CHAPTER I

Marketable Surplus - Some Definitional Issues.

Marketable surplus can be defined either at the sectoral level or at the farm (or commodity) level. At the sectoral level, marketable surplus \( (M) \) can be defined simply as

\[
(1) \quad M = Q - C
\]

where \( Q \) is the sectoral output and \( C \) is the sector's own consumption of the sectoral output. For instance, the economy may be divided into two sectors, namely (i) Agricultural sector, and (ii) Non-agricultural sector. The marketable surplus of the agricultural sector can then be defined as the agricultural output minus the consumption of agricultural products by the agricultural sector.

For estimating marketable surplus at the sectoral level, we have a few points to settle first.

1. A part of the agricultural output may be retained by the agricultural population to feed the live-stock. It may be mentioned here that in national income statistics, that part of income which is required to keep the capital intact is subtracted from gross national income to get net national income. Since a part of the live-stock may be utilised in the production process of the agricultural goods, the feed requirements of this part of live-stock, should on a similar ground be subtracted from output produced.
Moreover, since agriculture also includes animal husbandry, that part of the agricultural output used as an input for animal products should be subtracted from current agricultural output.

(2) A part of agricultural output may be retained on the agricultural sector as (i) seed requirements for next period's output, (ii) as a speculative stock in the expectation of a better price in future or (iii) as a store against future contingencies like a flood or a drought. Naturally, that part of the agricultural output required to replenish what is used as seed in the current production process or to maintain farm-level stock of agricultural goods at its previous level should be subtracted from current agricultural output.

Since agricultural sector is predominantly rural in nature, a relatively good estimate of \( C \) in equation (1) can be worked out on the basis of rural and urban consumption data.

Marketed surplus at the sectoral level is a slightly different concept. It is the sectoral output minus that part of the sectoral output that is retained at the sectoral level for consumption or other purposes. Marketed surplus is a relatively easier concept to deal with. In the first place we do not have to make a distinction between gross output and net output. Secondly, we do not have to make a distinction between consumption and other purposes. There is really no reason why consumption should be restricted
to human consumption alone. If a part of the sectoral output is used as seed or to feed the livestock or even as an input for animal products, that is also, in a way consumption. Similarly, if a part of output is used in a barter trade to obtain other consumption goods or to pay in kind for the productive or other types of services, that part of output also is, in a way, consumed. So we may still retain equation (1) and redefine 'C' in the wider sense and 'Q' as gross output, to get $M$, the marketed surplus. In a closed economy the marketed surplus of the agricultural sector is what is made available to the non-agricultural sector. So, in such an economy, we can directly estimate marketed surplus of the agricultural sector on the basis of urban and rural but non-agricultural consumption data.

Analogously, marketable surplus of a particular commodity at the farm level may be defined as the difference between the farm output and the farm level consumption of a particular commodity. For estimating marketable surplus of a particular commodity at the farm level, quite a few questions do crop up.

(1) How would we distinguish between the feed requirements for that part of the livestock that is used in the production process of that particular commodity and the other types of feed requirements for the livestock kept at the farm level?
(2) A part of the output may be used in a barter to obtain other goods and services for consumption purposes, i.e., to maintain the level of consumption of the farm family. What is even more, in the case of a broad-spectrum commodity like foodgrains, both the commodities, i.e., one the farm is producing and offering (say, wheat) and the other obtained in exchange (say, gram) might fall under the broadly defined category.

In this case the in-kind receipts should, logically, be included under 'C', if they are obtained to meet the consumption requirements of the farm family. But they may also be obtained to feed the livestock.

(3) In the case of a share-tenant farm, a part of the output would go to the landlord as his share. If a part of it is consumed by the landlord should that be included under 'C'? How should we distinguish between this part and the part of landlord's consumption of the same commodity financed out of income from other sources?

(4) Similar problems as in (2) would also arise if a part of wage or interest payments are made in-kind for a purely productive purpose.

(5) Just as in-kind payments are made to others, the farmer, himself, may be recipient of in-kind payments for productive services rendered to others. When we are considering a narrowly defined category like wheat, say, the possibility that the farmer would accept payments in-kind in the same
commodity he is also producing, is very remote except in the case of a marginal farmer. When we are considering a broad category like foodgrains (or cereals) the possibility of both what the farmer produces and what he receives in-kind falling in the above category cannot be ignored, should such in-kind payments be added to 'Q' in equation (1)?

