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Egypt's Engagement with the BRICS: Alternative Development Cooperation Initiative "With Reference to Agricultural Trade"

Ahmed, Y. N. ; Fatma Hefnawy* and V. Shaker

Faculty of Agriculture, Cairo University, 11865, Egypt.



ABSTRACT

Given the importance of international trade in economic development, this study evaluates the potential impact of Egypt's proposed entry into the bloc of BRICS (Brazil, Russia, India, China, and South Africa) countries. BRICS has great demographics and economic potential and is ranked amongst the world's largest economic blocs in the 21st century. Egypt was invited as a guest of honor at the Xiamen BRICS Summit in 2017. This study uses a regional CGE Model based on GTAP9 to clarify the expected economic impact of Egypt's accession to the BRICS alliance. The study further discusses two main scenarios, the first involving tariff reductions, and the second reductions in non-tariff barriers to trade. The first scenario leads to an increase in GDP and terms of trade for all member States of BRICS and Egypt, excluding Brazil and China whose terms of trade deteriorate. As for the second scenario, there is an improvement in welfare (Real Income) for all BRICS countries and Egypt. In this scenario, Brazil has the most gains. Moreover, all the nations under study achieve an increase in GDP. The study recommends that Egypt joins the BRICS alliance, given the positive effects on the Egyptian economy as well as members of BRICS.

Keywords: BRICS Countries, Egypt, General Equilibrium Model, Tariff reduction, trade facilitation.

INTRODUCTION

Regional Trade Agreements (RTA) refers to a trade agreement between two countries or more. It is one of the forms of economic co-operation or integration, where trade barriers are reduced between member countries [1]. Therefore, this agreement is discriminatory towards non-member countries. The countries belonging to the RTA should not be geographically close [2]. Member countries at a low-cost RTA replace the high-cost domestic producers, and each state produces goods for which they have a comparative advantage [3]. Without tariff reductions, the bilateral trade of the member countries will not happen. When analyzing their impact on trade, previous studies have shown that RTAs have a positive effect on welfare on a global or national scale [4,5]. In the last few years, many RTAs have been attracting a lot of attention because of the emergence of regional powers with increasing clout in the global arena [6].

One RTA, in particular, is the bloc formed by BRICS (Brazil, Russia, India, China, and South Africa) countries, which creates a powerful political and economic counterweight to the present world powers (the US, Japan, and the EU). Thus leading to the reallocation of global economic activities and consumption to emerging and developing countries, and the resulting alteration of trade patterns [6]. The beginning of the alliance can be traced to the first RTA established between Brazil, India, and China [1], later joined by Russia [7]. The term BRIC, before the inclusion of South Africa, was first articulated in a Goldman Sachs' report in 2001 [8]. Finally, in December 2010, South Africa was invited to join, with the support of Russia [9], thus the bloc took its present name [10]. Over the years, the analysis of Goldman Sachs introduced the forecast for BRIC (Brazil, Russia, India, and China) [11] emerging markets and pointed to their ability for economic

growth in the future [12]. The bloc of BRICS countries has great demographic and economic potential. It ranks among the world's largest and is one of the most important economic blocs in the 21st century [13]. Each of the member countries has its particular strengths, such as the agricultural resources of Brazil, with 60 million hectares of arable land (7 % of its land area) extremely rich in the production of soybeans, sugarcane, and coffee. The country is also very rich in iron ore and crude oil. However, Russia possesses massive deposits of minerals, oil, and natural gas. India is a reliable service provider with a growing manufacturing base.

Furthermore, China is seen as the largest manufacturing center in the world, with a highly skilled workforce and relatively low wages [14]. China and India have fast-growing economies, but on the other hand, have limited natural resources [15]. Finally, South Africa possesses natural resources such as diamonds, gold, iron, and platinum. It is also one of the largest economies in Africa [16]. These resources allow the BRICS countries to achieve high growth rates.

Hence, many countries are seeking to join the BRICS alliance. Arguments have been put forth that Indonesia should be included in the group, effectively turning it into BRIIC [17]. In Egypt as well, many policymakers are looking forward to joining this alliance. Also, Brazil is negotiating trade agreements with Egypt, Turkey, Morocco, and Jordan whereas China invited Egypt, Thailand, and Guinea as guests of honor at the Xiamen BRICS summit in 2017 [18], which might indicate that Egypt is taking steps to join this alliance in the future. Such a move will be supported by many in Egypt and provide benefits for all parties involved, seeing that Egypt is one of the emerging countries of the future. Regarding trade policy, it must be noted that Egypt and all BRICS countries are members of WTO [19].

Trade between the BRICS and African countries has expanded considerably. In some cases, the BRICS countries have replaced Africa's traditional trading partners even though natural resources mainly dominate African countries' exports to the BRICS. BRICS countries are also becoming important actors in development aid to Africa [20]. China has become an essential source of foreign investment in Africa.

The share of BRICS in international trade has doubled over the past two decades, this could be as a result of a shift in the trade policies of the member countries. Tariff rates have been significantly reduced over the previous few years in the economies of the BRICS countries [21]. Geographically, two of the BRICS countries are located south of the equator, and the rest is located north. This is important regarding production seasons in agriculture (complementary or competition). Also, Egypt has a good climate, which enables it to produce many agricultural products throughout the year; there is no competition in the agricultural sector between BRICS members and Egypt [22]. Egypt's strategic location, at the border of Africa and Asia and holding the Suez Canal, helps to facilitate the movement of international trade. In the following sections, this study will elaborate on the background of Egypt's accession to BRICS and discuss the expected economic effects on the Egyptian and BRICS economies, with a focus on agricultural trade.

