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Taxation of agricultural incomes in Pakistan: Conceptual issues, data challenges and empirical estimates

Abdul Salam
Former Chairman, Agricultural Prices Commission, Government of Pakistan and Professor of Economics, Abdul Qadir Memorial Chair, State Bank of Pakistan

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Cover Page Footnote

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Abstract There is considerable diversity and variation in the land-based and agricultural income tax rates across the provinces in Pakistan. The annual land-based tax revenues from the cultivated land, including orchards, are estimated at Rs. 5 billion in Punjab, 2.5 billion in Sindh, one billion in KP, and less than half a billion in Balochistan. Based on the 2017-18 GDP estimates from crops, two sets of income tax revenues were estimated: one at the provincial rates and the other at the FBR tax rates for non-salaried persons. Tax revenues from crop income, at the current provincial rates, work out to Rs. 34 to 37 billion in Punjab, 7 to 8 billion in Sindh, 7 to 9 billion in KP, and 4 to 5 billion in Balochistan. Revenue estimates at the FBR rates are Rs. 112 to 134 billion in Punjab, 25 to 30 billion in Sindh, 9 to 10 billion in KP and 21 to 24 billion in Balochistan. These estimates are indicative of the revenue potential from taxation of crop incomes and need to be kept in perspective along with the cost of tax collection while designing policy instruments for taxing agricultural incomes.

Keywords agricultural income tax, land-based tax, crop income, cultivated area, tax revenue, implicit tax

Dr Abdul Salam
Former Chairman, Agricultural Prices Commission, Government of Pakistan and Professor of Economics Abdul Qadir Memorial Chair, State Bank of Pakistan
E-mail: drsalam46@gmail.com

1 Introduction

Traditionally, agriculture has provided capital as well as labour for the development of other sectors. Resource transfers from agriculture were affected through various means and instruments: including terms of trade, implicit taxation, as well as direct taxes on land (Lewis et al 1954; Mellor 1967). Growing economic literature has, nevertheless, emphasized the role of agriculture as an engine of growth and harbinger of economic prosperity. However, it requires that farmers be provided opportunities and incentives for farm investment through technological development and a level playing field (Johnston and Mellor 1961; Mellor et al 1993; Schultz 1964).

Pakistan has a history of interventions in farm inputs as well as output markets. These, inter alia, have included:

- input subsidies,
- public sector monopoly in the marketing of inputs and outputs,
- compulsory procurement of commodities,
- zoning for sugar mills,
- minimum support prices of important crops,
- procurements and release of food grains below-market prices, and
- restrictions on inter-district and inter-provincial commodity movements, etc. despite constitutional guarantee for free inter-provincial trade.

These interventions were seldom based on an in-depth analysis of their repercussions for producer incentives, inter-sectoral terms of trade, agricultural production, and productivity (Salam 2019). These interventions, inter alia, led to increasing public expenditures and budgetary deficits. Accordingly, there were demands for revisiting input subsides and readjusting public sector investments and allocations for other options (Faruqee and Carey 1995). This led to the institution of economic reforms under the structural adjustment programs, retreat of the public sector, and expanding role of the private sector in agricultural markets. As the agricultural incomes were exempted from income tax, it was alleged to have led to underreporting of incomes from other sectors and exaggerated claims of farm incomes to evade tax on other incomes (Faruqee and Carey 1995; World Bank 1999). Accordingly, many committees and working groups and task forces examined the subject. This also highlighted the need for examination and analysis of the tax potential of agricultural incomes (GOP 1993).

The consensus emerging from the discussions and deliberations of these groups was that under the Constitution, the Federal government cannot levy tax on agricultural income and it was the prerogative of provincial governments. In the wake of the 18th amendment to the Constitution, the subject of agriculture has also been devolved to the provinces. Agricultural policy and development of agriculture is now the responsibility of provinces. Nevertheless, efficient, and judicious discharge of these responsibilities, by provinces, is predicated on:

- development of adequate institutional capacity,
- substantial investment in the social infrastructure of research and development,

- availability of technologies and their dissemination,
- inter-provincial coordination on policy issues to avoid duplication and inefficient use of resources, and
- harmonization of agriculture income tax regimes among the provinces.

Historically, Pakistan has been plagued with budgetary deficits, foreign exchange and revenue shortages, frequent recourse to international donors including International Monetary Fund, World Bank, etc. to overcome resource constraints, facing tough demands and conditions form the donors, involving harsh criticism from experts and opposition parties. In view of the persistent budget deficit and increasing need for resources for the development of infrastructure and public welfare programs, there is an urgent need not only for the judicious use of existing resources but also to explore and tap all avenues, including taxing of agricultural incomes, for mobilizing additional resources. The urgency for mobilization of additional resources was never greater than the current scenario of rising twin deficits, tough negotiations and stringent conditionalities imposed by the donors for lining up additional resources. It is in this context that this paper aims to visit the subject of taxing agricultural income, provide empirical estimates and examine conceptual challenges and practical difficulties involved in the process. This should help in fostering a debate on the issues and challenges involved and evolve a strategy for mobilizing resources from taxing agricultural incomes.

The rest of the paper is organized into four sections. A brief review of important literature on the subject is presented in section 2. The provincial land-based taxes on agriculture are explained in section 3. Distribution of land ownership is also discussed in section 3. Methodology to estimate revenues from the provincial land taxes, likely revenue estimates thereof and challenges involved in the process are also detailed in this section. Methodology to work out revenue from the tax on agricultural income and revenue estimates thereof, as per the Federal Bureau of Revenue (FBR) tax rates for non-salaried persons and the provincial tax rates on agricultural income, are dealt in Section 4. Conceptual issues and data challenges in this context are also discussed in Section 4. The revenue estimates from the land based and agricultural income tax are summed up in section 5 along with their policy implications.

