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# The Impact of Agricultural Price Policy in Developing Countries

*Agricultural price policies are under closer review now in many developing countries. There is a growing tendency to rely more on market forces. What impact have agricultural price policies had on the performance of the agricultural sector in developing countries until now?*

**A**gricultural price policy normally plays an important role in most developing countries in its effects on farm and food prices. It is not usually difficult to describe either its objectives or the measures to attain them. When it comes to measuring their impact on performance of an agricultural or food economy, however, that is an altogether different matter.

The poor correlation often found to exist between changes in real farm prices and in output, for example, suggests the need for more comprehensive econometric country studies, which take account not only of changes in commodity prices but also those of inputs, their availability, and changes in capital structure, marketing, etc. Farmers' decisions about production are also influenced by incentives on the consumption side: the availability and cost of consumer goods and services like health and education, and the direct taxes which must be paid. Money is only an intermediate objective. It could be that a farmer's unwillingness to increase production comes from a low valuation of the things he can buy, which may stem from the very limited selection available to buy. The consumption side of incentives is still largely neglected in many poor countries.

Yields have a key role in any incentive system because the greater the physical return, the lower the price can be and still give a farmer the same or even more income. The combination of high yields, subsidies (at first) for some inputs and price supports has often led to the adoption of new technologies, e.g. tubewell and/or pump irrigation with high yielding varieties in Bangladesh, India and Pakistan.

The adoption of new technologies is obviously desirable if yield increases are sufficient for farmers to keep raising output without higher prices. Developed

countries, in fact, seem to have reached a point where improved technology is habitually adopted and output rises (by some 1-1½ per cent annually) regardless of relatively minor reductions in price or acreage. Technological improvements are thus the preferred way of increasing farm output and income, if conditions for the systematic development and adoption of such changes can be put into effect. More productive inputs may be especially helpful when farmers are just starting to adopt new technologies.

Where improved technology is not readily available (and expenditure on research low, as in most developing countries), or where specific crops need to be developed, price increases and/or input subsidies will help. The lowest cost programme will, however, be one of price stabilization around the trend of balanced supply and demand. Price increases usually help small farmers, sharecroppers and tenants least, and large farmers most. Hence there are institutional problems. Countries that achieve high agricultural growth rates tend to be those which have a minimum level of government incentives, together with effective institutional arrangements.

Evidence from many different models and sample data sets shows that the aggregate supply responsiveness of non-price factors, as a group, tends to be much larger than the elasticity of response to price and price variability taken together. It is against these precautionary comments that analysis of the impact of price policy on performance begins.

## Policy Objectives

During the 1960's and 1970's, price policy was closely connected with intervention in marketing systems in order to bring about more government control, lower costs and better performance all round. Since the early 1980's, however, weaknesses in the various forms this

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intervention took has led to greater reliance on private marketing, with usually a mixture of the two.

Price intervention in one form or another is still widely practised. However, governments are trying to economise on the financial costs of such intervention in the developed world, e.g. in the EEC, and in both market-economy and centrally planned developing countries. The shift as just indicated is towards a more market-influenced agriculture. This is not surprising as developing countries in the 1980's have been compelled to adjust to world economic recession, budget restraints and balance of payments difficulties. In many instances, such policy changes are being undertaken within the framework of World Bank structural adjustment programmes and International Monetary Fund stand-by arrangements. Changes influencing agricultural prices include the reduction or elimination of food subsidies, wider involvement of the private sector in food and agricultural marketing, more attention to agricultural export expansion by e.g. exchange rate devaluations and the reduction of sectoral price distortions i.e. heavy protection of the industrial sector.

