

THE EFFECTS OF POPULATION AND CONSUMER INCOME GROWTH ON THE AGRICULTURAL SECTOR OF TAJIKISTAN

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OUTLINE

- 1. JUSTIFICATION OF THE STUDY**
- 2. OBJECTIVE & RESEARCH QUESTIONS**
- 3. METHODOLOGY**
- 4. RESULTS**
- 5. CONCLUSION**



1. JUSTIFICATION OF THE STUDY

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1. Justification of the study



Source: Own compilation based on World Development Indicators of World Bank, 2012

1. Labour Migration and Migrants remittances (2013)

- No of migrants - 1.2 million.
 - ✓ 15% of total population;
 - ✓ 28% of Labour Force;
 - ✓ 50% of economically active population.
- Remittances: 4.16 billion USD.
 - ✓ 2 times more than state budget;
 - ✓ Equivalent to 48% of GDP;
 - ✓ 35% of population income.

2. Share of Agricultural sector on GDP (2013)

- 21%.

3. Population growth

- On average 2% (1990-2013)



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2. Objective & Research Questions

Objective:

- To assess the effect of population and income growth on the agricultural sector of Tajikistan.

Research questions:

- How do demand and supply of agricultural commodities respond to the growth of population and consumer income?
- How are producers and consumers of agricultural commodities affected?
- How does the net trade, the state budget and the welfare change in response to these effects?

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3. Methodology

AGRISIM – partial-equilibrium, ex-ante, non-linear, multi-market, and multi region net trade model.

COUNTRIES & REGION		COMMODITIES	
Australia	Kyrgyzstan	Livestock	Crops
Brazil	Mexico	Beef & Veal	Wheat
Canada	Russia	Milk	Coarse grains
China	South Africa	Pig meat	Maize
Egypt	Tajikistan	Poultry	Rice, refined
European Union 27	Ukraine	Eggs	Sugar, refined
India	USA	Mutton & Goat	Cotton, fiber
Japan	Uzbekistan		Oils
Kazakhstan	Rest of the World		

3. Methodology


AGRISIM includes 67 equations:

- Commodity balance sheet;
- Yield and area functions;
- Net trade equations;
- Prices;
- Price transmission elasticity;
- Welfare functions;
- Elasticities, etc.

Developed & simulated scenarios:

Base assumption – population growth

Scenario 1 – BA plus income growth

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4. Results

Table 1. Demand changes in scenarios (in thousand ton)

	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	Change in %	
				BA against BY	SC-1 against BA
Beef & veal	36	41	50	12.4	22.9
Coarse grain	52	60	59	16.7	-2.7
Cotton, fiber	24	27	34	13.4	24.7
Eggs	11	13	17	11.9	35.7
Maize	86	100	98	16.4	-2.5
Milk	389	444	528	13.9	19.0
Mutton & goat	26	29	35	13.6	21.8
Oils	78	93	97	19.2	3.9
Pork	5	6	8	13.2	25.8
Poultry	7	7	10	12.6	37.5
Rice, refined	44	49	59	12.4	19.6
Sugar, refined	206	237	262	15.3	10.5
Wheat	1089	1238	1198	13.7	-3.2

Source: Own compilation based on AGRISIM simulation results

4. Results

Table 2. Producer and border prices changes in scenarios (in USD)

	Producer Price			Border Price			Difference Producer and Border Price (in BA)
	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	
Beef & veal	2343	2627	2628	1839	1839	1839	788
Coarse grain	167	180	180	194	194	194	-14
Cotton, fiber	506	537	537	1193	1193	1193	-656
Eggs	1585	1703	1703	812	812	812	891
Maize	181	195	195	195	195	195	0
Milk	222	235	235	298	298	298	-63
Mutton & goat	2659	2837	2839	2806	2807	2808	30
Oils	554	573	573	573	573	573	0
Pork	1395	1494	1494	1493	1494	1494	0
Poultry	2981	3151	3151	1611	1611	1611	1540
Rice, refined	979	1045	1045	580	580	580	465
Sugar, refined	294	300	300	300	300	300	0
Wheat	194	245	245	111	111	111	134

