5 Developmentalist theories of economic development

After studying this chapter, you should understand:

- the concept of hidden development potential in less-developed nations;
- the possibility of market failure and the role of positive externalities in creating virtuous circle effects;
- the importance of social overhead capital and a nation's augmentable initial endowments to growth;
- balanced versus unbalanced growth strategies and their shared paradigmatic perspective;
- the theory of export pessimism;
- backward and forward linkage effects and their key role in development;
- the idea of hidden comparative advantage;
- the potential role of surplus labor as a stimulant to growth in Lewis's dualist framework for transition; and
- Rostow's stages of growth theory, particularly the "take-off" stage.

Introduction

After the Second World War, and particularly after the quick success of the United States-financed Marshall Plan in helping to rebuild the European economies, several economists who had been directly involved either in the Marshall Plan or with institutions such as the United Nations and the World Bank, turned their attention to the question of economic development of less-developed regions. Among these early pioneers of development thinking were the Finnish economist Ragnar Nurkse, the Austrian economist Paul Rosenstein-Rodan, the German-born economist Albert Hirschman, the West Indian and later Nobel Laureate economist, Sir Arthur Lewis, and the American economic historian Walt Whitman Rostow. Only Lewis remained outside of the policy-making institutions in the late 1940s and early 1950s, but by 1957 he too was employed by the UN.

In a broad sense, the ideas of these early development economists were mutually supportive. They formed a loose school of thought on the issue of economic development, emphasizing a less theoretical and more historical and practical approach to the question of how to develop – particularly in relation to those who stressed the applicability of neoclassical models, such as the Solow model discussed in the last chapter. Like any such school of analysis, there were differences of emphasis and

interpretation between these theorists. These differences are particularly striking in the work of W.W. Rostow, who stressed a descriptive approach while emphasizing the near inevitability and predictability of economic development, based on the premise that the industrial past of Europe presents a rough picture of the approaching future of the developing nations. The others emphasized analytical constructs and were not striving to construct a mega-theory of economic history. Yet they shared many fundamental propositions. Above all, they coincided in believing, in Rostow's words, that "the tricks of growth are not that difficult" (Rostow 1960: 166). They also felt that the time period necessary for achieving economic development in the less-developed world would be relatively short, a matter of a decade or perhaps a generation, rarely more.

Furthermore, all these economists shared, to different degrees, an affinity for the work of English economist John Maynard Keynes, whose views on macroeconomics had swept the economics profession in the late 1930s and 1940s. Thus, they emphasized *aggregate* phenomena, such as the rate of saving, measured by the share of income not consumed in gross national product (S/Y), and the rate of investment (I/Y), as fundamental variables, a perspective which fits well, too, with the Solow-type model of the previous chapter. They agreed with the Keynesian assumption that poor economic performance reflected a lack of aggregate demand, rather than from a shortage of, or limits to, resources, though Keynes had come to this conclusion based on his knowledge of the advanced capitalist nations, not from studying the dualistic, less-developed economies to which this insight would be applied.

These early development economists also manifested a notable preference for industrialization as the driving force of economic growth, believing industrialization would release a tide of prosperity lifting all other sectors of the economy. Finally, while these **developmentalists** had a profound respect for market forces, they were not hesitant to advocate large-scale, short-term governmental intervention into the economy, very much after the Keynesian manner, if that might be expected to force economic growth. Markets were perceived as a *means* to realizing the end of economic development; they were not an end in themselves. Markets could achieve some objectives rather well, but there were other spheres in which the market worked less well. Under certain conditions, an assertive, and even a leading, role for government was to be encouraged and was perhaps necessary. In the long term, however, the developmentalists expected that an economy would achieve its best results with a competitive market interacting with a responsive and efficient governmental apparatus, and thus the interventionist role of government in development would be reduced to its stabilizing function as in the already developed nations. In this sense, the developmentalists had very conventional economic ideas, but only in the very long term.

In this chapter, some of the leading theories of the developmentalists are examined. Their theories and recommendations are more pragmatic and operational than the neoclassical or classical formulations. The theories were devised with an eye to directly affecting public policy in the less-developed countries. We shall see that their influence on the thinking of many economists remains strong, though there have been, and need to be, further refinement of their analyses.

The theory of the big push

One of the early theories about how a country might create the conditions for economic progress, where growth and development had not already arisen spontaneously, was formulated by Paul Rosenstein-Rodan based upon research he had conducted during the Second World War. After analyzing the economic structures of a number of poor Eastern and South-East European nations, Rosenstein-Rodan drew several conclusions which became basic building blocks for the field of development economics emerging after the war.[1]

Rosenstein-Rodan was noted for his effort to call attention to the **hidden potential** for economic development in less-developed regions. Much of his work centered on taking advantage of the *increasing returns* that could be realized from large-scale planned industrialization projects that encompassed several major sectors of the economy simultaneously. A "big push" of concurrent industrial investments could launch a chain reaction of virtuous circles and complementary investments that would then ripple in many directions through the economic system. Large-scale investments in several branches of industry would lead to a favorable synergistic interaction between these branches and across sectors. If economic development was to get a start in the now less-developed nations, Rosenstein-Rodan argued, it would have to come from a concerted and substantial "push" from government to create, effectively, an entire industrial structure in one huge and interlocked undertaking (see Box 5.1).

While concentrating on the hidden potential of large-scale future investments, with each successive increment to investment having an increasingly strong impact as output expanded at a rising rate,[2] Rosenstein-Rodan simultaneously maintained that these potential gains could not be realized within a purely market frame of reference. Individual entrepreneurs would be unlikely to invest enough to "push" the less-developed economy forward at its maximum potential rate, because under the profit-and-loss calculations of private entrepreneurs, their frame of reference would be too limited. Profit-maximizing steel producers are not concerned about whether their own private investments, if sufficiently large, will induce other investments and technical change in metallurgy which will then make that industry more profitable. Backward linkage effects which may be provoked by the investment actions of the steel industry are not taken into consideration by private decision-makers in the steel industry, because those firms cannot profit from these spin-off industries or even calculate the likelihood of the emergence and success of such linked firms.

Using Rosenstein-Rodan's terms, the steel industry cannot "appropriate" the future potential benefits to be gained in other sectors that are external to their business and hence they do not take these effects into account in making their private investment decisions. Because of this information and appropriation failure, market decisions will lead to a sub-optimal level of investment from the standpoint of society as a whole.[3] Rosenstein-Rodan was convinced that there were many such hidden potentialities for expanded production in less-developed economies that went unexploited because of the inability of the market economy to coordinate the multitude of simultaneous investment decisions that needed to be made.

Insufficient economic development would occur, because the private sector mechanisms in place in less-developed societies lead to economic decision-making which is sub-optimal. More investment was needed, and in many places at one time,

Box 5.1 Virtuous circles

Although Rosenstein-Rodan does not detail this point, one can sketch such virtuous circle effects: large-scale investments in steel-making could lead to research in metallurgy which would have "positive external" effects on companies which use metal products. Perhaps stronger alloys could be found that could then be used in the metal fabricating industries, reducing wear and fatigue and downtime for the machines in this sector. All this could reduce costs to another branch of industry, perhaps in railroad equipment manufacturing. Lower costs in the rail equipment could then be passed on to farmers, in the form of lower transport costs. Farmers, in turn, would now be able to invest in better mechanical equipment from the metal-manufacturing industry, creating a further surge of positive ripple effects. Each branch of industry, or at least many branches of industry, would be caught in a web of interacting and mutually complementary activities. The more efficient are supply conditions, the lower costs of production will be, and the greater the demand for the product. Cross-sector positive externalities will also be transmitted, for example, from industry to agriculture. In recent years interest in Rosenstein-Rodan's big-push theory has grown. His ideas were formalized by Kevin Murphy, Andrei Shleifer and Robert Vishney (1989) and his views are increasingly evoked by proponents of **endogenous growth theory** (see Chapter 8). This more recent work tends to highlight the role of demand **spillover effects** which, like the examples above, stress the virtuous circle effects which occur when an expanding manufacturing sector that raises productivity then stimulates income growth that, in turn, leads to increasing demand for the products of the expanding manufacturing sector. Increasing growth in this manufacturing sector could lead to increasing demand for inputs that – because they are produced on a larger scale – lead to economies of scale in the production of these inputs. This virtuous circle will then lower the costs of production for the manufacturing sector, which could lead to increasing demand and growth – another virtuous circle!

Source: Hoff and Stiglitz 2001: 4401–4413

in order to shift the economy away from its low-level equilibrium trap and toward rapid and sustainable growth. Of particular importance to this process is the provision of social overhead capital or infrastructure: roads, bridges, docks, communications systems, hospitals, schools, utilities, irrigation and flood control projects, and so on, which also generate substantial positive external benefits to society as a whole.

> The market mechanism alone will not lead to the creation of social overhead capital, which normally accounts for 30 to 35 percent of total investment. That must be sponsored, planned, or programmed (usually by public investment). To take advantage of external economies (due to indivisibilities) requires an "optimum size" of enterprise to be brought about by a simultaneous planning of several complementary industries.
>
> (Rosenstein-Rodan 1984: 209)[4]

For example, if schools are built and operated under the profit motive, then they will be available only for the child whose parents can pay. Bright and ambitious children of poor parents will be less likely to gain needed skills, and society's labor force will be under-skilled and operating below its potential as a consequence. The hidden

potential of the future labor force may never be realized if the market is left to provide social overhead capital, such as schools. This is the framework that Rosenstein-Rodan and others utilized when they argued that the market mechanism will not adequately create social overhead capital.[5]

In terms of the sequencing of investment decisions, Rosenstein-Rodan prioritized social overhead capital as an essential initial endowment, albeit one that nations have to actually create. Social overhead capital is not an initial endowment in the same sense that, say, land is.