1. Overview of Macroeconomic Indicators in BRICS Countries and Egypt.

This part covers an overview of the macroeconomic indicators of the countries under consideration. Table 1 shows, except for South Africa, Egypt has a smaller economy than the BRICS, with GDP per capita around US\$10000. This is less than China and South Africa, one-half of Russia and two-thirds of Brazil, yet it is twice that of India (Fig. 1). Furthermore, Egypt's population at 88 million represents half that of Brazil or Russia and is well behind the billion-plus population for both China and India (Fig. 2). Moreover, the Egyptian GDP is near 30% to that of Brazilian GDP, 27% for Russian GDP, and 6% to China's GDP. On the other hand, it is close to 135% of South Africa's GDP. (Fig. 3)

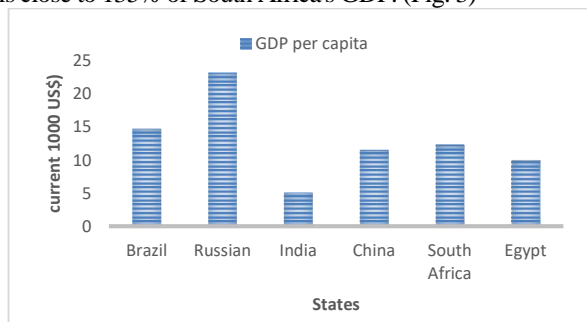


Fig. 1. per capita GDP in the BRICS countries and Egypt, average (2007-2017).

The total value of exports is around US\$ 239 billion for Brazil, US\$ 468 billion for Russia, US\$ 395 billion for India, US\$ 1962 billion for China, US\$ 104 billion for South Africa, and US\$ 45 billion for Egypt (Fig. 4). Consequently, exports by percentage of GDP are around 12%, 28%, 22%, 25%, 30%, and 20% respectively. (Fig. 5)

Regarding the imports, the value approximates to US\$ 247 billion for Brazil, US\$ 356 billion for Russia, US\$ 373 billion for India, US\$ 1709 billion for India, US\$ 106 billion for South Africa, and US\$ 65 billion for Egypt (Fig. 4). As a

result, imports by the percentage of GDP is around 12.7%, 20.7%, 26.3%, 21.7%, 31.1%, and 27% respectively. (Fig. 5) According to the macroeconomic indicators, the Egyptian economy matches up with some of the countries in BRICS with a difference in development modes.

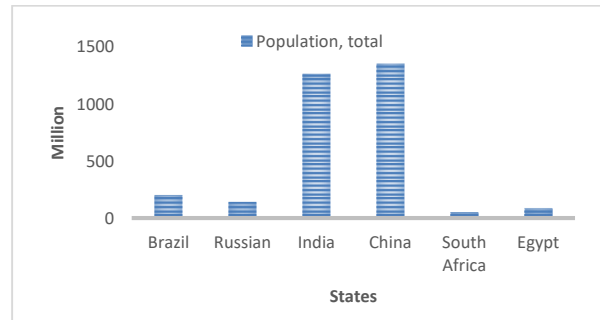


Fig. 2. The total population in the BRICS countries and Egypt, average (2007-2017).

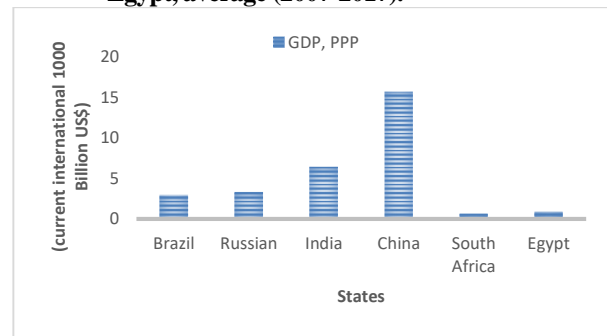


Fig. 3. GDP in the BRICS countries and Egypt, average (2007-2017).

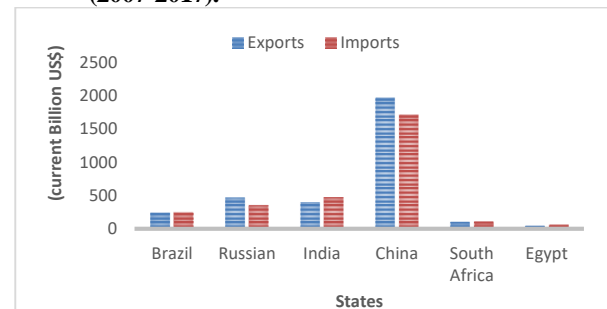


Fig. 4. Exports and imports in the BRICS countries and Egypt, average (2007-2017).

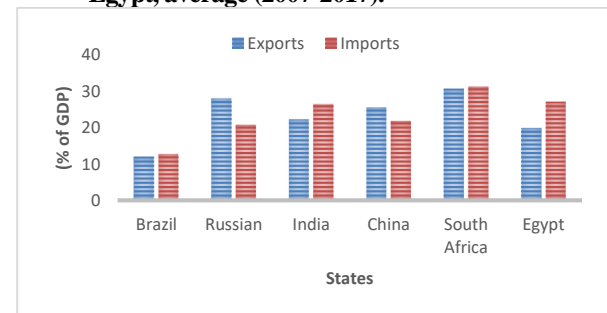


Fig. 5. Exports and imports as a percentage of GDP in the BRICS countries and Egypt, average (2007-2017).

Methodology

The GTAP model was built at Purdue University in the United States, based on the Global Trade Analysis Project (GTAP). It has been widely used in research and analysis. its application involves tariff reductions such as [23] and financial research [24]. it has also been used in the investment

sector [25], greenhouse gas reductions, and carbon tax collections [26, 27, 28] in addition to assessing the effects of trade frictions [29].

The standard GTAP model is a computable general equilibrium model that encompasses multiple regions and sectors. The so-called equilibrium of the model is that which is achieved in a completely competitive state. The innovative aspects of this model include: using the constant difference of elasticities (CDE) function to describe differences in preferences between different households, production functions are mostly constant elasticity of substitution (CES) functions, bilateral international trade is assumed to follow Armington hypothesis, and the inclusion of a worldwide banking sector called the “Currency Pool” under the overall architecture of the model used to describe savings and consumption around the world.

