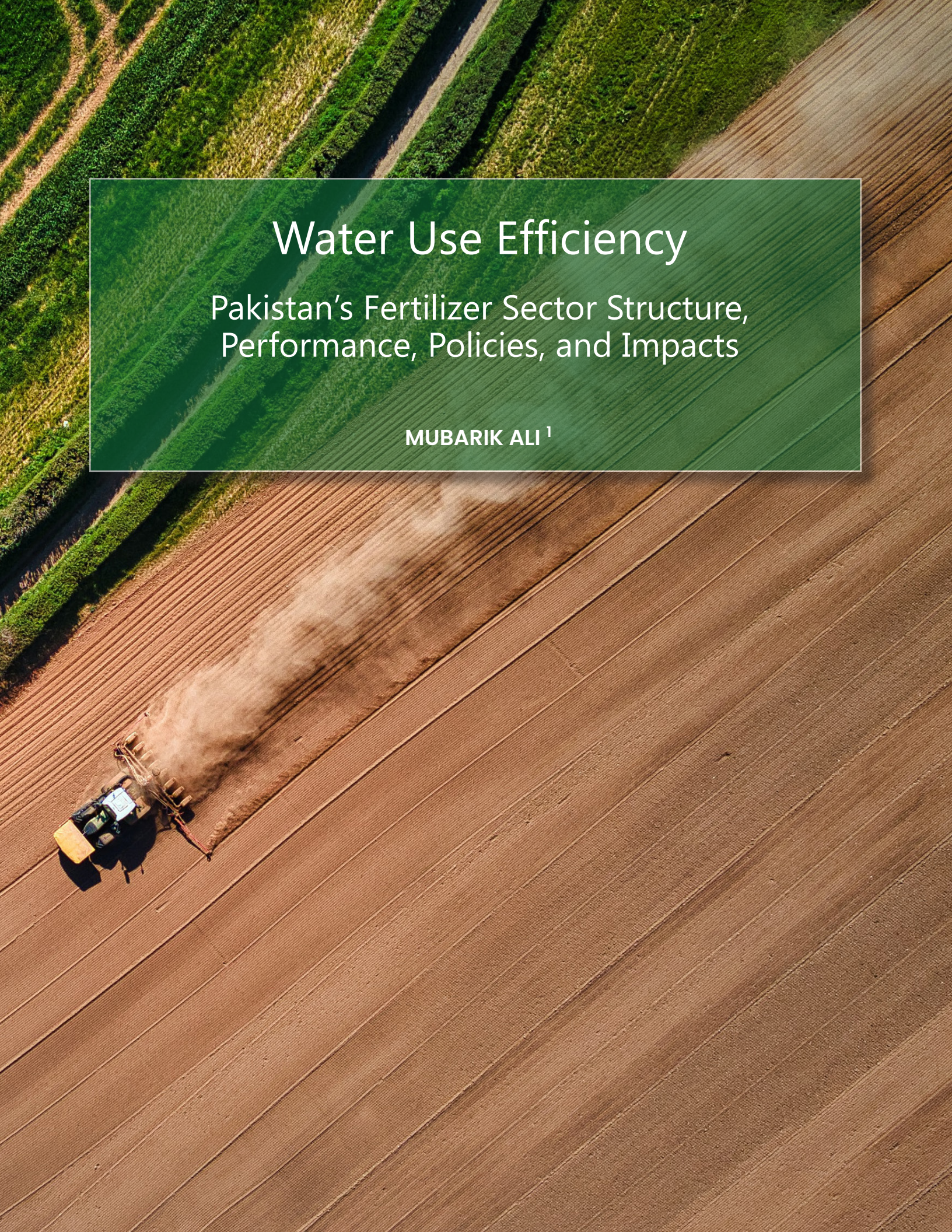

Water Use Efficiency

Pakistan's Fertilizer Sector Structure, Performance, Policies, and Impacts

MUBARIK ALI [1]

Introduction

The fertilizer industry in Pakistan, with US$3.74 billion per year in sales, now stands at a crossroads where, after an initial substantial contribution in boosting crop productivity, its future potential is being challenged. Fertilizer-responsive crop varieties, supplementary irrigation water, and a favorable policy environment in Pakistan have induced fast growth in fertilizer demand. On the supply side, the availability of gas at low prices along with a favorable investment environment resulted in the buildup of excessive manufacturing capacity. But recently, a shortage of gas and monopolistic behavior has led to underutilization and greater imports. Restrictive laws put fertilizer processing and marketing in a few hands, which has also affected its efficiency. Moreover, the yield response of fertilizer has tapered off and per hectare use is fast reaching its optimal level. The existing policy environment leads to higher costs, inefficient use, and a heavy burden on the government as it charges one-fourth of the market price for feedstock gas used in fertilizer manufacturing. In addition, the government normally imports urea and absorbs the difference in international and domestic prices.

