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## THE AGRICULTURAL SURPLUS AS A FACTOR IN DEVELOPMENT

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### *Introduction: The Notion of "Surplus"*

The concept of "surplus" plays a critical role in nearly all growth theories. But, as Warriner notes, surplus has been discussed so many times and with such variation in meaning that the notion has lost precision.

"... the concept is now so horribly muddled it is difficult to use it all without attempting to clear up the various issues confused in it." (Warriner 1963, 443).

"Surplus" is used analytically for quite different purposes by classic and neo-classical economists, by anthropologists, by agriculturalists, by Marxist and neo-Marxist "World Systems" writers. Surplus can mean in these various contexts: a realized or potential volume of physical output over and above some "requirement"; a less than fully-utilized volume of factor inputs, particularly labor or land; the amount of present output transferred to any group other than the actual producers; unutilized technological or organizational possibilities within the agricultural sector. The causes of these various types of surpluses are equally diffuse: resource endowment and population growth; nutritional and motivational problems; inequalitarian social and political structures; investment and technological change; foreign market penetration and monetization.

The use of the term "agricultural surplus" to define an excess of product over the subsistence requirements of the rural population, as reflected in the work of the classical economists, provided a relatively unambiguous concept. The main confusion was introduced by using the term surplus to mean an excess of labor required under given technological conditions to produce an existing level of output. Seasonal, nutritional, motivational and other factors are involved in such surpluses and raise different policy questions from the narrower classical notion of surplus as an excess of product per worker over rural subsistence needs.

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Confusion also results from the fact that an agricultural surplus is in part a social concept. The definition of subsistence is socially determined, a fact which was recognized by the classical economists (Spengler 1978). And, the manner in which a surplus is captured is not only socially determined but is an essential part of its definition.

Precision in the use of the concept requires a common framework within which the different viewpoints and approaches can be accommodated. The present paper attempts such a framework, centering around the concept of surplus. To anticipate, we find that the term has five possible meanings or interpretations, all of which can be incorporated into a single analytical economic framework.

Within the literature five sources of an agricultural surplus can be identified: (1) the classical (Malthusian-Ricardian) surplus; (2) a "leisure" surplus; (3) an "other goods" (Hymer-Resnick's Z goods) surplus; (4) a technological (Boserupian) surplus (5) an x-efficiency (Leibenstein) surplus. Let us explore each of these.

### The Classical Surplus

The Ricardian-Malthusian Classical Model is powered by two forces: the law of diminishing returns in agriculture and the inescapable tendency for population to grow whenever output exceeds subsistence requirements. (Baumol 1950). The two forces in combination inexorably drive the average product of labor to subsistence. Prior to reaching this long-run Malthusian equilibrium, however, there is a period of increasing and then declining average product. During this period, a surplus is available which can be measured by the difference between the agricultural output of a nation and the subsistence requirements of the rural population (Peacock 1952; Leibenstein 1957).

Within the classical framework, any non-consumption (any savings-investment) is surplus. This view also assumes that each level of output represents a full-employment utilization of the labor force; that labor force is a fairly stable share of total population; and that production as measured really does include the total value produced from the resources at hand. In another words, each point on the production function represents a point on a production possibilities frontier. It is a model of a monetized market-oriented economic system. The "surplus" is the marketable share of agricultural output allocated to non-producers, however this is accomplished.

Critics of capitalist development would be quick to point out that the surplus may accrue only to the capitalist class. Similarly, Marxist growth theorists argue that a large share of current consumption in capitalist economies is not required for subsistence and hence "wasteful" of the social

surplus (Baran 1968). The distribution of the surplus was also of concern to Ricardo who worried about the prospect of the entire social surplus ending up as rent to the land-owning gentry. Yet the essence of the classical model is the implicit assumption that the benefits of the surpluses *are* widely dispersed among the general population. Real wages and the standard of living *do* rise and population growth is stimulated thereby.

It is not really an exaggeration to say that this model and line of thought continue to dominate most development planning. The trick is to create as large as possible a current social surplus and then use it to increase future output while at the same time promoting declining human fertility. Under these conditions it is not necessary for the model to lead to a stagnation equilibrium. If population growth does not occur or occurs slowly enough, then surplus output can be channelled into investments calculated to shift the aggregate production function upward. Were population to stabilize at less than subsistence average product, a surplus could become a regular feature of the production process. This version of the model is, of course, the optimistic "escape trajectory" variant suggested by Leibenstein and others (Leibenstein 1957).

### The Labor Surplus

Lewis in his celebrated article (Lewis 1954) argued that most developing countries attempting to increase their level of output possessed already the means by which to do this. This means is the large under-employment of labor in their traditional rural sectors. That is, most workers do not work, on the average, a full day's work at some productive economic activity. Tasks are shared by family members, leisure is too abundant and long idle spells are characteristic of the annual work cycle. Thus, in classical terms the points along the production function do not represent full employment of labor and, hence, there is a further surplus which represents the failure to fully mobilize the resources of the economic system.

