

## Agricultural Income Taxation: Estimation of the Revenue Potential in Punjab

ANJUM NASIM

### 1. INTRODUCTION

In May 2011 a senator of the Muttahida Quami Movement (MQM), moved a private member's constitutional amendment bill to remove the exemption provided to agricultural incomes from federal income taxation. The proposed amendment mentioned a potential revenue of Rs 200 billion from Agricultural Income Tax (AIT). This figure, however, differs widely from some other reported estimates of potential agricultural income tax.<sup>1</sup> The issue of AIT is likely to echo again in the parliament and outside as Pakistan grapples with the issue of its low tax revenues. It is, therefore, important to carefully analyse the potential revenue from AIT to allow more informed discussion and policy decisions on tax options at the federal and provincial levels.

The 1973 Constitution of Pakistan gives provincial assemblies the exclusive power to make laws pertaining to taxes on agricultural income.<sup>2</sup> Agricultural income could be interpreted narrowly to include crop farming and rental income from land, or more broadly to include income from livestock and animal husbandry. There is no ambiguity that income from the narrower interpretation falls within the domain of provincial taxation though there may be room for debate whether the provincial jurisdiction extends to the broader definition of agricultural income or not [see Nasim (2012)].

Since 1996-97 all four provinces have instituted some form of tax on agriculture land or incomes. In its implementation this tax is largely a land tax (based on acreage) rather than a tax on agricultural income.

Agricultural Income Tax (AIT) collection in all four provinces amounted to Rs 1.2 billion in 2009-10. In contrast, the net receipts from the federal income tax in the same

Anjum Nasim is <anjum.nasim@ideaspak.org> is Senior Research Fellow, Institute of Development and Alternative Strategies (IDEAS), Lahore.

<sup>1</sup>A World Bank report [World Bank, *et al.* (2009)] estimates agricultural income tax to be Rs 2.9 billion for Punjab and Rs 0.28 billion for NWFP (Khyber Pakhtunkhwa). These estimates are obtained by using net income of Rs 4,000 to Rs 8,000 per acre, a threshold income level of Rs 100,000 and tax rate ranging from 5 to 15 percent. In an earlier study, Malik (2004) estimated agricultural income tax and/or land tax for KPK (Khyber Pakhtunkhwa) under three different alternatives. The tax revenue estimates ranged between Rs249 million (under alternative 1), Rs 86 million to Rs 808 million (under alternative 2—with the lower estimate corresponding to per acre income of about Rs 4,264 and the higher figures corresponding to per acre income figure of Rs 14,227) and Rs 745 million (under alternative 3).

<sup>2</sup>Agricultural income is also exempted from taxation by central government in India and is taxable by state governments. At the state-level, agricultural income tax is levied only by states which have plantation agriculture [see Rajaraman and Ghosh (2002)].

year were Rs 509 billion. The share of agriculture in the GDP in 2009-10 was 21 percent. In Punjab, the revenue from AIT was Rs 1 billion as compared with the total provincial own-tax revenue of Rs 37 billion and total revenue receipts (including federal transfers) of Rs436 billion.

The issue of agriculture income tax has important political economy dimensions. The two main political parties, the PPP and PML-N, have a strong support base in rural Pakistan while the MQM largely represents urban Sindh, whose capital Karachi is both an industrial hub and an MQM stronghold. During 2010 and 2011, when the federal government tried to introduce the Federal Value Added Tax Bill 2010 and then the Reformed General Sales Tax bill 2010 to increase tax revenues, the opposition and some of the political allies of the government stymied these efforts. The MQM took the position that the exemption provided to agricultural incomes protects the incomes of large landowners and forces the government to concentrate its tax measures on the common man.

It would be instructive to obtain estimates of potential revenue from taxing agricultural incomes by applying the same tax rates to agricultural incomes as are applied to similar incomes under the Income Tax Ordinance 2001. In this paper we attempt to provide estimates of revenues from taxing agricultural incomes from cultivation of land and from renting out of land for the province of Punjab for the financial year 2009-10 using tax rates applicable under the Income Tax Ordinance 2001, incorporating the amendments from the Finance Act 2009.<sup>3</sup> We also report tax revenue estimates for the financial year 2012-13 using forecasts of taxable agricultural incomes and applying the tax rates given in the Finance Act 2012.

We should stress that crop output accounted for 43 percent of the value added in agriculture in 2009-10, and livestock accounted for 54 percent of the value added. The available data, however, does not allow us to extend our analysis to include agricultural incomes other than crop incomes.

Taxation of agriculture incomes can take place in a number of ways, and several authors have discussed these in the context of developing countries and specifically Pakistan. One of the earliest papers on agricultural taxation in Pakistan is by Hamid (1970). Many later contributions have been influenced by this pioneering work. The estimates presented in this paper should be seen as a continuation of earlier work in this area.<sup>4</sup> We start with a brief history of agricultural taxation in Pakistan (Section 2), then consider some issues related to tax incidence (Section 3), this is followed by estimates of revenue potential from AIT (Section 4) and concluding remarks (Section 5).

<sup>3</sup>We focus only on one province to keep the estimation manageable. Punjab accounts for a very large part of the total agricultural crop output in the country (in 2009-10 it accounted for 77 percent of wheat output, 54 percent of rice output, 68 percent of sugarcane output and 66 percent of cotton output). Based on the tax revenue estimates for Punjab, reasonable projection can be made for aggregate agricultural income tax revenue for Pakistan. However, more precise estimates can be obtained by extending the methodology adopted in this paper to the data on other provinces.

