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# PAKISTAN WHEAT POLICY ISSUES

A Special EAN Project Briefing Paper

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# **PAKISTAN WHEAT POLICY ISSUES**

## **1.0 Introduction**

Wheat is the most important crop in Pakistan's food security strategy. About one-third of the cropland is planted in wheat {9}. About one-half of the calories and protein in the average Pakistani diet are supplied from wheat {12}.

Frequent wheat shortages have stirred perennial fears of food rationing and the attendant political instability. The most important agricultural policy objectives have emphasized adequate wheat supplies at low, stable prices. To support these objectives, policies have been designed to increase production, improve marketing and stabilize retail prices. The Pakistan Agricultural Research Council and the International Maize and Wheat Improvement Center (CIMMYT) have had a long and fruitful collaboration in improving wheat production.

Government has always played a major role in wheat marketing. At least one-third of the crop is procured, stored and transported by the federal Pakistan Agricultural Storage and Services Corporation (PASSCO) and provincial food departments {9}. Until recently, wheat was distributed at the retail level by a national ration shop system {20}. Substantial federal and provincial subsidies have been paid at the wholesale level to stabilize retail wheat and wheat flour prices.

The low 1988-89 wheat harvest caused a record amount of wheat to be imported. In view to the government's constant goal of wheat self-sufficiency, it is appropriate to review major elements of the wheat market and discuss their implications for improved food security.

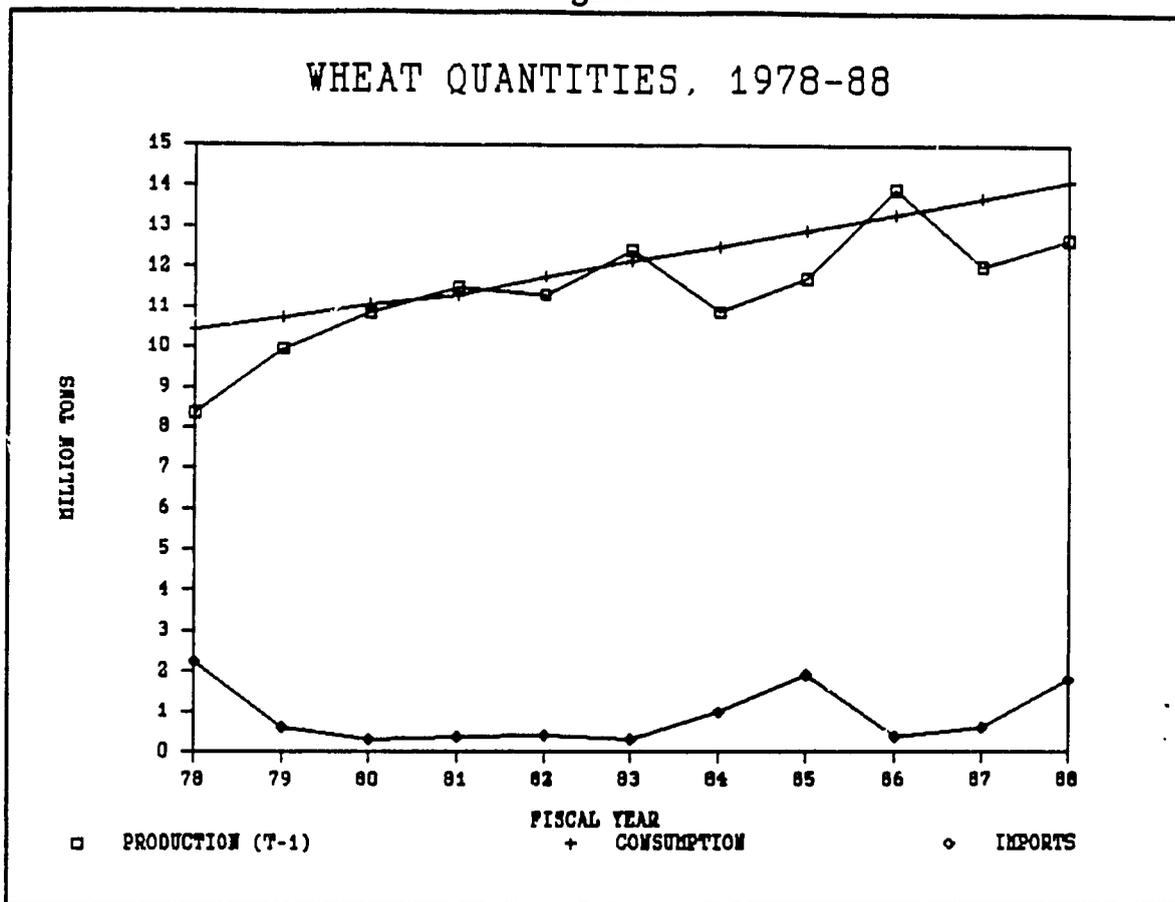
## **2.0 The Wheat Market**

An overview of market performance is necessary to analyze the effects of current and alternative wheat policies. Trends in domestic production and consumption and international trade indicate how well the market is satisfying physical needs. Price trends demonstrate how various market components signal the intensity of wheat allocations. Within a given market period, the forces of supply and demand interact under prevailing policies to balance consumption with available supplies.

### **2.1. Quantities**

Annual production has varied from 8.4 million tons to 13.9 million tons over the 1978-88 period (Figure 1) {8}. Although the trend has been increasing, the 2.3 percent growth rate is not keeping pace with a 3.1 percent population growth rate, and annual swings of about one-half million tons have created anxiety about the reliability of domestic supply.

