

5 Theories of Economic Development

To many people, a theory is a contention that is impractical or has no factual support. Someone who says that free migration to the United States may be all right in theory, but not in practice, implies that despite the merit of the idea, it would be impractical. Likewise, the statement that the idea of lower wealth taxes in India stimulating economic growth is just a theory indicates an unverified hypothesis.

For the economist, however, a **theory** is a systematic explanation of interrelationships among economic variables, and its purpose is to explain causal relationships among these variables. Usually a theory is used not only to understand the world better but also to provide a basis for policy. Theorists cannot consider all the factors influencing economic growth in a single theory. They must determine which variables are crucial and which are irrelevant. However, reality is so complicated that a simple model may omit critical variables in the real world. And although complex mathematical models can handle a large number of variables, they have not been very successful in explaining economic development in less developed countries (LDCs).

Scope of the Chapter

This chapter discusses a few major theories of economic development, reserving for subsequent chapters less comprehensive theories dealing with specific economic questions. Since the mid-twentieth century, economists have stressed all-encompassing theories of development, including neoclassicism and rival theories.

The first two models, those of the English classical economists and of their foremost critic, Karl Marx, were developed in the nineteenth century during early capitalist development in Western Europe, the United States, and Canada. The next theories include Walter Rostow's model – written as an alternative to Marx's theory of modern history – which sets forth five stages of economic growth for LDCs, based on the experience of developing countries; the vicious circle theory, focusing on LDC low saving rates; and the debate on preventing coordination failures, including balanced versus unbalanced growth, that clarifies issues concerning the “big push,” economies of scale, complementarities, and differential productivity. The Lewis-Fei-Ranis model

views the accumulation of capital by profits from the industrial capitalist sector hiring an unlimited supply of surplus labor from agriculture as the impetus to LDC growth. Paul Baran's coalitions model draws on Marx's historical dynamics and Lenin's theory of imperialism to analyze economic backwardness in Asia, Africa, and Latin America. In addition, dependency theory, which borrows from Baran's approach, argues that underdevelopment in Third World countries results from their participation in the international capitalist system.

Although the West and Japan have had both economically conservative and liberal governments in the years since 1990, the leading approach among development economists has been **neoclassicism**, an economic theory that stresses freedom from the state's economic restraint. Neoclassical economists dominate the two most powerful international financial agencies involved in LDCs, the World Bank and International Monetary Fund (IMF). Neoclassicism also includes a formal growth theory, which emphasizes the importance of capital formation for growth. The fact that neoclassical growth theory assumes perfect competition and has no explanation for technology within the model motivated other economists to propose an endogenous growth theory in which technical progress, the chief source of growth, was explained within the model.

The Classical Theory of Economic Stagnation

MODEL

The **classical theory**, based on the work of nineteenth-century English economist David Ricardo, *Principles of Political Economy and Taxation* (1817), was pessimistic about the possibility of sustained economic growth. For Ricardo, who assumed little continuing technical progress, growth was limited by land scarcity.

The classical economists – Adam Smith, Thomas Malthus, Ricardo, and John Stuart Mill – were influenced by Newtonian physics. Just as Newton posited that activities in the universe were not random but subject to some grand design, these men believed that the same natural order determined prices, rent, and economic affairs.

In the late eighteenth century, Smith argued that in a competitive economy, with no collusion or monopoly, each individual, by acting in his or her own interest, promoted the public interest. A producer who charges more than others will not find buyers, a

worker who asks more than the going wage will not find work, and an employer who pays less than competitors will not find anyone to work. It was as if an **invisible hand** were behind the self-interest of capitalists, merchants, landlords, and workers, directing their actions toward maximum economic growth (Smith [1937](#), first published 1776). Smith advocated a **laissez-faire** (governmental noninterference) and free-trade policy except where labor, capital, and product markets are monopolistic, a proviso some present-day disciples of Smith overlook.

The classical model also took into account (1) the use of paper money, (2) the development of institutions to supply it in appropriate quantities, (3) capital accumulation based on output in excess of wages, and (4) division of labor (limited primarily by the size of the market). A major tenet of Ricardo was the **law of diminishing returns**, referring to successively lower extra outputs from adding an equal extra input to fixed land. For him, diminishing returns from population growth and a constant amount of land threatened growth. Since Ricardo believed technological change or improved production techniques could only temporarily check diminishing returns, increasing capital was seen as the only way of offsetting this long-run threat.

His reasoning took the following path. In the long run, the natural wage is at subsistence – the cost of perpetuating the labor force (or population, which increases at the same rate). The wage may deviate but eventually returns to a natural rate at subsistence. On the one hand, if the wage rises, food production exceeds what is essential for maintaining the population. Extra food means fewer deaths, and the population increases. More people need food and the average wage falls. Population growth continues to reduce wages until they reach the subsistence level once again. On the other hand, a wage below subsistence increases deaths and eventually contributes to a labor shortage, which raises the wage. Population decline increases wages once again to subsistence. In both instances, the tendency is for the wage to return to the natural subsistence rate.

With this **iron law of wages**, total wages increase in proportion to the labor force. Output increases with population, but other things being equal, output per worker declines with diminishing returns on fixed land. Thus the surplus value (output minus wages) per person declines with increased population. At the same time, land rents per acre increase with population growth because land becomes scarcer relative to other factors.

The only way of offsetting diminishing returns is by accumulating increased capital

per person. However, capitalists require minimum profits and interest payments to maintain or increase capital stock. Yet, because profits and interest per person decline and rents increase with population growth, there is a diminishing **surplus** (profits, interest, and rent) available for the capitalists' accumulation. Ricardo feared that this declining surplus reduces the inducement to accumulate capital. Labor force expansion leads to a decline in capital per worker or a decrease in worker productivity and income per capita. Thus, the Ricardian model indicates eventual economic stagnation or decline.

CRITIQUE

Paradoxically, Ricardo's stagnation theory was formulated amid numerous scientific discoveries and technical changes that multiplied output. Clearly, he underestimated the impact of technological advances in offsetting diminishing returns. The steam engine (1769), the spinning jenny (1770), the Arkwright water frame (1771), the puddling process for making wrought iron (1784), the power loom (1785), the cotton gin (1793), interchangeable parts (1798), improved soil tillage and improved breeds of livestock (around 1800), the steamboat (1807), the water mill for powering factories (1813), and the three-piece iron plow (1814) were all developed before he wrote his theory. Since Ricardo's time, rapid technological progress contributed to unprecedented growth.¹ Furthermore the iron law of wages did not foresee the extent to which population growth could be limited, at least in the West, through voluntary birth control.

Moreover it did not occur to Ricardo that private ownership of land and capital is not an economic necessity. Land and capital would still be used even if rents and interest were not paid, as in state ownership of these means of production. Ironically Ricardian stagnation might result in a Marxian scenario, where wages and investment would be maintained only if property were confiscated by society and payments to private capitalists and landlords stopped (Enke 1963:70–90).

As discussed later, contemporary neoclassical economists take the classical stress on savings, free trade, and freedom from government restriction and add an emphasis on technological change as an important component of economic growth. These ideas are the major features of the neoclassical theory, a dominant present-day theory of economic growth.

Marx's Historical Materialism

Karl Marx's views were shaped by radical changes in Western Europe: the French Revolution; the rise of industrial, capitalist production; political and labor revolts; and a growing secular rationalism. Marx (1818–83) opposed the prevailing philosophy and political economy, especially the views of utopian socialists and classical economists, in favor of a worldview called **historical materialism**.

THEORY

Marx wanted to replace the unhistorical approach of the classicists with a historical dialectic. Marxists consider classical and later orthodox economic analysis as a still photograph, which describes reality at a certain time. In contrast, the dialectical approach, analogous to a moving picture, looks at a social phenomenon by examining where it was and is going and its process of change. History moves from one stage to another, say, from feudalism to capitalism to socialism, on the basis of changes in ruling and oppressed classes and their relationship to each other. Conflict between the forces of production (the state of science and technology, the organization of production, and the development of human skills) and the existing relations of production (the appropriation and distribution of output and a society's way of thinking, its ideology, and worldview) provide the dynamic movement in the materialist interpretation of history. The interaction between forces and relations of production shapes politics, law, morality, religion, culture, and ideas.

Accordingly feudalism is undercut by (1) the migration of serfs to the town, (2) factory competition with handicraft and manorial production, (3) expanded transport, trade, discovery, and new international markets on behalf of the new business class, and (4) the accompanying rise of nation-states. The new class, the proletariat or working class, created by this next stage, capitalism, is the seed for the destruction of capitalism and the transformation into the next stage, socialism. Capitalism faces repeated crises because the market, dependent largely on worker consumption, expands more slowly than productive capacity. Moreover, this unused capacity creates, in Marx's phrase, a **reserve army of the unemployed**, cheap labor that expands and contracts with the “boom and bust” of business cycles. Furthermore, with the growth of monopoly, many small business people, artisans, and farmers become “property-less” workers who no longer have control over their workplaces. Eventually, the proletariat revolts, takes control of capital, and establishes socialism. In time, socialism is succeeded by

communism, and the state withers away.

Marx's ideas were popularized by his collaborator, Friedrich Engels, especially 1883–95, when he finished Marx's uncompleted manuscripts, interpreted Marxism, and provided its intellectual leadership.

From the late nineteenth century through the first three-quarters of the twentieth century, Socialist, Social Democratic, and Labor parties in Western Europe have tried to introduce socialism through parliamentary democracy rather than violent revolution. Since the 1970s and 1980s, however, these parties, some with Marxist origins, have limited their goals to a welfare state, social market capitalism, or social reform under capitalism.

CRITIQUE

Marx's main analysis was of capitalism, but his discussions of socialism and communism were not well developed. Even his analysis of capitalism, and the transition to socialism, had a number of flaws. He had theorized worker revolt in the industrialized West, but the revolution occurred first in Russia, one of Europe's least developed capitalistic countries.

Marxists indicate several reasons why Western workers have yet to overthrow capitalism. Having realized the dangers of a rebellious working class at home, the capitalists have employed divide-and-rule tactics that depend on exploitation of workers outside the West. Furthermore, the news media, educational institutions, and churches create a false consciousness supporting ruling-class ideologies. And the capitalist state has powerful legal, police, military, and administrative machinery to quell potential resistance.

Marx overlooked the possibility that the interests of workers and capitalists might not conflict. Thus, workers in the West may have supported capitalism because they gained more in the long run by receiving a relatively constant share of a rapidly growing output than by trying to acquire a larger share of what might have been a more slowly growing output under a different system.

Regardless of how we view Marxism, it remains a rallying point for discontented people. The irony is that nationalist groups who overthrow their rulers in the name of Marxism are frequently threatened by class antagonisms from those they rule. Almost no other socialist government is willing to go as far as the late Chairman Mao Zedong of

China, who recognized the existence of classes under socialism and called for a continuing revolution to oppose the encrusted socialist, upper classes. Other theorists have revised or added to Marxism, including Paul Baran and the dependency theorists, considered later in this chapter.

Rostow's Stages of Economic Growth

People existed for centuries with little change in their economic life. When major changes occurred, as in the last 500 years, they often took place abruptly. In *The Stages of Economic Growth* (1961), Walter Rostow sets forth a new historical synthesis about the beginnings of modern economic growth.

FIVE STAGES

Rostow's economic stages are (1) the traditional society, (2) the preconditions for takeoff, (3) the takeoff, (4) the drive to maturity, and (5) the age of high mass consumption. Rostow has little to say about traditional society except that it is based on attitudes and technology before the turn of the eighteenth century. Isaac Newton formulated differential calculus and the law of gravity. After Newton, people widely believed “that the external world was subject to a few knowable laws, and was systematically capable of productive manipulation” (Rostow [1961](#):4).

PRECONDITIONS STAGE

Rostow's **preconditions stage** for sustained industrialization includes radical nonindustrial changes through (1) increased transport investment to enlarge the market and production specialization, (2) a revolution in agriculture to feed a growing urban population, and (3) an expansion of imports, including capital, financed by exporting natural resources. These changes, including increased capital formation, require a political elite interested in economic development. This interest may be instigated by a nationalist reaction against foreign domination or the desire to have a higher standard of living.