Price policy usually has multiple objectives which can easily come into conflict with each other—low and stable food prices for urban consumers, for example, with incentive prices for farmers; a high degree of self-sufficiency in food with some expansion of agricultural exports. An important objective is still heavy taxation of agricultural (usually export) commodities where alternative sources of government revenue are limited. Naturally the relative importance of these various objectives shifts with development but the mixture usually includes “fair” food prices, price stability for both producers and consumers, and output and export incentives. Improved farm incomes become a policy objective only as countries get richer and the numbers in agriculture and its share of GDP decline.

### Policy Measures

A wide variety of measures is deployed to buttress perceived weaknesses in a free price and marketing system. Rarely are these market interventions consistent. It is useful to enumerate them: guaranteed commodity floor price, government procurement and distribution, no monopoly; fixed price, government procurement and sales, monopoly; official mandatory prices without back-up arrangements other than price checks; deficiency payments; supply management; buffer stocks; buffer funds; export duties, taxes and commodity levies; export subsidies; parastatal monopoly exports with administered producer prices;

quantitative export restrictions; automatic stabilizing link of domestic to export prices; import tariffs, taxes and levies; import subsidies; parastatal monopoly imports with administered sale prices; quantitative import restrictions and quotas; food aid receipts; administered exchange rates; fixed or controlled consumer prices and price ceilings; consumer food subsidies; rationing; input subsidies.<sup>1</sup>

There are also international measures to contend with such as international commodity agreements and compensatory financing facilities.

### Price Bias

The conflict which often exists between these various intervention measures, as shown by their largely negative influence on the welfare of both farmers and consumers, is perhaps best illustrated by those measures adopted towards export crop and domestic food prices in developing countries. The literature on both topics is large and still growing.

Agricultural pricing programmes have led to differences, often considerable, between domestic and international prices. There has been a “price bias” against agriculture, more pronounced for export than for basic food crops which are often in the same category as import-competing commodities. Overvalued exchange rates have frequently added to this downward price bias.

Price bias, depressing agriculture's terms of trade, can be regarded as bad when it leads to disincentives for producers and lack of investment in agriculture, leading eventually to inadequate growth in output and marketed surplus, and deceleration of growth in the modern sector. A key problem, however, is the inefficiency with which resources taxed out of export and domestic commodities are often used in the modern or non-agricultural sectors. There are, unhappily, no set limits to bias. Resource transfers from agriculture which may rightly be judged fair, and at optimum levels, will vary from country to country and over time within countries. Bias can be too small as well as too large. Too small in the sense that resource transfers (taxes plus terms of trade effects, etc.) from agriculture do not contribute enough to higher productivity uses of capital in non-agricultural sectors (or, indeed, to certain agricultural sub-sectors). Too large in that farming is unable to finance its own higher-productivity activities, while less productive investment is taken up elsewhere. In addition, there is income distribution and employment to

<sup>1</sup> For more details see *Agricultural Price Policies*, FAO document C85/19, Rome 1985, pp. 83-85.

consider where transfers from agriculture may be too small, or too large, in terms of goals in these important areas.

A price bias against agriculture is not, of course, the only way to raise public funds. In fact, a crucial element in designing a better system of taxation is likely to involve movement towards an exchange rate that more nearly approximates the real cost of foreign exchange to the economy. Other elements may include more uniform protection for the non-farm sectors, a tax on land values, agricultural income tax and even a capital gains tax. The difficulty with most systems of taxation, however, is weak administration and it is here that price bias has appeared, until recently, to have had the edge.

However, price bias against agriculture has made its contribution to "capital bias" where resource transfers into agricultural development through improved technology (irrigation, drainage, storage, general infrastructure, research, equipment, better seeds, etc.) are likely to be far below that suggested by the relative importance of agriculture in the national economy.<sup>2</sup>

