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Fiscal Space for Investment in Agriculture— A Review of Taxes and Subsidies in Agriculture in Pakistan

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Despite agriculture's importance in terms of its relationship to poverty and welfare of the poorest households, the government finds it increasingly difficult to find the fiscal space for budgetary allocations for agriculture and agricultural R&D. We hypothesise that expansion of expenditures on agriculture is possible in the short to medium run with a combination of re-allocations and new taxation. We argue that existing spending aimed towards the agriculture sector includes very large outlays on implicit subsidies that are largely unproductive. These costs include: subsidisation of gas for fertiliser plants, which approach Rs 48 billion in gas subsidies to fertiliser companies; the full costs of the infrastructure and operation and maintenance of the irrigation system, which amount to Rs 166 billion per year; and losses on wheat procurement, which have been about Rs 25 billion recently.

On the taxation side, while agricultural producers are not currently liable to pay tax on income, they do however pay indirect taxes on agricultural inputs. Using a Social Accounting Matrix (SAM), we estimate agricultural producer pay about Rs 61 billion, mostly from GST taxes on fertiliser. Using a Computable General Equilibrium model, we show that agriculture could contribute further with an income tax on agricultural income. With a "low-rate-wide-base" income tax of 15 percent on non-poor, medium and large farms, as much as Rs 130 billion could be raised, enough to cover, for example, a sizable portion of the operation and maintenance cost of the irrigation system.

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INTRODUCTION

Finding the fiscal space for development expenditures and investment is always a challenge for developing countries. This is especially difficult in a country with twin deficit problems and frequently high inflation, along with requirements for a large military budget. Under the directive of IMF programs, Pakistan has been seeking to arrest

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its growing fiscal deficits through tax reforms. However, these have had limited short-term impact on the tax-to-GDP ratio (see Table 1). When fiscal space is not growing, and is seen as a very binding constraint, investments such as agricultural R&D fail to be prioritised. In this paper, we show that even in what appears to be a severely constrained financial environment, fiscal space can be found with structural analysis and rationalisation of existing spending to maintain key development investments.

Table 1

Tax to GDP Ratio

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
GDP (fc, current prices)	14,249	17,648	19,362	21,497	23,904	25,822
Tax Revenue	1,483	1,679	2,025	2,125	2,514	2,910
Tax to GDP Ratio	*10.4%*	*9.5%*	*10.5%*	*9.9%*	*10.5%*	*11.3%*

Sources: Government of Pakistan. Ministry of Finance, Economic Survey of Pakistan, 2015, and Federal Budget in Brief, various issues.

Spending on agricultural R&D in Pakistan has lagged. In 2009, for every $100 of agricultural output in Pakistan, $0.21 was invested in agricultural R&D. This level represents a decline from a high of 0.43 in 1991 and indicates that investments failed to keep pace with growth in the country's agricultural GDP. This ratio is also one of the lowest in South Asia, when compared with India (0.40), Sri Lanka (0.34), Bangladesh, (0.32), and Nepal (0.26) [ASTI-PARC (2012)].

Two common assertions are made to explain or justify this: either that the present fiscal space in Pakistan is too tight for spending on agriculture, or that the sector pays no taxes, leading to the (debatable) conclusion that agriculture therefore cannot and/or should not be a beneficiary of government spending.

We explore the validity of both assertions and conduct a review of taxes and subsidies related to the agriculture sector in Pakistan. We use a new 2011 Social Accounting Matrix (SAM) for Pakistan [PSSP (2015)] to attribute indirect tax revenues paid on commodities to sectors, and we bring together recent literature on implicit subsidies in agriculture, to create a comprehensive picture of the fiscal aspects of the sector. We show that the sector does in fact pay taxes in the form of indirect taxes on inputs, though the potential for further direct taxes exists, and, with a combination of plausible subsidy rationalisations and new taxes, sufficient fiscal space can be found to double spending on agriculture R&D.

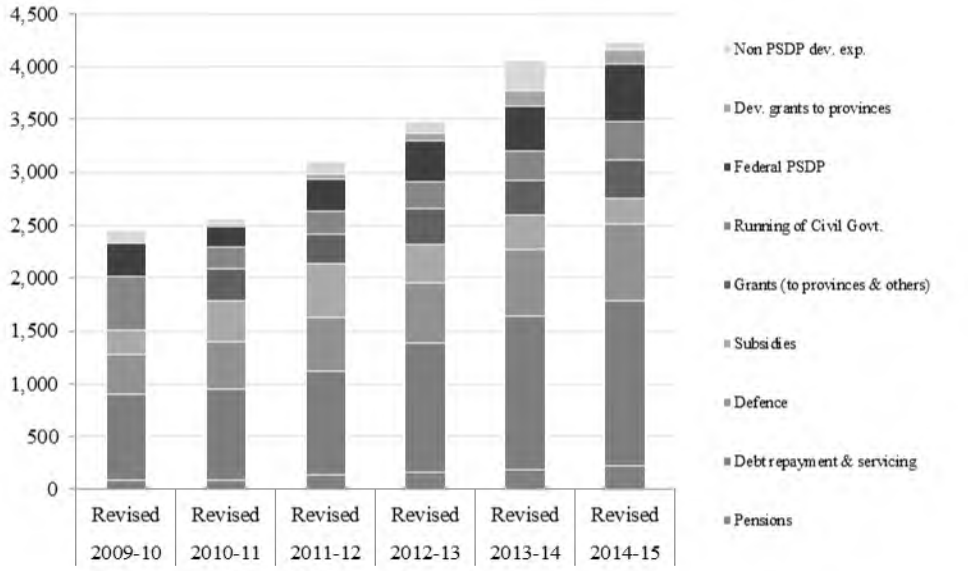
In Section 1, we begin with an overview of the current state of fiscal space in the overall government. In Section 2, we review recent literature on subsidies in agriculture, particularly the subsidies on fertiliser, of wheat farmers and millers, and irrigation water. In Section 3, we look at the structure of taxation in the country and estimate the amount of indirect taxes that can be attributed to agriculture. In Section 4, we use a computable general equilibrium (CGE) model to estimate the potential for revenue generation from a tax on agricultural incomes. Section 5 provides our summaries and conclusions.

