discipline's focus on equilibrium actually inhibits understanding of the role of economic forces in the evolution of the economy.

Neoclassical analyses provide neither a history of the economy nor an explanation of its evolving nature. However, without a history of the growth process and its effects on the power and interests of major actors, it is hardly possible to understand the dynamics of the world economy. Furthermore, neoclassical economics does not add a great deal to comprehension of the geographic distribution of economic activities within and across national economies, the evolution of trading patterns, or the spatial development of the economy. Although neoclassical economists believe that the territorial distribution of eco-

nomics activities is of little consequence as long as every economy is behaving according to the law of comparative advantage, the question of which countries produce what—potato chips or computer chips—is of the utmost importance to groups, nations, and regions around the world. The geographic distribution of the international division of labor and the ways in which the spatial organization of economic activities change over time are among the most contentious issues in the world economy.

The failure of mainstream economists to give sufficient attention to technological innovation is an especially glaring limitation. In the traditional approach of neoclassical theory, there are several weaknesses: (1) Because technological advance is considered exogenous to the economic system, economists have developed no comprehensive explanation for it; (2) because economists consider technology to be a public good to which everyone has equal access, they do not adequately recognize the importance of monopolies of technology; and (3) because the theory of the production function assumes that economic actors have complete or certain knowledge of and access to available technology, economists frequently fail to integrate uncertainty into their writings.³ Rather than technology being a public good equally available to all economic actors, in reality national differences in innovation and utilization of technology have become vital determinants of variations in national rates of economic growth, national competitiveness, and international trade patterns. Although there is some effort being made to incorporate a more realistic view of technology into neoclassical economics, such efforts have not gone far enough.

Many economists acknowledge that institutions (social, political, economic) do play a role in the outcome of economic activities; however, their emphasis on the market leads many, and maybe most, to ignore the significance of institutions. Even those who do take institutions seriously give little attention to their origins and functions. Explaining institutions as resulting from the attempts of rational individuals to maximize their interests, neoclassical institutionalists, for example, generally overlook the role of chance events and ideology in the origins of economic and other institutions. New insights provided by the concepts of path dependence and cumulative processes explain how historical accidents and nonrational events can have a

³ Maurice Fitzgerald Scott, *A New View of Economic Growth* (Oxford: Clarendon Press, 1989), 72–74, 94.

powerful impact on the evolution of those institutions that shape economic affairs.⁴ Although the new concepts attempt to overcome the inherent limitations of neoclassical theories, they have by no means overturned the basic theories or the assumptions of conventional economics.

WORLD VIEW OF THE NEW THEORIES

As Paul Krugman has argued, the new trade, growth, and other economic theories have profound implications for the analysis and functioning of the international economy. They provide a "world view of economics" very different from most of pre-1980 theory; they include increasing returns and imperfect competition, multiple equilibria, a crucial role for history, accident, and self-fulfilling prophecy. In this new and still controversial economic universe, there are arbitrary and accidental components that affect international economics.⁵

As a group, the new theories introduce both spatial and temporal dimensions into economic analysis, place technological innovation at the center of their analyses, and assign a prominent role in the economy to such institutions as national governments and corporations. The "new endogenous growth theory," "new economic geography," and "new strategic trade theory" have important implications for the study of international political economy.

Based on the fundamental behavioral assumption of neoclassical economics that society is composed of rational individuals whose primary purpose is to maximize their interests, these new theories depart from conventional neoclassical economics as they (1) assume that there are imperfect or oligopolistic markets, (2) emphasize the importance of technological innovation, and (3) utilize history or path dependence as an explanatory variable. Together, these novel theories remain highly controversial, and the evidence supporting them cannot be characterized (to use the language of economists) as "robust." With this caveat in mind, what are the common elements in the three theories that make them important for the study of international political economy?

Institutions, Scale Economies, and Imperfect Competition

All three theories—the new growth theory, the new economic geography, and the new trade theory—are based on the assumption of im-

⁴ W. Brian Arthur, "Path Dependence in the Economy," *Scientific American* (February 1990): 92–99.

⁵ Krugman, *Geography and Trade*, 8–9

perfect or oligopolistic competition in which markets are dominated by a few large firms. These new theories depict the economy as basically oligopolistic because of increasing returns to scale, cumulative processes, or some other market imperfections. They recognize the existence of powerful actors with some control over market forces. Indeed, especially in the leading technological sectors, a relatively small number of large firms, such as Siemens, Microsoft, and Matsushita, actually dominate the market.

The new theories have all been strongly influenced by research developments in the field of industrial organization. This research, which emphasizes the importance of scale economies and of imperfect competition in the organization of industrial sectors and the overall economy, challenges the assumption that all economic processes are characterized by constant returns and perfect competition. Conventional theory, for example, argues that if a firm doubles the input of both capital and labor, the output of the firm will only double and will, at some point, produce diminishing returns; this assumption places limits on an individual firm's capacity to dominate a market. If, on the other hand, scale economies and increasing returns to scale do exist, doubling both inputs would more than double the output and therefore would increase the firm's productivity. Consequently, in an industry characterized by increasing returns, a firm with a head start can increase its output and decrease its average costs much more rapidly than competitors just beginning production. Indeed, such a cost advantage could enable an existing domestic firm to establish a monopolistic market position; also, the region or nation in which such oligopolistic firms are located could itself grow more rapidly than other regions and nations. In time, the region/nation with oligopolistic firms could surpass and eventually dominate other regions or nations. In this way, the new theories have profound implications for the study of international political economy.

Technological Innovation

The new theories emphasize strongly the importance of technological developments for economic growth, the spatial location of economic activities, and international competitiveness. Technological innovation has become the primary determinant of economic growth in advanced economies and also of international competitiveness among industrialized economies. In fact, these new theories permit one to consider technology or knowledge as a separate factor of production. The growth rates of national economies, the patterns of international trade, and the overall structure of the international economy have

become increasingly dependent upon a nation's technological capabilities. The increased importance of technological innovation in turn has given every government a strong interest in the technological strength of its economy and has stimulated "technonationalism"—efforts by governments to prevent diffusion of their most important technologies. Competition among national economies for technological superiority has become a major feature of the international political economy.

History and Geography

The economic universe portrayed by the new theories is very different from that encountered in formal economic theories where the "economy" of neoclassical economists occupies neither time nor space and the equations that define the neoclassical economy and determine market equilibrium are solved simultaneously in a timeless void. What we noneconomists recognize as the economy—that is, a geographic space with a name like the American economy or the British economy—finds no place in formal economic theory. Neoclassical economists assume that the national economy is nothing more than a dimensionless point in space and the international economy is only a set of interconnected points.⁶

THE NEW THEORIES

The newer theories assume that history and geography are crucial to the definition of the nature and functioning of the economy, that the economic past largely determines the economic present, and that economic activities have a distinct spatial and hierarchical structure. They do not share the neoclassical assumption of an economic universe populated by powerless actors dispersed evenly throughout a timeless and dimensionless economic space.

Theory of Endogenous Growth

Possessing important implications for understanding the dynamics of the international political economy, the controversial "new growth theory" (or "theory of endogenous growth") was first set forth by Paul Romer (1986) and Robert Lucas (1988).⁷ This theory leads to

⁶ *Ibid.*, 2.

⁷ Paul M. Romer, "Increasing Returns and Long-Run Growth," *Journal of Political Economy* 94, no. 5 (October 1986): 1002–37; Robert E. Lucas Jr., "On the Mechanics of Economic Development," *Journal of Monetary Economics* 22, no. 1 (July 1988): 3–42.

conclusions that run counter to the ideas of conventional neoclassical economics regarding the role of the state in the economy, the institutional framework of economic activities, and the highly uneven distribution of wealth in the international economy. To appreciate the significance of the new growth theory, it is essential to review the neoclassical theory of long-term economic growth. These contradictory theories disagree on economic policies and the role for governments in economic affairs.

Background. The neoclassical explanation of long-term economic growth is based on formal economic models set forth by Robert Solow in the late 1950s;⁸ almost all subsequent work on economic growth has been an elaboration of his pioneering ideas. He argued that economic growth is a product of capital accumulation, labor input, and technical progress.⁹ His theory is based on the "neo-classical production function" in which the economic output of an economy is independent of the quantity of capital and labor employed, and the theory of the production function itself is based on certain critical assumptions. It assumes that there are constant returns to scale and that if the amount of both capital and labor employed in producing a widget are doubled, the output will double; phrased differently, there are *no* increasing returns to scale. Another assumption is that marginal returns diminish over time, that if there is no additional technological progress, and if either the amount of capital is increased while the size of the work force remains stable or vice versa, successive additional investments will produce only decreasing gains in output (the law of diminishing returns).¹⁰ Following this reasoning, economists conclude that the larger the capital stock in place, the smaller the benefit of each increment in capital investment.¹¹

The neoclassical theory of economic growth concludes that economic growth, or the rate of growth in output, is a consequence of the rate of increase in labor input, the rate of growth of capital input, and the rate of technical progress, and that accumulation of the fac-

⁸ The theories are discussed in Jeffrey D. Sachs and Felipe Larrain, *Macroeconomics in the Global Economy* (Englewood Cliffs, N.J.: Prentice-Hall, 1993), Chapter 18.

⁹ *Ibid.*, 555–56.

¹⁰ Adam Szirmai, Bart Van Ark, and Dirk Pilat, eds., *Explaining Economic Growth* (Amsterdam: North Holland, 1993), 8.

¹¹ N. Gregory Mankiw, David Romer, and David N. Weil, "A Contribution to the Empirics of Economic Growth," *Quarterly Journal of Economics* 107, no. 2 (May 1992): 407–37.

tors of production accompanied by technical change accounts for the long-term growth of an economy.¹²

Over the long term, economic growth is dependent upon technological progress, which raises labor productivity and counters the inherent tendency toward diminishing returns.¹³ Economists argue that a sustained increase in real GNP must be due either to an increase in the quantity of capital and labor used in production or due to more efficient use of these inputs (e.g., technical and/or organizational progress). Although empirical models of economic growth can determine the contribution of each cause to economic growth, they cannot explain the factors causing the growth of capital, labor, and/or technology.