> Because of indivisibilities and because services of social overhead capital cannot be imported, a high initial investment in social overhead capital must either precede or be known to be certainly available in order to pave the way for additional more quickly yielding directly productive investments.
>
> (Rosenstein-Rodan 1976: 635)

Rosenstein-Rodan's idea of the need for creating a "big push" of investment simultaneously in a number of branches of industry, and his emphasis on social overhead capital as fundamental to the success of the development project in less-developed nations, are his best-known contributions to the literature, but they are not the whole of what he had to say about the development process. Summing up his own contributions in the area of development economics, Rosenstein-Rodan claimed that he had made four innovations.

First, he had stressed **disguised unemployment**, that is, those workers, particularly in agriculture, who receive very low or no pay and whose work effort results in relatively little increase in total output. Their labor could be tapped to create the vast public works of social overhead capital which would be necessary for development, without reducing output in the economy.[6]

Second, by emphasizing the complementarity, and the external economies, of distinct investments, Rosenstein-Rodan demonstrated that large-scale investments could have an impact on overall economic growth greater than might be expected based on the calculations of individual entrepreneurs alone. It is necessary to take into account the positive externalities of one investment on others and on the possibility of increasing returns from successive units of investment. In order to achieve these serendipitous effects, however, economic planning of a limited nature would be necessary. Key industries or branches of industry would have to be targeted for expansion, and their initial investments would need to be subsidized if they were to occur at all.

Rosenstein-Rodan's third innovation was his emphasis on social overhead capital. Such investments, he argued, should precede the expansion of consumer-goods manufacturing investment if the latter is to be successful. As we shall discover in Chapter 8, this is a view supported by recent research on endogenous growth models.

And fourth, a "big push" of investment through the economy could result in **technological external economies**. These effects he defined in terms of work force training. Large-scale industrialization could contribute to a socially beneficial level of labor training that would have spread effects to other sectors throughout the economy, whereas incremental, market-driven development would not have the same impact, or at least dependence on the market would result in sub-optimal

social quantities of such training. Private businesses would not invest in the socially optimal level of labor training, again because any individual employer will be unable to appropriate the increases in income created by the new skill, especially if a worker moves on to another employer, who would not need to make any investment to benefit from the worker's increased skill level. However, under the big-push approach, labor training could be funded as part of a more general development plan. A broader time and planning horizon could be entertained by government, which could determine the training needs of an entire industrial complex and which could calculate the social profitability of any investment of additional educational expenditures and labor training. As we shall see in Chapter 8 in the discussion of endogenous growth theories, Rosenstein-Rodan was ahead of his time in maintaining that appropriate labor training was of equal, or perhaps even greater, importance than capital accumulation in the process of industrialization and economic development.

A theory of balanced growth

Ragnar Nurkse, like Rosenstein-Rodan, emphasized above all the need for a coordinated increase in the amount of capital utilized in a wide range of industries if the critical threshold level of industrialization was to have a chance of being achieved. Nurkse agreed that a massive injection of new technology, new machines, and new production processes spread across a broad range of industrial sectors held the key to igniting the development process in less-developed nations.[7]

Export pessimism and the need for domestic industrialization

This perspective of how to initiate rapid economic growth needs to be contrasted with what was, in the 1940s, a received doctrine in trade theory: to foster economic progress, less-developed regions were counseled to concentrate on increasing their exports of tropical products and raw materials, products in which, it was suggested, such countries had a comparative advantage. In Nurkse's view, this rather standard prescription for accelerating economic growth in less-developed countries was likely to yield meagre results for two basic reasons. First, Nurkse maintained that in future the world demand for tropical products and raw materials would be relatively limited and slow to expand. An increase in supply under such conditions would result in a decrease in the market price. The reduction in price could be of such a magnitude that the total revenue received (= unit price × quantity of the product sold on the world market) after an increase in supply could be less than the export income that was received prior to the drive to increase such exports.[8]

Nurkse did not devote himself to proving this point; rather he seems to have utilized this insight more as a working assumption based upon the weak pattern of prices for traditional primary exports from the less-developed nations he observed in the first half of the twentieth century. Because of this break with the orthodox view that the colonial and post-colonial regions had a comparative advantage in tropical products and raw material exports which could be further exploited through even more ambitious and pragmatic economic policy to expand such exports, Nurkse was branded an "export pessimist" (see Focus 3.4 for details).

The second reason for his rejection of the export-led road to development was

based on Nurkse's interpretation of the propensity to import.[9] In orthodox trade theory, it was assumed that a less-developed nation with the ability to export either tropical products and/or raw materials would use the income earned to import machinery, equipment, and manufactured consumer goods for domestic consumption. Trade would balance, that is, the value of exports would equal the value of imports, at least over an intermediate period of time. To challenge orthodox assumptions, Nurkse utilized a socio-psychological theory which explains why consumption continues to rise as income rises. This theory assumes that some "wants" are not innate, but rather are socially created. In this framework, some new goods are "demonstrated" to be desirable, because they are consumed by higher-income recipients in society. These goods confer social status and are therefore sought by others with less income.[10] Nurkse believed that the less-developed regions would be very vulnerable to the pernicious affects of this international demonstration effect. High-income consumers would spend inordinately on imported luxury products to "keep up with the Joneses" of the richer nations. Not only would there be an upward bias toward imports, especially of consumer goods, but the already limited potential supply of savings in the less-developed nation that might have been directed toward much needed domestic capital formation would be drawn down, as consumption as a share of total national income rose. Furthermore, the drive to show status through the importation of luxury commodities would conceivably cut into the ability of the economy to purchase imported machinery for industry, as the two forms of demand for foreign exchange competed for a limited stock of foreign exchange earned from primary product exports.

Less-developed regions were poor, according to Nurkse, because productivity per worker was low, and productivity, in turn, was low because savings were low, just as in the Solow model. With a low capacity for savings, the level of investment would, by necessity, be low, and consequently with only a modest amount of capital equipment available to each worker, the end result had to be a low level of per capita income because output per workers would be low. Small, incremental increases in capital formation would not solve the problem, in Nurkse's view. The market-based approach would more than likely fail, because as an individual business or a single industry alone attempted to raise its output level by increasing its individual capital investment, it ran the risk of not finding a market for its product due to the low level of overall average income. Alternatively, Nurkse emphasized that by attempting to solve the problem of underdevelopment via an expansion on the supply side alone, that is, through the expansion of production capacity, one ran the risk that the lack of demand for new output would short-circuit the attempt to move the economy forward.

The only solution that Nurkse foresaw, as had Rosenstein-Rodan, was via balanced growth. Large-scale increases in supply sweeping across a large number of industrial sectors would, at the same time, be met by a large-scale increase in demand created by the same expansion.[11] The essential demand-side stimulus would come from industries that were expanding as a result of the overall, balanced investment program; they would need more inputs of raw materials, intermediate or semi-processed products, and labor, and their act of buying inputs would create income for their suppliers. This income would then be transposed into a further expansion of demand by other firms and by workers in those firms buying the increased array of domestic goods available. But this widespread expansion could only happen if the

initial effort at development was "balanced," that is, only if supply increases were coordinated with simultaneous demand increases across the economy.

Although Nurkse's theory of balanced growth is very similar in many respects to the big-push formulation of Paul Rosenstein-Rodan, Nurkse's work was not merely a repetition. He did not advocate planning, as did Rosenstein-Rodan, nor was his approach open to the charge of being statist or of being dependent on the dominance of the public sector, a criticism that might be leveled at Rosenstein-Rodan. Rather, Nurkse felt that dynamic *fiscal policies* could have a very positive effect on the prospects for development without large-scale government involvement in production decisions or large-scale planning projects. Specifically, Nurkse advocated **forced savings** through an increase in taxes on upper-income recipients. The government, then, could repress the level of consumption out of national income, thereby increasing the level of overall savings. Then, the increased investment funds generated could be allocated to the most promising industrial sectors, possibly via government-operated development banks designed to identify and promote industrialization in the private sector or via private sector banks.

Industries would be encouraged to increase their capital formation and to raise their productivity, both because of the availability of loans from the development banks and because of the effects of infant industry protection, in which government would raise tariffs against cheaply manufactured imports from the advanced nations that might compete with the production of the new enterprises. Thus, both supply and demand factors would be addressed. The supply of savings would be expanded, leading to an increase in the supply of available domestic output via enhanced capital formation. At the same time, a market for domestically produced goods would be created, because potentially competing imports would be deflected via tariffs to the purchase of lower-priced domestically produced goods, a strategy which, later, became known as **import substitution industrialization** (discussed in detail in Chapters 9 and 10).

Like Rosenstein-Rodan, Nurkse felt strongly that less-developed regions possessed the hidden potential for greater progress; the resources and talents of society simply needed to be coordinated and released.

Unbalanced growth

Not all developmentalist economists believed, however, that the resources needed for implementing a big-push or a balanced growth strategy actually were available, though ideally this might be the optimum path in some abstract sense. One who voiced such concern was Albert O. Hirschman. Like most of the pioneers in the field of economic development, Hirschman was involved in the postwar economic reconstruction of Europe. However, this experience was followed by a four-year stint in Colombia, where his role as adviser to the National Economic Planning Board arose as a result of the recommendation of the World Bank (Hirschman 1984: 90). Hirschman's experiences in Colombia were formative; he would draw on a fund of experiences within this less-developed country to provide specificity to his emerging ideas on development. His work since that time has continued to convey a sense of immediacy and applicability that was at times lacking in the abstract and aggregative approaches employed by Rosenstein-Rodan, Nurkse, and other developmentalists.