SECTION 1:
AN OVERVIEW OF THE STATE OF FISCAL SPACE

Much of Pakistan's available financial resources go to defense spending, debt repayment and servicing, and the running of the government itself, leaving little for development expenditures in general. Figure 1 shows the federal government's spending, where the share of development related spending (on Federal Public Sector Development Plan - PSDP, development grants to provinces, and "other development expenditure") is dwarfed by current expenditures.

Fig. 1. Breakdown of Federal Government Spending

(Billion Rs)



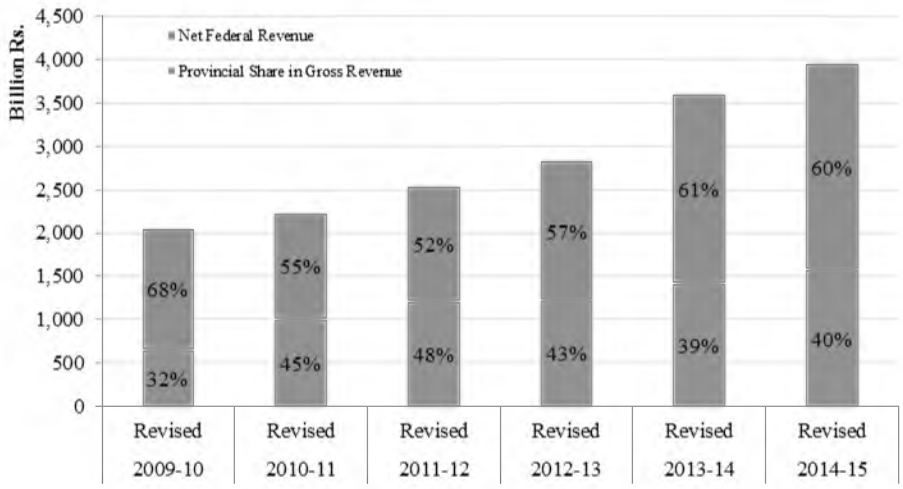
Source: GoP, Ministry of Finance, Federal Budget in Brief, various issues.

In this analysis, we start with 2009-10 to capture the pre-devolution period. In 2010-11, devolution came into effect in Pakistan and major federal ministries were dissolved. Subjects such as health, education and agriculture, formerly controlled at the federal level, became provincial subjects such that provincial departments for these subjects are now the primary policy-making institutions and provincial governments control their budgetary allocations. As the size of the federal government shrank, the federal government chose to allocate a larger share to subsidies and (non-development) grants.[1] The share of PSDP and non-PSDP development expenditures, in 2010-11, shrank. While, the share of the PSDP has since returned to normal "pre-devolution" levels, in the absence of ministries for food, health and education, the federal government now allocates larger shares towards subsidies and/or non-development grants.

[1]These grants include grants-in-aid to provinces and grants to others. Grants to others form the bulk of these grants with large outlays including, in 2015-16, allocations for "contingent liabilities", "miscellaneous grants", "other outstanding liabilities", and transfers to AJK, Gilgit Baltistan, and loss-making public sector enterprises.

Fig. 2. Share of Provinces vs. Federal Share in Gross Revenues Based on Revised Allocations

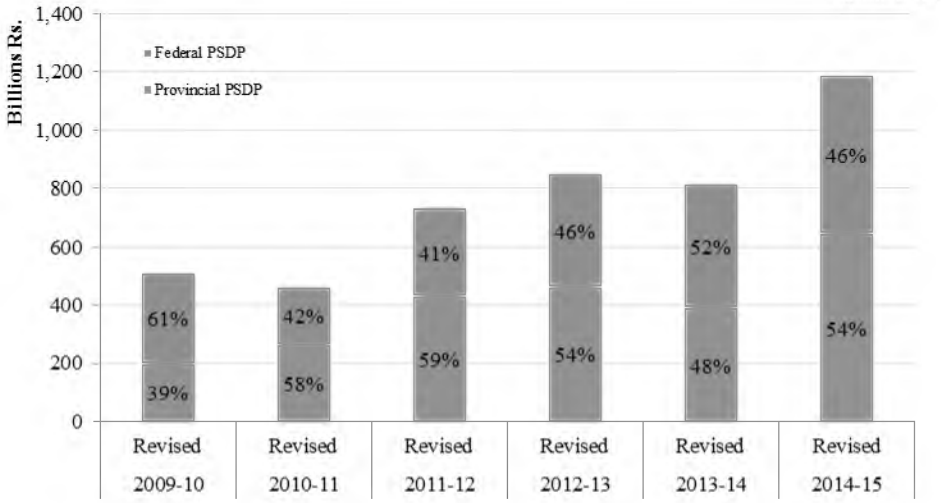
(Billion Rs)