## Measurement of Price Bias

Actual measurement of price bias was, until recently, not a matter for controversy. The basic test is to compare producers' prices with international, or border prices, of traded goods. Ideally the border prices should be adjusted to "farm-gate equivalent" by taking account of marketing, transport and storage costs but in practice (and this is where controversy arises) this has often not been the case. The World Bank's method for economic analysis of projects is based on the premise that border prices of traded goods are their "shadow prices". This premise has been commonly used in project evaluation for a relatively long time, and with strong theoretical support.<sup>3</sup> Any heavy bias against agriculture will be shown in a low value of the nominal protection coefficient (NPC), which is the ratio of the producers' price for a given commodity to its border price, converting the latter at its official rate of exchange. A value of 1 (after

adjustment for marketing charges, etc.) for the NPC indicates a neutral price policy, equal to free trade conditions and if less than 1 it indicates "negative protection",<sup>4</sup> or an implicit tax. An NPC above 1 indicates a subsidy to the commodity or activity concerned. When exchange rates are overvalued, a net nominal protection coefficient (NPC\*) is calculated by using the equilibrium or shadow exchange rate. Finally, an "effective" protection rate may be calculated which relates the value added by the commodity or activity, at producers' prices, to the value added at border prices. This particular rate thus combines the impact of distortions of both product and input prices and is likely to differ in scale from nominal rates as markets develop and the use of modern inputs rises.

Data from many studies covering the 1970's and early 1980's leave no doubt that price bias against agriculture at that time was strong, with negative NPCs for most staple and export commodities in a number of developing countries; in sharp contrast to positive protection in developed countries. The negative influence on agricultural performance of such output pricing policy was a major theme of the World Bank's influential Africa Report of 1981.<sup>5</sup>

## Inadequate Data and Methods

Yet measurement of protection co-efficients appears now to have been biased towards the negative end of the scale. In the words of Dharam Ghai and Lawrence Smith<sup>6</sup> "available data suggest that sweeping generalisations concerning export and food price trends in Africa may be misplaced". There were two main reasons: the poor quality of farm-gate price data and the inadequacy of the coefficients used to measure price distortion. FAO, in particular, has continually stressed the need to improve official statistics covering farmers' domestic terms of trade: farm-gate prices and prices paid for agricultural requisites. Detailed information is also needed at the country level about marketing costs (transport, storage, etc.) for major commodities between the farm-gate and port, or border, whichever is appropriate. As to the inadequacy of methods of calculating protection coefficients, most of the country studies of agricultural pricing carried out in the 1970's used nominal protection coefficients which did not take into account overvalued exchange rates. Only later were improved measures used which took this factor into account, as well as corrections for processing, marketing and transport costs. Price distortion must be measured at a particular point on an existing marketing chain by comparing actual and undistorted prices at that point. It cannot be measured accurately by comparing

<sup>2</sup> See J. A. Mollett: Agricultural investment and economic development – some relationships, in: Outlook on Agriculture, Vol. 11, No. 1, 1982, pp. 27-31.

<sup>3</sup> It can be safely predicted *a priori* that general equilibrium models designed to give shadow prices will yield border prices of traded goods as their shadow prices.

<sup>4</sup> Perhaps a misleading term as the numbers involved are always positive, but less than 1. It is, however, currently in common use.

<sup>5</sup> World Bank: Accelerated development in sub-Saharan Africa – An agenda for action, Washington, D.C., 1981.

<sup>6</sup> Dharam Ghai, Lawrence Smith: Food price policy and equity, in: Accelerating Food Production in Sub-Saharan Africa, The Johns Hopkins University Press, Baltimore 1984, pp. 281-285.

actual and different points on an existing marketing chain or at a single point on a non-existent marketing chain. Yet as Westlake points out "the use of such methods of measurement has become the accepted practice" and further problems concerned with different practices in measuring price distortion for export or import commodities lead him to the conclusion that "little confidence can be placed in the findings of studies of the extent and impact of agricultural price distortion in developing countries. Serious doubt must be cast, therefore, on the conclusions which have been drawn from these studies on the relationship between price distortion and development".<sup>7</sup>

