3 | The Classical Theory of Capitalist Development: Growth and Stagnation

The economists of the late eighteenth and early nineteenth centuries were very much concerned with the conditions for economic progress. This was the period of the "Industrial Revolution" in Europe. The Classical economists and Karl Marx lived through the period of take-off into sustained growth; Marx and Mill saw peak rates of growth attained in Europe. The observations of these economists regarding the nature and causes of economic progress are, therefore, of considerable interest.

Europe in 1750 differed from Asia and Africa in 1950, as we shall explain in some detail below. Nevertheless, the most dramatic examples of take-off into sustained and cumulative growth are to be found in eighteenth- and nineteenth-century Europe. Economic development of the New World was of course equally spectacular, but it was in part a transplanting of the development of Europe, and it was relatively easy because of the unusually favorable resource-population pattern. What happened in those countries in that period is what we want to happen in Asia, Africa, and Latin America now. Consequently, it is important to find out what the best thinkers of that period regarded as responsible for the current economic growth and what they considered was required to keep it going. The "best thinkers" of the Classical and Marxist schools brought to bear some of the most powerful minds ever to be directed toward questions of economics. Without examining their development theories, we can have no assurance that subsequent work in this field is any more penetrating than theirs, particularly since the field was almost totally neglected between 1870 and 1935. At the very least, any points of agreement in eighteenth- and nineteenth-century theories of growth are well worth our

Since we are interested in basic ideas which may be still relevant today, and in isolating points of agreement and disagreement, we shall treat the literature somewhat differently from the usual history of economic thought. In the first place, we shall be generous in interpreting ideas, translating them into basic functional relationships, and closing up any open ends in the analytical systems. Moreover, we shall translate these ideas into a common contemporary terminology. Not only does this approach help us to evaluate what they had to say, it also makes it easier to see the real points of difference and agreement.

For the most part—despite the controversies that took place within it— we will treat the Classical school as a unit. We shall refer to some differences among members of the school only at the end of this chapter, especially differences between Malthus and the others. Finally, since we want to present the best of the ideas of the Classical school, we shall concentrate on the writings of Adam Smith, Malthus, and Mill rather than those of Ricardo, Senior, and others. To be sure, Ricardo's system was in many respects tighter logically than those of his contemporaries, but his greater rigor was the result of a higher degree of abstraction. More important for us, he was much less interested in economic development than he was in the theory of value and distribution. Schumpeter has gone so far as to state that Ricardo "all but identifies economics with the theory of distribution, implying that he had little or nothing to say about—to use his language— 'the laws which regulate total output'."[1] For this reason Schumpeter considered Ricardian analysis as "a detour."[2] This evaluation may be too harsh when considering Ricardo's position in the history of economic thought as a whole, but it is true where the theory of growth is concerned.

A strong case can be made for including Marx in the Classical school. As Schumpeter says, the Marxist system is "part and parcel of that period's general economics."[3] The basic theories of production and value are much the same in Classical and Marxist models, as is the explanation of the process of economic growth. Even the theory of distribution is not really so very different. Nevertheless, there are good grounds for treating the Classical and Marxist models separately. First, the Marxist prognosis regarding capitalism is quite different from that of the Classical school. Second, Marx paid more explicit attention to interrelations among sectors in the economy, and the sectors he distinguished were different from those emphasized by the Classicists. Third, Marx had a stronger sense of history and of cultural variations than most of his contemporaries. Fourth, there is a more clear-cut suggestion that we cannot rely on "psychological individualism" (generalizing from the behavior of individual workers, capitalists, and landlords), but must conduct our analysis of economic development in terms of groups (classes). Accordingly, we shall confine this chapter to the essential features of the Classical theory of growth, and devote the next chapter to the Marxist model.

[1] Joseph A. Schumpeter, *History of Economic Analysis* (New York, 1954), pp. 568-69.

The Classical Model

For the Classical economists, the development of capitalist economies was a race between technological progress and population growth, a race in which technological progress would be in the lead for some time but which would end in a dead heat, or stagnation. Technological progress, in turn, depended on capital accumulation, which would permit increasing mechanization and greater division of labor. And the rate of capital accumulation depended on the level and trend of profits.

In order to give form to our presentation and to facilitate comparison with other models, let us translate the basic propositions of the Classical theory of growth into a series of mutually consistent and interacting propositions—or, in mathematical terms, into a set of simultaneous equations, with equal numbers of equations and unknowns, so that the system is soluble or "determinate."

Proposition 1: The Production Function

Smith, Malthus, and Mill all had it quite clearly in mind that total output, O, depended on the size of the labor force, L, the stock of capital, Q, the amount of land available—which we shall denote by K, to mean supply of known resources—and the level of technique, T. Using the common symbol f to mean "function of" or "depends upon," we can then write,

$$O = f(L, K, Q, T) \qquad (1)$$

Repeating this proposition in words for those who find equations a hindrance rather than a help, total output depends on the size of the labor force, the supply of land (or known and economically useful resources), the stock of capital, the proportions in which these factors of production are combined, and the level of technology.

We are perhaps being overgenerous to the Classicists in translating "land" into "supply of known and economically useful resources." Clearly, it is not the area of the country alone, or even the amount of arable land and its fertility that determines output but the total supply of natural resources. In this context "supply" includes only resources currently known to exist and to be economically useful; it does not include resources yet to be discovered or useful only after some future change in technology. Perhaps no member of the Classical school would have denied that only in this sense can "land" be treated as a distinct factor of production along with capital and labor, but much of their discussion was couched in terms of the total area of agricultural land as such. Later on we shall want to use "land" to mean "supply of known and economically useful resources," and we shall denote it by the symbol K—we cannot use L for more than one variable in our system. So let us be generous and introduce it in this sense into the Classical model. Perhaps, after all, they included resource discoveries as part of technological progress, so that at any point of time the supply of land could be treated as fixed.

including entrepreneurship explicitly in our system. By "entrepreneurship" is meant the function of seeing investment and production opportunities; organizing an enterprise to undertake a new production process; raising capital, hiring labor, arranging for a supply of raw materials, finding a site, and combining these factors of production into a going concern; introducing new techniques and commodities, discovering new sources of natural resources; and selecting top managers for day-to-day operations. As we shall see in Chapter 5, the entrepreneur in this sense plays the vital role in Schumpeter's theory of growth. Of course the Classical economists were aware of the importance of the entrepreneurial function, but they did not make it a strategic part of their system, and they did not make the crucial distinction between entrepreneurship and management.[4] So we omit the entrepreneur until we come to Schumpeter's model.