Source: GoP, Ministry of Finance, Federal Budget in Brief, various issues.

Fig. 3. Federal PSDP and Provincial PSDP

(Billion Rs)



Source: GoP, Ministry of Finance, Federal Budget in Brief, various issues.

Post-devolution, these federal ministries have been replaced with provincial counterparts (though new federal ministries have also been created to provide a central coordinating body). For agriculture, the former federal Ministry of Food and Agriculture was dissolved and responsibilities shifted to agriculture departments in the provinces. However, it became apparent quickly that Federal dimensions were still needed and the Ministry of National Food Security and Research (MNFSR) was created. In tandem, the 2009 (or 7th) National Finance Commission awarded the provinces a larger share of the

"divisible pool" of tax revenues beginning in 2010-11. As a result, the provincial share in gross revenues grew from 31 percent of the total revenues in 2009-10, the year before devolution started, to 39 percent in 2014-15.

SECTION 2: REVIEW OF GOVERNMENT EXPENDITURES TOWARDS AGRICULTURE

The government's expenditure on Pakistan's agriculture sector takes the form of a few major interventions. On the output side, the government's most direct engagement with the sector is through wheat procurement and procurement pricing.

On the input side, the government has intervened in the fertiliser sector (since 1989) with an import-substitution policy that supports local fertiliser manufacturers. In addition to fertiliser, the government plays a major role in water for irrigation as the provider, operator and maintainer of large dams, barrages and a massive canal-based irrigation system that is critical to agriculture.

Furthermore, the government has historically played a role in agricultural R&D and provides extension services to farmers through which information and new technologies are disseminated. In the past, these measures were coordinated by the Federal Ministry of Agriculture, and research activities were led by its Pakistan Agricultural Research Council (PARC). Devolution in 2010 led to the Federal Ministry of Agriculture being dissolved in favour of provincial departments instead, which now hold the responsibilities (and finances) for such interventions. While a Ministry for National Food Security and Research was created at the Federal level, and PARC remained Federal, the total budget allocation for agriculture declined sharply: in 2009-10, the Food and Agriculture division received Rs 12 billion (according to the revised budget figure) in the PSDP. Since its inception, the new MNFSR has received significantly smaller allocations ranging from Rs 3 to 5 billion (as per the revised budget figures). Hence, the government's major outlay towards the agriculture sector is now dominated by the three major subsidies/interventions mentioned earlier.

Subsidy to Fertiliser Manufacturers

The government of Pakistan has been following an import-substitution strategy for the fertiliser sector via what is effectively a subsidy to local fertiliser manufacturers: gas is provided to fertiliser producers as "feedstock" at prices substantially lower than what other sectors pay for gas ("fuel-stock"). Ali, *et al.* (2015) calculate the rupee value of this subsidy, and found that, in 2013-14, the loss to the government ballooned to Rs 48 billion (from Rs 6 billion in 2000-01). This sharp increase occurred due to the country's energy crisis and consequent increases in fuel prices (Table 3).

This loss is especially large when compared with the government's spending on agricultural R&D (estimated to be about Rs 8 billion in 2009 by ASTI-PARC 2012) and budget allocations for the ministry of national food security and research (Rs 5.5 billion in 2014-15).

Ali, *et al.* (2015) argue that, in recent years, this loss is not justifiable since 2009-10 when the international price of urea experienced sharp declines but the price of domestically produced urea increased consistently, while a severe energy shortfall arose in the country. Figure 4 shows these trends and the price of domestic urea if there were no subsidy.

