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THE CONCEPT OF DUALISM IN THE THEORY OF DEVELOPMENT

by

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INTRODUCTION

Competent observers generally agree that most underdeveloped countries exhibit a dualistic economic structure.[1] Japan is often brought forth as a classic case of dualism.[2] Snodgrass describes the economy of Ceylon as essentially dualistic.[3] Higgins' work on dualism, as related to Indonesia, is well known, and he has indicated the applicability of his views to other countries as well.[4] Myint describes Southeast Asia, in general, as dualistic in structure.[5] Barber, after an intensive study of Central Africa, concluded that "dualism... pervades the economic systems [of those countries]."[6] Baldwin says that a

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[1] The paper benefited from the helpful comments of Forrest Cookson, John Fei, Douglas Paauw, Vernon Ruttan, and colleagues at the National Planning Association.

[2] T. Wantanabe, "Economic Aspects of Dualism in the Industrial Development of Japan," Economic Development and Cultural Change (April 1965).

[3] D. Snodgrass, Ceylon: An Export Economy in Transition (Homewood, Illinois: Richard D. Irwin, Inc., 1966), pp. 5ff.

[4] B. Higgins, "The Dualistic Theory of Underdeveloped Areas," Economic Development and Cultural Change (January 1956).

[5] H. Myint, The Economics of the Developing Countries (New York: Frederick A. Praeger, 1964).

[6] J. Barber, The Economy of British Central Africa (Stanford, Calif.: Stanford University Press, 1961), p. 11. See also U. N., Department of Economic Affairs, Structure and Growth of Selected African Economies (New York: United Nations, 1958).

dualistic structure is "the most striking characteristic of economic development in Northern Rhodesia."[7] In a well known study Chenery[8] and others concluded that the economy of Italy was dualistic. Dualism is also a common feature of Latin American economies, such as Brazil,[9] Chile, and Peru. For example, Thorbecke and Condos describe the Peruvian economy as "essentially dualistic, with an advanced export sector concentrated primarily on the coast and a backward traditional sector in the 'Sierra'."[10] India has also been described as dualistic, although obviously in a somewhat different sense since India is not an "export economy." This list could be extended further without difficulty.

The institutional characteristics which authors have in mind when they describe an economy as "dualistic" vary somewhat from one author to

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[7] R. Baldwin, Economic Development and Export Growth: A Study of Northern Rhodesia (Los Angeles: University of California Press, 1966), p. 58.

[8] H. Chenery, P. Clark, and V. Cao-Pinna, The Structure and Growth of the Italian Economy (Rome: U. S. Mutual Security Agency, 1953).

[9] "The Growth and Decline of Import Substitution in Brazil," Economic Bulletin for Latin America (March 1964). Also, see W. Baer, Industrialization and Economic Development in Brazil (Homewood, Ill.: Richard D Irwin, Inc., 1965).

[10] E. Thorbecke and A. Condos, "Macroeconomic Growth and Development Models of the Peruvian Economy," in I. Adelman and E. Thorbecke, The Theory and Design of Economic Development (Baltimore: Johns Hopkins University Press, 1966), p. 184.

another. Nevertheless, there is a broad concensus on major aspects of the phenomenon. Centering around the towns is a commercial and industrial economy; in the rural areas there is a subsistence economy. The industrial sector is a money economy. The urban population uses money for most transactions. Incomes are earned in money, and most consumer goods and services are obtained by money expenditure. Since output is monitized, factor payments must also be monitized. This whole circuit of monetary payments requires, of course, a set of markets. Hence, the industrial sector is sometimes referred to as a market economy.

The subsistence sector is essentially a nonmonitized part of the economy. Much of output is destined for home use; hence, there is no need for markets either for output or for factors of production. A small part of output may be produced for a local market in which barter and money exchange take place side by side. Rural markets are generally local affairs; i. e., they facilitate exchange between producers and consumers in the same locality. The local markets are sometimes connected with the urban markets for a very limited number of basic items like fish or rice. But this does not alter the fundamental nonmonitized character of trade and production in this sector.

Work in the urban industrial centers is specialized and is limited to nonagricultural output. In the rural subsistence economy, agriculture is the major product. However, the production of other items on a handicraft basis

is often carried out with family labor during the off-season in agriculture. Sometimes this handicraft output competes directly with the products of the industrial sector--as in the case of textiles. In a good many cases there is no direct competition; but, even so, there is usually at least an indirect competition with products from the town, in the sense that somewhat differing products are competing for the (urban) consumers' purchasing power.

Observers in underdeveloped countries are often struck with the differences in capital intensity between the two sectors. On the one hand, the urban-based industrial sector is usually using the most modern production techniques imported from labor-scarce economies abroad. On the other hand, the subsistence sector, both in its agricultural and handicraft activities, utilizes labor-intensive techniques.

Industry generally secures outside capital through the organized financial system--commercial banks, insurance companies, and similar institutions located in these countries. These institutions are often directly connected with international financial centers. In contrast, producers in the subsistence sector secure capital from the unorganized financial system--a congeries of institutions including moneylenders, pawnshops, informal family-oriented financial transfers, and inter-firm book credit relying primarily, if not exclusively, on savings from indigenous households. Corresponding to this is a broad cleavage in business organization--companies in the modern sector

very often adopt a corporate form while, outside this sector, noncorporate forms of organization predominate.

There is widespread agreement on the institutional properties of dualism, and that, in one sense or another, most underdeveloped countries exhibit a dualistic economic structure. However, there is little agreement on exactly what dualism is. Different writers appear to be using different definitions of dualism, and sometimes the subject is discussed at length without presentation of any definition at all.

At this point it might be well to consider what some may feel is a rather widely accepted definition of dualism. A well known text in economic development takes the view that "a dual economy...[is] an economy with different marginal efficiencies of identical factors in different parts of the economy... the marginal efficiency of labor and capital will be different in different sectors, different industries and frequently...in the same industry."[11] For so complex a phenomenon as dualism, a single explanatory principle is likely to be elusive at best. More specifically, the trouble with this definition is that it seeks to define dualism by defining what it is <u>not</u>. Dualism is a situation in which the factor markets are not in equilibrium. This statement is logically consistent

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[11] C. Kindleberger, <u>Economic Development</u> (2nd ed.; New York: McGraw-Hill Book Company, 1965), p. 258.

but without substance. That is to say, granting that the marginal productivities of factors are not equal,[12] what are some of the properties of this particular type of (factor) disequilibrium? What are some of the reasons for differences in the marginal productivity of factors? What progress do these differences show over time and why? At the core of the difficulty of such an approach is the fact that it seeks only to define the conditions necessary for equilibrium at a point in time. Dualism, however, is a phenomenon of growth; hence, one must choose an approach which examines the path toward equilibrium. The latter approach will not only yield more meaningful results on a theoretical level but also will have more operational significance from the standpoint of policy formation.

In the following sections the role of the concept of dualism is examined in the context of the theory of development of each of a number of leading writers in the field. This paper contends that the various concepts of dualism which are expressed or implied by each of the different approaches to economic development bear a basic similarity. While dualism may take on different institutional features in different developing regions, it is important to recognize the common features from which a useful definition can be formulated.

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[12] It goes without saying that the inequality is a result of something other than simple frictions.