Neoclassical growth theory leads to the conclusion that government policies can do little to accelerate the long-term rate of economic growth. That rate is determined by what Solow called the "steady state," which is defined as that point in economic growth when capital per worker reaches an equilibrium and remains unchanged. This means that any attempt to accelerate the growth rate of such an economy by increasing the savings rate or the amount of capital investment will have only a slight or transitory effect on the long-term rate of economic growth. A government-induced sustained increase in capital investment, for example, has only a temporary impact on the long-term growth rate. Although the ratio of capital to labor may increase, the marginal product of capital will decline and thus will reduce the effectiveness of the investment. While the government can do some things at the margin, such as increasing the national rate of savings or the supply of "effective" labor, such efforts will not have a major impact over the long term.¹⁴

Another important implication of the neoclassical growth theory for international affairs derives from the convergence theory or hypothesis. This hypothesis posits that labor productivity and per capita income levels of the relatively less developed countries should over the long run converge or catch up with those of the more developed countries.¹⁵ Due to the technological gap between developed and less developed countries, LDCs can make large productivity gains by bor-

rowing technology from the technological leaders. Over time, the diffusion of capital, technology, and know-how from rich to poor will enable the less developed countries to increase their rates of economic growth both in absolute terms and in relation to the more advanced economies. Moreover, investment in poor countries should produce more rapid growth and greater increases in output than equivalent investment in rich countries; in the former, there will be higher marginal returns to inputs, while in the latter, marginal returns will decline. Thus, according to convergence theory, the rich will get rich more slowly and the poor will get richer more rapidly so they will gradually converge with one another and income inequalities between rich and poor countries will be eliminated.¹⁶

Limitations. An important criticism of the neoclassical growth theory focuses on its treatment of technology. Although the theory teaches that technological progress bears the primary responsibility for increases in per capita income over the long run, the theory does not explain the determinants of technological advance. Despite the central importance of technology as the ultimate determinant of long-term economic growth, the theory can explain neither economic change nor innovation.¹⁷ The theory considers technological progress to be exogenous to economic growth and technology to be embodied in capital investment. Moreover, technology is considered a public good to which every firm anywhere in the world has access.

Furthermore, technology (unlike capital and labor) cannot be observed or measured directly, so it must be the residual (or "Solow residual") after the contributions of the other two factors to "total factor productivity" and to overall economic growth have been taken into account.¹⁸ The term "residual," however, is quite misleading. Whereas 12 percent of the doubling of American productivity growth between 1909 and 1949 can be explained by the expansion of capital per worker, the residual or total factor productivity accounted for the other 88 percent increase. Some residual! As Sachs and Larrain have commented, the residual "is really a measure of our ignorance."¹⁹ As a consequence, the neoclassical theory, based on factor accumulation,

¹² Sachs and Larrain, *Macroeconomics in the Global Economy*, 556.

¹³ Shahrokh Fardoust and Ashok Dhareshwar, *Long-Term Outlook for the World Economy: Issues and Projections for the 1990s*, International Economic Analysis Working Paper No. 372 (Washington, D.C.: World Bank, February 1990), 65.

¹⁴ This discussion is based largely on Sachs and Larrain, *Macroeconomics in the Global Economy*.

¹⁵ Fardoust and Dhareshwar, *Long-Term Outlook for the World Economy*, 72.

¹⁶ Walter Rostow, *Why the Poor Get Richer and the Rich Slow Down: Essays in the Marshallian Long Period* (Austin: University of Texas Press, 1980).

¹⁷ Joseph Stiglitz, "Comments: Some Retrospective Views on Growth Theory," in Peter Diamond, ed., *Growth/Productivity/Unemployment: Essays to Celebrate Bob Solow's Birthday* (Cambridge: MIT Press, 1990), 50-68.

¹⁸ *Ibid.*, 556.

¹⁹ Sachs and Larrain, *Macroeconomics in the Global Economy*, 556.

can explain only a small portion of what it purports to explain. For example, the theory cannot explain the persistently large gap in wealth between rich and poor countries.²⁰ Despite these serious limitations, and lacking any satisfactory alternative, the neoclassical theory is considered by most economists to be generally correct because it does what it is meant to do.²¹

Another criticism is that the original theory neglected human capital and knowledge skills. Work by Edward Denison and others demonstrated the crucial role of education in economic growth and hence the importance of investment in human capital.²² Other studies have indicated that, due to positive investment externalities, investment in physical and human capital may contribute more to economic growth than the original neoclassical theory suggested; although investment improves the productivity of the investing firm, technological and other spillovers can also benefit other national firms and even the entire economy. For example, such positive externalities may explain why, since World War II, the return on capital investment in the industrialized countries has been much greater than neoclassical theory had predicted. Research in industrial organization, which emphasizes the importance of increasing returns to scale and the crucial role of research and development (R & D), has raised doubts about the basic assumptions of neoclassical growth theory. These ideas and others have been incorporated by Romer and Lucas into the new (endogenous) theory of economic growth.

The New Endogenous Growth Theory. Technological innovation and advances in knowledge are at the core of the differences between the neoclassical model and the new endogenous growth theory.²³ Whereas the neoclassical model builds on only two factors of production, (labor and capital), treats technology or knowledge as an exogenous factor, and assumes that progress in technology is produced by random scientific and technological breakthroughs, the new theory

²⁰ Maurice Obstfeld and Kenneth Rogoff, *Foundations of International Macroeconomics* (Cambridge: MIT Press, 1996), 473.

²¹ Mankiw, Romer, and Weil, "A Contribution to the Empirics of Economic Growth."

²² Cited in Sachs and Larrain, *Macroeconomics in the Global Economy*, 558.

²³ Many, if not most, of the central ideas in the new growth theory had been set forth earlier by other economists, including Joseph Schumpeter, Kenneth Arrow, Christopher Freeman, Richard Nelson, and Sidney Winter. A valuable history and critique of the theory is in Richard Nelson, "How New Is New Growth Theory?" *Challenge* 40, no. 5 (September/October 1997): 29–58. Nelson himself attributes much of the new thinking about economic growth to Moses Abramovitz.

incorporates technological progress and advances in knowledge as endogenous factors within the growth model. Technological advance is considered endogenous because technological innovations are the result of conscious investment decisions taken by entrepreneurs and individual firms. Firms are assumed to invest in research and development activities for the same reasons that they invest in other factors of production; that is, on the basis of the expected profitability of the investment. In effect, the new growth theory assumes that knowledge, technology, and/or "know-how" constitute a separate factor of production in addition to capital and labor.

The concept of knowledge or technology as a separate factor of production has important implications for understanding economic growth. Knowledge of how to do or make things can raise the productivity of the other two factors. Whereas knowledge and technology just happen in the neoclassical model, the new theory assumes that they result from conscious decisions and that technological advance is largely market-driven. Investment in capital and knowledge can stimulate and reinforce one another in a "virtuous circle" of cumulative causation so that acceleration in the rate of capital investment can raise the long-term growth in per capita income. In addition, whereas neoclassical growth theory is based on the assumption of constant returns to scale, the new theory is based on the existence of "economies of scale." Thus, whereas neoclassical theory predicts that the rate of long-term growth will decline because of diminishing returns, the new theory postulates that the possibility of increasing returns means that the growth rate need not decline.

The new growth theory is important because it permits or even encourages the use of government policies to increase the long-term rate of economic growth. Whereas neoclassical theory assumes that diminishing returns eventually place an upper limit on the returns to capital accumulation and hence on the long-term rate of economic growth, the new growth theory assumes that increasing returns to scale and positive investment economies can lead to an increased growth rate, especially in high-tech sectors. Whereas the neoclassical theory regards the savings rate as having only a modest effect on the long-term growth rate and technology as exogenous, endogenous growth theory suggests that government policies, through promotion of an increased national savings and investment rate and also increased support for R & D, can lead to a sustained higher rate of economic growth.

Romer makes several important points regarding the new growth theory:

- (1) Investment in knowledge-creation and R & D activities by profit-seeking entrepreneurs is an important determinant of economic growth.
- (2) While the results of R & D are partially captured or appropriated by the investing firm, some of the results are not captured but spill over and constitute public goods that can be exploited by other firms, thus stimulating economic and productivity growth throughout an economy.
- (3) Nevertheless, most of the benefits of the new technology are captured by the investing firm and give it a competitive advantage over its rivals; this can lead to an oligopolistic market.
- (4) Firms tend to underinvest in R & D, and governments should take appropriate actions to overcome this market failure.
- (5) A nation's human capital and skills determine its long-term growth rate and its success in economic development.²⁴

The new growth theory has many important implications for the nature of the economy and the status of neoclassical economics. The new theory is inconsistent with the fundamental assumption in neoclassical economics of perfect competition; that is, the belief that firms are "price-takers" because prices are determined by the market and firms cannot easily change the prices they charge. Although neoclassical theory assumes that if a firm should lower its price to increase its market share and should also increase its production, the increased output will not lead to economies of scale but only to lost profits; the new growth theory assumes that because increasing returns are possible, increasing output lowers unit costs and the firm can therefore increase its profit. And this means that the firm is a "price setter" rather than a "price-taker." To the extent that the new growth theory is correct, the market must be viewed as an imperfect or oligopolistic market rather than as a perfect one.

The new growth theory has engendered considerable controversy within the economics profession. Some critics charge that there is nothing especially novel about the new theory, asserting that its authors have merely codified in their model the technological innovation, monopolistic pricing, and increasing returns that have long been familiar to economists. Other critics argue that the traditional variables of growth such as capital investment and increases in the labor supply have far greater explanatory power than the new theory sug-

²⁴ Paul M. Romer, "Endogenous Technological Change," *Journal of Political Economy* 98, no. 5 (October 1990): S71.

gests.²⁵ Although Solow himself has praised the new growth theory, he believes that the theoretical foundations underlying the theory are simply not credible; the absence or presence of diminishing returns, he points out, is difficult to test. Arguing that the forces governing economic growth "are complex, mostly technological, and even a little mysterious," Solow has commented that economists are ignorant of the forces propelling the growth process and thus are incapable of providing governments with policy advice that would enable them to raise substantially the national rate of economic growth.²⁶ Perhaps, I would add, one cannot improve significantly on Keynes's attribution of economic growth to the existence of "animal spirits."

