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IMPACTS OF LIBERALIZATION ON AGRICULTURE AND TRADE:

A CASE STUDY OF UZBEKISTAN

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Abstract

The agricultural sector of Uzbekistan is still characterized by unsustainable production patterns and the agricultural institutions of the country are controlled to a large extent through government intervention. The Government takes the decision to grow cotton and wheat and fix the output prices. The decision about the production quotas for cotton and wheat leads to a restricted area and water availability for growing other crops. The country is affected by a locally occurring climate change as well as regional climate change threatens to aggravate existing water use conflicts. The current and expected climatic conditions are showing the additional irrigation applications for a sustainable and fruitful agricultural production. The partial implementation of reforms such as privatization and liberalization of agricultural markets affect the development of agriculture and agricultural trade in Uzbekistan. This paper highlights the major effects of market and price liberalization on agricultural trade using the partial equilibrium model AGRISIM which is based on the "Static World Policy Simulation Model" (SWOPSIM) of the U.S. Department of Agriculture (USDA).With the help of the model, changes in general economic conditions and policy intervention in agricultural markets and foreign trade are simulated. The study suggests that the issues of sustainable agriculture development and food security in Uzbekistan can be achieved through, liberalization of agricultural markets and trade specially wheat and cotton.

Keywords: Uzbekistan, agricultural sector, agriculture trade, liberalization, AGRISIM Model.

1. Introduction

The agricultural sector contributes 19 percent share in the country GDP (WORLD BANK, 2013) whereas about 20 percent share in the total labor force in 2011 (FAO, 2013). Despite a significant reduction of the agriculture in GDP i.e. 37% in 1991 (FAO, 2011), it is still important share holder in the economy. Agriculture provides the

livelihood about 49% of the country population who live in the rural areas (ADB, 2012). The cotton is one of the most important crops in Uzbekistan. The cotton sector was strongly developed in the past which accounts as about 40 % of total agricultural output while at present its share is 19% and only 3.5 % contribution in national GDP (FAO, 2011).

Total agricultural land occupies 28.5 million ha which is 63 percent of the total land area. In which, 23.4 million ha can be considered poor or low productive pasture land and 4.2 million ha of arable land i.e. approx. 11 percent of the total land area. Due to its arid climatic conditions, arable agricultural output is almost entirely dependent on irrigation. The total irrigated area is 4.2 million ha in which 3.4 million ha cultivated under annual crops. Currently, the area under cotton is 1.3 million ha which is higher than other crops area (MAWR, 2012). Cotton is the main raw material for Textile industry. Therefore, agriculture also has a significant influence on other areas of the economy. It shares about 35-40 percent of all industrial output which contributes about 8 percent in GDP (ADB, 2012).

2. Problem statement and objective of the study

Between 1981 to 1990, the annual growth rates of agricultural output barely exceeded 2%, and growth in farming products was less than 2%. Furthermore, in the early 1990s domestic agriculture experienced a significant recession along with the rest of the economy. During the 15 years (1992-2007) agricultural output growth rate was lower than population growth rate especially in rural areas. Therefore, it could not much contribute to improve the living standards (ADB, 2007).

Cotton was the dominant crop in Uzbekistan's agricultural sector during the Soviet period. The main constraint on higher agricultural productivity and growth is the state procurement system for cotton and wheat. Most of the agricultural land belongs to the States. The government sets prices and production targets for the wheat and cotton. During the early period in transition, national accounting was done by the Soviet system of material product balances which is not very reliable. But still it continues (SPOOR, 2005). The state order system reduces the effectiveness of farm restructuring. According to SIRAJIDDINOV und KASIMOVA (2001), at the beginning of 1990s, the major

objectives of the state quota policy were to supply essential agricultural products to protect people from food deficits, increase agricultural productivity, increase rural employment, increase agricultural exports and decrease imports.

It means that throughout the decade (1991-2000) low procurement prices were paid to farms than world market prices. On the other hand, State Government provides the subsidized inputs (fertilizers, pesticides, fuels, seeds and water) to motivate the farmers to grow cotton and wheat. Private farming takes place under very unfavorable conditions and is often subject to the arbitrariness of regional and local institutions.

High costs of monopolies are widespread in processing and marketing channels of cotton and input supplies. To make better use of the considerable agricultural potential requires providing better incentives to farmers and more freedom to decide than under the existing state order system for cotton and wheat. Pricing and marketing reforms in cotton sector must be accelerated. The net burden of taxation on the cotton sector should be reduced in order to increase farm income (AHMEDOV, 2006).

In the starting of transition period, the main emphasis was on to develop the market-oriented economic system which led to significant reduction in agricultural production. Therefore, there was negative impact on food security, economic prosperity, consumer safety and environmental sustainability of production systems activities. At the same time, it has been forced to develop new trading relationships with other former Soviet states and the rest of the world, which led to the mandated expansion of the wheat area to meet local food needs (ABDULLAEV ET AL., 2009).