APPROACHES TO DUALISM

To facilitate discussion, three basic approaches to the concept of dualism are distinguished. The term stagnant dualism is used to refer to those writers who see dualism as evidence of an aborted growth process, usually associating this with a failure of advanced techniques used by export industries to penetrate the rest of the economy. This approach is sometimes also called enclave dualism. In contrast, dynamic dualism is an approach which views dualism as a necessary phase in the growth process of a developing economy, during which certain changes in the structure of the economy take place. The term sociological dualism is used to describe a third group of writers for whom the concept is less an approach to a system of analysis than a means of dichotomizing the economy in terms of fundamental differences in patterns of participants' behavior.

Stagnant Dualism

The term dualism seems to have been first used to describe the enclave-type characteristics of underdeveloped economies engaged in foreign trade. In an early article Hans W. Singer called attention to the fact that many underdeveloped countries presented "the spectacle of a dualistic economic structure: a high-productivity sector producing for export coexisting with a low productivity sector producing for the domestic market. He went on to point

out that the advanced sector is characterized by the use of modern production methods, in contrast to the domestic sector where production methods are very primitive.[13]

Higgins. To this highly simplified, incomplete picture Higgins contributed an analysis of the structural characteristics of the two sectors and their pattern of development over time. He traced the origin of dualism to differences in technology between the modern and the subsistence sectors. The modern sector, consisting of mines, plantations, etc., produces for export with a capital intensive technology imported from abroad. In contrast, the subsistence sector produces for domestic consumption, using primitive, traditional techniques. To be more precise, Higgins' discussion of dualism implies that production conditions in the advanced sector can be defined as

$$(1) \quad E = \min \begin{cases} k_1 K_1 \\ l_1 L_1 e^{\lambda t} \\ n_1 N_1 e^{\lambda t} \end{cases}$$

where E is production for export, K_1, L_1, and N_1 represent capital, land and labor, respectively, and k_1, l_1, and n_1 represent fixed input coefficients. Since

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[13] Hans W. Singer, "The Distribution of Gains between Investing and Borrowing Countries," a paper presented at the December 1949 meeting of the American Economic Association. Reprinted in Hans W. Singer, International Development: Growth and Change (New York: McGraw-Hill Book Company, 1964) pp. 161-162.

technology and capital equipment are imported from abroad, technical change takes the form of increased output per worker and per natural resource input. This is shown as a shift factor, $e^{\lambda t}$.

In the subsistence sector, production conditions can be defined as

$$(2) \quad X = K_2^{\alpha} \; L_2^{\beta} \; N_2^{\gamma}$$

where X denotes output for domestic consumption, K_2, L_2, and N_2 are capital, land and labor inputs, respectively. α, β and γ denote the elasticity of output with respect to capital, land and labor; $\alpha+\beta+\gamma = 1$. There is no shift factor in this function because, under the conditions postulated by Higgins, there is no technical change.

In this model the expansion of the export sector has little impact on the subsistence economy. Expansion of advanced sector output (E) is achieved primarily by increases in capital (K_1), and the imported technology brings about shifts in factor productivity ($e^{\lambda t}$) which are labor and resource-saving. In addition, Higgins assumes that the demand for exports is increasing very slowly, if at all. For these reasons, expansion of enclave output has virtually no effect on the demand for domestic sector productive services.

In the subsistence economy, given variable input coefficients, an increasing population and a fixed stock of land, the marginal product of labor

tends toward zero.[14] Why cannot the subsistence economy increase labor productivity by adopting advanced techniques? Because it does not have contacts with the outside, the subsistence sector cannot draw on foreign sources for funds. It must obtain capital from savings of domestic households. Now Higgins holds that the savings function of these households is of the type:

$$(3) \quad \frac{S}{N} = \beta \frac{Y}{N} - \alpha \qquad (\alpha > 0, \beta > 0)$$

where α and β are constants and S, Y, and N are savings, income and population, respectively.[15] With per capita income in the subsistence sector already very low, the rate of saving and capital formation is correspondingly low. In this way Higgins utilizes different assumptions about saving sources and asymmetry in production coefficients of the two sectors to explain differences in production methods that persist indefinitely.

To summarize, Higgins' view is that dualism consists of two sectors distinguished by differences in technology in which one sector uses capital-intensive methods of production with fixed input coefficients, and the other sector uses labor-intensive methods of production with variable coefficients. The

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[14] The assumption is that the rate of growth of the labor force exceeds the rate of growth of demand for labor from the industrial sector. See B. Higgins, "The Dualistic Theory of Underdeveloped Areas," Economic Development and Cultural Change. (January 1956).

[15] B. Higgins, Economic Development, Principles, Problems, and Policies (New York: W. W. Norton & Company, Inc., 1959), pp. 416-417.

expansion of the industrial sector is held down to a slow pace because of the slow expansion of foreign demand for its output. The expansion of the rural sector is held in check by a shortage of savings which prevents it from adopting the more efficient imported technology.

Higgins' major contribution is his emphasis on technology and production coefficients as the main distinguishing features of the two sectors, and his attempt to show the emergence of enclave dualism as a part of the process of economic development in an open economy. His discussion does not add much, however, to the understanding of interrelationships between sectors. Indeed, insofar as his industrial sector depends on foreign demand for sale of its output and on foreign sources for its capital inputs, there is actually very little interdependence at all. That is why this approach is also called enclave dualism.

Myint. Hla Myint views dualism as a transitional stage of development in an open land surplus economy. Because of the existence of idle cultivatable land, the marginal product of labor is above zero and may be rising. In the advanced sector, foreign firms (mines and plantations) concentrate on production for export with an imported technology. They are responsible for bringing additional labor and resources into production for the money economy. These firms which form a "foreign enclave" in the developing country, are distinguished from their indigenous counterparts by differing technology, organization, and

sources of financing.[16]

Myint has a more thorough treatment of financial dualism than most writers. In brief, his view is that the modern sector, because of its access to modern financial institutions, obtains capital at a fraction of the cost to the indigenous sector. Hence these firms can afford to employ much more capital-intensive technology, with obvious (differential) effects on labor productivity in the two sectors.

To what extent do the technological and other superior aspects of the modern sector "spill over" onto the subsistence economy? Insofar as the incomes of the indigenous population are raised, and an enlarged demand for consumer goods is created which may be filled in part by domestic production, the modern sector does tend to have positive growth effects on the domestic economy. But these effects, such as they are, are limited. Myint inclines to the position that the modern sector in an underdeveloped economy has not had much effect in bringing about a diffusion of the new technology and associated skills in the subsistence sector. The main reason is that it would require "heavy additional investments on their part both in material and human capital" which they have been unwilling to make, largely because of the

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[16] H. Myint, The Economics of the Developing Countries. (London: Hutchinson University Library, 1964).

lack of security--economic and noneconomic--in these countries.[17] An additional reason is the financial dualism common to these areas, whereby the domestic enterprises are denied access to modern financial institutions.

The broad outlines of Myint's dualistic model bear obvious similarities to Higgins': both are open, and both view the modern sector as producing for export with capital intensive techniques. But whereas Higgins accounts for differences in production conditions in terms of fixed input coefficients, Myint relies primarily on the different availability and cost of capital. This approach, which focuses attention on the financial aspects of dualism, introduces the process of monitization of the subsistence sector as an integral part of dualism. Finally, while Higgins assumes the marginal product of labor is zero in the subsistence sector, Myint assumes it is positive. Myint leaves the process of wage determination unspecified.