Most Classicists probably thought of the production function as "linear and homogeneous"; that is, they would have expected that if the quantities used of all factors of production were doubled at once, output would double. Adam Smith might have made the case for increasing returns to scale; doubling all factors would increase the opportunities for division of labor. But they would have regarded such propositions as rather uninteresting, because in their view, it would have been nonsense to talk about doubling the supply of land. Any country has so much land, and that is that. It would not be nonsense, however, to talk of doubling the supply of that. It would not be nonsense, however, to talk of doubling the supply of known and economically useful resources over some period—which is the important difference between "land" as we shall use the term and "land" as the Classicists seemed to use it. It is a little inelegant to include all resource discoveries as a form of technological progress, as we must do with the Classical definitions; in any case, they did not seem to regard resource discoveries as an important source of progress. Perhaps for nineteenth-century England they were right, but for a *general* theory we would not want to treat the supply of natural resources—or even arable land—as fixed.

For the Classicists, then, the key cross section of the production function was the one showing what happens to output when land is fixed and the labor supply is increased. This cross section is shown by the solid line in Figure 3–1, which shows the usual four phases: increasing marginal returns, decreasing marginal returns, decreasing average returns, and decreasing total returns. It is also clear that the Classicists thought Europe was in the third phase, in which an increase in the amount of labor employed on the land would bring some increase in output, but would reduce output *per capita*, and so well beyond the second phase, where each additional unit of labor would add less to total output than the last one, although still increasing *per capita* output. In symbols, we can write

$$\frac{\delta f}{\delta L} \cdot \frac{dL}{dt} > 0 \qquad \frac{\delta^2 f}{\delta L^2} \cdot \frac{d^2 L}{dt^2} < 0 \qquad \text{and} \qquad \frac{d}{dL}\left(\frac{O}{L}\right) < 0 \qquad (1a)$$

which says just what we have said in the last sentence.[5]

4 *Ibid.*, pp. 554–56.
5 The symbols δ and d mean "rate of increase in." Thus *dL/dt* is the rate of growth in the labor force through time. etc.
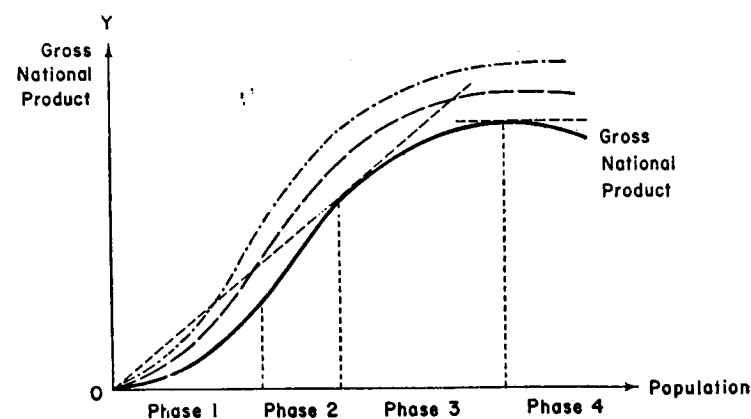
Figure 3–1

Now, the solid curve in Figure 3–1 shows what happens if the amount of labor is increased while the land utilized is fixed and nothing else happens either. If additional capital is accumulated, the curve will have the same general shape but will be higher, as indicated by the dotted curves in Figure 3–1. Each successive curve shows the effect of using a larger stock of capital together with the fixed amount of land and varying amounts of labor.

Proposition 2: Capital Accumulation Permits Technological Progress

This consideration brings us to the second basic proposition. The Classical economists seemed to think that there was always a plentiful supply of better techniques and new commodities to be introduced, but they considered that the rate at which these opportunities could be exploited was limited by the flow of capital for new investment. It would be too much to say that their analysis precluded altogether the possibility that new techniques might be capital saving after being introduced; conceivably the capital-output ratio might be lower, once the new improvement was in operation. But the Classicists did not give much weight to this possibility. They thought that, on balance, new net saving was needed to permit society to take advantage of the steady advance of technology; reinvestment of depreciation reserves would not be enough. For them, the whole process of technological progress was capital absorbing, whatever may have been the nature of inventions. (We shall have more to say about this question later.) In symbols, then, our second equation is

$$T = T(I) \qquad (2)$$

For this reason, the Classicists stressed the need for capital accumulation and saving, rather than technological progress as an independent factor.

Proposition 3: Investment Depends on Profits

In common with virtually every economist before or since, the Classicists took it for granted that capitalists make investments because they expect to earn profits on them, and that what they expect with regard to profits in the future depends a good deal on what profits are now.[6] Investment means here net investment, that is, a net addition to the stock of capital. So we can write

$$I = dQ = I(R) \qquad (3)$$

where R is return on fixed factors of production (land and capital), or profits. (By definition, net investment, I, equals the increase in stock of capital, dQ.)

Proposition 4: Profits Depend on Labor Supply and the Level of Technique

Of course, the whole nexus of economic events has an effect on profits, and any simple proposition regarding determination of profits is bound to be an abstraction from reality. Since some things are a good deal more important than others in determining the level of profits, one is justified in concentrating on those things, at least to begin with.