(6) Even when rent, wages or interest are paid in cash, rented land, hired labour and borrowed capital participate in the same way in the production process as owned land, family labour and farmer's own capital do.

(7) At the farm level, another pertinent question may be whether M as defined in equation (1) is really a surplus, for it may often turn out to be a distress sale. Strictly speaking surplus at the farm level should be what is above normal consumption requirements, but it may be impossible to determine the 'normal' level.

Bearing all these limitations in mind we may still retain (1) as a workable definition of marketable surplus of a particular commodity at the farm level as an analytical device to illustrate the different mechanisms through which a negative price elasticity of marketable surplus might arise.

To start with, it may be noted that for a pure subsistence farm, the entire output is consumed. Hence

(2) \( Q = C \) and \( M = 0 \),
i.e., there would be no response to any change in price.
Let us now go to the other extreme, that is a purely commercial farm. For such a farm,

(3) \( Q = M \) and \( C = 0 \): So the price elasticity of marketable surplus of such farm would depend entirely on the effect of a price change on output produced.

The ultimate outcome of a rise in price will now depend on the relative strengths of the following effects.

(a) The favourable effect on output as resources are transferred from any production-alternative to the production of the crop under consideration, induced by an increase in the relative profitability of the crop in comparison with the production alternative (resource-transfer effect).

(b) The favourable effect on output of the increased work-effort on part of the family, induced by a more favourable rate of exchange of leisure for money income (substitution effect of type one).

(c) The unfavourable effect on output as a result of more consumption of leisure induced by the improvement of the income position (income effect of type one).

(d) The favourable effect on output of other types of unused resources (besides labour which is already considered under (b) being brought into use (resource-utilization effect)).
For a farm producing one product only, or if the resources used in the other crops are not transferable, they are being either too specific in nature or available in a different production season (i.e. resource-use is supplementary in nature), so that the farm has no real production-alternative, resource-transfer effect would be zero. Sometimes, one crop produced may have a favourable impact on the other. The most common example is leguminous crops which, by fixing nitrogen in the soil, help to increase the productivity of the main crop produced. But since seldom two crops produced in the same season would have such favourable interaction, we may ignore such a possibility when considering the short-run price elasticity. On the other hand, unfavourable direct interaction between two production alternatives cannot be ruled out, as one crop attracting pests may also affect the other, but that can be subsumed in the resource-transfer effect.

For a farm employing only hired labour and managers (or supervisors), both substitution and income effects of type one could be ignored.

We have also assumed that non-labour resources like land, have no utility of their own (e.g., the psychic value of a vacant space) and consequently their increased rate of utilization do not entail any real (or pain) cost. Unused resources (e.g., land being kept fallow as in a three-field system) may also have a favourable restoring soil fertility.
or unfavourable (being infested with weeds) impact on output but only in the subsequent production period.

As a sort of contrast, we may now consider a producer who has already taken his output decision. A price change would now work only through C in equation (1), though the price now might influence the output in the next production period. Since almost all agricultural products are seasonal in nature, with a more or less fixed production period such an assumption appears quite reasonable. Once again there are more than one ways in which a price change might affect consumption level of the producers' family.

(e) As the price of the crop under consideration rises, the farmer may alter the composition of his consumption bundle in favour of cheaper consumption alternatives, if such substitutes are available (substitution effect of type two).

(f) A rise in price improves the income position of the producer and hence increases consumption of the commodity produced (income effect of type two).

Since the above two effects are in opposite directions, the net effect would once again depend on the relative strengths of the above two effects.

Let us now consider a farmer who produces partly for consumption and partly for sale, with at least one consumption alternative and one production alternative. The net outcome of a price rise would depend on the relative strengths of
all the above effects.

Aggregating over all the farms, at the commodity level, we may define marketable surplus of a particular commodity as the difference between the total production of the commodity and the aggregate consumption of the product by the members of producers' families.