Despite the controversy surrounding the new growth theory, Elhanan Helpman's conclusion that it is an important complement to the neoclassical theory does appear warranted.²⁷ As he argues, few of the variations in economic growth among national economies are explained by the neoclassical formulation, which has been primarily concerned with capital accumulation. Romer and Lucas, on the other hand, rely on the proposition that "learning by doing" can result in decreasing costs and scale economies. They have applied this important idea to the accumulation of knowledge and human capital, and this, Helpman believes, may be their most important contribution. Romer and Lucas have taken the view that aggregate production exhibits increasing returns to scale, and they have noted that some of those returns accrue to a specific economic sector rather than just to an individual firm. The inability of a firm to monopolize all the results of its investment in R & D and the presence of spillovers mean that the social rate of return on such investment is more than twice the private rate of return. Thus, by combining imperfect competition or economies of scale with learning by doing and innovation, Helpman argues, Romer and Lucas have developed a model that helps explain long-term growth in per capita income.

The implications of the new theory for economic policy are very important. As Helpman suggests, the new theory means that public policy can significantly increase the rate of economic growth. In the new growth theory, technical progress is recognized as being profit-motivated, endogenous, and driven by the investment rate. The rate of innovation and hence of economic growth can be increased by

²⁵ N. Gregory Mankiw, "The Growth of Nations," *Brookings Papers on Economic Activity* No. 1 (Washington, D.C.: Brookings Institution, 1955).

²⁶ Robert Solow, *IMF Survey*, 16 December 1991, 378.

²⁷ Elhanan Helpman, "Endogenous Macroeconomic Growth Theory," *European Economic Review* 36, nos. 2/3 (April 1992): 237-67.

appropriate industrial and government policies that increase expenditures on knowledge creation, research and development, and such human capital formation as education and training. To the extent that government policies can facilitate creation of new knowledge and technology, there will be an effect on the distribution of wealth and power within the global economy. Some economists and political economists have applied the new economic theory to explain the rapid industrialization of the dynamic Pacific Asian economies.

Another important implication of the new growth theory is that political, economic, and other institutions—from governments to universities to corporations—can either hinder or facilitate technical advance and hence long-term economic growth. Differing from the neoclassical economics assertion that free markets tend to produce efficient outcomes, the new growth theory suggests that national economic structures, institutions, and public policies are major determinants of technological developments and economic growth. In fact, long before the new growth theory was formulated by Romer and Lucas, a number of economists and political economists had engaged in pioneering work on the determinants of innovative activities and the diffusion of technical knowledge in the production process. Among the most important contributors to an understanding of “national systems of innovation” are Christopher Freeman, Richard Nelson, and Keith Pavitt, whose writings have demonstrated the crucial role of technological advance in economic growth and the dynamics of economic systems.²⁸

The new theory's emphasis on human capital as the key to economic growth weakens convergence theory, and this has significance for the nature and dynamics of the global economy. The new growth theory suggests that under some conditions, an initial advantage of one country over another in human capital will result in a permanent difference in income level between the countries. As Jeffrey Sachs and Felipe Larrain have pointed out, when human capital endowment is important, a rich country can maintain its lead indefinitely over poorer countries by generating sufficient new savings and investment.²⁹ According to the theory, the rich will get richer, the poor—unless they invest in human capital—will continue to lag behind, and the international economy will continue to be characterized by large

²⁸ Richard R. Nelson, *High Technology Policies: A Five-Nation Comparison* (Washington, D.C.: American Enterprise Institute, 1984); and Christopher Freeman, Raymond Poignat, and Ingvar Svnnilson, *Science, Economic Growth, and Government Policy* (Paris: OECD, 1963).

²⁹ Sachs and Larrain, *Macroeconomics in the Global Economy*, 579–80.

inequalities among nations. Thus, the new growth theory implies that the uneven growth of national economies, rather than their convergence, is the characteristic pattern of the global economy.

To summarize, the new growth theory has important implications for political economy and for the structure of both international and domestic economies. It implies that the rate of economic growth in advanced economies need not decline, convergence between rich and poor is not automatic, imperfect or oligopolistic competition will appear in many industries (especially high-tech industries) due to increasing returns, and government policies can have a major and positive impact on an economy's long-term rate of economic growth. If, as the theory assumes, there are increasing returns to scale, economies do not inevitably reach a steady state of economic growth; rather, deliberate policy decisions by governments can encourage continued capital accumulation and result in a higher rate of self-sustaining economic growth.³⁰

The New Economic Geography

Another new theory important to the study of international political economy (IPE) is “the new economic geography” (NEG).³¹ The central question addressed by NEG is, Why do economic activities, especially in particular industries, tend to be heavily concentrated in certain geographic locations—cities or regions—and why do these concentrations generally persist over very long periods? Indeed, the existence and endurance of certain regional concentrations of economic activities provide a startling aspect of the geography of economic life. Regional economic clusters and their persistence cannot normally be explained by the neoclassical emphasis on factor endowments. Although the principle of comparative advantage argues that the location of an industry will be determined principally by factor endowments, factor endowments do not and cannot explain the location of many important industries. Although NEG does not deny the relevance of comparative advantage or the economics of location, it does argue that noneconomic factors, path dependence, chance, and cumulative processes frequently account for the origins and concen-

³⁰ *Ibid.*, 571.

³¹ This section is based on Krugman, *Geography and Trade*, and other writings by Krugman. Many of the key ideas on the spatial nature of economic activities have long been stressed by noneconomists, especially regional geographers. Two of Krugman's major contributions were to explain spatial concentrations through the use of a model based on economies of scale and to introduce these ideas into the mainstream of economics.

tration of manufacturing and many other economic activities in particular locations.³²

The persistence of regional concentrations of economic activities on the core/periphery model of the structure of an economy has long been of great interest to Marxists, dependency theorists, and other scholars on the political left who attribute the core/periphery structure to capitalist imperialism and exploitation. While some conservative scholars have acknowledged the prevalence of the core/periphery structure, they have been unable to provide, or have been uninterested in providing, a satisfactory economic explanation of the universal tendency toward economic agglomeration. Although economic geographers have long been interested in the spatial organization of economic activities, their theories have unfortunately been ignored by economists and have not been incorporated into economics nor sufficiently integrated within the political economy literature. In the late twentieth century, some economists did attempt to explain the core/periphery structure of the economy through the new economic geography. Their explanation has considerable relevance for the study of IPE.³³

According to NEG, the initial location and concentration of economic activities in a particular region is frequently a matter of mere chance or historical accident. However, once an industry or economic activity is established, cumulative forces and feedback mechanisms can lead to continued concentration of economic activities in that region for an extended period of time. Self-reinforcing processes mean that the evolution of a regional economy and its structure are largely determined by what Brian Arthur and Paul David have labeled the phenomenon of path dependence.³⁴ According to this simple but powerful idea, the historical past and cumulative processes largely deter-

³² Most geographers undoubtedly characterize the new economic geography as the rediscovery of the wheel. Much that Krugman and others have written has already appeared in the literature of geography and is another example of the failure of economists to explore what historians and other social scientists have written. A valuable critique of the new economic geography by a geographer is Ron Martin, "The New 'Geographical' Turn in Economics," *Cambridge Journal of Economics* 23, no. 1 (January 1999): 65-91. A commentary on the slighting of geography by Krugman appears in *The Economist*, 13 March 1999, 92.

³³ The literature on core/periphery economic structures is extensive. A useful survey is in Arie Shachar and Sture Oberg, eds., *The World Economy and the Spatial Organization of Power* (Aldershot, U.K.: Avebury 1990).

³⁴ An important discussion of path dependence is in W. Brian Arthur, "Self-Reinforcing Mechanisms in Economics," in Philip W. Anderson, Kenneth J. Arrow, and David Pines, eds., *The Economy as an Evolving Complex System: The Proceedings of the Evolutionary Paths of the Global Workshop* (published for the Santa Fe Institute, Studies in the Sciences of Complexity, 1988), Vol. 5.

mine the choices available to a decision-maker and the context within which decisions are made. Path dependence thus implies that the economic universe—productive technologies, economic institutions, and the geographic distribution of economic activities—is largely the consequence of many minor random developments. Whereas conventional economics assumes that the magnitude of a cause determines the magnitude of its effect (i.e., there is a linear relationship between the two), path dependence analysis indicates that small, and even very small, causes can give rise to disproportionately large effects.

The important implications of path dependence for neoclassical theory may be illustrated by the theory of the production function. This theory, on which neoclassical growth theory is based, assumes that an entrepreneur selects from the range of available technologies. The rational entrepreneur will select the most efficient combination of factors of production and technological options. The key word here is "available." According to the path dependence idea, many of the technologies available to an entrepreneur are, like economic institutions, the result of random events and are not necessarily the most efficient. Indeed, especially in the area of advanced technologies or high-tech industries, some of the specific technologies available are not particularly efficient. Inferior and less efficient technologies can get locked in and be adopted rather than those that most technical experts would judge to be equal or even superior. An example is the complete victory of the Matsushita VHS standard for a VCR over Sony's equally good, if not superior, Betamax format. However, the most frequently cited example is the layout of the keyboard on a typewriter or a computer. The inefficient QWERTY layout was chosen because the keys of the first typewriters became jammed, and therefore the keyboard was deliberately redesigned to slow the speed of the typist; modern computers operating at nanosecond speeds retain this built-in inefficiency. However, my favorite example is even closer to my heart.

I am writing these lines on a Macintosh computer. It is well known that Macintosh users are fiercely loyal, and I include myself in this number. Any objective observer would have to grant that Macintosh hardware and software are far superior technically to their rivals in the Wintel world (of computers using the Windows operating system and the Intel chip).³⁵ Yet in the 1980s and 1990s the Macintosh share of the market deteriorated alarmingly, and the future of the company was in serious doubt. The principal reason for this decline does not

³⁵ "Wintel" refers to Intel computers using the Microsoft operating system.

lie in the technology or the intrinsic quality of the competing products, but in a number of serious marketing and other blunders made by successive Macintosh leaders. The personal computer (PC) gained a great advantage over the Macintosh due to huge economies of scale and decisively lower costs that could be credited in large part to Wintel's overwhelming share of the market; this meant that rational business persons equipping a company were much more likely to purchase Wintel computers than the superior and easier to use Mac.