<sup>4</sup>Work in the area of agricultural taxation and agriculture transfers in Pakistan include Ahmad and Stern (1991), Chaudhry (1973, 1999, 2001), Chaudhry and Kayani (1991), Hamid (1970, 1973), Hamid, Nabi and Nasim (1991), Kazi (1984), Khan (1978, 1981), Khan and Khan (1998), Malik (2004), Mohammad (1987), Mukhtar and Nasim (1999), Nasim (1994), Nasim and Akhlaque (1992), Qureshi (1973, 1987), Shah and Whalley (1991), World Bank (1999) and World Bank, *et al.* (2009).

## 2. A BRIEF HISTORY OF TAXATION OF AGRICULTURAL LAND, OUTPUT AND INCOME IN PUNJAB

Some form of taxation of agricultural land, output and incomes in the subcontinent dates back to the pre-Mughal period.<sup>5</sup> *Land revenue*—a tax on rental value of land, inherited by Pakistan from the British period, was influenced by the Ricardian view on rent. In Punjab, land revenue continued to be collected with occasional changes in either the rate structure and/or exemptions till it was abolished in 1997.<sup>6</sup>

The Indian Income Tax Act 1922, adopted by Pakistan at independence exempted agricultural income from taxation.<sup>7</sup> The 1973 Constitution of Pakistan made agricultural income a subject of provincial taxation by excluding it from the Federal Legislative List.

In 1977, the ruling PPP government introduced legislation to replace the land revenue tax with a presumptive income tax based on produce index unit (PIU)<sup>8,9</sup> but this attempt at taxing agricultural incomes directly was aborted by General Zia ul Haq regime, which overthrew the elected government by a *coup d'etat*, in July 1977. In 1980, *Ushr*—an output tax, was levied on Muslim landowners, lessees and lease holders with exemption for certain *fiqhs* (sects). *Ushr* was an earmarked tax for social protection and not a part of the government budget. At its peak, in 1983-84, the collection of *Ushr* was Rs 267 million in the country as a whole, but it declined over time. In Punjab, the collection has been insignificant since 1996-97.<sup>10</sup>

The presumptive income tax based on PIUs was attempted again under the caretaker government of Moeenuddin Qureshi in 1993 but the elected government in Punjab, which replaced the caretaker government, made little effort to enact any legislation to implement the tax in Punjab although the other three provincial governments did enact PIU-based tax legislation [Khan and Khan (1998)]. The PIU-based tax made another appearance under the caretaker government of Malik Meraj Khalid in 1996 and shortly afterwards all elected provincial governments adopted some form of agricultural land/income tax bills. The provincial government of Punjab adopted the Punjab Agricultural Income Tax Act 1997. At the same time that the Punjab Agricultural Income Tax Act 1997 was introduced, land revenue was abolished through the Punjab Land Revenue (Abolition) Ordinance 1997. Under the *Zakat* and *Ushr* Ordinance 1980, land revenue was not payable on land on which *Ushr* had been charged on a compulsory basis but the 1997 ordinance abolished land revenue altogether.<sup>11</sup>

<sup>5</sup>See, e.g., Bird (1974, chapter 6) and Khan (1981).

<sup>6</sup>Land revenue was a tax on economic rent or unearned income of the landlord. It was collected as a levy on 'net assets' which could be calculated in one of two ways: "(1) as value of annual gross output of owner operated holdings less the normal charges of production, or (2) as value of land rent received by landlord less charges borne by him in collecting the rent" [Khan (1981), chapter 8]. The net asset value, once determined, (known as land settlement) was fixed for several decades at a time—30-40 years at the time of independence in 1947 and reduced to 25 years in 1967 [see Khan (1981), chapter 8].

<sup>7</sup>The word 'Indian' was omitted from the Act in 1949 and it was titled 'Income Tax Act, 1922'. The Act, with periodic amendments, was the operative income tax law till it was replaced by the Income Tax Ordinance 1979.

<sup>8</sup>See Khan and Khan (1998).

<sup>9</sup>A Produce Index Unit (PIU) is a measure of land quality, based on land settlements (see footnote 6). These settlements were conducted before 1947 [see Khan (1981), p. 166].

<sup>10</sup>See Pakistan (2011a).

<sup>11</sup>Provincial government documents continue to show Land Revenue as a budgetary head, with land revenue receipts in Punjab amounting to Rs 5.75 billion in 2009-10. However, the bulk of this revenue consists of mutation fee, rent on government agricultural land and other minor fees, fines and charges.

Under the Punjab Agricultural Income Tax Act 1997, agricultural income tax is assessed in one of two ways: (1) as a charge on cultivated land, and (2) as a tax on agricultural incomes. The taxpayer is liable to pay one tax, the amount which is greater of the two. In actual implementation, the agricultural income tax in Punjab is collected as a tax on land area (or per acre tax) and not as a tax on agricultural or farm incomes.

### 3. WHO BEARS THE BURDEN OF TAXES

The lesson from tax incidence analysis is that those that are legally required to pay a particular tax do not necessarily bear the ultimate burden of the tax. In competitive markets, the extent to which the tax is borne by the seller or the buyer depends on the price elasticities of demand and supply of a good or factor of production. The key result on tax shifting is that “taxes will be shifted by those agents and factors that are more elastic in supply and demand.” [Kotlikoff and Summers (1987)].

The case for treating farm incomes as business incomes for tax purposes is made on the ground that the differential treatment of agricultural incomes violates the principle of horizontal equity—equal incomes should be treated equally, and on the ground that by excluding agricultural incomes from taxation, a very large segment of the earning households are excluded from the application of the principle of vertical equity—those with greater ability to pay, should pay more. The latter principle is embodied in a progressive income tax rate structure.

The case for taxation of agricultural incomes on grounds of horizontal and vertical equity presumes that a tax levied on farm incomes will be borne largely if not entirely by farm households, and that the burden of other forms of taxation is not being shifted disproportionately on farmers so that even if farmers do not pay taxes on incomes, their burden of taxes is no less than that on others with similar incomes.

