

Analysing the consequences of Regional Comprehensive Economic Partnership on the agricultural economies of China, Australia and New Zealand

SHILONG YANG¹, XIAO LIANG¹, ZHICHAO LOU¹, YANWEN TAN^{1*}, ABDELRAHMAN ALI^{1,2} 

¹Department of Agriculture and Forestry Economics, School of Economics and Management, South China Agricultural University, Guangzhou, P. R. China

²Department of Agricultural Economics, Faculty of Agricultural, Fayoum University, Fayoum, Egypt

*Corresponding author: tanyw@scau.edu.cn

Citation: Yang S., Liang X., Lou Z., Tan Y., Ali A. (2024): Analysing the consequences of Regional Comprehensive Economic Partnership on the agricultural economies of China, Australia and New Zealand. *Agric. Econ. – Czech*, 70: 362–381.

The authors are fully responsible for both the content and the formal aspects of the electronic supplementary material. No editorial adjustments were made.

Electronic supplementary material

Supplementary Tables S1–S5

<https://doi.org/10.17221/327/2023-AGRICECON>

Table S1. Classification of countries and sectors in the GTAP model

Country/Region	Department	Sectors
China, Australia, New Zealand, Japan, South Korea, United States, 27 EU countries, India, ASEAN (Vietnam, Thailand, Singapore, Philippines, Malaysia, Laos, Indonesia, Brunei, Cambodia), other countries in the world	agricultural sectors	rice, wheat, other cereals, fruits and nuts, oil crops, sugar crops, fiber crops, other crops, cattle, sheep, horses, other animal products, wool, beef products, other meat products, vegetable oils and fats, dairy products, glutinous rice, sugar, other food products, tobacco and beverages
	non-agricultural sectors	chemical, rubber, and plastic products; electronic products and equipment; machinery and equipment; paper products and publishing; other manufactured goods

GTAP – Global Trade Analysis Project

Source: Author's simulation of GTAP Version 100.

Table S2. Assumptions of each economic entity or economic indicator in the GTAP model

Economic entities or economic indicators	Assumptions in the GTAP model
Consumer	<i>i</i>) utility maximization; <i>ii</i>) price taker; <i>iii</i>) CDE consumption function; <i>iv</i>) single consumer; <i>v</i>) total consumption is fixed
Producer	<i>i</i>) cost minimization; <i>ii</i>) price taker; <i>iii</i>) single output; <i>iv</i>) nested CES/Leontief production function
Investor	<i>i</i>) cost minimization; <i>ii</i>) price taker; <i>iii</i>) use domestic goods and imported goods to produce capital goods
Export	<i>i</i>) products permitted for export and products intended for domestic use are not perfect substitutes; <i>ii</i>) the export demand curve slopes downward to the right.
Government	<i>i</i>) utility maximization; <i>ii</i>) Cobb-Douglas production function
Price	<i>i</i>) zero profit assumption; <i>ii</i>) monetary neutrality

GTAP – Global Trade Analysis Project; CDE – constant difference of elasticity; CES – constant elasticity of substitution

Source: Hertel (1996)

<https://doi.org/10.17221/327/2023-AGRICECON>

Table S3. Macroeconomic changes in China, Australia, New Zealand, and India under different scenarios of RCEP implementation

Country	GDP	Total imports	Total exports	Household income	Social welfare
China					
S1	0.06	0.22	0.13	0.06	4 069.23
S2	0.06	0.24	0.14	0.06	4 264.85
S3	0.19	0.44	0.31	0.21	10 086.29
S4	0.21	0.48	0.35	0.22	11 126.45
Australia					
S1	0.01	1.44	0.83	0.01	901.12
S2	0.01	1.53	0.87	0.01	939.95
S3	0.14	1.69	1.02	0.15	1 663.81
S4	0.16	1.81	1.09	0.18	1 809.67
New Zealand					
S1	0.09	0.26	0.26	0.10	161.78
S2	0.09	0.28	0.27	0.10	171.92
S3	0.16	0.38	0.37	0.17	192.71
S4	0.18	0.42	0.41	0.19	208.98
India					
S1	−0.01	−0.02	−0.01	−0.01	−82.82
S2	−0.01	−0.02	−0.01	−0.01	−87.35
S3	0.95	3.60	3.28	−1.00	2 500.36
S4	1.16	4.26	3.89	−1.23	1 415.04

Changes in GDP, total imports, total exports, and household income are measured in percentage (%); changes in social welfare are measured in millions of USD; RCEP – Regional Comprehensive Economic Partnership

Source: Author's simulation of GTAP Version 10

<https://doi.org/10.17221/327/2023-AGRICECON>

Table S4. Changes in China's major agricultural sector imports and exports under different RCEP scenarios