The overall structure of the GTAP model includes multiple sub-models. By using these sub-models, the behaviors of production-consumption in each country or region can be described in detail, and then each sub-model is linked into a general equilibrium model through international trade relations. In this model, it includes multiple countries and sectors. When using this model for policy analysis, it can quantitatively analyze the specific changes in macroeconomic variables such as production, import and export, gross domestic product, and social welfare level of various national policy influences. Therefore, its policy analysis results have a considerable value which can provide a good source of reference for policymakers.

The expected impact of Egypt's accession to BRICS on different regions is estimated by using the GTAP static model. This study is carried out with a multi-country, general equilibrium closure. The model assumes perfect competition; constant returns to scale; and profit-maximizing, utility-maximizing behavior of firms and households, respectively. Further information about the structure and overview of the GTAP model was provided through [31].

Model Database Processing

The database used in this study is the latest version of the GTAP (ninth edition) database. The essential data is based on the 2011 input-output table and international bilateral trade. The database includes 140 countries and regions, 57 product categories, and five production factors. As needed, the data is aggregated by country and the region for 11 Countries and Regions, as follows: five members of the BRICS (Brazil, Russian Federation, India, China, and South Africa) and the new player (Egypt), 27 EU countries (without the United Kingdom), the United States of America, the Middle East & North Africa, and the Sub-Saharan African countries. Other countries and regions were aggregated in the rest of the world, as shown in Table 1 [supplementary]. The database includes 57 commodities, aggregated into 20 commodities (Table 2[supplementary]). It also contains five basic production factors (land, technical labor, non-technical labor, capital, and natural resources), which remain unchanged.

Table 1. Overview of Macroeconomic Indicators in BRICS Countries and Egypt, average (2007-2017).

Indicators	Brazil	Russian	India	China	South Africa	Egypt
Population, total (million)	200.4	143.4	1261.6	1351.3	53.1	88.1
GDP per capita (current 1000 US\$)	14.7	23.1	5.1	11.5	12.3	10.0
GDP, PPP (current international 1000 Billion US\$)	2.96	3.33	6.43	15.61	0.66	0.89
Exports (% of GDP)	12.0	27.9	22.2	25.4	30.6	19.8
Exports (current Billion US\$)	239.7	468.4	395.0	1962.7	104.3	45.0
Imports (% of GDP)	12.7	20.7	26.3	21.7	31.1	27.0
Imports (current Billion US\$)	246.8	349.7	472.5	1708.6	105.8	64.5

Source: <http://databank.worldbank.org/data/source/world-development-indicators#>

Policy Scenarios

The accession of Egypt into the BRICS countries will have some vital implications in terms of overall welfare, output, and trade. To analyze the economic impact of Egypt's accession to BRICS with a special focus on agriculture, the study designs two policy scenarios as shown below.

The first scenario (tariff reduction): The study assumes a reduction in import tariffs to each commodity using the Harbinson approach. This approach repeats the formula used at the Uruguay Round, which employs an average reduction of overall products, allowing some variations for individual

commodities provided that a minimum total reduction is met. That is, the scenario performs a simple proportional cut, described in policy discussions as a *linear cut*. Table 2 shows the tariff cuts using a Harbinson scenario, for all developed and developing countries. The Harbinson formula will reduce tariffs linearly, making tariff cuts by tariff interval, differentiated between developed and developing countries. Estimates of the tariff reduction are to be between 40% to 60% for developed countries and 25% to 40% for developing countries.

Table 2. Scenarios for tariff reduction relative to the current tariff to imports

Developed Countries		Developing Countries	
Current Tariff Interval	Reduction	Current Tariff Interval	Reduction
0% - 15%	40%	0% - 20%	25%
15% - 90%	50%	20% - 60%	30%
> 90%	60%	60% -120%	35%
		> 120%	40%

Source: Antimiani, A.; Conforti, P.; Salvatici, L.(2005)

The second scenario (trade facilitation): In addition to the importance of tariff liberalization to trade improvement, other trade-related factors such as communication and transport services, customs procedures, port efficiency, standards, and technical regulations, etc. are also important in improving

trade performance. Hence, the second scenario includes reductions in Non-Tariff Barriers (NTBs) which is trade facilitation.

This study follows an approach where NTBs are considered dead-weight trade, such as the one used in the study

of the Doha Round of the WTO negotiation (Francois, 2001). According to this approach, NTBs has been incorporated into the CGE model by introducing an additional "effective" import price that is a function of the observed import price and an exogenous unobserved technical coefficient due to treating NTBs as unobserved trade costs, which are not explicit in the GTAP database [31]. The study reduces NTBs via decreased trading costs from trade facilitation efforts among Egypt and members of the BRICS countries, with an additional 2% increase in the availability of technology that can improve the management of cross-border trade [32,33].

Simulation Results

In this section, the results of the scenarios are described as follows.

General Impacts on Trade Volume of Tariff Reduction and trade facilitation Scenarios.

Equivalent Variation (EV) in income is used in a GTAP model to express the welfare implications of a change

Table 3. Percentage change in macroeconomic variables for policy scenario-1

Indicators	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU_27	MENA	SSA	ROW
GDP %	0.060	0.060	0.060	-0.08	0.010	0.020	-0.06	0.010	0.010	0.010	0.010
Trade balance (million \$)	10	87	84	1091	-621	69	151	-337	-36	-4	-493
Terms of trade (million \$)	0.030	0.010	0.010	-0.070	0.010	0.010	-0.050	0.000	0.000	0.000	0.010
Welfare (EV) (\$ million)	-44	-285	-281	-663	339	-105	-1351	348	4	13	525
Change in the total value of imports %	-0.145	-0.474	-0.160	-0.586	0.024	-0.133	-0.128	0.007	0.015	0.014	0.013
Change in the total value of exports %	-0.214	-0.439	-0.100	-0.112	-0.010	-0.183	-0.050	-0.003	0.008	0.011	-0.001
Export price Index	0.034	0.014	0.012	-0.064	0.011	0.014	-0.046	0.011	0.004	0.005	0.008
Import price Index	0.003	0.002	0.002	0.003	-0.001	0.000	0.005	0.006	0.004	0.003	0.002
Investment	-0.047	-0.148	-0.002	-0.247	0.019	-0.023	-0.029	0.013	0.009	0.006	0.013
Private consumption	0.029	-0.012	0.052	-0.108	0.015	0.015	-0.067	0.015	0.011	0.015	0.014

Source: Simulation results.