Figure 1



Monthly per capita wheat and flour consumption was estimated at 10.96 kilograms in the Federal Bureau of Statistics' household and expenditure survey for 1985-86 {10}. This figure is slightly higher than the 1984-85 survey, but significantly lower than the 13.4 kilogram level reported in the latest national nutrition survey {12}. Using the FBS consumption estimate and current estimates of population trends, national consumption has increased at about 3.1 percent per annum from 10.4 million tons in 1978 to 14.1 million tons in 1988.

In four years, 1980, 1981, 1983 and 1986, production was near or above the estimated consumption needs. However the production statistics are farm-level and do not account for the approximate 10 percent loss in the marketing chain {14}. The minimum annual imports of 300,000 tons over the last decade are therefore a reflection of more than prudent re-stocking of reserves: The million ton-plus imports in 1978, 1985 and 1988 strongly suggest the goal of wheat self-sufficiency will not soon be achieved under present policies.

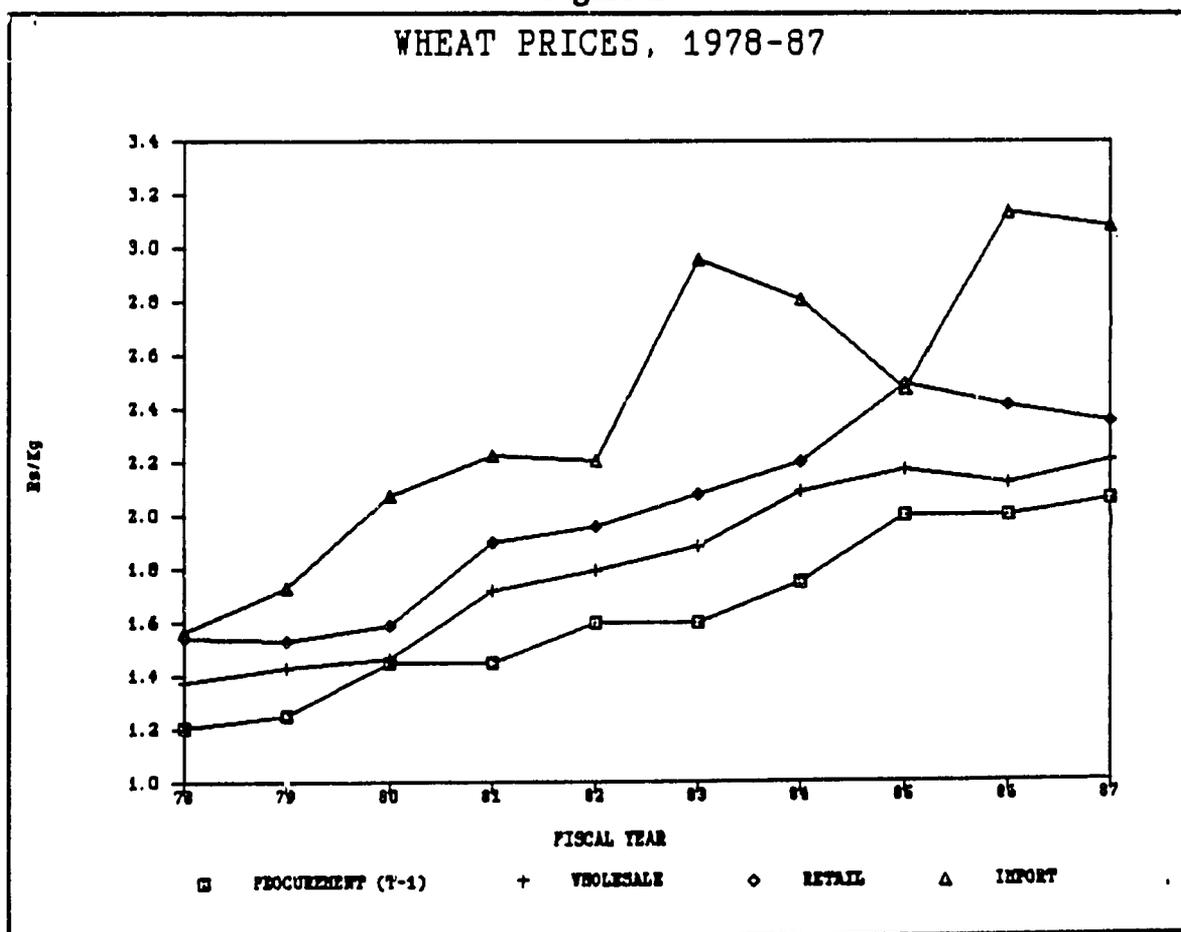
## 2.2. PRICES

Government wheat procurement prices increased about 6.2 percent per annum, from Rs 1.21 per kilogram in 1978 to Rs 2.06 per kilogram in 1987 (Figure 2). Wholesale prices increased about 5.8 percent per year, from Rs 1.38 to Rs 2.21 per kilogram during 1978-78, with annual procurement-wholesale margins of about Rs 0.2 per kilogram. Retail prices increased about 5.9 percent per annum, from Rs 1.54 per kilogram to Rs 2.35 per kilogram during the same period, with wholesale-retail also in the range of Rs 0.2 per kilogram.

Import prices have been much higher than domestic wholesale prices due to policy pressure against rising prices, and Pakistan's frequent vulnerability in an international "seller's" market. During 1978-87, import prices increased at 7.3 percent per year, from Rs 1.57 per kilogram to Rs 3.1 per kilogram.