Because Hirschman employed the term unbalanced growth in his major work

(1958) on economic development, and because his seminal work came considerably later than the ideas expressed by Rosenstein-Rodan and Nurkse, it has been commonly assumed that Hirschman's work was to be interpreted as an attack on the theory of big-push or balanced growth. It is important, therefore, to note that Hirschman agreed with the vast bulk of the ideas expressed by both Rosenstein-Rodan and Nurkse. He supported an "industrialization first" strategy, and he firmly believed that the key to rapid industrialization was to be found in large-scale capital formation in several industries and sectors. Hirschman also shared the optimistic opinion that less-developed nations harbored significant hidden reserves of talent, that potentially complementary relationships were waiting to be released, and that there were major potential externalities which would be instrumental in speeding the thrust toward industrialization. Hirschman's own interpretation of the relationship of his work to that of Rosenstein-Rodan and Nurkse was that he was a dissenter *within* the framework of the big-push/balanced growth paradigm.

The less-developed economies did indeed need a big push; without it, there would be either a snail's-pace rate of economic and societal change, or perhaps no discernible progress at all. But Hirschman advocated a big push for only a limited range of industries, with the idea that by inducing development in key sectors first, overcapacity would be created in these sectors, while supply bottlenecks would simultaneously increase production difficulties elsewhere in the economic structure. These bottlenecks would create pressures for new investments to resolve the supply inadequacies. In other words, Hirschman deliberately advocated the unbalancing of the economy, creating disequilibrium situations, for two basic reasons.

First, he maintained that there were resource limits in the less-developed regions and that this would necessitate prioritizing some areas of industry over others for the use of limited investment funds. It was impossible to move forward on a "broad front" in all industries at the same time as was envisioned in the big-push and balanced growth theories. Second, in deliberately unbalancing the economy and in creating excess capacity in some areas and intensifying shortages in other areas, he believed that the pressures created would result in subsequent reactions that would speed the development process by opening up opportunities for profit for new entrepreneurs.

In industries where overcapacity was generated, the output of these sectors would be made cheaper than previously, due to economies of scale; as output grew, unit costs of production would decrease as the firm moved down the average total cost curve. Hirschman believed this decrease in costs, assuming these were passed on to the final consumer, would then contribute to stimulating **upstream investments**. Hirschman's theory might be illustrated with the following example: by deliberately oversupplying electrical power, and thus lowering its price to users, sectors of the economy which used large amounts of electrical power as an input into their production process could be stimulated by this lowering of their marginal and average costs. Hirschman argued that in conditions of limited resources, as applied in the less-developed world, where it would be impossible to simultaneously increase electrical power-generating facilities and still have sufficient investment funds to stimulate industries that were intensive users of electrical power, it was the task of economic development economists to prioritize one of these two possible areas of growth, and then rely upon the positive effect of disequilibrium imbalances to push the economy forward as private entrepreneurs responded to the possibilities created by bottlenecks via the market.

The priority sector could be the upstream or the downstream industry. Excess capacity in social overhead capital could lead to the rapid expansion of private sector investments which would then subsequently utilize the excess capacity generated in the public sector, thus justifying its initial creation. On the other hand, were private sector investments to be prioritized, the need for a rapid increase in social overhead capital would subsequently manifest itself as the demand for electricity outstripped the supply; the profitability of more social investment would be made manifest. Bottlenecks and shortages of some inputs would create opportunities for profits for private entrepreneurs to fill in the gaps. These profits would attract other investors in search of profit windfalls created by such bottlenecks. Investments would flow into under-supplied sectors where prices and profits were rising. Perhaps this response would overshoot the needs of the market, thereby creating downstream opportunities for other businesses that could turn the new excess capacity and falling prices to their advantage.

Imbalances, or disequilibrium situations, would be conducive to further change; doing things "the wrong way around" could provide greater benefit than any other strategy in Hirschman's view. Basically, what Hirschman was explaining was how a market system responds to shortages and surpluses, but his contribution was to suggest how development planners might utilize market disequilibriums to stimulate economic progress.

Backward and forward linkages

One of Hirschman's best known and most creative ideas was that of **industrial linkages**. When one industry expands, it requires inputs from other industries to be able to produce. These are called **backward linkages**, that is, they are induced effects on the output of supplying industries. For example, coal mining and iron ore mining constitute backward linkages from a steel mill. On the other hand, when an industry sells and transports its production to other firms and sectors in the economy, these are the **forward linkages** of the original producer, that is, the induced effects of the output of the first industry in the direction of the final consumer. The metal fabrication industry and the chemical and paint manufacturing industry which use the output of the steel industry as their inputs would be forward linkages to the steel industry, and these industries might have further forward linkages to, say, the production of household stoves. Railroads or alternative forms of transport would enter the example as both backward and forward linkages to steel production and at each stage of production.

Thus, the production of one firm in one industry has a multiplicity of backward and forward linkages with firms in other industries in the domestic economy and, perhaps, abroad as well. In communicating the induced effects from one sector of the economy to another via shortages and excess capacity in Hirschman's unbalanced growth process, the size of potential backward and forward linkages were of paramount importance in evaluating where to locate the initial investment. Development strategies could be built around the maximization of the estimated stimulus of promoted industries in generating domestic backward and forward linkages.

Hirschman argued that the case could be made for large-scale capital-using projects, such as steel mills, if these investments could stimulate significant backward and forward linkages. Indeed, such investments could spark the creation of whole

new industries, providing not only increased output, but also increased employment, and with rising levels of production, lower costs and lower prices to consumers as the benefits of economies of scale were reaped. Nor would such large-scale capital-intensive investments necessarily displace workers, as sometimes is alleged. In an empirical study which analyzed the relationship between industrial structures and employment in Latin America, Hirschman found that

> once the indirect employment effects (via backward and forward linkages) are taken into account, investment in large-scale (capital-intensive) industry turns out to be just as employment-creating as investment in small-scale (labour intensive) industry for the industrially advanced countries of Latin America.
>
> (Hirschman 1984: 97)

How might such linkages be measured? Even at the time Hirschman was writing, **input–output** analysis of national economies was being elaborated, based on the pioneering work of Wassily Leontief at Harvard. Using input–output tables, it is possible to calculate the impact of a change in the output of one industry on supplying backward-linked producers and simultaneously on the production of forward-linked industries that use the originating output as inputs. An input–output table is a matrix showing the multiplier effects of the impact on other industries per unit change of output in another industry, as well as on labor use, imports, and final demand. For any country seriously thinking about stimulating development, at least a simple input–output table and the required calculations are almost essential for effective decision-making and monitoring of effects.

Changing the social organization of the labor process

Hirschman advanced an additional reason for promoting a capital-intensive, unbalanced industrialization program in less-developed nations. Many social scientists had argued that an attitude of "achievement" needed as a precondition for industrialization was missing in both the labor force and in management in less-developed nations. It had been suggested that standards in the work place were exceedingly lax in less-developed countries, and that neither workers nor managers were willing to take responsibility for errors in production. Slack management techniques often made it impossible to assign culpability when tasks were left uncompleted or were not completed within the time-norm set for a particular task. Hirschman did not take issue with this characterization of the work place in the less-developed nations. Rather, he noted that with the introduction of more advanced, machine-paced techniques, it would become easier both to calculate reasonable work-norms and to evaluate both success and failure in completing tasks (see Box 5.2).

Hirschman thus advocated new forms of production on the shop floor that might "hot-house" the completion of the less productive handicraft and manufacture stages of industrialization and allow the less-developed countries to move quickly to the machino-facture stage and its higher level of productivity. Under simple, relatively labor-intensive manufacture, the human operative has a great deal of control over the pacing of and output of a machine, since the worker chooses how quickly to

Box 5.2 Achievement orientation in the work place

A study of Mexican corporations conducted by the international consulting company, Vertex, may illustrate the significance of achievement attitudes. In comparing output per worker in Mexico with similar firms in advanced nations, Vertex found that productivity was 50 percent below international work-norms. In the most complex operations relating to production and maintenance, productivity was only 40 percent of what might be anticipated elsewhere.

Only 55 percent of the work day was devoted to work; 17 percent of time was spent in office gossip and coffee drinking, and 28 percent of the day was lost to (1) inefficiency of personnel, (2) communication problems, (3) repeating work due to errors, and (4) repeating instructions to employees. Among the difficulties cited by Vertex were the lack of motivation of workers due to the unwillingness of management to delegate authority, the lack of communication skills and proper training of workers, and the high turnover of workers with minimum loyalty to the firm. These conditions, they stated, tended to create apathy and negligence and an "it can't be done" mentality in the work force.

Source: Crevoshay 1994: 11

work and how much effort to put into the production process. Under machinofacture, or more capital-intensive production techniques, however, norms and rates of production are pre-determined to a great extent by the pace at which the machines are engineered to operate. Workers and managers are faced with a situation that is much more "all or nothing": maintain the pace of work and the quality of output determined by the machines, or risk losing employment. This situation, argued Hirschman, forces a change in the labor process which could lead to a rapid rise in productivity and could force institutional and behavioral changes that would be conducive to further economic development. This is another example of a Hirschmanian "pressure point," or disequilibrium process, designed to disrupt the production process and society in a way that promotes a positive outcome.

