CHAPTER ONE

Issues in Price Stabilisation

1.1 Introduction

Stabilisation of prices, particularly of major foodgrains is of serious concern to most developing countries. The overall macroeconomic links of agricultural prices are of special importance in these countries because of a number of characteristics typical of their economies. A large share of the national output and employment is accounted for by agriculture; besides this sector plays an important role in earning and saving foreign exchange in these countries. The early stage of industrialisation depends on agricultural raw materials and on an expanding rural market for many of its products. Moreover, a bulk of the personal income in these countries is spent on food. For instance, according to Mellor (1978), the expenditure share on foodgrains in India taken from the 1964-65 All India Consumer Expenditure Survey, for the lowest two deciles, was 54 percent.1

Changes in agricultural prices can, therefore, lead to remarkably wide ranging economic and social consequences. Such a variation in prices directly affects the demand for and supply of non-agricultural commodities and their prices. They affect revenues and expenditures as well as exports and imports of both agricultural and non-agricultural commodities. An increase in food prices may also lead to an increase in industrial wages as also in overall prices ultimately threatening industrial profits and output.

Price intervention for agricultural development has to contend with a number of special features that emanate from the nature of demand and supply functions for this

sector. Before proceeding further it may be useful to dwell briefly on the nature of agricultural production and prices.

1.2 Nature of Agricultural Production and Need for Price Stabilisation

Given its dependence on weather and other environmental conditions, agricultural production is inherently unstable. The time lag between changes in agricultural production capacity and the resultant output makes the matching of supplies with demand difficult, especially in the short run. Thus, the interaction of relatively inelastic demand and, over the short term, relatively inelastic supply gives rise to large price fluctuations which creates instability in prices and incomes within the agricultural sector as well as the rest of the economy.

The variability in agricultural prices may be attributed to different factors. One is related to the trend of price level which shows wide swings over time. The others comprise of cyclical and seasonal fluctuations around the trend line. A fourth kind includes the irregular fluctuations. Even the relative structure of the agricultural commodity does not show a uniform pattern of behaviour. While a few commodity prices move in close harmony with each other, others pursue widely deflected courses. The amplitude of the intra-year variation also varies from commodity to commodity and changes over time with their respective trends.

Moreover, the seasonal nature of agricultural production results in uneven distribution of supplies among different quarters of a year while the consumption of most agricultural commodities is evenly spread over the entire time period. In such a situation, foodgrain prices would naturally be depressed in the post harvest period and would tend to rise during the period of lean supply when farmers have sold out most of their produce. The fragmented nature of the world markets of many agricultural products and impediments to the free movement of exports and imports tend to magnify the instability arising from these factors.

Agricultural prices have the following three important functions:  

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• to serve as an allocator of resources
• to help in distribution of income
• to induce capital formation.

The implication of wide fluctuations in agricultural product prices remains that it causes inefficiencies in the allocation of resources and induces income fluctuations. Prices, then, fail to serve as an adequate guide to production plans and the distorted price movements often create production imbalances, vitiating supply-demand projections and regional food scarcities. One may question the need for interfering with the normal functioning of market forces on the grounds that the price mechanism or the 'invisible hand' helps to optimise resource allocation and welfare. However, in reality, the normal functioning of the price mechanism is far from optimum, because a perfectly competitive market structure in its 'pure' theoretical form does not exist. It is for all these reasons that government intervention for price stabilisation becomes necessary.

For farmers, instability leads to unpredictable variability in real incomes, more so when one or two products dominate output. This variability may lead to production decisions later considered mistakes. Moreover, uncertainty regarding future prices retards specialisation and commercialisation of farming in low income countries, thereby slowing growth in output. Consumers, too, are severely affected by price instability, particularly price surges. When the poorest of consumers who usually spend a sizeable proportion of their income on food (in some cases, even in excess of 75 percent) are confronted with a rise in its price, they are unlikely to reduce their non-food expenditure much. In this case, even a small rise in the price of food staples, say 10 percent, will reduce the calorie consumption by a fairly big margin, in many cases by about the same proportion. This could bear heavily or even disastrously on nutritional considerations.