However, using a "composite distortion index" which covers pricing of foreign exchange, factors of production (capital and labour) and products (power tariff and inflation) the World Bank, backed by a large body of theoretical material, has demonstrated how price distortions lead to a loss of efficiency.<sup>8</sup> Statistical analysis of the relationship between the price distortion index (where a value of 1 implies no distortion, or free trade) and agricultural growth in the 1970's shows that in 10 developing market economies with a low distortion index (averaging 1.56) the annual average rate of agricultural growth was 4.4 per cent, it averaged 2.9 per cent in 9 countries where the distortion index averaged 1.95 (countries arranged in ascending order of price distortion) and only 1.9 per cent in the 12 countries with an average distortion index of 2.44 (roughly half a percentage point above the overall average).

## Role of Marketing Boards

Although marketing costs are taken into account in the calculation of both protection coefficients (NPCs) and distortion indices, they are in a sense taken for granted, as a kind of fixed cost. Yet for a price policy to be really effective, it must be supported by an efficient marketing system – and many are not. Governments, especially in Africa and the Near East regions, have often set up marketing boards or other parastatal organisations to implement official price policy for key farm products – and made some attempts to improve marketing. The impact of marketing boards on production and incentives can be positive where sales to them are voluntary, and their role is to prevent farm prices from going below a pre-announced level. This depends, in practice, on the effectiveness of the marketing network and the availability of funds to pay for produce when offered. On the other hand, that impact can be distinctly negative when farmers have to sell to parastatal agencies, with no free market outlet permitted, with very few assembly markets and few

storage facilities at the farm and local levels. Support prices may rarely be announced in advance and in good time. Monopoly buying may have to be reinforced by controls on production areas and compulsory delivery quotas.

It is difficult to make generalizations about how efficient marketing or pricing arrangements are in any country. Marketing margins are not known systematically so this method of judging competitive efficiency is hardly practicable. However, the large number of traders in some countries suggests that entry into trading is not always too difficult and thus competitive efficiency could be quite high – considering "the circumstances". It is these "circumstances" or conditions which need changing if marketing is to be radically improved, thus leading to lower consumer prices and better farm incomes. Lack of integration between the various farming areas, some in surplus, others in deficit, often leads to glaring weaknesses in domestic marketing. This state of affairs arises mainly from inadequacies in market information and analyses, transport, feeder roads, storage and investment. Relatively few developing countries have well-organized systems of market information and intelligence, or the means to effectively use whatever information is collected. Yet if price policy is to contribute more to agricultural performance, more efficient and cheaper marketing must be a crucial element of that policy.

## Food Subsidies

Let us turn now to the second measure commonly adopted in price policy: consumer subsidies. There is little difficulty in understanding why governments intervene to provide cheap food for consumers. They are keenly aware that a high proportion of income is spent on food and that rising and unstable food prices have a disruptive effect on the cost of living and wage levels. They also assume the responsibility of safeguarding the nutritional welfare of urban and landless rural people. However, serious problems commonly arise from the high costs often associated with food subsidies, as well as their rigidity.

As might be expected, the extent of public involvement in food marketing, and in the mechanisms used, varies from country to country and from one region to another – and also between rural and urban

<sup>7</sup> M. J. Westlake: The measurement of agricultural price distortion in developing countries, in: *Journal of Development Studies*, Vol. 23, No. 3, 1987, pp. 371-381.

<sup>8</sup> World Bank: *World Economic Report 1983*, Washington, D.C., Ch. 6, pp. 60-61. See also *World Economic Report 1986*, Chs. 4-8, pp. 61-153.

sectors.<sup>9</sup> Thus governments in South Asia are often involved in all stages of marketing from procurement to processing and distribution, in competition with private trade. Dual price distribution systems exist to ensure equitable distribution of limited food supplies through fair price or ration shops. Any subsidy is usually provided by a direct transfer to the trading agency. It is one form of targeting subsidies i.e. to the poorest areas in cities and towns. In South-East Asia and Latin America, state intervention has been much smaller. In some of the countries in these regions subsidies are often given as direct payments at the stage of processing. In contrast, food subsidy programmes have been large in the Near East, and expensive – to give the entire population some benefit from the greatly increased oil revenues. In Africa, there has been heavy state involvement in marketing, now gradually being liberalised. Food subsidies in East Africa, for example, are administered by transfers to government marketing boards, either explicitly or indirectly through financing operating losses.