New attitudes and expectations regarding the labor process, both at the level of the shop floor and in management, could be inculcated as a by-product, or positive externality, of this more capital-intensive industrialization as the pace of work is increasingly dictated by machines. Both traditional labor practices and often ritual management responses would be made untenable with the new rules of the game, and a new cadre of workers and managers would be created as a complementary effect of industrialization, with positive and cumulative spin-off effects for other industries. Hirschman felt that innovative attitudes toward efficiency and responsibility on the job would also be transmitted to society at large. A system built upon merit and performance eventually would threaten the outmoded social structure built upon privilege and ceremony, a system which far too often remains a source of inefficiency in the less-developed world.

Antagonistic growth

Like all the developmentalist pioneers, Hirschman was extremely optimistic about the possibility for progress in the less-developed world in the 1950s. In his *Strategy of Economic Development* (1958: 5), he stated that

development depends not so much on finding optimal combinations for given resources and factors of production as on calling forth and enlisting for development purposes resources and abilities that are hidden, scattered, or badly utilized.

In a self-review of his own work in the 1980s, Hirschman struck a more sobering note. He defended his argument that development via excess capacity, or unbalanced growth, could be a viable strategy, while acknowledging that problems arising from resource scarcity also need to be given a more central role in conceptualizing the development process. Under conditions of resource scarcity – and all less-developed nations face scarcity, be it of investment funds or of skilled labor – an over-emphasis on a certain sector, such as industry, can mean that another sector, especially agriculture, fails to receive the inputs and support it needs to progress at a reasonable or desirable pace. Thus unbalancing development in one sector can leave another sector worse off, leading to what Hirschman termed an antagonistic growth process. In such a situation, Hirschman warned, further economic growth along the same lines will serve only to exacerbate existing levels of economic inequality. And this, of course, can lead to difficult if not explosive political struggles. So, both efficient allocation and effective reallocation of resources must be considered at the same time. It is not one or another that is most important for development.

Growth with unlimited supplies of labor

Another of the most important pioneers of early development economics is Sir Arthur W. Lewis who, along with Gunnar Myrdal, is one of only four development economists to have been awarded the Nobel Memorial Prize in Economic Science. Lewis's most cited work, and one of the best-known models in development economics, is his classic article on unlimited supplies of labor (1954). From 1970 to 1974, Lewis, who was born on St. Lucia in the Caribbean, was President of the Caribbean Development Bank, having previously held high-level positions at the United Nations in the area of development policy.

Like the other developmentalists discussed in this chapter, Lewis was quite optimistic that hidden reserves of strength could be tapped in the less-developed nations, and that by doing so, economic development could rapidly be promoted. He also shared their conviction that industrialization was the route the less-developed nations needed to pursue to escape poverty and reach a higher level of economic and social progress. Lewis's reasons for supporting industrialization, however, were quite distinct. He was not an "export pessimist." In fact, Lewis produced a major research work (Lewis 1969), the purpose of which was to demonstrate that tropical products and raw materials exports, the traditional primary exports of less-developed nations, were *not* subject to falling international prices resulting from supposed limits of the advanced nations to absorb these products. On the contrary, he drew the conclusion that rising incomes and rising levels of production in the already developed nations would call forth a stronger demand for tropical products and raw materials. Thus, the promotion of such exports promised higher levels of export income in future.

Despite this latent potential, Lewis nonetheless insisted that the wage level of the less-developed nations was moving upward at much too slow a pace; workers'

incomes in the less-developed nations were falling further behind that of their counterparts in the developed nations. Lewis believed this growing disparity was the result of differences in the productive structures existing between the two areas. The already-developed nations had large industrial and manufacturing sectors, where many workers were employed, and relatively small agricultural sectors, using a relatively small proportion of the labor force. Just the reverse structure prevailed in the less-developed nations, where most of the labor force was occupied in rural areas, with agricultural production their primary activity.

Higher wages were paid to workers in the manufacturing sector compared to agriculture in both the developed and less-developed nations, though the gap was smaller in the already-developed nations, because productivity per worker was higher in both the industrial and agricultural sectors. Especially low incomes prevailed in the agricultural sector of the less-developed countries, where most of the population lived and worked, since output per worker also was quite low, primarily because of the lack of capital and the relatively primitive technologies in use. Thus the higher average income in the already-developed nations was a structural function of having more workers in the higher-productivity, higher-wage industrial sector relative to the less-developed regions.

While the less-developed nations often were portrayed by economists and policymakers as having a comparative advantage in the production of tropical agricultural goods and raw materials for export that should continue to be exploited, Lewis suggested that they also had a potential, hidden, dynamic comparative advantage in some types of manufacturing. At the time, this was still a somewhat unconventional view as applied to the promotion of manufacturing. It arose from his observation that wages in the manufacturing sector in less-developed nations were relatively low compared to those of the advanced nations. Since wages were an important component of costs in labor-intensive manufacturing processes, such as textile production, if the less-developed regions could restructure their economies toward this type of manufacturing, they could perhaps create comparative advantage based on their relatively lower wage costs.[12] Lewis actually was an "export optimist," believing that the small net addition to global manufacturing exports coming from less-developed regions would be easily absorbed by a growing world market. Thus a higher level of manufactured exports from the less-developed nations need not spark a defensive reaction in the advanced nations in terms of new tariffs and other barriers, because Lewis believed that the increases in labor-intensive manufacturing exports added by the less-developed nations to total exports would be dispersed throughout the global economy. He thus did not believe that any developed country would face a serious threat from manufactured export competition coming from the less-developed regions. Consequently, the developed nations would not resort to protectionism to stop the flow of new manufacturing exports.

Lewis wanted to advocate shifting labor away from agriculture and into industry. But, as a well-trained orthodox economist, he had been taught that switching labor from agriculture to industry would mean that agricultural production must surely decline with such a reallocation, assuming the marginal product of labor in agriculture to be greater than zero. Consequently, food prices might be expected to rise, as fewer farmers would be producing less output for a growing number of non-agricultural workers.[13] With rising food prices, industrial wages would need to rise to ensure at least a subsistence wage, and the potential comparative advantage of the

less-developed country in producing labor-intensive manufacturing goods for export would disappear with the rising wages. Was there no way out?

Surplus labor

It was at this point that Lewis brought into development economics an important construct which had been widely utilized by Keynesian economists in analyzing the Great Depression (1929–1939) within the industrial countries in writing about disguised unemployment. What if labor in the agricultural sector was being utilized in an extremely inefficient manner, to the degree that, by taking agricultural workers out of this sector and employing them in industry, agricultural production would not decline at all, while industrial output was increased with the influx of greater employment? What if there were actually a *surplus* of agricultural workers, such that by transferring some labor from agriculture to industry the remaining workers could work longer hours, or more efficiently, and total agricultural production could remain constant or even rise?[14] Or, alternatively, agricultural producers who had been selling to the export market could replant their fields with an eye to the potential profits created by the growing domestic market resulting from the process of industrialization. In any event, Lewis reasoned, if there was surplus labor in agriculture, then that "hidden reserve" could be tapped for industrialization, and development perhaps would not prove to be so difficult to attain after all.

If industrialists were to pay a wage somewhat, say 30 percent, above the average wage prevailing in agriculture to cover the costs and discomforts of migrating to industrial areas and to compensate for the higher cost of urban living, then industrialists could hire all the labor they might want at a constant wage, as long as surplus labor conditions prevailed in agriculture. Industrialists could look forward to a double advantage. First, the absolute level of wages would be above but close to subsistence, yet domestic wages would be far below the wage prevailing in the advanced nations. Second, as industry shifted to higher and higher levels of production over time, more and more surplus agricultural laborers would be brought into the industrial sector. But wages in that sector would not have to rise at all, because the cost of food, the basic determinant of the wage level, would remain constant until the labor surplus was exhausted.

The Lewis surplus labor model

We can formalize the Lewis model along the following lines. Lewis presumed that the typical less-developed nation was **dualistic**, not only in having two key sectors, but in the sense that these sectors had little interconnection. There was a traditional, low-productivity rural and predominantly agriculture sector, where the great bulk of the population worked and produced what it consumed. But there also existed (or there could be created) an incipient modern capitalist sector, where production was more technologically driven and, accordingly, worker productivity was higher than in the traditional sector. The modern sector bought food, and perhaps other inputs, from the traditional sector for use in the production process, and the traditional sector provided labor to industry in the cities, but otherwise the links between the two sectors were weak.

It was in the labor supply link between the two sectors that Lewis found a trans-

formation dynamic. His model can be explained by examining Figure 5.1(a) and (b). Figure 5.1(a) shows the marginal product (MP_L) and average product (AP_L) of labor curves in agriculture. Since Lewis assumes a surplus of labor in agriculture, it can be presumed that the $MP_L = 0$, so that L_A workers are employed in that sector. However, unlike the usual neoclassical assumption that workers are paid their marginal product, which, in this case, would mean agricultural workers would be paid nothing – clearly an impossibility – workers actually receive a wage, w_A, equal to their average product when L_A workers are employed. Why? In the traditional sector, it is presumed income is shared by the members of extended families. One can think of the production process being organized around the household, rather than by and for individual decision-makers. Work often is done collectively on family farms, where the marginal product calculation of the optimal use of labor inputs would be a wholly alien concept.[15] All family members may contribute to production in their own fashion; and all share in the fruits of the labor process more or less equally, regardless of the individual contribution to production.