This simple, and plausible, notion has enjoyed an enormous vogue. The well-known Fei-Ranis Model in its many versions (1964; Paauw and Fei 1973) is nothing more than an elegant elaboration of the idea which is, to repeat, that since all workers must be fed if some are not fully employed at production activities, then their "idleness" represents a "labor surplus" which policy must aim at mobilizing.

"The 'exhaustion of the labor surplus' must be interpreted primarily as a market phenomenon rather than as a physical shortage of manpower. . . ." (Fei and Ranis 1964, 539).

Jorgenson has clarified the implicit assumptions of institutional constraints needed to explain the original "idleness" but the conclusions are the same

(Jorgenson 1970).

It is important to be clear that this view does not present a "romantic" or "irrational" picture of peasant agriculture. But it does argue for the existence of what Mellor called "a substantial unrealized potential" in agriculture (Mellor 1967, 47).

Two sorts of surplus are actually involved here and it is useful to distinguish between the two. Let us call these the "other-goods" surplus; and the "leisure" surplus.

#### A. Other-Goods Surplus

Hymer and Resnick (1969) first focused attention on the role of non-agricultural household production (which they define as "Z goods") as one of the ways in which the allegedly surplus labor was actually used in rural areas. Housing, clothing, tools, utensils and decorative and ornamental objects are all integral parts of "subsistence" and are typically produced within the rural family unit or at least within highly local areas. Thus, even a subsistence peasant economy which produced nothing for the market may actually have very little surplus. The much-discussed labor "surplus" may simply be a measure of the degree to which the rural labor is simultaneously engaged in non-agricultural pursuits. As Jones noted the labor surplus found by ". . . Fei and Ranis may be an illusion resulting from their refusal to take seriously when performed by non-Europeans a group of productive activities that account for the largest part of the national income of developed countries" (Jones 1969, 281).

Hymer and Resnick use the Z-goods notion not only to refute the labor-surplus model's key assumption but also to argue that the process of development has often been a very mixed business for the traditional societies. They argue that the Colonial powers have used a combination of market incentives and coercive political and fiscal power to eliminate the local Z-goods industries thus creating markets for their own manufactured exports and also put the developing nations in a permanently dependent position vis-a-vis the Colonial power.<sup>1</sup>

Thus, the view suggests that no real surplus ever existed; the increased output of a marketable surplus was at the expense of local manufacturers which now must be obtained through trade. By being more dependent the areas are worse off and have no better prospects for development (Wallerstein 1974).

<sup>1</sup> As noted above, the definition of the Classical surplus hinges on the difference between output and consumption of agricultural produce. To facilitate the graphic presentation of each of the surpluses on a single diagram we have transposed the rural population and labor force to adult equivalents. Clearly, in a dynamic situation in which population growth is changing the age distribution, then the relationship between actual and total population and total adult equivalents would not be constant.

### B. Leisure Surplus

Chayanov's celebrated theory of the peasant economy provides a second insight into the sources of the so-called labor surplus. He maintains that the rural household is not a net profit (or utility) maximizer in the ordinary microeconomic sense. Instead, the goals of the household are to obtain a satisfactory level of consumption for the household and to provide work for all labor available (Chayanov 1970). Technology is implicitly static so that in general, as the needs for consumption and the labor available change, the amount of land cultivated will change too. The theory suggests that there is often an unrealized potential for increased output, since when population pressure does rise more land is cultivated; and if no further land is available, then cultivation can become more intensive on the existing plots. Chayanov is implicitly assuming subsistence cultivation with only weak ties to the market and no demand in the rural sector for industrial goods. For his model, the "surplus" is implied by the deliberate sub-optimization of the household. The "surplus" is created and transferred the moment the agricultural sector acquires a taste for nonhousehold produced goods and is willing to sacrifice leisure to obtain more goods.

Chayanov's model is at the household level but a similar leisure-preference view is commonly advanced for larger social groups in the anthropological literature. The agricultural surplus is, as we have seen, a social concept. The definition of subsistence is socially determined and the manner in which a surplus is captured is not only socially determined but is an essential part of its definition.

"Man living in society, does not produce a surplus unless he names it such and then its effect is given by the manner in which it is institutionalized." (Jones 1969, 280).

Orans, (1966) summarizing the considerable discussion of the concept in the anthropological literature, concludes that the existence of a potential for surplus from any given activity is a necessary but not sufficient condition for undertaking that activity. The question he poses is why should producers ever produce more than they need? The development of some "coercive institutions" is the main anthropological explanation he finds. Yet it is a very general answer. "Obviously neither the transformation of potential production into actual production nor the use it is put to are intelligible apart from an institutional analysis." (Orans 1966, 27) And again:

"... better land or better techniques for working it are not likely to result in increased production but rather decreased labor unless there is a reason to produce more." (p. 26)

Allan, writing of West Africa, provides another answer.