Structure of Fertilizer Industry

The production capacity and marketing power in the fertilizer industry in Pakistan is concentrated in a relatively few firms. The two big players, Fauji Fertilizers Company (FFC) (Gorth Machi) and Engro Fertilizer Limited, hold more than two-thirds of the total installed urea capacity (Figure 1).

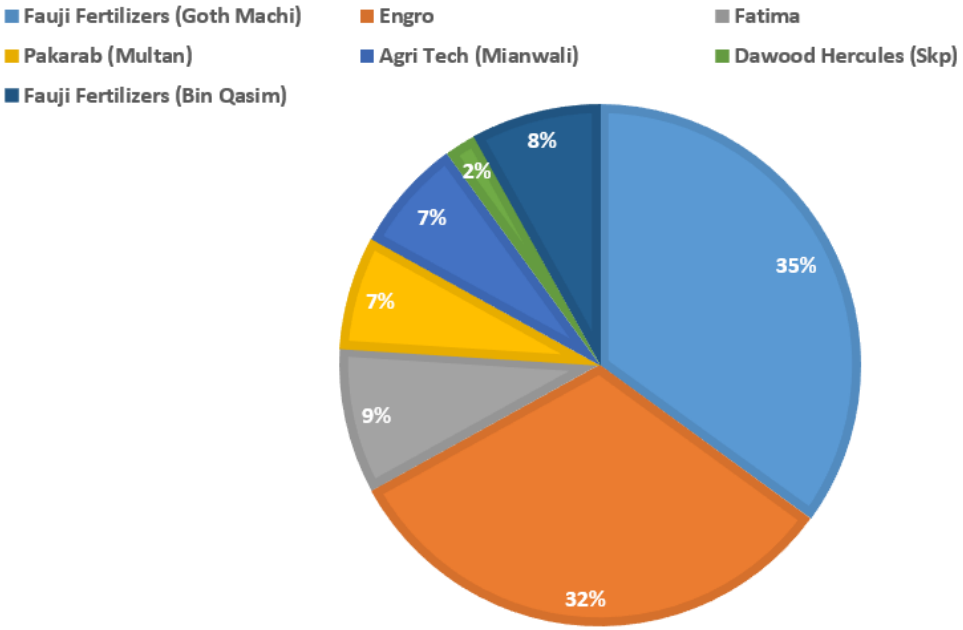

Figure 1: Share (%) of urea manufacturing firms in Pakistan 2015-16

With respect to DAP, the situation is slightly different. The Fauji Fertilizer Bin Qasim (FFBL) is also the only producer of DAP in the country, with about 54 percent of its demand met by that domestic producer, and with the rest being imported by a large number of smaller firms. As such, there is likely greater competition in the market for DAP, and domestic DAP prices tend to be more closely linked to its international price. But with this comes greater exposure to international price volatility and currency risk.

There is evidence suggesting anti-competitive behavior exists in Pakistan's fertilizer industry. In 2012, the CCP fined FFC and Dawood Hercules Corporation Limited approximately 6 billion Pakistani rupees (PKR) for employing collusion tactics in an effort to manipulate the fertilizer

[1] This paper is derived from Ali, M., F. Ahmad, S. Davies, and H. Chana. 2016. Pakistan's Fertilizer Sector: Structure, Policies, Performance and Impacts, IFPRI Working Paper 01516, Development Strategy and Governance Division, International Food Policy Research Institute, March 2016, Page 66.

market. Meanwhile, the return on equity in the industry is well above international comparators, suggesting the possibility of anti-competitive behavior that rewards investors. In Pakistan, the return on equity (taken as an average for the years 2004–2008) for the fertilizer industry was 33 percent, compared to 9 percent in China and 16 percent in India (CCP 2010).

Support to Fertilizer Industry

The growth of fertilizer production and use in Pakistan gave rise to a series of policies designed to regulate the industry. First and foremost, from 1954 until the present, the government maintained control of the supply and allocation of natural gas to the fertilizer industry at almost one-half of the average national price of gas charged to other industries or domestic consumers. Other policies that have been deployed over the past 40 years include subsidies on fertilizer importation and distribution, and occasional sales tax exemptions on farmers' fertilizer purchases. Until recently, these subsidies have been highly in favor of nitrogenous fertilizer, thus creating nutrient imbalance in fertilizer use. These subsidies, during 2020, cost the exchequer to the tune of Rs. 95 billion.

