DISGUISED UNEMPLOYMENT AND MARKETED SURPLUS OF FOODGRAINS IN A DEVELOPING ECONOMY*

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The thesis of Balanced Growth in the underdeveloped countries provided by Prof. Nurkse was strengthened by this essay throwing light on the problems which were not deeply treated in the original theoretical frame; and some critical comments were included in this paper against the criticism which has been brought against Nurkse's theory.

I

During recent years there has been much criticism of the concept of disguised unemployment and of the view that it constitutes a potential source of capital formation. One of the most important arguments against the view that surplus labour can be withdrawn from the soil in underdeveloped over-populated countries and utilized for capital formation is based on the difficulty of providing this labour with food once it is withdrawn from the agricultural sector. If the total output of the farm does not fall when surplus labour is withdrawn—and this is assumed to follow definitionally from the existence of disguised unemployment—the per capita income of those who remain increases. It is contended that this will cause them to increase their consumption of foodgrains so that the withdrawal of surplus labour will not be accompanied by the release of an equivalent quantity of foodgrains to the market. In other words, the quantity of foodgrains that the disguisedly unemployed consume when they are on the soil, or even any substantial proportion of it, will not be released to the market when these workers are withdrawn, while their consumption of food when they are put to work on capital projects will itself tend to rise.[1] It is this problem of the

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[1] Nurkse recognized the possibility of increased consumption of food by the labour remaining on the soil as well as by the labour withdrawn from it. Ragnar Nurkse, *Problems of Capital Formation in Underdeveloped Countries*, Cairo, 1952, pp. 39–40. The problem of feeding the labour withdrawn from the soil is stressed among others by W. Arthur Lewis, "Unlimited Labor: Further Notes," *The Manchester School of Economic and Social Studies*, 1958. For a recent expression of the same view, see V. V. Bhatt, *Aspects of Economic Change and Policy in India, 1800–1960*, Bombay, Allied Publisher, 1963, pp. 103–105.

marketed surplus of foodgrains in relation to the treatment of the problem of disguised unemployment which is examined in this paper.[2]

It is generally agreed that the indifference curves in the extreme southwest corner of the indifference map are likely to be highly convex indicating very limited substitutability between various goods at the low income levels which are relevant for small farmers in the underdeveloped countries. This is taken to mean that the income elasticity of the demand for food will be very high. It does not, of course, necessarily imply this; low price elasticity need not always imply high income elasticity. It is certainly likely, however, that the income elasticity of the demand for food will in fact be high. Besides, empirical studies of the income elasticity of the demand for food amongst the groups concerned have provided evidence in support of the contention that this is so.[3] Consequently, it is held to have been conclusively proved that the task of feeding any surplus labour withdrawn from the soil is almost hopeless, apart from any substantial and continuing foodgrain import from abroad.

Such an analysis, however, fails to take note of some essential features of the situation that offer somewhat greater hope of solving the problem satisfactorily. It tackles an essential dynamic problem in an unnecessarily static context. What is likely to happen to the food consumption of farmers when their incomes increase requires more careful analysis than it has received so far.

II

It is apparent that the strength of the tendency to increase food consumption when there is an increase in income will depend first upon the prevailing level of income and second upon the extent of the increase in income. It is of course obvious that the existing low level of income amongst small farmers will tend to keep the income elasticity of demand for food relatively high. Nothing much need, therefore, be said about this factor. We are more concerned here with the influence of the size and character of the change in income which is under consideration. It is important to note in this connexion that the income elasticity of the demand for food will tend to be lower for substantial increases in income than it will be for small increases at any given point. This is because for a large increase in income,

[2]   A brief discussion of this problem, as it arises in the context of Leibenstein's explanation of disguised unemployment, is contained in my earlier paper, "An Application of Leibenstein's Theory of Underemployment," *Journal of Political Economy*, Vol. 68, 1960, pp. 511–17.