"It would appear to be a reasonable—if not axiomatic—proposition that sub-

sistence cultivators, dependent entirely or almost entirely on the produce of their gardens, tend to cultivate an area large enough to ensure the food supply in a season of poor yields. Otherwise the community would be exposed to frequent privation and grave risk of extermination or dispersal by famine, more especially in regions of uncertain and fluctuating rainfall. One would therefore, expect the production of a 'normal surplus' of food in an average year." (Allan 1965, 38)

He goes on to argue that in such normal years the "surplus" it used for beer-making which when shared repays work-obligations, buys social prestige and amounts to obtaining future claims on others. Seen this way, the surplus is "invested" but not in anything yielding an increment to output for the group as a whole.

In this connection, Franklin has proposed the distinction between systems of surplus production and systems of appropriation (Franklin 1965). Thus a peasant economy is a system of production which may fit into any of several systems of appropriation (Wolfe 1966). Similarly, the anthropological literature stresses that civilization with relatively complex social organization, continuity, role-task specialization, group cohesion, the exercise of authority and other institutional development implies the existence of a surplus.

In any case, the leisure surplus is a deeply-rooted cultural phenomenon. The existing degree of labor utilization does represent a point on some socially-optimum production function, consistent with the existing leisure preferences, values and technology. Appropriating it for some non-consumptive purpose may require improved political and social organization or some exogenous force.

### **The Technological Surplus**

The forces limiting all economic progress in classic theory are population growth and diminishing returns to labor. Ester Boserup has dealt with the same factors but by ordering them in a different way suggests that she ends up "standing Malthus on his head" (Boserup 1965). She argues that population growth tends to be the stochastic variable, resulting from natural, climatic and biological forces as well as variation in economic conditions. In her view the economic problem for most societies is how best to adapt agricultural output to population given the supply of land and other factors. In other words, factor proportions, and income per capita follow population growth in relation to the land available, not the other way around. The shifts from primitive, slash-burn agriculture to short-fallow rotation and ultimately to settled, annual cultivation are, in her model, the responses of society to population pressure. The basic point of view is thus an optimistic one which stresses that most rural societies



have an unrealized potential for further "technological" adaptations if and when population pressure occurs.

Critical to the analysis of Boserup is a potential surplus of output available to the rural sector through the availability of an improved or higher-order level of technology. Thus, a technological response to changing man-land ratios such as movement from long-fallow to short-fallow suggests a hierarchy of agricultural production functions. The production functions represent different technologies and do not represent merely discontinuities or lumpiness associated with an existing production function. They represent genuine shifts to new production functions.

In addition to the movement from long-fallow to short-fallow the introduction of crop rotation, irrigation, chemical fertilizer and mechanization are all examples of technological changes. But the changes need not be so dramatic or instantaneous in effect. Smith (1969) has documented the profound effect on Japanese agriculture in the late Tokugawa period of a series of small changes, of know-how in seed selection, better fertilization and more careful cultivation. The first "Agricultural Revolution" in Western Europe was of the same sort (Dumont 1957; Jones and Woolf 1969).

The notion of a hierarchy of agricultural production functions was formalized by Hayami and Ruttan (1971) as a meta-production function. Hayami and Ruttan also argued, as does Boserup, that changing factor proportions would dictate the movement to a new production function although they focus more attention on the response of the input production sector to changing factor prices in total than to population alone. In general, it seems likely that at early stages of development new agricultural technologies are available within the sector and latter with varying degrees of adaptive research within the sector can be made suitable for local conditions and factor prices. But if the required new technologies require industrial based inputs, then the Boserupian surplus can be unlocked only with some inputs from outside agriculture.

In later extensions of her basic work, Mrs. Boserup has added off-farm employment by some members of the farm household as a second type of adjustment to population pressure. She has also examined the relationship between the agricultural production system and settlement pattern and the degree of urbanization of a nation. Thus, she finds that land extensive, sparsely-settled areas find it difficult to transport and accumulate the surplus needed to support a high degree of urbanization unless transportation costs are minimized by a river transport system (Boserup 1976). In short, as it is the absolute size of the surplus which matters to the support of the urban complex, densely settled, land-intensive areas are more likely to produce a commercially oriented urban system. She does not, however, fully integrate these points in her basic model nor does she attempt to deal with other sorts of cases—for example, with instances of



high rural density and land-intensity which have not created any marked degree of urbanization.

The technological-response model thus argues that some unrealized potential for increased output with given inputs nearly always exists. But the potential "surplus" is not in underemployed factors but in the choice of a technology. As Spooner and Nettling (1971) observe, the principle of least-effort motivates producers in this view not the principal of maximizing net surplus. New technology and increased output are usually thrust on a system by some pressure, population growth being the most obvious such pressure.

The model is limited in its view of the alternatives open to a society faced with growing population pressure. Intensification is one answer but so would be immigration, geopolitical expansion, or a more coercive internal distribution system. Slavery, for example, may be an effective way of protecting the standard of living of the elite without the need for any technological change. (Indeed, once instituted, there is reason for thinking that such a highly coercive sociopolitical system will tend to resist technological change since it threatens the control of the elite).

