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Different Measures of Net Farm Income and their Relevance to the Debate on Agricultural Taxation

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INTRODUCTION

Net farm income has not been defined appropriately in farm accounts studies in Pakistan. This has led to conflicting views about the profitability of the agricultural sector. To quote a few examples, the Fact Finding Committee (1969) concluded that "with the present high costs of production, farming has not remained a profitable enterprise [Government of West Pakistan (1969)]. Syed (1972) found a reasonably high average net income per acre for irrigated areas in the Punjab [Rs 347] but qualified his finding by the reservation that "for any scientific assessment of returns from farming enterprise, allowance has to be made for family labour, and interest and depreciation on capital investment". He, therefore, recalculated net income on 'business lines' and found it to be only Rs 62 per acre. Bucha (1972) endorsed Syed's recalculation of net income on business lines and concluded that "the average income from farming is inconsiderable despite the increase in yields and rise of price". Khan (1978), however, reported a much higher income per acre and unlike Syed did not qualify his estimates by any reservations. According to him, the average net income per acre ranged between Rs 354 for Mexi-Pak wheat and Rs 1,515 for sugar-cane in the Punjab. The National Taxation Reform Commission (1986) reported that average net income per acre was only Rs 109 in the Punjab and Rs 84 in each Sindh and the NWFP. Ahmad and Chaudhry (1987) concluded that net income per acre was negative in irrigated areas in the Punjab. Lately, the Punjab Economic Research Institute (1988) have reported an average net farm income of Rs 322 per cropped acre in the irrigated Punjab.

With such conflicting evidence about net income per acre, it is difficult to formulate a realistic view about the taxable capacity of the agricultural sector or of those engaged in it. The object of this paper is to suggest an appropriate definition of net farm income and accordingly to recompute true net farm income from the published farm accounts data of the Punjab Economic Research Institute.

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VARIOUS CONCEPTS OF NET INCOME

Net income was conceived in different ways in the studies reviewed above. Using a particular concept of net income, some researchers have created the impression that the farm sector is making losses. Others have taken a middle-of-the-road position to show that net farm incomes are positive but not high enough to be taxable. Still others have used a different concept of net income to show that farm incomes are sufficiently high to be taxable.

The first group of researchers who have shown that the farmers are making losses is represented by Ahmad and Chaudhry (1987). They define net income per acre as the residual left after meeting all production expenses including both cash and imputed costs of a farmer's own resources, i.e., his own and his family's labour, his capital and his land used in the production of various crops. Defined in this way, net income per acre during the past decade has been shown to be consistently negative in Punjab in the case of wheat, rice and sugar-cane, and for 7 years out of ten in the case of cotton.

At first glance, it looks like a startling result, because if one had, for the sake of argument, an acre of irrigated land of average fertility, say in the Faisalabad district, he could rent it out (1987-88) at Rs 800 to Rs 1,000 a year Punjab Economic Research Institute (1988), and that would be his net income. If instead, he decided to cultivate it himself, he would incur (1985-86) a huge loss of around Rs 900 with wheat cultivation, Rs 1,250 with rice, Rs 200 with cotton or Rs 1,600 with sugar-cane cultivation [Ahmad and Chaudhry (1987)]. The puzzle, however, can be solved by properly interpreting the loss figures. As already mentioned, Ahmad and Chaudhry have estimated net income per acre by deducting cash as well as the imputed costs from gross receipts. The residual which happens to be negative is not the net income of the farm owner-operator but only his reward for decision-making and risk taking. It would have been appropriate for Ahmad and Chaudhry to use the phrase 'net return to management' for what they termed 'net income' in their study. As we shall see later, net farm income is used in a different sense in farm accounting.

MIDDLE-OF-THE-ROAD POSITION

The second group of researchers basically employs the same methodology in computing net income as does the first group. Its definition of net income is similar to the one used by Ahmad and Chaudhry (1987) who calculate net income per acre by deducting cash as well as imputed costs from gross farm income. Its 'net income' is thus in effect only 'net return to management'. This group of researchers who neither shows negative 'net incomes' per acre nor large profits, is represented by the Punjab Economic Research Institute (PERI), which was formerly known as the

Board of Economic Inquiry, Punjab. PERI reports the following 'net income' per acre for various crops for 1982-83 on irrigated farms in the Punjab. (Table 1)

Table 1

Net Income per Acre

Crops	Net Income (1982-83)
Wheat	419
Basmati Rice	610
Cotton	714
Sugar-cane	704

Source: Punjab Economic Research Institute (1985) 80–94.