[3]   Estimated income elasticities of demand for food for some countries are as follows : Ghana 0.8–1.0; U. A. R. (Egyptian Region) 0.9; Ceylon, Puerto Rico 0.8; India 0.75–0.85; Greece, Guatemala 0.7. See L. M. Goreux, *Income Elasticity of the Demand for Food, Household Survey Analysis,* ECE and FAO (mimeographed), 1959. These income elasticities are with respect to food, not foodgrains.

the consumer will be in a position to increase his food consumption quite substantially and will probably prefer, after increasing his food consumption to some extent, to utilize his much larger income in satisfying other wants to a greater extent.[4]

It is also likely that the impact on food consumption is likely to be different for a given increase in income if it is brought about in one sharp stroke instead of in a series of small increases over a considerable period of time. From any given level of income (which may be assumed to be fairly low to start with), a small increase in income is no doubt likely to be absorbed mainly by additional food consumption, since the want for additional food is what is felt most extremely at that low level of income. As the person becomes accustomed to that new level of consumption, which it is granted is still inadequate in some sense, the desire for additional food consumption is likely to be felt acutely once again and so on. If, however, a substantial increase in income occurs sharply over a short period, it is very likely that the increase in food consumption that is made possible by the income increase will appear to be so large relative to the existing level of food consumption that a somewhat smaller increase in food consumption may prove quite satisfactory. There will thus be an impact effect on the income elasticity of the demand for food.[5]

This hypothesis that the income elasticity of demand for food is likely to be lower for a sharp large increase in income than for the same increase in income brought about over a long period in a series of marginal increments is not contradicted by the available empirical evidence regarding income elasticity of the demand for food since this is based on cross-sectional data with reference to income classes.[6] Even if this data does throw light on what is likely to happen to food consumption, as income goes up in small jumps —and even this is not entirely clear—it can hardly be considered conclusive

[4]   The distinction drawn here can be roughly described as one between the point and arc elasticities of demand, the difference between which is likely to become greater as the arc becomes larger, i. e., in this case as the relevant income change becomes greater. It is implied here that the arc elasticity will be generally smaller than the point elasticity.

[5]   If income increases in a series of small increases over a considerable period of time, the recipient would tend to move along a given demand curve. A sudden sharp increase in income is likely to bring about a shift in the demand curve—a sort of rotation about the recipient's present income-demand position. The combined effect of the two arguments is that the arc elasticity of a curve which has shifted to some extent as the result of a large increase in demand is likely to be lower than the point elasticity of the original demand curve, which shows the effect of small changes in income brought about over a period of time.

[6]   As the Food and Agriculture Organization points out, income elasticities of demand for food "are usually derived from household surveys of consumer consumption and expenditure," which make it possible to establish a rather comprehensive picture of "consumption patterns in different income and social groups." FAO, *The State of Food and Agriculture*, Rome, 1960, p. 114.

with regard to the effects of substantial jumps in income. Incidentally, this is consistent with the view that the indifference map is likely to be quite hazy at points considerably to the northeast of the current consumption equilibrium, a fact to which further reference will be made later in the analysis.

The above analysis suggests the importance of bringing about the maximum possible increase in the income of the farmer within the shortest possible time, since this will help to bring about a larger proportionate release of foodgrains to the market than would otherwise occur. A massive programme of withdrawal of surplus labour in a given region may in the light of this analysis offer greater hope than a thinly spread programme of surplus labour withdrawal operating over the entire country and over a long period of time. There could be other advantages of such massive programmes in small regions, which will be examined separately.

The discussion so far has been in terms of a constant total output and a proportionate increase in per capita income on the farm when surplus labour is withdrawn. There is no reason, however, why the problem should be considered in these terms only. The withdrawal of surplus labour has necessarily to be viewed as part of a wider programme of economic development. A programme of increased food production must be undertaken simultaneously with any programme for utilization of the pool of disguised unemployment, and there is everything to be said for implementing the two programmes in exactly the same regions in a co-ordinated manner.