Path dependence implies that a region or nation can have a dominant position in a particular industry simply for historical reasons. Industry concentration and a nation's trading patterns are not due to factor endowments alone, but may be due to the region's almost accidentally having achieved a head start in an industry. Such a head start has frequently enabled industries in a region to achieve economies of scale and to increase their efficiency through learning by doing, thus establishing and maintaining a decisive lead over potential rivals. There are many examples of industries or economic activities that cluster in a particular region due to an arbitrary event and the effects of path dependence; for example, the production of automobiles in Detroit and the computer industry in Silicon Valley.

The new economic geography substitutes imperfect competition for the neoclassical assumption of constant returns and perfect competition. NEG also assumes factor mobility and falling costs of transportation between the periphery and the core region. The interactions of increasing returns, decreasing transportation costs, and factor mobility can lead to further agglomeration or concentration of economic activities within the core region. Regions with a head start attract industries and economic activities from other regions; supply-and-demand factors reinforce one another, as suppliers want to concentrate near large markets and the concentration of suppliers in the region increases local demand.³⁶ As these various linkages, positive feedback mechanisms, and cumulative causation interact, over time an economic structure is created. This structure is composed of a dominant core, in which powerful oligopolistic firms are heavily concentrated, and a less developed and economically dependent periphery. The relatively self-sustaining core/periphery geographic structure characterizes all modern economic systems.³⁷

³⁶ Krugman, *Geography and Trade*, 71.

³⁷ For a detailed discussion of the advantages of the core over the periphery, consult Alfred Weber, *Alfred Weber's Theory of the Location of Industry* (Chicago: University of Chicago Press, 1929).

Stated simply, a core/periphery structure is determined primarily by the interaction of scale economies and the costs of transportation.³⁸ If economies of scale were the only factors involved in the location of industry, one would expect that the world economy as a whole would be characterized by a single or just a few core/periphery structures. Instead, as we know, the world economy and even some large national economies have a number of core regions. This multiple core structure of the international economy is explained primarily by the cost of transportation; reductions in transportation costs tend to increase economic concentration, and increases in transportation costs have the opposite effect. However, additional forces are at work in determining the core/periphery structure. For example, such centrifugal (diffusion or decentralizing) forces as rising wages and land rents in the core encourage industries to move into the lower-cost periphery and thereby counter the centripetal (polarizing, agglomeration, or concentration) forces that pull economic activities inward toward the core. Also, every government engages in deliberate efforts to erect barriers or provide inducements that will make either the centripetal or the centrifugal forces work toward their own advantage. A notable example was Canada's National Policy, which utilized trade barriers to encourage American and other firms to invest in the Canadian economy and to thereby industrialize that country.

A nation that possesses one or more regional cores with strong industries can achieve an overwhelming and continuing competitive superiority over others. A region with a head start in the accumulation of knowledge often widens its productivity lead. The great effects of a head start motivate lagging nations to pursue particular industrial policies, including subsidies, erection of protectionist barriers, and other actions that may help them to catch up and to possess important core regions of their own. Possession of a core region is considered to be of immense political importance because it is associated with high wages, industrial power, and national autonomy.

The above model of regional concentration and diffusion is important to the nature and dynamics of the world economy. It implies that lowering trade or other economic barriers and the ensuing process of economic integration will create a core/periphery structure in which industry and other economic activities will migrate to the core region as barriers are decreased. In effect, increasing economic interdepen-

³⁸ As Krugman demonstrated in his *Geography and Trade*, the core/periphery structure is explained by the interplay of economic forces and historical developments. Also, see Paul Krugman and Maurice Obstfeld, *International Economics: Theory and Policy* 3d ed. (New York: HarperCollins, 1994), 184–85.

dence among national economies means that many economic activities will concentrate in a small number of regions populated by oligopolistic firms that enjoy economies of scale and/or lower transport and transactions costs. This process explains why uneven development of regions and nations characterizes both national and international economies. This tendency toward a core/periphery structure has profound implications for the future economic structure of Western Europe as internal barriers come down and progress is made toward creation of a single market.

In an increasingly integrated world economy in which core/periphery structures spread across national boundaries, the presence of core regions exclusively controlled by a single nation, and of a periphery composed of other nations, will necessarily lead to economic tensions and even political conflict between the dominant core economy and dependent peripheral economies. Escaping economic dependence and achieving political independence is an objective of every society. Core economies wish to maintain their dominant position, and peripheral economies wish to become core economies in their own right. The efforts of the dependent peripheral economies to escape domination by well-established regional cores, and the efforts of the cores themselves to maintain their dominant position, are crucial factors in the dynamics of the world economy. Thus, growing integration of the world economy has led to increasing efforts by individual nations, threatened regions within those nations, and such interstate regional alliances as the European Union to protect themselves against the centralizing forces of economic globalization. The new economic geography implies that the structure of strong core economies and dependent peripheries will continue to produce economic tensions and occasional political conflict.

Strategic Trade Theory

The new (strategic) trade theory is the culmination of several earlier developments that have modified conventional trade theory, which was based on factor endowments or comparative advantage and was developed in the early 1930s by Eli Heckscher and Bertil Ohlin. This Heckscher-Ohlin (or H-O) model of comparative costs or advantage postulated that a country would specialize in the production and export of those goods or services in which it had a cost advantage over other countries; the model was based on the familiar neoclassical assumptions.

Strategic trade theory (or STT) developed from economists' growing appreciation of imperfect competition, economies of scale, learn-

ing by doing, the importance of R & D, cumulative processes, and technological spillovers.³⁹ STT challenges the theoretical foundations of the economics profession's previously unequivocal commitment to free trade. In fact, the development of STT was stimulated by growing dissatisfaction with conventional trade theory's inability to explain trade patterns and by concern about the increasing trade problems of the United States, especially with Japan in the 1980s. The application to trade theory of novel methods associated with important theoretical advances in the field of industrial organization provided the means to develop an alternative to the H-O theory. Mathematical models of imperfect competition and game theoretic models had been incorporated into trade theory in the early 1980s by James Brander and Barbara Spencer (1983), theorists of industrial organization, and by the work of international trade theorists Avinash Dixit, Gene Grossman, and Paul Krugman.⁴⁰

The theory of strategic trade provides a rationale for nations to use protectionist measures, for subsidies to particular industries, and for other forms of industrial policy to provide domestic firms with a decisive advantage in both home and world markets. Favored and protected firms can take advantage of increasing returns, cumulative processes, and the positive feedbacks associated with path dependence to increase their competitiveness in global markets.

The significance of strategic trade theory can be appreciated through consideration of the fundamental differences between perfect and imperfect competition. In those sectors where there is perfect competition (i.e., most of the economy), the behavior of one small firm cannot change the rules of the game, as it is too small to make a difference. This means that a small firm could not gain advantage through strategic behavior. However, if unit costs in certain industries continue to fall as output increases, output will expand and the number of firms in the market will decrease. Economies of scale in an industry mean that the market will support only one or just a few large firms; that is, such an industry will become oligopolistic, as happened in the automobile and computer sectors. Thus, the market will

³⁹ For an important collection of articles on imperfect competition and other aspects of these matters, see Gene M. Grossman, ed., *Imperfect Competition and International Trade* (Cambridge: MIT Press, 1992).

⁴⁰ James A. Brander and Barbara J. Spencer, "International R&D Rivalry and Industrial Strategy," *Review of Economic Studies* 50, no. 163 (October 1983): 707-22. An excellent discussion of these theoretical developments is in Paul R. Krugman, ed., *Strategic Trade Policy and the New International Economics* (Cambridge: MIT Press, 1986).

eventually be dominated by only a few firms, and this means that their behavior can make a difference and alter the decisions of other firms. If there is imperfect or oligopolistic competition in particular economic sectors, then monopoly rents or abnormally high profits can exist in that sector, and these rents or superprofits can be captured by a few firms or even by just one firm.⁴¹

The central idea of the new strategic trade theory (STT) is that firms and governments can behave strategically in imperfect global markets and thereby improve a country's balance of trade and national welfare. It assumes that some markets are characterized by imperfect or oligopolistic competition, and that this situation can create a strategic environment in which there is only a small number of players. Oligopolistic firms can and do consciously choose a course of action that anticipates the behavior of their competitors. If successful, this enables them to capture a much larger portion of the market than would be possible under conditions of perfect competition. Two of the most important strategies used to increase a firm's long-term domination of an oligopolistic market are dumping (selling below cost to drive out competitors in the product area) and preemption (making huge investments in productive capacity to deter others from entering the market).

Imperfect or oligopolistic competition is most likely to occur in certain high-tech industries characterized by economies of scale and learning by doing. These include the aerospace, advanced materials, computer and semiconductor, and biochemical industries; these technologies, of course, are identified by all governments as the commanding heights of the information economy. Most of them are dual technologies, since they are of particular importance both to military weaponry and to economic competitiveness. Therefore, many nations consider it essential, for both commercial and security reasons, to take actions that will ensure that they have as strong a capability as possible in such technologies.

The device of preclusive investment provides an example of the application of strategic trade theory; in such a situation, investment by a domestic firm in a protected home market can give the firm an overwhelmingly competitive position within that economy, a position that can deter investment by other countries in that industrial sector. Government policies may provide a national firm with decisive advantages in global markets; indeed, Henry Rosovsky and other economists have argued that the strategy of "import protection in order to

export" accounts in part for Japanese industrial success in the decades after World War II.⁴² STT implies that a government can assist a firm to establish a monopolistic or oligopolistic position in world markets. For example, in a market capable of sustaining only a limited number of producers, a state subsidy to a domestic firm may deter foreign firms from entering the home or even foreign markets and thereby confer on subsidized firms a dominant or monopolistic position. Various strategic trade tactics have become important in the efforts of national governments to influence the location of industry worldwide.

STT clearly implies that governments should assist national firms in order to generate positive externalities (that is, technological spillovers) and also to shift profits from foreign firms to national firms.⁴³ Economists have long appreciated that a nation with sufficient market power could impose an optimum tariff and thereby shift the terms of trade in its favor.⁴⁴ By restricting imports and decreasing the demand for a product, a large economy may be able to cause the price of the imported good to fall. STT, however, goes much farther than optimum tariff theory in its recognition of a nation's ability to intervene effectively in trade matters and thus to gain disproportionately. A government's decision to support a domestic firm's plans to increase its productive capabilities (preemption) or to signal an intention to build excess productive capacity is an example of a strategic trade policy. By using a direct subsidy to a firm or by giving outright protection to a domestic industry, the government might deter foreign firms from entering a particular industrial sector. Since a minimum scale of production is necessary to achieve efficiency, especially in many high-tech industries, the advantage of being first (first-mover advantage) encourages a strategy of preemptive investment. Thus, government intervention through "preemption" or first strike becomes especially important in certain industrial sectors.