Source: Own compilation based on AGRISIM simulation results

4. Results

Table 3. Production changes in scenarios (in thousand ton)

	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	Change in %	
				BA against BY	SC-1 against BA
Beef & veal	25.8	26.4	26.4	2.3	0.0
Coarse grain	65.3	65.8	65.8	0.8	0.0
Cotton, fiber	154.4	155.8	155.8	0.9	0.0
Eggs	5.3	5.3	5.3	0.8	0.0
Maize	135.9	135.2	136.0	-0.5	0.0
Milk	522.6	528.5	528.5	1.1	0.0
Mutton & goat	25.5	26.0	26.0	1.8	0.0
Oils	271.1	272.5	272.5	0.5	0.0
Pork	1.0	1.0	1.0	0.7	0.0
Poultry	0.4	0.4	0.4	1.0	0.0
Rice, refined	54.1	54.3	54.3	0.3	0.0
Sugar, refined	0.0	0.0	0.0	0.0	0.0
Wheat	630.0	659.6	659.6	4.7	0.0

Source: Own compilation based on AGRISIM simulation results

4. Results

Table 4. Net trade changes in scenarios (in thousand ton)

	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	Change of net trade situation (in 1000 t)	
				BA against BY	SC-1 against BA
Beef & veal	-10.5	-14.4	-23.7	-3.9	-9.4
Coarse grain	-6.0	-14.4	-12.8	-8.4	1.6
Cotton, fiber	130.4	128.5	121.8	-1.9	-6.7
Eggs	-6.2	-7.5	-12.0	-1.3	-4.6
Maize	-0.1	-15.7	-13.2	-15.6	2.5
Milk	-3.7	-51.8	-136.3	-48.1	-84.5
Mutton & goat	0.0	-3.0	-9.3	-3.0	-6.3
Oils	-50.6	-68.5	-72.2	-17.9	-3.7
Pork	-4.3	-5.0	-6.6	-0.7	-1.6
Poultry	-6.2	-7.1	-9.8	-0.8	-2.8
Rice, refined	1.7	-3.6	-13.2	-5.3	-9.7
Sugar, refined	-205.7	-237.3	-262.1	-31.6	-24.9
Wheat	-688.5	-810.7	-770.5	-122.2	40.2

Source: Own compilation based on AGRISIM simulation results

4. Results

Table 5. Welfare changes in scenarios (in million USD)