2 Literature review

This review of literature is limited to important studies, focussing on theoretical and applied issues of the subject. Lewis (1968) in his study of agricultural taxation in a developing economy provided a useful survey of literature and guidelines on the subject. The survey emphasized principles of neutrality and avoidance of excess burden and implied avoidance of taxes on specific persons, products, services or sectors. The idea of dividing an economy into sectors and discussing those sectors separately is implicitly rejected by the bulk of literature on taxation. Generally, there is a preference for neutrality and avoidance of excess burden, implying avoidance of taxes having strong substitution effects, i.

e. taxes on specific persons, products, services, or sectors. General taxes are to be preferred as they are less likely to interfere with market allocations (Lewis 1968).

The decision not to interfere with the market allocation of resources is based on the assumption that the allocation by market forces is desirable. This in turn is based on assumptions about the sanctity of market expressed demand and technical efficiency achieved by freely operating markets (Lewis 1968). However, the structures of the inputs and output markets in developing countries are often dominated by cartels, and oligopolies as the imperfect functioning of these markets is the norm. The market failures are often cited in the literature to justify government interventions (Salam 2001). Recent developments in Pakistan relating to wheat and sugar shortages and resulting hikes in prices as engineered by the cartels (GOP (2020b,c)) are well known to those familiar with Pakistans agriculture. The expansion in sugar and other industries based on agricultural raw materials bear ample testimony to high profits. Similarly, the industries which supply machinery and farm inputs are all characterized by extraordinary profits and high dividends, hallmarks of imperfect competition and oligopolistic market structures, exploiting the farming community and consumers or both.

World Bank (1999) study on taxation of agriculture in Pakistan, noting key requirements of a good tax system, emphasized the need for minimizing distortions, avoiding disparities in the treatment of incomes, consideration of equity and ease of administration. The study observed that the only direct tax on agriculture was the provincial land revenue levied on landowners and noted two important flaws in the tax system: revenue raised was quite small and agricultural income was treated differently from other incomes. The study, inter alia, opined this situation had evolved from a policy framework involving heavy implicit taxation of agriculture through an overvalued exchange rate, export taxes, compulsory procurements at unfavourable prices, and industrial protection.

The study recommended a three-phase approach to evolve the agricultural tax system. In the first phase, the existing agricultural income taxes will continue but with a reduced exemption (5 acres) and do away with the land revenue. In the second phase, the income tax would be levied on agriculture on the basis of annual rental value or a similar basis. In the final phase, the income tax would switch to a general income tax on a presumptive basis. Noting the strengths and limitations of various taxes to be imposed in agriculture, the World Bank study favoured a general income tax on the grounds: it would cover all types of income and thus remove the disparity in treatment of income by source, and could be made progressive. The study also observed that in the wake of economic reforms implicit taxation of agriculture had greatly diminished. Nevertheless, this observation on implicit taxation was contestable as there is ample empirical evidence of its continuing.

Nasim (2012) in his study of agricultural income taxation in Punjab provides useful guidelines for synthesizing revenue potential from taxing agricultural incomes from the data published in Agricultural Statistics of Pakistan, Census of Agriculture and Pakistan Economic Survey. The study estimated that tax revenues would have been between Rs 55−75 billion in Punjab if an income tax on incomes from crop farming and land rentals had been in place, on lines of

income tax in other sectors of the economy, in tax year 2010. Using these estimates for Punjab, the potential tax revenue from crop incomes for the country as a whole would have been in the region of Rs 80 billion to Rs 112 billion.

These estimates, which can serve as a valuable benchmark of the revenue potential, however, cannot be a substitute for the tax revenue estimates based on detailed farm income data for various agro-economic regions, which, inter alia, requires substantial investment in institutional capacity building and human resource development on the subject. Mukhtar and Nasim (2016), in their follow-up of Nasim's study of Agricultural taxation in Punjab, reported that had in 2010 an income tax on crop income been levied at the rates comparable to other sectors of the economy, the tax revenues in the Punjab would have worked out between Rs 55 and 75 billion. The Punjab Agricultural Income Tax Act (PAITA) 1997 provides for taxation of agricultural incomes, inter alia, allows tax to be collected as land tax. Lamenting infrequent revisions of the tax rates, they argue, tax collections are quite inadequate. Their potential revenue estimates for FY 2014 for Punjab work out to Rs. 2 billion under the pure land tax mode, Rs 15 billion under a combination of land and income tax mode, and Rs. 114 billion under pure income tax and Rs. 54 billion when income from agriculture was taxed at the rates comparable to non-agricultural income. They noted deterioration in tax implementation capacity of the provincial Board of Revenue and pointed the need for coordination and information sharing between the federal and provincial revenue boards and argued for investment in capacity building of the revenue department and exploration of alternative forms of agricultural taxes.

Jansen et al (2019) in their study of Taxation of Agricultural incomes in Pakistan have also supported general tax as opposed to a specific tax on sectors/ individuals on the grounds that exempting agriculture from income tax violates the principles of equity and neutrality, encourages conspicuous consumption, money laundering, and promotes tax evasion and other malpractice. All the above-mentioned studies: i.e., by the Jansen et al (2019); Nasim (2012); Mukhtar and Nasim (2016); World Bank (1999)), have favoured taxing agricultural incomes like other sectors and at the rates applicable to corresponding levels of non-farm incomes. The studies by the World Bank (1999) and Nasim (2012), have also concluded that in the wake of various reforms introduced in the 1980s and 1990s implicit taxation of agricultural incomes has been reduced to a large extent, paving the way for taxation of agricultural incomes. Notwithstanding, these reforms there is ample evidence of continued heavy incidence of implicit taxation of agricultural incomes in the country (Dorosh and Salam 2007; Salam 2010, 2017, 2019).

Hayat (2017) in his survey-based case study of Review of Agricultural Income Tax Administration in Punjab noted several deficiencies and confusion among the provincial tax collection officials: assessment of income on the basis of the judgment of crop production and pricing of crops, inadequate training of staff in tax-related matters and multiplicity of their roles, lack of awareness among farmers on agricultural tax and insufficient outreach activities of the revenue department. He underscored the need for proper training of the revenue staff and adopting a uniform and sound approach for tax assessment in various

districts of the province and proper implementation.