Any increase in food production that results from such a programme of development will operate to increase the incomes of farmers more than proportionately to the withdrawal of surplus labour. Even if the income elasticity of demand for food remains high, the net release of foodgrains from this additional food production will constitute a direct addition to the marketed surplus over and above that which results from the proportionate income increase caused by the withdrawal of surplus labour. The income increase resulting from the increased output of foodgrains is, however, also likely to have some impact on the income elasticity of the demand for food in terms of both the larger over-all increase in income and the sharpness of the increase which occurs at this time. When the approach suggested above is adopted, the release of foodgrains is thus likely to be larger both because of the lower income elasticity of the demand for food and the larger increment of income to which it is applied.

No distinction has been drawn so far between the value of total farm output and the farmer's income. There is clearly such a difference consisting of the business expenditure of all kinds incurred by the farmer in the course of production. Any wages paid to agricultural labour would of course tend to be consumed mainly in the form of food and would not, therefore, make any difference to the marketed surplus. Expenditure on non-agricultural inputs such as fertilizers, water, credit, etc., would, however, necessitate an equivalent sale of farm output.

A distinction has also to be drawn, for the purpose of this problem, between the total farm income and disposable income, which is the relevant magnitude to be considered in determining the volume of food consumption. This difference consists mainly of direct taxes of all kinds. The question of whether land rent and land revenue should be described as business expenditure or taxation need not be examined here since what is relevant to the present discussion is the total size of the difference between the value of total output on the one hand and disposable income on the other. Land rent and land revenue form very definitely a part of this difference.

The farmer must necessarily sell on the market that quantity of foodgrains which represents the excess of the value of total output over disposable income. Any factor which increases this excess will, therefore, tend to increase the total amount of foodgrains that is marketed. It is easy to see that an expansion of total output will lead automatically to some increase in the non-agricultural business expenditure of the farmer, though the mere withdrawal of surplus labour even though it has an impact on per capita income will not necessarily do this. To what extent the non-agricultural business expenditure of the farmer will increase when total output increases will depend partly on the nature of the techniques of production that the farmer adopts. This is in turn amenable to the influence of official policies and programmes, whose choice may, therefore, be subject to this consideration. Mechanization of agricultural operations may, for instance, lead to a relative increase in the non-agricultural business expenditure of the farmer. This may certainly be an additional argument in its favour, though one need not accept it only for that reason. Increased use of artificial fertilizers and irrigation facilities will probably form a part of any programme for increased agricultural production. Provision of additional credit is also likely to form part of such a programme. It is clear, therefore, that if a programme for increased production is combined with one for the removal of surplus labour in a given area—and particularly if this programme is appropriately oriented —there will be a net increase in the marketed surplus for the purpose of meeting increased non-agricultural business expenditure.

An analysis along these lines appears to support a policy of increases in land rent, land revenue, and direct taxation. Here, however, many complex questions of incentives for increased production are involved. Such incentives are of the utmost importance for the agricultural sector in a developing economy. There is, therefore, reason to be very careful in the choice of policies in this field. In general, it appears reasonable to suggest that where increased land rent, revenue, or direct taxation is linked clearly to some marked improvement in the farmer's situation—in fact, made conditional on it if possible—the disincentive effects of such higher taxation may not only be less marked, but may actually be transformed into incentive effects. There is a case, for instance, for tackling disguised unemployment by drawing off entire families from the soil and redistributing their land to those who have too little.[7] If this is done on condition that relatively higher land rent

or revenue is paid on this additional land, the disincentive effects are hardly likely to operate. The tax will in fact function like a tax on windfalls. Alternatively, a tax analogous to an excess profits tax will also meet the situation, but the practical difficulties in the construction and operation of such a tax are well known and it is not, therefore, advocated here. The point is that if the above analysis is kept in mind, it may be possible to devise appropriate measures which would widen the difference between the value of total output and disposable income, as the former increases.

