The Pakistan Development Review
32:4 Part II (Winter 1993) pp. 823–832

The Impact of the GOP's Wheat Pricing Policy on Flour Prices

JOE RYAN and SHAHEEN RAFI KHAN

PROPOSITION

The GOP attempts to influence flour prices by fixing its own wholesale price for wheat–the "release price"–at *below* market levels. We will try to determine who benefits from this intervention. In other words is the *open-ended subsidy* passed on to consumers, does it end up as excess profits for flour millers or is it dissipated in the pure economic waste of excessive investment in mills. The analysis has implications for alternative subsidy options which will be considered.

The paper is divided into three sections. We will begin with a brief institutional description which will set the framework for the following economic and statistical analysis.

INSTITUTIONAL DESCRIPTION

Ration Shop System

Until 1987, the GOP supported a ration shop system for distributing wheat flour to consumers. The GOP bought wheat from traders and farmers at a fixed "procurement price" and sold specific quantities to mills at a fixed "release price". Designated mills sold an equivalent quantity of flour to specified ration shops, adding a milling margin to the cost of the wheat. Ration shops, in turn, sold their quotas of ration flour to consumers, after adding a fixed retail mark-up.

Concurrently, flour mills also bought wheat from the open market, resulting in private trade in wheat at prices well above ration shop prices. There also existed a quasi-private market in wheat: periodic excess stocks held by the government were sold at open market prices to the flour mills.

Effects of the System

The system created a dual market. Distributional objectives were not achieved. Ration shop flour was diverted to the open market. The scheme was essentially urban biased. Also, the flour sold was of poor quality.

Joe Ryan and Shaheen Rafi Khan are associated with the USAID, Islamabad.

Authors' Note: We have benefited from the very informative comments of Dick Maxon, Akhtar Mahmood, and Abdul Wasay.

The scheme had fiscal implications in the form of GOP subsidies, equivalent to the difference between the wheat release price and the prevailing open market wholesale price. In budgetary terms, the unit subsidy was equal to the difference between the retail price and the procurement price plus partial storage costs.

Current Price Leader System

The scheme was abolished in 1987 and replaced by the current "price-leader system". The aim was to *induce* a reduction in flour prices through *open-ended sales* from GOP stocks to flour millers, rather than by controlling flour prices.

Under this system, farmers sell wheat to itinerant vendors (beoparis, arhtis) who, in turn, sell to about 450 "procurement" centres in Punjab and Sindh. This wheat is stored in provincial food department (PFD) and PASSCO godowns, bins, silos, etc. Even though the procurement centres are buyers of last resort, procurement targets are usually met because of private sector storage constraints and lack of credit for holding seasonal stocks. The recent increase in "release prices" has increased the incentive for private traders to invest in storage and as well as to sell relatively more wheat to the flour mills.

Flour mills tend to buy from the open market early in the wheat season. As private stocks are depleted during the year, and excess demand emerges, the PFDs step in by releasing wheat from their stocks at the official "release price". During the latter half of the wheat season, millers' demand for wheat is partly met from their sanctioned quotas from the PFDs and partly from open market purchases.

PASSCO procures wheat expressly for meeting the needs of the deficit provinces (NWFP, Balochistan, Northern Areas and AJ&K).

The GOP's storage capacity is about 4.5 million tons. In most years, this amount is domestically procured. However, when shortfalls occur, the gap is made up through imports. Imports are also used to replenish GOP reserve stocks. Reflecting a combination of increased demand and relatively stagnant production, imports have averaged about 2 million tons in the past five years. Private sector wheat imports have also been recently allowed.

There is no GOP involvement in the market for flour. Neither the free-market price of flour nor the profit margin of flour mills is controlled. The cost of wheat is estimated to be about 85 percent of operating costs. The public sector Utility Stores chain has about a 5 percent share in the retail flour market. This wheat sells at about 5 percent–10 percent below the free market price, with the revenue loss being transferred to PASSCO via exemption of payment for bags.