Farmers and their organizations, like other sections of the society, are generally opposed to paying income tax. The farming lobby detests agricultural income tax on the pretexts of:

– small farms and low farm incomes,
– high incidence of rural poverty,
– poor rural infrastructure,
– high transaction costs in the marketing of farm inputs and output,
– low producer prices of major commodities resulting in on implicit taxation of agriculture,
– payment of land revenue, water charges, abiana, excise duties, and
– imposition of general sales tax (GST) on agricultural inputs (GOP 1993).

High incidence of risk and uncertainty in agriculture has often resulted in dismal performance and poor growth in the sector and high incidence of poverty in rural areas. On the other hand, sectors engaged in marketing, processing of farm commodities: and suppliers of inputs and machinery providing farm inputs, chemicals, and farm machinery are doing roaring business. Similarly, those engaged in marketing and processing of farm commodities, flour mills, sugar mills and ginneries, and edible oil industry are enjoying a protected market, making high profits at the cost of farmers and consumers.

Experience with economic liberalization in Pakistan has been mixed. Although over time, the role of the public sector in commodity markets has declined while that of the private sector expanded, research studies point out continuing implicit taxation of major crops, leading to large resource transfers from domestic producers (Dorosh and Salam 2008; Salam 2010, 2017, 2019). These transfers, which averaged $1.21 billion per year in the 1990s (cotton and wheat accounting for 57 per cent and 38 per cent, respectively), increased to $1.72 billion per year between 2006 and 2008 (with wheat and cotton accounting for 81 per cent and 10 per cent, respectively) (Salam 2010). These distortions in production incentives and the resulting large resource transfers have adversely impacted farm investments, agricultural production and productivity, food security, farmers incomes, and aggravated rural poverty.

In view of the foregoing situation:

– of not treating income from agriculture at par with income of other sectors for taxation,
– continuing implicit taxation of agriculture,
– persistence of twin deficits and,
– the need to mobilize additional domestic resources,

It has become imperative to expand the tax net and explore all possible avenues for mobilizing additional resources. However, this should be preceded by a thorough debate to sort out the likely challenges and practical problems of: data needs and constraints, institutional requirements and analytical capacity to administer the subject. It is in this context that this study was designed to provide empirical estimates of the potential tax revenues by extending income tax to

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agriculture and examine the data requirements and challenges. It is based on new data sets on land distribution as available from the Census of Agriculture 2010 (GOP 2012) and final GDP estimates for GOP (2019) and GOP (2020a), as the revenue estimates from the previous studies on the subject have become dated.

3 Land ownership and land-based tax in Pakistan

3.1 Land ownership and distribution in Pakistan

The land tenure structure in Pakistan remains grounded in arrangements put in place during colonial times. Nevertheless, most land in Pakistan these days is acquired through either inheritance or purchase. In the case of the sale and purchase of land, the law of Haq Shufa dictates that the first right of the purchase goes to family or neighbours (Jansen et al 2019). Land administration is essentially a provincial subject, involving several departments resulting in fragmentation of land records and poor access involving laborious, time and resource-consuming procedures. Most of the data on land ownership remains confined to revenue records of the provincial / district governments and is often inaccessible to ordinary researchers. However, (GOP 2012) reports data on land ownership for various farm size categories. These data were adapted for various farm size classes and are set out in Table 1.

Table 1: Distribution of land ownership by farm size in Pakistan, 2010

	Owners	Area owned
Total (number)	8,355,772	55,598,276 acres
Farm size (acres)	Owners %	Area owned %
< 5	67.01	18.31
5 < 7.5	12.87	11.05
7.5 < 12.5	10.08	14.45
12.5 < 25	6.11	15.37
25 < 50	2.58	12.39
50 and above	1.36	28.53

Source: Adapted from Census of Agriculture 2010 (GOP 2012)

As a sequel to the burgeoning population, land holdings are subject to sub-division and increasing fragmentation under the law of inheritance. The total number of land holdings reported at 3.76 million in 1972 (GOP 1975) increased to 8.26 million in 2010 (GOP 2012), showing an increase of 120 per cent. The average farm size in the process decreased from 13.04 to 6.40 acres, accentuating population pressure on the cultivated area and declining per capita availability of arable land. Declining farm size has serious implications for technology adoption, farm production, incomes, and government revenues.
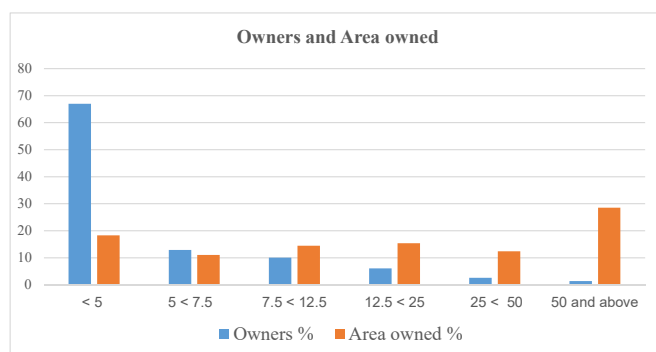
Fig. 1: Distribution of land ownership by farm size in Pakistan, based on data reported in 2010 Census of Agriculture

3.2 Land-based tax in Pakistan

Pakistan inherited land revenue- a tax introduced by the British on the rental value of the land. The Indian Income Tax Act 1922, adopted by Pakistan at the time of Independence, exempted agricultural income on the grounds that agriculture was subjected to land revenue and other cesses. The 1973 Constitution of Pakistan excluded agricultural income from the Federal Legislative List. In 1977, Pakistan Peoples Party government, led by Prime Minister Zulfiqar Ali Bhutto, tried to replace land revenue with a presumptive agricultural income tax based on Produce Index Unit (PIU). This was to come in force in July 1977. However, before it could be implemented, General Zia Ul Haq's military regime assumed power and reverted to the old system, exempting agriculture from income tax, and levying land revenue. Land holdings below 25 acres of irrigated and 50 acres of unirrigated lands were exempted from paying land revenue which tended to increase with the size of the holding (Mukhtar and Nasim 2016).