Colin Clark advanced a similar, mainly optimistic, model of the rural sector's development process, but one which allows for "unfortunate" cases. Thus: "The normal and fortunate course of economic development is that, when the productivity of a country's agriculture can considerably exceed the required standards of consumption of the rural population and when other circumstances are favorable too, urban and industrial population begins to grow . . . but, if this urban growth is in some way checked, the rural population continues to grow so that the amount of cultivable land per man falls . . . the ability to feed an urban population also diminishes. Such a country may therefore become relatively more dependent upon agriculture than ever . . . These cases of extreme congestion or 'rural overpopulation' represent an unhappy by-road on the normal road to development . . ." (Clark 1970, 18-19). These cases are the ones which Wharton had in mind with the question: "Why did so much of traditional agriculture lose its race with population?" (Wharton 1969, 465).

Clark's analysis does not involve population growth as a causal factor and could be called a "spontaneous" surplus model. Others focussing on the same intersector growth process have argued for what can be called a "demand-induced" surplus model. Julian Simon (Simon 1978) and Alfred Sauvy (Sauvy 1969) have constructed similarly optimistic longer-run models, which turn chiefly on the favorable effects of population growth on aggregate demand, investment and technical change.

### Effort or "x-Efficiency" Surplus

A further point remains regarding the surplus concept, potential and actual. Leibenstein has recently called attention to the relevance of "x-inefficiency or system-slack for theorizing about development. Thus, there may always be a potential for further increases in output per unit of input depending upon worker motivation, organizational skill, and a host of other qualitative factors (Leibenstein 1978). In fact, such small qualitative changes in efficiency can amount to a technological shift. As noted they seem to have played an important role in the modernization of agriculture in many countries (Smith 1959; Hanley and Yamamura 1977).

Leibenstein's basic x-efficiency paradigm is an effort to explain the puzzling but inescapable fact that producing units frequently can be shown *not* to be maximizing net profits or to be making the most "efficient" (output maximizing) use of their inputs. Rather than concluding that such firms are "irrational" he suggests that they are "efficient" judged by some more appropriate test. This appropriate but unobserved criteria he calls the "x-factor." A firm may thus be foregoing rationally some "allocative efficiency" in order to obtain "x-efficiency" -market peace with competitors, serving its customers "better," keeping its workers happy, etc. Such "inefficiencies" as judged by the usual criteria are optional. They can shade off into lethargy ("inert areas" of decision-making according to Leibenstein) and a transactions-cost argument. But the point for present purposes is that, under pressure, the firm has the potential for tightening up, increasing output, reducing costs or otherwise improving on its economic position. Thus, to the extent that this is possible, some unrealized surplus must exist.

### A General Framework for Surplus Analysis

We have suggested five analytically useful categories of surplus: (1) the Classical (or average product  $>$  average subsistence); (2) the "other goods" (or local manufacturing industries) surplus; (3) the leisure (or anthropological) surplus; (4) the technological surplus; (5) the x-efficiency (or system slack) surplus. The first is short-run if anything like Malthusian conditions prevail; sustained population growth, static technology and no possibility of economic redistribution. The second and third together comprise the surplus labor approach underlying most of the Lewis Ranis-Fei two-sector models. The fourth approach rests on a relatively optimistic anti-Malthusian assumption about technological change. Finally, the x-efficiency paradigm simply argues that the microeconomic units (firms households) may or may not be operating "efficiently" at all times and,

if they do not, then some surplus exists, all other conditions constant, on this score.

The general propositions involved can be put formally as follows:

Let  $L$  be labor used;  $O$  be output;  $P$  be population;  $N$  be all non-labor resources;  $S$  be subsistence per capita:

$$S = s(P_1)$$

$$L = f(P_1)$$

$$L_1 = g(P_1)$$

$$\frac{O''}{O'} = e$$

in which;  $f$  is current labor force participation rate in "productive" activities.

$e$  is an efficiency improvement factor in such activities.

$s$  is the socially-defined subsistence per capita.

$g$  is the "full employment" rate of labor force participation in productive activities.

(1)  $\left(\frac{O}{L}\right) L - S(P)$  for any given,  $P$ ,  $N$  constant, is the Classical Surplus.

If  $L_1$  is an increased supply of labor leading to output  $O_1$ , then:

(2)  $\left(\frac{O_1}{L_1}\right) L_1 - \left(\frac{O}{L}\right) L$  for any given  $P$ ,  $N$  constant, is the "labor surplus" potential output.

If the production function is:

$$O = N^a L^{1-a} \text{ in which } L \text{ is labor and } N \text{ is land}$$

then the marginal product of labor is:

$$MP_L = \frac{\partial O}{\partial L} = a \frac{O}{L}$$

and since  $N$  is fixed:

$$\partial O = \partial L \left( a \frac{O}{L} \right)$$

or total change in output is equal to change in labor input times labor's marginal productivity.

$$O = L^Z \quad (Z > 1)$$

indicating that  $MP_L \left( a \frac{O}{L} \right)$  falls.

And:

$$AP_L = \frac{O}{L} \text{ also falls.}$$

A change in  $O$ , due to a change in labor input, land and technology constant, is a movement along a given production function. A shift in

technology such as to shift the production function (land still fixed) is:

$$O' = L^z$$

Thus:

$$(3) \quad (L) \frac{O'}{L_1} - (L) \frac{O}{L_1}, N \text{ constant, for any given } P$$

is the technological potential surplus.

$$(4) \quad \left[ (L_1) \frac{O''}{L_1} \right] - \left[ (L_1) \frac{O'}{L_1} \right], N \text{ constant, for any given } P,$$

is the x-inefficiency surplus.

