

The Impact of Trade Openness on Economic Growth: Evidence from Agricultural Countries

Abi Pratiwa SIREGAR¹, Nadila Puspa Arum WIDJANARKO²

Received: November 15, 2021 Revised: January 23, 2022 Accepted: February 05, 2022

Abstract

The study investigates the effect of trade openness on the economic growth of agricultural countries. The information of export, import, gross domestic product (GDP), Gross Fixed Capital Formation (GFCF), and population of 72 agrarian nations generated by the World Bank from 2011 until 2020 is used for data examination. Then, before panel data analysis, a preferred model is chosen from among common-effects, fixed-effects, and random effects. The best model turns out to be a fixed-effect model. The result reports that from 2011 to 2020; 16 out of 72 nations have succeeded in experiencing positive economic growth, the value of GFCF was US\$ 2,859.04 billion, and later grew by 19 percent to US\$ 3,393.73 billion, the population tends to increase continuously year by year, and 2 out of 72 countries experienced export plus import exceed their GDP. Moreover, trade openness is positively associated with economic growth, with a coefficient of 3.81. Besides that, an increase in GFCF may boost economic growth by approximately 3.32 percent. On the contrary, one percent additional population significantly delivers around 25.46 percent negative economic growth. To sum up, the higher intensity of products or services sold and bought abroad may enhance the economic performance.

Keywords: International Trade, Economic Development, Human Capital Development, Agriculture

JEL Classification Code: F14, F43, F63, Q17

1. Introduction

According to their Gross National Income, countries can be classified as developed or developing (GNI). According to the World Bank (2021e), affluent countries have a GNI per capita of more than US\$ 12,535 per year, whereas underdeveloped countries have a GNI per capita of less than that. According to Olajide et al. (2012), emerging countries have one thing in common: the agricultural sector contributes a significant portion of labor absorption, export and import, and GDP (GDP). Then Agboola and

Bekun (2019) depict still another feature of agrarian countries: a large amount of arable land.

The vast land area aids agricultural countries in producing a wide range of products (Laborte et al., 2012). However, due to oversupply or higher prices on the international market, some portions of the production are not consumed domestically (Li, 2021). As a result, trade openness plays a critical role in facilitating access to commodities and services to boost economic growth (Keho, 2017). The ratio of exports + imports to GDP is what this word refers to.

The export-led growth hypothesis and the import-led growth hypothesis are used to determine the importance of trade openness (Hye & Lau, 2015). According to these beliefs, a country seeks economic progress via exporting and importing goods (international trade). Furthermore, trade openness has an impact on economic growth due to three factors: re-allocation effect (increased human capital), spillover effect (knowledge transmission), and competitiveness effect (innovation and replication) (Rivera-Batiz & Romer, 1991). The impact of trade openness on economic growth has been extensively studied due to its critical role in economic development.

¹First Author and Corresponding Author. Lecturer, Department of Agricultural Socio-economics, Faculty of Agriculture, Gadjah Mada University, Indonesia. ORCID ID: 0000-0001-5548-9673. [Postal Address: Flora Street, Bulaksumur, Yogyakarta Special Region, 555281, Indonesia] Email: abipratiwasiregar@ugm.ac.id

²Department of Agricultural Socio-economics, Faculty of Agriculture, Gadjah Mada University, Indonesia. ORCID ID: 0000-0002-7736-8386. Email: n.puspa@mail.ugm.ac.id

The goal of this research is to determine the impact of trade openness on agricultural countries' economic growth. First, agricultural countries obtain extra value from exports and may be able to maintain domestic production operations due to imported raw materials; nevertheless, each agricultural country may respond differently. Second, previous research was completed several years ago, necessitating the presentation of new data.

2. Literature Review

Using logs of the Cobb-Douglas production function combining capital and labor, Keho studies the impact of trade openness on economic growth (2017, p.5). The secondary data used ranged from 1965 to 2014, as provided by the World Development Indicators. This study indicated that international commerce might play a significant role in Cote d'Ivoire's economic growth, both in the short and long term. The conclusion is based on the fact that trade openness has a beneficial and considerable impact on the country under study. Furthermore, Raghutla (2020) used the traditional neoclassical-based one-sector aggregate production function to evaluate the impact of trade openness, inflation, technology, and financial development (capital) on the economic growth of Brazil, Russia, India, China, and South Africa (BRICS). The data used is from a World Bank document that spans the years 1993 to 2016. This study found that having a better score on independent variables can lead to greater economic growth. Furthermore, Kong et al. (2021) examined the impact of trade openness on China's economic growth using panel data from 1994 to 2018. The researchers discovered that China's opening up improves both short and long-term economic growth.

Population expansion can have a positive or negative impact on economic growth. Using the vector autoregression (VAR) model, Mohsen and Chua (2015) looked at the elements that influence Syria's economic growth. The research goal is met by using secondary data from the World Bank, which dates from 1980 to 2010. The population has a favorable and considerable impact on both short- and long-term economic growth, according to this study. The finding suggests that the education system, standard of living, and quality of life be improved to increase the human quality of life so that population change can continue to contribute to economic performance. Golley and Wei (2015), who looked into population dynamics and economic growth in China, came to a similar conclusion. According to this study, a bigger population could lead to continuous economic growth as long as systematic human quality upgrading is carried out, particularly for young people entering the labor market. Dao (2012), on the other hand, stated that developing countries must lower fertility rates to reduce population because a

study indicated that adding one unit to the population can limit economic growth at a certain level.