In 1980, Zia regime promulgated Zakat and Ushur Ordinance, which replaced land revenue with Ushur, levied @ 5 % of the value of farm output. It was to be assessed, collected, distributed by Zakat and Usher Committees while the Land Revenue department had no role in this context. Ushur collections did not form a part of the government budget either. In 1993, the Caretaker regime, led by Dr. Mueenuddin Qureshi, tried to introduce agricultural income tax again. In 1996, the provincial assemblies in all four provinces passed the agricultural income tax bills which are in vogue (Mukhtar and Nasim 2016).

Internationally, most developing countries in taxing farm incomes have relied on land taxes and/or presumptive income taxes, while developed countries rely more on sales taxes and value added tax in combination with a presumptive income tax (World Bank 1999). In India, tax on agricultural income, levied by state governments, is applicable to crop incomes only.

3.3 Land-based provincial income tax rates

The provincial governments, under pressure to augment their revenues, have introduced land-based income tax in agriculture in addition to land revenues. Data on provincial land tax rates, currently in vogue, for various farm size classes, are presented in Table 2.

Table 2: Provincial land-based tax rates

Category	Punjab	Sindh	KP	Baluchistan
		Rs. / Acre		
< 1 acre	0	200	0	50
1 to < 12.5 acres	0	200	225	50
12.5 to < 25 acres	300	200	340	50
25 to < 50 acres	400	200	340	50
50 acres and above	500	200	340	50
Orchard	600	700	900	200

The rates given in this table are for irrigated lands; for unirrigated lands rates are 50 per cent of these rates. In Baluchistan, no land tax is levied on unirrigated land. KP stands for Khyber Pakhtunkhwa
source:Jansen et al (2019)

The salient features of provincial land tax rates are:

– Wide variation in the provincial tax rates,
– lack of uniformity in exemption limits, as well as tax rates for various land categories,
– all irrigated cultivated land in Balochistan levied a uniform tax @ Rs. 50 per acre while unirrigated land is totally exempted,
– in KP all holdings < 1 acre are exempted from land tax while in Punjab this limit < 12.5 acres,
– in Sindh, instead of land tax minimum advance agricultural income tax @ Rs.200 / irrigated acre is applied,
– in Punjab, KP and Sindh tax rate for unirrigated land is 50 per cent of the irrigated lands. i.e., for land tax, two acres of unirrigated land are treated at par to one irrigated acre,
– Punjab and KP apply progressive tax rates while Sindh and Balochistan apply flat rates,
– orchards are taxed at higher rates as compared to the crop area, and
– KP applies the highest land tax rate on orchards and Balochistan the lowest,

3.4 Estimation of land tax revenues

3.4.1 Conceptual problems and data challenges/ issues

Empirical estimation of land tax revenues is confronted with several conceptual problems and data constraints as discussed below.

1. There are different tax rates for irrigated and unirrigated lands across the provinces but irrigated land is not clearly defined.

2. According to the 2010 Census of Agriculture, (GOP 2012) cultivated land that solely depends on rainfall or river floods and seepage water is to be included in the unirrigated land.

3. Similarly, cultivated land needs to be defined and spelt out to avoid confusion.

4. Like cropland, unirrigated orchards are also applied lower tax rates. However, it is difficult to raise an orchard without irrigation under conditions obtained in different provinces, save some areas in KP.

5. The units of land measurement also vary across provinces and even the measurement of an acre is not standardized within and across provinces. For example, in many districts of Punjab an acre consists of 8 Kanals while it is of 8 kanals and 17 marlas in some districts.

It is imperative to clearly define and spell out all such concepts, not only to avoid practical difficulties but also to minimize the chances of cheating and exploitation of and by the stakeholders. It would also serve the cause of good governance if definitions of various concepts and categories used in the notifications are standardized and adopted, accordingly, across all provinces.

3.4.2 Empirical estimates of land tax revenues

A perusal of data on cultivated area, available from various sources: Pakistan Census of Agriculture 2010 (GOP 2012) and the Agricultural Statistics of Pakistan (GOP 2019), revealed significant differences and variations in the cultivated area. In view of the situation, we have estimated land tax revenues for both these data sets.

3.4.2.1 Estimates based on area reported in Census of Agriculture 2010

The first set of data on the cultivated areas was adopted from the Census of Agriculture 2010. The cultivated area was categorized as irrigated and unirrigated based on the provincial average, as explained above. Area in various farm size classes, as obtained from the 2010 Census of Agriculture, was multiplied by the corresponding provincial tax rates applicable for irrigated and unirrigated areas and summed up to arrive at the provincial tax revenues. The mathematical formulation of the procedure adopted is given below:

$$Tax\,revenue\,estimates = \sum F_i X_i * r_i + Orchard\,area * r_2 \qquad (1)$$

Where, X_i = Provincial cultivated area, other than orchards, in acres.
$F_i X_i$ = Cultivated area distributed among various size categories.
F_i = share of a given size category in provincial cultivated area.
r_i = provincial land tax rate per cultivated acre for various categories, and
r_2 = Provincial tax rates per acre for orchards.

The provincial data on orchards area were obtained from the Agricultural Statistics of Pakistan 2017-18 (GOP 2019) and three years average thereof, 2015-17, calculated at 862 thousand acres, 371 thousand acres,110 thousand

acres and 539 thousand acres in Punjab, Sindh, KP and Balochistan, respectively. Tax revenue from orchards was estimated at the provincial land tax rates for irrigated orchards only, as hardly any orchards can be successfully raised without irrigation.The likely land tax revenues, as per the cultivated area reported in the Census of Agriculture 2010, explained above, are summarized in Table 3 (Revenue 1).