The domestic margins have been too low to attract private sector traders. The procurement price is the effective farm floor price, since the government usually procures at least one-third of the harvest. It is reasonable to assume that

Figure 2



government procurement has a depressing effect on wholesale prices. Fiaz Mohammad tested that proposition and found little evidence of procurement effects {15}. However, the wholesale price level is not affected only from the procurement market below: federal and provincial governments provide large subsidies to the wholesale market. Total subsidies fell from Rs 2.38 billion in 1978 to Rs 1.11 billion in 1980, then rose to Rs 3.63 billion in 1985, and finally ended at Rs three billion in 1987 (Figure 3). The federal subsidy has been erratic, perhaps representing a last resort to ease price inflation in years of severe shortages, such as 1984 and 1985. The provincial subsidies have been much more steady, and represent the largest share of the subsidy bill over the last decade.

Figure 4 illustrates how, under the current price structure for government wheat sold to flour millers, subsidies enter the market {20}. PASSCO and provincial food departments buy wheat at a farm price of Rs 2,125 per ton. PASSCO charges Rs 600 for storage and operating costs over the five to six months following the harvest. PASSCO wheat is then sold to provincial departments, who sell to flour millers for Rs 2,420 per ton, which results in an immediate subsidy of Rs 305 per ton as a discount from the PASSCO release price. An estimated additional subsidy of Rs 250 per ton is often paid by the food departments for transportation to flour mills.

Figure 3

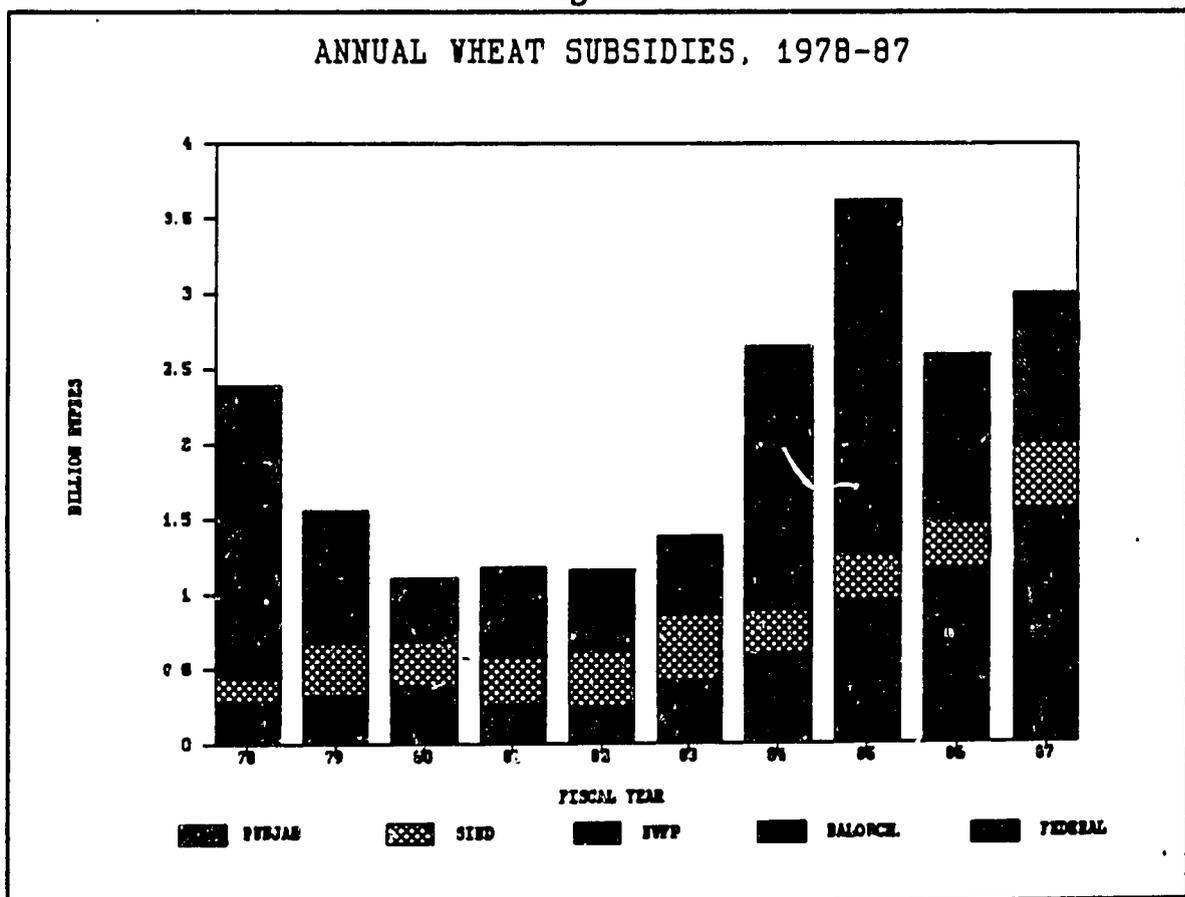
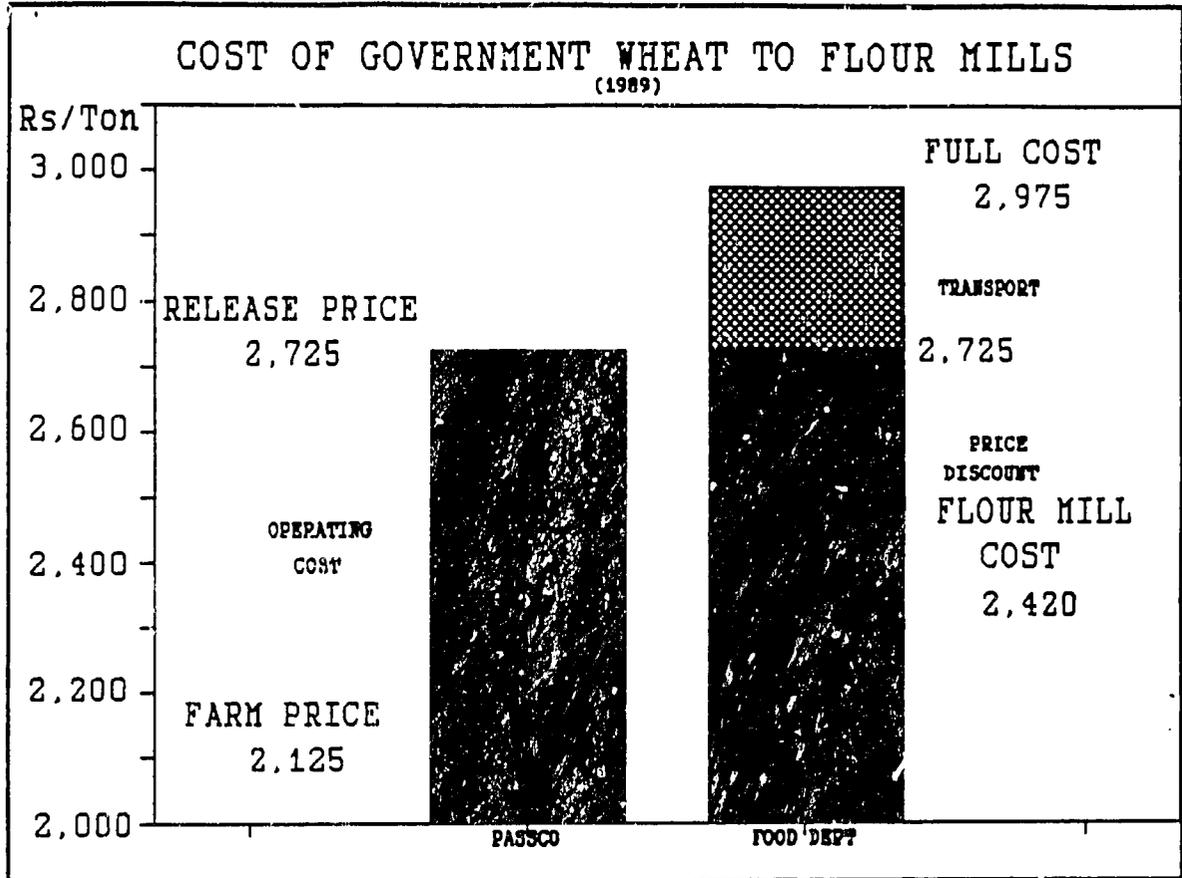