If farmers’ own labour, capital and land are in fixed supply, a proportional tax on farmers’ profits will leave their input and output decisions unchanged, there will be no tax shifting and the tax will be borne by farmers. This result will not hold, in general, under a progressive income tax regime or if farmers’ own supply of labour, capital or land were not fixed.

In the long run, competition will force economic profits to zero<sup>12</sup> and the profit tax will be a tax on the implicit returns to farmers’ own labour, capital and land. A farmer, who does not provide his own labour, capital or land but hires these instead, will pay zero profit tax in the long run because competition would drive profits to zero, but the farmer who employs some or all of the factors of production that he owns, will be taxed on the implicit returns to the own factors of production that he employs.

The factors of production that farmers own and employ in their production processes are not fixed in the long run. Differential treatment by tax authorities of debt

<sup>12</sup>Economic profit is the difference between a firm’s revenue and its input costs. The input costs incorporate the costs of raw materials and hired factors of production and also the opportunity cost of inputs that are owned by the firm and employed in the production process. In the case of owner-farmer, economic profits would incorporate the opportunity cost of farmer’s own land, labour and capital. A farmer’s productivity on his own farm may be greater than his productivity as hired worker on another farm. If the farmer is paid his marginal product as a hired worker, the opportunity cost of his labour may be less than the return to his labour when working on his own farm. The difference between the two returns will not be driven to zero by competition and therefore economic profits may not be zero even in the long run.

and equity, of own labour and hired labour and of own land and rented land for calculating taxable income can result in farmers substituting hired factors of production for own factors of production, thus offsetting some of the impact of the tax on farm incomes.<sup>13</sup> Tax of farm incomes can also create incentives for labour and capital to move to other sectors of the economy where the after-tax returns may be higher. With capital and labour no longer immobile, some shifting of the tax is inevitable. However, we can conjecture that because of the presence of a fixed factor (unimproved land) and the relatively inelastic labour supply,<sup>14</sup> considerable part of an agricultural income tax will be borne by farmers even in the long run.

We next consider the question of whether there are forms of taxes on agriculture which compensate or over-compensate for the absence of income tax. Till the 1980s, farmers were subjected to quite heavy taxation through government pricing policies which took the form of compulsory procurement of agricultural goods at prices below world prices, ban or restrictions on exports or taxes on exports of agricultural goods (which forced domestic prices below world prices), and overvaluation of the exchange rate which acted as a tax on exports, particularly agricultural exports. The government did not earn revenues directly from all of these policies but met its other objectives of lowering food prices in urban areas and reducing wages and raw material prices for industrial producers. Estimates by Dorosh and Valdes (1990) suggest that because of government pricing policies, the average implicit taxation for the five major crops in Pakistan constituted 36 percent of agricultural value added during 1978-87.<sup>15</sup> A price reform process was started in the 1980s which continued through the 1990s and later. As a result, implicit taxation of agricultural incomes has been phased out largely, if not entirely [see World Bank, *et al.* (2009)].

#### 4. ESTIMATES OF POTENTIAL AGRICULTURAL INCOME TAX

In this section we estimate the potential revenue that can be raised from taxing income from crop farming in Punjab by applying the same rates of taxes as those applicable on similar incomes under the Income Tax Ordinance 2001. For tax purposes, we treat farm income as business income of an *individual*.<sup>16</sup> Where we can distinguish between farm incomes and rental income, the tax rates used for rental incomes are those relevant to *income from property*.<sup>17</sup>

<sup>13</sup>To reduce incentive for such substitutions, appropriate taxes on rental incomes, e.g., rental income from land will have to be imposed.

<sup>14</sup>See Wahid and Wallace (2008) for a brief review of the literature of labour supply elasticities.

<sup>15</sup>Hamid, *et al.* (1991) also find evidence of substantial implicit taxation of agricultural incomes between 1960 and 1987.

<sup>16</sup>The rates of tax used are those that apply to *individuals and association of person other than salaried individuals* as given in the First Schedule, Part I, Division I of the Income Tax Ordinance 2001 [Pakistan (2011b)] taking into account the amendments under the Finance Bill 2009 [Pakistan (2009)]. The tax rate ranges from 0 percent (for income less than Rs 100,000) to 25 percent for incomes exceeding Rs 1.3 million.

<sup>17</sup>The tax rates used are as given in the First Schedule, Part I, Division VI of the Income Tax Ordinance 2001 [Pakistan (2011b)] under item (a), taking into account the amendments in the Finance Bill 2009 [Pakistan (2009)]. The tax rates range from 0 percent for income less than Rs 150,000 to 10 percent for income exceeding Rs 1 million.

To derive estimates of the tax potential, we rely principally on the following data sources: (1) *Pakistan Agricultural Census 2000* [Pakistan (2003)], (2) *Agricultural Statistics of Pakistan 2009-10* [Pakistan (2011a)] and (3) *Pakistan Economic Survey, 2010-11* [Pakistan (2011c)].

We first report tax revenue estimates for the year 2009-10 by applying the tax rates applicable under the Finance Bill 2009 [Pakistan (2011b)]. We also report, for the data based on tenure status, the potential tax revenue for the financial year 2012-13 by forecasting the potential taxable income for 2012-13 and applying the tax rates given in the Finance Act 2012 [Pakistan (2012)].