For the Classical school, profits were the outcome of the same race mentioned at the beginning of this section. As population grew, diminishing returns would be encountered in agriculture, raising labor costs (man-hour costs of food) and reducing profits. But offsetting this tendency was historically *increasing* returns, especially in industry, through improvements in technique. Which force is more powerful is a question of fact, not of pure theory, and varies from country to country and from time to time in the same country. Most of the Classicists felt that technological progress was winning for the time being, in their own country (England), but that it could not win for very much longer. Our fourth equation, then, is

$$R = R(T, L) \qquad (4)$$

That is, the level of profits depends on the level of technique and the size of the labor force.

The labor force and the population were generally conceived to vary together. Of course the Classical economists could ignore neither the existence of unemployment nor variations in the amount of unemployment, especially in the decades following the Napoleonic Wars. But on the whole they regarded unemployment as an aberration, at least in a growing economy, and felt that population growth and employment must move together. Thus population growth always brought a decline in per capita output, *unless* offset by technological progress.

[6] Malthus, however, attached considerable importance to the whole "climate" for ⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣⁣

We already have some indication of the circularity of their argument. The level of technique depends on the level of investment, investment depends on profits, and profits depend partly on the level of technique. This circularity is no accident or oversight; it is precisely what the Classicists—and most later economists—have wished to stress; in economic development nothing succeeds like success, and nothing fails like failure. We can express this circularity by substituting Equations (3) and (4) in Equation (2), which gives us

$$T = T(I) = T[I(R)] = T\{I[R(T, L)]\} \qquad (4a)$$

Thus a rapid rate of technological advance will tend to call forth a level of investment that will permit the rapid technological advance to continue, but the reverse is also true. Do we already have a clue to the difference in performance of advanced and underdeveloped countries? Perhaps; but let us go on with the Classical system.

Proposition 5: The Size of the Labor Force Depends on the Size of the Wages Bill

Few of the basic propositions of the Classical school have been so vehemently attacked as the "iron law of wages." The general idea is that the rate of population growth depends on how much money (working capital) is available to pay wages. If the total wages fund is increased and real average rates rise above the subsistence level, larger number of working-class children can survive to become members of the labor force. There are no checks on the size of working-class families except the amount of wages available to them and the number of children that can subsist on those wages. Thus there is a constant tendency for real wage rates to return to the subsistence level. An increase in wages paid may bring a temporary improvement in living standards, but this improvement will soon be swamped in an increased rate of population growth.

Sometimes the Classicists seemed to be thinking of subsistence wages as a true physiological minimum, below which children literally could not survive; sometimes they seemed to think rather of an "accustomed normal" living standard, not far above the physical subsistence level, which working-class families would not endanger by having more children. In terms of a systematic model, it does not matter much which explanation is given. In either case, a temporary increase in real wage rates would be squeezed out by accelerated population growth.

This argument often seems far-fetched to people living in advanced countries today, but it probably gave a fairly accurate description of what happened in Europe in the late eighteenth and early nineteenth centuries. It also seems to be true of peasant societies in Asian, African, and some Latin American countries today. Of course we do not know a great deal about the complex psychological, sociological, biological, and technical factors which enter into family size. We can, however, say a few things about it. First, improved standards of public health and nutrition permit a more rapid rate of population growth. Second, every society, from

primitive African or Australian tribes through ancient Egypt, Greece, and Rome to modern societies, has practiced population control in some form and to some degree. Third, the technical efficiency of the methods used has varied enormously, even within the same society. Fourth, limitation of family size is practiced only if there seems to be some good reason for it—some vision of a better life if the number of children is restricted. As Professor Myrdal has put it, these facts mean that if people have a very strong desire to keep family size down, they will do so, even if they must resort to infanticide, abortion, complicated and prolonged initiation rites to delay marriage, or similarly crude or brutal devices. If people want larger families, and if the means are available to support them and health standards are high, population growth will attain high levels. And if most people are rather indifferent about family size, because they cannot see that their way of life will be very different with four children or eight, population growth is still likely to reach fairly high levels, so long as health and nutritional standards permit it.

In Europe in the eighteenth century, and in Asia, Africa, and Latin America in recent decades, health and nutrition were improving, while most people could not visualize a significantly higher standard of living to be achieved by acceptable and available means of limiting family size. Thus they were probably rather indifferent about family planning. When wage rates rose, more children could be brought to maturity without impinging on the customary living standards of the working class, and consequently population growth could increase. There was no strong incentive for limiting family size, and no cheap and convenient ways of family planning were available. Under these conditions, the Classical theory of population makes good sense.

We shall have more to say about population growth later; meanwhile we can write the equation for this proposition as

$$L = L(W) \tag{5}$$

Proposition 6: The Wages Bill Depends on the Level of Investment

The Classical school thought of capital—or at least part of it—as consisting of a "wages fund," an amount of money available for hiring labor. This wages fund was built up by saving and put into effective use through investment. Except for Malthus, who showed a high degree of sophistication in this respect, the Classicists tended to think that savings found their way into investment more or less automatically. Thus the wages bill could be increased only by net (savings and) investment, and our sixth equation is

$$W = W(I) \tag{6}$$

Closing the System

We now have all the "operational" equations of the Classical system, that is, all propositions expressing fundamental causal relationships. But so

is indeterminate. We can close the system by adding an identity, *total output equals profits plus wages,* or

$$O = R + W \tag{7}$$

We can interpret this equation in either of two ways. If we define profits as we have done above, to include returns on fixed factors of production, including land as well as capital, the equation expresses an identity by definition. The total national income is equal to the total cost or value of all goods or services produced, and this amount is divided between workers and others.

If we want to be more purely Classical, we can think of it in another way, taking account of the somewhat fancy Classical theory of rent. According to the Classical school, value is equal to labor cost of production on "marginal" or no-rent land. Included in this labor cost is the cost of "embodied labor" tied up in capital; so value includes a return to capital as well as to labor. Price is value in money terms. Thus if we think of O as equal to pq, price times quantity of all goods and services, it will be equivalent to the total wages bill plus the total return to capital. If landlords succeed in getting rent, it is because workers or capitalists get less than their actual contribution to the value of output—which is exactly what the Classical economists wanted to imply. As a matter of social ethics they may have had a case; but as a matter of general theory this treatment of rent is a bit of a nuisance. So let us stick to the first interpretation.