TAKEOFF

Rostow's central stage, the **takeoff**, is a decisive expansion occurring over twenty to

thirty years that radically transforms a country's society. During this stage, barriers to steady growth are finally overcome, while forces making for widespread progress dominate the society, so that growth becomes normal. The takeoff is a dramatic moment in history, corresponding to the beginning of the industrial revolution in late eighteenth-century Britain; pre-Civil War railroad and manufacturing development in the United States; the period after the 1848 revolution in Germany; the years after the 1868 Meiji restoration in Japan; the rapid growth of the railroad, coal, iron, and heavy-engineering industries in the quarter-century before the 1917 Russian Revolution; and periods starting within a decade of India's independence (1947) and the communist victory in China (1949). Three conditions must be satisfied for takeoff:

1. Net investment as a percentage of net national product (NNP) increases sharply – from 5 percent or less to greater than 10 percent. If an investment of 3.5 percent of NNP leads to a growth of 1 percent yearly, then 10.5 percent of NNP is needed for a 3 percent growth (or a 2 percent per capita increase if population grows at 1 percent).
2. At least one substantial manufacturing sector grows rapidly. The growth of a leading manufacturing sector spreads to its input suppliers expanding to meet its increased demand and to its buyers benefiting from its larger output. In the last three decades of the 1700s, for example, the cotton textile industry in Britain expanded rapidly because of the use of the spinning jenny, water frame, and mule in textiles and the increased demand for cotton clothing. The development of textile manufactures, and their exports, had wide direct and indirect effects on the demand for coal, iron, machinery, and transport. In the United States, France, Germany, Canada, and Russia, the growth of the railroad, by widening markets, stimulated the coal, iron, and engineering industries, which fueled the takeoff.
3. A political, social, and institutional framework quickly emerges to exploit modern expansion, implying mobilizing capital through retained earnings from rapidly expanding sectors; an improved system to tax high-income groups, especially in agriculture; developing banks and capital markets; and generally foreign investment. Furthermore, where state initiative is lacking, the culture must support a new class of entrepreneurs prepared to risk innovation.

DRIVE TO MATURITY

The drive to maturity, a period of growth that is regular, expected, and self-sustained,

follows takeoff. A labor force that is predominantly urban, increasingly skilled, less individualistic, and more bureaucratic and looks increasingly to the state to provide economic security characterizes this stage.

AGE OF HIGH MASS CONSUMPTION

The symbols of this last stage, reached in the United States in the 1920s and in Western Europe in the 1950s, are the automobile, suburbanization, and innumerable durable consumer goods and gadgets. In Rostow's view, other societies may choose a welfare state or international military and political power.

CRITIQUE

Rostow's theory was the vogue among many U.S. government officials in the 1960s, especially in the international aid agencies, because it promised hope for sustained growth in LDCs after substantial initial infusions of foreign assistance. But among scholars, Rostow's work met with mixed reviews. Rostow is accused of overambition. Ian Drummond (1961:112–13) complains that “probably no theory has been so widely circulated from so slight a base of organized fact and careful analysis.”

Economic historian A. K. Cairncross (1961:454) argues that one can believe in an abrupt takeoff, or industrial revolution, only if one's knowledge of history is flimsy and out of date. Cairncross argues that many of Rostow's conditions are defined so vaguely that they stretch to cover any case and he seems only too willing to admit exceptions when takeoff occurs at a time other than his theory suggests.

Indeed, Rostow's stages, imprecisely defined, are difficult to test scientifically. For a theory to be meaningful, it must be possible to prove it wrong. If the stages are to explain how development is caused, the relationships cannot be circular. The stages must be defined in terms other than economic development, the variable the theory is trying to explain. For example, the concepts of *traditional society* and *high mass consumption society* define rather than explain reasons for the level of development. Furthermore, past economies – primitive, ancient, medieval, and those of the presently developed countries of a century or two ago – are all grouped with presently underdeveloped countries in a single category: the traditional society.

The designation of traditional societies as pre-Newtonian neglects the dualism of many LDCs. Much of the large manufacturing, plantation, and mining sectors of

post-World War II India, Indonesia, Nigeria, and Pakistan use modern methods and techniques and cannot be considered traditional in Rostow's sense.

Much of Rostow's thesis about the conditions for takeoff is contradicted by empirical data. Increases in investment rates and growth do not occur in the twenty- to thirty-year span Rostow designates for takeoff. Growth in investment rates and NNP in Great Britain, Germany, Sweden, and Japan indicate a slow and relatively steady acceleration rather than an abrupt takeoff.

Frequently the characteristics of one of Rostow's stages are not unique to it. Why would the agricultural revolution, capital imports, and social overhead investment of the preconditions stage not be consistent with the abrupt increase in investment rates during the takeoff stage? Why could the development of leading sectors or the emergence of an institutional framework exploiting growth not take place in the preconditions stage as well as during the takeoff stage? Why would the abrupt increase in growth and investment rates during takeoff not continue through the drive to maturity?

Unlike Marx's dialectical materialism, Rostow's approach does not show how the characteristics and processes of one stage move a society to the next stage. How do we explain the relatively effortless self-sustained growth after takeoff? Presumably, some obstacles to growth have been removed. What are they, and how does his theory explain their removal?

Rostow's premise that economic modernization implies a change from an underdeveloped economy to one similar to those in North America and Western Europe today poses another problem. Rostow compares LDCs at independence to the formation of nation-states in the West. He assumes that the development of underdeveloped countries will parallel the earlier stages of today's advanced countries, but he neglects the relationship of contemporary underdeveloped countries with developed countries (DCs) as well as each LDC's highly individual history.

Rostow is ethnocentric when he chooses high mass consumption society, characterized by automobiles, suburbanization, and consumer gadgets, as the culminating stage of economic growth. For him, today's modernized societies, the archetype of which is the United States, are an image of the future of traditional societies. Surely the study of comparative history should alert us to the danger of using the experience of the United States (or any other country) as a model for countries with very different cultural and political backgrounds to emulate.

Vicious Circle Theory

This theory indicates that poverty perpetuates itself in mutually reinforcing **vicious circles** on both the supply and demand sides.

SUPPLY SIDE

Because incomes are low, consumption cannot be diverted for capital formation. Lack of capital results in low productivity, which perpetuates low income. Thus, the circle is complete. A country *is* poor because it *was previously* too poor to save and invest.

Japan's high savings rates during rapid growth of the 1950s, 1960s, and 1970s and the high savings rates of the Asian tigers (South Korea, Taiwan, Singapore, and Hong Kong), Malaysia, and Thailand imply the other side of the coin of the vicious circle. As countries grow richer, they save more, creating a **virtuous circle** in which high savings rates lead to faster growth (Edwards 1995; World Bank 2003i:218–20).

DEMAND SIDE

Furthermore, because incomes are low, market size (for consumer goods, such as shoes, electric bulbs, and textiles) is too small to encourage investors. Lack of investment means low productivity and continued low income. A country *is* poor because it *was previously* too poor to provide the market to spur investment.

INSUFFICIENT SAVING: A CRITIQUE

The vicious circle theory seems plausible to those Westerners who imagine that the *entire* LDC population is poor and hungry. They are surprised that anyone in the LDCs saves. But you can probably identify flaws in these views. Westerners may be judging the saving potential in LDCs by Western standards of living. Of course, most Westerners find it difficult to imagine saving on the \$8,000 annual salary received by a middle manager in India. But remember the relative position that \$8,000 represents. There is reason for believing that LICs can save substantially more than they do. The highest income groups in LICs live far above subsistence levels. India's richest 10 percent receive about 34 percent of national income, an amount per head nine to ten times that of the poorest 10 percent (World Bank 2003i:65). Evidence indicates that

consumption levels are determined less by absolute income than by relative income (income in comparison to neighbors and community members); thus, the higher income classes in LDCs could save considerably if they were sufficiently motivated. One reason they may not do so is because of the **demonstration effect** of consumption levels in the West and of elites in their own country. That is, people may spend beyond their income to keep up with the Joneses, the Sridhars, or the Abdullahis.

You should also keep in mind that personal saving is usually a small proportion of LDC total saving. Corporate saving, government saving, public enterprise profits, social security contributions, life insurance premiums, and provident and pension fund reserves may be other sources for saving (Nafziger, Supplement, [2006b](#)).

If we look at saving more broadly, additional arguments suggest that poor countries have a substantial capacity to save. Throughout history, few societies have been too poor to wage war. Yet any war requires a share of the country's resources that would be sufficient for a significant rate of capital formation; 2.0 percent of gross national product (GNP) and 12.9 percent of central government expenditures of LDCs go for military expenditures (World Bank 2010h:318). Perhaps if countries mobilized for economic development as they did for war, they could increase saving.

Furthermore, some poor societies have built magnificent monuments. As Cairncross (1963) argues, "Anyone who looks at the pyramids, cathedrals, and pagodas that civilizations have bequeathed, can hardly regard the construction of railways, dams, and power stations as imposing an unprecedented burden on a poor community."

SMALL MARKETS: A CRITIQUE

Everett Hagen ([1962](#):42–3) contends that the market is ample for using modern production methods effectively for products commonly consumed by low-income people – sugar, milled rice, milled flour, soap, sandals, textiles, clothing, cigarettes, matches, and candies. He argues that even a fairly small improvement in productivity for any of these commodities would capture a sizable market.

Moreover, large establishments require not only large markets but, more importantly, complex machinery and processes, which demand entrepreneurial and technical skills that are frequently scarce in LDCs. Hla Myint ([1954](#):132–63) argues that cost advantages from early entry, or "economies of experience," are more important for large-scale production than economies of scale from increased market size.

Balanced versus Unbalanced Growth

Many development disputes in the twenty-first century repeat themes from mid-twentieth-century debates, **balanced growth** versus **unbalanced growth**. Sometimes the debate is semantic, as the meaning of *balance* can vary from the absurd requirement that all sectors grow at the same rate to the more sensible plea that some attention be given to all major sectors – industry, agriculture, and services. However, absurdities aside, the discussion raises important issues. What are the relative merits of strategies of gradualism versus a big push? Is capital or entrepreneurship the major limitation to growth?

BALANCED GROWTH

The synchronized application of capital to a wide range of different industries is called *balanced growth* by its advocates. Ragnar Nurkse (1953) considers this strategy the only way of escaping from the vicious circle of poverty. He does not consider the expansion of exports promising because the **price elasticity of demand** (minus percentage change in quantity demanded divided by percentage change in price) for the LDCs' predominantly primary exports is less than one, thus reducing export earnings with increased volume.

BIG PUSH THESIS

Advocates of this synchronized application of capital to all major sectors support the **big push thesis**, arguing that a strategy of gradualism is doomed to failure. A substantial effort is essential to overcome the inertia inherent in a stagnant economy. The situation is analogous to a car being stuck in the snow: It will not move with a gradually increasing push; it needs a big push. In this spirit, United Kingdom Prime Minister Tony Blair commissioned a *Report on Africa, 2005* that called for “a big, big push forward” in Africa.

For Paul Rosenstein-Rodan (1943:202–11), the factors that contribute to growth, like demand and investment in infrastructure, do not increase smoothly but are subject to sizable jumps or **indivisibilities**. These indivisibilities result from flaws created in the investment market by **external economies**, that is, cost advantages rendered free by one

producer to another. These benefits spill over to society as a whole, or to some member of it, rather than to the investor concerned. As an example, the increased production, decreased average costs, and labor training and experience that result from additional investment in the steel industry will benefit other industries as well. Greater output stimulates the demand for iron, coal, and transport. Lower costs may make vehicles and aluminum cheaper. In addition, other industries may benefit later by hiring laborers who acquired industrial skills in the steel mills. Thus, the social profitability of this investment exceeds its private profitability. Moreover, unless government intervenes, total private investment will be too low.

Indivisibility in infrastructure: For Rosenstein-Rodan a major indivisibility is in infrastructure, such as power, transport, and communications. This basic social capital reduces costs to other industries. To illustrate, the railroad from Kanpur to the Kolkata docks increases the competitiveness of India's wool textiles domestically and abroad. However, the investment for the 950-kilometer Kanpur-Kolkata rail line is virtually indivisible in that a line a fraction as long is of little value. Building the Aswan Dam or the Monterrey–Mexico City telegraph line is subject to similar discontinuities.

Indivisibility in demand: This indivisibility arises from the interdependence of investment decisions; that is, a prospective investor is uncertain whether the output from his or her investment project will find a market. Rosenstein-Rodan uses the example of an economy closed to international trade to illustrate this indivisibility. He assumes that there are many subsistence agricultural laborers whose work adds nothing to total output (that is, the marginal productivity of their labor is zero). If 100 of these farm workers were hired in a shoe factory, their wages would increase income.