Effects of the System

There is currently a single market for wheat flour, barring the limited utility store chain operations.

The GOP incurs a heavy subsidy cost ensuing from the relatively higher open-ended sales of domestically procured wheat at "release prices" to the flour

mills and from the difference between the c.i.f. price of imports and their eventual sale at the "release price".

From a distributional angle, the scheme continues to remain urban biased.

ECONOMIC ANALYSIS

The following economic analysis relies on the description given above of the market structure and GOP policies.

The Market Price of Wheat

Since the price of privately traded wheat is not under official control combined with the fact that buyers and sellers are atomistic, we can model the determination of the market price by demand and supply. Figure 1 depicts the long-term equilibrium situation in the wheat market under the present regime of fixed release prices.

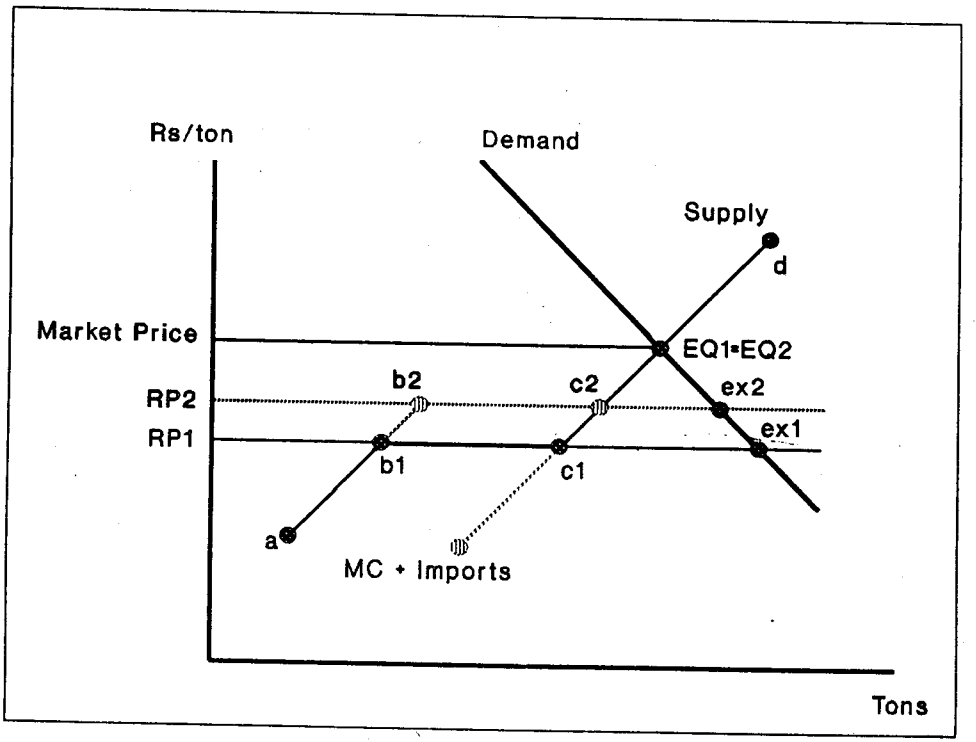

Fig. 1. Equilibrium in the Wheat Market

The position of the demand curve is based on overall consumer income and tastes. It is not affected by the release price. The supply curve is the additive combination of private sector sales, public sector releases and imports. We assume the wheat release price is RP1. a–b1 represents sales by private traders at their marginal cost, upto the price, RP1. From b1–c1, domestically procured and imported wheat becomes available to flour mills at the release price RP1. c1–d again represents the private traders' marginal cost curve above the price, RP1. EQ1 is the initial equilibrium.

Let us now assume the release price increases to RP2. Quite clearly, the new equilibrium price, EQ2, remains unchanged. The only difference is that the first segment of the private traders' marginal cost curve increases by b1–b2 and is exactly offset by a reduction of the second segment by c1–c2. The amount of wheat released remains as before. Only a portion of the supply curve shifts and in a manner that does not affect the equilibrium price.