The new strategic trade theory departs from conventional trade theory in its assumption that certain economic sectors are more important than others for the overall economy and therefore warrant government support. The manufacturing industries, for example, are considered more valuable than service industries because manufacturing is characterized by higher rates of productivity growth; many be-

⁴² Henry Rosovsky. "Trade, Japan, and the Year 2000," *New York Times*, 6 September 1985, Sec. 1.

⁴³ A frequently cited example is Airbus, an aircraft developed by a British-French consortium.

⁴⁴ An optimum tariff is one that improves a country's terms of trade to the detriment of its trading partners.

⁴¹ A monopoly rent is an excess return on a resource.

lieve that manufacturing also produces higher profits, higher value added, and higher wages. Some economic sectors, especially high-tech industries such as computers, semiconductors, and information processing, are particularly important because they generate spillovers and other positive externalities that benefit the entire economy. Because a new technology in one sector may have indirect benefits for firms in another sector, firms that do extensive research and development produce benefits that are valuable to many others. Indeed, a strategic industry may be defined as one that gives external benefits to the rest of the economy. However, because firms may not be able to capture or appropriate the results of their research and development activities, many will underinvest in these activities. Proponents of STT argue that such a market failure indicates that firms should be assisted through direct subsidy or import protection, particularly in high-tech industries that frequently raise the skill level of the labor force and thus increase human capital. If, as the proponents of strategic trade believe, such special industries exist, then free trade is not optimal and government intervention in trade matters can increase national welfare.

Strategic trade theory has become a highly controversial subject within the economics profession. Some critics argue that it is a clever, flawed, and pernicious idea that gives aid and comfort to proponents of trade protection. Others agree with this negative assessment but also make the point that the theory itself adds nothing really new to already discredited arguments favoring trade protection. Perhaps in response to severe denunciations of strategic trade theory by leading mainstream economists, some of the earliest and strongest proponents of STT have moderated their initial enthusiasm. Many economists consider it to be merely an intellectual game with no relevance to the real world of trade policy. Despite these criticisms and recantations, however, STT has had an important impact on government policy and has undoubtedly been a factor in the slowdown in the growth of world trade.

The neoclassical critique of strategic trade policy is that all industries, at least theoretically, are created equal; no economic sector is intrinsically more valuable than any other in terms of higher value added, higher wages, and so forth. The rate of productivity growth of an economic sector is considered the only real measure of its value and of its contribution to the nation's long-term economic welfare. A nation, therefore, should specialize in those economic sectors where high rates of productivity growth exist and where it has a comparative advantage. This sentiment was expressed in an often-employed

statement attributed to Michael Boskin, chair of the Council of Economic Advisors in the Bush Administration (1989–1993) that “chips are chips” and that it is unimportant whether an economy produces one type of chip or the other. If a nation has a comparative advantage in potato chips but not in computer chips, then it should export the former and import the latter. Moreover, even if some economic activities may be intrinsically more valuable than others, critics of strategic trade policy argue that governments are incapable of picking winners and that any efforts to do so are very likely to be captured by special interests. Favoring one sector, the critics charge, would of necessity divert scarce resources and harm other sectors that might be even more valuable to the economy over the long term. Finally, the critics charge that subsidies and trade protection will only lead to foreign retaliation, and then everyone will lose.

What can be concluded about strategic trade theory and the industrial policy to which it provides intellectual support? The argument that shifting profits from one economy to another can occur has neither been proved nor disproved; it is quite difficult to assess whether or not government intervention in oligopolistic markets actually works, because economists lack reliable models of how oligopolists behave. However, the positive externalities argument for strategic trade policy and the arguments for the related industrial policy have support in the economics literature. Even though empirical evidence for the success of industrial policy is admittedly mixed, government support for particular industrial sectors has frequently been very successful in creating technologies in sectors that do spill over into the rest of the economy. Most importantly, there is strong evidence that government support for R & D has a very high payoff for the entire economy. Governments around the world certainly believe that support for high-tech industries produces a high economic return over the long term.

CONCLUSION

The new economic theories significantly enhance our understanding of the dynamics of the world economy and of the fundamental issues of international political economy regarding distribution of economic outcomes, states' efforts to retain their national autonomy, and conflict among states over the nature of international regimes. The process of economic growth, the concentration of economic activities in particular locations, and the diffusion of economic growth and economic activities to new regions are fundamental elements in the evo-

lution of the world economy. Although market forces are central to these processes, such powerful actors as states and multinational firms constantly attempt to shape markets in ways that advance their own national or corporate interests. The new economic theories have led to recognition that interactions among economic/technological forces and powerful actors lead to shifts in the global distribution of economic activities, changes in comparative advantage and trading patterns among national economies, and ultimately, transformations in the international balance of economic and military power.

The Political Significance of the New Economic Theories

THE NEW economic theories have a number of significant implications for analysis of the world economy. Even though all three theories remain highly controversial within the economics profession, they nevertheless provide important insights into the nature and dynamics of international economic affairs, and they reinforce the state-centric interpretation of this book. In addition to emphasizing the central role of national governments in economic affairs, the theories emphasize the crucial nature of oligopolistic competition and the importance of technological innovation as determinants of international economic affairs.

NATIONAL GOVERNMENTS AND DOMESTIC ECONOMIES

Although every actor within the modern economy—whether a corporation, an interest group, or whatever—attempts to influence that economy, national governments and their policies are by far the most important determinants of the rules and institutions governing the market. Despite increasing globalization of economic activities, most such activity still takes place within the borders of individual states. Each state establishes limits that determine the movement of goods and other factors into and out of its economy, and through their laws, policies, and numerous interventions in the economy, governments attempt to manipulate and influence the market to benefit their own citizens (or at least some of their citizens) and to promote the national interests of that country. Every state, some more than others, attempts to use its power to influence market outcomes.

The new theories call attention to the importance of national governments and domestic economies within the world economy.¹ They

¹ The theories complement a similar change in scholarship in the field of international political economy, where the role of domestic factors has been given much greater attention in recent scholarship. A pioneering study on the interaction of domestic and international matters is Peter Gourevitch, *Politics in Hard Times: Comparative Responses to International Economic Crises* (Ithaca: Cornell University Press, 1986). An important analysis of the impact of domestic affairs on the international economy is Helen V. Milner, *Interests, Institutions, and Information: Domestic Politics and International Relations* (Princeton: Princeton University Press, 1997).

help explain continuing government intervention in the economy despite the apparent triumph of neoliberalism and increasing globalization. In a world where economic growth, the geographic location of industry, and comparative advantage are frequently produced by arbitrary decisions and cumulative processes, national governments have an almost overwhelming incentive to intervene in their domestic economies. Through industrial, strategic, and other interventionist policies, every nation, to one degree or another, does attempt to affect the international division of labor. There is growing concern within nation-states about which countries produce what and about the location of high-tech jobs and industries; this makes it unlikely that such crucial matters will be left solely to the interplay of market forces. National governments repeatedly attempt to use their political power and their position in the international political system to influence the international division of economic specialization as much as possible.

National leaders are reluctant to leave economic outcomes entirely up to market forces. This is reflected in the considerable differences among national economies regarding the relative importance of the state and the market in national economic structures and outcomes. Economic structures and institutions constitute what Nobel Laureate Douglass C. North has called "the incentive structure of a society," and are powerful determinants of economic performance.² Domestic structures also affect the interactions among national economies and between national and international economic affairs.

I shall use the term "national system of political economy" to refer to domestic structures and institutions that influence economic activities. The principal purposes of every national economy shape the defining characteristics of each system; these purposes may range from promotion of consumer welfare to creation and expansion of national power. The role of the state in the economy is a particularly important aspect of each national system; the differences among market economies range from the generally laissez-faire, noninterventionist stance of the United States government to the central role of the Japanese state in management of the economy. Yet, a third feature of a political economy is found in the mechanisms of corporate governance and private business practices; here again, the fragmented American business structure contrasts dramatically with the Japanese system of tightly integrated industrial groupings (the *keiretsu*).

The national system of innovation is another important aspect of a

² Douglass C. North, "Economic Performance Through Time," *American Economic Review* 84, no. 3 (June 1994): 359.

particular nation's political economy. When one speaks of a major technological advance or of a technological revolution, much more than nuts and bolts is involved. Many significant developments in technology involve a transformation in the organization of production and of the broader sociopolitical relationships in an economy.³ Many important aspects of society must be changed in order to develop or take advantage of new technologies or production possibilities. Indeed, some writers use the term "techno-economic paradigm" to designate the whole range of economic and institutional transformations associated with a particular technological change.⁴ Successive epochs of technological advance have entailed major transformations in economic behavior and in industrial organization. In today's digital or information age, the world economy is again experiencing a process of "creative destruction" from which new economic winners and losers will emerge, a process aptly described by Joseph Schumpeter as the dynamics of capitalism.

The new growth theory implies that political, economic, and other institutions—from governments to universities to corporations—can either hinder or facilitate technical advance, its adoption, and resultant long-term economic growth. While neoclassical economics maintains that free markets in themselves produce efficient outcomes, the new growth theory suggests that national and international economic structures and institutions are major determinants of technological developments and economic growth. In fact, long before Paul Romer and Robert Lucas set forth the new growth theory, a number of economists and political economists had conducted pioneering work on the determinants of innovative activities and the diffusion of technical knowledge in the production process. Christopher Freeman, Richard Nelson, and Keith Pavitt are among the most important contributors to an understanding of the resulting national systems of innovation.

Nathan Rosenberg and L. Birdzell Jr. have emphasized the crucial importance of the national system of innovation to technological progress in *How the West Grew Rich: The Economic Transformation of the Industrial World*.⁵ They demonstrate that the economic growth

³ For example, Japan's innovation of "lean production" was greatly facilitated by important aspects of the Japanese political economy, such as lifetime employment, long-term planning by both Japanese corporations and government, and the domination of the economy by large industrial groupings (*keiretsu*).