Thus, the *total* actual and potential surplus is equal to:

$$(5) \quad \left[ \left( \frac{O}{L} \right) L - S(P_1) \right] + \left[ \left( \frac{O_1}{L_1} \right) L_1 - \left( \frac{O}{L} \right) L \right] + \left[ (L_1) \frac{O'}{L_1} - (L_1) \frac{O}{L_1} \right] \\ + \left[ (L_1) \left( \frac{O''}{L_1} \right) - (L_1) \left( \frac{O'}{L_1} \right) \right]$$

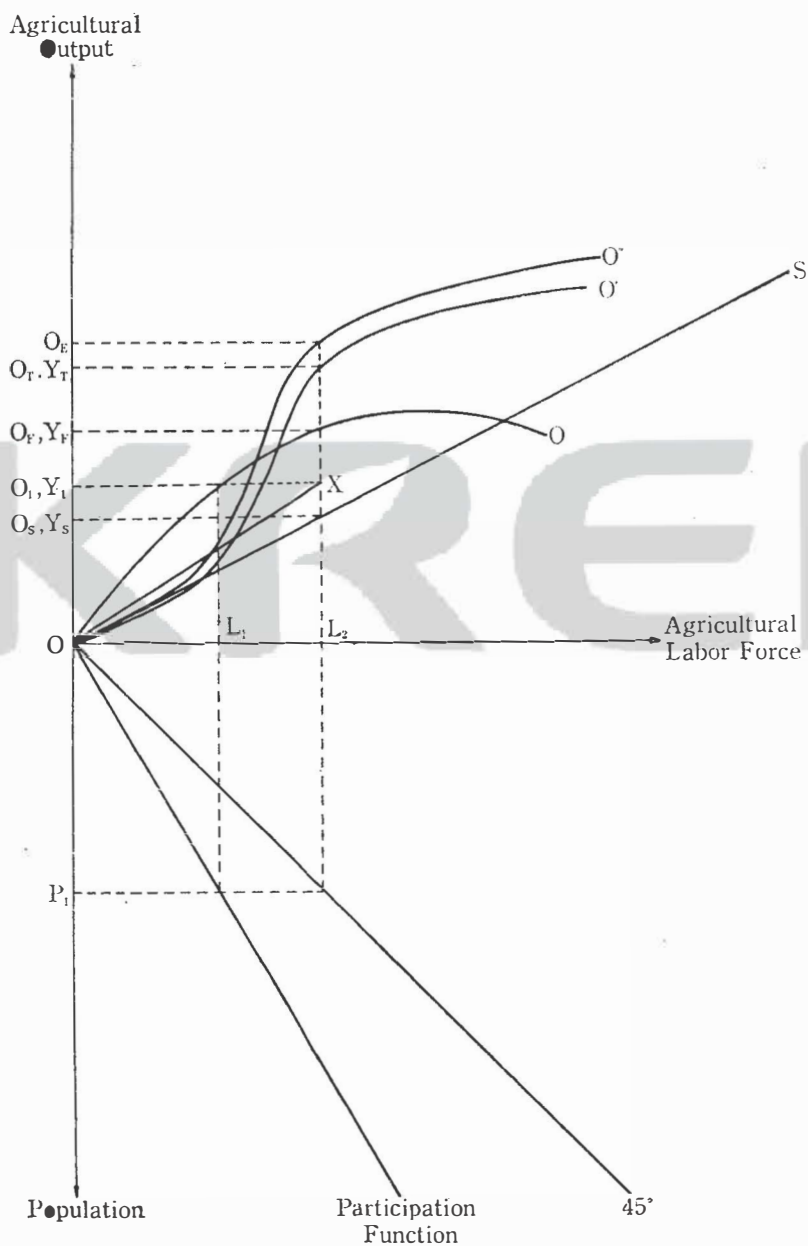
### Graphic Presentation of Alternative Sources of Agricultural Surplus

These several sources of possible agricultural surplus are illustrated in Figure 1. The upper quadrant relates the agricultural labor force to agricultural output. The lower quadrant relates rural population to the agricultural labor force. In the lower quadrant the size of the rural population is measured on the vertical axis and the size of the agricultural labor force on the horizontal axis. The 45° line indicates the maximum labor force participation rate (or *g*) - off it can be read that maximum labor force  $L_1$  available with a given population when both population and labor force are expressed in adult-consumption-equivalents which is required to compare output with total subsistence requirements. The participation function indicates the prevailing relationship between population and the labor engaged in agricultural production, (participation rate *f*). Thus, with a population of  $P_1$  the maximum employment in agricultural production is  $L_1$ , the actual is  $L$ . The difference between  $L_1$  and  $L$  represents "surplus labor"; that is, leisure and persons engaged in "non-productive" employment.

