

# **The Problem of Agricultural Taxation in West Pakistan and an Alternative Solution: A Comment**

by

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In the Summer 1973 issue of the *Pakistan Development Review*, Mr. Mohammad Ghaffar Chaudhry [1] has dealt with two very important issues relating to the intersectoral tax equity and the intrasectoral tax equity within the agricultural sector in Pakistan. Using a simple criterion for vertical tax equity that implies that the tax rate rises with per capita income such that the ratio of revenue to income rises at the same percentage rate as per capita income, Mr. Chaudhry found that the agricultural sector is overtaxed in Pakistan. Mr. Chaudhry further found that the land tax is a regressive levy with respect to the farm size. Both findings, if valid, have important policy implications.

In this note we argue that the validity of the findings on intersectoral tax equity depends on the treatment of water rate as tax rather than the price of a service provided by the Government and on the shifting assumptions regarding the indirect taxes on imports and domestic production levied by the Central Government. The relevance of the findings on the intrasectoral tax burden would have been more obvious if the tax liability was related to income from land per capita.

## I

The reasoning advanced by Mr. Chaudhry as to the justification for treating water rate as a tax rather than the price of water is not sound. A discriminating monopolist can charge different prices from different consumers for the same product. To say that this fact is sufficient to classify the

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discriminating monopolist as a tax farmer is somewhat unsound. Because of the nature of irrigation system in West Pakistan and because of the structure of administration designed to supervise it, charges for water have always been made on an acreage—not a volume—basis. Some awareness of the different amounts of water required by different crops was shown by applying differential rates per acre with differentiation based on the amount of water used by different crops per cropped acre.

The question whether the water rate is a tax or a price cannot be decided on the general attributes of a tax or a price. In theory, in a well-functioning competitive market the price of an input would be the cost of supplying the last unit, i.e., its marginal cost. If the government should price water higher than its marginal cost, there is a tax element in the price. If the price charged is lower than the marginal cost, an implicit subsidy is involved in the sale of water by the government.

The criterion for classifying the water rate as a price or a tax thus involves an examination of the empirical situation in Pakistan regarding the long-run marginal cost, the marginal value of water and the level of water rates. Falcon and Gotsch [2] have summarized the empirical facts as follows:

- (a) The government receives by way of irrigation charges 0.4 Rupees per acre inch,
- (b) The value to farmers often exceeds Rs. 5 per acre inch,
- (c) The long-run marginal cost of supplying additional water is about Rs. 2 per acre inch.

At an aggregative level, if the difference between longrun marginal cost (Rs. 2 per acre inch) and government receipts (Rs. 0.4 per acre inch) is used as a definition of subsidy, the value of the total subsidy in West Pakistan during 1968/69 comes to about Rs. 900 million.

We have recalculated the relative tax burden on the agricultural sector assuming that water rate is not a tax in Pakistan. All other assumptions are the same as made by Mr. Chaudhry Rows A-1, A-5 and C-2 in Table I indicate the results of the recalculation. The extent of overtaxation of the agricultural sector is reduced. In fact for the year 1967-68, the agricultural sector is slightly undertaxed.

## II

Another important shortcoming behind the conclusion of the relative overtaxation of agriculture in Pakistan is the assumption made by Chaudhry that central indirect taxes are shifted forward to consumers. Mr. Chaudhry has justified this assumption with reference to two studies for United States. He has ignored the studies done at the Institute that take account of the special situation in Pakistan. Stephen R. Lewis [5] has convincingly argued that if direct controls limit the available supplied sufficiently so that demand considerably exceeds supplies at tax-paid prices, actual prices would reflect the scarcity value and not simply the tax-paid value. An increase in the taxes in such a situation may not result in any increase in prices. The taxes would reduce the real income of the producers. Two empirical studies in Pakistan

provide considerable support for the theoretical insight by Lewis. Pal [8] found that internal prices of imported goods reflected license-created scarcities and that domestic price differentials were only slightly related to tariff differentials. Raldu [9] showed that increases in domestic indirect taxes were absorbed by the producing sectors and did not result in price increases.