The reasons for the positive 'net income' in one study and the negative 'net income' in the other for the same year (1982-83), with identical definitions of 'net income' and with both studies relating to irrigated areas in the Punjab, need further investigation. A possible cause could be the use of significantly different estimates of imputed costs by the authors of the two studies. It must be emphasized that imputation of costs necessarily introduces some degree of arbitrariness in the estimates and could have yielded widely different results in the two studies.

Another Version of Net Income

The third group of researchers which has concluded that farmers are making large profits is represented by Khan (1975) who reports the following net incomes per acre for various crops for 1972-73 in the Punjab and Sindh. (Table 2)

Khan has used a different version of net income. He has calculated net income by deducting only the variable costs from the gross farm income. Imputed costs for owned inputs have not been included in the cost estimates. Nor has depreciation been considered for arriving at net income. He has also ignored other fixed costs such as taxes, interest on long-term debt, insurance etc. Thus, Khan's concept of 'net income' somewhat overstates the net income conventionally used in farm accounting.

Table 2

Net Income per Acre

Crops	Punjab	Sindh
Wheat		
Local	173	209
Mexi-Pak	354	377
Rice		
Irri	337	574
Basmati	697	709
Cotton		
Local	584	901
Improved	1110	970
Sugar-cane	1515	2202
Maize		
Local	138	1044
Improved	302	–

Source: Khan (1975) 96.

The Definition of Net Farm Income

The use of different concepts of 'net income' by various researchers has caused endless controversy. To avoid such confusion in the future, the concept of net farm income should be confined to its conventional usage in farm accounting. Conventionally, net farm income is defined as gross farm income minus all costs (fixed and variable) without, however, including the imputed costs of owned inputs [Castle *et al.* (1972); Harsh *et al.* (1981); Key (1981)].

Another way to arrive at net farm income is by adding the residual net return to management [reported by PERI], to the imputed costs (or incomes) of the family-owned resources. Imputed costs, after all, are also the imputed incomes of the farm owner-operator and his family. The results of the two computations should always tally.

These measures of net farm income can be expressed in the form of identities as follows:

A. *First Version of Net Farm Income*

(i) $Y_n = Y_g - C_t$ (output approach)

(ii) $Y_n = w_1 + w_2 + i + r + p$ (distribution approach)

B. *Second Version of Net Farm Income*

(i) $Y_n = Y_g - C_t - w_2$ (output approach)

(ii) $Y_n = w_1 + i + r + p$ (distribution approach)

Symbols

Y_n = Net farm income;

Y_g = Gross farm income;

C_t = Total farm costs excluding the imputed costs of owned inputs;

w_1 = Imputed wages of the farm owner-operator;

w_2 = Imputed wages of the rest of the farm family;

r = Imputed rent of land-owned;

i = Imputed interest on owned capital; and

p = Net return to management (residual).

Recalculation of Net Farm Income

Ahmad and Chaudhry (1987) have not reported full cost and income data in their paper. It is, therefore, not possible to derive new income estimates from their data. Farm accounts studies done by PERI, however, contain the necessary details for the recalculation of net farm income according to the new definition. New estimates of net farm income for the irrigated Punjab for 1987-88 are summarized below. The details of calculation are shown in Appendix A. The new estimates are compared with those reported by PERI. (Table 3)

The much higher income figures under the new concept of net farm income compared to those reported by PERI are due to the difference in the net income concepts used in the two calculations. The fundamental difference between the concept of net farm income used conventionally in farm accounting and that used by PERI lies not so much in the estimation of gross farm income as in the treatment of farm costs. In estimating net income, PERI uses 'economic costs' for deduction from the gross farm income. Conventionally, however, only 'accounting costs' are deducted from gross income to arrive at net farm income. Accounting costs include only those costs which are actually incurred plus an allowance for depreciation. Economic costs, on the other hand, include not only the accounting costs, but also the opportunity costs of the farm owner-operator's resources employed in the enterprise. The net income computed in the accounting sense is always greater than

Table 3

Net Farm Income

(Rs)

Farm Size	PERI's Estimates	New Estimates	
		1st Version	2nd Version
Less than 5.25 Acres	84	12,870	11,928
6.25 < 12.5 Acres	1,588	26,010	21,651
12.5 < 25.0 Acres	18,273	53,653	46,842
25.0 Acres and Above	31,195	118,875	102,401
Overall	**5,279**	**31,706**	**27,351**

that computed by the use of economic costs. The accounting concept of net income is designed to disclose the net reward to the farm owner-operator for his resources of land, labour, capital and management employed in the enterprise. The economic concept of net income, on the other hand, is designed to help the owner-operator choose a farm enterprise or a combination of various enterprises that will employ all his resources in the most efficient manner. Thus, while the purpose of the accounting or the conventional concept of net farm income is to indicate the economic position of the owner-operator, that of the economic concept of net income is to indicate the efficiency of his resource allocation. Clearly, for tax purposes, it is the accounting or the conventional concept of net income that is the relevant one and not the economic concept of net income used by Ahmad and Chaudhry (1987) and PERI.