If the industrial sector pays a wage w_I that is above w_A, then labor will be attracted from agriculture to industry (Figure 5.1(b)). Industrial capitalists, who are presumed to be profit-maximizers, will hire L_{I1} workers: additional labor will be used until the industrial wage is equal to the MP_{L1} in the industrial sector.

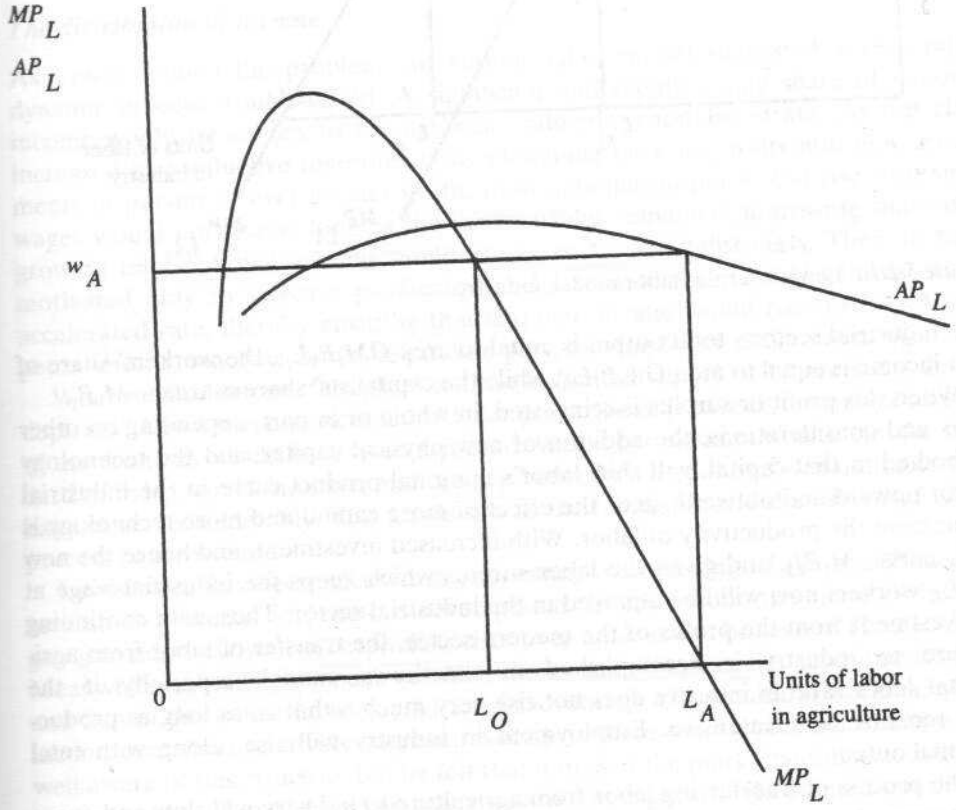

Figure 5.1(a) Lewis's surplus labor model: agriculture.

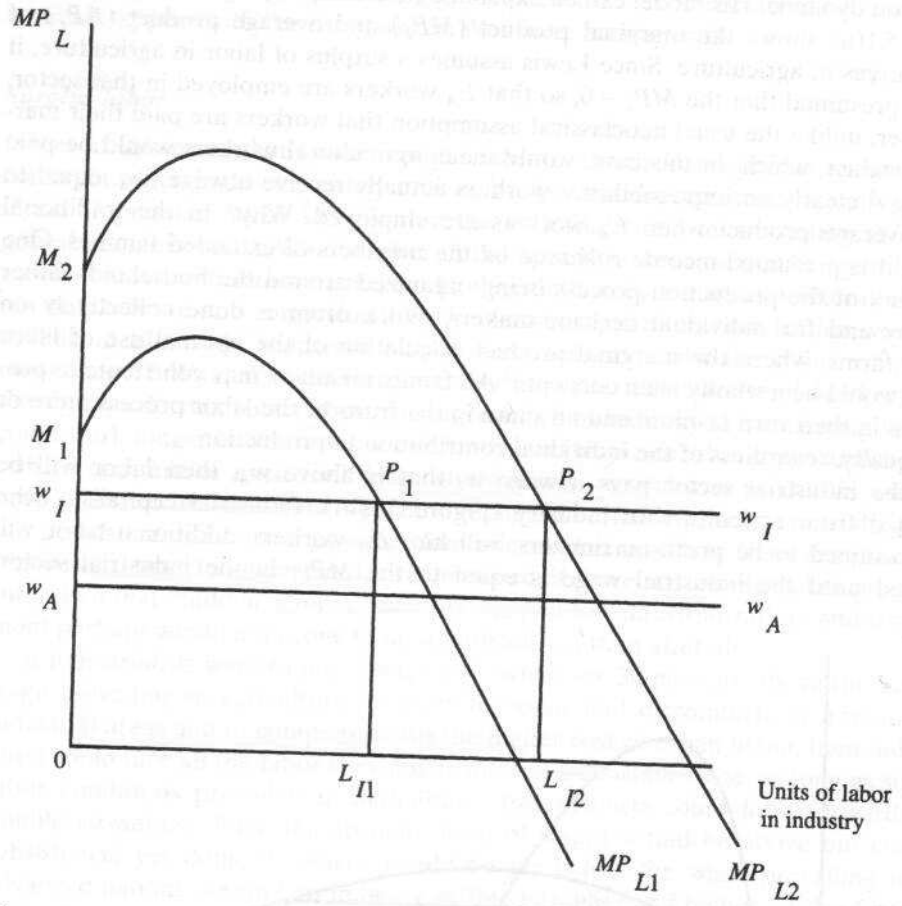

Figure 5.1(b) Lewis's surplus labor model: industry.

The industrial sector's total output is equal to area $OM_1P_1L_{I1}$; the workers' share of that income is equal to area $Ow_IP_1L_{I1}$, while the capitalists' share is area $w_IM_1P_1$.

When this profit or surplus is reinvested, in whole or in part, depending on other costs and considerations, the addition of new physical capital, and the technology embodied in that capital, will shift labor's marginal product curve in the industrial sector upward and outward, since the effect of more capital and more technology is to increase the productivity of labor. With increased investment, and hence the new MP_L curve, M_2P_{L2}, and given the labor surplus which keeps the industrial wage at w_I, L_{I2} workers now will be employed in the industrial sector. Thus, with continuing reinvestment from the profits of the modern sector, the transfer of labor from agriculture to industry is accomplished in the Lewis model, especially if the capital–labor ratio in industry does not rise very much – that is, as long as production remains labor-intensive. Employment in industry will rise, along with total national output.

The process of transferring labor from agriculture to industry will slow and eventually come to an end, of course. As labor leaves agriculture, the marginal product of labor, and its average product, must eventually rise as the labor surplus is

exhausted. In Lewis's view, the upward pressure this puts on wages in agriculture will force producers in that sector to become more productive via the adoption of better technologies, thus forcing the "modernization" of the primary sector as well. Of course, this process happens gradually, rather than discreetly, as some agricultural producers embrace modern methods of production earlier than others, but the effect of a growing scarcity of labor in agriculture will require the use of greater amounts of capital and technology to save on labor. In the process, productivity and incomes in agriculture also will rise.

To keep this "virtuous circle" of labor transfer going once started, there would have to be more and more capital formation in manufacturing capacity, which would necessitate a higher level of savings which then could be transformed into investment. In Lewis's view, only the fledgling capitalist sector would save. Large landowners, monopoly bankers, mine owners, and other wealthy strata of traditional society, including the political elite, would be more likely to squander their economic surplus in ostentatious consumption and/or capital flight out of the country. Only by increasing the share of national income which accrued to industrial capitalists, Lewis reasoned, could the less-developed regions move forward, and this would be accomplished by the transfer of labor from agriculture to industry, shown in Figure 5.1(b).

The distribution of income

As Lewis defined the problem, his surplus labor model suggested a very rapid dynamic process would unfold. A significant and rapidly rising share of national income would be shifted to the national, industrial capitalist strata. As this class increased its productive investments by ploughing back its profits into new investments in pursuit of ever-greater profit, total national output would rise. But since wages would not rise as long as the labor surplus remained, a growing share of a growing total national income would accrue to the capitalist class. They, in turn, motivated only to increase production and profits further, would reinvest at an accelerated rate, thereby ensuring that national income would rise further. A perpetual-motion machine would be put into play, moving faster as time went on.

What would happen, though, when the unlimited supply of laborers was finally depleted? Lewis was unconcerned. At that point, the objective of the transformation of the economy would have been achieved. Wages for workers would rise, the standard of living would improve, and the gap between the poor and rich nations would have closed considerably. This Lewis saw as the inevitable and desirable end of the process he envisioned.

Lewis often has been accused of advocating a worsening of the distribution of income as a means to promote development. In his model, the share of income going to relatively well-off capitalists rises over time, as can be seen in Figure 5.1(b). Meanwhile, a small gap opens between the average wage in the agricultural sector and that of the industrial sector, to the disadvantage of agricultural workers, whose income remained relatively stagnant as long as there was surplus labor. Lewis was well aware of this criticism, but he felt that it missed the mark. Painful as it might be to contemplate, Lewis found no other way to foster growth. He pointed out that he was not advocating a worsening of the distribution of income. What he was advocating was economic development and a general rise in the standard of living, and he

could see no other way to exploit the "hidden surplus" of disguised unemployment in agriculture without such an adverse, but temporary, increase in inequality between agriculture and industry (see Box 5.3).[16]

Joan Robinson put the matter well in another context: "The misery of being exploited by capitalists is nothing compared to the misery of not being exploited at all" (Robinson 1966: 46). In other words, the wage of the industrial worker is likely to be higher, and the standard of living better, than for the rural peasant or rural worker. The transition from agricultural poverty to a higher standard of living in industrial production was desirable, even if it engendered temporary inequality. One suspects that Lewis would have agreed with Robinson's pithy comment.