If the newly employed workers spend all of their additional income on shoes they produce, the shoe factory will find a market and would succeed. In fact, however, they will not spend all of their additional income on shoes. There is no “easy” solution of creating an additional market in this way. The risk of not finding a market reduces the incentive to invest, and the shoe factory investment project will probably be abandoned (Rosenstein-Rodan [1951](#):62).

Instead, however, let us put 10,000 workers in 100 factories (and farms) that among them will produce the bulk of consumer goods on which the newly employed workers will spend their wages. What was not true of the shoe factory is true for the complementary system of a hundred enterprises. The new producers are each other's customers and create additional markets through increased incomes. Complementary

demand reduces the risk of not finding a market. Reducing interdependent risks increases the incentive to invest.

The Murphy–Shleifer–Vishny Model

Murphy, Shleifer, and Vishny (1989:537–64) analyze an economy where world trade is costly: today perhaps, Bolivia, where a majority of the population live on a high plateau between two north–south Andes mountain chains; landlocked east-central African states Rwanda, Burundi, Uganda or Malawi; or isolated islands Papua New Guinea; or, in the nineteenth century, the United States, Australia, or Japan. Domestic agriculture or exports may not be sufficient for industrialization, so these economies need large domestic markets, a la Rosenstein-Rodan. For increasing returns from sliding down the initial part of a U-shaped long-run average cost curve (representing successive plants with more specialized labor and equipment), sales must be high enough to cover fixed setup costs.

To illustrate, “in the first half of the nineteenth century, the United States greatly surpassed England in the range of consumer products it manufactured using mass production techniques” (ibid., p. 538). In contrast to high-quality English artisan products for a quality-conscious upper class, American producers offered standardized mass-produced utilitarian items, largely bought by relatively well-off farmers and other middle classes. Colombia's tobacco export boom failed to lead to widespread economic development, as incomes went to a few plantation owners who spent on luxury imports. Later, from 1880–1915, however, the boom in coffee exports, grown on small family enterprises, benefited large numbers who demanded domestic manufactures (ibid., p. 539). For industrialization, incomes from the leading sector must be broadly distributed, providing demand for manufactures.

CRITIQUE OF BALANCED GROWTH

Advocates of balanced growth emphasize a varied package of industrial investment at the expense of investment in agriculture, especially exports. But [Chapter 17](#) shows that a country cannot grow rapidly if it fails to specialize where production is most efficient. Recent experience indicates that LDCs cannot neglect agricultural investment if they are to feed their population, supply industrial inputs, and earn foreign currency. [Chapter 14](#) points out that the recent demand for primary product exports increased so that their

value grew as fast as GNP.

Furthermore, infrastructure is not so indivisible as Rosenstein-Rodan implies. Roads, rivers, canals, or air traffic can substitute for railroads. Roads may be dirt, graveled, blacktopped, or paved and of various widths. Power plants can differ greatly in size, and telegram and telephone systems can be small, large, or intermediate. Large infrastructure facilities, although perhaps economical at high levels of development, are not essential for LDC growth (Hagen 1980:89–90).

Some critics argue that the resources required for carrying out balanced growth are so vast that a country that was able to invest the required capital would not, in fact, be underdeveloped. Moreover, in fact, farm workers with zero marginal labor productivity are not available ([Chapter 9](#)). In any case, where will a LDC obtain the capital, skilled labor, and materials needed for such industrial expansion? We cannot forget that although new industries may be complementary on the demand side, they are competitors for limited resources on the supply side.

Advocates of balanced growth assume that LDCs start from scratch. In reality, every LDC starts from a position that reflects previous investment decisions. Thus, at any time, there are highly desirable investment programs that are not balanced in themselves but are well integrated with existing capital imbalances (Fleming 1955:241–56; Singer [1958](#)). But perhaps the major discreditor of the balanced growth strategy was the widespread evidence in the 1960s and 1970s that LDCs were growing rapidly – without any attempt at the massive investments in the wide range of industries that advocates of the strategy considered essential.

HIRSCHMAN'S STRATEGY OF UNBALANCE

Albert Hirschman ([1958](#)) develops the idea of unbalanced investment to complement existing imbalances. He contends that deliberately unbalancing the economy, in line with a predesigned strategy, is the best path for growth.² He argues that the big push thesis may make interesting reading for economists, but it is gloomy news for the LDCs: they do not have the skills needed to launch such a massive effort. The major shortage in LDCs is not the supply of savings, but the decision to invest by entrepreneurs, the risk takers and decision makers. The ability to invest is dependent on the amount and nature of existing investments. Hirschman believes poor countries need a development strategy that spurs investment decisions.

He suggests that because resources and abilities are limited, a big push is sensible only in strategically selected industries. Growth then spreads from one sector to another (similar to Rostow's concept of leading and following sectors).

Investment should not be left solely to individuals in the market, however, because the profitability of different investment projects may depend on the order in which they are undertaken. For example, assume that investment in a truck factory yields a return of 10 percent yearly; in a steel factory, 8 percent, with the interest rate 9 percent. If left to the market, a private investor will invest in the truck factory. Later, as a result of this initial investment, returns on a steel investment increase to 10 percent, so then the investor invests in steel.

Assume, however, that establishing a steel factory would increase the returns in the truck factory from 10 to 16 percent. Society would be better off investing in the steel factory first and the truck enterprise second rather than making independent decisions based on the market. Planners need to consider the interdependence of investment projects so that they maximize overall *social* profitability. They need to make the investment that spurs the greatest amount of new investment decisions. Investments should occur in industries that have the greatest linkages, including **backward linkages** to enterprises that sell inputs to the industry and **forward linkages** to units that buy output from the industry. The steel industry, having backward linkages to coal and iron production and forward linkages to the construction and truck industries, has good investment potential, according to Hirschman.

Even a government that limits its role to providing infrastructure can time its investment projects to spur private investments. Government investment in transport and power will increase productivity and thus encourage other investments.

Planners trying to maximize linkages will not want to hamper imports too much because doing so will deprive the country of forward linkages to domestic industries using imports. In fact, officials may encourage imports until they reach a threshold to create forward linkages. Once these linkages have been developed, protective tariffs will provide a strong inducement for domestic entrepreneurs to replace imports with domestic production.

CRITIQUE OF UNBALANCED GROWTH

Hirschman fails to stress agricultural investments. According to him, agriculture does

not stimulate linkages as directly as do other industries. However, empirical studies indicate that agriculture has substantial linkages to other sectors; moreover, agricultural growth makes vital contributions to the nonagricultural sector through increased food supplies, added foreign exchange, labor supply, capital transfer, and larger markets (Johnston and Mellor [1961](#):571–81).

What constitutes proper sectoral investment balance requires careful analysis. In some instances, imbalances may be essential for compensating for existing imbalances. On the other hand, Hirschman's unbalanced growth should have some kind of balance as an ultimate aim. Generally, the concepts of *balance* and *imbalance* are of limited value. To be helpful, their meanings need to be defined carefully in specific contexts.

Coordination Failure: The O-Ring Theory of Economic Development

Balanced and unbalanced growth advocates focus on preventing or overcoming coordination failure. Michael Kremer (1993) uses the 1986 space shuttle Challenger as a metaphor for coordinating production in “The O-Ring Theory of Economic Development.” The Challenger has thousands of components, but it exploded because the temperature at which it was launched was so low that one component, the O-rings, malfunctioned. In a similar fashion, Kremer proposes a production function where “production consists of many tasks, [either simultaneous or sequential], all of which must be successfully completed for the product to have full value” (ibid., p. 551). To illustrate, a violinist who plays off key or misses the beat can ruin a whole symphony orchestra. This function describes production processes subject to mistakes in any of several tasks. You cannot substitute quantity for quality; indeed, “quality is job one.” This production function does not allow the substitution of quantity (two mediocre violinists, copyeditors, chefs, or goalkeepers) for quality (one good one). Highly skilled workers, who make few mistakes, will be matched together, with wages and output rising steeply with skill.³

Rich countries specialize in complicated products, such as aircraft, whereas poor countries produce simpler goods, such as textiles and coffee. Kremer thinks the O-ring theory can explain why rich countries specialize in more complicated products, have larger firms, and have astonishingly higher worker productivity and average incomes than poor countries.

Taiwan and South Korea, otherwise ready for takeoff in the mid-1960s, relied on

government action to override coordination failure. Both countries have a reasonably skilled labor force but a low endowment of physical capital, especially for taking advantage of scale economies. Additionally, some labor skills are not available locally and some technologies are not readily transferable internationally (Rodrik [2000](#):195–201).

Korea's government provided the initiative, subsidized capital and guaranteed markets to *chaebols*, such as Hyundai and Lucky Goldstar, allowing them to internalize spillovers from one affiliate to another (ibid., p. 197). For example, “Hyundai used its cement plant...to train its managers with background in construction, before assigning them to other manufacturing affiliates” (Amsden 1989).

Taiwan's government took the initial steps in establishing enterprises such as plastics, textiles, fibers, steel, and electronics. In some instances, such as plastics, the state firm was handed over to private entrepreneurs upon completion (Rodrik [2000](#):198–9).

For Mankiw, Romer, and Weil ([1992](#):407–37), human capital, and for Romer, **endogenous** (originating internally) technology, when added to physical capital and labor in neoclassical theory, are important factors contributing to growth. Microeconomic studies by Gregory Clark (1987:141–73) indicate that an early twentieth-century New England (United States) cotton textile mill operative, with the same equipment, “performed as much work as 1.5 British, 2.3 German, and nearly 6.0 Greek, Japanese, Indian, or Chinese workers.”

The Lewis–Fei–Ranis Model

The purpose of the Lewis and Fei–Ranis models is to explain how economic growth gets started in an LDC with a traditional agricultural sector and an industrial capitalist sector. In the Lewis–Fei–Ranis model, economic growth occurs because of the increase in the size of the industrial sector, which accumulates capital, relative to the subsistence agricultural sectors, which amasses no capital. The source of capital in the industrial sector is profits from the low wages paid an unlimited supply of surplus labor from traditional agriculture.

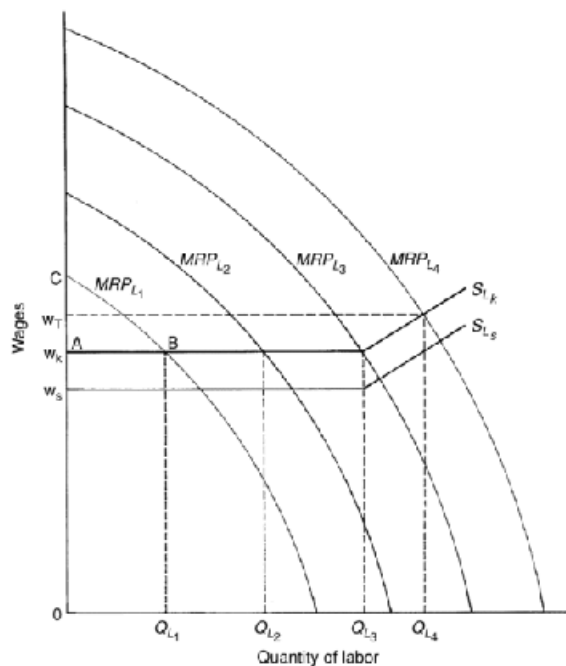
THE LEWIS MODEL

Urban industrialists increase their labor supply by attracting workers from agriculture who migrate to urban areas when wages there exceed rural agricultural wages. Arthur

Lewis elaborates in his explanation of labor transfer from agriculture to industry in a newly industrializing country. In contrast to those economists writing since the early 1970s, who have been concerned about overurbanization, Lewis, writing in 1954, is concerned about possible labor shortages in the expanding industrial sector.

Lewis believes in zero (or negligible) marginal productivity of labor in subsistence agriculture, a sector virtually without capital and technological progress. Yet he contends that the wage (w) in agriculture is positive at subsistence (s): w_s (see [Figure 5-1](#)). For this to be true, it is essential only that the *average* product of labor be at a subsistence level, as agricultural workers divide the produce equally among themselves until food availability is above subsistence. Lewis thinks equilibrium wages in agriculture stay at w_s through the classical mechanism of the iron law of wages, in which higher wages are brought down by population growth, and lower wages raised as output spread over a smaller population is reduced by an increased mortality rate.

Figure 5-1. Industrial Expansion in the Lewis Model. An unlimited supply of labor facilitates capital accumulation and economic growth. *Source:* Based on Lewis 1954:146.