We now have a determinate system with seven equations and seven unknowns. If we like, we can add an eighth variable, w, to mean the minimum wage rate, which is a constant, and then add an eighth equation expressing a long-run equilibrium condition,

$$W = wL \tag{8}$$

Summary

Let us now put together our interpretation of the Classical system and have a look at it:

$$
\begin{aligned}
O &= f(L, K, Q, T) &(1)\\
T &= T(I) &(2)\\
I &= dQ = I(R) &(3)\\
R &= R(T, L) &(4)\\
L &= L(W) &(5)\\
W &= W(I) &(6)\\
O &= R + W &(7)
\end{aligned}
$$

And in long-run equilibrium, we have also

$$W = wL \tag{8}$$

The circularity that we noticed above is even more apparent when we have the whole system before us. We can break into the circular flow

We could write schematically, $dR \rightarrow dI \rightarrow dQ \rightarrow dT$, $dW \rightarrow dL \rightarrow dR$. That is, an increase in profits brings an increase in investment, and so an addition to the stock of capital, which permits capitalists to take advantage of the steady flow of improved techniques and also raises the wages fund; that brings an accelerated population growth, which causes decreasing returns to labor on the land, raising labor costs and reducing profits. We could, of course, go on: reduced profits mean reduced investment, retarded technological progress, a diminished wages fund, and slowing down of population growth.

If we want to be a bit more sophisticated, we could make investment a function of the change in profits rather than the level of profits; thus capital accumulation would take place only if profits increase, and capital decumulation occurs when profits fall.

Figure 3-2 presents a diagrammatic summary of the Classical theory of growth. We cannot, of course, present seven or eight variables in one diagram; since we have at best three dimensions, we must pick the variables that tell us most. Moreover, the whole process of growth takes place in time; time is the variable with respect to which all the variables in our equations must be differentiated so get a picture of the growth process. So we are left with two other variables to be shown directly in the diagram. We have chosen to treat population and total production as the key variables; after all, what we are ultimately interested in is the trend of per capita output. The other variables must be treated implicitly, in terms of the circular flow outlined in the equations above. For example, we treat technological progress as depending only on the rate of capital accumulation, and we show variations in both, implicitly, by the change in total output with a given population as time goes by.

We begin at $t = O$, with a stock of capital and a technology which gives us the relationship between labor force and output shown in the curve O_0. Let us suppose that actual population is P_0 and output is at the point GNP_0, in the phase of diminishing average returns on this curve. Profits are earned and some investment takes place, permitting technological progress and increased wage payments. Thus as time goes by we move onto a new curve, O_1, with a higher output than before for any *given* labor force on the fixed amount of land. Meanwhile, of course, the population has also grown, so that at time $t = 1$ our actual position is GNP_1. And so on.

This movement through time has a clearly defined shape. According to the Classical school, when population is relatively small, returns on land will be high, perhaps even increasing; but as population grows we encounter more and more rapidly diminishing returns. Technological progress takes place at a *steady* rate, provided enough capital is forthcoming to exploit opportunities for improvement to the full. Thus in an advanced or "mature" economy, diminishing returns to land, and the consequent rise in labor costs, will outrun effective technological progress. Profits will fall. Then investment drops, technological progress is retarded, the wages fund ceases to grow, and so population also ceases to grow. In the Classical model, the end result of capitalist development is stagnation.
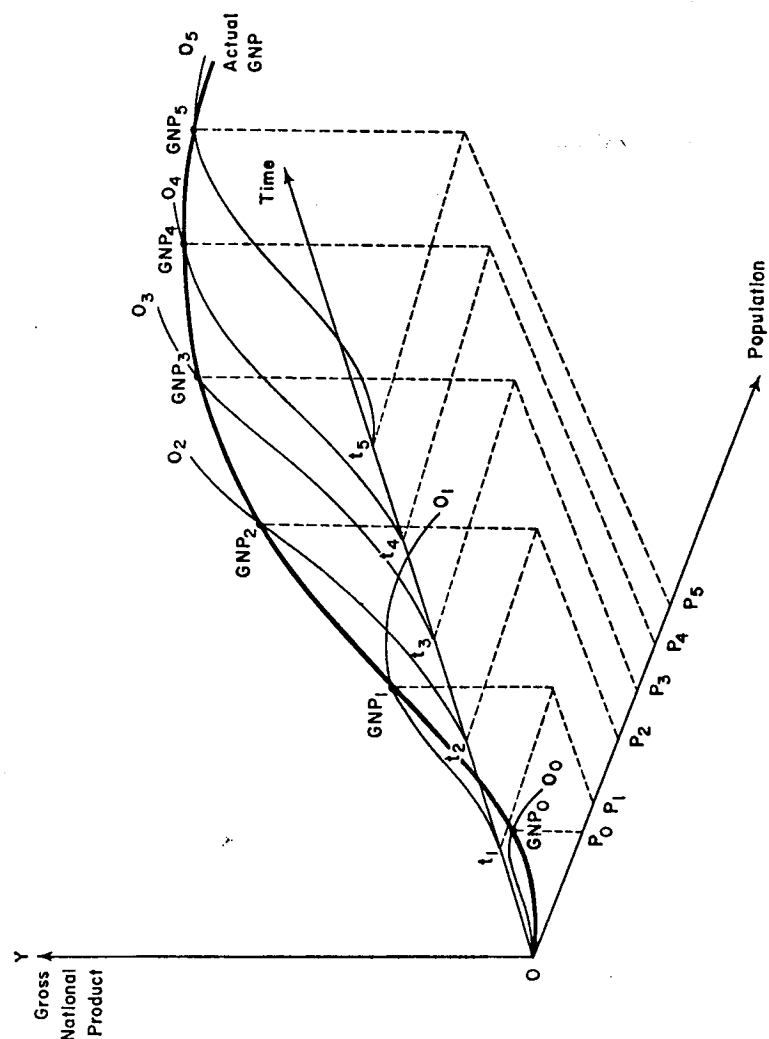