Figure 4



The annual changes in prices show steady increases, reflecting the government's goal of price stability. On a seasonal basis, government procurement agencies' dominant role in controlling wheat releases to millers is a major depressant on the usual rise in prices following harvest. Monthly wholesale prices in Karachi, Faisalabad and Rawalpindi for 1984-87 were used to construct a monthly composite index with May prices set at 100 (Figure 5) {11}. The index clearly indicates a supply of storage service pattern, with steady increases to a peak of 115, or 15 percent above the May price in February. Given the heavy intervention by the government in defending against sharp price increases, this curve can be considered to be the floor of opportunity costs for seasonal storage. The private sector has not constructed much storage because PASSCO and the food departments have such a dominant share of the commercial grain storage market. However, the potential for profits from private storage are not inconsequential, even with heavy government (subsidized) competition. In Figure 6, the seasonal benefits of storage are estimated for one ton stored in May, at a wholesale price of Rs 2.25 per kilogram. The monthly differences from the May base price, as determined by the index in Figure 5, show that the price differential peaks at Rs 341 per ton in February. This benefit is

Figure 5

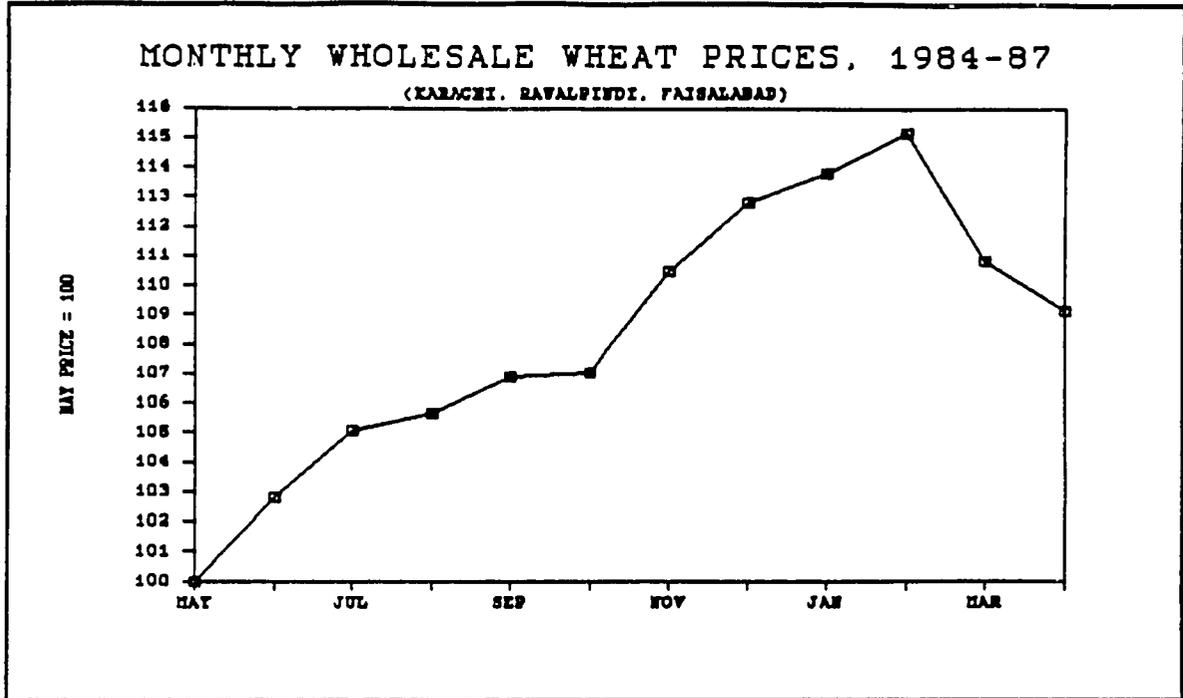
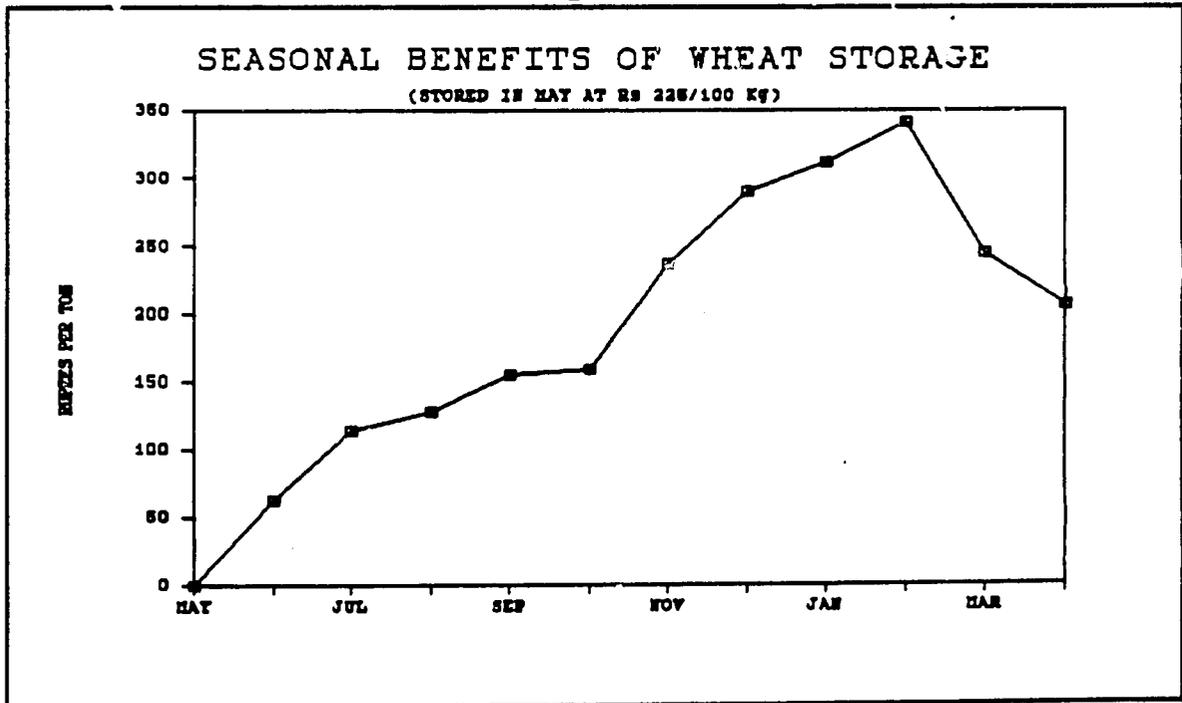


Figure 6



considerably less than the Rs 600 charged by PASSCO for a five or six month season, but the PASSCO charge includes recovery of past losses and, given the current weak demand for private sector storage, there are not yet economies of size for private storage construction.

### 2.3. The 1989-90 Market

The events of the first half of 1989 illustrate many of the policy problems facing the government. First, the wheat production target was set at 15 million tons, although the highest annual yields and acreages over the last decade would only produce 14.5 million tons. In April, market observers began predicting a significant shortfall. At the end of May, the Economic Survey reported a crop of 14.4 million tons {9}. In the face of recent news reports that the production target had been achieved, private traders began reporting shortages. Market uncertainty has increased with increased news coverages of bans on inter-province shipments of wheat and reductions in daily flour milling quotas. Since more than 1.8 million tons were imported to supplement the small 1988 crop, there is growing apprehension about import requirements for the current year, since stocks were drawn down last year. Morgan estimated a 1989 import requirement of 1.26 million tons {16}. However, new production and consumption estimates suggest the shortage is much higher.