For the more capital-intensive urban industrial sector to attract labor from the rural area, it is essential to pay w_s plus a 30 percent inducement, or w_k (the capitalist wage). This higher wage compensates for the higher cost of living as well as the psychological cost of moving to a more regimented environment. At w_k the urban employer can attract an unlimited supply of unskilled rural labor. The employer will hire this labor up to the point Q_{L1} , where the value of its extra product (or the left marginal revenue product curve MRP_{L1}) equals the wage w_k . The total wages of the workers are equal to OQ_{L1} , the quantity of labor, multiplied by w_k , the wage (that is, rectangle $OQ_{L1}BA$). The capitalist earns the surplus (ABC in [Figure 5-1](#)), the amount between the wage and that part of the marginal product curve above the wage.

Lewis assumes that the capitalist saves the entire surplus (profits, interest, and rent) and the worker saves nothing. Further, he suggests that all the surplus is reinvested, increasing the amount of capital per worker and thus the marginal product of labor to MRP_{L2} , so that more labor Q_{L2} can be hired at wage rate w_k . This process enlarges the surplus, adds to capital formation, raises labor's marginal productivity, increases the labor hired, enlarges the surplus, and so on, through the cycle until all surplus labor is absorbed into the industrial sector. Beyond this point Q_{L3} , the labor supply curve (S_{Lk}) is upward sloping and additional laborers can be attracted only with a higher wage. As productivity increases beyond MRP_{L3} to MRP_{L4} , the $MRPL$ (or demand for labor) curve intersects the labor supply curve at a wage w_T and at a quantity of labor Q_{L4} in excess of surplus rural labor (Lewis [1954](#):139–91).

In the Lewis model, capital is created by using surplus labor (with little social cost). Capital goods are created without giving up the production of consumer goods. However, to finance surplus labor, additional credit may sometimes be needed.

The significance of Lewis's model is that growth takes place as a result of structural change. An economy consisting primarily of a subsistence agricultural sector (which does not save) is transformed into one predominantly in the modern capitalist sector (which does save). As the relative size of the capitalist sector grows, the ratio of profits and other surplus to national income grows.

CRITIQUE

Critics question the theoretical underpinning of the Lewis model – the assumption of an unlimited labor supply.⁴ They believe the capitalist wage rate may rise before all surplus rural labor is absorbed. As workers with zero marginal productivity migrate from the subsistence agricultural sector, those workers remaining in this sector will then divide *constant* output among *fewer persons* resulting in a *higher wage*. Industrial wages, then, must increase to motivate rural workers to migrate. Or Lewis's critics argue that the larger industrial labor force contributes to greater food demand, but the capacity to produce food is unchanged. Thus, food prices rise. Accordingly, the industrial sector must increase wages to pay for the increased price of food. Lewis overestimates the extent that the availability of cheap rural migrant labor can stimulate industrial growth.

THE FEI–RANIS MODIFICATION

How can LDCs maintain subsistence output per farm worker amid population expansion? John Fei and Gustav Ranis, in their modification of the Lewis model, contend that the agricultural sector must grow, through technological progress, for output to grow as fast as population; technical change increases output per hectare to compensate for the increase in labor per land, which is a fixed resource. Ranis and Fei (1961:533–65; Fei and Ranis 1964) label w_k from 0 to Q_{L3} an **institutional wage** supported by nonmarket factors such as the government minimum wage or labor union pressure. This institutional wage can remain infinitely elastic when the marginal revenue productivity of labor is greater than zero; this wage remains at the same level as long as marginal productivity is less than the wage. However, the threshold for both agricultural and industrial sectors occurs when the marginal revenue productivity in agriculture equals the wage. At this point, the **turning point** or **commercialization point**, industry abandons the institutional wage and, together with agriculture, must pay the market rate. Similar to the Lewis model, the advent of fully commercialized agriculture and industry ends industrial growth (or what Fei–Ranis labels the takeoff into self-sustained growth).

One problem is to avoid increasing the average product of labor in agriculture and the industrial institutional wage that would halt industrial expansion. Fei and Ranis solve this with a sleight of hand; the LDC maintains a constant institutional wage until Q_{L3} but

at the expense of realism: each migrating farm worker takes his or her own subsistence bundle to the industrial sector.

How do Fei and Ranis prevent rises in food prices (and the agricultural terms of trade) from increasing the industrial wage? Fei–Ranis proposes a balanced growth between agriculture and industry. However, agricultural growth increases farm income, undermining the restraints on the institutional wage.

APPLICATION OF THE LEWIS–FEI–RANIS MODEL TO JAPAN

Fei and Ranis believe their model applies to Japan, 1888–1930. Indeed, unlike Lewis's assumption, the marginal productivity of labor in Japanese agriculture during this period was always positive. And Japan's industry paid a low premium for labor after 1873, when land reform displaced a large number of landless workers, who could no longer lease land. Because much of industry's wage laborers – women, second and third sons with no inheritance rights, or off-farm part-time workers – merely supplemented household income, employers paid them less than subsistence wages.

However, subsistence levels rose during the late nineteenth and early twentieth centuries as the minimum maintenance expected by society increased with growth. The relatively stable agricultural (and thus industrial) real wages can be attributed partly to technical progress and increased productivity in agriculture (and cheap food from colonies Taiwan and Korea after 1911), which enabled the industrial sector to buy food without declining terms of trade. These low real industrial wages increased industrial profits, business savings, and labor-intensive manufactured export competitiveness, consistent with the Lewis–Fei–Ranis model. Indeed, the large wage differential between France and Italy on the one hand and Japan on the other was a major contributor to Japan's comparative advantage in textiles, a labor-intensive commodity.

In Japan, over a normal range, where product and labor demand increased gradually, **labor supply elasticities** (percentage change in quantity supplied/percentage change in wage) were high (although not infinite, with a perfectly horizontal supply, as in Lewis–Fei–Ranis), benefiting from vast reserves in the agricultural and informal industrial sectors. But the 1915–19 increase in demand for Japanese industrial products and labor resulting from World War I was too substantial to be satisfied by labor from the elastic portion of the supply curve. Wage equilibrium could be attained only at the inelastic portion of the labor supply curve, thus increasing industrial wages and

subsequently, through greater food demand by new workers, increasing agricultural product (especially rice) and labor prices. In the 1920s and early 1930s, industrial wages – rigid in the downward direction because of emerging unions – remained high, while agricultural (and informal industrial sector) wages declined from their war peak. Nevertheless, Japan's rapid increase in labor productivity relative to labor remuneration increased its export competitiveness, especially in textiles. Following the war and recovery years, 1935–55, the labor surplus ended and industrial sector supply turned inelastic permanently, as innovation-led demand for industrial products and labor increased rapidly, while labor supply growth from agriculture and population growth was drying up (Hayami [1975](#); Minami [1973](#); Ohkawa and Rosovsky [1973](#); Nafziger [1995](#):103–5; Shinohara [1962](#), [1970](#); Tsurumi [1990](#)).

In Japan, unlike Lewis–Fei–Ranis, the capitalist wage rate was raised during World War I before all surplus rural labor was absorbed. As workers with low (not zero, as in Lewis's model) marginal productivity migrated from the subsistence agricultural sector, that sector then divided its growing output among fewer persons, resulting in a gradually increasing wage. Industrial wages then had to increase to motivate rural workers to migrate. The larger industrial labor force contributed to a growing food demand that rose more rapidly than the capacity to produce food, resulting in food price increases. Accordingly, the industrial sector had to raise wages to pay for the increased price of food. In the Japanese case, the Fei–Ranis model overestimated the time that cheap labor could stimulate industrial growth.

Indeed, empirical studies by neoclassical critics show that (1) both farm and industrial wages fluctuate in response to changes in supply and demand; and (2) the supply curve is upward sloping, showing a positive relationship between the wage and quantity of labor. The supply curve is not infinitely elastic, as for portions of the supply curves in [Figure 5-1](#), but inelastic, meaning that the percentage change in quantity is less than the percentage change in wage (Hansen [1966](#):367–407; Hansen [1969](#):298–313; Richards [1993](#):239–61). Evidence by these critics suggests that the period of unlimited supply of labor is more restricted than either Lewis or Fei–Ranis indicate.

Baran's Neo-Marxist Thesis

Africa, Asia, and Latin America were not of major interest to Marx. He regarded production in these regions as feudal and backward compared with the more progressive

capitalism. Thus, he saw the introduction of European capitalism in these regions as beneficial. But in the twentieth century, Marxian analysis came to encompass an international class struggle, including the conflict between rich and poor countries. Vladimir Il'ich Lenin, who not only furnished intellectual and organizational leadership for the revolutionary takeover of power by the Communist Party in Russia in October 1917 but was also chairman of the party from then until his death in 1924, provided much of this new Marxian revision. He argued that it was essential to recognize the difference between the monopoly capitalism of his period and the competitive capitalism of Marx's day. According to Lenin, a logical outgrowth of the monopoly stage of industrial and financial capitalism is the imperialist domination of poor countries by rich countries.

THESIS

U.S. Marxist Paul Baran incorporated Lenin's concepts of imperialism and international class conflict into his theory of economic growth and stagnation. For Baran capitalist revolution, homegrown variety, in LDCs was unlikely because of Western economic and political domination, especially in the colonial period. Capitalism arose not through the growth of small competitive firms at home but through the transfer from abroad of advanced monopolistic business. Baran believed that as capitalism took hold, the bourgeoisie (business and middle classes) in LDCs, lacking the strength to spearhead thorough institutional change for major capital accumulation, would have to seek allies from other classes.

Thus, in certain instances, the bourgeoisie would ally itself with the more moderate leaders of the workers and peasants to form a progressive coalition with a New Deal orientation (such as the Congress party governments under Prime Minister Jawaharlal Nehru, 1947–64, in India). At the outset, such a popular movement would be democratic, antifeudal, and anti-imperialist and in support of domestic capitalism. However, the indigenous capitalist middle classes would ultimately be either unwilling or unable to provide the leadership for a sustained economic development that would greatly reduce poverty and liberate the masses. In time, the bourgeoisie, frightened by the threat of labor radicalism and populist upheaval and the possible expropriation of their property, would be forced into an alliance with the landed interests and the foreign bourgeoisie in their midst, whose governments could provide economic and military

assistance to stave off impending disaster.

The differences within this counterrevolutionary coalition would not interfere with the overriding common interest in preventing socialism. Even so, the coalition would be unable to raise the rate of capital accumulation significantly. A progressive income tax system to eliminate nonessential consumption; channeling savings from the landed aristocracy into productive investment; and undertaking substantial public investment in sectors where private capital does not venture, where monopolistic controls block expansion, or where infrastructure is required would be beyond the coalition's ability or desire. Thus, this conservative alliance thrusts the popular forces even further along the road of radicalism and revolt, leading to further polarization. Finally, Baran theorizes that the only way out of the impasse may be worker and peasant revolution, expropriating land and capital, and establishing a new regime based on the “ethos of collective effort” and “the creed of the predominance of the interests of society over the interests of a selected few” (Baran [1957](#), more succinctly presented in Baran [1952](#):66–84).

CRITIQUE

Although Baran's approach explains the difficulties that some reformed capitalist LDCs face in spurring economic development, the theory fails to examine a number of economic and political conflicts of interest. Although there are certainly many local agents, managers, merchants, industrialists, bureaucrats, and politicians who benefit considerably from foreign-controlled capital and technology, there are also some local capitalists whose interests compete with foreign business. These capitalists and their allies frequently lead movements for independence. (For example, Côte d'Ivoire cocoa farmers who opposed the formation of French cocoa plantations were major supporters of the nationalist Democratic party in the 1950s.) After independence, these nationalist elements may become even stronger as colonial economic ties are gradually weakened. Economic policy under a coalition of domestic capitalists, politicians, and bureaucrats may erode the power of foreign capital. The allies and competitors of foreign business people are often locked in economic and political conflict.

Baran also ignores the probability that power is more frequently transferred from one elite to another when revolution occurs, rather than from the advantaged classes to the politically dispossessed masses. Very few of the Soviet and Chinese revolutionary

leaders were workers or poor peasants.

For Baran (1952:84), the society closest to “a new social ethos [that] will become the spirit and guide of a new age” is the Soviet Union after 1917. He argues that despite the political violence used by Stalin in the 1930s and the loss of several million lives during this period, the collectivization of agriculture in the Soviet Union was the only possible approach to economic growth, given an irrational and illiterate peasantry. However, he ignores the substantial growth in both agriculture and industry, 1921–8, under the Soviet New Economic Policy of market socialism. This policy consisted of widespread reliance on market prices, limited private ownership (especially in agriculture), and state ownership of most of the largest industrial enterprises. After Stalin began collectivization, agricultural production declined, the peasants’ standard of living dropped significantly, and even the savings agriculture contributed to the industrial sector did not increase. There were widespread violence, famine, forced labor, and purges during collectivization. Although the performance of Soviet agriculture since then has improved, the relatively slow growth in agricultural productivity frustrated Soviet leadership in its attempt to increase average consumption levels to those expected in a high-income economy.