Figure 3-2

Thus the Classical concept of the "stationary state"—which for the Classical school was a historical phase and not just an analytical model—was essentially a concept of a mature economy. Adam Smith saw that the "stationary state" might be one in which wealth would be "very great," but nevertheless one in which "there would be a constant scarcity of employment." In the stagnation theory of Ricardo and Mill, however, unemployment plays no significant role; "stagnation" in Ricardo's analysis referred to what Mill called gross annual produce, and what we would now call gross national product at full employment. The stagnation resulted from the natural tendency of profits to fall and the consequent choking off of capital accumulation. Ultimately, stagnation would result in a constant population; but capital accumulation may cease "long before" population reaches its highest point. In Mill's stationary state, there would be no increase in either population or stock of capital, profit having reached the minimum necessary to prevent net dissaving by the economy as a whole. However, there might still be a rising standard of living due to improvements in the art of living and increased leisure through technological progress.

In Mill's view, stagnation was just around the corner for England: [7]

> . . . When a country has long possessed a large production, and a large net income to make savings from, and when, therefore, the means have long existed of making a great annual addition to capital; it is one of the characteristics of such a country, that the rate of profit is habitually within, as it were, a hands' breadth of the minimum, and the country therefore on the very verge of the stationary state. [As for England] . . . The mere continuance of the present annual increase in capital if no circumstance occurred to counteract its effect, would suffice in a small number of years to reduce the rate of net profit to [the minimum].

Mill has been scoffed at as a poor prophet, in the light of the economic growth of the English economy in the decades following this pronouncement. Actually, Mill showed a good deal of insight into the English economic situation in his prognosis of stagnation. His error was in underestimating the potential growth of the New World and the foreign investment opportunities that such growth would provide for British capitalists; but only this growth of the world economy prevented "stagnation" from appearing in the late nineteenth century instead of after World War I. When Mill wrote his third edition, England was losing out as an industrialist and financier to Germany, France, the United States, and even Japan. Her balance of payments on goods and services account had become chronically unfavorable, never again to become chronically favorable; England had become a *rentier* nation living on returns from its investments abroad. The extent of the trouble with the English economy did not become apparent, however, until World War I reduced this *rentier* income from abroad.

[7] J. S. Mill, *Principles of Political Economy*, Book IV, chap. IV (3d ed., London, 1852).

The Malthus Version

We cannot leave our discussion of the Classical theory of development without drawing attention to its refinements in the Malthus version. For although the general theory of Malthus is described by the model presented above, certain features of his theory make it particularly enlightening both for an understanding of the requirements for steady growth in advanced countries and for the launching of development in underdeveloped countries.

To begin with, Malthus showed more appreciation than most of his contemporaries of the importance of a distinct and systematic theory of growth. Book I of his *Principles of Political Economy* [8] was concerned with value and distribution, Book II with "The Progress of Wealth." This book opens with the following statement: [9]

> There is scarcely any inquiry more curious, or, from its importance, more worthy of our attention, than that which traces the causes which practically check the progress of wealth in different countries, and stop it, or make it proceed very slowly, while the power of production remains comparatively undiminished, or at least would furnish the means of a great and abundant increase of produce and population.

He defines the *problem* of development as explaining any difference between potential gross national product ("power of producing riches") and actual gross national product ("actual riches").

There is nothing automatic about economic growth, Malthus warns. To say that population growth by itself is enough to bring economic advance is absurd. In the first place, population growth—despite the strength of the psychological and physiological forces tending to bring it about—is an *end product* of the whole economic process; "an increase of population cannot take place without a proportionate or nearly proportionate increase of wealth." As evidence that the natural tendency toward population growth is no guarantee that either population or income will grow, he cites such "underdeveloped" countries as Spain, Portugal, Hungary, Turkey, "together with nearly the whole of Asia and Africa and the greatest part of America." [10]

Secondly, mere increases in numbers do not provide a stimulus to economic expansion; population growth encourages development only if it brings an increase in effective demand. "A man whose only possession is his labor has, or has not, an effective demand for produce according as his labor is, or is not, in demand by those who have the disposal of produce." [11] And the demand for labor, in turn, depends on the rate of capital accumulation.

[8] The first edition of Malthus' *Principles* appeared in 1820, the second in 1836. (Page references are to the Augustus Kelly reprint of the second edition; New York, 1951.
[9] *Ibid.*, p. 309.
[10] *Ibid.*, p. 314.
[11] *Ibid.*, pp. 311–12.

In elaborating his theory of effective demand and its relation to savings and investment, Malthus anticipated some of the basic ideas of such modern writers as Keynes and Kalecki. He flatly repudiated "Say's law," which said in effect that supply creates its own demand and that savings are just a demand for capital goods. Saving, in the sense of planned or *ex ante* saving, or abstinence, means not consuming; and not consuming in itself brings a decline in effective demand, profits, and investment.