Such a definition, might not be useful for estimation purpose, though it may, also be used for analytical purpose. If the particular commodity happens to be a 'broad-spectrum' one like food-grains, we may, once again, have recourse to a sort of sectoral approach, to estimate the total consumption of foodgrains by all the participants in its production process. For a narrowly defined category like wheat (say), this may not be possible. In that case, we have very little option but to take market arrival i.e., quantity entering into monetized exchange as a proxy for $M$ in equation (1). But this then excludes not only consumed part of wage, rent and interest paid in kind in connection with the production process of the commodity but also the consumed part of all payments in kind for providing any kind of service in-kind payments to artisans may still have a link with the production process, the same is definitely not true for payments in kind for a religious or ceremonial purpose except by a wide stretch of imagination.

Some part of the in-kind payments in a particular commodity will flow back to the producers of the commodity
and for the non-monetized sector, as a whole, the value of in-kind payments should always be equal to the value of in-kind receipts so that they would cancel each other out and the net value would be zero. Unfortunately, this would not be true even at the sectoral level, not to speak of the commodity level. For instance, the agricultural sector may dispose of a part of the agricultural produce to the non-agricultural sector, either in exchange of non-agricultural goods or for rendering non-agricultural type productive services, and a part of it may again flow back to the agricultural sector as in-kind receipts. There is, however, no guarantee that the net disposals to the other sector would be zero.

What is even more, that part of the produced output retained either as seed requirement for the next period's output or as a stock either for speculative purpose or as a reserve against future contingencies would not enter into monetised exchange. Similarly that part of the output which is used to feed the drought animals or as an input for animal products (e.g. fodder for the milch cow) will not be a part of the market arrival. Under such circumstances we have a few options.

(1) We may keep equation (1) as it stands and define $M$ as marketable surplus of a particular commodity and $C$ as the total consumption of the producer families, as an analyti-
ocal device, as explained above.

(2) We may keep equation (1) but now reinterpret $M$ as the Marketed surplus of a commodity, and $C$ as the total retentions of the commodity by the non-monetized sector either for its own consumption or for other purposes.

(3) We may introduce a new term 'N' as the 'other retentions' of the non-monetized sector and write:

\[ M = Q - C - N \]

where 'M' is once again, the marketed surplus of a particular commodity, 'C' the retention of the produced commodity by the non-monetized sector for its own consumption, and 'N', the retentions of the non-monetized sector for other purposes.

It may be noted, however, that a part of the 'market arrival' might be bought back either by the producing sector or by the non-monetized sector and that has to be adjusted for treating $M$ as what is ultimately made available either as marketable or marketed surplus.

Now, if $N$ is assumed to be independent of price, i.e., $\frac{dn}{dp} = 0$, where $P$ is the (absolute or relative) price level of the commodity under consideration, then whether we use any of the above three options or whether we consider marketable or marketed surplus at the sectoral, farm or commodity level, the formal mathematical structure of a model for estimating the price-elasticity of marketable or marketed surplus would remain the same. For estimation
purpose, however, there would be a great deal of difference.

In Chapter Two, we address ourselves to the task of presenting the only formal mathematical structures of some of the models in the available literature and their implications if any for the sign of the price-elasticity of the relevant variable. In Chapter Three, we review the various estimation procedures that have been adopted to measure marketable or marketed surplus and its price-elasticity, either at the sectoral or at the commodity level. In Chapter Four, we present a few alternative models at the farm level, developed by us, to tie up a few loose ends.

Marketable surplus at the sectoral level is a crucial variable in the growth literature. Marketable surplus of the agricultural sector indicates the economy's capacity to reallocate surplus labour from the agricultural sector to the non-agricultural sector without bringing about a terms-of-trade adjustment in favour of the agricultural sector. In the heyday of industrial fundamentalism, agriculture was considered the traditional sector and industry, the modern sector, characterised by the reinvestment of acquired surplus. Nowadays, it has been observed that the modernization of agriculture is not only possible but it is also a cheap source of growth. The concept of marketable surplus of the agricultural sector and the apprehension that the growing productivity of industrial workers will be neutralised by a stagnant agriculture as it is used to meet the growing demand for agricultural
goods induced by a rise in the income of the industrial sector, have therefore, lost their sharp edges now.

At the commodity level, the marketed surplus (or the market arrival) is a very useful concept to a policy-maker. Since agricultural prices are often subject to wide fluctuations, the policy-makers must know the price-elasticity of marketed surplus before he can design an appropriate buffer-stock or support price policy. For someone interested in following a positive price policy to stir the crop-mix according to targets, it is not enough to know merely the price elasticity of marketed surplus, he must also know the precise mechanism through which it is brought about.