The table further shows that all the members of possible intra-BRICS will achieve economic growth, excluding Brazil and China with 0.08% and 0.06% GDP drop respectively. For Egypt, it is expected to have improved economic growth by about 0.06%. Developments in the terms of trade show that the trade changes will have positive effects except for Brazil and China, indicating the negative impact of tariff reductions on those countries. Egypt will witness an improvement in terms of trade by about \$0.03 million. An improvement in the terms of trade means that export prices are increasing faster than import price. Therefore, ceteris paribus, a rise in export prices will cause a fall in the quantity of exports. Relatively cheaper import prices will increase the quantity of imports.

Results also suggest that the trade balance for all member countries in BRICS will improve, including Egypt with \$10 million. However, it will improve for all member

Table 4. Percentage change in macroeconomic variables for policy scenario-2.

Indicators	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU_27	MENA	SSA	ROW
GDP %	0.248	0.287	0.059	0.335	-0.064	0.179	0.142	-0.067	-0.074	-0.084	-0.063
Trade balance million \$	-160	-302	-850	-2516	2423	-640	-2467	2172	52	42	2246
Terms of trade million \$	0.276	0.337	0.162	0.402	-0.038	0.151	0.111	-0.022	-0.051	-0.083	-0.031
Equivalent Variation(welfare) US\$ million	611	1091	1535	2942	-1071	3264	6292	-1748	-778	-358	-2356
Change in the total value of imports %	0.507	1.017	0.597	1.334	-0.087	0.656	0.435	-0.042	-0.098	-0.104	-0.066
Change in the total value of exports %	0.156	0.476	0.084	-0.006	0.033	0.591	0.135	0.015	-0.018	-0.005	0.000
Export price Index	0.266	0.307	0.134	0.368	-0.061	0.120	0.086	-0.054	-0.072	-0.094	-0.057
Import price Index	-0.010	-0.030	-0.029	-0.033	-0.023	-0.031	-0.025	-0.032	-0.021	-0.011	-0.026
Investment	0.277	0.576	0.307	0.593	-0.070	0.267	0.188	-0.078	-0.051	-0.056	-0.056
Private consumption	0.432	0.490	0.102	0.441	-0.066	0.343	0.208	-0.071	-0.079	-0.094	-0.067

Source: Simulation results.

All the members of possible intra-BRICS will achieve an increase in GDP. Brazil will gain the most with a 0.33% GDP increase, it is expected to reach 0.24% for Egypt.

in a country's policy. EV measures the annual change in a country's income following the new trade agreements. In this case, the EV refers to the difference in income between pre- and post-implementation of trade policy scenarios with all prices set as fixed at pre-agreement levels [34].

Table 3 shows the impact of tariff reduction on macroeconomic indicators and changes in the welfare of Egypt, the BRICS countries, the USA, and other trading blocs (EU, MENA, and SSA. Results show that there will be welfare loss for the BRICS. The welfare of Egypt, South Africa, Russia, Brazil, and India will shrink by about 44, 285, 281, 662, and 105 million respectively. China is the biggest loser of US\$ 1.351 billion. On the contrary, both the U.S. and the EU will achieve welfare gains of about US\$ 339 million and US\$348 million, respectively. Both MENA and SSA will also achieve welfare gains, albeit much lower in comparison.

countries in BRICS will improve, including Egypt with \$10 million.

Results also indicate that trade will be diverted from the USA and the trading blocs to the BRICS countries. Furthermore, Investment for all the BRICS countries and Egypt will decrease by a percentage not exceeding 2% (0.05% for Egypt), While it will increase for the USA and the considered trading blocs in tiny proportions. Except for South Africa, Brazil, and China, private consumption will increase for all countries being about 0.03% for Egypt.

Table 4 shows the impact of trade facilitation on macroeconomic indicators. The results show that China stands to win the most among BRICS countries with US\$ 6.29 billion in terms of welfare, it is amounted to be US\$ 611 million for Egypt. The USA and the trading blocs will suffer a negative impact on wellbeing, especially the EU which will lose the most by about US\$ 1.75 million.

Contrastingly, the USA and the other trading blocs will be affected negatively.

The terms of trade changes will be favorable for all BRICS members. Egypt has an improvement in terms of trade amounted to US\$ 0.28 million which leads to a trade deficit of US\$160 million. Conversely, there will be a deterioration in terms of trade for the USA, and the trading blocs considered causing a trade surplus.

The Policy Simulation Impact on Output.

Applying the first scenario, table 5 represents the percent change in the output of 20 commodities for each region. Focusing on Egypt, there will be a decline in the output of some commodities such as rice (0.003%), vegetables & fruits (0.03%), oilseeds (0.003%), raw milk (0.006%), extraction (0.01%), heavy manufacturing (0.05%), utilities & construction (0.04%), transport & communication (0.03%), and Other Services (0.02%). on the other side, there will an increase in some other commodities for such as wheat (0.02%), other cereal grains (0.004%), sugar crops (0.001%), and fiber crops (0.07%), living animals (0.06%), food processing (0.01%), textiles & clothing (0.23%), and light manufacturing (0.08%). Reducing tariffs on intermediate inputs may induce firms to exploit economies of scale and thus produce more.