Malthus drew attention to a circularity of a kind quite different from the one spelled out by the other Classicists, which has been restated more systematically by Kalecki and others in our own day. Going back to Equation (7) above, we have national income (or output) equal to profits plus wages. Let us rewrite the equation,

$$R = O - W \qquad (7a)$$

Now workers, as a class, are too poor to save. They spend all their income on consumption. Let us denote workers' consumption as C_w. Capitalists, however, do save; these savings create income in so far as they are invested. So we may write, substituting in Equation (7a)

$$R = (I + C_c + C_w) - C_w = I + C_c \qquad (7b)$$

That is, national income or output is generated by investment, capitalists' consumption, and workers' consumption. Profits are national income less wages; wages equal workers' consumption—and so profits are equal to investment plus capitalists' consumption. Thus abstinence on the part of capitalists, far from accelerating economic growth, will, in itself, retard it.[12]

Malthus does not, of course, deny the need for saving and investment for economic growth. But he suggests a concept of "optimum propensity to save." Up to a certain point saving is needed to finance (without inflation) the investment for which profitable opportunities exist. Beyond that point, however, saving will reduce consumer spending to such an extent that investment too will be discouraged.[13] High rates of growth do not occur with high levels of *ex ante* savings (abstinence) on the part of the upper-income groups, but with high levels of *ex post* (realized) savings and investment, which are in large degree the result of growth, and do not require reductions in consumer spending:[14]

... The fortune of a country, though necessarily made more slow, is made in the same way as the fortunes of individuals in trade are generally made—by savings, certainly; but by savings which are furnished by increased gains, and by no means involve a diminished expenditure on objects of luxury and enjoyment. ... The amount of capital in this country is immense, and it certainly received very great additions during the last forty years but on looking back, few traces are to be found of a diminishing expenditure in the shape of revenue.

[12] This argument is made in effect in *ibid.*, pp. 311, 361.
[13] *Ibid.*, pp. 326–29.
[14] *Ibid.*, p. 367.

Thus Malthus had the picture of an advanced economy enjoying steady growth, with consumption, investment, and *ex post* (realized) savings expanding together.

Malthus also demonstrated a number of random insights into the factors which may retard a take-off into sustained economic growth. He attached considerable importance to backward-sloping supply curves of effort—both for workers and managers—in the explanation of the underdeveloped condition of such countries as Mexico and Ireland. He denied that the indolence characterizing underdeveloped countries could be explained by the tropical climate; the scene in the Cordilleras, where the climates "seem to be the finest in the world," is "not essentially different" from that of the "lower regions of New Spain."[15] The problem, as he saw it, was rather a matter of absence of incentives. He suggested that broadening international trade could help a good deal to straighten out these supply curves, by providing incentives for additional expenditure of effort, until an economy could get "over the hump" to the point where its own production was sufficiently varied to provide all the incentive needed for further growth.[16]

... The peasant, who might be induced to labor an additional number of hours for tea or tobacco, might prefer indolence to a new coat. ... And the trader or merchant, who would continue his business in order to be able to drink and give his guests claret and champagne, might think an addition of homely commodities by no means worth the trouble of so much constant attention.

Meanwhile anything that can be done to widen the market and permit more division of labor by internal measures is well worthwhile; and improved transport is one such measure.[17]

... It has never, I believe, occurred, that the better distribution of the commodities of a country occasioned by improved facilities of communication has failed to increase the value as well as the quantity of the whole produce.

Malthus also noted the phenomenon which Colin Clark has stressed in our own day; economic development entails structural change of a sort which diminishes the relative importance of agriculture in the economy.[18] He argued that technological progress tends to increase employment[19] and that tapering-off of the growth of income and output causes unemployment.[20] He suggested land reform as one means of expanding output.[21]

More important for us than any of these insights, however, was Malthus' anticipation of the theory of "dualism" as applied to underdeveloped countries. We shall see below that our understanding of the problem of underdevelopment can be greatly increased by breaking up the economy

[15] *Ibid.*, p. 338.
[16] *Ibid.*, p. 354.
[17] *Ibid.*, p. 362.
[18] *Ibid.*, p. 334.
[19] *Ibid.*, p. 352.
[20] *Ibid.*, p. 312.
[21] *Ibid.*, p. 373.

into sectors and studying interactions among them; even a two-sector model is a great advance over a single-sector model. A charitable interpretation of the Classical theory of growth can convert it into such a two-sector model, but the intersectoral analysis emerges more clearly in Malthus' writings than in those of other members of the Classical school.

Malthus envisaged the economy as consisting of two major sectors: one industrial, one agricultural. Technological progress he regarded as a phenomenon confined to the industrial sector—in advanced countries, at any rate. "Increasing returns" was a property of this sector, and unmitigated diminishing returns was the primary characteristic of the agricultural sector. If we think of nineteenth-century England, this picture was probably a good approximation to reality. The first wave of agricultural progress, undertaken by the "improving landlords," had helped to set the stage for the Industrial Revolution, but it was pretty well over when Malthus was writing; and the "industrial revolution" in agriculture itself (mechanization) did not set in until later. The good land was already occupied and no major resource discoveries were taking place. Meanwhile, striking progress was evident in power, manufacturing, and transport.

The Malthusian picture of economic development seems to have been one in which capital was invested in agriculture until all the arable land was brought into cultivation, stocked, and improved; after that there were no more opportunities for profitable investment in that sector, and investment opportunities existed only in the industrial sector. Diminishing returns to increased employment on the land could be avoided only if technological progress in the industrial sector was rapid enough, and if enough investment took place, to absorb most of the population growth in the industrial sector and to reduce the cost of living of workers on the land, permitting reductions in their corn (goods) wage rates.[22]

For those who like equations, we might express this relationship as follows. Let us assume once again that the rate of technological progress in the industrial sector depends only on the amount of capital available for utilizing the steady flow of improvements. Malthus explicitly recognized the possibility of unemployment arising from inadequate investment, so the level of industrial employment can also be treated as a function of investment. Thus we can regard industrial output as depending solely on the amount of capital invested in the industrial sector:

$$O_i = a \cdot Q_i \qquad (9)$$

where O_i is the output of the industrial sector, Q_i is the amount of capital in the industrial sector, and $1/a$ is the capital-output ratio for the sector. Differentiating with respect to time,

$$\frac{dO_i}{dt} = a \cdot \frac{dQ_i}{dt} + Q_i \cdot \frac{da}{dt} \qquad (9a)$$

If technological progress is "neutral" so that the capital-output ratio can be considered a constant, the second term drops out and the trend of

[22] See especially *ibid.*, pp. 278, 284.

industrial output through time depends only on the rate of capital accumulation (investment) in the industrial sector. The rate of investment in turn depends on the level of profits, as we already know; and in this model, the rate of profits will depend on the wage rate (which in turn depends on the cost of producing wage goods, especially foodstuffs) and effective demand, which depends on capitalists' consumption and investment.