For manufacturers who use agricultural raw materials, price instability raises operating costs, since they must either stock raw materials to ensure continuous supplies or vary their production. It encourages them to search for synthetic substitutes or alternatives.

1.3 Meaning and Objectives of Price Stabilisation

Price stabilisation does not mean freezing of prices at a certain level. Stabilising agricultural prices in such a way that they remain unchanged for years would be an untenable objective. Some price rise is usually considered to be a good development pre-requisite for an economy, which is picking up growth and undergoing structural transformation of production and employment. Therefore, price stabilisation would mean the determination of prices at levels, which are consistent with the state of economic growth in the country. The change in prices should be in tandem with relative changes in other economic variables so as to ensure a steady movement of resources into alternative channels. Otherwise, the anticipated growth rates in other sectors would remain unachieved.

So, the concept of price stabilisation is more consistent with flexibility rather than rigidity. In a dynamic economy, where production changes in response to changes in demand, there must be a degree of price flexibility. Such variation, however, should be marginal and not sharp and sudden. As defined by the Business Men's Commission, "Real price stabilisation would effect a mitigation in price fluctuations but this would involve a scaling down of heights of prices as well as an elimination of their depths". In fact, wide swings in prices obscure rather than make plain the change in consumer wants and production techniques and in addition, creates a higher degree of price uncertainty. This leads to a decline in the volume of total output. Price stabilisation would eliminate such swings in prices and soften the process of long term adjustment between demand and supply.

The objective of price policy is contingent on the basic differences in economic structures of different countries. In developed countries where incomes and revenues are high, agriculture forms a small part of the overall economic activity and supply response to price changes are high, the objective of price policy would be to provide incentive prices for greater production and assure a reasonable farm income. In case of

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a developing economy, where agriculture contributes a lion’s share to GDP and accounts for bulk of the labour force, all this in the midst of wide spread market imperfections, unless the government intervenes to strengthen the market infrastructure, a policy of providing incentive prices and raising farm incomes would not materialise.

In the context of developing economies, some economists have defined the role of a positive price policy as part of a growth policy so as to:

- accelerate the growth of agricultural output as a whole
- accelerate the growth of output of different crops or in the context of planning to promote optimum crop mix in tune with well articulated targets and
- to ensure adequate increases in the market supply of food crops in countries where a large part of the output is retained for home consumption.  

In general, any price policy to improve the price milieu of a developing agriculture should consider the following aspects:

- the variability of agricultural prices that determines the riskiness of farming;
- the relative prices of various crops that affect the allocation of land;
- the ratio of the general level of agricultural product prices to the level of agricultural input prices and
- the ratio of the general level of agricultural products to the general level of non-agricultural prices.

Any set of price regulation should be based on a consideration of its effects on all the above price relationships. Broadly, the objectives of price stabilisation may be summarised as below:

- to stimulate agricultural production so as to adjust to all the changes in demand—both quantitative and qualitative by providing incentives through remunerative prices;
- to ensure the relative price movement in line with the production targets;

• to promote development in the agricultural sector which may result in simultaneous development of the non-agricultural sector through adequate supplies of food and raw materials at reasonable prices, thus increasing the average level of income and standard of living in the agricultural sector;
• to stabilise the agricultural income and maintain a reasonable balance in the inter-commodity terms of trade within agriculture and in the inter-sectoral terms of trade in the economy;
• to stimulate the production of strategic exports and to maintain the prices of exports at competitive level with the other countries as far as practicable;
• to keep the prices of agricultural commodities at a level within the reach of consumers;
• to eliminate the irregular fluctuations arising out of speculative hoarding and trading. The objective should be to avoid those measures which give rise to such tendencies and
• to eliminate the localised pockets of very high and very low prices as far as practical. The objective should be to avoid artificial restrictions on the movement of grains.