Dynamic Dualism

The idea of a dynamic, growth oriented dualism is implicit in some early attempts to formulate analytically the problem of economic development. For example, Rosenstein-Rodan in an early article called attention to the "agrarian excess population" which is either partly or wholly unemployed and the consequent need to establish industry (manufacturing) in order to

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[17] Ibid, p. 67

utilize this pool of idle labor resources.[18] The policies he recommended amounted essentially to a transfer of agrarian labor from a (backward) agricultural sector to a modern, capital-intensive industrial sector, with the latter expanding alongside the traditional labor-intensive agricultural sector. Although dualism is implicit in this approach, Rosenstein-Rodan never used that term to describe the situation. Nevertheless, he posed clearly and unequivocally the idea of the process of development as requiring a shift of the center of gravity of the economy from agriculture to industry. This idea remains the hallmark of all theories of dynamic dualism.

Nurkse. Nurkse also took a dualistic approach to the problem of economic development. But whereas previous writers had been content to talk about the transfer of surplus labor out of subsistence agriculture, Nurkse pointed to the need for growth in the market for industrial products, and to the need for a more rapid growth in the capital stock at the same time. The commercial policies he advocated were designed essentially to insure a growth in the demand for labor in industry at a rate sufficient to absorb the excess rural population.[19]

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[18] P. N. Rosenstein-Rodan, "Industrialization of East and Southeastern Europe," Economic Journal (June-September 1943), pp. 202ff.

[19] R. Nurkse, Problems of Capital Formation in Underdeveloped Countries (Oxford: Baisel and Blackwell, 1953).

Lewis. The work of Arthur Lewis is a milestone in the emergence of the concept of dualism, because he is the first writer to make dualism an integral part of a theory of development. That is to say, he develops a model of the economic mechanism through which the transfer of resources takes place. He begins by sharply defining two sectors--one which he calls "capitalist" and the other a "subsistence" sector--each producing industrial and agricultural goods, respectively. The production functions of these two sectors are characterized by a basic asymmetry: inputs for the industrial sector are labor and capital, while for the agricultural sector they are labor and land. Essential to Lewis' analysis is the idea that, as development proceeds, the capitalist sector expands relative to the agricultural and, in the process, draws labor into itself from agriculture. Expansion of the capital stock proceeds apace, through reinvestment of profits exclusively, since wage earners are assumed to have a propensity to save of zero. The central theme here is two sectors growing side-by-side, distinct but not wholly separate because of their interconnection through the labor market, exhibiting a gradual shift in the focus of economic activity away from agriculture toward industry. The conditions necessary for the process to take place and the structural changes that are likely to accompany it are then discussed.[20]

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[20] A. W. Lewis, "Economic Development with Unlimited Supplies of Labor." Reprinted in A. N. Agarwala and S. P. Singh, The Economics of Underdevelopment. (New York: Oxford University Press, 1963); see also his "Unlimited Labor: Further Notes," The Manchester School, May, 1958.

Lewis chose to present his model within the context of several important assumptions. Land is fixed in supply, and agriculture is subject to diminishing returns. Assuming any positive rate of population growth, a situation must eventuate where the marginal productivity of agricultural labor is zero. This then becomes the basis for the assumption of an unlimited supply of industrial labor at a (constant) subsistence wage during the initial period of industrialization. Finally, the model is framed in terms of a closed economy; that is, either the economy is closed to trade or trade is in balance in terms of the goods of each sector.

There are several questions which Lewis does not answer. For example, why do developing economies tend to bifurcate into sectors--one using capital but not the other? Why doesn't the entire economy absorb capital as rapidly as the supply will permit, thus diffusing it more or less evenly over all sectors? This question cannot really be answered without a more extensive analysis of development in agriculture. In fact, a conspicuous omission from Lewis is precisely an analysis of the development process in agriculture.

A second question regards the points of contact between the sectors. Lewis points to one--the supply of labor by the subsistence to the industrial sector. But are there any other? Are there any other goods for which there is an intersectoral supply or demand? This question can be broadened by defining "goods" to include other services and knowledge,

especially that of productive techniques. The question at issue is what are the points of economically relevant contact between the two sectors besides the labor market?

Third, there is no indication of how technical change takes place. This is important because dualism could conceivably be gradually strengthened or mitigated by differential rates of technical progress in the two sectors.

Finally, Lewis says that dualism is a characteristic of developing economies. The implication is that both the highly developed as well as the completely underdeveloped economies are not dualistic in structure. Assuming that the extent of dualism could be measured in some way, how rapidly would a dualistically structured economy converge on the structural pattern of a developed one? In other words, what is the time path of dualism?

Fei and Ranis. Nowhere does the concept of dualism play a more important role than in the work of Fei and Ranis. They define a dualistic economic system as one characterized by "... the predominance of a subsistence agricultural sector in which an institutionally determined real wage obtains side-by-side with a relatively small industrial sector in which competitive conditions obtain in factor markets".[21] They then proceed to show that dualism

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[21] Gustav Ranis and John C. H. Fei, The Development of a Labor Surplus Economy: Theory and Policy (Homewood, Ill.: Richard D. Irwin, Inc., 1964) p. 256.

is a transitional phase in the changing structure of a developing economy, during which the center of economic activities is slowly shifted from the subsistence to the industrial sector. Labor and other resources shift from the subsistence to the modern sector. During this process of transformation both sectors have important economic functions. The subsistence sector supplies labor and capital to the industrial sector which, because it employs a more advanced technology, can utilize these factors at higher levels of productivity. They emphasize the necessity of a society passing through this dualistic stage a precondition to full industrialization.

The earlier Fei-Ranis model includes a subsistence sector characterized by fixed land inputs, zero marginal productivity of labor, disguised unemployment and an institutionally determined real wage, defined as average productivity of labor in the subsistence sector.

Production conditions in the agricultural sector are the same as in classical theory. If X denotes agricultural output, L land, N the agricultural labor force, and $\overline{N}$ the agricultural labor force when the marginal product of labor is just zero, then the production function for agriculture characterized by constant returns to scale, with all factors variable, is given by

$$(4) \quad X = \phi L^{\alpha} N^{1-\alpha} \qquad N < \overline{N}$$

where ϕ represents a shift factor (technical change) and is an autonomous variable. However, if the stock of land is fixed, and the labor input is increased to the point of zero marginal productivity of land, then the function becomes

$$(5) \quad X = \phi L^{\alpha} \bar{T}^{1-\alpha} \qquad L > \bar{T}$$

That is to say, output is now a constant, and therefore increases in labor inputs have no effect on output. This is relevant for Fei-Ranis because much of their analysis is conducted over this range of the function--i. e., where the marginal product of labor is zero.[22]

In the industrial sector conditions of production can also be described by a Cobb-Douglas function. Let Y denote industrial output, K the capital stock, M the industrial labor force, and λ a shift factor. Then, assuming once more constant returns to scale and letting β indicate variable production coefficients, the production function becomes

$$(6) \quad Y = \lambda K^{\beta} M^{1-\beta}$$

More recently they have modified some of these assumptions. They do not insist on the fixity of land assumption, or on the existence of disguised unemployment and its corollary: that the marginal product of labor is zero.

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[22] John C. H. Fei and Gustav Ranis, "Agrarianism, Dualism and Economic Development" I. Adelman and E. Thorbecke, The Theory and Design of Economic Development (Baltimore: Johns Hopkins Press, 1966).

They do assume these conditions as simplifying assumptions that facilitate analysis; but their model is constructed in such a way that it can be utilized without them. In this respect they have departed from the strictly classical model and have broadened their approach to include situations where agricultural labor is scarce as well as those in which it is in surplus.