Box 5.3 Other dualist models of structural transformation

The Lewis model of unlimited supplies of labor is but one, though perhaps the best known, of a number of dualist models examining the transfer of labor from agriculture to industry.

The Fei–Ranis model This was an extension and elaboration of the basic Lewis model, a major distinction being an upward-sloping labor supply curve after some amount of labor has been extracted from agriculture to industry. The Lewis model also envisages such a tendency, though it is not formalized as it is in the Fei–Ranis model. This was a theoretical contribution, and it does not detract from the basic Lewis conclusion that labor will be attracted from rural areas to urban industrial centers by a wage higher than that paid in agriculture, and that it is that transfer which contributes to the desired structural transformation of production (which will be examined in Chapter 9).

The idea that total national output and income per person could be increased by such a strategy of labor transfer, where the marginal product of labor in industry exceeded the marginal product of labor in agriculture, is the key insight of both the Lewis and Fei–Ranis models.

The Harris–Todaro model Though traditionally the Harris–Todaro model is not categorized as a dual economy model, but rather one explaining rural–urban migration and urban unemployment and underemployment, it is in the tradition and spirit of the Lewis model. The Harris–Todaro model envisages workers in agriculture rationally choosing to migrate to urban, industrial centers in the pursuit of wages that, with some probability, are expected to be higher than in rural areas. Urban wages are higher due to many forces: higher productivity of workers, higher living costs of cities, and, perhaps, the "wedge" of unionization pushing wages above the market-clearing level.

As a consequence of a "too"-high differential between urban and rural wages, too many migrants continue to be attracted to urban areas relative to the number of urban, industrial jobs available in the formal sector. As a consequence, many migrants are forced into informal sector employment in low-productivity, low-income jobs: domestics, street vendors, beggars, jugglers, newspaper vendors, day laborers, and so on.

Further, urban slums emerge and grow, as the urban formal sector wage wedge relative to agricultural wages continues to draw migrants hoping to find formal sector employment. Thus the disguised unemployment or underemployment of some rural migrants becomes open unemployment, or the disguised underemployment of the urban informal sector.

Sources: Fei and Ranis 1964; Harris and Todaro 1970

Lewis subsequently broadened his definition of what contributed to a labor surplus, or disguised unemployment, to include:

1 individuals unemployed due to technical change in agriculture and industry;
2 the underemployed in rural areas;
3 the movement of women from the household to the labor force;
4 the surplus labor generated by rapid increases in population.

Of these factors, he considered the last the most powerful force for creating a labor surplus (Lewis 1984: 133).[17]

Utilizing the economic surplus

Although Lewis is best known for his article on unlimited supplies of labor, he later took a somewhat different approach to the development problem. He felt that more attention should be paid to the inordinately high level of consumption as a share of total income in the less-developed regions. Much of the income generated in less-developed countries was squandered in conspicuous consumption, and not just by capitalists, who were too small in number to have much of an impact and who, in any case, were presumed to save and invest much of their income in pursuit of future profit. Rather, it was residual classes, like landowners and plantation barons, as well as new groups such as financial manipulators and a political elite who were skimming-off part of aggregate income that could have been used for investment, who engaged in superfluous consumption (Lewis 1976: 257).

In order to reduce this waste, Lewis advocated raising the tax burden on the top 10, or perhaps the top 20 percent of income recipients to the point that government would receive 20 percent of national income. The state, in turn, would devote roughly 60 percent of those revenues, or 12 percent of national income, to basic public services, such as schools, hospitals, social security, and so on, and 40 percent of tax revenues (8 percent of national income) to public capital formation or social overhead capital. Thus, the mature version of the Lewis model should include *two* forms of investment that would be promoted: private-sector investment in manufacturing and industry deriving from the private capitalist, and public investment in social overhead capital, such as roads, communications systems, energy and so on, deriving from government decisions as to priorities. Of the two, Lewis felt that the role to be played by the state in taxing the unproductive elite and allocating national income to socially productive purposes to be far more important in future.

By 1984, Lewis had determined that political and economic matters could not be separated. Development was as much a matter of "getting public policy right," as of providing a constructive environment for the private sector, a view with a strong Keynesian resonance. Achieving development, Lewis seemed to say, was as much a question of political will as it was in finding the technical means. Sir Arthur continued to advocate a large increase in savings and investment, but he also emphasized that the only way to achieve this was to reduce the unproductive and wasteful consumption levels at the top of the income pyramid, especially of unproductive classes who continued to control significant economic and political resources.

> Nowadays in most underdeveloped countries people know what economic growth requires; the difficulty is to make available the quarter of the national income which it costs. Personal consumption which should only be 75 per cent of the national income is nearer 85 per cent, leaving for the public services and for capital formation together only about 15 per cent instead of the 25 per cent they need.
>
> (Lewis 1984: 256)

The legacy of the Lewis model

The Lewis model has continued to have an important influence in development economics (we shall use it again in Chapter 9). Subject as it was to a great deal of critical scrutiny, it is not surprising that many objections were raised. Most telling were two. First, the model ignored institutional factors which influence the level of wage determination in the industrial sector. Governmental labor standards, including minimum wages, and unions are absent from the model. In fact, many less-developed nations have introduced relatively advanced labor legislation, and unions often have been able to negotiate a wage far above that determined by the free play of market forces. Many of these institutional factors were introduced by, or were a reaction to, foreign transnational firms in mining and agriculture. These firms could easily afford the increase in their costs which would improve working conditions. However, via "target bargaining," such improved conditions can quickly become the bargaining norm for unions and workers in other industrial sectors not linked to the transnationals. The end result often has been to ratchet up wages for those workers in the industrial sector who have permanent jobs (i.e., who are not hired on a day-by-day or per-job basis). Thus rather than a constant industrial wage with some premium above the agricultural wage, industrial workers in some countries have been able to achieve substantial increases in wages, thereby eroding the potential comparative advantage in wage costs and undercutting Lewis projections for economic development by reducing the absorptive capacity of the industrial sector.

A second major objection concerned the socially virtuous behavior which Lewis assumed the capitalist strata would engage in, that is, the continued reinvestment of earnings in new production. Some have argued that the native capitalist strata may short-circuit the growth process through capital flight, rather than ploughing profits back into production; of course that possibility certainly exists. Lewis assumed that capitalists would have a high propensity to reinvest and that their earnings would not leak out of the country via capital flight or via the conspicuous consumption of luxury imports. Whether capital flight or reinvestment takes place, however, is not something that can be assumed. As we shall see in Chapter 15, governments interested in promoting economic and social development can help to create an internal economic environment attractive to domestic investors, particularly by keeping the inflation rate relatively low and stable. There are other aspects of the internal balance that are important, as we shall see, but there is no guarantee that capitalist profits will be reinvested, especially in an increasingly global capitalist economy.

There can be no question that capital flight played a major role in many less-developed nations in the 1980s, often contributing to an external debt crisis. However, to criticize the Lewis model in this context would appear to be inappro-

priate, for two reasons. First, Lewis's model was developed in the early 1950s when international currency and financial markets were in a shambles, and most nations maintained strict currency controls. Second, given Lewis's strong advocacy of governmental intervention in order to tap the economic surplus of high income recipients, it is doubtful that Lewis would oppose the reinstitution of currency controls to block capital flight. Nations, such as Brazil, that imposed currency controls in the 1980s suffered relatively little capital flight.

Stages of growth theory

The last developmentalist theory to be examined in this chapter is Walt Whitman Rostow's stages of growth analysis (1960). Rostow's writing on the economics of what he called the "take-off" into sustained growth quickly became influential, in large part because of his remarkable ability to use metaphors, such as the take-off, and his deft compaction of European economic history. Like Marx before him, Rostow sought a *universal* interpretation of history, and this he provided in his stage model. He argued that all nations pass through five phases: the traditional society, the pre-conditions for take-off, the take-off, the drive to maturity, and the age of mass consumption. Rostow built his theoretical analysis upon the history of Britain, as had Marx. In doing so, he utilized a framework that most economists and other social scientists knew quite well. The plausibility of his argument seemed to many to be well-anchored in historical dynamics, both because it seemed to fit quite well the British experience, which had long been the basis for countless generalizations in economics, and because many economists did not have a ready grasp of the economic history of the less-developed regions. Thus, the model projected by Rostow seemed to generally conform to what many economists knew, or at least believed, to be true.

Stage 1: traditional society

In defining his first stage of historical and economic development, Rostow was rather vague. He likened traditional society to that of medieval Europe, and more broadly to any society that was pre-Newtonian. That is, traditional society was pre-scientific. Scientific progress might occur from time-to-time, but there was no *systematic* mechanism which led to the introduction of scientific knowledge into the production process on a continual basis. Traditional society was dominated by a perspective which Rostow defined as "long-term fatalism." According to his formulation, traditional society was predominantly agricultural, with landholders playing a dominant role in the determination of political and economic power.