Thus, what is required is a critical balance among the manifold objectives of a price stabilisation policy. Such a policy should be adopted against the overall price policy for the economy as a whole. On the one hand, prices will be stabilised at a level which does not affect the consumers' interest adversely, even in the short run and at the same time provides adequate incentive for production expansion. On the other hand, the structure of prices would be such as to ensure a pattern of agricultural growth in keeping with the growth pattern of the economy as also its foreign exchange requirements.

1.4 Policy Instruments for Price Stabilisation

The most suitable policy instrument to be employed towards agricultural price stabilisation depends on the economic and agricultural characteristics of the concerned country. A variety of policy measures can be implemented to mollify the more serious consequences of price instability. However, there is often a trade off between the goal
of stability and other policy goals. Hence a judicious planning on the part of the
government is required to weigh these trade-offs and choose the most effective
measures. Governments, therefore, need to consider four basic questions viz. why do
we want to stabilise agricultural prices? What do we most want to stabilise? How
much do we want to stabilise? What is likely to be the most cost-effective way of
doing so? The first question has already been dealt with at the start of the chapter. We
now turn to the others.

Different analysts eke out different meanings from the stabilisation programmes.
Producers want to be insulated from abrupt and sharp descent in product prices and
from escalations in input costs. Their goal is greater stability of income rather than
prices per se. Consumers, on the other hand, want to be protected against price
increases, as long as controls do not limit supply. Governments, in turn, are
particularly concerned with ensuring stable growth in the economy as a whole i.e. they
wish to minimise adverse macro effects arising from commodity price instability and
to shield both producers and consumers from the full impact of violent commodity
price fluctuations.

Precisely how much to stabilise in any particular country is a question which does not
have a single, unequivocal answer. About one in five deflated year to year producer
price changes in developing countries have fallen outside a plus or minus 20 percent
range in the period since the late 1960s.\textsuperscript{10} A goal of keeping producer price
fluctuations within the 20 percent range, if successfully, implemented would constitute
a worthwhile avoidance of extreme price movements. Similar considerations suggest
that a 5 percent rise from one year to the other in consumer real prices for food staples
might be an approximate maximum.

Specific stabilisation targets must, however, take into account the technical and market
characteristics of the concerned commodity, the normality of the previous price level
and the availability of targeted food subsidies. It is also important not to suppress price
movements below storage costs. So, policy measures must be flexible enough to

\textsuperscript{10} FAO. (1987). \textit{op. cit.}, pp. 64.
accommodate broad changes that may be needed in levels and composition of production of basic food. Intervention measures should not be allowed to divorce consumer price trends permanently from the trends in cost of providing food.

The most cost effective stabilisation method will reflect a variety of influences: what mechanisms are available, the extent of stabilisation sought, the efficiency of administration and the actual—and only partly predictable demand and supply situation.

As mentioned earlier in this chapter, there are two major types of instability – annual (inter-year) and seasonal (intra-year). The first arises between years and the second between harvest periods of the same crop (or different crop mixes). The former is unpredictable as it is dependent, to a large extent, on nature while the latter is predictable as prices are likely to be low in the post harvest season and high in the lean supply season. In a price stabilisation policy, interventions necessarily take care of the seasonal up and downswings in prices. The target price in a given season around which variations are permitted is determined with respect to an annual target price. Thus, the floor and ceiling of target price variations in a price stabilisation scheme are usually built around the floor and ceiling of annual variations. It is not possible, for example, to implement a band around an annual target price without having a band around seasonal price variations.

Another important consideration associated with any stabilisation scheme is the type of market structure. Segmentation of market implies that transmission of prices among markets is absent in that the markets with excess supply do not get feedback from markets with excess demand. In general, markets in developing countries are often not fully integrated.