3.4.2.2 Estimates based on area reported in Agricultural Statistics
The annual cultivated area reported in Agricultural Statistics of Pakistan 2017-18 (GOP 2019) reflected quite a bit of inter-year variation. To avoid the effect of annual area fluctuations on revenue estimates, a three years average of cultivated area, 2015-17, was used. Three years average of the provincial cultivated area is thus estimated at 31,023,200 acres in Punjab, 13,659,100 acres in Sindh, 4,618,900 acres in KP, and 6,767,800 acres in Balochistan, respectively. The Census of Agriculture 2010 (GOP 2012), the latest on the subject, organizes farm area in categories based on the size of holdings. In our calculations of tax revenues, we have adopted farm size categories as such. The provincial cultivated area as obtained from the Agricultural Statistics of Pakistan, after subtracting the orchard area, was distributed among various farm size categories proportionate to their shares reported in the 2010 Census of Agriculture. Based on the average incidence of irrigation in each province: estimated from data reported in Agricultural Statistics of Pakistan 2017-18, at 86, 71, 51, and 100 per cent, respectively, in Punjab, Sindh, KP, and Balochistan GOP (2019) cultivated land across various farm size classes was subdivided into irrigated and unirrigated categories for calculation of tax revenues. The resultant revenue estimates are set out in table 3 as Revenue 2.

Table 3: Tax revenue estimates as per provincial land-based tax rates

Province	Revenue 1	Revenue 2	Revenue from land tax on Orchards
	Rs. Million ...		
Punjab	3,750.86	4,158.44	519.10
KP	922.86	859.32	99.29
Sindh	1,484.69	2,261.51	261.02
Baluchistan	125.52	311.01	108.19

Revenue 1 is based on the cultivated area as reported in the 2010 Census of Agriculture.
Revenue 2 is based on the average of cultivated area, 2015-17, as calculated from the cultivated area reported in Pakistan Agricultural Statistics 2018-19.
Tax revenue from orchards was also estimated for the average of orchards area 2015-17.

The annual revenues from land-based taxes, likely to accrue, as per the current rates, hover around Rs. 4 billion in Punjab, about rupees one billion in KP, Rs. 1.5 to 2. 3 billion in Sindh and less than Rs. 0.5 billion in Balochistan. Total revenues taxes on orchards in the country yield about one billion rupees a year. The considerable variation observed in revenue estimates, based on different sources of cultivated area, i. e., Census of Agriculture and Agricultural

Statistics, points to the need for reconciliation of land records data and their improvement.
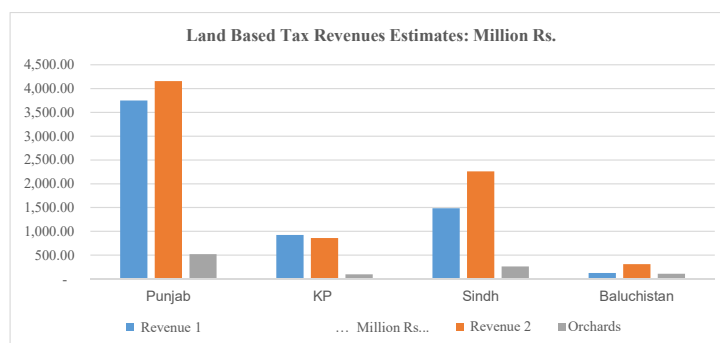

Fig. 2: Land Tax Revenues Estimates by Province: 2017-18; based on the authors calculations given in Table 3

4 Taxation of agricultural income

4.1 Provincial agricultural income tax rates

All provinces have taxed income from crops and orchards but exempted income from livestock, fisheries, and forestry. These sub-sectors of agriculture do not fall under the income tax orbit, which applies only to the crops. The crops are the most vulnerable sub-sector of agriculture, their production subject to vagaries of weather and prices prone to significant seasonal variability. Determination of crop incomes under such circumstances is at best problematic. A lot of confusion has been reported among revenue officials, concerned with the collection of agricultural income tax, on the determination of agricultural incomes and tax revenue estimates thereof (Hayat 2017).

Data on provincial income tax rates structure, currently applicable to the agricultural sectors crop income, are presented in Appendix 1. A perusal of these data brings out the following features:

 – Progressivity in tax rates, albeit varying, across provinces,
 – exempted annual crop income levels among Punjab, KPK and Balochistan are uniforms, < Rs. 400, 000. In Sindh, this limit is < Rs. 1, 200, 000,
 – slabs for various tax rates vary among provinces,
 – tax rates for various slabs also depict considerable inter-provincial variation,
 – Balochistan has the simplest structure for taxing agricultural income, having only two income slabs,
 – Sindh has four income slabs, while Punjab and KP, both, have six income slabs, albeit, with varying limits and rates.

These variations in exemptions in provincial tax structures i. e., different tax slabs and varying exemptions across provinces result in a lot of confusion and low tax revenues.

4.2 Data challenges, revenue estimates and conceptual issues

4.2.1 Data challenges

The biggest challenge in extending income tax net to agriculture comes from the inadequacy of reliable data on agricultural incomes. The revenue estimates are predicated on the availability of data on records of land ownership, information on crop rotation, cropping patterns, and reasonable estimates of per acre use of important inputs: farm labour, farm machinery, seed, chemicals including fertilizers, pesticides, weedicides, irrigation water, etc., in raising one crop acre of various crops grown in various regions/crop zones. In addition to the quantum of these inputs, data on prices thereof are also required along with the land rents and tenure arrangements to share the cost of inputs and farm production. Besides, data on crop yields of the principal products and their by-products, as most of the field crops yield joint products, and prices thereof are required for arriving at the farm incomes. These are daunting requirements and neither researcher nor revenue officials have the luxury of access to such data. Most of the farmers in Pakistan are uneducated and do not keep farm accounts and even the educated ones seldom keep detailed records and those who do so may be unwilling to share.

4.2.2 Methodology and revenue estimates

To overcome the agricultural income data problems, we have relied on GDP data from crops, as published in the Pakistan Economic Survey (Statistical Supplement) 2019-20 (GOP (2020a)). Combining these data with the provincial shares in total crop area, averaging (2015-17) at 73, 14, 8, and 5 per cent, respectively, for Punjab, Sindh, KP and Balochistan, respectively, (GOP (2019)), GDP for the 2017-18 crop sector was proportionately apportioned among the provinces, assuming uniform productivity across provinces (Table 4).