Control of Fertilizer Industry

In addition to the control through subsidies to processors and users (i.e., farmers), the fertilizer market is highly controlled through various regulations. The Provincial Essential Commodity Act (PECA) (amended in 1973), placed fertilizer production and marketing under the direct regulatory purview of the federal government. At the provincial level, the Punjab Fertilizer (Control) Order of 1973 further strengthened the power of regulators by rendering provincial management of fertilizer subservient to PECA. These laws provide almost complete powers to the controller5 in the management of prices, imports, and even the size of daily fertilizer transactions.

Impact of Alternative Policy Scenarios

We use an equilibrium displacement model (EDM) to estimate the impact of exogenous policy shocks on the market for urea and DAP as well as on major crops: cotton, rice, wheat, and other crops. Simulations were made for various policy scenarios as: 1) Removing the Subsidy on Natural Gas (Scenario 1); 2) Removal of General Sales Tax (GST) (Scenario 2); 3) Removal of Gas Subsidy and GST Simultaneously (Scenario 3); 4) Removal of Gas Shortage while Maintaining its Subsidized Price (Scenario 4); 5) Subsidizing DAP and the Removal of the Gas Subsidy (Scenario 5); 6) Investing in R&D and Combining it with the Removal of the Gas Subsidy (Scenario 6). We simulate the results in each scenario with two import elasticities, at 1 and 5, to judge how ease of import will affect the outcomes. The results of all scenarios (in percentage changes) with import elasticity of 1 are presented in Table 1 (detailed results are available in Ali et. al. 2016).

The simulation under various policy scenario using the DM suggests that removing the gas subsidy results in an increase in government revenue but losses to manufacturers, consumers, and farmers. Additionally, removing the gas subsidy and sales tax simultaneously reduces losses to farmers and manufacturers, but the government gain is nullified. Increasing the gas supply results in small benefits to consumers, manufacturers, and farmers, but government expenditure also increases due to increased gas subsidies. However, removing the gas subsidy and investing in agriculture research and development will result in the highest social benefit, where all major stakeholders benefit to some degree and the return to society is highest. The research and development investment could also result in the highest increase in agricultural productivity and a trade surplus, relative to the other simulations. Finally, removing the gas subsidy also makes sense because increased imports of fertilizer will occur in any case within a decade or so, and it is not wise to exhaust existing gas resources quickly through subsidies.

Figure 1: Share (%) of urea manufacturing firms in Pakistan 2015-16

Variables	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Fertilizer Market						
Domestic supply of urea	-14.1	2.4	-11.7	5.7	-13.9	-11.6
Domestic supply of DAP	-7.1	1.9	-5.2	3.6	-3.9	-6.5
Import supply of urea	10.2	3.1	13.3	-4.1	10.5	13.3
Import supply of DAP	4.5	4.8	9.3	-2.3	12.5	5.9
Demand of urea	-9.5	2.6	-6.9	3.8	-9.3	-6.9
Demand of DAP	-0.5	3.6	3.1	0.2	5.5	0.6
Farmer price of urea (inclusive GST)	10.2	-14.0	-3.8	-4.1	10.5	13.3
Farmer price of DAP (inclusive GST)	4.5	-12.2	-7.7	-2.3	-17.5	5.9
Factory price of urea (exclusive GST)	10.2	3.1	13.3	-4.1	10.5	13.3
Factory price of DAP (exclusive GST)	4.5	4.8	9.3	-2.3	12.5	5.9
Import cost of fertilizer	15.2	8.7	24.5	-6.3	25.6	20.2
Output Market						
Overall pressure on output prices	0.1	-0.1	0.0	0.0	0.0	-0.4
Overall trade surplus	-0.5	0.8	0.3	0.2	-0.2	4.6
Total crop production gain	-0.3	0.5	0.2	0.1	-0.1	2.2
Fertilizer expense for farmers	1.2	-10.8	-8.5	-1.0	-4.4	5.9
Production revenue	-0.3	0.4	0.2	0.1	-0.1	2.0
Overall farmer benefit	-0.5	2.1	1.5	0.3	0.5	1.4
Gas expense	242.4	2.4	252.0	5.6	243.8	251.9
Fertilizer revenue	-4.8	5.8	0.8	1.3	-2.1	-0.1
Overall manufacturer benefit	-32.3	6.2	-27.1	0.9	-29.4	-28.2
Production subsidy (urea)	-100.0	2.4	-100.0	5.6	-100.0	-100.0
Distribution subsidy	16.0	3.0	13.3	-6.1	16.4	21.0
Tax revenue from fertilizer sales	1.2	-100.0	-100.0	-1.0	-34.6	5.9
All subsidies	23.6	102.5	10.9	103.2	46.4	24.6
Consumer crop demand	-0.3	0.4	0.2	0.1	-0.1	1.9

Source: Authors' results