

Factors Influencing the Volume of Wheat Cultivation, Processing in Surkhandarya Region and its Economic Efficiency

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Abstract

Wheat and wheat products are an important part of the daily diet of Uzbek people, and thus, are under strategic consideration in terms of food security in Uzbekistan since the beginning of independence. In this study, wheat production during agricultural transition is reviewed and determinants of technical efficiency of wheat-cultivating farms in the Samarkand region are analyzed.

Keywords: strategy, independence, analyze, study, wheat

Analyses are accomplished in two steps. In the initial step, technical efficiency of wheat farms is estimated using data envelopment analyses (DEA) and determinants of inefficiencies are analyzed by the Tobit model in the second step. Data for this study were collected from 124 randomly sampled private farms engaged in wheat production in the Samarkand region. The mean value of technical efficiency scores of wheat-growing farmers were found to be 0.79 and 0.82 under constant return to scale (CRS) and variable return to scale (VRS) assumptions. Empirical results suggest that there is a considerable scope for increasing production through reallocation of existing resources or that private farmers can reduce their input costs by 21 and 18 percent while holding the same production levels. The age of farmers, farmers' education on agriculture, soil fertility, and the quality of seeds were found as the main determinants of technical efficiency in the study area. Agriculture is the largest and most important sector for the economy of Uzbekistan, especially in terms of food security, employment, rural livelihood, and export [1]. Since the beginning of independence, reforms in the agricultural sector have been focused on intensification of agricultural production while recent policies are more addressed to diversification of cropping systems and supporting the development of high-value crop production for domestic and export markets [2]. The share of agriculture is 17.6% in national GDP and it employs 27% of labor force in the country [3]. Importantly, about 49% of country's population lives in rural areas and 25.9% of them are associated with agricultural production [3]. After the independence of the country in 1991, the main strategic development plans were identified and a number of laws were issued in order to establish the legal base of the agricultural system [4]. Uzbekistan is pushing for a gradual transition to market-oriented economy through efforts such as land reformation, market liberalization, farm restructuring, and supporting the market infrastructure in the republic [4]. Furthermore, the main attentions were addressed to change the structure of property rights in agriculture and to provide sufficiently the needs of the country's population by increasing the volume of agricultural production [5]. Expansion of wheat production became widespread around 1993–1994 in the framework of the national program on self-sufficiency in foods [6]. After the gradual policy implications in the country, most of the cotton harvesting areas were subdivided into cereals,

especially for wheat production [1]. As a consequence, dependence on imports of wheat was eliminated, and grain independency was achieved in the country [8]. With the implementation of the farm restructuring policy, agricultural production systems turned into a dual system, with two types of producers—private and smallholder farms [4]. Private farms became the main producers of wheat and currently produce about 82% of the total wheat in the country [9]. Private farmers produce state procurement targets, while in return, farmers are subsidized by input resources, such as seeds, fertilizers, chemicals, and fuel [8]. According to Rudenko [10], private farms receive only 20% of their operating profit, and it is less than other type of agricultural products. Nonetheless, unlike private farms engaged in cotton production, wheat farmers can sell any remaining stocks at market prices after fulfilling the obligations of state quotas. After the gradual implementation of reforms on wheat production, Uzbekistan has succeeded rapidly in increasing grain production during the transition. As shown in Table 1, irrigated land for wheat production increased from 487,200 hectares in 1991 to approximately 1.4 million hectares in 2015, with substantial declines in cotton areas, consequently pushing the overall wheat production from 609,500 tons in 1991 to 7.2 million tons in 2015. Similarly, yields have also been increased, as it was only 1.2 ton/ha in 1991, reaching to 4.8 ton/ha in 2015 [7]. High yield were obtained mainly due to the intensification of agricultural production, improvement in varieties and development of modern agricultural technologies. 0 2000 4000 6000 8000 10000 Wheat Vegetables Fruit and berries Figure 1. Dynamics of main food crop production in Uzbekistan (1000 tons). Source: Reference [7]. Expansion of wheat production became widespread around 1993–1994 in the framework of the national program on self-sufficiency in foods [6]. After the gradual policy implications in the country, most of the cotton harvesting areas were subdivided into cereals, especially for wheat production [1]. As a consequence, dependence on imports of wheat was eliminated, and grain independency was achieved in the country [8]. With the implementation of the farm restructuring policy, agricultural production systems turned into a dual system, with two types of producers—private and smallholder farms [4]. Private farms became the main producers of wheat and currently produce about 82% of the total wheat in the country [9]. Private farmers produce state procurement targets, while in return, farmers are subsidized by input resources, such as seeds, fertilizers, chemicals, and fuel [8]. According to Rudenko [10], private farms receive only 20% of their operating profit, and it is less than other type of agricultural products. Nonetheless, unlike private farms engaged in cotton production, wheat farmers can sell any remaining stocks at market prices after fulfilling the obligations of state quotas. In this study, farm-level, cross-sectional data was used for estimations and primary data was collected through survey questionnaires from randomly sampled private farms by following the 2016–2017 growing season in the region. The period of the survey was from 15 July 2017 to 15 August 2017. During one month, 124 wheat producing farmers were interviewed face to face in two Pastdargom and Payarik districts of Samarkand region. Private farms are mostly specialized in the production of wheat and cotton in these districts. The survey questionnaire form was structured based on the conditions of wheat farmers including demographic questions and input accessibility of farmers. It should be noted that inefficient farmers may not become efficient by simply reducing input costs. Therefore, we considered to incorporate several human capital and environmental variables in order to identify the determinants of inefficiencies. These determinants may reveal more precise aspects that farmers could use to increase their efficiency. Findings indicate that farmer’s age, farmer’s education on agriculture, soil fertility, and the quality of seeds were found as the main determinants of efficiency. This implies that aged and educated farmers, particularly farmers with agricultural backgrounds, were found to be more technically efficient. In addition, scale efficiencies of farmers were also calculated and it was relatively high, implying that farmers are operating near to their optimal size. In sum, causes of

inefficiencies may be due to improper use or misallocation of input resources. Empirical analyses on technical efficiency and the knowledge of actual constraints facing wheat farmers, their resources utilization, and productivity situations are important for the policy makers regarding wheat production in the future. However, allocative and economic efficiencies are also important and should be studied in the region. Due to time limitations and budget constraints, we could manage only 124 face-to-face interviews with wheat farmers.

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