In their later work technical change in agriculture becomes an endogenous variable. That is, if P_A and P_M denote the price levels of agriculture and industry, respectively, and ϕ takes the same meaning as previously, then

$$(7) \qquad \phi = f\left[\frac{P_A}{P_M}\right]$$

The significance of this relationship is that if land is <u>not</u> fixed in supply, the marginal product of labor in the subsistence sector will be above zero, and technical change will be required in agriculture from the beginning of the development process. This would be induced, according to their model, by corresponding changes in the terms of trade.[23]

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[23] The form which equation (7) takes implies that technical change is dependent on current period terms of trade exclusively. However, it may be more in accord with the Fei-Ranis discussion of this point to suppose that current period ϕ is the product of <u>accumulated</u> technical change in the past--that is, on the past history of the terms of trade. In the event this interpretation is preferred, then one should write

$$\phi_{t_i} = e^{\int_{t_o}^{t_i} f\left[\frac{P_A}{P_M}\right] dt}$$

The most striking feature of the Fei-Ranis model when compared to Lewis is their treatment of agriculture. The subsistence agricultural sector now becomes explicit, and the difference in production conditions is sharpened. With this also comes additional insights into the interrelationships between sectors. Besides the transfer of labor from agriculture to industry, they also treat savings transfers (i. e., transfer of the agricultural surplus). Also, they touch on intermediate goods transfers as well as the intersectoral transfer of technical knowledge.

In summary, Fei and Ranis see dualism as a dynamic transitional phase in a process of development when the center of gravity of economic activity has begun to shift from subsistence agriculture to modern industry. It involves the shift of production factors (labor and capital) from the subsistence to the industrial sector, the import of technology and possibly other factors from abroad, and at least a beginning of the transfer of modern techniques to the subsistence sector in some form or other. In contrast to some other models, their view emphasizes the multiplicity of points of contact between the two sectors and the gradual expansion or deepening of these contact points throughout the dualistic period.

Jorgenson. Jorgenson has presented an elegant development model constructed in a dualistic setting. His general approach is similar to that of Lewis and Fei-Ranis but it also differs in some important ways. It is a

closed model, and the supply of land is fixed. His two sectors are distinguished by the assumption of asymmetry of inputs in the production functions. Technological change is introduced in each sector as an autonomous variable.[24] However, the assumptions of zero marginal productivity of labor and an institutionally determined real wage in the subsistence sector are no longer present. Instead, wage rates for labor (for both sectors) are determined in a labor market. As a result, the terms of trade move against the industrial sector from the outset. Hence, there is a greater urgency for technological change at an early stage than in most other dualistic models.[25]

Jorgenson is intent on showing the conditions necessary and sufficient for an agricultural surplus to appear. These turn out to be that the rate of technological change must exceed the product of the rate of population growth and the elasticity of output in the agricultural sector with respect to changes in the agricultural labor force. The operational relevance of this approach is clear: in order to generate an agricultural surplus, one can work on either the rate of technical progress in agriculture or the rate of population growth.

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[24] Thus, for example, the production function for industry would be $Y = \lambda^t K^\beta M^{1-\beta}$ where all the variables have the meanings indicated previously, and t represents time.

[25] D. Jorgenson, "The Development of a Dual Economy," Economic Journal (June 1961).

In a recent article[26] Jorgensen has shown that the differences between his approach and that of Lewis and the earlier Fei-Ranis work essentially represent differences of assumptions under what he calls the 'classical' and 'neo-classical' approaches. In the former, one assumes that the marginal productivity of labor in agriculture is zero and the real wage rate fixed; in the latter, agricultural labor productivity is variable and the real wage rate is agriculture is proportional to that in industry.

Jorgenson has also raised an important question concerning the time path of dualism. Since in a dualistic growth model there is no stationary situation for the economy, it becomes important to explain how the economy develops over time. He is able, for example, to explain the rate of growth of the capital stock in terms of the production function in industry and the savings function.[27] There is more that one would like to know about how dualism develops over time, but this is a hopeful beginning.

Jorgenson's model, which assumes a competitive intersector labor market even from the beginning of the dualistic period, postulates implicitly that the marketed surplus of subsistence agriculture is a constant proportion of the sector's output. This follows from the production function which

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[26] D. Jorgenson, "Surplus Agricultural Labor and the Development of a Dual Economy," Oxford Economic Papers (New Series) (November 1967).

[27] Ibid, pp. 302-303.

determines the distribution of income shares. However, one can consider the possibility that, as labor is transferred out of agriculture to industry, the remaining agricultural households decide to increase their consumption of food; i. e., the marketable surplus actually declines. This situation and other aspects of the final demand for food are considered at length in an interesting paper by A. Krueger.[28]

In summary the main thrust of Jorgenson's thinking has been to generalize the dynamic dualistic model from a classical to a neo-classical type, and to show clearly the conditions necessary and sufficient for an agricultural surplus to appear. While his model does not make any special contribution to the mechanism whereby resource transfer takes place, it does achieve a degree of formal consistency and precision which is exceptionally useful, perhaps primarily because it should assist in empirical verification.

There are some important points on which all dynamic dualistic models are still not completely satisfactory. Earlier it was shown how stagnant dualists incorporated foreign trade into their models while at the same time being unable to show the mechanism through which the growth process is transmitted to the domestic economy. Dynamic dualistic models, on the other hand, have achieved important success in sketching out the main

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[28] A. Krueger, "Interrelationships between Industry and Agriculture in an Dual Economy," Indian Economic Journal (July 1962).

aspects of the development process, but always within the context of a closed economy. A major contribution to the theory of dualism waits on the incorporation of foreign trade into a dynamic dualistic model.

There appears to be some ambiguity in the treatment of capital and other inputs besides land and labor in agriculture. The absence of a capital input in the agricultural sector need not create a problem if one takes the approach that this sector is subsistence agriculture, and hence the only capital inputs relevant to the model are those which are monetized. But this leaves us with the question of how technical change can be introduced into the agricultural sector. There is a large body of opinion to the effect that the introduction of technical change in subsistence agriculture rarely occurs in a 'disembodied' fashion. It is argued that technical change is usually accompanied by the introduction of new inputs of both capital and intermediate goods.[29] There is no place for these in the production functions currently used to describe the agricultural sector in these dualistic models.

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[29] See for example, T. W. Schultz, Transforming Traditional Agriculture (New Haven: Yale University Press, 1964).

Socioligical Dualism

This group of theorists is distinguished by several features. First, they do not make a sharp contrast between industrial and agricultural sectors on the basis of the type of output produced. Second, there is not the same interest among these writers in analyzing the mechanism of resource transfers or in describing the time path of dualism as one finds in the dynamic dualists. Finally, the emphasis of these writers is on the contrast in behavior patterns between participants in the modern and the backward sectors.

Boeke. One of the best known of the early sociological dualists is Boeke. In his analysis of Indonesian society[30] Boeke argued that Oriental society was one of limited needs in contrast to the "unlimited needs" of Western society. In addition, he argued that Oriental society displays an absence of profit-seeking in a rational ends-means context. These differences in basic behavior patterns preclude the operation of (or applicability of) Western-type economic organization in backward areas. Hence, market-orientation behavior, while applicable in the modern (or enclave) sector, can never flourish among the indigenous population.