Although Rostow attempted to demonstrate a general theory of historical stages, it would seem his sketch of traditional society best fits Europe prior to the sixteenth century during its feudal period. He made virtually no effort to extend his analysis to the Third World. Were these vast regions, from 1500 to 1800 similar in any meaningful way to Europe, *ca.* 1400? Certainly the information surveyed in Chapter 3 on Colonialism demonstrates that this vast region was not traditional or unchanging – on the contrary the changes imposed by colonialism were revolutionary. Rostow neglected to forge the link between traditional (European) society and the societies in the Third World – because non exists.

Stage 2: the pre-conditions for take-off

After his brief sketch of traditional society, Rostow moved forward to the second stage, the pre-conditions for take-off. Here, under one stage category, we find two processes at work: the beginnings of a sweeping destruction of traditional society, and the gathering of societal forces which will propel it forward into the subsequent take-off stage. But in his emphasis on the destruction of traditional society, usually through an outside source, probably colonialism according to Rostow, he blurred the line between a nation which becomes colonized and the colonizing nation itself. The presumption is that both colonizer and colonized are swept forward through this stage, both benefitting from events which stimulate development. But, in the case of the colonized nations, Rostow fails to entertain the likelihood that the process of destruction will be so thorough that the colonized society will be set on a path that does not lead to take-off, but to stagnation.

Thus the processes of both entering and leaving a major transformational epoch is commingled in the same stage, without a detailed analysis as to how these two processes unfold. Rather than doing so, Rostow presents a shopping list of changes which he expects to arise during this stage, without much apparent regard to either causality or sequence. He states that new types of entrepreneurs and managers will appear in the private and public sector, banks will appear and investment will increase, particularly in infrastructure. Modern businesses will be created which will make use of new and sophisticated methods of production. As this process unfolds in the colonial or post-colonial regions, "reactive nationalism" sets the less-developed region on a new course, the drive for modernization (see Box 5.4).

Stage 3: the take-off into sustained growth

Our brief review of Latin America in the nineteenth century in Box 5.4 suggests that neither the role of "reactive nationalism" nor the existence of the profit motive appeared to be sufficient conditions to launch Latin America into its take-off stage. Rostow does not explain the movement from one stage to the next, and since he does not provide his reader with an interpretation of the nineteenth-century economic history of Latin America that would support his views, the Rostovian framework may be less universal than Rostow had hoped. Nonetheless, given the importance of Rostow's work in the field of development economics, it is useful to briefly analyze what he considers to be the key stage in the development process: the take-off. This stage is defined as emerging under the following simultaneous conditions.

> (1) a rise in the rate of productive investment from, say, 5 percent or less to over 10 percent of national income; (2) the development of one or more substantial manufacturing sectors with a high rate of growth; (and) (3) the existence or quick emergence of a political, social and institutional framework which exploits the impulses to expansion.
>
> (Rostow 1960: 39)

Furthermore, Rostow states that there must be a sweeping reallocation of resources devoted now to

Box 5.4 Testing Rostow's concept of reactive nationalism: the case of Latin America after independence

In attempting to test Rostow's hypotheses regarding the pre-conditions stage, the situation in Latin America in the early nineteenth century would appear to be an important case. Here we find, however, that the breaking of the colonial bonds did not lead to a full rupture with the past. Factions within the new nationalist elite fought among themselves for political control for another half-century, and then split into independent nations that mirrored the separated colonial vice-royalties that had kept the colonies divided from each other prior to independence. Moreover, the new nationalist elite classes were not interested in, or were not capable of, transforming their newly independent countries along the path that had been followed in Europe and the United States, that is, following a dynamic capitalist and industrial revolution. Rather, the goals of these new elite classes were relatively limited. They wished to gain the class privileges Spanish colonial policy had for so long reserved exclusively for pure-blooded European immigrants. Such a backward-looking elite was content to continue the pattern of exporting primary commodities begun under Spanish rule. This new dominant class of large landowners, merchants, and politicians, was certain to enrich itself through the expansion of such exports.

As we have noted in Chapter 3, throughout nearly the entire nineteenth century, raw material prices soared and the terms of trade moved, perhaps fortuitously, in favor of such products. Trade with the advanced industrial nations permitted the nationalist leaders to import the manufactured luxury goods to which they aspired as emblems of their social status. With easy access to vast reaches of land, much of it expropriated from the Catholic church and native Indians, the new nationalist elite was able to prosper by producing in the same technologically backward manner while utilizing more land, that is, using *extensive* forms of production.

Thus the Latin American elite by-passed one of the prime defining characteristics of the Rostovian second, pre-conditions, stage; they were not forced to utilize the latest technological advances in an effort to make each unit of land more productive, that is, they did not pursue *intensive* production methods. Contrary to Rostow, there was an obvious lag in the development of Latin America's essential infrastructure, such as banks, communications systems, and roads. And this, in turn, tended to reinforce the lag in the modernization of the productive apparatus, that is, a delay in the introduction and use of machinery, equipment, knowledge, and managerial strategies in tropical agriculture, mining, farming and ranching, let alone in industry. It was in the period after 1870 that Latin America's pernicious pattern of limited export diversity was consolidated. In some countries this was manifested by mono-export production.

Source: Dietz 1995: ch. 1

> building up and modernizing the three non-industrial sectors required as the matrix for industrial growth: social overhead capital; agriculture and foreign-exchange earning sectors, rooted in the improved exploitation of natural resources. In addition, they must begin to find areas where the application of modern technique are likely to permit rapid growth rates, with a high rate of plow-back of profits.
>
> (Ibid.: 193)

The take-off is to occur in the space of roughly twenty to twenty-five years. According to Rostow's dating, India began its "take-off" in 1952. Thus India, with a

per capita income in 2000 of only $460, ranked thirty-sixth in terms of the poorest country in the world, should in fact have had by then a relatively strong economy. Yet in the period 1980–1991, decades past the presumed take-off stage, India's per capita growth rate was a disappointing 0.7 percent per year (per capita growth rose to an impressive 4.2 percent per year in the 1990s). Following the take-off, growth at rates well above the population growth rate was expected to be the normal condition. The take-off into sustained growth had faltered in India, apparently – an event that the stage model cannot even consider.

Critical responses to the concept of the take-off

As intuitively appealing as Rostow's list of conditions for take-off may be, it is disconcerting to note that a number of development economists who have reviewed the historical record have found that the concept does not accord with the history of most of the nations which have purportedly moved beyond take-off into "self-sustained growth." For example, Albert Fishlow argues that, in the now advanced nations, there was no major abrupt jump in either the rate of investment or the rate of growth of output for most nations (Stage 3 above). Rather, there was a gradual speed-up in the rate of investment and growth in most countries, and a sharp rise in investment and growth only in some (Fishlow 1976: 84–85). Simon Kuznets also argued (1971a) that a review of the economic history of the now developed nations showed no sudden significant rise in the rate of savings during what might be considered their take-off stage. Kuznets further pointed out that when the now developed nations moved into the take-off stage, they did so at per capita income levels much higher than those prevailing in the less-developed world currently (Kuznets 1971b: 224).

Gerald Meier elaborated on this point by concentrating his analysis on the agricultural sector. He drew a contrast between the robust agricultural sector of the nations which went through a take-off in the eighteenth, nineteenth and early twentieth centuries, such as Britain, France, Germany, the United States, Canada, and Australia, with the weak agricultural sectors generally prevailing in the less-developed regions.

> It is fairly conclusive that productivity is lower in the agricultural sector of underdeveloped countries than it was in the pre-industrialization phase of the presently developed countries. Although direct evidence of this is unavailable, it is indirectly confirmed by data suggesting that the supply of agricultural land per capita is much lower in most underdeveloped countries today than it was in presently developed countries during their take-off, and that there is a wider difference between per worker income in agriculture and nonagricultural sectors in the underdeveloped countries today than there was in the pre-industrial phase of presently developed countries.
>
> (Meier 1976: 95)

Meier pointed to another important difference between the conditions prevailing in the present-day less-developed regions compared to those that prevailed when the now developed nations entered into their initial period of rapid development: population pressures were relatively moderate in the past, whereas today an annual

population rate of growth of 1.5–3 percent necessitates a much higher level of investment in order to move the economy forward fast enough just to keep per capita income constant. That is, what would have been considered a remarkably fast rate of aggregate economic growth during Britain's industrial revolution, 3 percent per year, is often the minimum rate of aggregate growth that must be attained in many less-developed nations today in order simply to maintain the existing, low standard of living per capita.

Furthermore, migration played a tremendous role in the economic performance of the now advanced nations during their early industrial period. For some nations, like the United States, Canada, and Australia, the influx of trained, ambitious, young immigrants was a clear economic boon. At the same time, the out-migration of young workers from Europe tended to eliminate both potential unemployment and social problems that might have arisen from structural unemployment. Lacking surpluses of labor, many of the now developed nations had a strong incentive to adapt new machinery and equipment which would dynamize the productive process.

Criticism of the takeoff have continued to be published. Nicolas Crafts' research confirmed the analysis of Fishlow and Kuznets. Based on more recent work he suggests that we "discard Rostow's linear model":

> Rostow's notion of the takeoff seems to be completely discredited. GDP growth [in England from 1780–1830] exhibited a steady acceleration over perhaps half a century . . . and there is no sign of the rapid doubling of the investment rate postulated by Rostow. The notion of a leading sector has also faired badly.
>
> (Crafts 2001: 312)

Stages 4 and 5: maturity and high mass consumption

Rostow's last two stages, maturity and high mass consumption, are defined sequentially as:

- A period wherein growth is sufficiently high so that there is significant increase in per capita income. The economy becomes diversified and technologically sophisticated, such that the society can now produce anything, but not everything, it chooses;
- A subsequent period where production is largely for the purpose of consumption, with relatively little concern for the need to further build production capabilities. Society is now devoted to the pleasures of consumer choice, the pursuit of security, and the enjoyments of the arts and leisure.