Regarding the second scenario, the trade facilitation will cause a decline in the output of some commodities for Egypt as follows: wheat (1.90%), other cereal grains (0.08%), oil seeds (0.23%), living animals (0.47%), textiles & clothing (0.47%), light manufacturing (0.08%), and heavy manufacturing (0.45%). However, there will be an increase in some other commodities such as rice (0.06%), vegetables & fruits (0.06%), sugar crops (0.11%), fiber crops (0.07%), raw milk (0.13 %), extraction (0.16 %), food processing (0.12%), utilities & construction (0.18%), transport & communication (0.05%), and other services (0.14%).

In both scenarios, Some BRICS countries will experience a decline and some others will achieve an increase in producing such commodities.

The Policy Simulation Impact on Trade Balance

To illustrate this point using the first scenario, table 7 presents the trade balance by each commodity considering both exports and imports of the products. The findings indicate that the trade balance for Egypt will experience a deficit in some commodities namely, wheat (1.11%), vegetables & fruits (3.54%), food processing (13.53%), heavy manufacturing (19.28%), utilities & construction (1.51%), transport & communication (9.44%) and Other Services (9.83%). Conversely, some commodities will achieve surplus like rice (0.06%), living animals (2.84%), extraction (7.11%), textiles & clothing (48.01 %), and light manufacturing (15.65%).

The effect of tariffs on the trade deficit depends on the nature of the deficit and its persistence. A trade surplus or deficit is not always a viable indicator of an economy's health, and it must be considered in the context of the business cycle and other economic indicators

Implementation of the second scenario-trade facilitation - as seen in Table (8) - shows Egypt's trade deficit in some commodities such as rice (2.03%), wheat (20.48%), oilseeds (4.16%), sugar crops (0.04%), living animals (11.24%), food processing (17.93%), textiles & clothing (105.64%), light manufacturing (4.51%), heavy manufacturing (110.76%), utilities & construction (3.38%), transport & communication (63.41%) and Other Services (38.75%). on the other hand, there will a trade surplus in other commodities namely, vegetables &

fruits (2.94 %), fiber crops (8.85%), and Extraction (208.91%). The findings suggest that trade facilitation serves as an important channel through which trade affects economic growth.

Summary and Suggestions

Egypt seeks to join trade blocs, in particular, the bloc formed by the BRICS countries. Ranked among the world's largest and the most important economies in the 21st century, the BRICS has great demographic and economic potential. This study uses a regional CGE Model based on GTAP9 to clarify the expected economic impact of Egypt's accession to the BRICS alliance. The study has aggregated the countries into 11 regions, and the commodities were additionally aggregated into 20 commodities. The study discusses two main scenarios, namely, tariff reduction, and non-tariff barriers reduction via decreased trading costs.

The results of the first scenario show that Egypt will experience a loss in terms of welfare (\$44 million), terms of trade (\$ 0.030 million), and investment (0.05%), however, it will achieve gains in terms of economic growth (0.06%), consumption (0.03%), and trade surplus (\$10 million). Trade will be diverted from the USA and the trading blocs to the BRICS countries.

Concerning the levels of output, Egypt will achieve an increase in the output of some commodities, mainly: wheat (0.02%), other cereal grains (0.004%), sugar crops (0.001%), and fiber crops (0.07%), living animals (0.06%), food processing (0.01%), textiles & clothing (0.23%), and light manufacturing (0.08%). Concerning trade balance, Egypt will achieve a trade surplus in some sectors such as rice (0.06%), living animals (2.84%), extraction (7.11%), textiles & clothing (48.01 %), and light manufacturing (15.65%).

The outcomes of **the second scenario** indicate that Egypt will achieve a welfare gain of US\$ 611 million, besides it will achieve economic growth amounted to about 0.24% in addition to a slight improvement in terms of trade by US\$ 0.28 million which will lead to a trade deficit of US\$160 million. There will also be a clear improvement in investment and private consumption with about 0.27% and 0.43% respectively. This scenario has a stronger effect than the tariff reduction on macroeconomic indicators for Egypt and the BRICS.

Regarding the levels of output, Egypt will achieve an increase in the output of some sectors, mainly: rice (0.06%), vegetables & fruits (0.06%), sugar crops (0.11%), fiber crops (0.07%), raw milk (0.13 %), extraction (0.16 %), food processing (0.12%), utilities & construction (0.18%), transport & communication (0.05%), and Other Services (0.14%). This indicates the effective impact of trade facilitation between countries compared to tariff reduction.

Regarding trade balance, Egypt is expected to achieve a trade surplus in a few sectors mainly, vegetables & fruits (2.94 %), fiber crops (8.85%), and Extraction (208.91%)

In conclusion, trade facilitation is a "good deal" for all parties, in that it has the potential to bring economic benefits at least on a par with, and perhaps well above, those that would come from tariff reduction.

The study recommends that Egypt should strengthen economic and trade relations with BRICS countries. since it will have positive effects on the economy for both Egypt and the BRICS.