In the agricultural sector the situation is different. There are no investment opportunities in the agricultural sector of a "mature" economy, and in underdeveloped countries capital is needed only to increase the effective supply of improved land. So we may write,

$$O_a = f(L_a, K) \qquad (10)$$

That is, agricultural output depends only on the supply of labor to the agricultural sector and the stock of improved land. Through time the change in agricultural output is

$$\frac{dO_a}{dt} = \frac{\delta f}{\delta L_a} \cdot \frac{dL_a}{dt} + \frac{\delta f}{\delta K} \cdot \frac{dK}{dt} \qquad (10a)$$

In a mature economy, K is constant, so the second term drops out. We are then left only with the first term to explain the trend in agricultural output. Now the first half of that term, $\delta f / \delta L_a$, is the marginal productivity of agricultural labor, which will be positive but diminishing. The second part, dL_a/dt, is the rate of growth of the agricultural labor force. It will increase until net investment in agriculture disappears, because agricultural profits have dropped too low, as a result of falling output per man-year as agricultural employment increases.

The kind of interaction between these two sectors which leads to the stationary state (stagnation) in mature economies has been outlined above. Malthus also, however, makes some suggestions about sectoral interaction in underdeveloped areas, which help to explain why they remain underdeveloped. First, he points out that each sector constitutes the market for the output of the other sector (in the absence of international trade). Thus failure of either sector to expand acts as a drag on the growth of the other; "balanced growth" is necessary if we are to have growth at all. The development of the industrial sector of underdeveloped countries is limited by the poverty of the agricultural sector. Speaking of Latin American countries, Malthus writes:

Except in the neighborhood of the mines and near the great towns, the effective demand for produce is not such as to induce the great proprietors to bring their immense tracts of land properly into cultivation: and the population, which, as we have seen, presses hard at times against the limits of subsistence, evidently exceeds in general the demand for labor, or the number of persons which the country can employ with regularity and constancy in the actual state of its agriculture and manufactures.

The continuing poverty of the peasant agriculture sector does not arise from scarcity of fertile land; poverty persists because large landowners have no incentive for more intensive cultivation with the present limita-

tions of the market, whereas the peasants lack the capital that would be needed for efficient cultivation, which alone would permit them to pay enough to induce landlords to rent some of their land: [23]

In the midst of an abundance of fertile land, it appears that the natives are often very scantily supplied with it. They would gladly cultivate portions of the extensive districts held by the great proprietors, and could not fail of thus deriving an ample subsistence for themselves and their families; but in the actual state of the demand for produce in many parts of the country, and in the actual state of the ignorance and indolence of the natives, such tenants might not be able to pay a rent equal to what the land would yield in its uncultivated state, and in this case they would seldom be allowed to intrude upon domains; and thus lands which might be made capable of supporting thousands of people, may be left to support a few hundreds of cattle.

Thus the industrial sector (including large-scale agriculture) remains limited in total size. Because of its land-and-capital-intensive nature it provides employment for relatively few people. The bulk of the population, meanwhile, lives in poverty by means of labor-intensive peasant agriculture which provides no effective demand for further growth.

In other words, there is an "indivisibility" with respect to demand; a certain minimum level of effective demand is necessary before cumulative growth can set in.[24]

Without sufficient foreign commerce to give value to the raw produce of the land; and before the general introduction of manufacturers had opened channels for domestic industry, the demands of the great proprietors for labor would be very soon supplied; and beyond this, the laboring classes would have nothing to give them for the use of their lands.

With no alluring use of increased income to tempt them to greater efforts, the landlord-capitalists find themselves on the backward-sloping portions of their supply curves. The concentration of land ownership deprives the peasants of any incentives they might have for raising output through greater efforts.[25]

And under these circumstances, if a comparative deficiency of commerce and manufactures, which great inequality of property tends rather to perpetuate rather than to correct, prevents the growth of that demand for labor and produce, which can alone remedy the discouragement to population occasioned by this inequality, it is obvious that Spanish America may remain for ages thinly peopled and poor, compared with her natural resources. And so, in fact, she has remained.

And so she remains today, over a century later. As Malthus said then, so now, although "the increase of population and wealth has been considerable, particularly of late years, yet altogether it has been far short of what

[23] *Ibid.,* p. 341.
[24] *Ibid.,* p. 342.

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it would have been, even under a Spanish government," if appropriate development policies had been pursued.

Malthus on the Population Explosion

Malthus is better known for his *Essay on the Principle of Population* than for his *Principles of Political Economy*. Indeed, so close is the association of the name of Malthus with the concept of population pressure, that the more significant two-sector analysis of underdevelopment outlined above has been largely neglected. As Professor M. Blaug points out in his introduction to a recent edition of the *Essay*, the tremendous interest engendered by the Malthusian population theory can be explained at least partially by "population explosion" in the last two decades of the eighteenth century. Dr. Blaug adds, "Every schoolboy at the turn of the twentieth century could prove that Malthus had gone wrong by underestimating the potentialities of technical progress." [26] By the same token, the renewed interest in population pressure in developing countries has resulted in a resurgence of popularity of the Malthusian theory.

Malthus wrote the *Essay* at the age of 32, before he wrote the *Principles*, and seven years before he married. He never thoroughly integrated his population theory with the theory of underdevelopment, but there can be no doubt that he was constantly aware of population growth and its implications for development of underdeveloped countries. The sixth and last edition of the Essay in Malthus' lifetime was published in 1826, some years after the first edition of the *Principles*. If we do Malthus the service of coordinating for him his population theory with his theory of underdevelopment, virtually all of the ideas regarding technological dualism and the population explosion, presented in Chapter 14 below, will prove to have been anticipated by him.