⁴ Giovanni Dosi, Christopher Freeman, Richard Nelson, Gerald Silverberg, and Luc Soete, eds., *Technical Change and Economic Theory* (London: Pinter, 1988).

⁵ Nathan Rosenberg and L. E. Birdzell Jr., *How the West Grew Rich: The Economic Transformation of the Industrial World* (New York: Basic Books, 1986).

and the technological success of the West have been due primarily to institutional innovations; the unique economic, political, and other institutions that have characterized the modern West have greatly facilitated technological advance, capital accumulation, and rapid economic growth. It was, Rosenberg and Birdzell point out, the freedom of individual entrepreneurs to experiment with novel institutions and economic arrangements that differentiated the West from other civilizations, and this freedom has been vital to the West's enormous economic success. Economic freedom created a powerful incentive for entrepreneurs to innovate, invest, and accumulate wealth.

Even though the modern state has been central to development of the national system of political economy and technological innovation, the state's role in fostering economic growth and international competitiveness has been largely neglected by neoclassical economics. The emphasis in neoclassical growth theory on factor accumulation is indeed appropriate, but it is only a first approximation to an explanation of the causes of a nation's growth. A particular society's possession of an institutional framework or national system of political economy that facilitates factor accumulation, technological innovation, and economic growth is crucial to its economic success. Those societies that adapt themselves to the requirements of economic growth and technological innovation in a particular epoch become the economic leaders of that epoch, and societies that do not or cannot adjust to such requirements fall behind.

OLIGOPOLY AND POWER IN ECONOMIC OUTCOMES

The economic universe of the new theories is populated by a few important economic actors and characterized by imperfect or oligopolistic competition.⁶ In an oligopolistic market, power and strategy strongly affect economic outcomes; consequently, many international markets function differently from the predictions of conventional neoclassical economics. In the world of oligopolistic competition, powerful players can and frequently do use their market power to alter and manipulate the terms of exchange.⁷ Indeed, powerful firms are frequently "price-setters" rather than "price-takers." In the neo-

⁶ The significance of oligopolistic competition for economic theory is discussed in John R. Hicks, *The Crisis in Keynesian Economics* (Oxford: Basil Blackwell, 1974), 23-25.

⁷ A collection of articles on the neglect of power in economic analysis is in Kurt W. Rothschild, ed., *Power in Economics: Selected Readings* (Harmondsworth, U.K.: Penguin Books, 1971).

classical world of perfect competition, the self-regulating market reigns and every economic situation has a single equilibrium solution. In an oligopolistic market, there are many possible rational economic outcomes, and power, strategy, and guile are important determinants of each economic outcome. Oligopolies profoundly change the nature and functioning of markets. As an old taunt in the economics profession says, "With oligopoly, anything can happen."⁸

Economists are obviously fully aware of the nature and importance of oligopolistic competition based on economies of scale. Alfred Marshall himself was cognizant of oligopoly but rejected its significance, perhaps because of its implications that increasing returns (and hence oligopoly) would make it theoretically possible for just one or a few firms to dominate an economy. As time has passed, the subject of oligopoly has been taken more seriously, and research in the field of industrial organization on oligopolistic markets has greatly extended understanding of the ways in which oligopolistic markets work. Yet it makes economists quite uncomfortable to recognize that oligopolies do exist.⁹ The negative attitude of most economists toward the implications for economic analysis of oligopoly and economies of scale is conveyed in John Hicks's comment that increasing returns result in "the wreckage of the greater part of economic theory."¹⁰ Clearly, there is good reason for economists to find oligopoly and imperfect competition distasteful. However, in political economy, oligopoly and imperfect competition are central concerns.

The world of oligopolistic competition is best comprehended through application of the theory of games (or simply game theory) set forth initially by John von Neumann and Oscar Morgenstern in their classic study, *The Theory of Games and Economic Behavior* (1944).¹¹ Game theory has become an extraordinarily complex and

⁸ John Sutton, *Sunk Costs and Market Structure: Price Competition, Advertising, and the Evolution of Concentration* (Cambridge: MIT Press, 1991), xiii.

⁹ For example, one important line of inquiry (that regarding contestable markets) appears to be motivated, at least in part, by a desire to mute the importance of oligopoly by suggesting that under certain conditions oligopolistic markets behave just like competitive markets. William J. Baumol, "Determinants of Industry Structure and Contestable Market Theory," in David Greenaway, Michael Bleaney, and Ian Stewart, eds., *Companion to Contemporary Economic Thought* (London: Routledge, 1991), Chapter 24; and William J. Baumol, John C. Panzar, and Robert Willig, with contributions by Elizabeth E. Bailey, Dietrich Fischer, and Herman Q. Quirmback, *Contestable Markets and the Theory of Industrial Structure* (New York: Harcourt Brace Jovanovich, 1982).

¹⁰ John Hicks, quoted in W. Brian Arthur, "Increasing Returns and the New World of Business," *Harvard Business Review* (July-August 1996): 100-109.

¹¹ John von Neumann and Oscar Morgenstern, *The Theory of Games and Economic Behavior* (Princeton: Princeton University Press, 1944).

esoteric subject, but stated as simply as possible, the theory of games attempts to predict or explain outcomes of human interactions where the players are few in number and each player has a choice of alternative courses of action or strategies. Each individual's strategy is based in part on what that individual believes the strategy or strategies of the other player or players might be. Thus, game theory analyzes situations characterized by strategic uncertainty and interdependent decision-making. In other words, "I think that he thinks that I think . . ." ad infinitum.

According to game theory, each individual player chooses whatever strategy clearly maximizes gains or minimizes losses. The outcome of the game could be either losses or wins for either one or both of the players.¹² While in some cases the outcome of a strategic game can be predicted easily, this is not always the case. In a "Nash equilibrium" situation, the outcome *may* be predictable. Such a situation is defined as an array of strategies from which no player has an incentive to deviate.¹³ In a Nash equilibrium where one array of strategic choices unquestionably dominates and is preferred by each player over all other possibilities, there can be only one outcome that will be satisfactory for both players. In other words, in such situations, oligopolistic competition may be indistinguishable from perfect competition. However, the real world of oligopoly is generally characterized by many situations in which a number of Nash equilibria are possible. This means that game theory is of little use in describing or predicting business behavior in situations of mutual interdependence.

The possibility of multiple equilibria has profound implications for both economics and political economy. Many, if not most, strategic situations in which firms and states find themselves do have many feasible equilibrium points or, in the jargon of the field, are said to have "multi-equilibria."¹⁴ Instead of one obviously best array of strategies for both players, there are several possible arrays. In fact, there can be an infinite number of equilibria that promise to each cooperating player higher returns than would result from noncooperative behavior. In such situations, it is difficult and perhaps impossible to determine which array of strategies will be selected by the players. Thus, even in the case of cooperative players, it may be difficult to achieve a mutually satisfactory solution.

¹² The essence of game theory is discussed in Chapter 4.

¹³ David M. Kreps, *Game Theory and Economic Modeling* (Oxford: Clarendon Press, 1990), 28.

¹⁴ James D. Morrow, *Game Theory for Political Scientists* (Princeton: Princeton University Press, 1994), 306.

Regulations governing the market can significantly affect both the strategies available to market participants and also which Nash equilibrium will be chosen. Therefore, the rules or regimes can be or are important determinants of the outcome of economic activities.¹⁵ Although liberals would argue that the rules and regimes can result from cooperative processes, more powerful actors frequently impose rules or regimes on other players in the market. Since the rules and institutions governing economic activities may reflect the interests of the powerful actors, market outcomes are profoundly affected by political, institutional, and other noneconomic factors; this is a subject central to the study of international political economy.

TECHNOLOGICAL INNOVATION

All the new theories of growth, economic location, and strategic trade accord an increasingly important role to technological change in determining the nature and dynamics of the world economy. Even though technological progress has always been acknowledged as an important factor in economic affairs, technology's scale, ubiquitous character, and rapid rate of advance are now reshaping every aspect of social, economic, and political affairs. As the twenty-first century begins, technological advances in computers and telecommunications are forcing nations to make major adjustments in their policies and economic structures. As we have already observed, technology has created a fluid world of scale economies and imperfect competition in which trade patterns, the location of economic activities, and growth rates are more arbitrary and dependent than in the past on the strategies of private firms and the policies of national governments. The increased importance of technological innovation in economic affairs has resulted in the following changes.

Technological Developments and International Competitiveness

Electronics-based design, manufacturing, and distribution have greatly reduced the time lapse between the innovation of a new product and its production and marketing, and this has facilitated rapid, flexible response to changes in demand.¹⁶ Consequently, product diversification has increased and such activities as design, distribution, and service have gained importance as factors in competition. Moreover, the

¹⁵ Kreps, *Game Theory and Economic Modeling*, 182.

¹⁶ This discussion is based largely on Carl Dahlman, "The Third Industrial Revolution: Trends and Implications for Developing Countries" (April 1992), unpublished.

increased importance of these nonmanufacturing activities means that the importance of production costs in determining total costs has decreased; the result is that low-cost producers can lose some of their prior competitive advantage. Inputs of new materials and resource-saving processes also decrease the importance of traditional commodities in international trade, reduce commodity prices, and thus harm commodity producers around the world (including in the United States).

Organization of Production and Technological Innovation

The world economy is experiencing another phase of the industrial revolution that began in the latter part of the eighteenth century. The first phase, based on iron and steam power, was characterized by the rise of the factory system; these developments took place in Great Britain and led to the industrial and international preeminence of that nation. The second phase, beginning in the latter part of the nineteenth century and based on steel, petroleum, chemicals, electricity, and the internal combustion engine, occurred in the United States and, to a lesser extent, in Germany. This phase reached its highest development with the advent of the assembly line and mass production (labeled "Fordism" by many writers). Once again, the technological leader or leaders became the most powerful nation(s) in the world. And, as in the earlier phases of the industrial revolution, the dominant industrial nation used its power to reshape world affairs in its own economic and political interests. Furthermore, the economic expansion of the technological leader through trade and foreign investment imposed on other economies the choice of either adopting the new production methods or retreating behind protective barriers and inevitably falling behind in global economic competition.