The GOP's objective is to lower flour prices by selling wheat to millers at a "release price" below the open market price. The analysis above shows that this policy does not affect the equilibrium price, which is determined by private sector sales. Varying the release price, as demonstrated, only affects the part of the supply curve away from this equilibrium price.

It can be shown that increasing imports at a given "release price" will lower the equilibrium price to, say, ex2 in Fig. 1. However, the policy under scrutiny is the "release price". Its effects should not be confused with those engendered by a different policy, one pertaining to imports in this case. The effect of imports which *increase* total supply, and hence lower the equilibrium price, has nothing to do with the "release price". This is clearly evident from the fact that at a new "release price" RP, lower than RP1, the new equilibrium price, ex2, will not change.

The Market Price of Flour

Since the price of flour is not under official control and since the number of millers and consumers is large, we can also model long-term equilibrium in the flour market by demand and supply. Flour millers get a portion of their wheat from public sector stocks at reduced "released prices". This lowers their cost of production and should lead to a reduction in flour prices as well. However, this will only hold true if the public sector is the sole supplier of wheat to the mills which, as we know, is not the case. In other words, the downward shift in costs, stemming from the release price or from changes in this price, is *infra-marginal*. At the margin, flour millers get their wheat from the private sector at a higher price. This price, in effect, determines the equilibrium price of flour.

Fig. 2 illustrates this point graphically. Equilibrium is at EQ1. Lowering the "release price" shifts the millers' marginal cost curve downward only upto the point where public sector stocks are exhausted, at output level OY. Beyond this point additional wheat is obtained from the private sector. Since the price at which it sells

wheat is unaffected by the "release price", equilibrium also remains unchanged at EQ1.