Baran does not ask whether a more gradual, less-centralized approach to agricultural production would have resulted in more rapid development. But perhaps such a question cannot be resolved. Some historians argue that raising living levels, increasing life expectancy, and improving literacy during economic growth have inevitable human costs. Squalor, poverty, an unhealthy environment, high infant mortality rate, and a high premature death rate among the working poor may mark the economic transition, as occurred during Europe's Industrial Revolution, or by the disruption, famine, and death among peasants in the Soviet Union in the 1930s. In any case, the human costs cannot be avoided.

Several Marxian economists have argued that the Russian Revolution of 1917 did not erase divergent class interests. One French economist argues that the Union of Soviet Socialist Republics (USSR) abandoned the socialist road, creating a new ruling class – made up of the Communist Party, the *Praesidium*, and the bureaucracy – whose economic interests are antagonistic to those of Soviet workers (Bettelheim 1978).

Dependency Theory

Celso Furtado ([1970](#), [1968](#)), a Brazilian economist with the United Nations (UN) Economic Committee for Latin America, was an early contributor to the Spanish and Portuguese literature in **dependency theory** in the 1950s and 1960s. According to him, since the eighteenth century, global changes in demand resulted in a new international division of labor in which the peripheral countries of Asia, Africa, and Latin America specialized in primary products in an enclave controlled by foreigners while importing consumer goods that were the fruits of technical progress in the central countries of the West. The increased productivity and new consumption patterns in peripheral countries benefited a small ruling class and its allies (less than a tenth of the population), who cooperated with the DCs to achieve modernization (economic development among a modernizing minority). The result is “peripheral capitalism, a capitalism unable to generate innovations and dependent for transformation upon decisions from the outside” (Furtado [1973](#):120).

A major dependency theorist, Andre Gunder Frank, criticized the view of many development scholars that contemporary underdeveloped countries resemble the earlier stages of now-developed countries. Many of these scholars viewed modernization in LDCs as simply the adoption of economic and political systems developed in Western Europe and North America.

For Frank, the presently developed countries were never *underdeveloped*, although they may have been *undeveloped*. His basic thesis is that underdevelopment does *not* mean traditional (that is, nonmodern) economic, political, and social institutions but the subjection of an LDC to the colonial rule and imperial domination of foreign powers. In essence, Frank sees underdevelopment as the effect of the penetration of modern capitalism into the archaic economic structures of the Third World.⁵ He sees the deindustrialization of India under British colonialism, the disruption of African society by the slave trade and subsequent colonialism, and the total destruction of Incan and Aztec civilizations by the Spanish conquistadors as examples of the *creation* of underdevelopment (Frank [1969](#)).

More plainly stated, the economic development of the rich countries contributes to the underdevelopment of the poor. Development in an LDC is not self-generating or autonomous but ancillary. The LDCs are economic satellites of the highly developed regions of Northern America and Western Europe in the international capitalist system. The Afro-Asian and Latin American countries least integrated into this system tend to be

the most highly developed. For Frank, Japanese economic development after the 1860s is the classic case illustrating his theory. Japan's industrial growth remains unmatched: Japan, unlike most of the rest of Asia, was never a capitalist satellite.

Brazil best illustrates the connection between the satellite relationship and underdevelopment. Since the nineteenth century, the growth of Brazil's major cities, Sao Paulo and Rio de Janeiro, has been satellite development – largely dependent on outside capitalist powers, especially Britain and the United States. As a result, regions in interior Brazil have become satellites of these two cities and, through them, of these Western capitalist countries.

Frank suggests that satellite countries experience their *greatest* economic development when they are *least* dependent on the world capitalist system. Thus, Argentina, Brazil, Mexico, and Chile grew most rapidly during World War I, the Great Depression, and World War II, when trade and financial ties with major capitalist countries were weakest. Significantly, the most underdeveloped regions today are those that have had the closest ties to Western capitalism in the past. They were the greatest exporters of primary products to, and the biggest sources of capital for, DCs and were abandoned by them when for one reason or another business fell off. Frank points to India's Bengal; the one-time sugar-exporting West Indies and Northeastern Brazil; the defunct mining districts of Minas Gerais in Brazil, highland Peru, and Bolivia; and the former silver regions of Mexico as examples. He contends that even the *latifundium*, the large plantation or hacienda that has contributed so much to underdevelopment in Latin America, originated as a commercial, capitalist enterprise, not a feudal institution, which contradicts the generally held thesis that a region is underdeveloped because it is isolated and precapitalist.

It is an error, in Frank's opinion, to argue that development of the underdeveloped countries will be stimulated by indiscriminately transferring capital, institutions, and values from DCs. He suggests that, in fact, the following economic activities have contributed to underdevelopment, not development:

1. Replacing indigenous enterprises with technologically more advanced, global, subsidiary companies
2. Forming an unskilled labor force to work in factories and mines and on plantations
3. Recruiting highly educated youths for junior posts in the colonial administrative service

4. Workers migrating from villages to foreign-dominated urban complexes
5. Opening the economy to trade with, and investment from, developed countries

According to Frank, a Third World country can develop only by withdrawing from the world capitalist system. Perforce such a withdrawal means a large reduction in trade, aid, investment, and technology from the developed capitalist countries.⁶

CRITIQUE

Many economic historians would agree with Frank that colonies paid dearly for economic dependency under foreign rule. They grant that development was not self-directed. Production was directed toward external rather than domestic needs, and economic policies inhibited local industrial activity and led to uneven ethnic and regional economic progress; an elite oriented to foreign interests arose. However, these costs were offset, at least in part, by the development of schools, roads, railroads, and administrative service under the colonial powers.

Moreover, it is unfair to compare the experience of these countries under colonialism to what *might* have happened without foreign domination. The internal economic and political weaknesses of Afro-Asian and Latin American countries during the last part of the nineteenth and early part of the twentieth centuries probably made it inevitable that most of them would be economically dependent on some foreign power. The acute underdevelopment of Afghanistan and Ethiopia, which were not colonized, although the West influenced them, suggests that colonialism by itself might not have had so negative an impact as Frank indicates. Furthermore, cutting economic ties with developed capitalist countries, as Frank recommends, is more likely to inhibit than expedite LDC development. To be sure, the People's Republic of China (through 1976) and the Soviet Union (from the 1930s through the 1950s) were not hurt much by a policy of economic self-sufficiency because they s>had large resource bases. However, Frank's recommendation is often costly for small countries. Ghana's President Kwame Nkrumah lost a 1957 wager to President Felix Houphouet-Boigny of neighboring Côte d'Ivoire, similar in resource endowment to Ghana, that history would judge Ghana, which cut economic ties with capitalist countries, more successful economically than Côte d'Ivoire, dependent on the French for most of its industrial investment (through the early 1970s) and for international trade. Côte d'Ivoire outperformed Ghana in annual growth: from 1950–1960, 1.5 percent to –0.3 percent; from 1960–70, 4.2 percent to –0.3 percent

(Nkrumah was overthrown by a military coup in 1966); and from 1970–80, 1.4 percent to –3.2 percent. However, after Nkrumah died, in 1972, and before Houphouët-Boigny died, in 1993, the same year he left office, Ghana's annual growth exceeded Côte d'Ivoire's 1.1 percent to –4.7 percent (1980–92) (Nafziger [1988](#):54, 72–4; World Bank 1994i:162–215), suggesting problems with the Ivorian long-term growth strategy. Moreover, Cuba also stagnated during a period of drastically reduced economic ties to foreign capital. By contrast, Taiwan and South Korea both experienced annual real growth of at least 7 percent (World Bank [1994i](#):162–215; Nafziger [1997](#):16) and decreased income inequality from 1960–80 while highly dependent on trade, assistance, and investment from the United States and other capitalist countries.⁷

Some changes to cut dependence have not had the anticipated effect. Dependence took new forms in the last quarter of the twentieth century. Beginning in the mid-1970s, Nigeria took several steps that, on the face of it, should have reduced its dependence on the West. The Lagos government cut substantially the share of its trade with the colonial power, Britain. Lagos acquired majority equity holdings in local petroleum extracting, refining, and distribution and promulgated an indigenization decree shifting the majority of ownership in manufacturing from foreign to indigenous hands. But these measures did not greatly reduce dependence on the West. Nigeria's trade was still virtually all with capitalist DCs (with the United States replacing Britain as the chief trading partner). In contrast to more diversified exports in the 1960s, petroleum constituted more than 90 percent of export value since 1974. Moreover, only 15 to 20 percent of the petroleum industry's total expenditure on goods and services was spent on locally produced items, which do not include most basic requirements, such as drilling rigs, platforms, heavy structures, underwater engineering systems, and other advanced technologies. Further multinational corporation (MNC) ownership was replaced by MNC–state joint enterprises, which enriched private middlemen and middlewomen and enlarged the patronage base for state officials but did little to develop Nigerian administrative and technological skills for subsequent industrialization. Kenya, Tanzania, Zaire, Malawi, and Bangladesh made even less progress than Nigeria in using indigenization requirements to reduce external dependence (Nafziger [1988](#):53–4).

There are, however, several instances where countries might have developed more rapidly with less dependence on foreign economic initiative. Pakistan, Bangladesh, Honduras, Guatemala, Zaire, and the Philippines were probably hurt by excessive economic dependence on the United States and other Western countries. But the solution

to these problems is not withdrawal from the world capitalist system but, rather, a more selective policy in dealings with capitalist countries. Trade, economic aid, capital movements, and technological borrowing from DCs should be such that investment is directed into priority industries. Discouraging foreign monopoly power, encouraging domestic enterprise, preventing heavy debt burdens, avoiding substantial technological dependence on outsiders, and protecting infant domestic industries should all be part of this selective policy. ([Chapters 15–17](#) discuss further foreign trade and investment strategies).

What characteristics of dependent economies are not found in independent ones? Frank defines dependence in a circular manner. The LDCs are underdeveloped because they are dependent. But the features Frank concentrates on in defining dependence are those characteristics of underdevelopment. Thus, the theory does not offer an independent and verifiable explanation of the processes causing underdevelopment.

Are there degrees of economic dependence? Dependency theory fails to distinguish between regional powers in the Third World, such as Brazil and Organization of Petroleum Exporting Countries (OPEC), Venezuela, Libya, Saudi Arabia, and Nigeria, and more dependent countries, such as Senegal, Niger, Uganda, Nepal, and Lesotho.

Finally, most DCs are also dependent on foreign economic ties. In fact, Canada and Belgium may be more dependent on foreign investment than India or Brazil, but Frank does not consider them dependent countries. Rather than divide the world into dependent and independent countries, it seems more sensible to think in terms of a continuum of dependence from the weakest LDC to the most powerful capitalist country.

The Neoclassical Counterrevolution

In the 1980s, the governments of economic conservatives, American President Ronald Reagan, British Prime Minister Margaret Thatcher, Canadian Prime Minister Brian Mulroney, German Chancellor Helmut Kohl, and a series of Japanese Liberal Democratic Party prime ministers coincided with a **neoclassical counterrevolution** in economic policy and analysis. “Liberal” here, and among Europeans, refers to **economic liberalism** (the ideology of Adam Smith, Milton Friedman, and Ludwig von Hayek), which stresses freedom from the state's economic restraint (see [Chapter 3](#) on factors influencing capitalism) and not left-of-center politics and economics, as used in North America. (Another usage refers to the “liberal” arts and sciences worthy of a free

person.) Support of neoclassicism generally continued regardless of the ruling party in Western nations, as indicated by the presidencies of George H. W. Bush, Bill Clinton, and George W. Bush in the United States; the premierships of John Major, Tony Blair, Gordon Brown, and David Cameron in Britain; and heads of state in continental Europe, even when Social Democratic parties formed the government.