Taxable Farm Income

Most of the measures of net income reported in the earlier studies are not relevant to the debate on taxation of agricultural income. The 'net income' concept used by Ahmad and Chaudhry (1987), and PERI may be useful for determining the support prices of different crops, or for choosing between alternate farm enterprises or for instituting a comparison of profitability between farms with different factor endowments but is not an indicator of the tax-paying capacity of a farm owner-operator, or for that matter of his economic position.

Khan's concept (1975) which he later used to estimate the yield of income tax from the agricultural sector is more realistic but also differs from the one used by the income tax authorities. The accounting or conventional concept of net

income suggested in this paper comes close to the one used for income tax purposes but is not synonymous with it. The computation of taxable income is a technical matter and cannot be discussed here.

The main points, however, to be noted in regard to the computation of net farm income for income tax purposes are as follows:

(i) Only those production costs which have actually been incurred are allowed as deduction from total income;
(ii) Implicit costs such as depreciation which though not actually incurred are nevertheless legitimate costs are also deductible from total income;
(iii) Fixed costs such as insurance premium, interest on long-term debt, taxes and contractual rent paid for land are also deductible;
(iv) Imputed costs of owned inputs are not allowed as deduction; and
(v) For income tax purposes, the total income of the assessee from all sources, i.e., from crops, livestock, area rented out, machinery hired out and sale of tube-well water, is taken into account. Even off-farm income of the assessee, if taxable, may be included in the total income.

CONCLUSIONS

Most of the existing measures of net farm income do not truly reflect an agriculturist's economic position. Ahmad and Chaudhry's (1987) 'net income' is technically only net return to management. It may be of use in determining the support prices of various crops but is not an indicator of the tax-paying capacity of the agriculturist or of his economic well-being. PERI's 'net income' estimates too are technically net returns to management and do not reflect an agriculturist's tax-paying capacity. Khan's estimates of net income are closer to reality but would need some adjustments before they can be used for estimating the yield of agricultural income tax.

Net farm income defined in the accounting sense in this paper is arrived at by deducting total variable and fixed costs from gross farm income. Imputed costs of owned inputs are not included in the total costs. It should be borne in mind that imputed costs are at the same time imputed income of the farm family. Unlike the impression created by Ahmad and Chaudhry (1987), PERI, and many other researchers, the new estimates of net farm income indicate strong economic position of the relatively large agriculturists and their fairly high tax-paying capacity.

Appendix – A

IRRIGATED AREAS (PUNJAB): OWNER-OPERATED FARMS

A = Under 6.25 Acres
B = 6.25 to Under 12.5 Acres
C = 12.5 to Under 25 Acres
D = 25 Acres and Above

A – OUTPUT APPROACH

	A	B	C	D	Overall
Y_g	25,658	52,140	100,539	263,260	63,902
C_t	12,788	26,130	46,886	144,385	32,196
Y_n $(Y_g - C_t)$	12,870	26,010	53,653	118,875	31,706

B – DISTRIBUTION APPROACH

$Y_n = [w_1 + w_2 + i + r + p]$

w_1	5,234	5,381	5,923	6,410	5,965
w_2	942	4,359	6,811	16,474	4,355
i	1,862	4,079	6,610	14,768	14,328
r	4,748	10,603	16,036	50,028	11,779
p	84	1,588	18,273	31,195	5,279
Y_n	12,870	26,010	53,653	118,875	31,706
Average Cropped Area	6.7	14.2	25.4	64.3	16.4
Net Farm Income/ Cropped Acre	1,921	1,832	2,112	1,849	1,933

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Comments on "Different Measures of Net Farm Income and their Relevance to the Debate on Agricultural Taxation"

Mr Azhar has made his position very clear, and I agree with his findings.

Methods and instruments – including income calculations – are supposed to satisfy specific needs. Their value depends on the degree they satisfy this need, in the case at hand, to assess the economic position of the taxpayer and to assess his income tax paying capacity.

The purpose of agricultural income tax is to tax all kinds of income from agricultural activities, i.e., rewards from land, labour, capital and management.

Therefore, all these should be included in our net income concept, and this is the case, if we use, like Mr Azhar, the accounting concept of net income.

If we deduct imputed costs (land, labour) like the economic concept of net income does, income from land and labour would not be taxed.

For sure, using the accounting concept of net income results in higher income figures and higher taxes, but that seems to be justified by equity and developmental reasons beyond a certain farm size.

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