We derive three sets of estimates of tax potential using broadly the same methodology, relying on different sets of tables in the Pakistan Agricultural Census 2000 and, in one case, combining the information from the Agricultural Census with the value added figures from the Pakistan Economic Survey. We discuss three sets of estimates under the headings: (1) estimates based on value added, (2) estimates based on tenure status of farmers and (3) estimates based on irrigation status of farms. Table 1 summarises the estimates of tax potential from all three approaches.<sup>18</sup>

Our tax estimates are based on the assumption that supply of agricultural output is inelastic in the presence of higher taxes on farm incomes. While this may hold in the short-run, long-run responses of farmers in the form of shift in labour supply from farm to non-farm activities, lower level of capital investment in farming, substitution between equity capital and debt capital and parceling of land holdings among family members can have implications for both agricultural output as well as revenue potential from agricultural taxation.

Table 1

*Summary of Estimates of Potential Tax Revenue from Agricultural Incomes*

1	2	3
	Potential Tax Revenue: Tax Year 2010 (Rs Billion)	Potential Tax Revenue: Tax Year 2013 (Rs Billion)
Estimates Based on Value Added	75	
Estimates Based on Tenure Status of Farmers	55	30
Estimates Based on Irrigation Status of Farms	69	

*Source:* Nasim (2012).

*Note:* Potential tax revenue for tax year 2013 is estimated only for the data pertaining to tenure status of farmers.

#### 4.1. Estimates Based on Value Added

Using data on total value added in agriculture (in major and minor crops), as given in Pakistan (2011c), the value added for Punjab is estimated and allocated to the ten farm size categories in line with the classification given in the Pakistan Agricultural Census 2000. This allocation is done according to the distribution of cropped area by farm size. We assume implicitly that value added in a particular farm size category is proportional to the cropped area in that farm size. By dividing the value added (by farm size) by the number of cultivated

<sup>18</sup>All three sets of estimates are described in detail in an extended version of this paper [Nasim (2012)].

farms in each size category, we obtain a distribution of average value added per cultivated farm. The average value added (by farm size) is the income that accrues to all the factors of production of a representative farm, and takes the form of wages, return to capital, rental income of land and profits or return to entrepreneurship. To arrive at taxable income, we adjust this value added of a representative farmer (by farm size) for any hired labour and for depreciation of capital.<sup>19</sup> Having calculated the taxable income we apply the tax rates applicable to individual incomes. This gives potential revenue for Punjab to be Rs 75 billion for the tax year 2010.

The value added approach to calculation of taxable incomes of farmers does not distinguish between incomes from owned land and rented land. For farmers who cultivate rented land, the rental payments to landowners are a cost of production and need to be subtracted from total farm income to obtain taxable income from crop farming. The rental payments, in turn, need to be taxed separately as property income of landowners. The clubbing of land rental with farm income can overestimate or underestimate farm income and the tax potential. In the following subsection we use data on farm households based on tenure status, which allows us to separate farm income from property or rental income.

#### 4.2. Estimates Based on Distribution of Acreage by Tenure Status

Pakistan Agricultural Census 2000 [Pakistan (2003)] provides data on farm households according to their tenure status. It classifies farm households as tenant farmers, owner-cum-tenant farmers or owner farmers. We base our aggregate tax revenue estimates on taxation of incomes of farmers after subtracting any rental payments by tenant farmers and owner-cum-tenants, treating farm income as business income and combining these tax revenue estimates with tax estimates of rental income of landowners.

To calculate taxable farm incomes (by farm size), we require estimates of: (1) gross value of output (GVO), and (2) cost of production (COP). GVO for any crop is the product of its price, yield per acre and the acreage under the crop. Aggregate GVO is obtained by summing GVO for all crops and adjusting for the value of by products. Since data requirement for calculating GVO for all crops is quite formidable, we use an approximation based on average GVO calculated from a small number of important crops and assuming this average GVO to be representative of the average GVO for all crops.<sup>20</sup>

For owner farmers, potential taxable income (PTI) is calculated by subtracting an estimate of COP from GVO. Following Khan and Khan (1998) and World Bank (1999),

<sup>19</sup>The depreciation rate used is one that is applied to 'machinery and plant', which consists of 50 percent depreciation in the first year and 15 percent in later years till the capital is fully depreciated. If some of the investment goes into buildings or other forms of capital (for which the depreciation rates are lower) then we would have overestimated the depreciation allowance and underestimated the taxable income. On the other hand we may have overestimated taxable income because we do not allow for the possibility that some capital may not be entirely owned by farmers and may be rented capital and which gives rise to other admissible business expenses such as bank charges on loans.

<sup>20</sup>In the case of owner farmers the GVO is obtained as follows: (1) calculate the average GVO (by farm size) for the five major crops grown in irrigated areas (wheat, cotton, Basmati rice, Irri rice and sugarcane), (2) calculate the average GVO (by farm size) for the two major crops grown in unirrigated areas (wheat and pulses), (3) calculate a weighted average of the average GVOs calculated in (1) and (2) using as weights the share of irrigated cropped area in total cropped area and the share of unirrigated cropped area in total cropped area respectively, and (4) multiply the weighted average GVO by the total area cropped by owner farmers. The GVO for tenant farmers and owner-cum-tenant farmers involves using the weighted average GVO and multiplying it by the area cropped by tenant farmers and owner-cum-tenant farmers respectively.

we have taken COP to be 40 percent of GVO.<sup>21</sup> An alternative method was also used for calculating COP, which gives tax estimates (using data on tenure status) within about 12.5 percent of the ones obtained by assuming COP to be 40 percent of GVO.<sup>22</sup>

For tenant farmers, another expense allowed in calculating PTI is the rental income payable to landowners. For owner-cum-tenants, who cultivate both own land and rented land, potential taxable income for own land is calculated in the same way as it is calculated for owner farmers, and for rented land, PTI is calculated in the same way as it is calculated for tenant farmers.

