Agricultural Extension and Technical Efficiency: an Empirical Assessment in Central Asia

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Introduction

- The World Development Report prominently raised the issue of *agricultural productivity slowdown* (World Bank, 2008);

- An **agricultural extension services** has drawn attention of many researchers as a tool to boost productivity of farmers (FAO, 2015; Lampach et al., 2018; Ma et al., 2018);

- The studies on agricultural extension systems in **Central Asia** are very limited (Kazbekov and Qureshi, 2011; Vakhabov et al. 2006; Pulatov et al. 2016);

- *No study* has *quantitatively* analyzed the impact of agricultural extension service on technical efficiency of farmers in Central Asian regional context.

Results and Discussions

Table 1. Descriptive statistics (for 2014-2015 growing season)

Variables	Unit of measurement	Observations	Statistics			
			Mean	Std. Dev.	Min	Max
Inputs and output						
Wheat	kilograms	316	93578.99	72238.09	4000	444360
Land	hectare	316	39.55	199.58	1	3535
Labor	man-days	316	1556.21	1242.93	120	8350
Seed	kilograms	312	5781.68	4879.75	140	44000
Fertilizer	thousand UZS	312	12100.00	13300.00	0	149000
Machinery	thousand UZS	312	912.04	9296.53	0	144207
Farm specific variables						
Age	years	316	47.05	10.01	20	83
Male	dummy	316	0.96	0.21	0	1
Education	measured as a score	316.00	2.11	1	1	3.00
Irrigation	dummy	316	0.86	0.34	0	1
Extension visits	total number of visits per year	282	7.82	7.18	0	30
State extension services	dummy	201	0.24	0.43	0	1
Cooperation	dummy	316	0.66	0.48	0	1
Extension approach	measured as a score	208	3.00	1.70	1	7

Results and Discussions

Table 2. Eslasticities of mean output of Translog stochastic production function.

Variables	Mean	Std. Err.	[95% Conf. Interval]	
Land	0.84***	0.03	0.79	0.90
Labor	0.10***	0.02	0.06	0.14
Seed	0.03***	0.02	-0.01	0.08
Fertilizers	0.10***	0.01	0.09	0.11
Machinery	0.08	0.01	0.07	0.09

Note: ***significant at 1%; **significant at 5%; *significant at 10%.

Figure 2. Percentage of technical efficiency distribution range of preferred model by heterogeneity effects
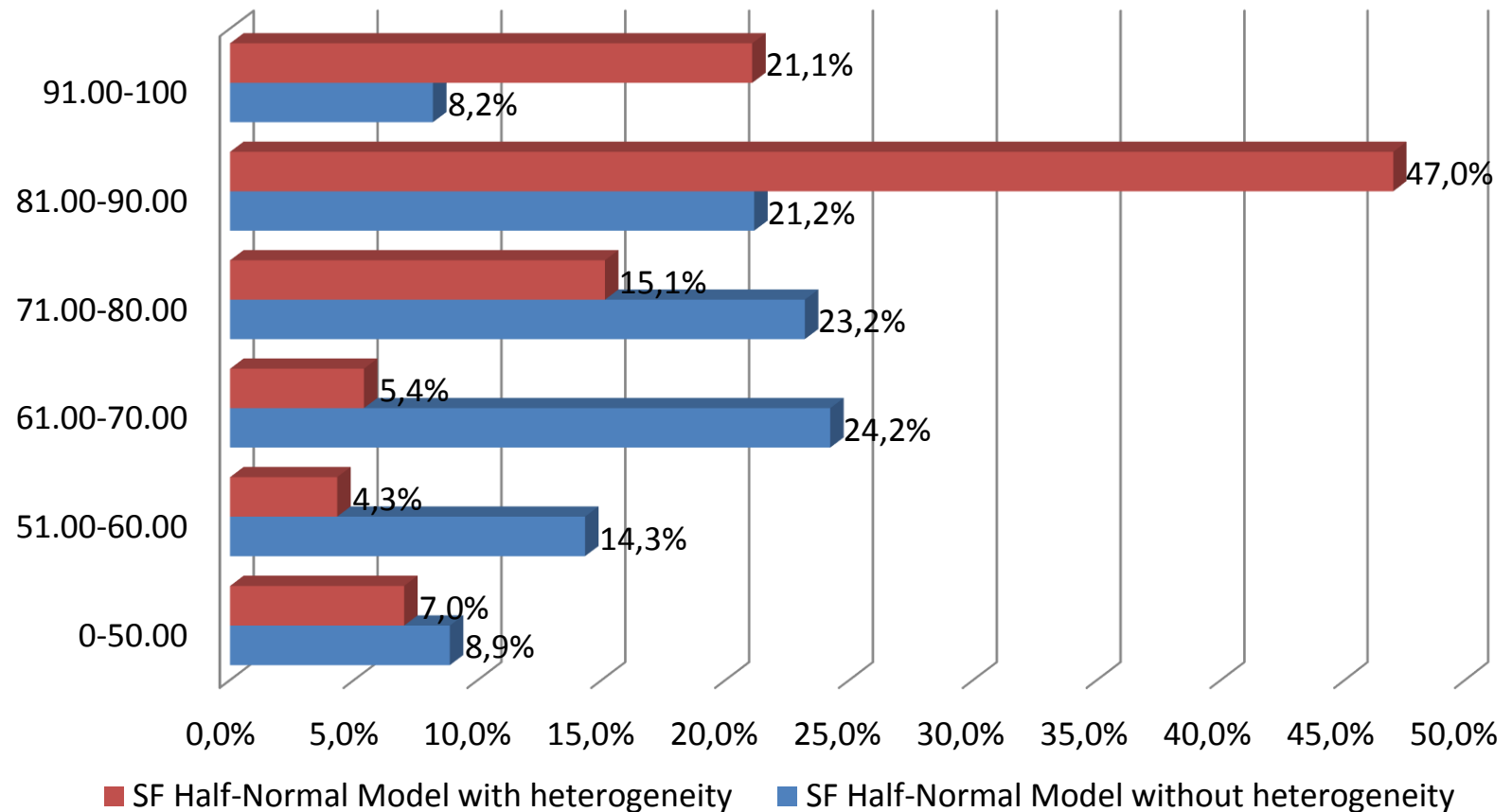
Source: Own estimation

Conclusion

- On average, farmers realize 81% of the potential frontier output, having considerable gap in achieving full potential output;

- Agricultural extension services are found to have positive and statistically significant effect on technical efficiency of wheat-producing farmers;

- Among farm characteristics, age and education are found as significant determinants in technical efficiency of farmers;

- The impact of irrigation on technical efficiency is found to be highly statistically positive;

- Production efficiency does not response to whether the extension services are state-owned or otherwise.

Thank you for attention!

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