Table 3

Value of Subsidy to Fertiliser Production

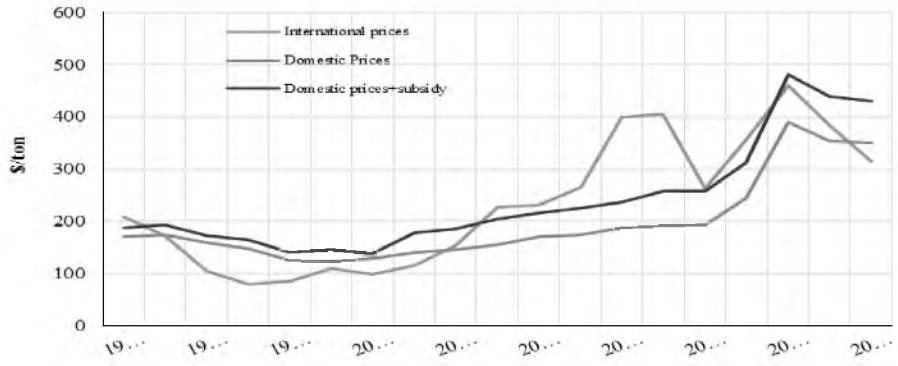
Year	Gas Prices (Rs/mcf) Feed Stock	Fuel-Stock	Difference in Price	Gas Consumed (billion mcf)	Total Production Subsidy* (Billion PKR)
2000-01	63.9	117.2	53.2	106.0	5.64
2001-02	70.8	95.6	24.7	110.0	2.72
2002-03	76.1	170.4	94.4	112.8	10.64
2003-04	79.6	175.7	96.1	116.1	11.16
2004-05	61.2	185.7	124.5	119.9	14.93
2005-06	110.8	229.2	118.4	124.2	14.71
2006-07	124.7	256.7	132.0	122.8	16.20
2007-08	124.7	256.6	132.0	128.1	16.90
2008-09	120.3	341.2	220.9	129.6	28.63
2009-10	132.3	360.4	228.1	140.5	32.05
2010-11	138.7	375.2	236.5	140.7	33.29
2011-12	161.8	492.4	330.6	135.0	44.62
2012-13	116.3	460.0	343.7	116.7	41.37
2013-14	123.4	488.2	364.8	128.3	48.04

Source: Ali, *et al.* (2015).

Notes: * The production subsidy on fertiliser is calculated as the difference between fertiliser feedstock and fuel-stock prices per million British thermal units (MMBTU), multiplied by the amount of feedstock gas used by each firm and then aggregated for the sector. The conversion from million cubic feet (MMCFT) to MMBTU was done at the rate of 1 MMCFT=950 MMBTU for SSGCL and SNGPL, and at the rate of 1 MMCFT=750 MMBTU for Mari Gas. Gas consumption figures for the sector were obtained from HDIP (2013), NFDC (1998), NFDC (2008), and NFDC (2014).

Beginning in 2009-10, in the absence of the subsidy, the price of domestic urea (produced using local gas growing increasingly short in supply) would have been about the same as that of foreign urea, or higher. In 2013-14, the price of domestic urea was higher, even with the subsidy. Ali, *et al.* (2015) conclude that the subsidy benefits only fertiliser companies, and is resulting in the misallocation of scarce natural gas.

Fig. 4. International versus Domestic Urea Prices with and Without Subsidies (1995–2014)



Source: Ali, *et al.* (2015)

Note: Domestic price without subsidy is calculated by adding back the per unit subsidy to domestic prices.

Subsidisation of Irrigation Waters

A major source of government expenditures for agriculture, which is basically a subsidy, is for irrigation infrastructure. In 2007, the Punjab Irrigation and Power Department (IPD) made an inventory of assets used in the irrigation system for the management of these assets. (This document, written by the Strategic Planning/Reform Unit of the IPD, is hereafter called AMP for Asset Management Plan.) Making use of the data from that analysis, Davies (2012) derived the annual costs for the various infrastructures in the irrigation system. Based on that work, it was possible to estimate the annual costs to maintain that infrastructure.

Figure 5 provides perspectives on the infrastructure required to distribute water through the irrigation system, from dams through the extensive network of barrages, main and secondary canals. The costs in the Figure essentially start from the source of water in a dam (at the top) and show costs for infrastructure at each step through the irrigation system. These are on a per hectare basis and are annual costs. The largest cost is to support infrastructure related to the main canals, which would cost $43.68 per year for each hectare. The second largest costs are dams and secondary canals, which cost $37.82 and $27.63 respectively, per hectare. The overall costs are $135.47 per year per hectare. For comparison, the gross margin of a wheat producer, from a recent analysis of resource conservation technologies, was about $600 per hectare. While the gross margin is not profits, and some expenses have to come out of it, a farmer could pay, but full payment will be a challenge to absorb, especially for smaller farmers. Therefore some participation by the government seems likely to be needed.

The Punjab IPD, as part of the assessment of its irrigation infrastructure, determined whether certain expenses should be supported by the public or private sectors. The headworks and barrages, link canals and drainage infrastructure should be left in the public sector, presumably because they are national, or are part of the main Indus River system, or are external to farm decisions. The portion of dam costs that goes into storage is put in the private sector, but it could well be that some of those expenses could logically go to the public sector. The net result is that cost per hectare to farmers to keep up and supervise irrigation infrastructure would be $114.30 per hectare, or $1.66 billion per year to service 14.6 million hectares of irrigated crop land.

Fig. 5. Total Irrigation Costs, Dollars/Hectare

Source: Davies (2012).

Wheat Procurement Subsidies

Wheat procurement by the government remains a major case of explicit subsidisation of Pakistan's agriculture sector wherein the government purchases wheat from farmers at government set prices, and restrictions are imposed on the import and export of wheat by the private sector. Successive governments have continued these interventions in some form since independence, with the objective of supporting both farmers (with high producer prices) and consumers (by managing food inflation).