To obtain tax on rental incomes, we calculate rental income of landowners and apply tax rates for property income, and adjust these tax estimates for the discrepancy in the rental incomes calculated from the area rented out and the area rented in. We estimate tax revenue from rental incomes to be about Rs 4 billion.

We estimate tax potential from crop farming and rental income for Punjab in 2009-10 to be about Rs 55 billion using tax rates for the tax year 2010. If large farmers are assumed to have 25 percent greater yield than small farmers then the tax revenue estimate (based on tenure status of farmers) for the tax year 2010 is Rs 60 billion.<sup>23</sup> If large farmers are assumed to be 50 percent more productive than small farmers, the tax yield goes up to Rs 63 billion.

Potential tax revenue for the financial year 2012-13 is estimated by: (i) assuming that between 2009-10 and 2012-13, taxable farm and rental incomes would increase at the same rate as the growth rate of agricultural crop sector, (ii) applying this growth rate to the potential taxable incomes for 2009-10 to forecast potential taxable income for 2012-13, and (iii) applying the tax rates given in the Finance Act 2012 (Government of Pakistan 2012) to the forecast value of potential taxable income.<sup>24</sup> The potential tax revenue for the tax year 2013 is estimated to be about Rs 30 billion.<sup>25</sup>

<sup>21</sup>Khan and Khan (1998) mention that COP varies between 35 and 45 percent of GVO. World Bank (1999) also report that several farm management studies in Pakistan support the assumption that COP per acre varies between 35 to 45 percent of GVO. We have taken the intermediate value in this range.

<sup>22</sup>The alternative method adopted was to solve for  $\lambda$  in the equation:

$$VA = (GVO - COP_{UnAdj}) = GVO - \lambda GVO = (1 - \lambda) \times GVO$$

where VA is the aggregate value added in agricultural crop sector (as given in Pakistan (2011c)),  $COP_{UnAdj}$  is the cost of production which is not adjusted for depreciation or hired labour, and GVO is the gross value of output as explained in the text, aggregated over all farm sizes and across all tenure classes. The solution of the equation gave:  $\lambda = 0.26$ . We then calculated, for each farm size,  $VA_i = (1 - 0.26) \times GVO_i$ . This value added was adjusted for the depreciation of capital and for the cost of hired labour to obtain potential taxable income for each farm size.

<sup>23</sup>We treated farm size of 25 acres and less as small and farm size of 25 acres or more as large. Difference in yield between small farmers and large farmers can arise because the latter are better placed to purchase high cost farm inputs such as high yielding seed varieties, fertilisers, pesticides, water, etc. We do not have recent empirical evidence to support this hypothesis. Evidence from earlier literature on farm size and productivity relationship is mixed [see Nasim (2012)] for references to the literature.

<sup>24</sup>The target growth rates for major and minor crops for 2012-13 are 3.8 percent and 4.5 percent respectively. With CPI inflation forecast of 9.5 percent for 2012-13, the nominal growth of major and minor crops in 2012-13 is taken to be 13.3 percent and 14 percent respectively. Applying these rates to the value added (at current factor cost) of major and minor crops in 2011-12 (provisional estimates), we calculate nominal growth rate of 33.4 percent for the crop sector between 2009-10 and 2012-13.

<sup>25</sup>The exemption limit and tax rates have changed considerably between the tax year 2010 and the tax year 2013, which explain the very large drop in potential tax revenue between the two tax years.



#### 4.3. Estimates Based on Irrigation Status of Farms

We base the third set of estimates on the irrigation status of farmers. Pakistan Agricultural Census 2000 provides data on the number of irrigated and unirrigated farms under different size categories and the area cultivated by these farms. It also provides data on the area under different crops cultivated within each size category. We calculate GVO for farms classified as irrigated and unirrigated, and estimate tax potential for both types of farms separately using a methodology very similar to the one described in the preceding subsection [see Nasim (2012) for details]. Stratification of irrigated and unirrigated farms by tenure status is not available. Consequently, we made no attempt to distinguish between incomes from own land and rented land. The two incomes are in effect clubbed and taxed as farmer's individual income.

We estimate the tax potential from crop farming in Punjab in 2009-10 to be Rs 69 billion. If we assume that large farmers have 25 percent higher yield than small farmers, the tax revenue estimate is Rs 75 billion. Assuming 50 percent greater yield for large farmers, the tax revenue estimate is Rs 79 billion.

#### 4.4. Revenue Equivalent Land Tax on Owner Farmers

From the estimates of potential tax revenue, one can also calculate the per acre tax on owner farmers that would yield the same revenue as obtained from treating farm income as business income. Working with the figure of Rs 39.4 billion as the potential tax revenue for owner farmers obtained by applying the tax rates given in the Finance Act 2009, the per acre tax ranges from zero for farms below 2.5 acres to about Rs 4736 for farms of size 100-150 acres (see Table 2, column 7). Under the current AIT in Punjab, the tax is Rs 150 per acre for farm size exceeding 12.5 acres of cultivated irrigated land but not exceeding 25 acres, and Rs 250 per acre for farm size exceeding 25 acres of cultivated irrigated land.<sup>26</sup>

Given the total area cultivated by owner farmers is about 19 million acres, a flat tax of Rs 2050 per acre on owner farmers would raise the same revenue (Rs 39.4 billion) as from a progressive income tax. If farms below 12.5 acres were to be exempted then the flat rate would be about Rs 4175 per acre.