#### 2.3.1 Demand

A retail demand function was estimated by assuming: a price elasticity of demand of -0.24; a retail price of Rs 2.7 per kilogram; and total market demand of 14.51 million tons. The price elasticity was estimated by Ahmad, Ludlow and Stern {1}. Market demand was estimated by expanding the annual per capita wheat consumption estimated in the Federal Bureau of Statistics 1985-86 household income and expenditure survey to a current population basis, assuming an annual population growth rate of 3.1 percent. The function is defined as:

$$Q_D = a + bP \quad [1]$$

or

$$Q_D = 17.9977 - 1.2902P \quad [2]$$

The conventional price-dependent function based on equation 1 is:

$$P = -\frac{a}{b} + \frac{1}{b}Q_D \quad [3]$$

or

$$P = 13.9500 - 0.7751Q_D \quad [4]$$

### 2.3.2 Supply

A wholesale supply function was first estimated by assuming: a price elasticity of supply of 0.2; a wholesale price of Rs 2.38 per kilogram; and a farm production level of 14.2 million tons. Most wheat supply elasticities are in the 0.15 to 0.25 range. Mubarik Ali estimated an elasticity of 0.23 for the short run {3}. The resulting equation was adjusted to the retail level by adding a wholesale-retail margin of Rs 0.32 per kilogram and reducing supply by 10 percent to account for post-harvest loss {14}. The retail function is defined as:

$$Q_s = c + dP \quad [5]$$

or

$$Q_s = 9.5510 + 1.1957P \quad [6]$$

The conventional price-dependent function based on equation 5 is:

$$P = -\frac{c}{d} + \frac{1}{d}Q_s \quad [7]$$

or

$$P = -7.9875 + 0.8363Q_s \quad [8]$$

### 2.3.3 Market Effects of Supply and Demand

The implications of equations 4 and 8 are shown in Figure 7. If retail prices were held in the vicinity of Rs 2.7, about 12.78 million tons would be supplied while about 14.51 million tons would be demanded, resulting in a shortage of about 1.73 million tons. The shortage could be much higher if the higher per capita wheat consumption estimates of the latest national nutrition survey are correct. The estimated shortage also does not account for unknown amounts smuggled into Iran and Afghanistan and diverted into livestock feed. To satisfy consumer needs, imports will be needed to supplement the meager carry-over stocks remaining from last season. The model depicted in Figure 7 implies that, in the absence of existing subsidies, the market price would move toward Rs 3.4 and supply and demand would move toward equilibrium at about 13.61 million tons.

The supply equations presented in Figure 7 were estimated under the assumption that wheat supply response in the present season is largely determined by the farmgate-wholesale price in the last season. It should be emphasized that a sudden abandonment of the existing price-depressing subsidies would not result in an increased quantity supplied because the current crop season is fixed.

A more useful way of evaluating the 1989-90 market is to assume that prices were free to respond to market forces over an intermediate period of 1-3 years. In that case, the model presented in Figure 7 can be used to show the interactions of market price and production on the gap between consumption and production. The tradeoffs between retail price and import costs is shown in Figure 8. If imported