In the upper quadrant,  $O$  and  $O'$  represent two aggregate production functions for agricultural produce with diminishing returns resulting from an increasing man/land ratio due to fixed land. Production function  $O'$  represents a higher level of technology such as to shift the production function.

The  $S$  line measures the total subsistence requirement of the agricultural sector with the slope of the line  $S$  equal to the individual subsistence requirement. At population  $P_1$  the minimum level of output required to assume survival of the rural population is  $O_S$ .

FIGURE 1 THE SEVERAL SURPLUSES ILLUSTRATED



The leisure and non-productive employment surplus can be demonstrated by the difference between output level  $O_1$  and level  $O_F$  which would result from a shift in the participation function toward the full employment line, i.e., a movement from  $L$  to  $L_1$  with population held constant at  $P_1$ . Thus, to the extent that rural people are accepting leisure or are producing non-agricultural products within the household it would be possible to increase the output of agricultural product through an expansion of the labor input.

The classical surplus for population  $P_1$  with production function  $O$  is represented by the difference between subsistence requirements of the population ( $O_s$ ) and the current level of output ( $O_1$ ). Thus, the slope of the subsistence function provides a measure of the per capita subsistence requirement while the slope of  $O$  provide a measure of the per capita agricultural output. The difference between the two slopes is a measure of the reduction in per capita food availability that could occur with a given population without falling below subsistence. It is important to note that at the lower end of the process, population leads to an increase in the surplus due to increasing returns to scale. Only after the "optimum" is exceeded do decreasing returns set in.

The technological surplus is measured by the increase in output at a given level of labor input that could be obtained with a higher level of technology. Once again, assuming population  $P_1$  and the production function  $O$  and  $O'$ , the Boserupian surplus would equal the difference between output level  $O_F$  and  $O_T$ . There can be no Boserupian surplus at the existing level of labor input for if more output could be obtained with the labor input it would be taken.

The x-efficiency surplus is shown as the dotted production possibilities curve  $O''$  which raises output at  $L$  and  $O_E$  creating a surplus of  $O_E - O_T$ . The curve  $O''$  as drawn is a constant percent increment to  $O$ . It could equally be a constant absolute increment in which case the surplus would be constant absolutely. Thus, in Figure 1, the total surplus, actual and potential, is equal to  $O_E - O_s$  or the four measured subcomponents of: classical; labor under utilization (covering leisure and other-goods); technological; and x-efficiency; or  $O_1 - Y_s$  plus  $O_F - Y_1$  plus  $O_T - O_F$  plus  $O_E - O_T$ .

### Policy Implications: Realizing the Surplus

Only the Classical Surplus is an *existing* surplus, the others are all potential increases in output over and above subsistence needs. Yet all the surpluses require not only a mechanism for stimulating production but a means of transferring or expropriating it. This is the key question for development policy: How best to stimulate and expropriate the several latent surpluses.

The above theoretical framework suggests a systematic way of approaching the question. The creation of any of the latent surpluses turns around the imposition of some external pressure on the existing systems. The classical surplus begins to occur due to population growth and economies of scale but only as the economy becomes monetized, specialized and tradeoriented. The leisure labor-surplus exists when no central political authority or Colonial power exists to require full-employment or change the leisure preference. The local manufactures surplus (if it is a surplus at all) exists when tastes are unchanging and no import penetration has occurred. The technological surplus implies a satisfactory present standard of living due to no population pressure, no demand for imports or other pressures. Much the same can be said of the x-efficiency surplus.

In retrospect it seems clear that the great attraction of the "labor surplus" approach to development policy was that it seems to promise the creation of an exploitable surplus without the need for any "pressure" or structural transformation. The framework laid out above argues that the latent surplus implied by strong leisure preference, by poorly integrated domestic economic systems or by limited material aspirations may not be easy to change through even wise policy.

Countries which argue that they are "under-populated" are presumably arguing that they are still in a range of increasing returns to scale and hence have an unrealized classical surplus which population growth will create.

This also is a something-for-nothing policy model.

The "Stalinist" approach creates the surplus through forced labor, mandatory fixed delivery quotes and other physical techniques. Structural transformation is achieved through economic and political coercion (Swianiewicz 1960).

The "open" or market-oriented development model, on the other hand, sees the market as achieving the transformation. Hla Myint (1958) has, for example, shown that the classical "vent for surplus" doctrine was for the most part an outgrowth of growing monetization, specialization and rising output. A country necessarily adopted an export-oriented policy as structural transformation creates larger and larger actual surpluses. Under colonial conditions the export-oriented may, in effect, be imposed on a nation by capitalists and plantation administrators. Voluntary or not, the point remains the same. Opening an economy with large potential agricultural surplus to substantial foreign export demand is a type of pressure which leads to structural transformation. It is thus a policy option for creating and capturing potential surplus.