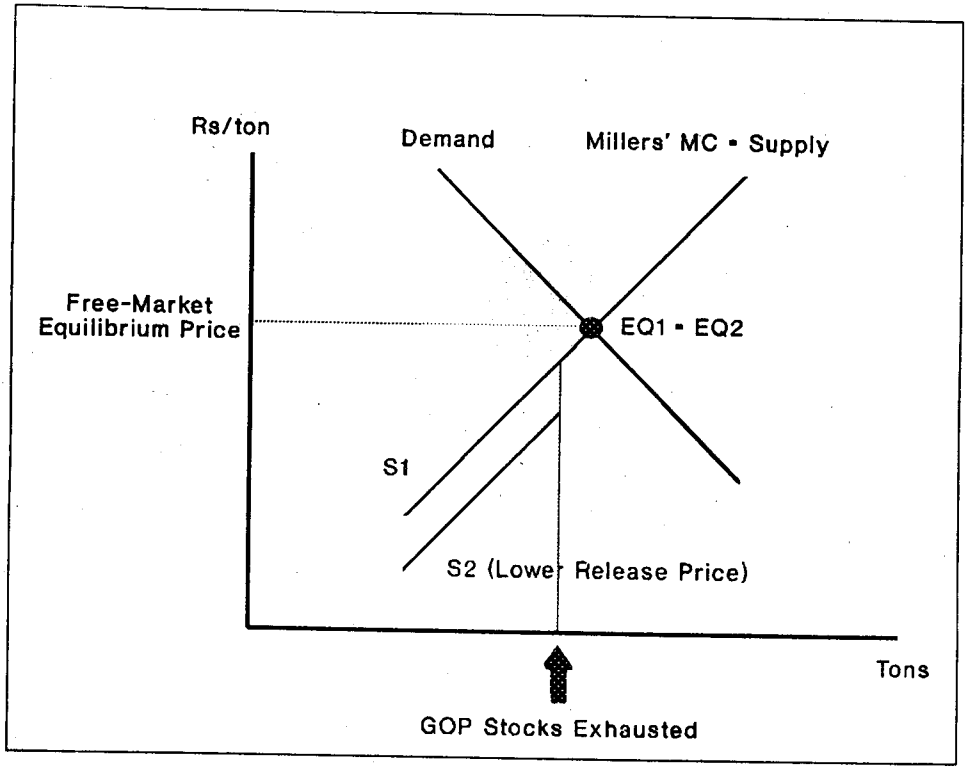

Fig. 2. Equilibrium in the Flour Market

Although millers' marginal costs and, hence the equilibrium flour price does not change with a lowering of the "release price", their total costs will decline and profits will increase. The resulting long-term adjustments are shown in Fig. 3. For the amount of flour actually milled, total costs–comprising fixed and average costs –are shown by the height of TC1 at A. A lower "release price" lowers variable costs upto the point where public of TC1 at A. A lower "release price" lowers variable costs upto the point where public sector stocks are exhausted. From this point onwards, variable costs parallel their initial path at a lower level. Total costs are now denoted by the height of TC2 at B. With a decrease in total costs and an unchanged flour price, excess profits are generated. This stimulates entry into the

milling industry. Since the total supply of wheat is unchanged each mill now has less wheat to grind. The additional capital investment only creates excess milling capacity and leads to inefficient production by each mill. Excess profits are ultimately dissipated in the economic waste of this surplus capacity. This process is represented in Fig. 3 as an upward shift in fixed costs from TC1 to TC3. As a result of this shift, total costs for the industry return to the point A and no further investment takes place.

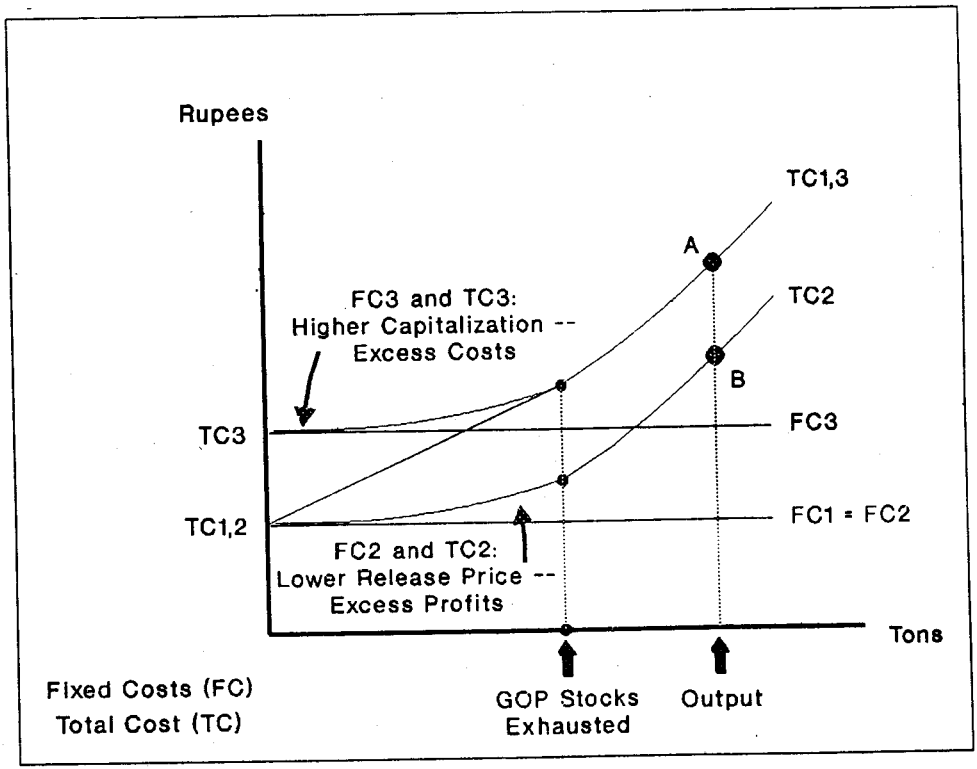

Fig. 3. Long-run Adjustment in Flour Milling

The empirical data does confirm that there is considerable surplus capacity in the milling industry. About 500 mills in operation work an average of 1.2 shifts per day, which indicates considerable under-utilisation. However, there are other factors besides entry which also contribute to this development. These are credit market

imperfections which provide free credit and allow penalty-free default. Also, there exist a number of "ghost mills", set up for the express purpose of buying wheat at the "release price" and selling it at the open-market price. Again, excess capacity may allow greater access to public sector wheat at the "release price".