Figure 7

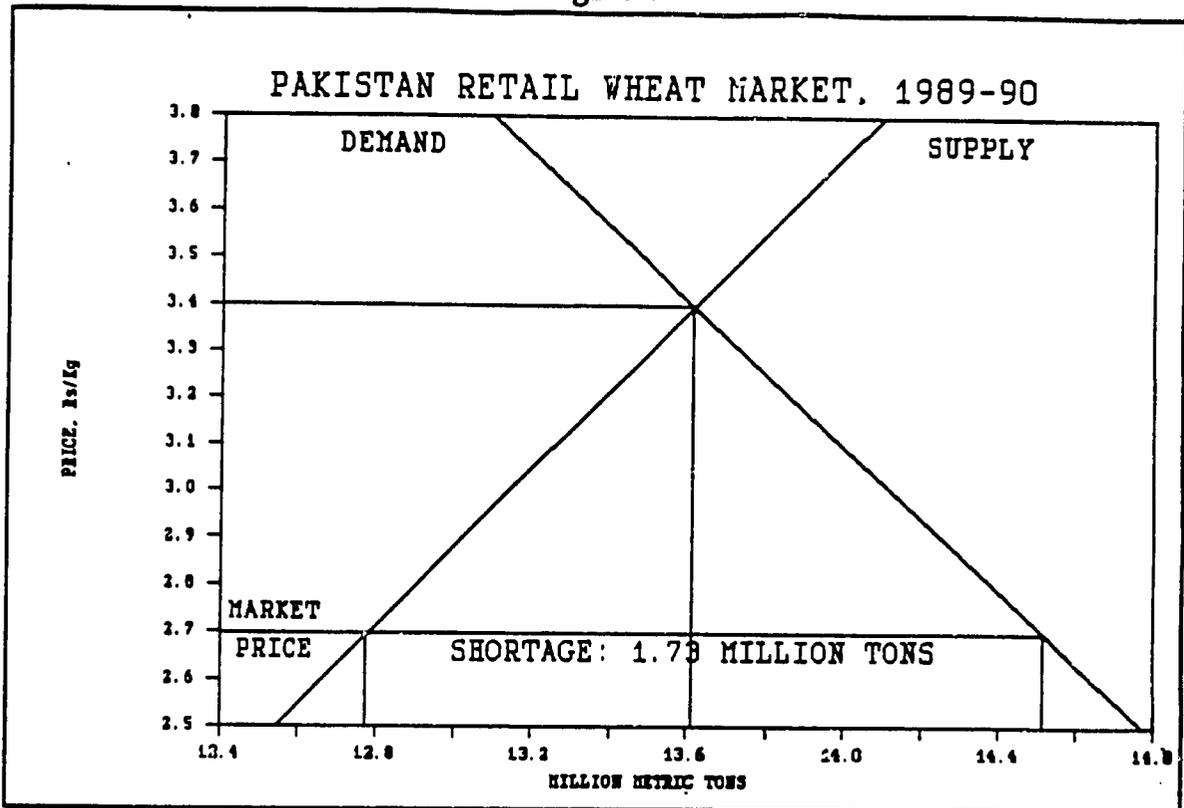
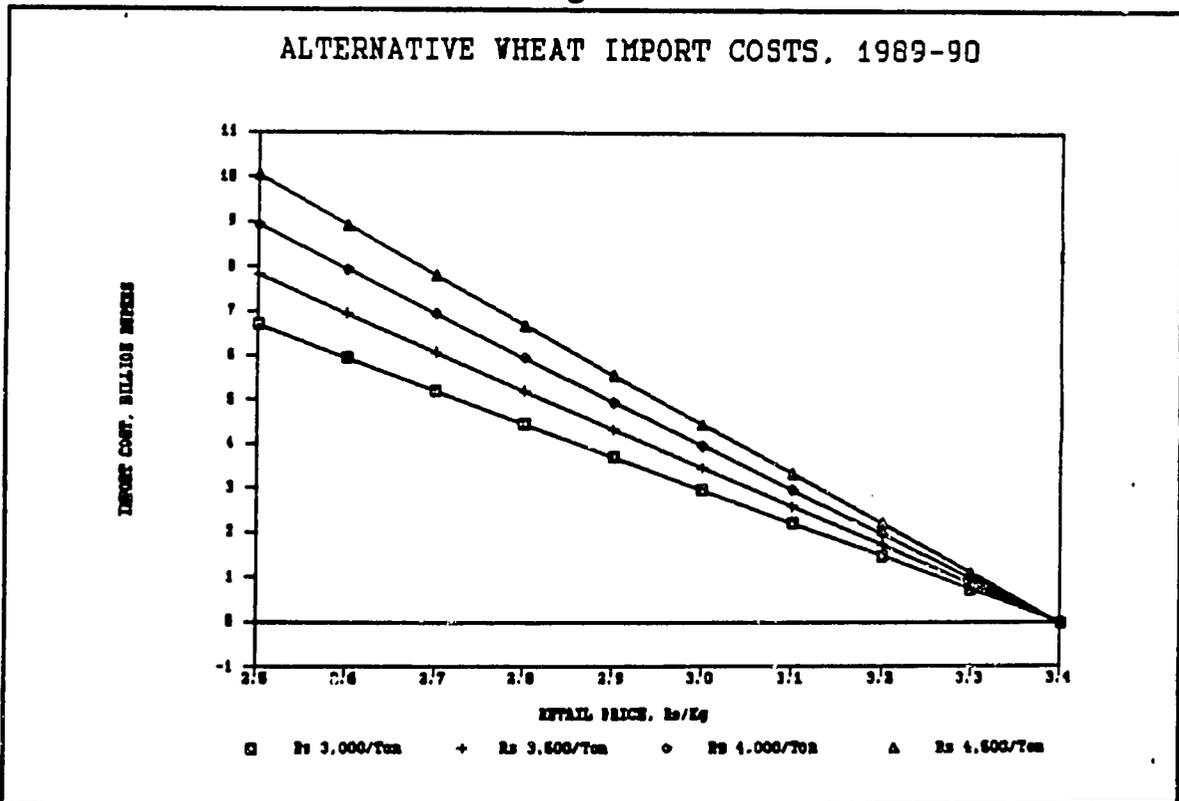


Figure 8



wheat costs Rs 3,500 or about \$163 per ton, and the retail price is held at about Rs 2.7, the import bill for 1.73 million tons would be about Rs 6.07 billion. If, at the same retail price, the import price were Rs 4,500, or about \$209 per ton, the import bill would rise to about Rs 7.8 billion.

### 2.3.4 The Effects of New Technology

Under present policies, small annual increases in procurement prices stimulate shifts along the supply curve. But since supply response is very inelastic, a 10 percent increase in price results two percent more production. A more satisfactory option would be to shift the supply curve to the right through the introduction of a new technology. However, technological innovation will not be stimulated until prices are allowed to float upward toward market equilibrium, and perhaps self-sufficiency. As Figure 7 indicates, without government intervention, price would tend to rise from Rs 2.7 to Rs 3.4. This sharp increase would undoubtedly raise serious political concerns, but the second-round effects of the price rise would stimulate the demand for new technologies. PARC has produced high-yielding wheat technologies that will not be adopted until prices rise significantly above the current trend.