In assessing the importance of the contribution of "sociological

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[30] J. H. Boeke, Economics and Economic Policy of Dual Societies (New York, 1953).

dualism," it is helpful to distinguish between two possible interpretations. We can say that the members of a backward society are rational within the limits of their imperfect knowledge. Such persons are presumed to possess a tendency to "maximize" in their behavior, whether it be in production, investment, or consumption (including leu ure). The limits of such rational behavior are, in the case of many backward countries, admittedly quite narrow because of the imperfect state of transportation, storage, and, especially, communication.

On the other hand, one can take the position that behavior of production and consumer units in developing countries differs from their Western counterparts because of innate socio-psychological differences. Under this interpretation producers and consumers do not maximize and have no tendency to do so. Even if institutional obstacles to maximization were removed, these persons would still follow a "non-maximizing" pattern of behavior.

There seems to be a small but growing body of evidence to justify the first interpretation, but not the second. Schultz quotes a number of separate studies which all point to a strong supply response to price by farmers in India, Peru, and Mexico.[31] In the Philippines, the evidence so far

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[31] T. W. Schultz, Transforming Traditional Agriculture (New Haven: Yale University Press, 1964), p. 162 et passim.

suggests that farmers are responsive to price as regards area planted although their response as regards yields is admittedly in doubt.[32] In a study of Northern Rhodesia, a similar conclusion regarding the behavior of indigenous African farmers emerges.[33]

If the first interpretation of "sociological dualism" is adopted, it would seem to complement the theories of dualism surveyed thus far. Insofar as pre-industrial institutions create "roadblocks" to the free transfer of labor and other factors of production, to the transfer of knowledge, techniques, and forms of organization, they thereby create a tension in the economy between the forces of modernization and those of tradition. It is precisely this ambivalence which theories of economic dualism are often trying to capture.

Leibenstein. Although Leibenstein is better known for his 'big push' thesis, he has also written extensively on dualism. For analytical purposes he divides the economy into two sectors, one of which is modern and the other a handicraft sector. The handicraft sector produces a great

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[32] V. Ruttan, M. Manghas, and I. Recto, "Price and Market Relationships for Rice and Grain in the Philippines," Journal of Farm Economics, (August 1966).

[33] Robert Baldwin, Economic Development and Export Growth (Berkeley: University of California Press, 1966), p. 219.

variety of output including, but not limited to, agricultural products, and it is technologically backward. Activities are centered in small production units. Capital per worker is low and consequently output per worker is also low. Existing alongside the handicraft sector is the modern sector, which is organized into large production units that utilize modern technology. Capital per worker is high and output per worker is also high.[34]

Leibenstein holds that large units are more efficient than small units. The reason for this is somewhat similar to the infant industry argument based on internal and external economies of scale. However, his emphasis is on the possibilities of specialization in production, such as the possibility of using specialized machinery, specialized talents (knowledge), etc. Large units can produce larger outputs from the same inputs as small units; and since presumably these economies cover a fairly wide scale of operations, output per worker in the modern sector can increase rapidly on this count alone, other things remaining unchanged.

The modern sector is also likely to grow faster because of its higher investment rate. In the traditional sector, where labor-intensive methods are in vogue, a large part of a firm's factor payments is paid to labor.

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[34] H. Leibenstein, "Technical Progress, The Productive Function and Dualism," Bauca Lavionale del Lavoro Quarterly Review (December 1960).

In contrast, in large firms the lion's share of income is distributed to capital. Now, under the assumption that labor's propensity to save is zero[35] and that entrepreneurs' propensity to save (retention rate) approaches unity, it is easy to see that the capital stock will grow much faster in the modern sector than in the traditional sector.[36]

As modern production units expand and specialization proceeds, the range of activities per unit is narrowed. Some old operations previously carried on by subsistence agriculture will be shifted to new production units no longer primarily engaged in agriculture. These new units attract resources[37] and expand their phase of the economy's output, and in so doing the industrial sector gradually shifts to the center of the stage, replacing

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[35] Leibenstein never gives any justification for this assumption. Presumably he accepts a savings function for indigenous households similar to the one postulated by Higgins.

[36] W. Galenson and H. Leibenstein, "Investment Criteria, Productivity and Economic Development," Quarterly Journal of Economics (August 1955). G. Ranis has pointed out that this view also assumes that the rate of profit on output is at least as high in large firms as in small firms. See Gustav Ranis, "Investment Criteria, Productivity and Economic Development: An Empirical Comment," Quarterly Journal of Economics (May 1962).

[37] Especially as regards the labor force. New occupations are required in the nonagricultural part of the labor force, and the number of labor inputs therein expands rapidly in contrast to the traditional sector.

the once dominant agricultural sector.[38]

Why is dualism an integral part of this theory? In other words, why is it not possible for individual production units to make a gradual transition from the small handicraft stage without specialization to large modern units using specialized inputs and advanced technology? The reason is because of indivisibilities in production. Among different size units the production function is essentially discontinuous. In order to utilize modern, capital-intensive techniques and participate in the efficiencies of specialization, a firm must be large. In order for the typical firm in the traditional sector to adopt these production methods, it would have to "leap" over to a greatly increased size, adopt new forms of organization (e. g., corporate as opposed to non-corporate), hire new types of managerial and administrative skills, etc.[39] It is unlikely that all production units will make the leap from small, handicraft production to large, modern production methods simultaneously. Those that do will be essentially different in their methods of operation, and they will exhibit the characteristics and behavior

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[38] H. Leibenstein, Economic Backwardness and Economic Growth (New York: John Wiley & Sons, Inc., 1957), pp. 82, 92.

[39] H. Leibenstein, "Technical Progress, The Production Function and Dualism," Bauca Lavionale del Lavoro Quarterly Review (December 1960). He also shows here that small wage increases will not bring about capital deepening in the backward sector although it will in the modern sector, thus increasing the difference between the two sectors rather than mitigating it.

patterns of the modern sector units. This view of dualism fits into the "big push" thesis by emphasizing the important role of overcoming indivisibilities by large investment, large changes in occupational distribution, and radical changes in production conditions.

In a recent article, Leibenstein has argued that allocation inefficiency is a relatively unimportant hurdle to increases in output productivity as compared to the contribution of what he calls "X-efficiency."[40] "X-efficiency" represents improvements in output attributable to either internal or external motivational efficiency of the firm or the reduction of nonmarket barriers to the free availability of inputs to all firms. Large firms may be expected to participate to a greater extent in "X-efficiency" as compared to small firms. The former have access to good communications, to specialized managerial knowledge and skill, to a market-oriented labor force, and are more subject to competitive pressures for cost reduction when compared to small firms which often operate within the context of the family and are located in rural areas poorly connected with the outside world. For these reasons, we should expect "X-efficiency" to be higher among the larger firms, thereby creating substantial productivity and output growth rate differentials between sectors.

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[40] H. Leibenstein, "Allocative Efficiency vs. X-Efficiency," American Economic Review (June 1966).

Hirschman. A distinctive feature of Albert Hirschman's view of this development process is the emphasis on induced decision-making. He takes the view that economic development depends less on optimizing the use of given resources than it does on the marshalling for development resources that, under existing conditions, are badly utilized or not utilized at all.[41] A most important role of investment is to induce complementary capital formation that would not have otherwise taken place. This "complementarity" may be achieved through linkage effects, especially backward linkage. The latter will occur to the extent that investments tend to induce attempts by other industries to supply through domestic production the inputs needed in that industry.