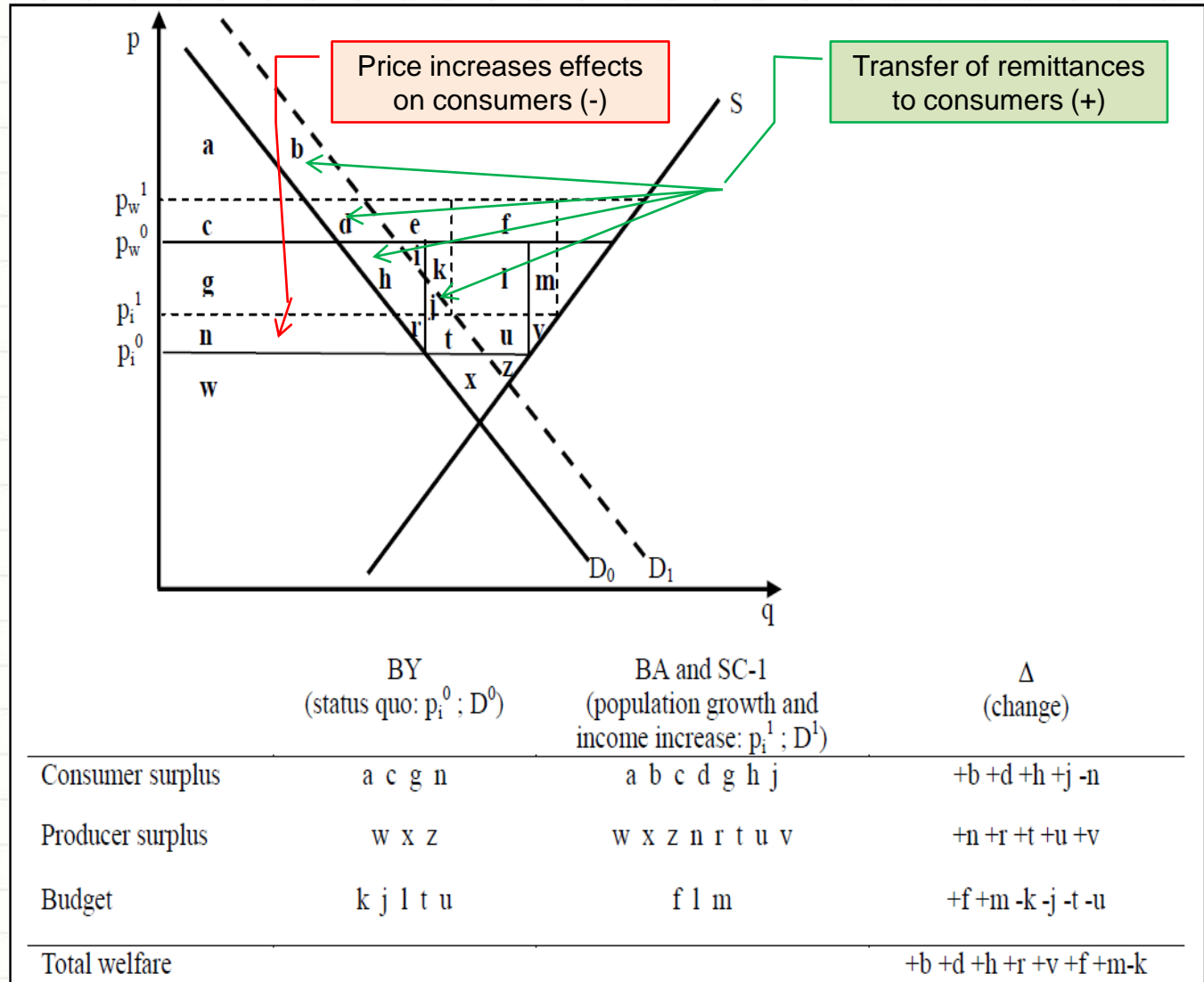
	BY (status quo)	BA (pop-n growth)	SC-1 (BA + income increase)	Change SC-1 against BA (in mill. USD)
Producer surplus	0.000	66.92	67.05	0.13
Consumer surplus (sequentially measured)	0.000	-86.49	-86.59	-0.10
Remittances as transfer for consumers			2665.00	
Budget	0.000	46.15	51.48	5.33
Total	0.000	26.58	2696.94	5.36

Source: Own compilation based on AGRISIM simulation results

4. Results

Figure 1. Welfare effects of worldwide population growth and income growth in Tajikistan (net export situation and negative protection)