Following Nasim (2012), the provincial GDP was distributed among various farm size classes as delineated in the 2010 Census of Agriculture (GOP 2012). Based on these data, two sets of provincial revenues from agricultural income tax: one by using the agricultural income tax rates applied by the provincial governments and the second by applying the FBRs tax rates for non-salaried persons for various income slabs, were estimated. The FBRs income tax rates as applicable to incomes of non-salaried persons are given in Appendix 2.

Table 4: Provincial shares in crop area and crop sector GDP in 2017-18

Province	Share in Total Crop Area	GDP from Crops
Pakistan's GDP from crops	100	2,964,892 Million Rs.
Punjab	73	2,164,372
KP	8	237,191
Sindh	14	415,085
Baluchistan	5	148,244

Agricultural Statistics of Pakistan 2017-18 and Pakistan Economic Survey (Statistical Supplement) 2019-20

4.2.3 Crop sector GDP and its provincial allocation: mathematical formulation

$$GDPC = YC = GDPC*Balc+GDPC*KPc+GDPC*Pbc+GDPC*Sdc \quad (2)$$

– GDPC and YC: Gross domestic product from crops at the national level in 2018,
– Balc : Balochistan share in total crop area,
– KPc : Khyber Pakhtunkhwa share in total crop area,
– Pbc : Punjab share in total crop area, and
– Sdc :Sindh share in total crop area.

GDPC and YC= Gross domestic product from crops at the national level in 2018.

4.2.3.1 Distribution of provincial crop GDP among farm size categories: mathematical formulation
Distribution of crop sector GDP among farm size classes: e.g. $= GDPC*Balc = Pi*Yc = \sum F_i * GDPC * Balc$, where,

– F_i is the share of various farm size categories in the total crop area of a given province, here Balochistan, and
– $GDPC*Balc$ is the Crop sector GDP of Balochistan, standing for provincial crop GDP. This can also be denoted by $Pi*Yc$

4.2.3.2 Provincial revenue estimates from income tax on crop income: mathematical formulation

– Average Income per farmer: $Fi*PiYc/$ (Number of Farmers in respective size categories of a given province),
– Income tax: $[(Fi*PiYc)/(Number\,of\,Farmers\,in\,respective\,farm\,size\,classes),]*$ $[(Income\,tax\,rate\,for\,that\,income\,slab)+(Fixed\,income\,tax\,for\,that\,category,\,if\,any)]*$ $(Number\,of\,farmers\,in\,that\,size\,category)$
– Total income tax revenue for the province: $\sum[(Fi*(Pi*Yc))/$ $(Number\,of\,Farmers\,in\,respective\,classes)]$ $*[(Income\,tax\,rate\,for\,that\,income\,slab)+(Fixed\,income\,tax\,for\,that\,category,\,if\,any)]$ $*(Number\,of\,farmers\,in\,that\,size\,category)]$.

4.2.3.3 Conceptual issues and data limitations

The GDP estimates are worked out at output and input prices obtained at the market level. It is a common observation that market prices of outputs are higher as compared to the farm gate prices while the opposite is true for inputs prices. Both these developments tend to lower farm income, as compared to the corresponding incomes calculated at farm gate prices. Thus, tax revenues based on the farm incomes, as worked back from GDP estimates, are likely to suffer from an upward bias. Let us also hasten to add the approach adopted here assumes no productivity differences in crop area, neither among the provinces nor across various farm size categories in a given region/province. These are very bold assumptions. But given the nature of assignment and paucity of requisite data on the subject we do not have much choice. Nevertheless, we are sanguine many of these things would cancel out each other and the estimated results will not be much affected.

It may be mentioned that crop income, unlike income of non-salaried persons, is subject to vagaries of weather as well as fluctuations in commodity prices. Thus, the adoption of tax rates for non-salaried persons in agriculture may not be equitable and result in exaggerated estimates. However, for want of a better option, we do not have much choice. A notable feature of agriculture in Pakistan is the increasing use of hired labour in performing various field operations. Hired labour though involved in all field operations but is mainly used in sowing, inter culture, plant protection, harvesting and post-harvest management of the produce. The use of contractual labour, where a team of workers contract to perform a given operation for an agreed payment in cash or kind is on the rise. The use of contract labour is especially important in planting, inter culture, plant protection, and harvesting and post-harvest operations of all crops and vegetables. However, precise information about the contributions of such labour in the cost of production/farm incomes is not available. Discussions with crop experts and knowledgeable farmers suggest such labour accounts for 5 to 15 per cent of the total cost for various farm size classes; share tends to increase with farm size and large farmers rely more on such labour. We have adopted a share of such labour at 10 % and discounted value addition of the crop sector accordingly and calculated Tax revenue 2, both at the provincial and FBR tax rates.

4.2.4 Empirical estimates of tax revenues

Agricultural Income Tax revenues estimated for various farm size classes, following the two methods explained above, are detailed in Annexes 3 -6 and summarized in Table 5.

Estimate 1, of tax revenues from the crop income, as per rates fixed by the provincial governments, work out to Rs.37.12 billion in Punjab, Rs.7.69 billion in Sindh, Rs.8.66 billion in KP and Rs.4.92 billion in Balochistan, totalling Rs.58.39 billion in 2017-18. The revenue estimates calculated at the FBR rates, applicable for non-salaried persons, work out to Rs.134.3 billion in Punjab, Rs.29.63 billion in Sindh, Rs.10.21 billion in KPK and Rs.24.19 billion in

Table 5: Summary of tax revenue estimates

| | Revenue Estimate 1 | | Revenue Estimate 2 | |
	FBR @	Provincial @	FBR @	Provincial @
		...Rs. Million...		
Punjab	134,296.31	37,123.13	111,585.27	33,495.88
Sindh	29,630.06	7,693.03	24,662.84	6,629.98
KP	10,214.65	8,657.04	8,505.91	7,225.42
Baluchistan	24,197.05	4,915.57	20,860.30	4,314.35