Dorosh and Salam (2008) find that, in terms of supporting wheat producers, it is only 20 percent of wheat farmers who are relatively large and produce surpluses that are able to sell to the government, and that 20 percent of wheat farmers are in fact net purchasers of wheat.

In the next stage, wheat procured by the government is sold to flour mills (on quota basis) at release prices set below per unit procurement costs, to the benefit of millers and resulting in losses to the government. On the consumer side, Dorosh and Salam (2008) employ price multiplier analysis and find that the final impact on overall inflation levels is not very large.

Table 5

Wheat Procurement Unit Subsidy and Total Subsidy, 2005-06 to 2012-13

Year	Procurement Quantity ('000 tons)	Support Price (Rs/kg)	Release Price (Rs/kg)	Unit Subsidy* (Rs/kg)	Financial Loss* (Bn Rs)	Financial Loss* (Bn 12/13 Rs)
2005-06	3,939	10.38	10.75	1.40	5.51	12.18
2006-07	4,514	10.63	11.63	1.13	5.08	10.41
2007-08	4,422	15.63	15.63	2.15	9.51	17.40
2008-09	3,917	23.75	18.75	7.76	30.41	46.07
2009-10	9,231	23.75	24.38	4.28	39.46	53.53
2010-11	6,715	23.75	26.25	3.50	23.50	28.01
2011-12	6,150	26.25	33.25	1.08	6.61	7.10
2012-13	5,948	30.00	33.25	4.18	24.84	24.84
Ave 06-08	**4,292**	**12.21**	**12.67**	**1.56**	**6.70**	**13.33**
Ave 11-13	**6,271**	**26.67**	**30.92**	**2.92**	**18.32**	**19.98**

Source: Dorosh, *et al.* (2015).

* Possible financial loss for each year is calculated as the unit subsidy (domestic procurement price plus the cost of incidentals minus the release price) times the quantity of domestic procurement.

Thus, the direct benefits of this wheat subsidy are limited to the relatively large wheat farmers and wheat millers while the losses incurred are substantial. Dorosh, *et al.* (2015) estimate that in 2012-13, the total cost to the government of these interventions (accounting for storage and handling costs) was Rs 25 billion. In other years, (FY 2009 and FY 2010) this loss was as high as Rs 46 -54 billion in real terms. See Table 5. The average loss over the period FY 2011–FY 2013 was 50 percent higher in real terms than the average over the period FY 2006–FY 2008 due largely to a 46 percent increase in the average quantity procured each year. Reducing quantities of procurement to earlier levels could save 6.7 billion rupees per year.

SECTION 3
A REVIEW OF TAX COLLECTION IN PAKISTAN

Major Taxes in Pakistan

Historically, Pakistan has relied considerably on indirect taxes to raise revenues, particularly the General Sales Tax (GST)—an ad valorem tax imposed on various goods. Furthermore, in 2010-11, tax reforms led to the removal of numerous GST exemptions, including exemptions for agricultural inputs such as fertiliser,[2] which had been introduced over the years on various commodity groups in ad-hoc measures. Table 6 decomposes Pakistan's total tax collection by type of tax for 2012-13, when these reforms had become effective. It shows that 60 percent of taxes came from indirect taxes in that fiscal year (FY).

Direct taxes accounted for 33 percent of tax revenues in 2012-13, which came mainly from either withholding tax (WHT), deducted at the source on salaries, contracts, and bank transactions, or as income taxes paid by various businesses. Agricultural enterprises, however, are exempt from paying these. This means that GST paid on inputs is, formally, the only point at which the agricultural producer currently becomes subject to taxation. However, withholding taxes on imported goods (classified as direct taxes by the FBR) are also arguably borne by producers who purchase them if these passed by importers. In the following, we estimate the total tax revenues (indirect taxes on inputs and WHT on imports) that can be attributed to the agriculture sector.

Table 6

Overall Tax Collection by Type of Tax—FY 2013

(Billion Rs)

	Federal	Provincial	Total	% Share
Indirect Taxes	**1,348**	**5**	**1,352**	**60**
Excise taxes	121	5	126	6
GST - on domestic goods	413		413	18
GST - on imports	430		430	19
Surcharges	142		142	6
Custom duties	249		249	11
Export rebates (customs)	-8		-8	0
Direct Taxes	**743**	7	**750**	**33**
Withholding taxes (WHT) on imports	103		103	5
All other WHT (salaries, contracts, banking etc.)	279		279	12
Other income taxes (other than WHT)	340	7	347	15
Other direct taxes (non-income tax)	21		21	1
Other Taxes (stamp duties, motor vehicle taxes etc.)		**142**	**142**	**6**
Total	**2,091**	**153**	**2,244**	**100**

Source: Federal Board of Revenue Annual Report 2012-13 for federal taxes, Economic Survey 2013-14 for provincial taxes.

[2]Presidential Amendment Ordinance, 2011—SRO 229(I)/2011—Dated 15.03.2011—Through this notification the Federal Government rescinded three notifications namely SRO 535(I)/2008 Dated 11.06.2008, SRO 536(I)/2008 Dated 11.06.2008 & SRO 706(I)/2008 Dated 02.08.2010 withdrawing exemption of sales tax on fertilisers, pesticides & agricultural tractors respectively.