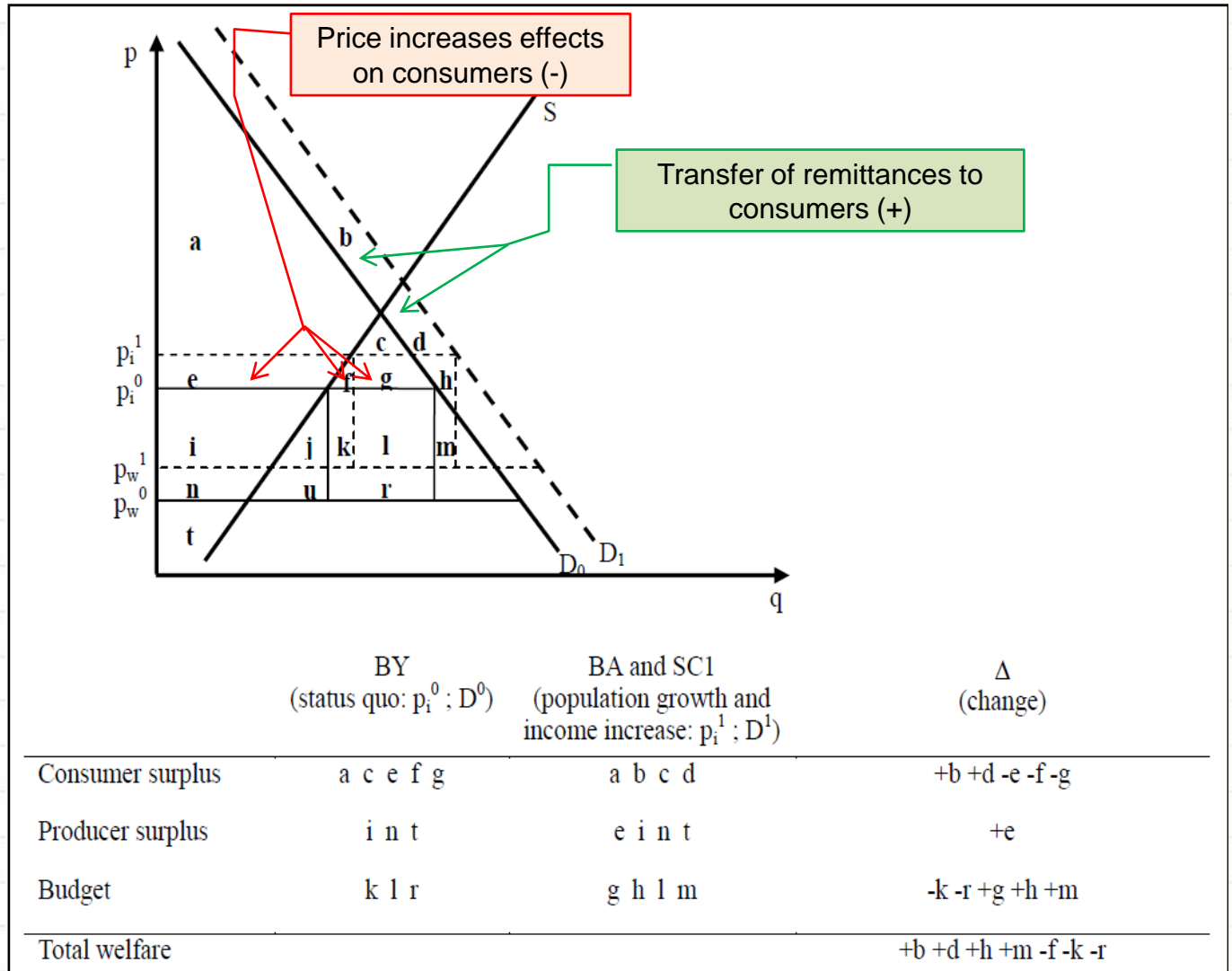
SC-1 compared to status quo (BY);



4. Results

Figure 2. Welfare effects of worldwide population growth and income growth in Tajikistan. Net import situation and positive protection.

SC-1 compared to status quo (BY);



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5. Conclusion

1. The results reveal that the worldwide population growth has a dominating effect on demand, production, trade, and welfare.
2. The income growth will impacts additionally on demand, particularly with regard to livestock products.
3. The increase in demand is mainly satisfied by increasing imports.
4. The negative trade balance in agriculture will further deepen.
5. The state budget will gain through taxes and other levies at the border.
6. Consumers will win through the direct income transfer although they have to pay higher prices for food.



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Thank you for attention!

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