We have amended the analysis by Chaudhry to take account of the non-shiftability of indirect taxes in Pakistan. Table I shows the detailed results. Alternative II in the table reflects the assumption that the indirect taxes levied by the Federal Government are not shifted forward to consumers and the water rate is treated as the price of water. Alternative III assumes that 50 per cent of the indirect tax revenue is shifted forward to consumers and the remaining portion is absorbed by the non-agricultural sector. This reflects the fact that the level of overall scarcity in the economy was less than at the start of process of import-substitution in Pakistan. Moreover some of the industries were exporting their products by late sixties. Under each of the two shifting assumptions and using the criterion of vertical equity suggested by Mr. Chaudhry, the agricultural sector is considerably undertaxed in all three years in Pakistan.

### III

There is a basic difference between the index of tax-paying capacity in the intersectoral and intrasectoral comparisons in Mr. Chaudhry's paper. For the intersectoral tax equity, he uses income as the measure of taxable capacity. For the intrasectoral tax burden, he uses land owned as the measure of taxable capacity. Generally income is a preferred measure than wealth as an index of ability to pay taxes. Had Mr. Chaudhry adopted income as the measure, he would have found that the land tax is much less regressive with respect to income as contrasted with land owned.

The basic reason for this bias in measurement is that gross and net output per acre has been found to be an inverse function of farm size in many less developed countries [3,4,6]. The farm management studies in Pakistan support the inverse relationship between output per acre and farm size. It has also been found that family size and income are positively correlated in the rural areas in Pakistan [7]. Given the relationships between family size and income and between income and farm size, it is easy to see that a land tax regressive with respect to land owned would be relatively less regressive with respect to income per acre and with respect to per capita income. Depending on the strength of relationships, the land tax may be regressive with respect to land owned but progressive with respect to income per acre and/or income per capita.

### IV

We will be brief in conclusion. Mr. Chaudhry's conclusion that agriculture in Pakistan is overtaxed does not stand when realistic assumptions about tax shifting are made. The conclusion also breaks down for one of the three years if water rate is treated as the price of water. The intrasectoral tax burden of the land tax as measured by Mr. Chaudhry is subject to a bias. Measured against per capita income, land tax would be relatively less regressive than the calculations made by Mr. Chaudhry show.

TABLE I

*Insectoral Disparities in Income and Taxes in West Pakistan*

(Taxes and Income in Million Rupees)

Sector	1967/68	1968/69	1969/70
<b>A. Agriculture</b>			
1. Total taxes—Alternative I <sup>a</sup>	1278	1490	1655
2. Total taxes—Alternative II <sup>b</sup>	587	606	691
3. Total taxes—Alternative III <sup>c</sup>	945	1049	1191
4. Income	13994	14089	15653
5. Taxes as per cent of income—I	9.13	10.58	10.57
6. Taxes as per cent of income—II	4.20	4.30	4.41
7. Taxes as per cent of income—III	6.75	7.45	7.61
8. Taxes as per cent of income—IV <sup>d</sup>	10.85	12.67	12.80
<b>B. Non-Agriculture</b>			
1. Total taxes—Alternative I <sup>a</sup>	2847	3418	4068
2. Total taxes—Alternative II <sup>b</sup>	3538	4302	5033
3. Total taxes—Alternative III <sup>c</sup>	3180	3859	4533
4. Income	18947	21265	23174
5. Taxes as per cent of income—I <sup>a</sup>	15.03	16.07	17.55
6. Taxes as per cent of income—II <sup>b</sup>	18.67	20.23	21.72
7. Taxes as per cent of income—III <sup>c</sup>	16.78	18.15	19.56
8. Taxes as per cent of income—IV <sup>d</sup>	15.04	16.07	17.57
<b>C. Disparities</b>			
1. Income (B-4) as per cent of (A-4)	163.5	176.9	179.2
2. Tax (B-5) as per cent of (A-5)	164.6	151.9	166.0
3. Tax (B-6) as per cent of (A-6)	444.5	470.5	492.5
4. Tax (B-7) as per cent of (A-7)	248.6	243.6	257.0
5. Tax (B-8) as per cent of (A-8)	138.6	126.8	137.3

*Sources and Notes:*

- (a) This alternative is based on the assumption that water tax is not tax in any meaningful sense. All other assumption are similar to Mr. Chaudhry's analysis.
- (b) This alternative corrects alternative I for the zero shifting of central indirect taxes in Pakistan.
- (c) This alternative corrects alternative I for only 50% shifting of the indirect taxes.
- (d) This alternative is same as Mr. Chaudhry's in his analysis.

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