Most countries subsidize one or two food items – usually an urban staple food – with the benefits mostly targeted towards urban areas: around 65 per cent in Bangladesh, 90 per cent in China and close to 100 per cent in most African countries. This situation is largely explained by the greater political power of the urban poor as compared to the rural poor, and the relative ease of subsidizing food in urban areas. Rural poor can usually only benefit when there are large numbers of landless who must buy their food.

The main weakness of food subsidies is their relatively high cost even when every attempt is made to target the benefits to those who need them most. One useful cost indicator is to measure food subsidies as a percentage of annual government expenditure. In Egypt during 1978-80 the relevant proportion was as much as 12.8 per cent, compared to 9.1 per cent in Sri Lanka, 5.1 per cent in Bangladesh, 4.0 per cent in India (average 1973-82), 2.1 per cent in Mali (1978) but only 0.2 per cent in Brazil. Too few cost-benefit studies have been made of food subsidies for conclusive results to emerge. In some countries, however, rough calculations appear to indicate that most of the costs involved could be better used in other developmental efforts. This appears to be the conclusion of a growing number of governments in both centrally planned and market-economy developing countries as well as in some developed countries, e.g. Hungary, Poland and, recently, the USSR. Although

poor people benefit who have access to the programmes, the pronounced urban bias of nearly all programmes, and an inability to limit benefits within urban populations to the very poor, has led to a deterioration in the national distribution of income.

## Income Distribution

This situation supports the view that a more equitable income distribution is best approached by direct means which involve the re-distribution of productive assets, notably land, and progressive taxation. It is generally difficult to calculate the consequences of any changes in farm price policy on the pattern of income distribution in a country as a whole. Some gain, such as farmers, particularly large farmers, and some lose – most likely the poor, especially in rural areas; a precise assessment is not usually possible. The small semi-subsistence farmer will gain, or lose, depending on the higher value of his or her sales of food products as compared to the added cost of food purchases, for example. If, on balance, income is reduced then the farmer concerned may be forced to lower investment or current farm expenditure, leading probably to even lower future production and income. It may even come down to selling the holding. Another possible scenario might be based on the benefits of higher prices being largely “captured” by the modern agricultural sector leading eventually to the ousting of small farmers, usually less well-placed to adopt new technologies requiring relatively large capital inputs.

All this implies that agricultural price policy needs to be associated with structural and other non-price measures to tackle equity problems more directly. Policy-makers should, therefore, not forget the special needs of small farmers in the design and administration of any price measures – within total budget limitations, of course. Finally, if special farm price incentives are provided, then a serious attempt is required to ensure that any consumer food subsidies reach both rural and urban poor.

## Supply Responses to Price

As indicated earlier, price is usually not the most important explanatory variable in supply equations. But if the effectiveness of price policy is to be measured against its influence on agricultural growth some attempt is necessary to measure supply elasticity or response to price changes. The usual direction of the response is well-known, it is positive; and supply response to price increases is usually greater than to price reductions. It is the estimation of the magnitude of supply response which is difficult. The main problem is that non-price factors account for most of agricultural

<sup>9</sup> For details see *Agricultural Price Policies*, FAO document C85/19, Rome 1985, pp. 30-40.

growth in developing countries. For example, Kevin M. Cleaver in a recent study of 31 countries in sub-Saharan Africa<sup>10</sup> concludes that price and exchange rate policy have a relatively small impact on agricultural growth "compared to other factors such as government involvement in farm input supply, population growth and government's ability to operate and maintain its agricultural investments. Much of the variation in agricultural growth between African countries still cannot be explained".<sup>11</sup>

If it is assumed that price policy plays a relatively minor role in supply response then attention is naturally turned to technological factors such as research, infrastructure, marketing, irrigation, equipment etc. Yet experience shows that supply responsiveness to price, while low for total output, is sufficient for prices to matter. This has been demonstrated by the negative effects cheap food policies have on rates of agricultural growth.