The governments of the United States, Canada, Western Europe, Japan, Australia, and New Zealand, high-income members of the **Organization for Economic and Cooperation and Development (OECD)**, largely supportive of the market, privatization, supply-side economics, and other neoclassical positions were influential as majority holders in two international financial institutions created at Bretton Woods, New Hampshire, in July 1944 as part of a new post-World War II international economic order, the **World Bank** and the **IMF**. The World Bank (or International Bank for Reconstruction and Development) initially envisioned as a source for loans to areas devastated during World War II, is now the major source of development loans to LDCs. The IMF, an agency charged with promoting exchange stability to provide short-term credit for international balance of payments deficits, is a lender of last resort, where borrowers agree to adopt acceptable adjustment policies. Neoclassicists dominated policy positions in the World Bank and IMF and even had substantial influence in the U.N. Development Program (UNDP) and the regional development banks (especially African, Asian, and Middle Eastern), although failing to penetrate the UN Conference on Trade and Development (UNCTAD) and International Labour Organization (ILO), which like the 1960s and 1970s, are still dominated by Third World ideologies demanding a more just world economic order.

The neoclassicists contend that slow or negative growth results from poor resource allocation from nonmarket prices and excessive LDC state intervention. They argue that promoting competitive free markets, privatizing public enterprises, supporting exports and free international trade, liberalizing trade and exchange rates, allowing exchange rates to attain a market-clearing rate, removing barriers to foreign investment, rewarding domestic savings, reducing government spending and monetary expansion, and removing regulations and price distortions in financial, resource, and commodity markets will spur increased efficiency and economic growth. The World Bank and IMF point to South Korea, Taiwan, Singapore, Hong Kong, Malaysia, Thailand, and Indonesia as examples of the free market approach, although we have seen in [Chapter 3](#) that governments have played major roles in their economic development.

Neoclassicism's policies are reflected in the **Washington consensus**, a term coined by Washington's Institute of International Economics' John Williamson (1993:1329–36; 1994b:26–8). This consensus includes the World Bank, the IMF, and the U.S. government, based in Washington, D.C., and other major Bank-IMF shareholders, the high-income OECD governments,⁸ although perhaps not the OECD bureaucracy itself in Paris, France.

Following are the components of the neoclassical Washington consensus:

1. *Price decontrol*. Neoclassicists favor immediate lifting of controls on commodity, factor, and currency prices.
2. *Fiscal discipline*. Budget deficits of governments or central banks should be small enough to be financed without using inflationary financing.
3. *Public expenditure priorities*. LDCs should reduce government spending and redirect expenditures from politically sensitive areas like administration, defense, indiscriminate subsidies, and “white elephants” to infrastructure, primary health, and education.
4. *Tax reform*. This includes broadening of the tax base, improved tax administration, sharpening of tax incentives, reduced marginal tax rates, diminished tax evasion and loopholes, and taxing interest on assets held abroad.
5. *Financial liberalization*. The immediate objectives are to abolish preferential interest rates for privileged borrowers and charge nominal interest rates in excess of inflation rates; the ultimate objective is market-determined interest rates to improve capital's allocative efficiency.
6. *Exchange rates*. Countries need a unified, competitive rate to spur a rapid expansion in exports.
7. *Trade liberalization*. LDCs should replace quantitative restrictions with tariffs and progressively reduce tariffs until they achieve a uniform low tariff rate (about 10 to 20 percent).
8. *Domestic savings*. Fiscal discipline, cutbacks in government spending, tax reform, and financial liberalization divert resources from the state to highly productive private sectors, where savings rates are higher. The neoclassical growth model, discussed below, emphasizes the importance of savings and capital formation for rapid economic development.
9. *Foreign direct investment*. Neoclassicists favor abolishing barriers to the entry of

foreign firms; additionally, foreign firms should compete with domestic firms on equal terms.

10. *Privatization*. State enterprises should be privatized.

11. *Deregulation*. Governments should abolish regulations that impede new-firm entry and restrict competition unless safety or environmental protection justifies regulations.

12. *Property rights*. The legal system should provide secure property rights without excessive costs to all land, capital, and buildings.

Williamson ([1993](#):1329), prodded by both economists from Washington and LDCs, indicates that “Washington consensus” is a misnomer and that these policies more accurately reflect a “universal convergence” of DC and LDC capitals, albeit with support from the three major Washington institutions. Indeed, there is widespread (although not universal) consensus among economists favoring more reliance on market prices to improve the efficiency of resource allocation, monetary and fiscal discipline, improved tax administration, trade and exchange liberalization, and secure and exclusive user or property rights. Whereas few economists argue with the need for selective deregulation, opponents of neoclassicals feel they fail to realize the extent to which externalities, public goods, and income distribution limit the scope of deregulation. Additionally, although many of these opponents support liberalization of entry and improved competition policy for activities previously restricted to the public sector, they oppose the neoclassical emphasis on rampant privatization.

Critics see other problems with the neoclassicals. Cutbacks in government spending may depress the economy and usually requires that spending on education, nutrition, and social services be reduced. The neoclassicals’ concern with decontrol and deregulation may turn a blind eye toward preventing global industrial concentration (such as the coffee roasting and processing oligopoly discussed in [Chapter 7](#) and oligopolies in athletic footwear and agricultural biotechnology). Even where privatization is desirable, government may want to proceed slowly to avoid a highly concentrated business elite being created from newly privatized firms falling into a few hands, as was true in Nigeria and many other African countries during the 1970s. The emphasis on openness to foreign investment and abolition of lending to preferred domestic borrowers may increase monopolistic power within the economy and restrict opportunities for domestic capitalists and entrepreneurs to learn from experience. Mosley, Harrigan, and Toye

(1991, vol. 1:110–16) argue that, given LDC labor and resource immobility, immediate liberalization of external trade and supply-side stimulation in “one glorious burst” result in rising unemployment, inflation, and capital flight, and the undermining of efforts to bring the international balance of payments into adjustment. Although few would dispute the advantages of a *single* country striving for competitive exchange rates to expand exports, a given LDC may face an export trap, in which its export growth faces competition from other LDCs under pressure to expand exports. Furthermore, critics charge that the neoclassical model for liberalization and adjustment hurts disadvantaged portions of the population without providing safety nets for the poor.

Neoclassicals generally favor comprehensive change to liberalization, an immediate “big bang” or “shock therapy” (Chapter 18) rather than a gradual adjustment in price decontrol, market creation, reduction in government spending, monetary restriction, deregulation, legal changes, and privatization. Historical experience in the nineteenth-century and twentieth-century West and Japan indicate that economic liberalization requires changes in economic institutions, which can only occur step by step. As economic historian Douglass North (1994:359) argued in his Nobel lecture:

Neoclassical theory is simply an inappropriate tool to analyze and prescribe policies that will induce development. It is concerned with the operation of markets, not with how markets develop. How can one prescribe policies when one doesn't understand how economies develop?

According to Moises Naim (2002), the Washington consensus's “core ideas are far better than the damaged brand [that] now emits the poisonous odours of a recipe concocted in Washington by a cabal of inept technocrats who are out of touch with the realities of poor countries or, even worse, are in the pockets of Wall Street.” For Stiglitz, “The net effect of the policies set by the Washington Consensus has all too often been to benefit the few at the expense of the many, the well-off at the expense of the poor.” Williamson (2003a:326) “once attempted to engage Stiglitz in a debate about the Washington Consensus. He declined to participate on the ground that he and I disagree little about substance as opposed to semantics and he did not consider semantics to be worth debating.”

Williamson (2003b:12) argues that the World Bank's increased focus on reducing LDC income inequality contrasts with “the Bush administration's disdain for any concern

about income distribution” (ibid., p. 12). With differences among Washington institutions on income distribution and capital controls, and the U.S. administration straying from orthodoxy on trade liberalization and fiscal policy, the Washington consensus has been slightly altered if not considered “inoperative.”

Moreover, since the 1997–8 Asian crisis ([Chapter 16](#)), the IMF has retreated on the necessity of capital account liberalization, while the U.S. administration, Williamson indicates, is using “trade agreements to bully countries like Chile and Singapore into emasculating even the most enlightened capital controls” (ibid., p. 12). Finally, the IMF has disapproved of the U.S. administration's large budget deficits, while both the Bank and Fund have been critical of U.S. protectionism on agriculture, steel, and textiles. Any post–Washington consensus must preclude procyclical (and lax) fiscal policy, excessive capital inflows, comprehensive capital account liberalization, weak prudential banking supervision, currency rigidity and overvaluation (especially currency boards that tie currencies to the U.S. dollar or other hard currencies), emphasis on import liberalization without attention to export market access, and inattention to institutional reform (Williamson [2003b](#):10–13; Kuczynski and Williamson [2003](#):1–19).

World Bank economists (2005i:xiii, 12) have shifted policy emphases that have made the consensus less certain: “There is no unique universal set of rules. Sustained growth depends on key functions that need to be fulfilled over time: accumulation of physical and human capital, efficiency in the allocation of resources, adoption of technology, and the sharing of the benefits of growth. [Policymakers need to] rely on deeper economic analysis to identify binding constraints to growth....Different policies can yield the same result, and the same policy can yield different results, depending on country institutional contexts and underlying growth strategies.” Yet, although the Bank has lost confidence in the sufficiency of the Washington consensus, the IMF, the lender of last resort, still has the upper hand in policy prescriptions.

The remaining chapters clarify the positions, strengths, and weaknesses of neoclassicism, the leading approach in economics departments in the United States, Canada, and the United Kingdom and among the world's major lending institutions and an important influence among economists in most of the rest of the world. The neoclassical agenda is at the center of controversies concerning poverty and income distribution in [Chapters 6](#) and [7](#); factor market policies in [Chapters 8–12](#); environmental policies in [Chapter 13](#); monetary and fiscal policies in [Chapter 14](#); international trade and exchange-rate liberalization in [Chapters 15–17](#); and policies toward financial

stabilization, external adjustment, and privatization in [Chapter 18](#). These controversies will help you arrive at a clearer position concerning neoclassical economics and its policies.

The Neoclassical Growth Theory

Robert Solow won a Nobel Prize for his formulation of the **neoclassical theory of growth**, which stressed the importance of savings and capital formation for economic development and for empirical measures of sources of growth. Unlike the Harrod-Domar model, discussed in the appendix, which focused on capital formation, Solow allowed flexible factor prices with changes in wage and interest rates and variable factor proportions with substitutions of labor and capital for each other. He showed that growth need not be unstable because, as the labor force outgrew capital, wages would fall relative to the interest rate, or if capital outgrew labor, wages would rise. Factor price changes and factor substitution mitigated the departure from the razor's edge of the Harrod-Domar growth path.

Because aggregate growth refers to increases in total production, we can visualize growth factors through a **production function** stating the relationship between capacity output and the volume of various inputs. Solow used the following Cobb-Douglas production function, written in the 1920s by mathematician Charles Cobb and economist Paul Douglas (later U.S. Senator from Illinois), to distinguish among the sources of growth—labor quantity and quality, capital, and technology. The equation is

$$Y = TK^{\alpha}L^{\beta}, \tag{5-1}$$

where Y is output or income, T the level of technology, K capital, and L labor. T is neutral in that it raises output from a given combination of capital and labor without affecting their relative marginal products. The parameter and exponent α is $(\Delta Y/Y)/(\Delta K/K)$, the elasticity (responsiveness) of output with respect to capital (holding labor constant). (The symbol Δ means increment in, so that, for example, $\Delta Y/Y$ is the rate of growth of output and $\Delta K/K$ the rate of growth of capital.) The parameter β is $(\Delta Y/Y)/(\Delta L/L)$, the elasticity of output with respect to labor (holding capital constant) (Cobb and Douglas: [1928](#):139–65; Thirlwall 1977:52–4). If we assume $\alpha + \beta = 1$, which represents constant returns to scale (that is, a 1 percent increase in both capital and labor increases output by 1 percent, no matter what present output is), and perfect

competition, so that production factors are paid their marginal products, then α also equals capital's share and β labor's share of total income. (Constant returns to scale, where output and *all* factors of production vary by the same proportion, still entail diminishing returns, where *increments* in output fall with each successive change in *one* variable factor.) The Cobb–Douglas production function allows capital and labor to grow at different rates (Solow [1956:65–94](#); Solow [1970](#); Kindleberger and Herrick [1977:81](#); Chenery, Robinson, and Syrquin [1986:17](#)).

The neoclassical model predicts that incomes per capita between rich and poor countries will converge. But empirical economists cannot find values for parameters and variables (such as α , β , and capital formation rates) that are consistent with neoclassical equation 5-1 and [Chapter 3](#)'s evidence of lack of convergence (see Box 5-1). Without modification or augmentation, the Solow model is a poor predictor.

Can we modify neoclassical assumptions to arrive at plausible numbers that are consistent with no convergence? Mankiw, Romer, and Weil ([1992:407–37](#)) argue that although the direction of the variables, the growths in capital and labor, is correct, the magnitudes of these growths on income growth are excessive. These three economists propose an augmented Solow neoclassical model that includes human capital as an additional explanatory variable to physical capital and labor.