STATISTICAL ANALYSIS

While both the description and analysis above are reasonably certain in their results, we will attempt to statistically test the hypothesis that the release price has no impact on the price of flour. The approach taken is an annual time-series model of nationally aggregated data.

The model specification used is that the retail price of flour depends on the demand for flour, the supply of flour and the release price of wheat. Demand, in turn, depends on GNP per capita, the level of population (represented by the trend variable) and the price of the substitute, rice. Supply represents the sum of wheat output, imports and GOP stocks at the beginning of the year.

Combinations of various regressors are used in order to arrive at a consistent model. In addition to the above regressors, and as an alternative demand determinant, population and per capita GNP are folded into a new parameter, GNP. The wholesale wheat price is included, to encompass the effects of quantity and price movements in wheat markets. Also, the rationing dummy represents an institutional variable.

Results

In Table 1, each equation's estimated parameters are read horizontally. In Equation 1, GNP per capita has the wrong sign as does the rice price and the rationing dummy. The supply variable is insignificant even though it has the right sign.

In Equation 2, the rice price is dropped. Money GNP is substituted as the new demand variable and works well. The low coefficient is consistent with the finding that the income elasticity of demand for wheat products is low in Pakistan. The supply variable continues to be insignificant and the dummy variable again goes the wrong way.

In Equation 3, we drop the dummy variable. The result is an even worse supply variable performance.

In Equation 4, we add the wholesale wheat price variable. This proves to be significant and also cuts into the explanatory value of the demand variable GNP. The supply variable performance deteriorates further.

In the final equation the supply variable is dropped. The result is fairly similar to Equation 4. In both equations the wholesale price co-efficient is not significantly different from zero but this is probably due to multi-collinearity between money GNP and this price. The sum of these two co-efficients is 0.615 which is five times the sum's standard error of 0.118. In all five equations the

release price has no worth as an explanatory variable, thus confirming our hypothesis.

We have to admit a fairly major flaw in this analysis. Pre and post 1987 markets were structurally different and, therefore, should not have been modelled into the same equations. We were, unfortunately, constrained by the limited data after 1987. However, Nadeem-ul-Haque has tested for the same results using post 87 monthly regional data upto 1991, which also captures seasonal effects. His findings confirm our hypothesis that the release price does not matter, where as the wholesale price does. He, however, has demonstrated that in two thirds of the markets studied, the *announcement* of a release price change did affect the price of flour.

FINDINGS AND RECOMMENDATIONS

We conclude from this analysis that the subsidy designed to benefit consumers gets diverted to the flour mills and is further dissipated through the creation of surplus milling capacity. One obvious lesson to be learnt from this is that *indirect* subsidies should be avoided as much as possible. It can be argued that the current, open-ended, subsidy was the direct outcome of an ineffectual ration system. However, we have attempted to show that the price-leader system has proven to be even more misdirected.

While not opting again for a ration system, we recommend that the principle of *direct* subsidies should be retained. There is fairly extensive literature demonstrating that such subsidies can reach intended beneficiaries, provided they are carefully designed. Some cases in point are, subsidies targeted towards specific population groups such as school going children and subsidies which reach the targeted groups by virtue of their inherent characteristics, such as inferior goods. Again, it may be contended that such subsidies would benefit only a restricted group. However, since the alternatives benefit nobody, small, results-oriented programmes seem an obvious choice. Also, the fiscal burden of such programmes would be comparatively lower.