Rostow's legacy

In spite of the fact that it has been his fate to serve as a lightning-rod for criticisms from virtually all schools of thought in development economics, Rostow clearly made a powerful contribution. He forced other economists to review the experiences of the now-developed nations and to demonstrate the tremendous gulf that exists between the historical conditions which gave rise to the developmental success stories of the eighteenth, nineteenth and twentieth centuries and the experiences with patterns of distorted development, stagnation and economic decay that

prevail in the less-developed world today. Rostow also opened the debate to another question in development economics. Did colonialism lead to the entrenchment of backward socio-economic forces and processes in less-developed nations which could not be displaced easily once political independence was achieved? A full exploration of this matter will be left for the following chapter, where we will review the work of a number of analysts who clearly argue that Rostow's main analytical error was to be found in his failure to incorporate the retarding and inhibiting forces of colonialism into his model.

While today little remains of Rostow's analysis which is of general use in the field of development economics, Rostow was clearly a pioneer in opening up new areas for study, debate, and analysis. Without his "big-picture" approach, many major issues might not have received a critical airing. Furthermore, Rostow's willingness to express his ideas within the difficult terrain of political economy forced those who would refute him to consider a broad range of factors at the analytical points of intersection of historical dynamics, political processes, and economic forces.

Questions for review

1 Contrast Nurkse's "export pessimism" with Lewis's views on development. In what respects do their apparently contrasting views on exports actually coincide, and where do differences remain?
2 In what sense would you argue that the economists discussed in this chapter formed a school of thought? What ideas did they tend to share?
3 How can a fair test of Rostow's stages model be formulated? Analyze the history of a specific economy to see if such a test can be made.
4 Why and how did Hirschman argue that by putting things the wrong way around, by actually creating disequilibrium, economic development could be promoted?
5 Why might unbalanced growth be easier, and less costly, for a poor economy to follow than a balanced growth strategy?
6 Briefly explain the ideas of virtuous circles. Can you give two different examples of virtuous circles that might affect a less-developed economy? Summarize the various forms of positive external effects and virtuous hidden effects which Rosenstein-Rodan utilized to argue that development could be achieved quicker than one might expect. Can you speculate on what a "vicious circle" might be?
7 What did Lewis mean when he wrote that there was a surplus of labor in agriculture? How does one measure that surplus? To what standard is labor in surplus, that is, in surplus relative to what?

Notes

1 Rosenstein-Rodan became an influential policy-maker after the war. He held a top-level post within the World Bank from 1947 until 1953, and from 1962 to 1966 he served on a key directive committee of the United States-sponsored development program for Latin America, known as the Alliance for Progress.
2 This is the situation of increasing returns to successive inputs of investment, so that if investment increases by x percent, output rises by more than x percent. For an aggregate production function of the form $Q = f(K, L)$, where Q is total output, K is capital and L is

labor, this means that both $f_K, f_L > 0$, but also that $f_{KK}, f_{LL} > 0$, that is, diminishing returns to the inputs to production have not yet been reached. If one draws the aggregate production function, it will have both a positive and increasing slope. Interestingly, the possibility of increasing returns, which seems to go against the grain of so much of both classical and neoclassical economic thinking and the law of eventually diminishing marginal return, is one of the pillars of the new, endogenous theories of growth considered in Chapter 8 that have become increasingly influential since the late 1980s.

3 Rosenstein-Rodan's argument illustrates an important example of a larger phenomenon in economics, called **market failure**. Whenever there is a divergence between private and social benefits, as in this instance, and/or private and social costs, an unfettered market economy may fail to produce the socially optimal level of output. What is desirable is to have the marginal social benefits of any action equal to the marginal social costs, but private calculations of benefits and costs may, and often do, differ from the social values. Basically, Rosenstein-Rodan was arguing that the inability of any single private entrepreneur to appropriate all the social benefits – in this case profits – of an action will result in an under-estimation of the total value of any private action. One entrepreneur's private investment decision, such as that of the steel firm, creates positive externalities that accrue to other potential entrepreneurs, such as the metallurgy industry, and/or, society in the form of increased opportunities, higher demand, and lower costs that resulted from the decision of another. Government intervention may be required in such circumstances, particularly when many persons or firms are involved, if the social and private benefits and costs are to be equated, and if the optimal and socially desirable level of output is to be reached.

4 The term "indivisibilities" was another of Rosenstein-Rodan's favorites. Unlike neoclassical economic analysis, which assumes that capital can be combined with labor in precisely optimal amounts on the assumption that there is an infinitely divisible set of combinations of capital and labor available, the concept of indivisibility is intended to illustrate production situations where fixed, minimum amounts of capital (or labor) are necessary. A little less, and the product cannot be produced. For example, in building a steel bridge, one cannot simply and infinitely substitute labor for capital inputs and still produce the bridge; obviously labor cannot completely substitute for capital and other inputs, like steel or bolts. The bridge will be engineered in such a way that a specific amount of structural steel will be needed; an amount somewhat less and there will be no bridge at all. Likewise in oil drilling, the drilling company either buys *all* of a drilling rig, or none. It is not a divisible item. In general, social overhead capital tends to be of this nature. Often Rosenstein-Rodan referred to the "lumpiness" of capital in this context.

5 Of course, government-sponsored projects can lead to over-investment or under-investment in social overhead capital. The developmentalists did not naively believe that every action of government was per se justified. If government does not employ *transparent* methods whereby officials can be held accountable for their actions and their spending of public funds, then the government itself can become one of the primary sources of social inefficiency. Without an efficient government bureaucracy, the state itself often becomes an arena where individual fortunes are amassed through the manipulation of public funds. Unfortunately in many less-developed nations, the most promising avenue for upward social mobility lies within the governmental apparatus where accountability is nearly nonexistent and corruption is rife. This barrier to progress is one we shall have occasion to comment on again later in discussing "economic rents" and the relative economic success of the East Asian nations in recent decades.

6 This theme of "surplus" labor in agriculture is one that recurs again and again in the development literature. One of the leading theories of development, that of Sir Arthur Lewis, considered below, makes this basic assumption central to the structural transformation required for economic development.

7 Nurkse is best known for his book, *Problems of Capital Formation in Underdeveloped Countries* (1953). His remarkable essay "Patterns of Trade and Development" (Nurkse 1962), which constituted an attack on the idea of trade as the "engine of growth," was finished only a month prior to his untimely death in 1959.

8 This adverse effect of a lower price and greater quantity will occur, assuming demand to

be constant, as supply increases if the demand for the good is price inelastic. In such cases, the larger quantity of export sales will be insufficient to compensate for the lower price, and hence total export revenues will decline.

9 The **propensity to import** is technically defined from the statement, $M = mY$, where M is the value of imports purchased, Y is national income (GNP or GDP), and, m, which has a value $0 < m < 1$, is the "marginal propensity to import," that is, it is the proportion of income that society chooses to spend on imported goods and services. This proportion depends upon the level of average income, the income distribution of society, and social and cultural factors.

10 In modern economic analysis, such consumption items are referred to as **positional goods**.

11 It is not sufficient to simply produce more to have economic growth; if the increase in output is to be sustainable, it must find a market and be sold, or capitalist enterprises will stop producing.

12 This is simply an extension of the insight that was formalized early in the 1920s in the Heckscher–Ohlin theory of trade, which suggested that countries with an abundance of one factor of production over another, would, with free trade, tend to export those goods using the abundant, that is, relatively cheaper, input because that is where their comparative advantage would exist vis-à-vis other nations. Thus less-developed economies, with their abundant labor and scarce capital, could be expected to export those goods, be they agricultural or industrial, that were labor-intensive in their production and, by the Stolper–Samuelson theorem of international trade, this would be expected, over time, to lead to the equalization of income for the different factors of production within and among nations, assuming free mobility of capital and labor and perfect competition.

13 In effect, as labor left agriculture, the supply of agricultural output might be expected to decrease as the quantity of labor, L, in agriculture falls, while the demand for agricultural goods would, at best, stay the same, and might even be expected to rise if workers in industry have rising incomes. Thus, from simple supply and demand analysis, if the supply of agricultural output decreases (the supply curve shifts inward), while the demand rises (an outward shift), the equilibrium price of agricultural products must increase, given the assumptions.

14 In effect, what if the marginal product of labor, MP_L, in agriculture, at the current level of labor usage, is such that $MP_L = 0$? In such a case, extracting L from agriculture will not reduce agricultural output, if $MP_L = 0$, and will result in an increase in agricultural output if $MP_L < 0$. As long as the MP_L in manufacturing $> MP_L$ in agriculture, a shift of labor from agriculture to manufacturing will increase aggregate output.

15 In this instance, given w_A, which can be interpreted as the subsistence wage, the optimal quantity of labor to be employed in agriculture would be L_O, which is clearly less than L_A, the actual level of employment with the household calculation of labor usage in which income is shared and average income is distributed among family members.

16 Such an outcome in the transition from a surplus labor economy might be one explanation for the Kuznets' inverted U-hypothesis considered in Chapter 2, which also prognosticated a worsening of income distribution with economic growth, up to a threshold level of per capita income, after which the income distribution might be expected to improve.

17 Two very important theoretical models related to the Lewis model are the Fei–Ranis and the Todaro models. These are briefly explained in Box 5.3.

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