The most widely used approaches in developing countries towards greater price stability are setting a floor or a guaranteed minimum price and specially for food, a


ceiling price or a buffer stock policy or a combination of buffer stock and trade policies. The guaranteed minimum price is implemented through the government purchasing the quantities offered at this price or by restricting imports etc. It sets a floor to price fluctuation and leaves the market forces free to determine the price above the minimum level. Broadly, two sets of administered prices are fixed by the government, viz. (a) minimum support price for major field crops in the country, which are usually fixed and are meant to be the floor levels below which market prices would not be allowed to fall, and (b) procurement prices in respect of kharif and rabi cereals at which the grain is to be domestically procured by public agencies for release through the Public Distribution System.

One drawback of the guaranteed minimum price or procurement approach to price stabilisation is the accumulation of excess stocks. This could be due to a bumper crop or because the price guarantee has been set too high.

Closely associated with either a support or a stabilisation plan is the critical need for storage facilities. All too often there is a tendency for governments to embark on price incentives scheme without the requisite warehousing. As a consequence, price promises to farmers cannot be kept and the entire programme falls into disrepute. A buffer stock scheme seeks to stabilise a commodity price by support purchasing when prices are low, storing the stocks for long periods if required and selling when the market prices are high. The basic concept behind a buffer stock scheme is to stabilise, not the price of the farm product but the total value of the crop. Stabilising the price of a crop through ‘time arbitrage’ does not necessarily stabilise farm incomes. For example, if the price of wheat was constant from year to year, then in poor harvest years, farmers’ income would be depressed while it would rise in good harvest years.

The distinction between a relatively elastic and a relatively inelastic demand is very important in the stabilisation of incomes.\(^{13}\) If the demand elasticity for the crop is unity as shown by EE’ in figure 1.1 below, then irrespective of the size of the crop, be it small (say, OH) or large (say, OK), the total value of the crop is the same. In small

harvest years, the crop price would be just high enough to compensate for the contracted demand and vice versa for good harvest years. Such a situation demands that the government need not intervene to stabilise farm incomes.

In case of a relatively elastic demand, the government must regulate both gluts and scarcities to stabilise farm incomes. In figure 1.2 below $DD'$ is a relatively elastic demand curve. When the average output over a number of years is $OT$, the average price is $OS$ and average gross income is $OTRS$. Suppose a rectangular hyperbola $ERE'$ is drawn through point $R$ to depict a demand curve of unit elasticity. If then, the crop output is abnormally large, say $OM$, the price which the farmer should receive to give him his average income is $OL$. The price that would obtain in the absence of government intervention would be $ON$. In order that price $OL$ may hold in the market, the government must sell, out of its previously accumulated stocks, an amount, $QK$, so that the total amount available in the market that year is $LK$. Thus the farmer's income will be $OMQL=OTRS$ (the average income) by the construction of the curve $EE'$. If the government had not intervened, the price would have been $ON$ and the farmer's income would be $OMPN$, which is greater than normal. Similarly in a bad harvest year, the government must, in this case, take some of the crop off the market and, therefore, raise the price even above what it would have been with no government
intervention. The effect of government intervention, in this way would be to increase price fluctuations but do away with fluctuations in the total value of the crop.

In the case of an inelastic demand, the government must actually reduce both gluts and scarcities, in order to stabilise farm incomes. Figure 1.3 shows an inelastic demand curve DD'. Again, through point R, we draw a unit elastic demand curve, EE'. When the output is large, OM, the farmer income in the absence of any intervention is OMPN, which is less than the average income, OTRS. Consequently the government must take off from the market, an amount equal to QK, leaving an amount LQ which will sell for OL thereby making the farmer's income equal to OMQL which is equal to average income OTRS. When there is a small crop, the government must float some of its stock in the market to bring down the price. In this case, therefore, the effect of government action will tend to make the prices as well as gross incomes more equal in different years.