Table 5. Percentage change in Outputs for policy scenario-1

output	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU_27	MENA	SSA	ROW
P_r	-0.003	0.007	1.067	0.021	0.008	-0.002	-0.017	0.000	-0.001	-0.014	0.003
Wht	0.018	-0.073	-0.087	0.357	0.014	0.014	0.005	0.002	-0.006	-0.021	-0.009
Gro	0.004	-0.099	0.046	-0.155	0.006	-0.002	-0.013	0.004	-0.009	-0.001	-0.001
V_f	-0.026	0.012	-0.035	0.034	0.007	0.046	-0.011	0.003	0.005	0.008	0.005
Osd	-0.003	-0.054	-0.013	0.022	-0.056	-0.002	0.080	-0.038	-0.022	-0.008	-0.023
C_B	0.001	-0.068	0.048	-0.178	0.006	0.016	0.037	0.006	-0.003	0.003	0.018
Pfb	0.071	0.088	0.152	0.610	-0.026	-0.104	-0.216	-0.003	0.007	0.013	-0.001
Ocr	-0.323	3.169	-0.144	-0.004	-0.002	-0.024	0.033	0.008	0.013	0.094	0.005
Oap	-0.009	-0.008	0.098	-0.277	0.005	-0.003	-0.004	0.017	-0.009	-0.004	0.004
Rmk	-0.006	-0.049	0.017	-0.223	0.006	-0.001	0.032	0.008	-0.002	-0.002	0.015
Wol	-1.026	-8.638	0.319	-0.204	0.216	0.005	0.055	0.192	0.072	0.041	0.309
Cal	0.067	0.054	0.350	-0.397	0.011	-0.010	0.008	0.028	-0.028	-0.006	0.009
Extraction	-0.009	-0.020	-0.023	0.085	-0.008	-0.003	0.040	-0.012	-0.007	-0.008	-0.009
ProcFood	0.009	-0.082	0.044	-0.314	0.006	0.022	0.040	0.009	-0.002	-0.004	0.021
TextWapp	0.233	2.828	1.572	0.984	-0.012	0.026	-0.339	0.077	0.136	0.169	0.064
LightMnfc	0.084	0.087	0.057	0.123	-0.003	-0.018	-0.024	0.002	0.010	-0.019	0.005
HeavyMnfc	-0.047	-0.207	-0.048	0.130	-0.013	0.007	0.044	-0.015	0.002	-0.024	-0.019
Util_Con	-0.039	-0.113	-0.006	-0.151	0.010	-0.015	-0.022	0.007	0.007	0.002	0.008
TransComm	-0.032	0.067	-0.006	-0.010	0.001	-0.003	0.009	-0.003	0.000	-0.002	-0.001
OthServices	-0.023	-0.033	-0.010	-0.003	0.001	0.004	-0.004	0.000	-0.002	-0.001	0.000

Source: Simulation results.

Table 6. Percentage change in Outputs for policy scenario-2

output	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU_27	MENA	SSA	ROW
P_r	0.058	0.092	-0.239	-0.089	0.084	0.009	-0.018	0.066	0.214	0.041	0.011
Wht	-1.903	-0.756	0.930	-1.017	-0.026	-0.012	-0.019	-0.069	0.090	0.081	-0.031
Gro	-0.079	-0.202	-0.087	-0.124	0.036	0.012	-0.030	0.023	0.032	-0.014	0.025
V_f	0.067	-0.237	-0.136	-0.418	0.058	-0.016	-0.011	0.015	0.007	-0.009	0.015
Osd	-0.229	-0.208	-0.320	0.988	-0.599	-0.046	-0.722	0.095	0.049	-0.058	-0.128
C_B	0.112	0.041	-0.038	-0.213	0.014	0.010	-0.015	0.009	0.016	0.017	0.006
Pfb	0.071	-0.224	0.903	-0.217	-0.224	0.247	-0.612	-0.126	-0.011	-0.137	-0.111
Ocr	-0.279	-1.253	-0.006	-0.353	0.166	-0.032	-0.256	0.100	0.128	0.082	0.057
Oap	0.185	0.027	-0.050	-0.020	0.031	0.053	0.028	0.025	0.026	-0.006	0.018
Rmk	0.129	0.013	0.029	-0.011	0.014	0.078	-0.010	0.008	0.011	-0.002	0.007
Wol	9.139	4.644	-0.216	0.522	0.025	-0.141	-0.362	0.027	0.051	0.025	-0.042
Cal	-0.465	-0.090	-0.217	-0.044	0.024	-0.114	-0.042	0.027	0.083	0.010	0.033
Extraction	0.163	0.566	0.040	0.283	-0.002	0.136	-0.296	0.042	-0.005	-0.021	-0.019
ProcFood	0.123	-0.057	-0.035	-0.044	0.014	-0.008	-0.017	0.009	0.016	0.035	0.008
TextWapp	-0.472	-1.223	-1.377	-0.616	0.126	-0.329	-0.104	0.118	0.088	0.167	0.133
LightMnfc	-0.083	-0.510	-0.211	-0.187	0.027	-0.254	-0.046	0.026	0.025	0.112	0.031
HeavyMnfc	-0.450	-0.215	-0.193	-0.610	0.027	-0.161	0.038	-0.015	0.003	0.095	0.013
Util_Con	0.181	0.379	0.119	0.352	-0.038	0.169	0.157	-0.045	-0.034	-0.033	-0.035
TransComm	0.053	-0.193	0.008	0.025	-0.001	0.045	0.000	0.008	0.003	0.007	0.001
OthServices	0.146	0.139	0.011	0.053	-0.002	-0.027	0.024	0.000	-0.002	-0.018	-0.003

Source: Simulation results.

Table 7. the policies simulation impact on trade balance for scenario-1 US\$ million

trade balance	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU_27	MENA	SSA	ROW
P_r	0.06	0.19	1.38	3.01	0.74	0.00	-2.22	-0.14	-0.97	-2.55	0.19
Wht	-1.11	0.55	-6.00	16.32	4.00	0.01	1.71	-0.15	-2.32	-1.37	-11.06
Gro	-0.36	0.34	-0.64	7.19	2.21	0.13	1.31	-1.31	-1.27	-0.13	-8.14
V_f	-3.54	2.39	-22.29	8.97	2.20	23.64	-34.92	0.24	6.04	11.25	9.36
Osd	-0.34	0.11	-1.61	24.29	-20.31	-3.41	30.39	-7.23	-0.81	-1.46	-21.91
C_B	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-0.01
Pfb	-1.75	-0.16	-0.20	-0.95	-1.90	-19.46	40.36	-0.42	-1.69	-1.41	-10.66
Ocr	-2.63	-40.11	-0.50	18.06	0.97	-17.24	-0.39	2.02	1.24	29.97	5.86
Oap	-0.01	-0.76	-1.55	1.62	-1.13	0.44	5.85	-1.99	-0.05	-0.02	-2.55
Rmk	0.00	0.00	-0.09	0.04	0.00	0.01	0.06	0.00	0.01	0.00	-0.03
Wol	-0.03	-67.64	-0.24	0.43	0.12	0.54	37.48	0.72	0.02	-0.01	29.73
Cal	2.84	9.50	156.35	-282.75	19.30	-1.15	22.61	69.41	-13.24	-2.32	23.56
Extraction	7.11	41.78	-13.91	29.21	35.83	-9.12	-40.67	45.09	-96.51	-19.41	17.34
ProcFood	-13.53	-10.13	32.48	-546.26	23.51	37.57	124.88	79.04	-3.85	-3.47	299.68
TextWapp	48.01	298.03	174.03	404.84	-21.77	7.40	-1584.21	256.48	136.77	34.75	298.75
LightMnfc	15.65	81.06	73.63	422.13	-135.55	-48.50	-570.13	79.96	10.28	-10.83	105.07
HeavyMnfc	-19.28	-237.09	-233.44	803.57	-451.40	80.12	1738.85	-631.74	-24.89	-24.67	-990.29
Util_Con	-1.51	1.11	-13.62	11.09	-1.33	0.17	27.54	-12.27	-1.88	-1.79	-7.51
TransComm	-9.44	3.47	-28.76	57.15	-31.71	-1.77	189.73	-116.36	-18.86	-4.10	-146.41
OthServices	-9.83	4.62	-31.37	113.08	-44.86	19.28	162.26	-98.89	-23.79	-6.60	-83.89