Indirect Tax Revenues Raised from the Agriculture Sector

While agricultural enterprises are exempt from income taxes, they do pay indirect taxes on inputs. Agricultural inputs such as fertilisers and pesticides were exempted from GST in 2008, but tax reforms in 2011 led to a loss of this exemption, and then, agricultural inputs were subject to the standard 17 percent rate. The FBR reports indirect tax collections by commodities on which they are paid. We disaggregate indirect tax revenues (and WHT on imports) by the sector that must have purchased these commodities using demand shares from a 2011 Social Accounting Matrix (SAM) for Pakistan [PSSP (2015)].

Table 7

Structure of Aggregate Demand—2011 SAM

(Percentages)

	Demand Share of							
Commodities	Agricul--ture*	Manufac--turing*	Services excl. Transport	Transport	Households and Government	Investment and Stocks	World	Total
Crops	10.23	77.06	2.20	0.00	8.40	1.69	0.43	100
Fruits and Vegetables	5.22	0.07	4.87	0.00	82.41	0.47	6.96	100
Livestock and Poultry	0.64	24.95	0.27	0.00	62.58	11.52	0.05	100
Forestry and Fishing	0.67	20.04	2.73	0.00	68.47	0.00	8.09	100
Mining	0.00	79.70	0.43	0.00	13.53	2.56	3.78	100
Manufacturing of Food	3.27	10.28	4.88	0.02	76.30	0.63	4.63	100
Manufacturing	0.37	39.49	4.89	2.80	26.36	9.46	16.63	100
Petroleum	0.31	46.54	5.39	20.90	22.05	0.17	4.64	100
Fertilisers	86.14	13.21	0.53	0.10	0.00	0.00	0.02	100
Energy	1.69	66.61	5.83	0.85	25.01	0.01	0.00	100
Construction	0.02	15.33	21.80	1.01	0.00	61.76	0.09	100
Services	0.54	11.02	37.51	4.32	43.90	0.02	2.70	100
Transport	0.39	6.80	63.84	2.92	22.08	0.00	3.98	100

Source: Pakistan Social Accounting Matrix 2011(PSSP 2015)

* Agriculture includes crops, livestock, fruits and vegetables, livestock and poultry, and forestry and fishing.

Manufacturing Includes Mining, Manufacturing, Energy and Construction

A SAM captures the flows of incomes and expenditures in the economy between producers, factors of production, households, government and tax accounts, savings and investment, and the rest of the world. Table 7 presents, in condensed form, the demand-side of the economy from the 2011 Pakistan SAM. It shows that the agriculture sector purchases 10.2 percent of crops, 5.2 percent of fruits and vegetables and so on. (Note that it purchases 82 percent of all fertiliser). We then assume that since agriculture buys 10.2 percent of crops, then 10.2 percent of taxes collected on sales of crops must have been paid by agricultural enterprises; similarly for all other commodities.

These calculations show that the agriculture sector paid approximately Rs 46 billion in taxes via purchases of inputs in FY 2013 (Table 8). This sum was paid primarily from three major taxes: Rs 21 billion was paid as GST on domestic goods; Rs 12 billion as GST on imported goods; and Rs 6 billion as WHT on imported goods.[3]

[3] This calculation leaves out indirect taxes on purchases of capital goods such as tractors. In the SAM these purchases are captured under a single investment account, i.e. capital purchases by agriculture are not separated.

Table 8

Estimated Taxes Paid by Agriculture by Type of Tax—(Billion Rs)—FY 2013

	Paid by Agriculture	Overall Tax Collection	% Paid by Agriculture
Indirect Taxes			
Excise taxes	2.57	121	2.1%
GST – domestic	20.91	413	5.1%
GST – Imports	12.48	430	2.9%
Surcharges	0.34	142	0.2%
Custom duties	2.08	249	0.8%
Import duties rebate	-0.06	-8	-0.8%
Direct Taxes			
WHT on Imports	7.36	743	1.0%
TOTAL	45.68	2,091	2.2%

Source: Calculated using Tables 6 and 7.

In Table 9, this payment is disaggregated by type of tax and the commodities that these were paid on. Agriculture paid most of its taxes (Rs 33 billion) on the purchase of fertiliser. The second largest tax payment (of Rs 6 billion) was on the purchase of "Manufacturing—Food" which includes feeds purchased by the livestock and poultry sub-sectors.

These taxes, particularly GST on fertiliser and animal feeds, add to the costs of farmers. However, looking at the sector as a whole, we find that indirect taxes are small relative to intermediate cost and value-added. Based on the input-output structure of the agriculture sector from the 2011 Pakistan SAM, indirect taxes on intermediates are approximately 4.3 percent of total intermediate costs and 0.9 percent of value-added (see Table 10). This is however a sector-level view. It may very well be that GST on fertiliser (being regressive in nature) is in fact prohibitive for smaller farmers. It is also likely that much of the agricultural value-added reported comes from larger farmers. All this adds towards a case for direct taxation on agricultural incomes.