Comments on "The Impact of the GOP's Wheat Pricing Policy on Flour Prices"

The paper on "The impact of the GOP's wheat price policy on flour prices", deals with the relationship between the wheat price and the retail price of flour. The Government of Pakistan is following a policy to purchase wheat directly from farmers and then to supply it over the year to fill the gap between demand and supply to avoid fluctuation in its prices. Such a policy is adopted to stabilise wheat and flour prices and also to ensure that farmers are protected against a lower price for wheat. Similarly, the consumers are also protected from a very high price of flour. It is an important issue which has wide implications. The authors concluded that such a government policy has not influenced flour prices. However, it leads to a windfall increase in the profits of the flour millers. Besides, it led to over capacity as more flour mills were established. Such a conclusion has a significant bearing on the present wheat flour policy of the government. In other words, such a government policy resulted in an overinvestment in flour mills, providing them abnormal profits, having over capacity mills and hardly any justification for government's investment in storages facility. Such a conclusion is very strong. However, it is an important conclusion which has nullified the present policy of the government.

The paper is important and provides very useful information. However, a lot of space has been assigned to historical review of wheat disbursement such as rationing and pre-Pakistan policies, which hardly deal with the major issue analysed in the paper. Therefore, such discussion needs to be condensed to one or two pages.

The theoretical rationale provided by the authors and figures drawn on these basis are hardly relevant to the wheat flour market in Pakistan. It is stated that wheat supply is controlled by the government while the flour price is freely determined in the market. Such views do not quietly relate to the actual position. The wheat supplied by the public sector to millers at a controlled price is converted into flour by millers and the flour is also sold at a controlled price with some margin of value added. Thus, a free market does not exist. The authors themselves acknowledge that the bulk of flour/wheat is consumed by the public sector for defence etc., which has the major market share, thus, free market analysis may not convey the actual realities. Besides, it is also stated that wheat supply above RP2 (in Figure 1) is determined by marginal cost plus imports while it is not relevant below this price. It may be noted that even below RP2 marginal cost and average cost of production are the basis for government procurement price which is changed every year accordingly. Thus, there is a need to improve the theoretical base which should capture the actual market conditions. Free market analysis of demand and supply do not reflect the actual market in Pakistan which is utilised by the authors.

The empirical analysis is based on five regression equations. The first four equations provide foundations for final outcome. Based on a single equation several conclusions have been drawn. The major conclusion is that release price of wheat has no worth as an explanatory variable. Therefore, the release price of wheat has not influenced the flour price. Such a work based on one equation analysis, lacking in theoretical foundation, is hardly reliable for policy formulation or criticism. The single equation model also lacks the inclusion of important variables which are close substitutes to wheat, e.g. maize. The authors have analysed the price of rice which could hardly be considered a close substitute to wheat since its price is far higher than the wheat price.

One of the major objectives of government's purchases of wheat directly from the farmers during the peak season is to provide at least a minimum price to the farmer to encourage its production and stability in its prices. Besides, there were hardly any sufficient storage capacity in the private sector, therefore, the public sector filled this gap to provide such a service where the market failed. These two core objective of the wheat flour policy is hardly touched by the authors. If such analysis is made a part it could have been an important contribution.

The authors have also drawn several other conclusions which are hardly based on their analysis. For example, the wheat/flour policy has led to windfall profits of the millers, overinvestment in mills and its over capacity etc. It may be noted that the flour price is as controlled as wheat's, only a value added margin is provided to the millers. It is the extraction of refined flour (*sugi*) etc., which provides some profit to the millers. There is no such discussion in the paper.

Notwithstanding the above, the authors have opened a debate on agricultural price policies which is a significant contribution. I am sure further research in this area will provide useful information on these policies. The incorporation of comments given above will help to improve the paper and the reliability of its results.

Mohammad Aslam

Ministry of Finance,
Islamabad.