III

It has been shown so far that the increase in the marketed surplus is dependent on (a) the difference between the value of total output and disposable income, (b) the extent of the increase in per capita disposable income, and (c) the income elasticity of the demand for food. When surplus labour is withdrawn and total production is increased at the same time, all these factors operate in such a way as to bring about a substantial increase in the marketed surplus. In this connexion, the possibility of a lower income elasticity of demand being operative for larger increases in per capita income has been already noted. The effects of possible changes in the pattern of consumption on the income elasticity of demand for food have not, however, been examined. It is to that problem that attention is now turned.

Let us consider first the problem of saving, which to the extent that it is monetized implies the marketing of an equivalent quantum of foodgrains. Substitutability between consumption and saving is perhaps likely to be lower even than between different items of consumption. Yet, an increase in saving is essential if the capital formation necessary for economic development is to take place. According to Rosenstein-Rodan, the way out of this vicious circle is "to have *first* an increase in income (due to an increase in investment which mobilizes additional latent resources) and to provide mechanisms which assure that at the *second* stage the marginal rate of savings be very much higher than the average rate of savings."[8] The argument here is clearly that the income elasticity of saving can be increased even though its price elasticity is low and cannot be significantly influenced. Since Rosenstein-Rodan has not distinguished between income and disposable income in this particular argument, it would apparently be satisfied even by tax and other measures for widening the difference between income and disposable income. In other words, it is not clear that he has voluntary saving mainly in mind in this particular context. It has been already argued that an increase in compulsory saving through tax measures is possible and this will affect the volume of the marketed surplus of foodgrains. But is

7   The economic effects of different types of programmes for withdrawal of surplus labour from the soil are being separately examined.

8   P. N. Rosenstein-Rodan, *Notes on the Theory of the "Big Push"* (mimeographed), Center for International Studies, M.I.T., Cambridge, Massachusetts, 1957, p. 13.

there any reason to feel that voluntary saving will not increase also in this context?

This question cannot be tackled without taking into account the circumstances under which the farmer in an underdeveloped country is placed. For centuries, he has lived under grinding poverty and rarely has he seen any hope of bringing about an improvement in his own condition. The apparent conservatism of the farmer in the underdeveloped countries has been ascribed to this basic absence of hope of improvement. In the past, increases in output have usually been barely marginal in character and they have rarely contributed anything to a lasting improvement in the farmer's standard of living. On the other hand, a programme of the type described above will bring about a sharp increase in the income of the farmer. This will not only have the advantage described earlier but will also bring about a change in the farmer's attitude to his own future. All this is certainly very relevant to the impact of this programme on his marginal propensity to save.

It is possible to look upon saving as just one more commodity that can be purchased with the income of the farmer. The problem is then: what is the nature of the indifference map of the farmer between saving and consumption in general? It has been argued that the farmer's indifference map is likely to be hazy much to the northeast of the current equilibrium position. A sharp increase in income is, therefore, likely to result in new equilibrium positions which cannot be predicted merely from the character of the current equilibrium position and of the changes in it that result from small changes in income. By bringing hope to the farmer, a sharp increase in income is likely to change the shape of the indifference map entirely. A high marginal rate of voluntary saving is possible in this context.

The marketed supply of foodgrains does not depend only upon the proportion of saving, but also upon the proportion of non-food consumption. The significance of this fact for economic policy is rarely realized. Yet a discussion of the factors influencing the proportion of food to total consumption could follow substantially the same lines as the earlier discussion of the proportion of consumption to disposable income. If it is possible to force down the income elasticity of the demand for consumption in general, it is equally possible to force down the income elasticity of the demand for foodgrains within the group of consumption goods. Another way of putting this is to say that it is possible, with appropriate measures, to increase the substitutability between food and non-food consumer goods as consumption in general increases in the context of increasing income.[9]

The current high income elasticity of the demand for food (i. e., low substitutability between food and non-food consumer goods even in the context of rising incomes) reflects the current availability of other goods and

9   It is also possible to ensure that a large proportion of the increased per capita food consumption consists of food items other than foodgrains. Possibly some part of the surplus labour withdrawn from general agriculture could be devoted to the production of these other food items, e. g., vegetables, milk, eggs, fish.