#### 4.5. Allowing for Fragmentation of Land Holding and Relaxing Representative Farmer Assumption

Our methodology relies on the level of disaggregation provided in the Pakistan Agricultural Census 2000. The aggregation of farm households into 10 farm-size categories limits the extent to which we can capture the full dispersion of farm incomes. The tax revenue estimates, based on the representative household assumption, which treats all farmers within each of the ten farm size categories as having the same income, can overestimate or underestimate the actual potential of tax revenue. Another source of possible overestimation of tax revenue is the fragmentation of land holding that we have not incorporated in our estimates. In Nasim (2012) we have tried to address both these limitations by allowing for land fragmentation and working with finer farm size classification by fitting a Pareto distribution to owner farmers with farm size of 12.5 acres and above. The tax estimates differ by less than 5 percent from those reported here.

<sup>26</sup>Unirrigated land is also taxed with one acre of irrigated land treated as two acres of unirrigated land. Irrigated orchards are taxed at the rate of Rs 300 per acre and unirrigated orchards at the rate of Rs 150 per acre.

Table 2

*Revenue Equivalent Land Tax on Owner Farmers in Punjab (2009-2010)*

1	2	3	4	5	6	7
	No of Farms	Farm Area (Acres)	GVO (Rs Billion)	Net Income (Rs Billion)	Tax Revenue (Rs Billion)	Tax Per Acre (Rs)
<b>Private Farms</b>						
Under 1.0	364,383	165,617	7.41	4.44	0.0	-
1.0 to under 2.5	822,892	1,268,446	63.79	38.28	0.0	-
2.5 to under 5.0	681,845	2,312,219	117.62	70.57	0.4	153
5.0 to under 7.5	443,956	2,563,966	127.87	76.72	2.3	898
7.5 to under 12.5	366,294	3,501,421	166.34	99.80	5.0	1,425
12.5 to under 25.0	230,696	3,732,199	161.27	96.76	9.7	2,593
25.0 to under 50.0	94,964	2,897,503	110.29	66.18	9.9	3,426
50.0 to under 100.0	24,390	1,490,134	48.79	29.27	6.1	4,125
100.0 to under 150.0	4,086	466,095	14.72	8.83	2.2	4,736
150.0 and above	3,651	851,013	25.38	15.23	3.8	4,473
<b>Total</b>		<b>19,248,613</b>			<b>39.4</b>	

Source: Pakistan (2003) and the author's calculations.

Notes: 1. Column 2 and Column 3 are from Pakistan (2003). 2. Calculations for Column 4 are given in Nasim (2012). 3. Column 5 = 0.6 x (Column 4). 4. Column 6 is obtained by dividing Column 5 by Column 2 to obtain net income per farm, then applying the tax rates given in Finance Act 2009 to obtain tax liability per farm, and multiplying the resulting tax liability per farm by the number of farms (Column 2). 5. Column 7 = (Column 6)/(Column 3).

## 5. CONCLUDING REMARKS

The share of land taxes in total tax revenues is miniscule in Pakistan. Farmers and agriculturists contribute towards some other direct taxes (e.g., taxes on dividends and interest incomes and taxes on property transfer) and also bear the burden of indirect taxes in their capacity as consumers of taxed goods and as suppliers of raw materials to the taxed industries. Before the 1980s, there was considerable implicit taxation of agricultural incomes, and agricultural pricing policies resulted in substantial transfers from the agricultural sector. Price-related transfers and taxation was brought down considerably in the 1980s and 1990s. The 1990s decade was also marked by other reforms in the economy, in particular liberalisation of the financial sector and trade and foreign exchange regimes. The attempt to replace export taxes and price-related taxes and transfers with AIT in 1993 only succeeded in putting AIT on the statute books—as late as 1997 in the case of Punjab—without any attempt by the political or military regimes to seriously implement the tax.

Our estimates suggest that if in the tax year 2010, an income tax on crop farming and land rental had been in place along the lines of an income tax in other sectors of the economy, the tax revenues would have been between Rs 55–75 billion in Punjab. Using these estimates for Punjab, the potential tax revenue from agricultural crop incomes for the country as a whole would have been in the region of Rs 80 billion to Rs 112 billion in 2009-10 compared with Rs 509 billion collected as federal income tax from the non-agricultural sector in 2009-10. For the tax year 2013, the potential tax revenue for Punjab is estimated to be Rs 30 billion (using estimates of agricultural income based on tenure status of farms and forecasts of farm incomes based on growth forecasts of crop incomes). For the country as a whole, the projected tax revenue from farm and rental income for the financial year 2012-13 is less than Rs 50 billion.

The discussion of agricultural income tax normally relates to income from crop farming. In 2009-10, crop farming accounted for 43 percent of the value added in agriculture. Based on our estimates we can say that the potential tax revenue from crop farming, particularly under the Finance Act 2012, appears considerably smaller than the perception that the potential revenue is of the order of Rs 200 billion. However, the potential revenue is sizeable, and if the tax had been in place in 2009-10, the tax revenue from this source would have added at least another 13 percent to Punjab's total revenue receipts.

Why does actual agricultural tax collection fall so short of its potential? One reason is that the tax is effectively a tax on land and not on income, and the provincial governments have not revised the tax rates to reflect the changes in the income potential from land. Therefore, tax as a share of income falls as agricultural income increases. The land tax could be redesigned to reflect the changes in potential income from land and also distribute the burden of tax more heavily on large landowners.

The lack of effectiveness of the tax administration could be one of the constraints in the design and implementation of a modern income tax system in the agricultural sector. The administrative difficulties in collecting land tax and AIT are not limited to Pakistan [see e.g., Bird (1974) and Skinner (1991)]. In Pakistan, provincial land tax and land administration system has been in place since the pre-independence period. These revenue departments may not be appropriate vehicles for collection of income taxes but they could be strengthened for collection of more buoyant forms of land taxes.

The growing provincial share in the federal divisible pool of taxes under the National Finance Commission (NFC) awards also creates a disincentive for the provinces to tap own-source revenues. The seventh NFC award has reinforced this disincentive. The award has increased the provincial share in the divisible pool of tax revenue to 56—57.5 percent compared with 46.25 percent in the sixth NFC award.