One result of a successful investment program is dualism. As Hirschman puts it:

> "It is often said that the underdeveloped...countries are apt to pass from the mule to the airplane in one generation. But a closer look at most of these countries reveals that they are, and appear to remain for a long time, in a situation where both airplane and mule fulfill essential economic functions..."[42]

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[41] Albert O. Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1958), p. 5.

[42] Op. cit., pp. 125-126.

Dualism results from the concentration of new investment in new product industries which, in turn, stimulate investment in overall industries which attempt to supply inputs for the modern sector.

> "...in today's underdeveloped countries...industrial progress can concentrate on a wide range of useful and desirable products that are entirely new to the economy. As a result, the traditional handicraft and cottage industries are given a valuable respite which can be utilized to improve the efficiency of their operations and the quality of their output."[43]

Accordingly, in his view, dualism represents an attempt by the economy of an underdeveloped country to make the best of its resources during a transitional phase.

The process works as follows. The introduction of new products and new technology creates an (intermediate) demand for inputs which can be satisfied either by imports or by domestic production from existing plants. The new technology is at an absolute advantage over the handicraft technology in producing new product lines. Moreover, where the same technology is used by both modern and handicraft sectors, (total) productivity may be higher in the modern sector because of the loss of efficiency consequent upon adoption of more capital-intensive methods in the handicraft

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[43] Op. cit., p. 129.

sector. In addition, it will probably have a cost advantage in the production of some existing products--like textiles. It will be inferior in a number of existing product lines such as furniture, cigars, etc.--different lines depending on the specific country and time involved. The handicraft industries, in their struggle to stay alive in the face of the new competition, can count on being the net beneficiary of external economies created by modern industry.[44]

A second factor which the handicraft sector can count on in its struggle to stay alive is the differences in the factor markets for the two sectors. There exist two distinct wage levels which reflect the differences in the marginal product of labor in the two sectors, combined with highly imperfect labor mobility. The latter is based partly on inhibiting institutional arrangements, such as labor unions, and to a considerable degree on persistent preference by many workers for the more independent life that goes with pursuits of agriculture, small industry, and trade. There also exist two capital markets. The organized market, which obtains funds from commercial banks and from foreign money centers, has access to cheaper capital. Loans and investments of these institutions are directed to the large corporate firms which compose the modern sector. The unorganized money

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[44] Albert O. Hirschman, "Investment Policies in Underdeveloped Countries," American Economic Review (September 1957), p. 578.

market, which consists of numerous small quasi-banking institutions, does not participate in any of the extensive financial economies of scale. To these institutions capital is supplied at relatively high rates, and the inefficiency of their own internal organization compels them to lend it out at comparatively onerous rates in order to survive. They are the primary suppliers of capital to the many small agriculturalists, traders, and businessmen.

Thus, in Hirschman's view, dualism represents a transitional stage in development which follows after the introduction of modern technology into an economy characterized by small handicraft industries operated at relatively low levels of efficiency. During the dualistic period the relations between modern and small-scale industry are characterized by an essential ambivalence; on the one hand, these two sectors are competing in factor and final goods markets at several points, and on the other, they are mutually stimulating through the various linkage effects that they exert on one another, especially in the intermediate goods markets.

Note that Hirschman defines dualism in a dynamic way, emphasizing the points of contact between sectors. He holds that this approach is in sharp contrast to a static enclave dualism where contact between sectors is at a minimum and linkages are weak or non-existent.[45]

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[45] Op. cit., p. 110.

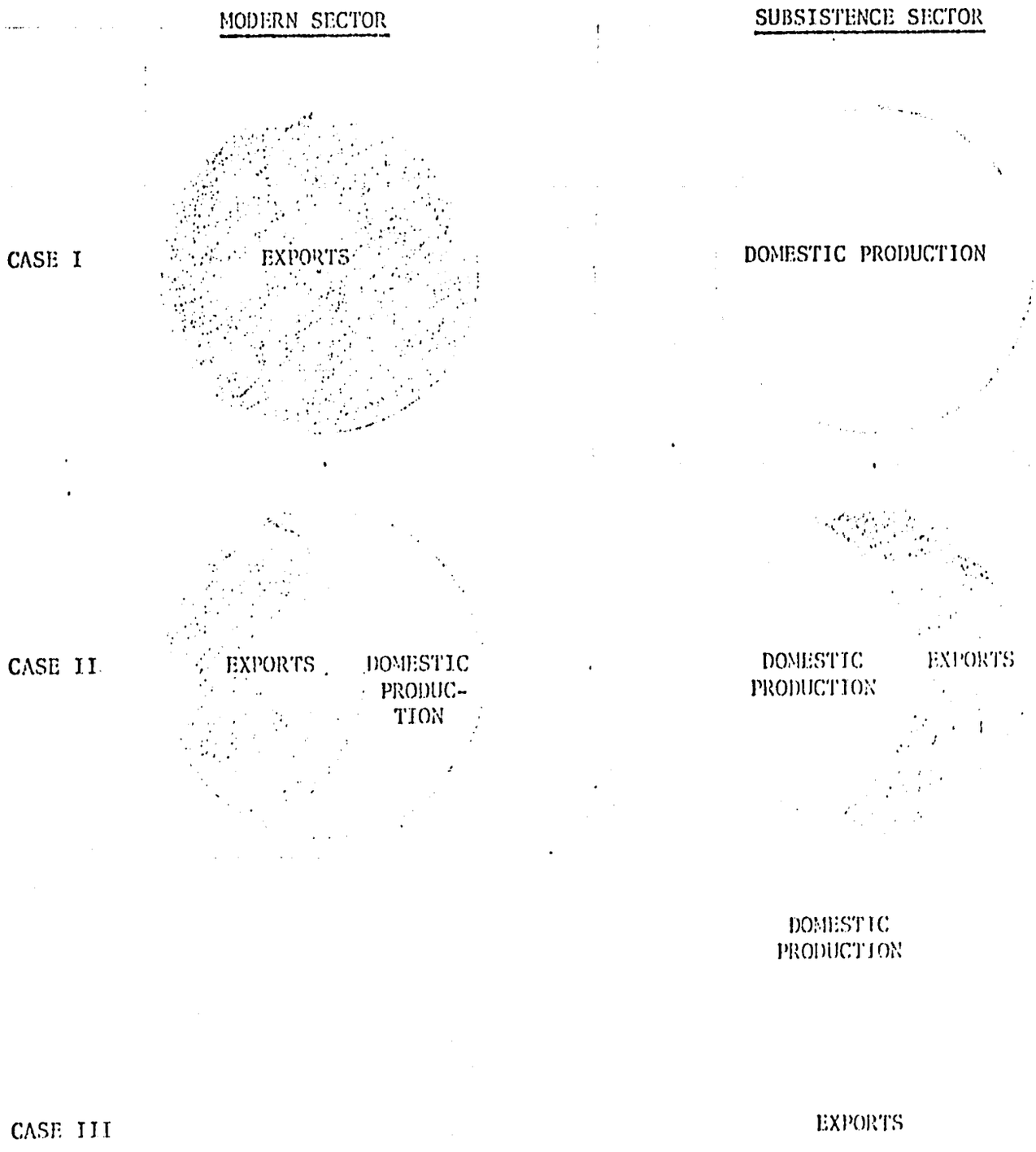
FOREIGN TRADE AND DUALISM

It was pointed out earlier that the concept of dualism originally referred to foreign enclave-type development in an open economy. Later the term lost this signification. But there are some writers, such as Myint and Higgins, who present dualism as inextricably bound up with foreign trade. It is important, therefore, to look at the relationship between these two phenomena and attempt to summarize what is known about the relationship at present.