Hence, there seems to be more justification for a buffer stocks plan in the case of commodities with a relatively inelastic demand than in the case of commodities with a relatively elastic demand. In the first case, such a policy will not only equalise
incomes but will diminish the fluctuation of prices. In the second case, equalising incomes actually necessitates an increased fluctuation in prices. As Boulding writes:\textsuperscript{14}

It will be observed that the attempt to apply an “ever normal granary” (sometimes called a buffer stocks plan) under circumstances of fluctuating demand would require the augmentation of consumption in years of good demand (boom years) and its restriction in years of poor demand (depression years). So the stability of income of farmers of a particular commodity will be attained at the cost of destabilising what may be a more important element of the economy—consumption. Only if the basic cause of unstable farm incomes is fluctuating crop output, is there much to be said for the “buffer stocks” plan and only then if the demand is inelastic, so that the operation of the plan tends towards stabilising prices and consumption as well as producer income.

Moreover, as contrasted with the government procurement scheme, a buffer stock is a continuing speculative operation with buying and selling operations left largely to the management. This method has come under increasing criticism in recent years as buffer stock operation can be extremely costly way of stabilising supply.

Another approach is through the use of commodity stabilisation fund. Differences between fixed or minimum prices and market (domestic or international) prices or a part of those differences are paid to farmers or collected as levies. A central organisation is required to operate the scheme which is more practicable for export.

\textsuperscript{14} Boulding, \textit{ibid.} pp. 177
sales than for more dispersed marketing of most domestic products. A frequent practical drawback of a stabilisation fund is that it can become a means of taxing farmers to provide funds for the expenditures, rather than performing its primary function of stabilising producer prices around their trend. If this weakness is kept in check to preclude severe producer price distortions, a stabilisation fund can be an effective means of bringing greater stability to domestic prices of export crops.

So far as the role of trade in stabilising prices is concerned a distinction needs to be drawn between countries that are regular importers or exporters and those that are otherwise more or less self sufficient, having a marginal surplus in some years and a small deficit in others. The regular importer or exporter can more easily and successfully rely on trade adjustment, varying exports and imports, as the case may be to smoothen out price fluctuations due to variability in domestic production.

Long term solutions to lessen production instability and subsequently price instability mainly lies in developments in investment and research. For instance, irrigation development and developing varieties of plants that are drought or disease resistant can lead to long term development which contribute to stabilisation goals as well as the chief aim of increasing production. In the short run, approaches like crop insurance would also enable farmers to achieve more secure future incomes and to manage their farms more effectively under unstable price regime.

1.5 Commodity Price Stabilisation: A Brief Literature Review

A number of studies have been conducted on the analysis of price stabilisation. The theoretical framework used historically in most empirical investigations of commodity price stabilisation was the simple Marshallian partial equilibrium analysis of a closed economy developed by Waugh (1944) and Oi (1961) and synthesized by Masse! (1969, 1970). These models assume that producers are risk neutral, supply is stochastic, both demand and supply disturbances are additive, buffer stocks are costless to hold and administer, agents are risk neutral, trade in grains is free and prices are stabilised perfectly. Supply adjusts instantaneously to a change in price. Waugh's seminal work established that consumers with a negatively sloped demand curve gain from price variation and lose from price stabilisation. He focussed on consumers. Following his
line of reasoning, Oi showed that with a positively sloped supply curve, producers also benefit from price instability and lose from price stabilisation. He focussed only on producers. Massel combined both producers’ and consumers’ welfare and showed that price stabilisation produces a net gain to society.

Turnovsky (1974) examined the Waugh-Oi-Massel approach under the more realistic assumption that producers’ decisions were based on expected prices, and considered two different processes by which producers anticipate prices – rational expectations and adaptive expectations. He found that whether or not the Oi results continue to hold depends on the price expectation mechanism while the Waugh and Massel results hold under both the expectation hypotheses.

The most comprehensive treatment of commodity price stabilisation to date is the seminal work by Newberry and Stiglitz (1981). They formulated a model to quantify the benefits to producers and consumers in terms of expected utility rather than in terms of producers’ and consumers’ surplus. They use a simple long run rational expectations model, where producers adjust their output in response to changes in risk. The model operates under a set of assumptions most ostensibly that all producers are identical, grow only one crop and have constant relative risk aversions.