Finally, a dynamic urban-industrial sector can have the same effect. The demand such a sector will generate for agricultural output will inevitably lead to a growing market-penetration into the countryside and changes in tastes and the allocation of time and other resources. Such a market-



oriented expropriation not may or may be "exploitative" or non-competitive. The urban sector even in relatively primitive societies may emerge as the producer of outputs which when applied to the rural sector result in increased labor productivity. Included in such outputs are military and policy protection, design and control of irrigation schemes and religious rituals to ensure a favorable harvest. Wallerstein (1974) and others emphasize the exploitative nature of the surplus transfer. They argue that an insatiable desire for further surplus by the ruling elites "explains" virtually all of modern European (and World) history. This approach is essentially neo-Marrist and, like Marx, can be criticized for a failure to see the essential difference between extracting a surplus by authoritarian political means as against using market incentives.<sup>2</sup>

In sum, any policy which aims at creating the latent surplus must employ some external "pressure." Any policy which aims at appropriating the surplus created must use some economic or political mechanism for doing so. Which type of pressure and which system of appropriation are most likely to work will in the end depend upon which of the several latent surpluses outlined above are the target of the policy.

### Summary and Conclusions

We suggest that a potential surplus can be generated and captured in response to three forces: (1) population growth; (2) outside market penetration and monetization; and (3) domestic urbanization coupled with the growth of a central authority anxious for the surplus. Once any one or combination of these forces sets the process of surplus creation and transfer in motion, the process becomes cumulative. That is, population growth begins by creating a classical surplus due to economies of scale, next puts pressure on the system to reduce leisure and for shift to a more intensive technology and finally forces a more relentless efficiency in production. Similar scenarios can be sketched out for the short vs. long run effects of market penetration, and of the growth of a coercive central authority. In practice it is likely that all three interact. The surplus remains the key to development but it is a more complicated concept than is commonly understood.

<sup>2</sup> This distinction corresponds to the last two types of systems (redistributive and exchange) in Pearson, Polanyi and Arensburg's well-known typology of economic systems (Pearson *et al.*, 1958). An excellent discussion of the political implication of this distinction in a modern Asian context is to be found in Race (1971).

## REFERENCES

- Allan, William, 1965. *The African Husbandman*. New York: Barnes & Noble.
- Baran, Paul. 1962. *The Political Economy of Growth*. New York: Monthly Review Press.
- Baumol, William J. 1956. *Economic Dynamics*. London: Macmillan.
- Birnberg, Thomas B. and Resnick, Stephen A. 1975. *Colonial Development: An Economic Study*. New Haven: Yale University Press.
- Boserup, Ester. 1965. *The Conditions of Agricultural Growth: The Economics of Agrarian Change under Population Pressure*. Chicago: Aldine Pub. Co.
- . 1976. "Environment, population and technology in primitive societies." *Population and Development Review* 2(1): 21–36.
- . 1973. "Organizer's statement: Population, food and agriculture" in IUSSP. Leige: International Population Congress.
- Chayanov, A.V. 1970. *Theory of the Peasant Economy*. Homewood, Ill.: Irwin.
- Clark, Colin. 1970. "Health, population and agriculture," in A.H. Bunting (ed.), *Change in Agriculture*, International Seminar on Change in Agriculture, University of Reading. N.Y.: Praeger.
- . 1977. *Population Growth and Land Use*, 2nd ed. N.Y.: Macmillan.
- , and Haswell, Margaret. 1967. *The Economics of Subsistence Agriculture*. N.Y.: St. Martins Press.
- Domar, Evsey D. 1970. "The causes of slavery or serfdom: A hypothesis." *The Journal of Economic History* 30 (1): 18–32.
- Dumont, Rene. 1957. *Types of Rural Economy: Studies in World Agriculture*. London: Methuen & Co.
- Fei, John C.H. and Ranis, Gustav. 1964. *Development of the Labor Surplus Economy*. Homewood: Irwin Inc.
- Feller, Irwin. 1972. "Production isoquants and the analysis of technological and technical change." *Quarterly Journal of Economics* 86 (Feb.): 154–161.
- Franklin, S.H. 1965. "Systems of production: Systems of appropriation." *Pacific Viewpoint* 2(2): 145–166.
- Hanley, Susan B. and Yamamura, Kozo. 1977. *Economic and Demographic Change in Preindustrial Japan, 1600–1868*. Princeton: Princeton University Press.
- Hayami, Yujiro and Ruttan, Vernon W. 1971. *Agricultural Development: An International Perspective*. Baltimore: Johns Hopkins Press.
- Hymer, Stephen and Resnick, Stephen. 1969. "An model of agrarian economy with nonagricultural activities." *American Economic Review* 59(4), Pt. 1.
- Jones, E.L. and Wolf, S.J. (eds.). 1969. *Agrarian Change and Economic Development: The Historical Problems*. London: Meuthen and Co.
- Jones, W.O. 1969. "The demand for food, leisure and economic surpluses," in C.R. Wharton, Jr. (ed.), *Subsistence Agriculture and Economic Development*. Chicago: Aldine.
- Jorgenson, D.W. 1961. "The Development of a Dual Economy." *Economics Journal* (June):
- Krader, Lawrence. 1975. *The Asiatic Mode of Production: Sources, Development and Critique in the Writings of Karl Marx*. The Hague: Assen.