services to the farmer and his current taste patterns based on this availability. If a wide variety of new and attractive consumer goods at low prices are made available to the farmer just as his income is rising by a substantial amount, it is very likely that there will be an appropriate alteration in the shape of his indifference map and a fall in the income elasticity of the demand for food. It is thus necessary to ensure that a substantial volume and variety of non-food consumer goods are made available at reasonable prices in the areas in which the income increases are being brought about. The irrelevance of current data about income elasticities of demand for food stems from the fact that the studies on which they are based have never been carried out in this context.[10]

Sharp income increases, increased availability of non-food consumer goods, and an atmosphere of change which the entire programme visualized here is likely to engender will produce changes in the pattern of consumption and hence tend to lower the income elasticity of the demand for food. In following the programme, one can no doubt try first to play upon potential demands about whose existence there is definite evidence. In community project areas in India, for instance, it has been found that there is a strong demand for education for children and even for adults. This does not of course necessarily justify the charging of fees for such education in view of other arguments against such a policy, but cheap, well-written, illustrated books printed in colour may certainly sell well in such areas and might do considerable good by disseminating ideas as well. One need not, however, be specific in this way to convey the general idea that a wide supply of consumer goods will stimulate a corresponding demand in the context of a substantial increase in per capita incomes and an atmosphere of change induced by the programme described. Increased consumption of various types of non-food consumer goods by those whose incomes have increased will produce a demonstration effect, which will operate here to advantage and could be deliberately brought into effect if necessary. The demonstration effect could thus be made to have beneficial rather than adverse effects on the developmental process.

An objection might be raised at this point that increased availability of non-food consumer goods might operate to reduce voluntary marginal saving rather than to reduce the income elasticity of the demand for good. This is no doubt a real danger, but the circumstances in which increased availability of various types of non-food consumer goods will operate under the proposed programme are in fact likely to reduce this danger and may help to make such availability produce further beneficial effects on the whole process of growth in the area.

Sharp increases in per capita income and the generation of an atmosphere of hope for the future are crucial elements of the programme in this connexion. Increased availability of non-food consumer goods will contribute substantially to an atmosphere of hope for the future by giving substance to

[10] See footnote 6 above.

the idea of a higher standard of living which is quite capable of achievement. It is very likely, for instance, that increased availability of non-food consumer goods and the demonstration effect of their purchase by others in the context of increasing incomes will stimulate efforts to increase income further. It will encourage the adoption of new techniques and methods which promise results in terms of increased income, and what is even more important it will stimulate additional investment, which will, to some extent, be a necessary concomitant of the adoption of new techniques of production.

Increased voluntary saving is no doubt an alternative to increased consumption of non-food consumer goods out of a given increase in income, but it is also an instrument for making such increased consumption of non-food consumer goods possible in the future by increasing income itself. This reasoning is likely to appeal to the farmer in the context in which he is placed in terms of the policy outlined above, particularly since a partial but immediate satisfaction of his desires for the new consumer goods is made possible with the initial increase in income.[11]

Thus, in the given situation of sharply increased disposable income and increased availability of non-food consumer goods, the farmer will tend to (1) increase his efforts to produce income, (2) adopt new techniques and methods more easily, (3) invest more than he would otherwise have done, and (4) consume more non-food consumer goods than he would otherwise have done. He will do this while at the same time increasing his food consumption substantially, but by less than he would otherwise have done. All this will not only produce favourable effects on income and output over time, but will yield in the immediate future a lower income elasticity of the demand for food than would otherwise have been the case. The combined effect of this will be to produce a larger increase in the marketed surplus over time than appears at first sight to be likely.

The marketed surplus of foodgrains can be increased to a much greater extent than is usually thought possible provided the withdrawal of surplus labour is looked upon as part of a composite programme of economic development and provided an increased supply of non-food consumer goods and non-foodgrain items of food is made available as an instrument for changing the entire socio-cultural atmosphere in the rural areas. The problem of feeding the surplus labour that is withdrawn from the soil is likely to appear less intractable in the context of the above approach.