Strong political influence of large landowners also constrains the growth of revenue from agricultural incomes. Political governments can risk a revolt by their party members from rural constituencies if they attempt to institute an AIT. As we have seen, the urban constituency is also now opposing new tax measures unless landowners pay a fair share of their taxes.

Bringing the taxation of agricultural incomes at par with business incomes will plug an avenue for tax evasion in the system. This avenue arises because the differential tax treatment of agricultural incomes provides the opportunity to fraudulently declare non-agricultural incomes as agricultural income and thereby escape the rates of taxation applicable to non-agricultural incomes.

The AIT can substantially supplement provincial government finances and will also have a very important symbolic value in terms of equity and fairness. Instituting an AIT could also contribute to lowering opposition to new tax proposals and measures aimed at broadening the tax bases at the federal level. It is probably time for a national consensus through the Council of Common Interests to institute an agricultural income tax, which can raise substantially more revenue than it does presently, and which in due course could resemble the taxation of incomes in other sectors of the economy.

**APPENDIX****YIELD AND PRICES FOR CROPS USED IN THE CALCULATION  
OF GROSS VALUE OF OUTPUT**

Table A-1 provides values for yield per acre in kg and price per kg for Basmati, Irri, wheat (irrigated), cotton, sugarcane, wheat (unirrigated) and pulses (unirrigated). These yield and output figures are used in the calculation of gross value of output. The main source for yield and prices is the Agricultural Statistics of Pakistan 2009-10 [Pakistan (2011a)].

***Yield***

Separate figures for yield by irrigation status are reported only for wheat. Cotton, Basmati, Irri (and other rice) and sugarcane are grown mostly, if not entirely, in irrigated areas. The reported yield figures for Basmati rice, Irri and other rice, wheat (irrigated), cotton and sugarcane were taken to be the representative yield figures for all farm sizes in irrigated areas.

According to the data on area under various crops in irrigated and unirrigated areas (by farm size) as reported in Pakistan Agricultural Census 2000 [Pakistan (2003)], 73 percent of the total acreage in Punjab under pulses is unirrigated. The reported yield figures for pulses and wheat (unirrigated) were taken to be representative of the yield figures for all farm sizes in unirrigated areas.

***Prices***

The price of wheat is taken to be the procurement/support price of wheat, which is the same for wheat (irrigated) and wheat (unirrigated). The price of Basmati is the intervention price of Basmati 385. The price of Irri and other rice is taken to be the intervention price of Irri-6 (FAQ). The price of sugarcane is the support/indicative price of sugarcane.

Government of Pakistan (2011a) reports intervention price for seed cotton (B-557, F-149 and Niab-78) for 2008-09 but does not provide price data for lint cotton. On the other hand the yield figures are reported only for lint cotton. To arrive at the price of lint cotton for 2009-10 we made two approximations: (a) based on the data reported for earlier years, we took lint prices to be 2.5 times the price of seed cotton, and (b) to convert the estimated lint price of cotton in 2008-09 to 2009-10 prices, we multiplied the 2008-9 prices with the ratio of wholesale price of cotton in 2009-10 to the wholesale price in 2008-09. Thus the price of seed cotton in 2008-09, which was Rs 1,465 per 40 kg (or Rs 36.625 per kg) was multiplied by 2.5 to convert to the price of lint cotton in 2008-9 and then multiplied by 1.327 to convert it to the price in 2009-10. The latter ratio was obtained from the data on wholesale prices in Economic Survey [Pakistan (2011c)].

The price of pulses (unirrigated) was the weighted average wholesale price of gram, Mung, Mash and Masoor, adjusted for the wholesale margin (10 percent) to arrive at the price received by farmers. The weights used were the relative shares of these crops in the total production of these four crops. The wholesale prices for each of the four crops were the average of the wholesale prices of these crops in Lahore and Rawalpindi.

Table A-1

*Yield per Acre and Price per Kilogram for Major Crops in Punjab in 2009-10*

	Yield per Acre (kg)	Price (Rs/kg)
Wheat (irrigated)	1,112	23.75
Wheat (unirrigated)	318	23.75
Cotton (lint)	242	121.50
Basmati	708	50
Irri and other Rice	968	30
Sugarcane	20,882	2.5
Pulses (unirrigated)	213	42.1

Source: (1) Pakistan (2011a, 2011c) and author's calculations.

Notes: Some of the yield and prices are taken directly from Pakistan (2011a, 2011c) and others are calculated from the data given in these sources.