Thus, it is important to describe in detail about the developments in Uzbek agriculture and some of their impacts on natural resource use, and impacts of liberalization on agriculture and agricultural trade in Uzbekistan. The main objective of this paper is to analysis the impact of liberalization on the development of agricultural production and trade in Uzbekistan. This paper is divided in three more sections. Next section is related about methodology use to attain the objective of the study, following section describe the major finding of the study. Finally, the paper is concluded with some suggestions.

3. Methodology

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To attain the main objective of the study, partial-equilibrium net trade model is used. The partial implementation of reforms such as privatization and liberalization of agricultural markets affect the development of agriculture and agricultural trade in Uzbekistan. For the empirical analysis using the partial equilibrium model AGRISIM (Agricultural Simulations Model) which has been developed at the University of Giessen, and which is based on the "Static World Policy Simulation Model" (SWOPSIM) of the U.S. Department of Agriculture (USDA), is the most appropriate for modeling the agricultural sector of Uzbekistan. AGRISIM is a partial-equilibrium, multi-commodity, multi-region model. It is comparatively static in nature, deterministic and has non-linear isoelastic supply and demand functions (PUSTOVIT, 2003; SCHMITZ, 2002).

Trade is calculated as net trade. Policy interventions are generally considered with changes in nominal protection rates (NPR), price transmission coefficients, minimum producer prices, production quotas and subsidies. Through shift coefficients in the demand and supply functions additional exogenous taken into account and their impact can be simulated, such as population, income growth and technical progress. The base version of the model from Weber includes nine commodities: wheat, coarse grains, rice, oilseeds, sugar, milk, beef, pork, and poultry meat. The current version of the model included 36 different agricultural commodities or products. The commodity groups will be calculated in four group's i.e. cereals (coarse grains, maize, and wheat), coarse grains (rye, barley, oats, sorghum, triticale, buckwheat, and other cereals), oilseeds (rapeseed, soybean, sunflower, and cottonseed), poultry meat (chicken, ducks, goose, turkey and other poultry). After the calculation of group commodities the list of commodities were defined. The 15 commodities includes into the AGRISIM Model, including nine vegetable and six animal products: such as: wheat, coarse grains, maize, soybean, cotton, rice, sugar, oilseeds, tobacco, milk, beef, sheep, pork, poultry, and eggs. Generally, in the Model, there will be 19 countries and region, including Central Asian countries, CIS countries, Asian countries, European countries, African countries, North and South American countries, such as: Australia, Brazil, Canada, China, Egypt, European Union (27 country member of EU considered as a one), India, Japan, Kazakhstan, Kyrgyzstan, Mexico, Russia, South Africa, Tajikistan, Ukraine, United States of America (USA), Uzbekistan and Rest of the World (ROW) included.

The database was recently updated to the year 2006 and based on above mentioned products as well as countries. The data from "FAOSTAT" FAO, PSE Statistics of OECD, USDA, World Bank, IMF data, State Statistical Committee of countries, central banks, ministries of economics, foreign trade ministries, ministries of agriculture, agricultural institutions, farms, and the Institute of agribusiness (IAB), Giessen, has been compiled.

The main structure of the model follows the suggestions of RONINGEN (1997). It describes a multi-market multi-region partial equilibrium model and the main structure of the model SWOPSIM (**S**tatic **Wo**rld **P**olicy **Si**mulation **M**odeling Framework (RONINGEN ET AL., 1991). The regions are connected with each other through a market equilibrium mechanism. The world market price which also belongs to market equilibrium mechanism, are influenced by domestic markets through domestic prices. The net trade is summed from all regions, which is calculated as the difference between supply and demand. The model was programmed in General Algebraic Modeling System (GAMS).

On the basis of current macroeconomic and base data, especially current agricultural situation in Uzbekistan, the dynamic scenario is formulated. The formulation of the scenario is: Yield growth + population growth + income growth per year in all Regions of Model + Reduction of the Input subsidies in UZB + Reduction of the positive and negative NRPs in UZB (NPR=0, Full Liberalization in UZB) It can be called as full liberalization scenario.

4. Results & Discussions

The simulation results (Table 1) shows the clear effects of the production, demand, price and trade and it is considered after the welfare economic evaluation. In this section the analysis is broadened to a sectoral level, taking into consideration the supply and the demand side, their interaction on national and international markets with respect to price formation, as well as the net trade and welfare effects of the scenario.

The results of the production effects show that production of beef 14.49%, coarse 67.13%, milk 30.55%, poultry 7.44%, rice 50.63%, wheat 29.57%, maize 52.53%, egg 32.33% and tobacco 21.82% compare to base year has increased. Where as in case of

oils, pork, sugar, soybean, mutton-goat, and cotton production it has decreased 0.78 to 23.26%.