APPENDIX

It is possible to show the effect of the withdrawal of surplus labour from

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[11]   Bhatt makes the point that "farmers cannot be induced to work harder unless they are promised some increase in consumption . . . ," op. cit., p. 105. Increased consumption can operate as an incentive not only to work harder but to save more (out of increased income), particularly when harder work and more saving can both be seen as instruments for increasing consumption further in the future.

the soil on the marketed surplus of foodgrains in terms of general expressions involving the various parameters discussed earlier.

Take Y_0 = Initial total net output (i. e., disposable income).

$a = \dfrac{L_1}{L_0}$, where L_1 = Labour left on the soil.

L_0 = Total labour on the soil before withdrawal of surplus labour.

and $0 < a < 1$.

$b = \dfrac{Y_1}{Y_0}$, where Y_1 = Total net output after development programme.

and $b > 1$.

c = average propensity to consume foodgrains.

d = ratio of gross to net output.

e = income elasticity of the demand for foodgrains.

m = marginal propensity to consume foodgrains.

In the results below, alternate equations are presented, one using the income elasticity of the demand for foodgrains and the other using the marginal propensity to consume foodgrains. The latter concept, as Thweatt[12] has explained, should be used in preference to the former in discussions of this kind of problem, though no difference is produced in the basic results.

Stage I shows the position if no increase in output is produced.

Stage II shows the position when there is an increase in output as a result of the simultaneous introduction of a development programme, but the analysis is restricted, as is usually done, to net income only.

Stage III shows the position when gross output is also introduced into the picture.

The increase in marketed surplus of foodgrains when surplus labour is withdrawn from the soil is given by the following equations:

Stage   I $= c Y_0 (1-a)(1-e)$

or $Y_0 (1-a)(c-m)$

Stage   II $= Y_0 \Big((b-1)(1-ce) + c(1-a)(1-e) \Big)$

or $Y_0 \Big((b-1)(1-m) + (1-a)(c-m) \Big)$

Stage   III $= Y_0 \Big((b-1)(d-ce) + c(1-a)(1-e) \Big)$

or $Y_0 \Big((b-1)(d-m) + (1-a)(c-m) \Big)$

The increase in marketed surplus can be also examined as a proportion of the initial consumption of those withdrawn from the soil. This proportion is given by the following equations:

Stage   I $= (1-e)$

or $\dfrac{(c-m)}{c}$

Stage   II $= \dfrac{(b-1)(1-ce) + c(1-a)(1-e)}{c(1-a)}$

or $\dfrac{(b-1)(1-m) + (1-a)(c-m)}{c(1-a)}$

[12]   W. O. Thweatt, *The Concept of Elasticity and the Growth Equation,* Bombay, Asia Publishing House, 1961.

$$\text{Stage III} = \frac{(b-1)(d-ce)+c(1-a)(1-e)}{c(1-a)}$$

$$\text{or} \quad \frac{(b-1)(d-m)+(1-a)(c-m)}{c(1-a)}$$

These results can be quantified by giving the various parameters the following reasonable values:

$$a=0.8$$
$$b=1.2$$
$$c=0.8$$
$$d=1.2$$
$$e=0.8$$
$$\text{(or } m=0.64)$$

The increase in marketed surplus as a proportion of the initial consumption of those withdrawn from the soil is shown below:

Stage I = 0.20 or 20 per cent.

Stage II = 0.65 or 65 per cent.

Stage III = 0.90 or 90 per cent.

If the value of e is assumed to be lower (i. e., reduced below the assumed level through the operation of the factors discussed above) at, say, 0.6 (i. e., $m=0.48$) the result changes to:

1.3 or 130 per cent.

These results do not take into account the possibility, discussed in the body of the paper, that the difference between the value of total output and net disposable income might widen automatically as output increases and could perhaps be deliberately widened through official action.