Source: Simulation results.

Table 8. the policies simulation impact on trade balance for scenario-2 US\$ million

Trade balance	Egy	Zaf	Rus	Bra	USA	Ind	Chn	EU 27	MENA	SSA	ROW
P_r	-2.03	2.18	-0.47	-10.78	4.88	-25.71	-6.53	2.90	8.05	11.48	20.40
Wht	-20.48	-2.88	93.57	-16.96	-18.31	-2.34	-4.36	-31.22	13.15	5.29	-16.78
Gro	-1.70	-3.41	-1.10	-8.86	4.04	-3.65	-1.97	2.58	3.53	0.64	10.76
V_f	2.94	-6.51	-1.43	-11.89	34.02	-43.12	0.80	8.80	0.88	7.01	19.42
Osd	-4.16	-0.53	-3.02	370.23	-251.92	-10.28	58.88	13.00	1.13	-11.37	-143.48
C_B	-0.04	0.00	-0.02	-0.01	0.06	-0.02	-0.05	0.06	0.00	0.00	0.01
Pfb	8.85	-0.24	0.22	13.58	-34.41	89.19	-19.01	-1.85	-0.12	-12.12	-44.80
Ocr	3.11	2.89	5.54	-117.99	22.16	-27.18	0.57	52.56	2.46	14.43	48.01
Oap	-0.07	1.61	0.64	-2.07	3.95	-1.51	-12.09	2.99	0.77	0.38	5.57
Rmk	-0.02	-0.04	-0.07	-0.09	0.34	-0.69	-0.59	0.42	0.12	0.06	0.56
Wol	0.22	35.89	0.32	-1.04	-0.03	-11.75	-16.88	-0.70	0.38	0.01	-7.52
Cal	-11.24	-20.50	-86.61	-37.22	33.96	-25.87	-74.10	57.81	47.93	16.63	105.96
Extraction	208.91	417.20	-17.85	1311.24	88.63	745.14	-804.35	87.84	-709.35	-343.05	-710.58
ProcFood	-17.93	-62.02	7.46	-61.17	83.52	-102.92	-163.46	95.60	58.91	43.43	135.46
TextWapp	-105.64	-97.62	-32.72	-209.11	249.50	-229.60	-379.84	340.33	63.73	20.47	405.55
LightMnfc	-4.51	-330.89	-88.71	-626.87	798.27	-565.72	-1179.22	821.16	174.62	84.13	952.51
HeavyMnfc	-110.76	-82.28	-372.19	-2533.11	1054.90	257.00	1146.18	-356.94	122.87	125.58	649.65
Util_Con	-3.38	-9.83	-100.63	-35.58	7.68	-16.49	-10.22	82.31	27.04	12.93	46.16
TransComm	-63.41	-89.55	-113.78	-187.64	109.64	-142.75	-529.60	314.39	85.57	19.34	301.43
OthServices	-38.75	-54.99	-139.14	-350.82	231.86	-522.20	-471.04	679.72	150.79	46.43	468.16

Source: Simulation results.

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APPENDIX

Table 1. GTAP database region classification.

Nu.	Country or region	GTAP ninth edition database original country and region
1.	Egy	Egypt
2.	Zaf	South Africa
3.	Rus	Russian Federation
4.	Bra	Brazil
5.	USA	United States of America
6.	Ind	India
7.	Chn	China
8.	EU_27	Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Bulgaria, Croatia, and Romania
9.	The Middle East and North Africa(MENA)	Bahrain, Iran Islamic Republic, Israel, Jordan, Kuwait, Oman, Qatar, Saudi Arabia, Turkey, United Arab Emirates, Rest of Western Asia, Morocco, Tunisia, and Rest of North Africa
10.	Sub-Saharan Africa(SSA)	Benin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana Guinea, Nigeria, Senegal, Togo, Rest of Western Africa Central Africa, South Central Africa, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Tanzania, Uganda, Zambia, Zimbabwe, Rest of Eastern Africa, Botswana, and Namibia
11.	Rest of World	Australia, New Zealand, Rest of Oceania, Hong Kong, Japan, Korea, Mongolia, Taiwan, Rest of East Asia, Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Philippines, Singapore, Thailand, Viet Nam, Rest of Southeast Asia, Bangladesh, Nepal, Pakistan, Sri Lanka, Rest of South Asia, Canada, Mexico, Rest of North America, Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, Venezuela, Rest of South America, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, El Salvador, Rest of Central America, Dominican Republic, Jamaica, Puerto Rico, Trinidad and Tobago, Caribbean, United Kingdom, Switzerland, Norway, Rest of EFTA, Albania, Belarus, Ukraine, Rest of Eastern Europe, Rest of Europe, Kazakhstan, Kyrgyzstan, Rest of Former Soviet Union, Armenia, Azerbaijan, and Georgia

Source: Aggregated according to GTAP ninth edition database.