Box 5-1. Are Solow Model Predictions Plausible?

We can illustrate the neoclassical bias toward convergence if we compare the United States and the Philippines in 1992. The United States had 110 times the Philippines' net national product (Y), 3.67 times the Philippines' labor force (L), and, according to neoclassical assumptions, the same level of technology (T). A growth rate by the United States at the same rate as the Philippines' requires either capital formation rates or β values that are not plausible.

A benchmark for β is 0.6, so that α is 0.4. Plugging these values and Y and L into [Equation 5-1](#) requires that K (capital stock) in the United States be 18,050 times that of the Philippines for the United States to attain the same growth rate as that of the Philippines. But assume, as the neoclassicals do, that the capital requirement per unit of output is fixed, so that the ratio of capital to income is the same as the ratio of savings or investment to additional income (savings and investment rates are the same, given the neoclassical assumption of a **closed economy**, one with no foreign trade or investment); then the U.S. capital stock is only 92 times that of the

Philippines'. For the Philippines' savings rate to be its 1992 rate (18 percent) and for K in the United States to be 18,050 times that of the Philippines, the neoclassical model requires the United States to save 2,943 percent, a preposterous figure, instead of its 1992 figure, 15 percent.

What are α and β if the United States' net national product is 110 times that of the Philippines, the U.S. labor force is 3.67 times that of the Philippines, and U.S. capital stock 92 times that of the Philippines? (Mankiw, Romer, and Weil [1992:407–37](#); World Bank [1994i](#)). The answer is $\alpha = 1.05$ and $\beta = -0.05$. But a negative β is absurd, meaning that labor's share and marginal product are both negative.

Human capital, as well as physical capital, can yield a stream of income over time. Theodore Schultz (1964) argues that a society can invest in its citizens through expenditures on education, training, research, and health that enhance their productive capacity. Although there are diminishing returns to physical capital by itself, there are constant returns to all (human and physical) capital (Lucas 1998:3–42).

Given the fact that such a large percentage of capital stock is human capital, Mankiw, Romer, and Weil ([1992:407–37](#)) expected that adding a human capital variable, the fraction of the working-age population that attends secondary school, would improve the explanation of the model. Mankiw et al.'s augmented model substantially reduces labor's share of income from about 0.60 to 0.33. They modify [Equation 5-1](#) to

$$Y = TK^{1/3}L^{1/3}H^{1/3}, \quad (5-2)$$

where H is human capital. H 's positive correlation with savings rates and population growth substantially alters the results. Adding human capital, which explains 80 percent of the variation between rich and poor countries, does indeed give plausible values for the neoclassical growth model. Mankiw et al.'s model means that, with similar technologies and rates of capital and labor growths, income growth should converge, but much more slowly than Solow's model ([Equation 5-1](#)).

CRITIQUE

Although Mankiw et al. salvaged the neoclassical growth model, it still has several weaknesses, including the assumptions that markets are perfectly competitive (essential for computing the marginal products that are components of α , β , and the human capital exponent), that technological change is exogenous (explained outside the model), and

that the level of technology is the same throughout the world. Indeed, neoclassical technical progress takes place completely independent of decisions by people, firms, and governments.

The New (Endogenous) Growth Theory

Robert Lucas finds that international wage differences and migration are difficult to reconcile with neoclassical theory. If the same technology were available globally, skilled people embodying human capital would *not* move from LDCs, where human capital is scarce, to DCs, where human capital is abundant, as these people do now. Nor would a given worker be able to earn a higher wage after moving from the Philippines to the United States (Lucas [1988](#):3–42; Romer [1994](#):11). Moreover, Robert Barro and Xavier Sala-i-Martin observe that diminishing returns to capital in the neoclassical model should mean substantial international capital movements from DCs, with high capital-labor ratios, to LDCs, with low capital-labor ratios. These capital movements should enhance the convergence found in Solow's model, in contrast to the lack of convergence found in the real world.⁹ Additionally, most LDCs attract no net capital inflows, and many LDCs even experience domestic capital flight. New-growth theorists think their model is closer to the realities of international flows of people and capital than to the neoclassical model.

Paul Romer ([1994](#):8–9; [1986](#):1002–37; [1990](#):S71–102) believes that if technology is **endogenous**, explained within the model, economists can elucidate growth where the neoclassical model fails. When the level of technology is allowed to vary, you can explain more of growth, as DCs have higher level than LDCs. Variable technology means that the speed of convergence between DCs and LDCs is determined primarily by the rate of diffusion of knowledge. For **new-growth theorists** like Romer, **innovation** or technical change, the embodiment in production of some new idea or invention that enhances capital and labor productivity, is the engine of growth. The endogenous theorists, whose message is continuous technological innovation, are the strongest antidotes to the limits-to-growth literature discussed in [Chapter 13](#).

Neoclassical theorists assume that technological discoveries are global public goods, so that all people can use new technology at the same time. Indeed, it is technologically possible (but not historically accurate) for every person and firm to use the internal combustion engine, the transistor, the microcomputer, and other innovations. For

new-growth economists, however, technological discovery results from an LDC's government policies (the neoclassical growth theorists have no role for the state) and industrial research.

Neoclassical economists assume that the innovator receives no monopoly profits from their discoveries. However, because individuals and firms control information flows, petition for patents to restrict use by rivals, and charge prices for others to use the technology, new-growth economists assume a temporary monopoly associated with innovation (see [Chapter 12](#) on the Schumpeterian entrepreneur). Note the concentration of high-technology industries in particular locations, such as the Silicon Valley, in Santa Clara County, Western California; and Route 128, which runs around Greater Boston. Private and government support for technological concentration and control breaks down the assumption of perfect competition, as well as the ability to compute factor shares.

Neoclassical economists emphasize capital formation. New-growth economists, by contrast, stress external economies to capital accumulation that can permanently keep the marginal product of physical or human capital above the interest rate and prevent diminishing returns from generating stagnation (Grossman and Helpman [1994](#):23–44; Romer [1994](#):3–22).

CRITIQUE

The endogenous growth model, like Mankiw et al.'s neoclassical model enhanced by human capital, generates plausible numbers and is consistent with persistent differences in income per capita (or little or no convergence) between nations. Indeed, both models are consistent, with a large number of observations concerning aggregate output and capital. Howard Pack ([1994a](#):55–6), however, considers endogenous growth theory as only a rich expansion of neoclassical growth theory rather than a powerful organizing framework about actual growth. Also, as Solow ([1994](#):50–1) argues, the knife-edge character of the model means that any disequilibrium can cause the model to break down. Moreover, technology is growth in output unexplained by the increase in measured factors of production. Could we explain technical advance by increased investment in resources, such as research and development (R&D)? Surely purposive, profit-seeking investment in knowledge is a key to explaining technological progress (Pack [1994a](#):55–72; Grossman and Helpman [1994](#):24). Others suggest international trade, government macroeconomic policies, learning by doing, or other variables

discussed in future chapters. Furthermore, the endogenous growth theory, similar to the neoclassical growth theory, fails to discuss how changes in incentives or institutions affect the variables of the model and the rate of growth.

Solow (1994:52) contends that “the ‘production’ of new technology may not be a simple matter of inputs and outputs.” Indeed, R&D is an inadequate measure of resources devoted to increasing productivity. A producer’s investment in research and development may contribute to growth that is disseminated to other producers. In many instances, however, as in microcomputers, economies may require substantial time before production reorganization contributes to increased productivity. Moreover, some investment in R&D might net no growth at all. Furthermore, some LDCs may be able to increase capital and labor productivity by using existing technologies without any new investment in R&D. For Solow (1994:45–54), the lack of correspondence between investment in technology and economic growth means that much of R&D is, as neoclassicists contend, exogenous to the economy. Neither the new-growth theorists’ measures of R&D nor the neoclassicals’ measures of human capital explain much of the extraordinary growth of Asian newly industrialized countries – South Korea, Taiwan, and Singapore – during the last quarter of the twentieth century (Pack 1994a:60–3). Econometric models have not yet been able to break down technological innovations and economic growth into measured inputs, and it is doubtful that they will.

A Trial-by-Error Approach: Turning Research into Action

Abhijit Banerjee, Director of Massachusetts Institute of Technology’s Poverty Action Lab (2009:219–20), which advocates an **empirically based research** oriented toward action, indicates the frustration of many leading economists with prescriptions from elegant growth theories:

It is not clear that the best way to get growth is to do growth policy of any form. Perhaps making growth happen is ultimately beyond our control. Maybe all that happens is that something goes right for once (privatized agriculture raises incomes in rural China) and then that sparks growth somewhere else in the economy and so on. Perhaps we will never learn where it will start or what will make it continue. The best we can do in that world is to hold the fort till that initial spark arrives: make sure that there is not too much human misery, maintain the social equilibrium, and try to make sure that there is enough human capital around to take advantage of

the spark when it arrives....Social policy may be the best thing that we can do for growth to happen and microevidence on how to do it well could turn out to be the key to growth success.

Conclusion

English classical economist Ricardo feared eventual stagnation from slow capital accumulation and diminishing returns from population growth on fixed natural resources. However, he failed to see the possibility of sustained, rapid, economic growth because his theory understated scientific discoveries and technological progress.

Marx saw history dialectically – as progressing from feudalism to capitalism to socialism on the basis of class conflict. The oppressed classes overthrow the classes controlling the means of production. Nevertheless, the socialist revolution did not take place in the most advanced capitalist countries, nor did workers overthrow capitalism when they became a majority of the labor force, as Marx expected.

Rostow's economic model has five stages; its central historical stage is the takeoff, a decisive period of increased investment, rapid growth in leading sectors, and institutional change during which the major blocks to steady growth are finally overcome. Rostow's theory has several weaknesses: insufficient empirical evidence concerning the conditions needed for takeoff, imprecise definitions, no theoretical ground for a society's movement from one stage to another, and the mistaken assumption that LDC development will parallel the early stages of DC development.

The vicious circle theory contends that a country is poor because its income is too low to encourage potential investors and generate adequate saving. However, high income inequality, funds spent on prestige projects and the military, and numerous products requiring few economies of scale suggest that the savings potential of LDCs is much greater than this theory envisions.

Balanced growth advocates argue that a big push is needed to begin economic development because of indivisibilities in demand and infrastructure. Critics indicate that most LDCs do not have the resources essential for launching such a big push.

Hirschman supports a deliberate unbalancing of the economy to facilitate economic decision making and investment. However, he fails to stress the importance of agricultural investment.

Kremer's O-ring theory of development emphasizes that production consists of many

tasks, all of which must be successfully completed for the product to have full value and to prevent coordination failure.

For Lewis, economic growth takes place as a result of growth in the size of the industrial sector, which saves, relative to the subsistence agricultural sector, which saves nothing. In the Lewis model, an unlimited supply of surplus farm labor migrates to urban areas for wages in excess of rural, subsistence wages. This supply of cheap labor to the industrial sector is the basis for profits and capital accumulation. However, critics question Lewis's premise of zero marginal productivity of labor and believe that the capitalist wage rate will rise before all surplus rural labor is absorbed.

Fei and Ranis, too, believe that the capitalist wage will increase before surplus labor is absorbed, unless agriculture and industry can achieve balanced growth. However, contrary to the Lewis–Fei–Ranis model, Japan raised its capitalist wage rate before all surplus rural labor was absorbed.

For Baran, the coalition of the bourgeoisie and landed classes, helped by foreign capitalist governments, is incapable of undertaking the capital formation and political reform required for rapid economic growth and alleviation of mass poverty. Although Baran's vision of a ruling progressive coalition is intriguing, he underestimates the conflicts of interest and class antagonism that are likely to occur under its rule.

Furtado's dependency theory contends that increased productivity and new consumption patterns resulting from capitalism in the peripheral countries of Asia, Africa, and Latin America benefit a small ruling class and its allies.

Frank's dependency approach maintains that countries become underdeveloped through integration into, not isolation from, the international capitalist system. However, despite some evidence supporting Frank, he does not adequately demonstrate that withdrawing from the capitalist system results in faster economic development.

The neoclassical counterrevolution to Marxian and dependency theory emphasizes reliance on the market, private initiative, and deregulation in LDCs. Neoclassical growth theory emphasizes the importance of increased saving for economic growth. The Washington institutions of the World Bank, the IMF, and the U.S. government have applied neoclassical analysis in their policy-based lending to LDCs.