Malthus begins his *Essay* by saying that any research on social progress must begin by investigating the factors that have impeded progress in the past, and then proceed to a consideration of "the probability of the total or partial removal of these causes in the future." To investigate "all factors influencing human happiness," he adds, "is beyond the powers of any single person. . . ." Malthus was well aware that every society ever known has practiced family planning in some manner and to some degree. There is yet to exist, he maintained, a society in which the potential of population growth has been left to exercise itself to the full: [27]

Whether the law of marriage be instituted, or not, the dictate of nature and virtue seems to be an early attachment to one woman; and where there were no impediments of any kind in the way of a union to which such an attachment would lead, and no causes of depopulation afterwards, the increase of the human species would be evidently much greater than any increase which has been hitherto known.

[26] M. Blaug, Introduction; Thomas R. Malthus, *An Essay on the Principle of Population, or A View of Its Past and Present Effects on Human Happiness with an Inquiry into our Prospects Respecting the Future Removal or Mitigation of the Evils*

Malthus had a high regard for love. "Perhaps there is scarcely a man," he wrote, "who has once experienced the genuine delight of virtuous love, however great his intellectual pleasures may have been, who does not look back to that period as the sunny spot of his whole life, where his imagination likes most to bask, which he recollects and contemplates with the fondest regret, in which he would wish to live over again." He takes Godwin to task—with some justice—for saying, "Strip the commerce of the sexes of all its attendant circumstances, and it would be greatly despised." Malthus replies, "He might as well say to a man who admires trees, strip them of their spreading branches and lovely foliage, and what beauty can you see in a bare pole?" It is "the symmetry of person, the vivacity, the voluptuous 'softness of temper, the affectionate kindness of feeling, the imagination and wit' of a woman, which excites the passion of love, and not the mere distinction of being a female."

Malthus also anticipated Freud in some measure, recognizing that sexuality pervades the whole of human behavior. It would be a mistake, he maintained, to imagine that "the passion between the sexes" is influential only "when the immediate gratification of it is in contemplation." The whole pattern and plan of human life, he insists, are "connected in a considerable degree with the prospect of the gratification of this passion and with the support of children arising from it." [28]

Malthus envisaged a process of increasing population pressure on the land, not unlike what has in fact taken place in many underdeveloped countries today. Once all the fertile land is occupied, further increases in food production depend on agricultural improvement. But the natural tendency is for the fertility of the soil to decrease, not increase, whereas population, given an adequate food supply, would continue to expand indefinitely. Perhaps, he says, it would be possible to double the agricultural output of Great Britain in the next twenty-five years. It is impossible to imagine that in the next twenty-five years agricultural production could be quadrupled. Yet, a quadrupling of population is to be expected. As for the United Kingdom itself, some relief could be found through emigration. However, "taking the whole earth, instead of this island, emigration would of course be excluded; and, supposing the present population equaled to a thousand million, the human specie would increase as the numbers 1, 2, 4, 8, 16, 32, 64, 128, 256, and subsistence as 1, 2, 3, 4, 5, 6, 7, 8, 9." Here we have the "law" most frequently associated with Malthus: the geometric growth of population and the arithmetic growth of means of subsistence.

Malthus then proceeds to consider the various checks to population growth. The ultimate check, of course, is lack of food. The immediate check consists "in all those customs, and in all those diseases, which seem to be generated by a scarcity of the means of subsistence." These checks may be divided into the "preventive" and the "positive" checks. In so far as the preventive check is voluntary it is peculiar to mankind. Essentially, it consists of restraint; and "if this restraint do not produce vice, it is

undoubtedly the least evil that can arise from the principle of population."

The positive checks "include every cause, whether arising from vice or misery, which in any degree contributes to shorten the natural duration of human life." These include unwholesome occupations, severe labor and exposure to the seasons, and extreme poverty, bad nursing of children, great towns, and "the whole train of common diseases and epidemics, wars, plague, and famine."

Restraint from marriage, if it is not accompanied by "irregular gratifications," is "moral restraint." But "promiscuous intercourse, unnatural passions, violations of the marriage bed, and improper arts to conceal the consequences of irregular connections, are preventive checks that clearly come under the head of vice." [29]

The great bulk of the *Essay* consists of armchair anthropology, designed to provide factual support for his theory. His "law" regarding arithmetic growth of food supply and geometric growth of population is based on a kind of empirical observation from afar—the only kind of empirical research possible for a gentleman living in England in the early nineteenth century. However, he makes use of such literature as he could find to make observations on checks to population among such diverse societies as that of the American Indians, and those of the South Pacific islands, North and South Siberia, Hindustan and Tibet, China and Japan, the ancient Greeks and Romans, and contemporary Europe.

His poor opinion of colonial administration in Latin America becomes evident once again. No settlements, he says, could have been worse managed than those in Mexico, Peru, and Quito. The tyranny, superstition, and vices of the mother country were introduced, exorbitant taxes were exacted, arbitrary restrictions were imposed on trade, and the governors were corrupt. Nonetheless, he says, the population grew. The same is true of Brazil, governed "with almost equal tyranny" by the Portuguese. But in the United States, for which Malthus had much admiration, the rate of population growth was much greater.

When we add this theory of the population explosion to the two-sector model outlined above, the continuing poverty in underdeveloped countries is amply explained. For the population growth continues, in spite of everything, as long as the food supply permits a mere subsistence level of existence. As the industrial sector does not expand enough to absorb a large share in the increase in population, population pressure on the land continues to increase, and per capita productivity and income in the traditional rural sector fall.

[29] It is interesting to note that Malthus apparently believed that those who engaged in promiscuity would somehow avoid having children. It may be, however, that he had in mind nothing more sophisticated than abortion. He speaks later of the American Indians, stating that "the libertinage which generally prevails among the women before marriage, with the habit of procuring abortions, must necessarily render them more unfit for bearing children afterwards." As evidence he cites the practice among the Natchez of swapping wives unless they have children, indicating that many marriages are unfruitful.