Appendices 3 - 6

Balochistan. These tax revenues add up to Rs. 198.37 billion in 2017-18, 240 per cent more than the corresponding estimates calculated at the provincial tax rates. Total revenue estimate 2, worked out after allowing a deduction for use of hired labour, adds up to about Rs.52 billion at the provincial tax rates and Rs.166 billion at the FBR tax rates for non-salaried persons. Tax revenue estimates calculated at the FBR rates are much higher as compared to the corresponding revenues calculated as per the provincial income tax rates.
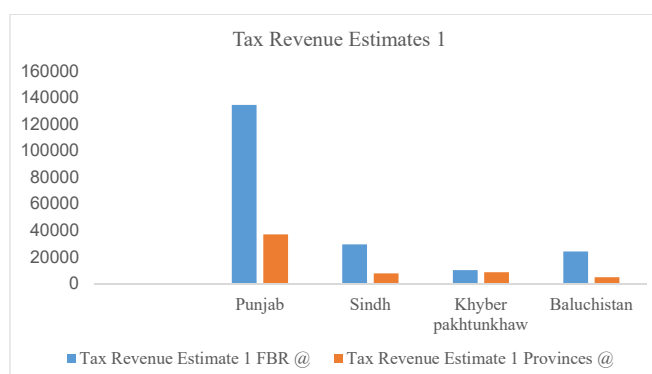
Fig. 3: Tax revenue estimate 1; based on the authors estimates reported in Appendices 3- 4

These estimates are indicative of the potential revenues under two alternatives and need to be refined in the light of ground realities and weighed against collection charges involved in their collection.

5 Conclusions

The structure of land distribution in Pakistan is characterized by an overwhelming majority of small farms, 67 per cent, commanding a small fraction of the cultivated area,18 per cent, on one hand, and a tiny fraction of large holdings, 1.36 per cent, controlling a significant proportion, 28.53 per cent, of the area on the other hand. With a fast-growing population, increasing urbanization, and associated developments average farm size in the country has declined from 13
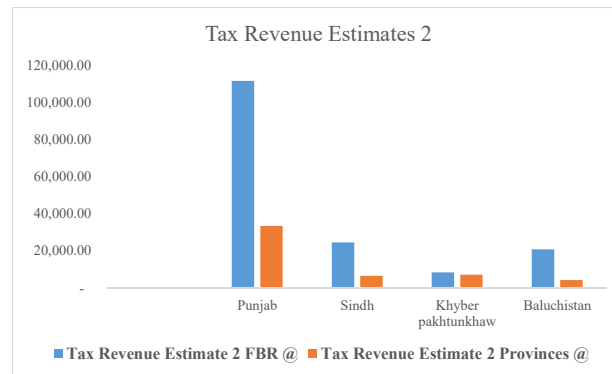
Fig. 4: Tax revenue estimate 2; based on the authors estimates reported in Appendices 5-6

acres in 1972 to 6.41 acres in 2010. To augment their resources, the provincial governments have introduced land-based taxes on agriculture in addition to land revenues. There is a considerable diversity and variation in land-based tax rates across the provinces. The annual tax revenues from the cultivated land, including orchards, are estimated at about Rs. 5 billion in Punjab, 2.5 billion in Sindh, one billion in KP, and less than half a billion in Balochistan. The provincial tax rates applied to agricultural income, as the land-based tax rates, reflect a lot of variation in the rates, income slabs and exemption limits across the provinces. Annual crop income below Rs. 400,000/ is exempted from income tax in Punjab, KP, and Balochistan while this is Rs. 1200, 000 in Sindh.

Based on the 2017-18 GDP estimates from crops, at the national level, two sets of income tax revenues were estimated: one at the provincial rates and the other at the FBR tax rate applicable to non-salaried persons. The income tax revenues from crop income, at the current provincial rates, work out to Rs. 34 to 37 billion in Punjab, Rs. 7 to 8 billion in Sindh, Rs. 7 to 9 billion in KP and Rs. 4 to 5 billion in Balochistan. The corresponding revenue estimates at the FBR rates are Rs. 112 to 134 billion in Punjab, Rs. 25 to 30 billion in Sindh, Rs. 9 to 10 billion in KP and Rs. 21 to 24 billion in Balochistan. These estimates are indicative of the revenue potential from taxation of agricultural incomes and are considerably higher as compared to the ones estimated by Nasim (2012) and by Mukhtar and Nasim (2016), primarily because of the higher GDP incomes in 2017-18, forming the basis of current study, as compared to those of the previous studies.

Agriculture is a risky profession, facing uncertainty in production, and risks of marketing and price fluctuations. A tax on agricultural incomes though desirable for considerations of equity and need for resource mobilization is nevertheless difficult to levy on account of problems and challenges of assessment, high collection costs and governance issues. Thus, while designing policy on the subject and choosing instruments of taxing farm incomes, special features of agriculture and administrative challenges involved in the process must be given due consideration to avoid adverse impacts on investments, farm production and productivity. Agriculture, treated as a poor relation, in Pakistan is in dire need

of a level playing field, including the provision of social and economic infrastructure. Making the farmers and rural populace aware of their responsibilities in this context and allocating an increasing share of the tax revenues for the service and cause of agriculture can help motivate farmers to play their due role in resource mobilization.

It is imperative to narrow inter-provincial differences and disparities in structure and rates of tax on agricultural incomes. As per the data published in Pakistan Economic Survey, the performance of the livestock subsector has been much better as compared to crops. However, its income is exempted from income tax. It is quite queer that the sub-sector which is showing higher growth and performing better is exempted, while the sub-sector with poor performance is subjected to income tax. Efforts are needed to develop institutional capacity to evolve an adequate and equitable framework for taxing incomes from various subsectors of the economy. It is equally important to develop an efficient and effective administrative set-up to implement an income tax system in agriculture, sensitive to its requirements and ground realities, as reliance on the existing revenue machinery may kill the goose expected to lay the golden eggs.