Table 2. GTAP Ninth Edition Database Industry Classification.

Nu.	Total industry	GTAP 9 database original industry	Nu.	Total industry	GTAP 9 database original industry
1.	P_r	Paddy rice	11.	Wol	Wool, silk-worm cocoons
2.	Wht	Wheat	12.	Cal	Cattle,sheep,goats,horses
3.	Gro	Cereal grains nec	13.	Extraction	Mining and Extraction
4.	V_f	Vegetables, fruit, nuts	14.	ProcFood	Processed Food
5.	Osd	Oilseeds	15.	TextWapp	Textiles and Clothing
6.	C_B	Sugar cane, sugar beet	16.	LightMnfc	Light Manufacturing
7.	Pfb	Plant-based fibers	17.	HeavyMnfc	Heavy Manufacturing
8.	Ocr	Crops nec	18.	Manufacturing Util_Cons	Utilities and Construction
9.	Oap	Animal products nec	19.	TransComm	Transport and Communication
10.	Rmk	Raw milk	20.	OthServices	Other Services

Source: Aggregated according to GTAP ninth edition database.

الشراكة المصرية مع دول البريكس: مبادرة التعاون الإنمائي البديل "مع الإشارة إلى التجارة الزراعية"

يسرى نصر أحمد، فاطمة حفناوي* وفكتور شاكر

قسم الاقتصاد الزراعي - كلية الزراعة - جامعة القاهرة 11865 مصر

في إطار سعي مصر للانضمام إلى اتفاقيات التجارة الحرة بشكل ثنائي أو بشكل متعدد الأطراف، تهدف الدراسة الحالية إلى تقييم انضمام مصر لتكتل البريكس الذي تم تصنيفه ضمن أكبر الاقتصاديات في العالم وأهمها في القرن الحادي والعشرين إلى جانب تمتعه بإمكانيات ديموغرافية واقتصادية كبيرة. لتحقيق الهدف البحثي، اعتمدت الدراسة على استخدام نموذج التوازن العام الحسابي الإقليمي المستند على قاعدة بيانات GTAP9، حيث تم تجميع الدول في 11 إقليم، وتجميع السلع في 20 سلعة. في هذا الإطار، تناقش الدراسة سيناريوهين رئيسيين هما تخفيض التعريفات، وخفض الحواجز غير الجمركية من خلال خفض تكاليف التجارة. بالنسبة للسيناريو الأول المتعلق بخفض الرسوم الجمركية، أشارت النتائج إلى أن مصر ستعرض لخسارة في الرفاهية (44 مليون دولار) ومعدل التبادل التجاري (0.03 مليون دولار) والاستثمار (0.05٪)، لكنها ستحقق مكاسب في معدل النمو الاقتصادي (0.06٪) والاستهلاك (0.03٪) والفائض التجاري (10 مليون دولار)، كما أشارت إلى حدوث تحول للتجارة المصرية من الولايات المتحدة الأمريكية والتكتلات التجارية (الاتحاد الأوروبي، الشرق الأوسط وشمال أفريقيا، أفريقيا جنوب الصحراء الكبرى) إلى دول البريكس. وفيما يتعلق بالأثر على مستويات الإنتاج، ستحقق مصر زيادة طفيفة في إنتاج بعض القطاعات مثل: القمح (0.02٪)، الحبوب الأخرى (0.004٪)، محاصيل السكر (0.001٪)، محاصيل الألياف (0.07٪)، الحيوانات الحية (0.06٪)، الصناعات الغذائية (0.01٪)، المنسوجات والملابس (0.23٪)، الصناعات الخفيفة (0.08٪). أما فيما يتعلق بالأثر على الميزان التجاري، ستحقق مصر فائضًا تجاريًا في بعض المنتجات مثل الأرز (0.06٪)، الحيوانات الحية (2.84٪)، الاستخراجات (7.11٪)، المنسوجات والملابس (48.01٪)، والصناعات الخفيفة (15.65٪). أما بالنسبة للسيناريو الثاني المتعلق بإزالة الحواجز غير الجمركية (تيسير التجارة)، من المتوقع أن تحقق مصر مكاسب في الرفاهية بقيمة 611 مليون دولار ومعدل نمو اقتصادي 0.24٪، إلى جانب حدوث تحسن طفيف في معدل التبادل التجاري بحوالي 0.28 مليون دولار مما ترتب عليه تحقق عجز تجاري بلغ 160 مليون دولار. كما أوضحت النتائج تحقق تحسن في الاستثمار والاستهلاك الخاص بنحو 0.27٪، 0.43٪ على التوالي. وبالنسبة للأثر وعلى مستويات الإنتاج، من المتوقع أن تحقق مصر زيادة في إنتاج بعض القطاعات مثل: الأرز (0.06٪)، الخضروات والفواكه (0.06٪)، محاصيل السكر (0.11٪)، محاصيل الألياف (0.07٪)، اللبن الخام (0.13٪)، الاستخراجات (0.16٪)، التصنيع الغذائي (0.12٪)، المرافق والبناء (0.18٪)، النقل والاتصالات (0.05٪)، والخدمات الأخرى (0.14٪). وفيما يتعلق بالأثر على الميزان التجاري، من المتوقع أن تحقق مصر فائضًا تجاريًا في عدد قليل من القطاعات، أهمها الخضراوات والفواكه (2.94٪) ومحاصيل الألياف (8.85٪) والاستخراجات (208.91٪). إن تيسير التجارة "صفقة جيدة" لجميع الأطراف، من حيث أنه من الممكن أن يجلب منافع اقتصادية على الأقل على قدم المساواة، وربما تتجاوز بكثير، تلك التي قد تأتي من تخفيض التعريفات الجمركية. في هذا الإطار، توصي الدراسة بضرورة قيام مصر بتعزيز العلاقات الاقتصادية والتجارية مع دول البريكس، لما سترتب على ذلك من آثار إيجابية لكل من مصر ودول البريكس.