On strictly a priori grounds, there are several combinations of foreign trade and dualism that one may expect to find. At the one extreme, the modern (or industrial) sector may be engaged exclusively in the production and processing of primary commodities for export. Secondly, the industrial sector could be partly engaged in export of primary commodities and partly in production for the domestic market. Finally, there is the possibility that a country will export primary commodities which are produced entirely in the backward or subsistence sector. These relationships are summarized visually in Diagram I on the following page.

In Diagram I two sectors are shown and the division of production between the two. Production for export is represented by shaded areas and production for domestic use is shown by unshaded areas. In Case I we have the situation where exports are produced exclusively by the modern sector

DIAGRAM I: TYPES OF DEVELOPING EXPORT ECONOMIES



and the subsistence sector produces exclusively for domestic use. Case II represents a situation where production for export and domestic use is shared by both the modern and the subsistence sectors. In Case III there is no modern sector; production for export and domestic use is carried out in the subsistence sector.[46]

These patterns are archetypal forms and are not expected to correspond exactly to concrete situations. However, Case I is approximated by countries such as Kuwait or Venezuela; Case II, by the Philippines; and Case III, by Burma and Thailand. Foreign trade may, and often is, associated with dualism. On the other hand, it may not be so linked. In what follows an attempt is made to bring together some of the factors which impinge on this relationship.

The traditional approach of international trade theory--the comparative costs doctrine--emphasizes the role of trade as bringing about a reallocation of resources in trading countries. This approach to trade must be modified

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[46] The classification used here is basically similar to that used by Paauw and Fei. Their 'monomorphic economy' is essentially Case I, while their 'multiple production economy' is Case III. See Douglas S. Paauw and John C. H. Fei, "Development Strategies and Planning Issues in Southeast Asian Type Economies," The Philippine Economic Journal (Second Semester, 1965).

when applied to underdeveloped countries. As Myint has pointed out,[47] these countries may possess unemployed resources; and, therefore, foreign trade is often of primary importance in providing an outlet for previously idle factors. The increase in export production can also be a result of an increase in productivity of the once-for-all kind which accompanies the shift of labor from the subsistence sector to the plantations or mines.

Whatever may be the source of output growth following the opening up of a country to trade, this paper is primarily concerned with the effect that opening the country has on the emergence of dualism and dualism's behavior over time. There is one type of growth associated with opening up of foreign trade which does not produce dualism. This is the type of export industry that requires production factors in proportions that roughly fit relative factor supplies in the producing country. Tobacco, abaca, tea, and coffee production fit this description. They are relatively labor-intensive products. There may be some tendency toward bifurcation of the economy into plantation and non-plantation sectors, but it will be of slight economic significance. Both of these "sectors" use the same factor proportions, and production functions are presumably similar as well. Because production techniques are labor-intensive, the indome stream created by export

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[47] H. Myint, "The Classical Theory of International Trade and the Underdeveloped Countries," Economic Journal (June 1958).

industries goes mainly to the indigenous population. "Spillover" effects are limited mainly to this. To be sure, there will be some structural effects on the economy, such as a greater monitization of output and, what is of considerable importance, perhaps some development of a monetized commercial system, along with the institutionalization of price signals and producer responses thereto. On the other hand, the limitations of such a development pattern are weighty. The income spillover, because it is concentrated in the hands of the farm labor population, tends to be expended mainly on unprocessed food and on imports of a narrow range of consumer goods. It can be argued that this development pattern provides little impetus for upgrading the backwardness of the labor force, for improving the level of technology, or for capital accumulation.

A pattern of development of an entirely different nature arises with the expansion of export industries based on advanced technology. A large part of the extractive industries, including mining and (commercial) forestry operations, and plantation operation of certain crops (such as maize, wheat, and sugar) in some countries, are conducted on a capital-intensive basis.[48] The reason for choosing this method of production is generally that

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[48] A distinction ought to be made between monetized and nonmonetized capital. Actually, some crops which are usually thought of as labor-intensive (such as coconuts, palm oil, and rubber) are highly capital-intensive if the stock of nonmonetized capital which is embodied in the trees is properly valued. In this discussion, however, the term capital-intensive will be used in its usual sense; i. e., to mean monetized capital-intensive.

the natural resource or geographical conditions are so favorable that capital and skilled labor can be imported and output can still be priced competitively. The size of the export market often makes possible economies of scale that would be absent in production for domestic use.

For growth in this dualistic framework, the crucial question revolves around whether the techniques of production in the export industries spread into the rest of the economy. Before considering this in detail it should be observed that the "spread potential" varies greatly from one country to another simply as a result of the importance of foreign trade. For countries like Malaysia or the Philippines, where foreign trade aggregates to between one-fourth and one-third of national income, the potential is far greater, ceteris paribus, than for countries like mainland China or India where the corresponding figure is closer to 5 or 10 percent.

The spread of techniques depends on the extent to which the foreign financial institutions, which initially service the export industries, make their facilities available to the domestic sector. For a number of institutional reasons, this has generally happened slowly if at all.[49] It also depends on how much training of local skilled labor the export industries engage in.

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[49] Edward Nevin, Capital Funds in Underdeveloped Countries (London: Macmillan, 1961).

According to Myint,[50] the short-run view taken by export firms has generally made it more profitable to buy imported skilled labor at higher prices than to undertake the heavy social investment necessary to produce a local supply of labor of similar quality.

The presence of backward linkages (i. e., increases in intermediate demand) is likely to be determined in large part by the import coefficients of the export industry.[51] When the major import is machinery, for example, the linkage effect is small since the industrial countries have a substantial comparative advantage. Where construction is a major input, however, the linkage effects may be considerable, especially if the volume of construction is large and steady so as to provide a good basis for the establishment of a stable construction industry. In general, the mobility of services is very low, and therefore the linkage potential between export industries and supplying service industries is generally high.[52] What is often not realized is that a

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[50] H. Myint, The Economics of the Developing Countries (London: Hutchinson, 1964), chap. 4.

[51] For an extended discussion of this topic, see Robert E. Baldwin, Economic Development and Export Growth, chap. 3.

[52] See R. E. Caves, "'Vent for Surplus' Models of Trade and Growth," in Robert Baldwin et al, Trade, Growth, and the Balance of Payments (Chicago: Rand McNally and Co., 1965).

most important service is trade--wholesale, retail, domestic, and foreign. The establishment of export industries often brings on a substantial expansion and refinement of the commercial system in its wake. With this, of course, goes the increased sensitiveness of the domestic economic system to price signals and the encouragement of local entrepreneurship.[53]

Forward linkage depends on the reduction in physical weight (or bulk) of the item processed. The relevant variable is the reduction of shipping charges. That is, the decision to process primary products in the producing country depends on whether the aggregate (discounted) value of future savings on shipping costs exceeds the added costs involved in establishing new processing facilities as against using existing facilities in the importing country. It is also affected by the proportion of the exported product which is consumed locally.[54] Finally, it is affected by tariffs and similar trade restrictions in both countries.

Backward linkages are affected largely by the extent to which the supplying industry is not subject to economies of scale. Obviously it is also dependent on the savings involved in local production with importations.

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[53] Studies of the origins of indigenous entrepreneurs tend to confirm the impression that many obtain their early training and experience in commercial establishments.

