Measuring the policy effects on cotton production in Uzbekistan

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Introduction and problem statement

The attempts of the government of Uzbekistan directed towards restructuring the agriculture haven't brought any positive social or economic results. The natural advantage of Uzbekistan, the combination of the favorable glow climate with the fertile soil and various irrigation possibilities is very favorable for the cultivation of cotton. The tendency, observed in Uzbekistan is reduction of areas under cotton production. Such a policy is based on calculations of private profitability of cotton, wheat and other agricultural products at local, regional levels. However, factors, like distorted exchange rate, totally by government dictated prices of production inputs and market control of more than the ¾ of agricultural products, low salary, defined by the state and high level of unemployment, leading to low motivation, cannot serve as true economic indicators of production efficiency.

Research on real costs of agricultural production is needed to determine the existence of comparative advantage in production alternatives, based on which it could be proved, whether the production of cotton is socially profitable (moreover, whether traditional cotton is more profitable than cotton under plastic) in Uzbekistan.

Objectives: The main objective of the paper is to study and analyze production and market efficiency of cotton produced using 2 technologies.

Specific objectives:

-observe the formation process of market prices for agricultural inputs, and outputs and estimate their economic values; calculate profit-cost ratios of different production alternatives.

-investigate the comparative advantage of cotton different production opportunities in Uzbekistan's agriculture.

Hypothesis: Restructuring cotton production by decreasing the areas under traditional cotton in favor of cotton under plastic will result in welfare gains.

Methodology: Based upon the theory of comparative advantage the methodology of domestic resource cost (DRC) analysis (as a ratio of opportunity costs of domestic factors of production per unit of value added in world prices is applied) to investigate the domestic potential of producing traditional cotton and cotton under plastic (Monke, 1989). Primary and secondary data were gathered in three regions (Tashkent, Namangan and Surhandarja) of Uzbekistan. The reason in doing so was different distances of the regions to the capital and different market development possibilities and perspectives. Policy Analysis Matrix (PAM) methodology is employed to reveal and measure the effects of divergences (policy interventions and market failures), as the difference between observed parameters and the parameters that would exist if the distortions were removed.

Analysis and Results

The results of DRC analysis revealed existence of comparative advantage in production of cotton and cotton under plastic in Uzbekistan (Table 1), whereby DRC of traditional cotton is 0,67 and for cotton under plastic is 0,54 in the base run of the model. These prove the hypothesis, that production of cotton under plastic is more advantageous and generate higher welfare gains at the country wide level, as the production of traditional cotton. The results of PAM analyses reveal the existence of distorting policies and non competitive markets. The impact of various government policies are expressed in Table 2.

To prove the robustness of the results, sensitivity analysis (testing different policy options) is carried out. The DRC ratios calculated under different scenarios (10% higher value of labor force; higher rent for water and land, organic fertilizer considered as tradable input) range between 0,54 and 0,88, which indicates that at any case the cotton production has a comparative advantage in Uzbekistan.

Table 1. DRC Ratios (model results)
Source: own calculations

Models	DRC ratios for cotton traditional	DRC ratios for cotton under plastic
Base Run	**0,67**	**0,54**
Scenario1 organic fertilizer as tradable	0,79	0,65
Scenario 2 20% higer labour force	0,81	0,68

Table 2. Policy Analysis Matrix of cotton production in Uzbekistan (model results),
Source: own calculations

	Tradable input cost	Domestic factor cost	Profit
Market Value	**B**	**C**	**D**
Social Value	**F**	**G**	**H**
Policy Effects In Uzbekistan	J=B-F **J < 0 =>** Inefficient input price polices (21 % subsidized inputs)	K=C-G **K < 0 =>** 86 % inefficient use of domestic resources	L=D-H **L< 0=>** Inefficient output price policies (prices fixed 72% under social price)

Conclusions and recommendations

Relying on the results of PAM, DRC and sensitivity analysis, such policy options are advisable, which are directed to encouragement of production of cotton in general, and to enlargement of production of cotton under plastic in particular.

Photos: Johannes Ode

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