### REFERENCES

- Ahmed, E. and N. Stern (1991) *The Theory and Practice of Tax Reform in Developing Countries*. Cambridge: Cambridge University Press.
- Bird, R. M. (1974) *Taxing Agricultural Land in Developing Countries*. Cambridge, Mass.: Harvard University Press.
- Chaudhry, M. G. (1973) The Problem of Agricultural Taxation in West Pakistan and an Alternative Solution. *The Pakistan Development Review* 12:2, 93–122.
- Chaudhry, M. G. (1999) The Theory and Practice of Agricultural Income Tax in Pakistan and a Viable Solution. *The Pakistan Development Review* 38:4, 757–768.
- Chaudhry, M. G. (2001) Theory of Optimal Taxation and Current Tax Policy in Pakistan's Agriculture. *The Pakistan Development Review* 40:4, 489–502.
- Chaudhry, M. G. and N. N. Kayani (1991) Implicit Taxation of Pakistan's Agriculture: An Analysis of Commodity and Input Prices. *The Pakistan Development Review* 30:3 225–242.
- Dorosh, P., and A. Valdes (1990) Effects of Exchange Rate and Trade Policies on Agriculture in Pakistan. International Food Policy Research Institute. (Research Report 84).
- Hamid N, I. Nabi and A. Nasim (1991) In A. O. Krueger, M. Schieffe and A. Valdes (eds.) *The Political Economy of Agricultural Pricing Policy*. Volume 2, Asia: A World Bank Comparative Study. Baltimore, Maryland: The Johns Hopkins University Press.
- Hamid, J. (1970) Suggested Approach to Agricultural Taxation Policy in West Pakistan. *The Pakistan Development Review* 10:4, 422–447.
- Hamid, J. (1973) The Problem of Agricultural Taxation in West Pakistan and an Alternative Solution: A Comment. *The Pakistan Development Review* 12:3, 311–314.
- Kazi, S. (1984) Intersectoral Tax Burden in Pakistan: A Critical Review of Existing Evidence and Some New Estimates. *The Pakistan Development Review* 23:4, 553–573.
- Khan, M. H. (1978) A Note on Estimates of Agricultural Income Tax. *The Pakistan Development Review* 17:1, 89–98.
- Khan, M. H. (1981) *Underdevelopment and Agrarian Structure in Pakistan*. Boulder, Colo.: Westview Press.

- Khan, M. H. and M. S. Khan (1998) *Taxing Agriculture in Pakistan*. Washington, DC: Paper on Policy Analysis and Assessment of the International Monetary Fund.
- Kotlikoff, L. J. and L. H. Summers (1987) Tax Incidence. In A. J. Auerbach and M. Feldstein (eds.) *Chapter 16 in Handbook of Public Economics, Vol. II*. Elsevier Science Publishers B. V. (North Holland).
- Malik, S. (2004) Study on Tax Potential in NWFP (Revised Report). Islamabad: Innovative Development Strategies (Pvt.) Limited.
- Mohammad, F. (1987) Agricultural Taxation in Pakistan Revisited. *The Pakistan Development Review* 26:4, 419–432.
- Mukhtar, H. and A. Nasim (1999) Resource Mobilisation in the Punjab. Unpublished Background Paper for the Punjab Expenditure Review, 2000, undertaken jointly by the World Bank and the Government of Pakistan.
- Nasim, A. (1994) Revenue Estimates from Land Taxation in Pakistan. *Pakistan Journal of Applied Economics* 10:1&2, 77–97.
- Nasim, A. (2012) Agricultural Income Taxation: Estimates of Revenue Potential in Punjab: A Report. Unpublished. Lahore: Institute of Development and Economic Alternatives.
- Nasim, A. and A. Akhalaque (1992) In A. Nasim (ed.) *Financing Pakistan's Development in the 1990s*. Lahore: Lahore University of Management Sciences and Oxford University Press.
- Pakistan Government of (2011a) *Agricultural Statistics of Pakistan 2009-10*. Islamabad: Ministry of Food and Agriculture (Economic Wing).
- Pakistan, Government of (2011b) Income Tax Manual, Part I, Income Tax Ordinance, 2001 (Amended up to 30th June, 2011). Islamabad: Federal Board of Revenue (Revenue Division), Facilitation and Taxpayers Education Wing. Available from the Federal Board of Revenue (Government of Pakistan) site, <http://n.fbr.gov.pk/Docs/201191210938447ITOrdinanceUpdated2011.pdf>
- Pakistan Government of (2011c) *Pakistan Economic Survey 2010-11*. Islamabad: Economic Affairs Wing, Finance Division.
- Pakistan, Government of (2003) *Pakistan Agricultural Census 2000*. Lahore: Agricultural Census Organisation.
- Pakistan, Government of (2009) *Income Tax Manual, Part I, Income Tax Ordinance, 2001 (Amended up to 28th October, 2009)*. Islamabad: Federal Board of Revenue (Revenue Division), Facilitation and Taxpayers Education Wing. Available from the Federal Board of Revenue (Government of Pakistan) site, <http://www.fbr.gov.pk/Docs/201012279125232750ITaxOrdinance2001ut28-10-2009.pdf>
- Pakistan, Government of (2012a) *Finance Bill 2012*. Islamabad: Federal Board of Revenue, (Revenue Division). Available from the Federal Board of Revenue (Government of Pakistan) site, <http://www.fbr.gov.pk/budget/FinanceBill/FinanceBillFinal.pdf>
- Qureshi, S. K. (1987) *Agricultural Pricing and Taxation in Pakistan*. Islamabad: Pakistan Institute of Development Economics.
- Qureshi, S. K. (1973) The Problem of Agricultural Taxation in West Pakistan and an Alternative Solution: A Comment. *The Pakistan Development Review* 12:4, 433–437.

- Rajaraman, I. and N. Ghosh (2002) Revenue Estimates for a Crop Specific Agricultural Tax. *Economic and Political Weekly* 37:13 (March 13 – April 5, 2002), 1204–1211.
- Shah, A. and J. Whalley (1991) Tax Incidence Analysis of Developing Countries: An Alternative View. *The World Bank Economic Review* 5:3, September.
- Skinner, J. (1991) Prospects of Agricultural Land Taxation in Developing Countries. *The World Bank Economic Review* 5:3, 493–511.
- Wahid, U. and S. Wallace (2008) Incidence of Taxes in Pakistan: Primer and Estimates. International Studies Program, Andrew Young School of Policy Studies, Georgia State University. (Working Paper 08-13).
- World Bank (1999) Agricultural Taxation in Pakistan. Rural Development Sector, South Asia Region. (Report Number 18935-PAK.)
- World Bank, Government of Pakistan, Federal Board of Revenue and Georgia State University (2009) Pakistan Tax Policy Report: Tapping Tax Bases for Development. Document of the World Bank.