Beginning in the 1970s, Japanese firms captured international leadership in one industrial sector after another, due in large part to their implementation of lean production techniques.¹⁷ Various techniques associated with lean production—introduction of quality circles, reliance on just-in-time inventories (*kanban*) that save resources, and computerized automation—became central to the production process in Japan; these highly efficient techniques, pioneered at Toyota and associated with the technological and organizational revolution, diffused rapidly throughout Japanese industry. Later, these techniques

spread to other countries, but Japanese industry, with its ability to keep production costs low and the quality of its products high and to shift product mix much more rapidly than its competitors, took a decisive lead in manufacturing in many high-tech and other sectors. Indeed, Japanese superiority in manufacturing processes rather than in product innovation has been the key to Japan's outstanding export success. Even though many of Japan's most successful exports had been invented in the United States, Japan triumphed in manufacturing these products in high volume, at low cost, and with superior quality. After several years, however, as the Japanese system of lean production diffused to other countries, the overwhelming Japanese productive advantage decreased.¹⁸ Indeed, during the 1990s, American corporations, through downsizing, heavy investments in computers, and development of new enterprises regained much of the competitiveness they had lost in the mid-1980s.

Globalization, Intensified Competition, and Transnational Alliances

Many developments in the 1990s increased the globalization of the world economy and also intensified international competition in a number of ways. Reduced transportation and communication costs contributed to growing globalization in the areas of trade, investment, and production. Gigantic multinational corporations became even more central to the management of trade and the organization of production around the world, and intrafirm or managed trade, rather than arms-length or market-based transactions, expanded to a much larger portion of international trade. Growing costs for research and development as well as the increasing importance of scale economies and the need for market access caused more and more firms to enter international markets to capture the returns on their investments. The ever-expanding scope of modern science and technology and the compression of time between innovation and commercialization provided yet another impetus for intercorporate alliances. Learning that no individual firm, nor even any single country, could take a commanding lead in every industry, more and more firms began to seek partners in other countries.

Technological Developments and the International Division of Labor

Technological developments affect significantly the comparative advantage of developed and developing countries; the impact is particu-

¹⁸ David J. Jeremy, ed., *The Transfer of International Technology: Europe, Japan, and the USA in the Twentieth Century* (London: Edward Elgar, 1992).

¹⁷ The story of lean production and its advantages is told in James P. Womack, Daniel T. Jones, and Daniel Roos, *The Machine that Changed the World* (New York: Rawson Associates, 1990).

larly notable in the rapid advances of the Pacific Asian electronics industry in the 1980s and early 1990s, where the effects of technological developments changed the international division of labor. In the final decades of the twentieth century, the developed countries, especially the United States, were becoming service economies, or "postindustrial societies," based on the creation, processing, and distribution of information. To speak of the United States as a service economy does not mean, as many Americans feared during the late 1980s, that the United States was becoming a nation of hamburger flippers; nor does it mean that services displace production of consumer and other types of goods. The advent of the service economy means that such services as information-based services are a growing input into the production of hard goods; these inputs make it possible to produce more and higher quality goods. The nature of manufacturing is changing and reducing employment in the traditional manufacturing sector at the same time that the volume of manufacturing output is increasing.¹⁹ In the late nineteenth century, a similar transition occurred as the agriculture-based society shifted to a manufacturing-based society and industrialization transformed food production.

At the same time that the advanced industrial countries are becoming service-oriented economies, more traditional manufacturing is moving to the less developed countries of Pacific Asia and, to a lesser extent, to other parts of the world previously known as the Third World. Many developing nations shifted by the end of the century from being primarily commodity exporters to becoming exporters of manufactured goods. Unfortunately, however, this development was accompanied by increasing polarization between those rapidly industrializing economies that could take advantage of ongoing technological changes and the large majority of less developed countries that, for one reason or another, were unable to adjust to the technological revolution.

Restricted Access to Leading Technology

The new theories differ from neoclassical theory in the extent to which they assume that technological innovation can be appropriated or monopolized by an innovator. Neoclassical economics assumes that technology is a public good equally available to all firms; that is, that technical knowledge cannot easily be monopolized. Every firm

¹⁹ Geza Feketsky, *International Trade in Services: An Overview and Blueprint for Negotiations* (Cambridge, Mass.: An American Enterprise Institute/Ballinger Publication, 1988).

regardless of its size, nationality, or other features is believed to have an equal opportunity to appropriate and exploit the fruits of scientific and technical advance around the world. Thus, when a firm makes an investment decision, the neoclassical assumption is that it can incorporate "state-of-the-art" technology in its new plant and thereby be competitive in world markets.

The new growth, location, and trade theories assume, to the contrary, that technology can be and is being, at least temporarily, appropriated and monopolized by its innovators. Private firms and national governments can and do attempt to slow down the international diffusion of the most advanced technologies at a moment when achieving and maintaining control of technology and knowledge have become more and more important as factors in economic growth and international competitiveness. Thus, at the beginning of the twenty-first century, the technological leaders (Japan, the United States, and Western Europe) attempt to restrict transmission of their most advanced technologies to foreign competitors and to protect their intellectual property rights, especially from the encroachment of developing countries. Although an effort to safeguard intellectual property rights against piracy is proper in most cases, such efforts can lead to technonationalism and even denial of important medical technology to poor countries.²⁰

Technological Leapfrogging

The new growth theory is based on the assumption that technological change is generally incremental within a well-established technological paradigm and that an oligopolistic firm can expect to maintain its lead over its rivals through continuous investment in established technology. This theory also suggests that technological leapfrogging can sometimes explain drastic reversals among firms and nations in their economic fortune and relative position, thus occasionally transforming the hierarchy of power and the structure of the international system. From time to time, one economy suddenly moves to a higher stage of technological development and productive efficiency. Such technological leapfrogging, especially when major powers are involved, can have profound and disturbing consequences for international economic and political affairs.²¹ The new growth theory may

²⁰ Sylvia Ostry and Richard R. Nelson, *Techno-Nationalism and Techno-Globalism: Conflict and Cooperation* (Washington, D.C.: Brookings Institution, 1995).

²¹ Elise S. Brezis, Paul R. Krugman, and Daniel Tsiddon, "Leapfrogging in International Competition: A Theory of Cycles in National Technological Leadership," *American Economic Review* 83, no. 5 (December 1993): 1211-19.

contribute not only to an understanding of the rise and decline of nations, but also to improved comprehension of the international political conflicts to which shifts in international status frequently give rise.

If technological advance is revolutionary, a technological leader may suddenly find itself at a decisive disadvantage and may even need to start anew and make substantial investments in the new technology. Whereas a technological leader with high wages and large investments in state-of-the-art technologies may have little or no incentive to take advantage of a newer revolutionary technology, a more technologically backward economy with no vested interest in the previously established technology and with cheaper labor and an undervalued currency is likely to view the new technology as a promising means to leap ahead of the leader. In times of normal incremental technological change, increasing returns to scale generally favor economic leaders. However, a new invention or a major technological breakthrough may favor the interests of a rising economy while disadvantaging those economic leaders who pay high wages and, as Mancur Olson has demonstrated, are also strongly influenced by vested interests that oppose adoption of new ideas.²² In this way, success in one stage of economic development may create barriers to success in the next stage.

Intensified Competition for Technological Leadership

Historically, there has been a high correlation among technological, economic, and political leadership. The rise of particular nations to global preeminence—for example, Great Britain, the United States, Germany, and Japan—resulted from their ability to take advantage of the first and second Industrial Revolutions. As in those earlier revolutions, the latest technological revolution has given rise to intensified competition among national economies for leadership. In the late nineteenth century, the great powers struggled with one another over the commanding heights of mass production. At the close of the twentieth century and in the beginning of the twenty-first century, the battleground has been located among the high-tech industries of the computer and the information economies. This has produced an intensifying competition among the great economic powers for global supremacy in these technologies and, consequently, for dominant political power in the future.

²² Mancur Olson Jr., *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven: Yale University Press, 1982).

Technological developments available at the turn of the century hold great promise that all economies could eventually benefit. These new technologies are so central to economic competitiveness and national power that the struggle to determine which nations will lead and which will follow in development and exploitation of these revolutionary technologies has been intensifying. Although recognition of the importance of the technologies has unleashed a competitive struggle among states for technological supremacy, it is highly unlikely that any nation will be able, in the early years of the twenty-first century, to achieve the commanding technological leads that Great Britain and the United States enjoyed in the nineteenth and twentieth centuries. The scope and expense of modern science and technology are simply too great for any one nation to acquire a monopoly position in every high-tech sector. Nevertheless, the competition will be fierce, because control over what have been called the “nerve centers” of the twenty-first century is at stake in this struggle.

CONVERGENT AND DIVERGENT ECONOMIC GROWTH

The world economy portrayed by the new economic theories is characterized by both divergent and convergent economic growth among national economies and different regions within individual national economies. Despite the optimistic predictions flowing from the convergence theory of mainstream neoclassical economics, the growth process within and among national economies remains highly uneven. Although convergence has been taking place among the industrialized countries throughout the post-World War II era, few developing economies have converged with the developed economies despite the considerable progress that some have experienced. An important study by Robert Barro and Xavier Martin found that the prediction that convergence between rich and poor would occur has not been fulfilled; in fact, the growth rates of many countries are diverging from one another.²³ Government policies that encourage private entrepreneurship and national economic efficiency are important in determining that convergence rather than divergence will take place.

²³ Robert J. Barro and Xavier-Martin, “Convergence Across States and Regions” (Washington: Brookings Institution, Brookings Papers on Economic Activity I, 1991), 107–58. These negative findings regarding convergence are supported by Maurice Obstfeld and Kenneth Rogoff, *Foundations of International Macroeconomics* (Cambridge: MIT Press, 1996), 454.

The low capacity of the societies in less developed countries to absorb the knowledge required for economic development has proved to be a particularly significant deficiency. As I have already pointed out, the availability of human capital and the ability to use knowledge are the most important determinants of economic development. Educational, institutional, and/or some other factors may provide reasons for the weakness of less developed countries in meeting the requirements for economic development.²⁴ As Moses Abramovitz has pointed out, convergence occurs only when national economies share a similar "social capacity." He was referring to the institutional and human components of a society that develop only slowly through educational and organizational responses to technological opportunity.²⁵ Unfortunately, few less developed countries possess such a capacity.