Sector	Import changes (%)				Export changes (%)			
	S1	S2	S3	S4	S1	S2	S3	S4
Rice	0.05	0.05	1.73	2.00	−0.13	−0.13	−0.71	−0.63
Wheat	1.16	1.22	1.73	1.87	0.18	0.20	−1.50	−1.72
Other cereals	0.71	0.75	0.87	0.94	0.01	0.02	−0.30	−0.34
Vegetables, fruits, and nuts	0.25	0.27	0.48	0.53	0.02	0.02	2.54	3.11
Oilseed crops	0.01	0.01	0.22	0.27	0.03	0.04	−0.59	−0.58
Sugar crops	−0.28	−0.30	0.26	0.34	0.04	0.05	−0.54	−0.60
Fiber crops	0.17	0.17	0.62	0.70	−0.07	−0.07	10.72	12.24
Other crops	0.26	0.28	0.37	0.39	0.02	0.03	0.39	0.55
Cattle, sheep, and horses	0.53	0.55	0.84	0.91	0.12	0.13	−0.29	−0.33
Animal products	1.03	1.09	1.21	1.31	0.02	0.02	0.06	0.08
Wool	1.34	1.41	3.46	3.89	0.52	0.55	11.17	13.01
Beef products	18.25	19.63	18.46	19.86	1.26	1.36	0.06	−0.03
Other meat products	0.26	0.28	0.94	1.06	−0.04	−0.04	−0.85	−0.94
Vegetable oils and fats	0.21	0.22	−1.83	−2.14	−0.01	0.00	1.80	2.08
Dairy products	9.21	9.83	9.55	10.23	0.69	0.74	0.64	0.76
Indica rice	0.04	0.04	−0.09	−0.16	−0.04	−0.04	−1.00	−1.15
Sugar	2.38	2.60	2.78	3.06	0.49	0.52	4.59	5.63
Other food products	0.35	0.37	0.60	0.66	0.08	0.09	0.00	0.00
Tobacco and beverages	0.70	0.75	0.85	0.92	0.00	0.01	0.46	0.59
Other industries	0.16	0.17	0.41	0.45	0.32	0.34	0.62	0.69

RCEP – Regional Comprehensive Economic Partnership

Source: Author's simulation of GTAP Version 10

<https://doi.org/10.17221/327/2023-AGRICECON>

Table S5. Changes in agricultural major sector output for China and India under different scenarios after RCEP implementation

Sector	China				India			
	S1	S2	S3	S4	S1	S2	S3	S4
Rice	−0.01	−0.01	−0.01	−0.01	0.00	0.00	0.37	0.42
Wheat	−0.10	−0.11	−0.04	−0.04	0.01	0.02	1.10	1.29
Other cereals	−0.11	−0.12	−0.09	−0.10	0.00	0.00	0.44	0.50
Vegetables, fruits, and nuts	−0.01	−0.01	0.04	0.05	0.00	0.00	0.40	0.45
Oilseed crops	−0.04	−0.05	0.16	0.20	0.00	0.00	−12.76	−14.70
Sugar crops	−0.11	−0.12	−0.07	−0.06	0.00	0.00	0.48	0.55
Fiber crops	−0.03	−0.03	−0.11	−0.13	−0.01	−0.01	1.26	1.50
Other crops	−0.02	−0.02	0.05	0.07	0.00	0.00	−1.91	−2.40
Cattle, sheep, and horses	−0.30	−0.32	−0.30	−0.32	0.01	0.01	−1.42	−1.66
Animal products	−0.02	−0.02	−0.03	−0.03	0.00	0.00	0.29	0.33
Wool	−0.31	−0.32	3.38	3.99	0.00	0.00	−4.04	−4.70
Beef products	−1.74	−1.86	−1.79	−1.92	0.16	0.17	2.55	3.01
Other meat products	0.01	0.01	−0.02	−0.03	0.00	0.00	0.86	0.98
Vegetable oils and fats	−0.02	−0.02	0.36	0.41	−0.01	−0.01	−28.34	−32.76
Dairy products	−1.31	−1.40	−1.35	−1.44	0.00	0.00	0.20	0.21
Indica rice	−0.01	−0.01	−0.01	−0.01	0.00	0.00	0.56	0.65
Sugar	−0.29	−0.31	−0.20	−0.19	0.00	0.00	0.70	0.81
Other food products	−0.02	−0.02	−0.04	−0.04	0.00	0.00	0.90	1.05
Tobacco and beverages	−0.01	−0.01	0.00	0.00	0.00	0.00	0.06	0.03
Other industries	0.02	0.02	0.02	0.02	0.00	0.00	0.23	0.27

The unit of change in output is %; RCEP – Regional Comprehensive Economic Partnership

Source: Author's simulation of GTAP Version 10