- Leibenstein, Harvey. 1957. *Economic Backwardness and Economic Growth: Studies in the Theory of Economic Development*. N.Y.: John Wiley.
- . 1954. *An Economic-Demographic Theory of Development*. Princeton: Princeton University Press.
- . 1978. *General X-Efficiency Theory and Economic Development*. N.Y.: Oxford University Press.
- Lewis, W. Arthur. 1954. "Economic development with unlimited supplies of labour." *The Manchester School* 22(May): 139–191.
- Mellor, John W. 1967. "Toward a theory of agricultural development," in Southworth and Johnston (eds.), *Agricultural Development and Economic Growth*. Ithaca: Cornell University Press.
- Myint, Hai. 1958. "The 'classical theory' of international trade and the underdeveloped countries." *Economic Journal* 68(270): 317–337. Reprinted in T. Morgan *et al.*, *Readings in Economic Development*. Belmont, Calif.: Wadsworth.
- Nelson, R. Richard. 1956. "A theory of the low level equilibrium trap in underdeveloped economics." *American Economic Review* 46(5): 894–908.
- Ohlin, Goran. 1970. "Historical evidence of Malthusianism," in Deprez (ed.), *Population and Economics*. International History Association Congress, Section V, 1968. Winnipeg: University of Manitoba Press.
- Orans, Martin. 1966. "Surplus." *Human Organization*, Vol. 25, No. 1, Spring 1966.
- Paauw, Douglas S. and Fei, John C.H. 1973. *The Transition in Open Dualistic Economics: Theory and Southeast Asian Experience*. New Haven: Yale University Press.
- Peacock, Alan T. 1952. "Theory of population and modern economic analysis." *Population Studies*, 6: 114–122; 7: 227–244 (1954).
- Peasant Studies Newsletter. 1972. A symposium on the Boserup Model containing analysis and comments by Julius Rubin, Jan DeVries, Edward Neil, Brain Spooner, Robert Netting and Emmanuel Leroy Ladurie. Vol. 1(2): 35–44.
- Perkins, Dwight. 1969. *Agricultural Development in China, 1368–1968* 1st ed. Chicago: Aldine Pub. Co.
- Peterson, Willis and Hayami, Hujiro. 1977. "Technical change in agriculture," in L.R. Martin (general editor), *A Survey of Agricultural Economics Literature*, Vol. I (Traditional Fields of Agricultural Economics, 1940–1970), American Agricultural Economics Association. University of Minnesota Press.
- Polanyi, Karl *et al.* (eds.). 1957. *Trade and Markets in the Early Empires*. New York: Free Press.
- Race, Jeffrey. 1971. "Toward an exchange theory of revoltion," in John W. Lewis (ed.), *Peasant Rebellion and Communist Revolution in Asia*. New York:
- Robinson, Warren C. 1969. "The economics of work-sharing in peasant agriculture." *Economic Development and Cultural Change* 19(1): 57–58.
- Sauvy, Alfred. 1969. *General Theory of Population*. London: Weidenfield and Nicholson.
- Schultz, T.W. 1964. *Transforming Traditional Agriculture*. New Haven: Yale University Press.
- . 1966. "Review of Boserup." *Journal of Farm Economics* 48: 486–487.
- Sen, A.K. 1975. *Employment, Technology and Development*. Oxford: Clarendon.
- Simon, Julian. 1978. *The Economics of Population Growth*. Princeton: Princeton University Press.

- Slicher Van Bath, B.H. 1963. *The Agrarian History of Western Europe, A.D. 500-1850*. New York: St. Martins.
- Smith, Thomas C. 1959. *The Agrarian Origins of Modern Japan*. Stanford: Stanford University Press.
- Southworth, Herman M. and Johnston, Bruce F. (eds.). 1967. *Agricultural Development and Economic Growth*. Ithaca: Cornell University Press.
- Spooner, Brian. 1971. "Report on colloquium entitled "Population Resources and Technology." *Curent Anthropology* 12 (April): 254-255.
- (ed.). 1972. *Population Growth: Anthropological Implications*. Cambridge: MIT Press.
- Swianiewicz, S. 1965. *Forced Labour and Economic Development: An Inquiry into the Experiences of Soviet Industrialization*. London: Royal Institute of International Affairs.
- Wallerstein, Immanuel. 1974. *The Modern World-System: Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century*. New York: Academic Press.
- Warriner, Doreen. 1963. "Problems of rural-urban migration: Some suggestions for investigation," *International Labour Review*.
- Watkins, M.H. 1963. "A staple theory of economic growth." *Canadian Journal of Economics and Political Science* XXIX(2): 141-158.
- Wharton, Clifton R., Jr. 1969. "Subsistence agriculture: Concept and scope." Chapter 2 in C.R. Wharton (ed.), *Subsistence Agriculture and Economic Development*. Chicago: Aldine Pub. Co.
- Wittfogel, Karl. 1957. *Oriental Despotism*. New Haven: Yale University Press.
- Yotopoulos, Pan A. 1977. *The Population Problem and the Development Solution*. Stanford University Food Research Institute Studies, Vol. XVI, No. 1.