Table 9

Federal Taxes Paid by Agriculture on Inputs—by Type of Tax and Input Commodity Groups—FY 2013

(Billion Rs)

	Indirect Taxes on Inputs						Direct Taxes	
Inputs	Excise Taxes	GST-Domestic	GST-Imports	Surcharges	Custom Duties	Import Duty Rebate	WHT on Imports	Total
Crops	0	0.9	0.7	0	0.16	0	0.64	2.4
All other agriculture	0	0.01	0.17	0	0.16	0	0.22	0.56
Manufacturing, food*	2.42	1.41	1.25	0	0.96	-0.04	0.45	6.45
Manufacturing, other**	0.06	0.29	0.65	0	0.49	-0.02	0.24	1.72
Mining and Petroleum	0	0.58	0.48	0.34	0.06	0	0	1.45
Fertiliser	0	17.67	9.09	0	0	0	5.8	32.57
Energy and Services	0.09	0.05	0.15	0	0.24	-0.01	0	0.52
TOTAL	**2.57**	**20.91**	**12.48**	**0.34**	**2.08**	**-0.06**	**7.36**	45.68

Source: Calculated using Tables 6 and 7.

Notes: Calculations assume all indirect taxes and WHT on imports passed on to buyers.

* "Manufacturing, food" includes the manufacture of feeds for the livestock sector.

** "Manufacturing, other" includes the manufacture of pesticides.

Table 10

Agriculture Input-output Structure (FY 2013)

Agriculture's Payments to: *	Billion Rs	IO Ratio*
Crops	313	5%
Fruits and Vegetables	28	0%
Livestock and Poultry, Forestry and Fishing	23	0%
Manufacturing—Food (includes Feeds)	238	4%
Manufacturing (includes Pesticides)	49	1%
Mining and Petroleum Products	7	0%
Fertiliser	271	4%
Energy	41	1%
Construction & Services	87	1%
Transport	16	0%
A: Total Intermediate Cost	**1,072**	**17%**
B: Indirect Taxes on Intermediates	**45.7**	**1%**
C: Value Added of Agriculture**	**5,269**	**82%**
Gross Output (A+B+C)	**6,387**	**100%**
Indirect Taxes as % of Intermediate Cost (B:A)	*4.3%*	
Indirect Taxes as % of Value Added (B:C)	*0.9%*	

* Payments for intermediates based on Input-Output ratios from SAM 2011and agriculture value added in FY2013.

** Economic Survey 2014: GDP at factor cost of agriculture excluding cotton ginning, revised FY2013.

We conclude that while agriculture *does* pay a non-trivial amount in taxes under the GST system, the input-output and value-added structure of the sector contains ample space for further taxation. Tax payments by agriculture as a whole are only about 1 percent of agricultural value-added which is high (82 percent of gross output). We also compare indirect taxes paid by agriculture with indirect taxes paid by other sectors (calculated in a similar manner). Table 11 confirms that taxes paid by agriculture are low considering, for example, that agricultural value added in FY 2013 was larger than that of all manufacturing (*Economic Survey* 2013-14), and that other sectors pay income taxes in addition.

Table 11

Taxes Paid on Intermediates—Comparison across Selected Sectors (Billion Rs—FY2013)

	Indirect Taxes Paid by:					
	Agriculture	Manufacturing	Textiles	Petroleum	Transport	Services
Excise taxes	2.6	12.2	3.0	4.8	1.3	12.9
GST – domestic	20.9	36.0	17.4	15.9	42.2	29.3
GST – Imports	12.5	46.5	30.9	0.1	38.7	43.3
Surcharges	0.3	3.5	2.1	0.0	22.9	5.9
Custom duties	2.1	29.5	20.9	0.1	9.8	48.7
Import duty rebate	-0.1	-1.0	-0.7	0.0	-0.2	-1.8
WHT on Imports	7.4	18.1	10.9	2.6	1.9	4.3
TOTAL	**45.7**	**144.9**	**84.6**	**23.5**	**116.6**	**142.7**

Source: Authors' calculations based on FBR Annual Report 2012-13 and SAM 2011.

SECTION 4

REVENUE POTENTIAL OF TAXING AGRICULTURAL INCOMES

In this section, we use a Computable General Equilibrium (CGE) model to simulate the introduction of an agricultural income tax. We employ the IFPRI Standard CGE model [Löfgren, Harris, and Robinson (2002)] paired with a 2010-11 Pakistan SAM [PSSP (2015)]. This permits an analysis of the aggregate distributional impacts of simulated shocks, taking into account all direct and indirect effects resulting from linkages between sectors, given the structure of the economy.

Simulation Results

Using the model specified in Löfgren, Harris, and Robinson (2002), we find that following a "low-rate-broad-base" approach via a nominal rate of income tax of 5 percent on all farmers who own more than 12 acres, and do not fall in the poorest quartile, is sufficient to raise approximately Rs 43 billion in additional revenues. A higher rate of tax of 15 percent (closer to what other sectors may pay) would bring this number to Rs 130 billion (Table 12).

Table 12

Impact on Government Revenues

	Billion Rs	% Change
Simulated income tax on non-poor, medium and large farmers		
5% Income Tax	43.3	2.6
10% Income Tax	86.5	5.1
15% Income Tax	129.6	7.7
Simulated import duty on cotton yarn		
15 p.p. increase in import duty	-0.27	-0.02

Source: CGE simulations.