The new endogenous growth theory arose from concerns that neoclassical economics neglected the explanations of technological change and accepted an unrealistic assumption of perfect competition. The new-growth theory, however, does no better than an enhanced neoclassical model in measuring the sources of economic growth.

Finally, Abhijit Banerjee, emphasizing turning research into action, downplays elegant growth theories and advocates a trial-and-error approach in the field rather than seeking guidance from elegant growth theories.

Terms to Review

- accelerator
- backward linkages
- balanced growth
- big push thesis
- classical theory
- closed economy
- commercialization (turning) point
- demonstration effect
- dependency theory
- economic liberalism
- empirically based research
- endogenous
- external economies
- forward linkages
- historical materialism
- human capital
- incremental capital output ratio (ICOR)
- indivisibilities
- infrastructure
- innovation
- institutional wage
- International Monetary Fund (IMF)
- invisible hand
- iron law of wages
- labor supply elasticities
- laissez-faire
- law of diminishing returns
- Lewis–Fei–Ranis model
- neoclassical counterrevolution

- neoclassical theory of growth
- neoclassicism
- new (endogenous) growth theory
- Organization for Economic and Cooperation and Development (OECD)
- O-ring theory of economic development
- preconditions stage
- price elasticity of demand
- production function
- reserve army of the unemployed
- surplus
- takeoff
- theory
- unbalanced growth
- vicious circle
- virtuous circle
- Washington consensus
- World Bank

Questions to Discuss

1. Is Ricardian classical economic theory applicable to LDCs?
2. How valid is the assumption that the development of LDCs will parallel the earlier stages of today's DCs?
3. Choose one developed country (or one LDC that Rostow says has already experienced takeoff). How well does Rostow's stage theory explain that country's economic growth?
4. Which historical theory – Marx's or Rostow's – is more useful in explaining Western economic development? Contemporary LDC development?
5. Are some of today's LDCs closer to Marx's feudal stage than his capitalist stage? What might a Marxist recommend for a LDC in the feudal stage? Would a Leninist or Baranist prescription for a feudal LDC be any different from Marx's?
6. How might Marxian economic analysis (like Mao's or Bettelheim's) threaten political elites in socialist countries?
7. How valid is Baran's theory in explaining contemporary underdevelopment in Asia,

Africa, and Latin America? Are revolution and a Soviet-type government essential for removing this underdevelopment?

8. How valid is Baran's theory in explaining the weaknesses of New-Deal-type regimes in LDCs?

9. How does Andre Gunder Frank differ from Karl Marx in judging Western capitalism's influence in Asia, Africa, and Latin America?

10. For which country has dependence on Western capitalist economies been most costly? For which country has dependence on Western capitalist economies been most beneficial? On the basis of arguments about these two countries, how persuasive is Frank's dependency theory?

11. What are some potential LDC vicious circles? How plausible are these as barriers to development?

12. How are wages determined in the subsistence and capitalist sectors in the Lewis model?

13. What is Lewis's explanation for the expansion of the industrial capitalist sector? Why do critics think that the Lewis model overstates rural-to-urban migration and industrial expansion?

14. How well does the Lewis–Fei–Ranis model explain Japan's economic growth in the early part of the twentieth century?

15. How important are supply and demand indivisibilities in influencing LDC investment strategies?

16. How well does coordination failure or its overcoming explain the economic development of LDCs? Give examples.

17. What is the neoclassical theory of economic development? The theory of economic growth? What are the policy implications of the neoclassical theory of development and growth? How effective have neoclassical policy prescriptions been for stimulating economic growth in developing countries?

18. How effective was Mankiw, Romer, and Weil's modification in increasing the plausibility of neoclassical growth theory?

19. What were the weaknesses of the neoclassical theory of growth and development that gave rise to the new endogenous growth theory? How does the new-growth theory address the neoclassical weaknesses? What are the strengths and weaknesses of new-growth theory?

20. Choose a country or world region. Which economic development theory best

explains development in that country or region?

21. Indicate an empirically based research project that is oriented toward eventual action. How effective has this research been in contributing to the populations' increased incomes and well-being?

Guide to Readings

Serra and Stiglitz (2008), with contributions from fourteen leading economists, examine the new global governance that they hope will replace the Washington consensus.

Higgins (1968) has a detailed discussion and evaluation of the models of classical economists Marx and Rostow and balanced and unbalanced growth theorists. Adelman (1961) on growth and development theories analyzes the classical and Marxian models, as well as several other major theories. Enke (1963) has a concise outline and critique of the classical approach. Eatwell, Milgate, and Newman (1989) discuss Lewis, Nurkse, Rosenstein–Rodan, balanced growth, Hirschman, linkages, and Fei–Ranis's labor surplus economy.

Rostow's stage theory was criticized by economists and historians at the 1963 International Economic Association meetings in Konstanz, West Germany. The papers have been compiled in a book edited by Rostow (1963).

Nurkse (1953) presents his views of the vicious circle and balanced growth theories. Nurkse's summary article, Rosenstein–Rodan's (1943) article on indivisibilities, Fleming's (1955) criticism of balanced growth, Myint's (1954) article, Rostow's presentation of his stage theory in condensed form, Lewis (1954), and Baran's (1952) article on economic backwardness are included in Agarwala and Singh (1958).

The major statements of the dependency theory are Furtado (1968, 1970, 1973) and Frank (1969b, 1969a). Lall (1975) has a useful critique and bibliography of dependency theory.

Immanuel Wallerstein's view of core-periphery and Samir Amin's perspective on nationalism are in Eatwell, Milgate, and Newman (1989).

Weaver and Jameson (1981) discuss competing approaches for explaining economic development, including orthodox and Marxist theories.

Lewis (1954), Ranis and Fei (1961:533–65), and Fei and Ranis (1964) present the Lewis–Fei–Ranis model.

On neoclassical growth theory, see Solow (1956, 1970) and Mankiw et al. (1992).

Lucas (1988) and Romer (1994) discuss new-growth theory. For a highly accessible discussion and bibliography of both neoclassical and new-growth theory, see Romer (1994), Grossman and Helpman (1994), Solow (1994), and Pack (1994). On convergence see Romer (1994) and Barro and Sala-i-Martin (1992). Bardhan (1995) evaluates endogenous growth theory.

Khan, Montiel, and Haque (1990:155–79) present IMF–World Bank macroeconomic models. For various macroeconomic adjustment models, including those for Iran, Venezuela, Singapore, and South Korea, see Khan, Montiel, and Haque (1991).

Weeks (1993) criticizes neoclassical development economics and the Washington consensus.

Some may prefer to include Joseph Schumpeter's theory of growth and business cycles (Chapter 12) with the theories of this chapter.

Appendix to [Chapter 5](#): The Harrod–Domar Model

The Harrod–Domar Model and Capital Requirements

Capital formation and the **ICOR, the incremental capital output ratio**, the inverse of the ratio of increase in output to investment are fundamental variables in the **Harrod–Domar growth model**. If Y is income, K capital stock, and I investment, then the *ICOR* is $(\Delta K/\Delta Y)$, the increment in capital divided by the increment in income, the same as $(I/\Delta Y)$, as $\Delta K \equiv I$ by definition.

Evsey D. Domar (1947:34–55) emphasizes that present investment, although contributing to aggregate demand today, also provides new productive capacity. If this capacity is not adequately used, it discourages future investment, thus increasing surplus capital and depressing the economy. But if investment increases at the correct rate, aggregate demand will be sufficient to use fully the newly added capacity. Domar indicates the rate at which investment would have to grow for this process to take place. Investment must grow at a constant percentage rate,

$$\Delta I/I = (1/ICOR)(\alpha) \tag{5-3}$$

α , the marginal propensity to save, the ratio of the increment in savings to the increment in income, and the *ICOR* are both constant.

Roy F. Harrod (1939:14–33) is also concerned with keeping total spending and

productive capacity in balance, but he focuses on the growth path of income, unlike Domar's concentration on the growth rate of investment. In the Harrod model, the equilibrium (or warranted) growth rate keeps planned savings equal to planned investment; that is,

$$sY_t = ICOR(Y_t - Y_{t-1}) \quad (5-4)$$

$$(Y_t - Y_{t-1})/Y = s/ICOR, \quad (5-5)$$

where s is (St/Yt) , the average propensity to save.

Harrod goes beyond Domar's explanation of what investment must be for sustainable growth to include a theory of what determines investment. He calls his notion the **accelerator** theory of investment; that is, investment today (I_t) is partly dependent on income today minus that of yesterday ($Y_t - Y_{t-1}$), reflected in the $ICOR$ relationship.

Harrod also discusses what happens if the actual growth rate does not equal the warranted rate; that is, planned savings does not equal planned investment. He concludes that the warranted growth path is like a razor's edge because a departure of the actual growth rate $[(Y_t - Y_{t-1})/Y_t]$ from the warranted path causes a further departure in the same direction, throwing the economy into a period of either explosive growth (producing inflation) or stagnation.

The model's instability follows from some peculiar assumptions about producer behavior. If producers guessed correctly yesterday about demand and their supply just equaled market demand, they will plan today to increase their output by the *same percentage* as they increased it yesterday. If they produced too much, they will reduce yesterday's growth rate of output and again produce too much today because demand will fall below expectations. If they produced too little yesterday, so there was excess demand, today's output growth will increase over yesterday's and there will again be excess demand. One possibility Harrod considers is that the warranted growth path might not be attainable because of limitations in the growth of capacity, that is, his "natural" growth rate.

There are several problems with the Harrod-Domar model. The first is Harrod's assumption about producer behavior, including the premise that producers do not modify behavior as they learn how the economy previously responded to divergences between warranted and actual growths. Harrod's behavioral assumptions may be even less relevant where the state has a major role in planning output expansion. The second

problem is that Harrod's accelerator has no lag, implying that capital goods are produced simultaneously with the increased output requiring this production. A third problem, which is also characteristic of the Domar model, is the assumption of fixed capital-labor proportions, which omits the possibility of adjusting capital-labor ratios to avoid surplus capital, and output ceilings that might cause the warranted rate to be the actual rate. Models that allow for substitution between factors – such as the neoclassical growth model and others using a Cobb–Douglas approach – overcome this last problem of the Harrod–Domar model.¹⁰

Nafziger's supplement (2006b) discusses ICOR's and capital requirements in Lewis's and Rostow's focus on increasing investment rates.

¹ Some twentieth-century economists, culminating with Meade (1963), have added a variable reflecting technical progress while retaining most classical premises.

² Debraj Ray (2010:45–60) uses uneven growth as an organizing device for research.

³ This is similar to the marriage model of Becker (1981:72), in which marriage partners of similar quality are matched together.

⁴ In the late twentieth century, China, with substantial rural populations, may have been the closest to an unlimited labor supply; they may be replaced by Vietnam and Congo (Kinshasa) in the early twenty-first century.

⁵ Wilmsen's (1989) political economy of Botswana's Kalahari provides excellent anthropological support for dependency analysis. The author, who worked in the Kalahari for more than 15 years, criticizes ethnologists for analyzing the San-speaking peoples (or Bushmen) on the rural fringe of southern African economies without considering their historical context and contemporary condition. In previous millennia, the San were enmeshed in the pastoralist economies of the region through production and kinship networks. The poverty, remoteness, and foraging of the San are not unchanging attributes bequeathed by ancient ancestors, Wilmsen contends, but results of subjugation under capitalist penetration and state expansion during the past four to five centuries.

⁶ Richard DuBoff (2003:11–15) argues that the military superiority of major capitalist countries (primarily the United States) is the key to support for the world's open trade

and investment and LDC dependence.

⁷ Bill Warren (1980), a Marxist economist, argues that the LDC state can control foreign multinational corporations, using contact with advanced capitalist economies to strengthen the development of an indigenous capitalist class that can play a leading role in industrialization.

⁸ Ann Krueger (1997:3) characterizes pre-1990s development strategies before the Washington Consensus as “a mixture of touristic impressions, half-truths, and misapplied policy inferences.” By contrast, Dani Rodrik (2010:37–8) views the Washington Consensus, with its negative view of government intervention, import substitution, and infant-industry promotion, as little better than early postwar policies.

⁹ Barro and Sala-i-Martin (1992: 223–51) and Barro, Mankiw, and Sala-i-Martin (1995:103–15), who examine samples of U.S. states and OECD countries (but not DCs and LDCs together), find that, in neoclassical models, the quantitative effect of including capital mobility in explaining convergence is small.

¹⁰ Ackley 1961:513–26 and Shapiro 1978:402–13. I am grateful for the help of Edgar S. Bagley.