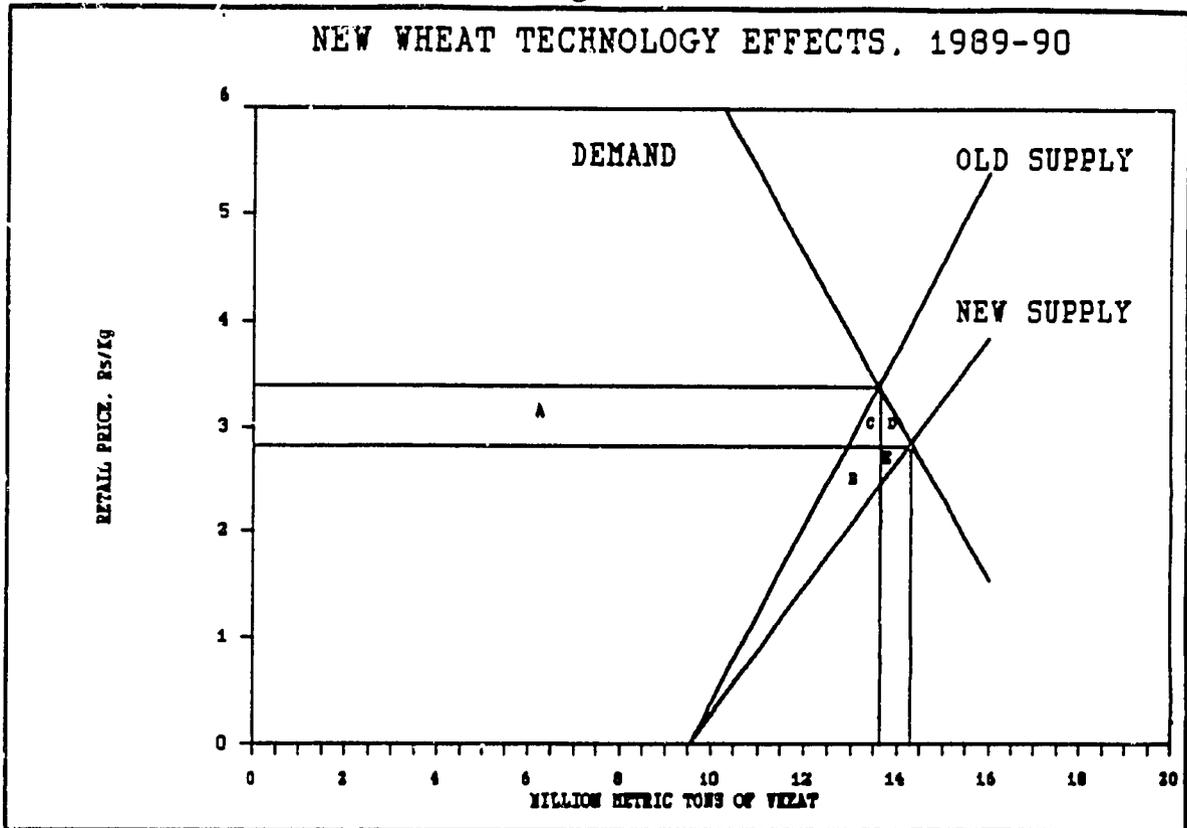
In this context, it is useful to analyze the effects of a hypothetical increase in supply due to a new technology. In Figure 9, the supply curve shown in Figure 7 (equation 8) is shifted to the right, based on an assumed 10 percent increase in production at the current equilibrium price of Rs 3.4. Several implications are readily apparent: the market price would fall from Rs 3.4 to about Rs 2.85; the market quantity would increase from about 13.61 million tons to about 14.32 million tons; and society would benefit from the new technology, but consumers would gain while producers (farmers, flour millers, market middlemen) would be worse off.

The magnitude of the welfare effects of the new technology can be estimated by measuring the areas of the rectangle A and the triangles B, C, D and E. The values are as follows:

	Million Rs
A	7,224
B	1,929
C	177
D	191
E	147
B+C+D+E	2,444
CONSUMERS: (+A+E+D)	7,591
PRODUCERS: (+C+D+B+E-A-C-D)	-5,148
NET CHANGE: (+B+C+D+E)	2,444

The net social benefit of Rs 2.4 billion is roughly the annual wheat subsidy bill: current subsidies have held retail prices down, but a new technology might have

Figure 9



similar price effects. Policies would have to deal with the question of compensating producers for their sizable losses. Direct payments would not be effective and farmers might be satisfied with increased investments in rural infrastructure, such as roads, schools and public health.

The more immediate problem with the new technology is paying for its delivery to the marketplace. If the research and development costs cannot be recovered, the technology will not be commercially attractive. Policy makers must therefore estimate what proportion of the net social benefits estimated in Figure 9 would have to be shared with the technology suppliers.

### **3.0 Policy Issues**

Recent market developments demonstrate the need to review performance or current wheat policies. The most immediate questions deal with the question of self sufficiency and the related issue of import costs. Other issues involve the role of government in procuring and storing wheat, role of subsidies in holding retail prices down.

#### **3.1. Self-Sufficiency**

If prices are held below open-market levels, the country will continue to have an annual deficit of 10-15 percent. Policy analysts need to estimate the costs, benefits of the current policy, compared to alternative policies, such as elimination of subsidies. The prime concern in the self-sufficiency issue is the tradeoff between consumer prices versus and imports costs.

#### **3.2. Role of Public Sector in Storage**

The dominate role of PASSCO and provincial food departments in procurement and storage weakens the private market for storage services. Some major costs of public sector operations are deteriorating storage facilities due to lack of funds for recurrent costs of storage maintenance and inadequate accountability.

#### **3.3. Role of Public Sector in Distribution**

The food departments' distribution subsidies distort the market, encouraging flour mills to be located in outlying areas, rather than in grain surplus areas.

#### **3.4. Import Procedures**

The exclusive public sector role in importing has aggravated geographic coordination on distribution and requires subsidies, since import prices are will above domestic wholesale prices. The government importing agencies have often neglected to seek flour millers' advice on selecting grains appropriate for local milling conditions.

#### **3.5. Grain Quality Standards**

Lack of standards weakens incentives for market differentiation to meet consumers' needs and improve marketing efficiency.

#### **3.6. "No-Loss" Rule**

The public sector no-loss storage rule conflicts with biological nature of stored grain, encourages further waste, pilferage, and reduced grain quality.

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