[54] Robert Baldwin, op. cit.

The upshot of this discussion is that foreign trade may or may not be associated with dualism. On the one hand, export industries may grow, utilizing domestic production techniques and available factors, with relatively large income spillovers on the domestic economy but with little or no impact on production conditions and related aspects of the economy's structural configuration. On the other hand, export industries utilizing modern production techniques provide more potential stimulation to the growth process by virtue of the possibility of spread effects involving production methods, demands for intermediate goods, commercial services, and financial facilities. To what extent these spread effects take hold in the domestic economy depends in part on technical economic factors like import coefficients, transport costs, and the like. In practice, however, the (conscious or unconscious) erection of purely institutional barriers of a political or social type may well be the most important block to reaping the full returns from these linkages.

SUMMARY AND CONCLUSIONS

The most common characteristic of underdeveloped countries is a dualistic economic structure. This is the conclusion of a large number of competent observers who have devoted time to studying these economies.

At the outset of this paper we considered an approach to dualism which defined it as a situation in which the marginal efficiency of factors is different in different sectors. This approach was rejected because inequality in marginal efficiencies of factors is a necessary but not a sufficient condition for dualism.

The term dualism was first used in reference to those developing economies primarily engaged in the production of primary goods for export in which modern technology is used extensively. There is a fundamental asymmetry in the production functions of the enclave and the domestic sectors. Production coefficients are much larger for capital and smaller for labor in the enclave as compared to the subsistence sector; and the coefficients in the enclave are fixed. Finally, since the enclave has access to both technical expertise and capital funds from abroad, then presumably the rate of technical advance is rapid too, in contrast to the subsistence sector where it is virtually zero.

That the concept of dualism is not necessarily committed in any way to foreign trade becomes evident when one turns to the dynamic dualistic

models. In these models there are two sectors--industry and agriculture--both of which produce for the domestic market. The roots of dualism lie in an asymmetry of production conditions based on the character of factor inputs. The production function of the industrial sector includes capital and labor while that of the agricultural sector includes land and labor. In both functions factor proportions are assumed to be variable and returns to scale are constant. There is no reason why technical change must be an exclusive property of the industrial sector.

The thrust of the sociological dualist's thinking is directed mainly toward explaining differences in the behavior of participants in the two sectors. For example, Leibenstein and Hirschman lay particular emphasis on the organizational aspects of production units in the two sectors. Also, both would seem to incline toward the view that production units in the modern sector often have increasing returns to scale. In general, their sectors are less clearly defined in terms of purely economic variables, such as output, and they are less interested in analyzing the economic mechanism involved in resource transfers between sectors. Nevertheless, on the crucial point concerning the roots of dualism, they share with other theorists the view that ultimately dualism is grounded in differences in production conditions in the modern and backward sectors.

Economic dualism, which has its origin in methods of production,

is usually reinforced by noneconomic institutions. In the subsistence sector, organization of the firm may be a by-product of the family household structure, and allocation of productive factors may be determined by institutions entirely different from the market. To this list must also be added political or social barriers to competitive intercourse sometimes erected by members of the modern sector--such as labor unions, monopolistic agreements, discriminatory racial practices, and so on.

When dualism is dynamic, the resistence of these various barriers is gradually overcome by modernizing influences. Modern methods of production are gradually adopted by the subsistence sector. The adoption of modern productive methods, however, is not usually possible without additional accompanying changes. First, growth of the commercial system is required. This presupposes the institutionalization of price signals and producer responses thereto, so that efficient combinations of factor and output mix can be chosen by producers and consumers. Second, some intermediate goods flows will usually be required. For example, agriculture will probably require fertilizer as an input to accompany technological changes in crop production. The number and volume of such intermediate goods transfers will ordinarily increase as modernization of subsistence agriculture proceeds, although varying from one case to another. Third, organizational changes are required in order to allow market-price signals to elicit rational (ends-means)

responses. In agriculture this often means reform of land tenure patterns. Fourth, a financial system must emerge capable of allocating credit resources among sectors and among units within each sector and also to provide for the resource requirement of the emerging commercial system. Fifth, technological change must be introduced. This is partly a matter of imitation, but in the primary producing industries of agriculture and mining the relative weight of adapting existing knowledge is far greater than simple imitation. This is in contrast to nonagriculture where the relative weight assigned to imitation is often paramount.

Dynamic dualism is a process of growth in which these points or avenues of contact between the modern and the subsistence sectors strengthen and proliferate. The process generally proceeds slowly, partly because of the existence of entrenched socio-political institutions built around and reinforcing the rural economy. The effect of these institutions is to dampen the reactions to price signals sent out by the modern sector. The process is also slow because of the interdependent nature of the various aspects of the growth process. For example, an increase of commercialization makes easier the introduction of more rational production methods, but the latter may be dependent on the growth of intermediate goods flows as well. Until recently growth models introduced changes like technology as autonomous variables, ignoring the relationship between this and other aspects of the

growth process. More recently (e. g., Fei and Ranis) the relationship between technological changes and other aspects of the growth process has been recognized, although the relationship posited is between technology and one other variable, holding other pertinent aspects of the dualistic intersector relationship constant. While the inherent difficulty of working with mutually interacting variables is freely admitted, it may nevertheless be necessary in the end because the growth process approximated under a ceteris paribus approach may be quite different from the one that emerges without such an assumption.

In early dualistic models, scant attention was paid to changes in demand during the growth process. The most cavalier treatment of this matter is to consider all transfers between the two sectors, whether of consumer or capital goods, food, labor services, etc., on a net basis as "resource transfers." A somewhat different approach was taken by Lewis who, while recognizing the necessity for transfers of food from the subsistence to the capitalist sector, implicitly assumed that the structure of demand in the aggregate remained unchanged. That is, when a worker is transferred from agriculture to industry, the pattern of his consumption expenditure remains unchanged. There are many reasons, however, on the basis of more recent writings to challenge this view. Hirschman, of course, has emphasized that it is not only final demand which is of importance but intermediate goods

demand as well. The presumption is that as the industrial sector grows, so too will its demand for domestically produced intermediate products (i. e., the output of agriculture). Second, as Krueger has emphasized, the worker who transfers from the farm to industry does so for a higher income; hence, the question, how is this addition to his income spent? (And how, also, will any addition to real farm income be spent?) Lest it be thought that the answer to this question lies in some simple application of Engel's law of demand, it has been pointed out by several writers (e. g., Kuznets) that the process of urbanization changes the structure of consumer demand in important ways unrelated to the change in consumer income. Hence, changes in final demand cannot be explained satisfactorily simply by reference to changes in per capita income. These views on the changing structure of demand are of special interest because they intimately affect the changes in terms of trade between the two sectors--a relationship not usually made clear in dualistic models.

Most writers agree that dualism is a phase in the development process. The inference one draws is that at some earlier time dualism is non-existent, and at some future time in the growth process it vanishes. It is hard to give this approach a precise statement as long as the interrelationships of the model of growth itself are still not entirely clear. However, it appears that a beginning has recently been made (Jorgensen) toward working out the

time path of some of the more important variables.

Dynamic dualistic models have captured the interest of the profession because of their ability to throw light on the sequence of structural changes usually associated with economic growth. But they still have important weaknesses. One is the absence of a dynamic model which is also open at the same time. Up to now only stagnant dualistic models have been open. A second point regards technical change, especially in agriculture. The introduction of technical progress on an exclusively disembodied basis seems to be a significant departure from realism.