A few studies have been conducted on foodgrain price stabilisation in Bangladesh. Ahmed and Bernard (1989) have carried out an exercise for assessing variability in rice prices. In this study, the trend element has been separated from the random elements using the moving average method and a log linear function to measure real fluctuations. To demonstrate the annual fluctuation in real prices, the nominal prices were deflated by a suitable index. To assess the seasonal pattern of variation, nominal prices were decomposed into trend, seasonal and irregular components. The X-11 procedures developed by the US bureau of census for adjusting economic series for seasonality have been used in the study. Finally, they have formulated an aggregate model to predict the average annual price of rice in Bangladesh.

Drawing on the above model, Shahabuddin (1991) developed a more disaggregated model that distinguishes lean from the harvesting season to predict the amount of
domestic procurement and distribution, including open market sales needed to achieve seasonal price stabilisation. The model involves a shift from the current practice of quantity planning to that of price based planning of the food system.

Another study by Islam and Thomas (1996) assesses the long run trend in domestic prices by comparing the real wholesale prices to long run trend in the border prices for Bangladesh, Philippines, Indonesia, Malaysia, Thailand and Pakistan. According to the study price stabilisation results in stability of domestic price vis-à-vis the border price; with stable domestic but falling border price, farmers are protected from the onslaught of lower international price. On the contrary, when border price is rising, a stable domestic price protects consumers and penalises producers.

A very recent study on price stabilisation is that of Dorosh and Shahabuddin (1999) which examines the role of government intervention and private sector participation in food markets in recent years. The study is mainly restricted to rice. Apart from looking into the trends in the domestic and international market prices, it looks into the implications of stock modelling exercises regarding private sector trade and price stabilisation. It also examines the medium term implications of current production and price trends, particularly with regard to food aid and household food security.

1.6 Cost of Price Stabilisation

There are three distinct issues that must be carefully analysed to calculate the cost of a stabilisation programme. Firstly, the direct cost of price stabilisation includes the interest cost of financial capital required to purchase and sell the stock, transport and handling charges, rent of physical storage facilities and any wastage of stock that may occur in the operation. The initial cost is by far the largest component of cost. This cost component is dependent on the quantity under procurement and distribution.

If traders and farmers expect that the government will not be able, due to budgetary or other reasons, to maintain the price at the announced level, they might speculate against the government position by postponing, selling or unloading all their stock in the market to make larger profits. Such behaviour by farmers and traders would imply that the government would have to buy or sell more than the quantity estimated on the
basis of no change in expectations of producers and traders. Therefore, stability in
government policy is crucial in determining the expectations of traders and farmers.

If there are dual markets for foodgrains – if, for instance, the government sells
foodgrains at prices lower than the open market price and if the prices in the
government outlets are stickier than in the open markets- the public agency will
confront large swings in demand as consumers move back and forth between public
and private outlets. This increases the amount of stock the public authorities need to
hold because they have to deal with these swings as well as with harvest fluctuations.

Secondly, on many occasions explicit budgetary costs in the ongoing procurement and
distribution of foodgrains are assumed as the costs of price stabilisation. This is often
not the true assessment of cost. More often this budgetary cost includes cost on
account of food subsidy as well as cost of stabilisation.

Thirdly, if the two objectives of transfer of income through food subsidy and price
stabilisation are attempted through the same programme, as is usually the case, then
treatment of cost for stabilisation requires a different approach than is conventionally
followed. The administrative cost, physical storage cost and part of the stocking cost
that are required for transfer of income through food subsidy can be assumed as a
fixed cost that a government will carry out in any case. The additional cost required to
carry out the objectives of price stabilisation is, then, the average variable cost which
can be compared with the estimated benefits of price stabilisation. If this view is
correct, then the cost of price stabilisation would emerge to be not as expensive as is
normally assumed.

This brief exposition of conceptual issues brings home the complexities of price
stabilisation in terms of both analysis and conclusion that would be understandable to
policy makers. We now turn to the scenario of public intervention in the foodgrain
system in Bangladesh.