Differences in the level of social capacity among national economies leads to an international core/periphery structure in which strong concentrations of economic wealth and economic activities (the core economies) coexist with weaker or peripheral economies. Emergence of core economies and slower development of other economies results in an uneven evolution of the international economy. In the language of economics, economic development around the world is "lumpy," as development clusters in one region of the globe or another. While some nations and regions develop and become important components of the world economy, others remain stagnant or develop more slowly. Over time, however, new regional concentrations of economic activities arise and older developed regions decline, at least in relative terms.

The core/periphery structure is held together by mutual dependence; trade, investment, and other economic activities bind the core economy and peripheral economies. Yet, in almost all cases, the periphery is much more dependent on the core than vice versa. The core is the periphery's major source of capital and investment as well as being a large market for the exports of the periphery. The periphery is primarily a source of commodities (food, raw materials, etc.), lower valued exports, and in some cases, workers. In the language of

Hirschman, the core has power over the periphery because a rupture of their ties would be more costly to the latter than the former. Keohane and Nye (1977) had much the same point in mind when they distinguished between "sensitivity" and "vulnerability" interdependence.²⁶

The global process of uneven economic development and the existence of core/periphery structures are the result of the interplay of opposed economic forces that successively create and undermine regional concentrations of industry and economic activity.²⁷ On the one hand are found forces of polarization or agglomeration that promote regional concentration of economic activities. These forces include economies of scale, the technological and other advantages gained by path dependence, and the cumulative process. In addition, externalities and the learning experience can give a region a powerful competitive advantage over other regions. For example, the ability of entrepreneurs within a region to take advantage of local technologies, knowledge spillovers, and economies of scale will enhance their competitiveness. In addition, a region may also possess the advantages of proximity to suppliers and customers and the linkages that develop among firms dealing in intermediate goods.²⁸ Then there are the opposed forces of spread and diffusion. The forces of dispersal that lead to development of new core economies include diffusion of technology from developed to industrializing economies, the exhaustion of valuable resources, increasing labor costs in the core/s, rising land costs, and such other diseconomies as urban congestion and rising taxation.

Whether the centrifugal forces concentrating economic activities or the centripetal forces dispersing them will prevail in a particular case is virtually impossible to predict; as with almost every economic question, the answer is, "It depends." It is impossible to know which economies will become core economies or which will be in the periphery over the long term. As Paul R. Krugman has pointed out, the organization of the world economy with respect to the location of

²⁶ These matters are discussed in Chapter 4.

²⁷ Prior to Krugman, a number of scholars such as Albert O. Hirschman and Gunnar Myrdal made important contributions to the study of the core/periphery formation. These writings are discussed in my book, *The Political Economy of International Relations* (Princeton: Princeton University Press, 1987). One important element missing from these earlier analyses, and emphasized by Krugman, is the role of economies of scale in the formation of core economies. A discussion of this earlier literature is Keith Chapman and David Walker, *Industrial Location. Principles and Policies* (Cambridge: Basil Blackwell, 1987).

²⁸ Anthony J. Venables, "Cities, Trade, and Economic Development," May 1999, unpublished.

²⁴ Luc Soete and Bart Verspagen, "Technology and Growth: The Complex Dynamics of Catching Up, Falling Behind, and Taking Over," in Adam Szirmai, Bart Van Ark, and Dirk Pilat, eds., *Explaining Economic Growth* (Amsterdam: North Holland, 1993), 8.

²⁵ Moses Abramovitz first set forth his notion of social capacity in *Thinking About Growth and Other Essays on Economic Growth* (Cambridge: Cambridge University Press, 1989).

particular industries, the concentration of wealth and economic activities in urban centers and core economies, and the uneven development of the globe and the unequal distribution of wealth among societies are, to a considerable degree, functions of chance, arbitrariness, and historical accident reinforced by increasing returns and cumulative processes.²⁹ Nevertheless, several generalizations on the global process of economic development can be extracted from the writings of economists on the new economic geography and other recent theories:

- (1) The process of concentration or agglomeration divides the global economy into developed and less developed regions. Concentration of economic activities is particularly characteristic of manufacturing, as firms desire to be close to large markets and to suppliers of intermediate goods.
- (2) Agglomeration is primarily confined to regions within individual developed economies. However, as trade and other barriers fall, uneven growth and a resulting core/periphery structure extend across national boundaries. Divergent growth rates rather than convergent rates are characteristic of the global economy.
- (3) Economic development takes place sequentially and unevenly as clusters of economic activity spread from industrialized to industrializing countries.

While generally contributing to greater understanding of the dynamics of the world economy, the above generalizations lack certain key components that a comprehensive analysis should include. In the first place, Krugman's core/periphery model overlooks the economic, and especially the political, implications of that structure for the world economy. For example, a nation that possesses one or more regional cores with strong industries can achieve an overwhelming economic and competitive superiority over other nations. As economists point out, an economy with a head start in the accumulation of knowledge tends to widen its productivity lead. Actually, one implication of Paul Krugman's core/periphery formulation is that a hierarchical global economic and political structure will be created in which the core economy/economies possess the most important economic activities and the dependent periphery is where lower value-added economic activities are located. Such a situation inevitably becomes a major source of economic tension and even political conflict.

²⁹ Paul R. Krugman, *Geography and Trade* (Cambridge: MIT Press, 1991).

In the game of international economics, one vital national objective is to ensure possession of important core regions and leading industries. Because a head start is so very important, lagging nations are motivated to pursue such trade and industrial policies as subsidies to local businesses and erection of protectionist barriers in order to catch up with or leapfrog over the leading economy. Nations desire core regions because they are associated with high wages, economic power, and national autonomy. Almost every government engages in deliberate efforts to erect barriers to protect established industries or provide inducements to attract new industries. Policies of economic nationalism attempt to increase the probability that both the centripetal and centrifugal forces will work toward the nation's own advantage. A notable example of such an effort to redistribute industry and other economic activities to a nation's own advantage occurred when, in the last part of the nineteenth century, Canada put into place high-trade barriers, subsidized a transcontinental railway, and took other actions to encourage foreign direct investment and to create an industrialized, united, and independent economy. This strategy of encouraging diffusion of industry to and within Canada met with considerable success.

Another significant implication of economic geography is that lowering trade and other economic barriers will lead to economic integration across national boundaries and to significant restructuring of national economies. As integration takes place, industry and other economic activities tend to migrate within the enlarged market. As displacements occur, existing core/periphery structures will be reconfigured and new structures will be formed. Increasing economic interdependence in the world economy or within a regionalized economy, such as the European Union or the North American Free Trade Agreement (NAFTA), will result in many economic activities shifting their geographic location. Yet it remains impossible to predict the overall result of this restructuring and whether industry will move to the periphery to take advantage of lower cost labor or will concentrate in the existing regional cores.³⁰

The neoclassical characterization of a smooth evolution of the world economy is patently unrealistic. Indeed, as convergence among developed and developing economies takes place, conflict between

³⁰ Paul R. Krugman and Anthony J. Venables, "Integration and the Competitiveness of Peripheral Industries," in Christopher Bliss and Jorge Braga, De Macedo, eds., *Unity with Diversity in the European Economy: The Community's Southern Frontier* (New York: Cambridge University Press, 1996), Chapter 3.

them invariably intensifies for several reasons.³¹ In the first place, the rise of a new economic power decreases the relative economic share and international status of the dominant economy. A second and closely related effect is that this shift in economic wealth and technological capability causes an economy experiencing relative decline to be concerned over its national security. And, thirdly, as the rising power closes the economic/technological gap, it competes away the monopoly rents or superprofits of the more advanced economy. Under these circumstances, it is not surprising that declining powers have made scapegoats of rising powers and have charged that the latter have played the game unfairly; this happened in the late 1980s and early 1990s when Japan seemed to be displacing the United States as the world's dominant economic power.

There are several alternative strategies available to a declining economic power. The most drastic recourse is to use military power to remove the economic challenge and security threat posed by the rising power; fortunately, utilization of this option is rare and usually the result of serious political conflicts rather than of merely economic tensions. A second option is a retreat into trade protection (even though protectionism will most likely accelerate economic decline) or an attempt to weaken the rising economy. The third and most desirable response available to the challenged country is to take policy initiatives designed to rejuvenate its own flagging economy. This strategy of economic adjustment can mean letting the market work and/or implementing judicious interventionist policies to shift an economy away from those industries and economic activities in which it is losing comparative advantage and toward those in which it is gaining advantage. Frequently, a challenged economy pursues a combination of these strategies.

As the new theories suggest, a government can pursue specific macroeconomic and microeconomic policies to strengthen its economy. It can, for example, devalue its currency; although this choice may temporarily increase the competitiveness of the economy, it is at best a short-term strategy. A better strategy would be to take steps to increase the productivity of the economy. This can be done through improving market functioning. However, as the theory of strategic trade and the importance of technology suggest, the government can also take more direct actions. It is quite clear, for example, that gov-

ernment support for basic scientific and technological R & D can produce large economic payoffs. In addition, the crucial role of skilled labor in economic development and international competition makes it imperative that governments actively promote education and worker training. As they respond to the process of uneven growth, governments do have choices.

Although the strategy of economic adjustment is certainly the preferable response to convergence and to relative economic decline, it is frequently the most difficult to carry out. As Mancur Olson argued in *The Rise and Decline of Nations* (1982), the balance of power within an economy tends to favor those groups whose interests lie with the status quo and therefore do not want to pay the costs of adjustment.³² Because they know precisely what they may lose, threatened and entrenched economic sectors frequently put pressure on their governments for protection against the "unfair" trading and economic practices of rising competitors. In the contemporary world, a frequent response to convergence and other shifts in the global distribution of highly valued economic activities is to undertake or expand regional economic and political arrangements, such as the European Union and the North American Free Trade Agreement (NAFTA).

CONCLUSION

The new economic theories and their implications for the world economy lead me to conclude that governments and their policies are and will remain of crucial importance for the functioning of the international economy. Despite the increasing significance of the market and economic globalization, economic outcomes are determined not only by economic forces but also by governments and their policies. Yet, national societies differ fundamentally in the degree to which their governments play a meaningful role in the economy and in the ways in which they attempt to manage their economies.

³¹ Staffan Burnenstam Linder, *The Pacific Century: Economic and Political Consequences of Asian-Pacific Dynamism* (Stanford: Stanford University Press, 1986), 90-94.

³² Olson, *The Rise and Decline of Nations*.