The domestic price changes generate corresponding demand reactions in Uzbekistan. The results also accept the demand theory. The demand of beef, oils, pork, poultry, sugar, wheat, maize, soybean, egg, mutton-goat is increased significantly with the range of 1.15 to 30.30%. In case of cotton demand in the liberalization, it is decreased by 1.16 percent whereas it is worse in case of tobacco i.e. 30.30%.

In the scenario, the net-trade position for wheat is changed from an import status of 380.46 thousand tons at base year to an export status of 1.31 million tons with liberalization. The same trend is noticed for the beef, coarse grain, milk, rice, and maize net-trade. The net imports of oilseeds, pork, poultry, sugar, soybean, and mutton-goat increase from 0.0003 thousand tons to a maximum of 985.10 thousand tons, whereas the cotton net export decreases from 949.0 to 813.60 thousand tons.

Table 1: Results of Production (PROD), Demand (DNAD), Farm Gate price (FGP), Border Price (BP), and Net Trade (NTRA) Effects

Com m.	PROD	DNAD	FGP	BP	NTRA
	change in %	Tsd. Ton			
BEEF	14.49	5.35	-41.11	-11.31	49
COAR	67.13	-13.32	47.49	-22.56	371
MILK	30.55	-4.11	26.28	-8.62	2193
OILS	-12.89	30.30	-105.35	-105.34	-985
PORK	-5.49	8.40	-65.78	-5.96	-12

POUL	7.44	18.00	-109.61	-21.65	-16
RICE	50.63	-5.53	12.28	-10.33	193
SUGA	-0.78	1.15	-8.47	-2.08	-454
WHEA	29.57	3.27	-28.04	-53.84	1313
MAIZ	52.53	2.22	-5.70	-32.50	194
SOYB	-8.63	17.73	-67.87	-67.87	-26
EGG	32.33	7.33	-11.09	0.15	37
MUTG	-0.98	23.22	-332.58	-207.50	-28
COTT	-23.26	-1.16	37.28	-11.81	814
TOBA	21.82	-30.43	79.83	-0.00	20

Source: own calculation using AGRISIM, 2013

Producer price effects show that the prices are declined for all products in this scenario except coarse grains, rice, milk, cotton, and tobacco. It is because of a huge gap between domestic and international prices.

The world price decreases in the scenarios for all products, with the exception of egg. World prices for wheat, oils, soybean, and mutton-goat significantly decrease whereas in case of sugar, pork, milk, beef, and cotton it decreases slightly. Because the nominal rate protection corresponds to zero and increasing worldwide competitiveness. Domestic price effects actually influence by the global market.

Table 2 presents the results on welfare effects. The economic welfare effects for producers, consumers, and total welfare is positive changes. In the liberalization scenarios, the state budget became near about -522 million US$. On the other hand, total welfare is going very high because the producer rent is increasing more than 2200 million US$.

Table 2: Results of the Welfare effects

Indicators	Amount (Million US$)
Producer rent	2225
Quota owner	0,00
Consumer rent	316
Budget	-522
Total welfare	**2020**

Source: own calculation using AGRISIM, 2013

The main results of the policy simulations depend on assumptions of the model. Although, the simulation results should be treated with caution, it is believed that they are reliable and can contribute to the discussion on how the simulated policy can affect the regional production, sales, marketing, agriculture trade, income, production pattern and land and water use in Uzbekistan. In general, the market liberalization has a positive effect on the regional state order quota crops cotton and wheat sector. Concerning the policy effect with regards to the location of producers and consumers, the market and price liberalization and reforms about input subsidies are more beneficial for producers. This process have need to be completed with exchange rate liberalization so that administered procurement prices are set at border price levels with the market exchange rate.

5. Conclusions & Suggestions

The agriculture is strongly limited due to the established state system of the low prices for end production. In spite of subsidized inputs like fuel, irrigation services, fertilizers, service of technical equipment and credit grants, the cotton production became unprofitable because the net implicit tax are very high. The production increases for almost products with liberalization, Uzbekistan imported most of the products which are included in the model except cotton. After the simulation, the results show that beef, coarse, milk, rice, wheat, maize, eggs, tobacco and also cotton are exported. Producer price increases due to demand growth and positive change of the negative nominal rate of protection. The market and price liberalization is favorable for the producer as well as consumers. In general, achieving sustainable development of agriculture and rural areas depend on reforms at the national level and creating favorable conditions at the international level. From the results we can summarize that the Uzbek agriculture and agricultural trade can be developed well with liberalization.

Agricultural markets liberalization is needed to provide appropriate incentives to farmers which motivate to farmers in the processing of agricultural products. State procurement quotas for wheat and cotton should be reduced or vanished. The farmers should have the freedom to sale their products and prices for these products should be liberalized.

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