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Appendix 1: Provincial agricultural income tax rates

	Income Slabs : Rs	Tax Rate	Fixed Tax (Rs)
		Punjab	
1	< 400,000/	0	0
2	400, 000 < 800, 000/	0	1,000/
3	800, 000< 1200, 000/	0	2. 000/
4	1, 200, 000 < 2400, 000/	5 % of income> Rs. 1, 200,000/	0
5	2, 400, 000 < 4800,000/	10% of income> Rs. 2, 400,000/	60,000/
6	> 4, 800,000/	15 % of income > Rs. 4, 800, 000/	300,000/
		Sindh	
1	< 1, 200. 000/	Nil	
2	1,200, 000 < 2, 400, 000/	5 % of the amount > Rs. 1200, 000/	0
3	2, 400, 000 to< 4, 800, 000/	10 % of the amount > Rs. 2400,000/	60,000
4	> 4 , 800, 000	15% of the amount > Rs. 4, 800, 000/	300,000
		KP	
1	< 400,000/	Nil	0
2	400, 000 to < 550, 000	5 % of the amount >Rs. 400, 000/	Nil
3	> 550, 000 to< 750, 000	7.5 % of the amount > Rs. 550,000/	7, 500
4	> 750, 000 to < 950,000	10 % of the amount > Rs.750,000/	22, 500
5	> 950, 000 to < + 1,100, 000	15 % of the amount > Rs. 950, 000/	42, 500
6	> 1, 100, 000	17.5 % of the amount> Rs. 1100,000/	65,000
		Baluchistan	
1	< 400,000	Nil	0
2	> 400, 000	5 % of the amount > Rs. 400,000	Nil

Appendix 2 FBR income tax rates for non-salaried persons

Income Slabs: Rs	Tax Rates
< 400,000	0%
400,001 − 600,000	5 % of the amount > 400,000
600, 001 −1,200,000	10 % of the amount > 600, 000
1,200,001 − 2,400.000	70,000 + 15 % of the amount > 1,200,000
2,400,001 − 3,000,000	250,000 + 20 % of the amount >2,400,000
3,000,001 − 4,000,000	370,000 + 25 % of the amount > 3.000,000
4,000,001 − 6,000,000	620,000 + 30% of the amount >4,000,000
> 6,000,000	1,220,000 + 35 % of the amount > 6,000,000

Source: FBR Tax Rate Card: 2021, published by Khilji and Co

Appendix 3 :Revenue estimates 1 on the basis of provincial tax rates, 2017-18

Farm Size	Punjab	Sindh	KPK	Baluchistan
		...Rs. Million		
<1 acre	-	-	-	-
1 - 2.5 acres	-	-	-	-
2.5 - 5 acres	-	-	-	-
5 - 7.5 acres	772.83	-	-	-
7.5 - 12.5 acres	570.11	-	-	-
12.5 - 25 acres	197.72	-	802.28	-
25 - 50 acres	5,095.53	222.69	1,856.51	113.11
50 - 100 acres	7,622.78	1,643.85	2,176.99	398.25
100-150 acres	6,188.12	1,171.37	1,060.02	235.34
150 acres +	16,676.03	4,655.12	2,761.24	4,168.88
Total Revenue	37,123.13	7,693.03	8,657.04	4,915.57

Notes and data source: Revenue estimate 1 based on crop income without allowing any allowance for cost of hired labour; calculations by the author.

Appendix 4 :Revenue estimates 1 on the basis of FBR tax rates for non-Salaried persons: 2017-18

	Punjab	Sindh	KPK	Baluchistan
		Rs, Million		
< 1 acre	-	-	-	-
1 - 2.5 acres	-	-	-	-
2.5 - 5 acres	-	-	-	-
5 - 7.5 acres	1,138.90	-	-	-
7.5 - 12.5 acres	12,447.18	-	-	-
12.5 - 25 acres	22,620.07	2,130.52	805.09	-
25 - 50 acres	21,681.52	6,006.69	1,576.82	113.11
50 - 100 acres	21,803.14	6,885.19	1,881.46	645.68
100-150 acres	15,162.86	3,321.32	1,215.04	509.12
150 acres +	39,442.64	11,286.34	4,736.23	22,929.14
Total Revenue	134,296.31	29,630.06	10,214.65	24,197.05

Notes and data source: Revenue estimate 1 based on crop income without allowing any allowance for cost of hired labour; calculations by the author.

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Appendix 5:Revenue estimate 2 on the basis of provincial tax rate: 2017-18

Farm Size categories	Punjab	Sindh	KPK	Baluchistan
		...Rs. Million		
<1 acre	-	-	-	-
1 - 2.5 acres	-	-	-	-
2.5 - 5 acres	-	-	-	-
5 - 7.5 acres	-	-	-	-
7.5 - 12.5 acres	570.11	-	-	-
12.5 - 25 acres	629.34	-	543.44	-
25 - 50 acres	5,864.97		1,412.59	47.08
50 - 100 acres	6,381.16	1,312.01	1,867.54	328.26
100-150 acres	5,265.27	1,306.61	932.78	203.93
150 acres +	14,785.03	4,011.36	2,469.08	3,735.09
Total Revenue	33,495.88	6,629.98	7,225.42	4,314.35

Source: Calculations by the author, after allowing 10 percent deductions for hired labour

Appendix 6 :Revenue estimates 2 on the basis of FBR tax rates for non-salaried persons: 2017-18

Farm size categories	Punjab	Sindh	KPK	Baluchistan
		Rs. Million		
<1 acre	-	-	-	-
1 - 2.5 acres	-	-	-	-
2.5 - 5 acres	-	-	-	-
5 - 7.5 acres	-	-	-	-
7.5 - 12.5 acres	8,351.92	-	-	-
12.5 - 25 acres	18,606.76	1,408.58	485.3	-
25 - 50 acres	18,508.46	4,824.27	1,270.19	47.08
50 - 100 acres	18,078.29	5,889.67	1,595.61	505.71
100-150 acres	13,009.54	2,756.09	1,002.91	414.89
150 acres +	35,030.31	9,784.23	4,151.90	19,892.63
Total Revenue	111,585.27	24,662.84	8,505.91	20,860.30

Source: Calculations by the author, after allowing 10 percent deductions for hired labour