Aggregate supply responses to price changes vary widely for individual developing countries but elasticities are generally within the ranges of 0.1 to 0.3 for the short run and 0.2 to 0.5 for the long run.<sup>12</sup> Prices do matter but response to changes in prices alone makes them inadequate to bring about sustained growth in agricultural production. Nevertheless as the FAO report quoted above points out "a fall in the price of agricultural products relative to other products, i.e. a fall in the terms of trade for agriculture of, say, 20 per cent may under certain circumstances bring about a reduction in total agricultural production of the order of 4 to 10 per cent – a very significant reduction viewed against the size of the current national food deficits confronting developing countries".<sup>13</sup>

There is little doubt that much work is needed on factors governing supply response, and the technological conditions under which price policy can play a more positive role, at less cost. An important reason why this additional research is necessary is that agricultural price policy affects not only income and output in that sector, but in most of the other sectors, too, including the governmental (tax revenue and public expenditure) sector. The complex relationship of agriculture with the rest of the economy can, to some extent, be estimated by mathematical/simulation models, though rarely, if at all, in developing countries because of inadequate data. A rough guide to the consequences of changes in farm price policy can, however, be prepared quite easily. Thus an increase in

farm-gate or producers' prices for the main staple foods is likely to lead to some rise in their output and a fall in the production of export crops (assuming their prices remain unchanged). The resulting inflationary pressure is likely to be reflected in higher consumer food prices, as aggregate demand expands with the higher income received by producers. Government spending on food procurement will also rise. Higher farm prices and rural incomes will generate a multiplier demand effect on both the farm supply side as well as on demand for rural and urban employment (and vice versa, of course). Thus it follows that agricultural price policy should not be determined largely or even solely by agricultural ministers (as in the European Community, and with what consequences!) but as part of a wider assessment of the national economy and agriculture's part in it.

## Conclusions

Measuring the performance of agricultural price policy is not an easy matter. It is generally difficult to do a cost-benefit exercise in this whole area and few are attempted.<sup>14</sup> This situation was probably to the advantage of many price policies as their benefits were only likely to have been marginal at best. Now that governments in many developing countries are compelled by changing economic and financial circumstances to be more stringent in public spending, agricultural price policies are under closer review. There is a move encouraged by the World Bank and the International Monetary Fund to rely more on market forces – with less interference from government agencies and regulations. This change is occurring in both centrally planned and market-economy developing countries.

Yet price policy still has more than a marginal role to play in guiding farm production. It has implications for other sectors of an economy as well, although not as a way of attempting to provide a more equitable distribution of income. To some extent this whole development reflects the gradual improvement in marketing infrastructure, the move towards better price information, analysis of market conditions, and better communications. It may also be a reaction against the deadening effect of inefficient and sometimes corrupt state agencies, and the often awful bureaucracies which put price policy into effect.

<sup>11</sup> Ibid., see Abstract.

<sup>12</sup> Agricultural Price Policies, FAO document C85/19, op. cit., p. 106.

<sup>13</sup> Ibid., pp. 106-107.

<sup>14</sup> However, see Paul Streeten: *Agricultural Price-Policies in Developing Countries*, Collier Macmillan, Basingstoke 1987.

<sup>10</sup> Kevin M. Cleaver: *The impact of price and exchange rate policies on agriculture in Sub-Saharan Africa*, Staff Working Paper, No. 728, World Bank, Washington, D.C., 1985.