That is, each extra percent point added to the income tax rate is worth about Rs 8 billion while the impact on other farm households, while negative, is small (Table 13). Wage earners in the rural economy and urban households may even benefit slightly. Note that these impacts do not account for welfare changes from increased government revenues and spending. The impact of taxing larger farmers on GDP is negligible. Even in the higher, 15 percent tax rate simulation, GDP falls just by 0.01 percent, driven mostly by the crop sector shrinking by 0.06 percent (Table 14). Thus, a non-trivial sum can be raised with fairly low rates of taxation on larger, non-poor farmers, and this has, if any at all, little negative impact on the economy. To put these findings in perspective, we also simulate import duties on yarn, as an example, of actual ad-hoc tax proposals that arise from time to time. In recent years (2014-15), the introduction of import duty on yarn (which was previously exempt) of 15 percent has been proposed. Our simulation reveals that this has little impact on revenue generation and may in fact reduce government revenues due to negative effects on textile sectors. In fact, we find that government revenues *fall* by Rs 267 million with little or negative impacts on associated sectors.

Table 13

Impacts on Households' Expenditure—(Percentage Changes)

	Simulations			
	Income Tax on Medium-Large Farmers			Import duty on yarn
	5% Income Tax	10% Income Tax	15% Income Tax	15 p.p. increase
Larger & Medium Farmers	-5.0	-10.1	-15.1	0.001
Small Farmers	-0.1	-0.2	-0.2	0.002
Landless Farmers	-0.1	-0.1	-0.2	0.001
Rural farm-wage earners	0.0	0.0	0.0	0.002
Rural non-farm-wage earners	0.1	0.2	0.3	0.002
Urban households	0.1	0.2	0.3	0.001
Total	-0.2	-0.4	-0.6	0.002

Source: CGE simulations.

Table 14

Impacts on Sectoral Value Added—(Percentage Changes)

	Simulations			
	Income tax on non-poor medium-large farmers			Import duty on yarn
	5% Income Tax	10% Income Tax	15% Income Tax	15 p.p. increase
Crops	-0.02	-0.04	-0.06	0.001
Horticulture	0.00	-0.01	-0.01	0.000
Livestock	0.02	0.03	0.05	0.000
Mining	-0.01	-0.01	-0.02	0.000
Ginning	0.00	0.00	0.00	0.002
Spinning	-0.03	-0.06	-0.09	0.030
Weaving	-0.04	-0.08	-0.12	-0.012
Knitwear	0.03	0.06	0.09	-0.014
Garment	-0.03	-0.07	-0.10	-0.001
Other Textiles	0.02	0.05	0.07	-0.015
Other Manufacturing	0.01	0.01	0.02	0.000
Energy, Constr., Services	0.00	-0.01	-0.01	0.000
Total	0.00	0.00	-0.01	0.001

Source: CGE simulations.

SECTION 5
SUMMARY AND CONCLUSION

Despite agriculture's importance in its relationship to poverty and welfare of the poorest households, the government finds it increasingly difficult to find fiscal space for budgetary allocations for agriculture and agricultural R&D. In this paper, we assessed the basic position of agricultural taxes and subsidies in Pakistan to produce a picture of its net fiscal position, with an aim to find the fiscal space for productive expenditure on the sector.

Using recent literature, we assessed three main expenditures along with the level of taxation of agriculture in Pakistan. In summary, we found that agriculture pays about Rs 46 billion in indirect taxes intermediate goods (primarily fertiliser) but almost no direct taxes, as there is no income tax. Then, about Rs 41 billion of government revenue was lost in FY 2012-13 from subsidies to the fertiliser sector via subsidised gas feedstock, thus depleting a resource in short supply and that is sold lower than its opportunity cost. A second area with substantial subsidies is the wheat procurement

system where costs of running the system lead to losses of Rs 25 billion on average. Dwarfing all of these is the cost of maintaining the irrigation system, where the full cost is Rs 166 billion, which is largely unpaid for by the agricultural sector.

Putting these costs, losses and subsidies together suggests that the tax payments are offset by subsidies, ignoring irrigation, as the sector pays Rs 46 billion and receives Rs 41 and Rs 25 billion in subsidies, leaving agriculture with a Rs 20 billion benefit. However, farmers pay the indirect taxes, while the subsidies go to fertiliser manufacturers and select flour millers, so they do not reach farmers. There appears to be few reasons for subsidies to go to these beneficiaries.

However, the cost of infrastructure and irrigation maintenance is very large and is picked up by tax payers and through deferred maintenance so the performance deteriorates, as agriculture pays very little. However, we show that an agricultural income tax could generate enough funds to come close to covering the cost of the irrigation system as it would generate Rs 148 billion in tax revenues with a 15 percent tax rate on medium and large farmers. Thus the agricultural system could be basically self-sustaining and have adequate funding with a few reduced subsidies and the presence of an agricultural income tax. The fiscal space can thus be found with a few key changes in the expenditures and revenues related to the agricultural sector.

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