GFCF is defined as the acquisition of generated assets, according to the Organisation for Economic Co-operation and Development (2021). Belloumi and Alshehry (2018) use an autoregressive distributed lag model to investigate the influence of GFCF on economic growth. In the short and long run, investment has a significant and positive association with economic performance, according to this study. The recommendation based on the findings is to encourage more activities and projects to keep the business cycle and economic prosperity going. In terms of GFCF on economic growth, Rehman and Hysa (2021) found a similar outcome. Increasing economic growth, on the other hand, may result from improving the financial system to boost investment. Furthermore, Fathima Rinosha and Mohamed Mustafa (2021) emphasized that the GFCF can have a positive impact on economic growth by increasing investment.

Several of the studies mentioned above gave useful information on trade openness, population, and the impact of GFCF on economic growth, however, they only looked at one country or region. Nonetheless, the impact of predictor variables on agricultural countries' economic growth must be considered; agricultural countries function as both producers and consumers of certain goods. Increasing exports can help producers add more value to their products. The increased intensity of imports from products that can be produced domestically, on the other hand, may have an equivocal impact on the micro and macro scales. As a result, the current research deems it important to investigate the impact of trade openness on the economic growth of agricultural countries. Moreover, the investigation is based on the following hypotheses:

H1: Trade openness influences agricultural countries' economic growth.

H2: Population influences agricultural countries' economic growth.

H3: GFCF influences agricultural countries' economic growth.

3. Research Methods and Materials

In this study, countries' classification was determined using Location Quotient (LQ). Adapted from Crawley et al. (2013) and employed for this research, a country is classified as an agricultural nation if the LQ score is higher than one.

$$LQ_i = \frac{\frac{x_i}{n_i}}{\frac{x}{n}} \quad (1)$$

Where LQ_i denotes the LQ score in i -country. The levels of agriculture sector contribution to GDP at the national and global levels are represented by X_i and n_p , respectively; X and n are the total levels of GDP at the national and global levels. According to calculations based on GDP data at the country and global levels given by the World Bank, 121 nations out of 214 have an LQ score greater than one. However, after focusing on each variable and each chosen country, only 72 nations were picked for the data analysis step. This reduction is not available year by year, from 2011 through 2020, due to trade openness, population, GFCF, or economic growth in 49 nations (World Bank, 2020a, 2021d, 2021b, 2021e, 2021c).

The final stage is the examination of trade openness on economic growth using the equation as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \tag{2}$$

Where Y , X_1 , X_2 , X_3 , and e represented economic growth, log of GFCF, population, and trade openness and error, respectively. Furthermore, β_0 , β_1 , β_2 , β_3 are represented coefficients of each independent variable. A semi-log regression model results in a better estimation, whereas the other models found a heteroscedasticity issue.

Concerning optimizing panel data utilization (Baltagi, 2005) and measuring economic growth determinants, it is necessary to find the best model to predict the dependent variable. Three models have been examined using the Chow test (common effect and fixed effect) and Hausman Test (fixed effect and random effect), and the result concluded that the fixed effect model is more suitable for this research (Table 1).

4. Results and Discussion

4.1. Economic Growth of Agricultural Countries

Economic growth is one of the most important markers of a country's progress, and a steady increase in GDP might suggest that specific business fields or economic sectors are seeing increased production or productivity. The service

sector is the top business field in agricultural countries that can grow beyond other sectors, according to the World Bank's four business fields category (2021g, 2021a, 2021f, and 2021h). It is necessary to investigate this information. Excess supply in agricultural countries may result in reduced product prices. A solution that can address this problem while still boosting international trade growth is needed. As part of the service sector, trade can assist agricultural countries in sending excess raw materials out of the country.

The expansion of the service sector demonstrates that agricultural countries' quality and quantity of output can fulfill the demands of destination countries. In general, destination countries all over the world will have their own set of criteria (size, quality, and chemical content). Increased added value from the service sector suggests that the need may be met in a long-term manner. As a result, quality control must be carried out from crop growth to post-harvest to ensure the continuation of commodity shipments to destination countries, allowing producers to retain additional value.

Only five countries have had diminishing annual economic growth in the recent decade, according to Table 2. Mongolia, on the other hand, outperformed 71 other agricultural countries in terms of economic success. This country's annual growth rate has been around 6.50 percent during the past decade. This performance is backed up by the mining industry. Mongolia's coal consumption is mostly consistent, with considerable growth coming from China, India, Japan, and Korea. In addition to domestic production, mining activities were carried out in other parts of the country. A broad dispersion of production sources, according to Hardjoko et al. (2021), can lower the chance of failure and prevent economic stagnation. This reduction is possible because, in the event of a natural disaster or an impediment to the use of equipment and machines at a mining location, the other mining locations can be adjusted to compensate for these shortcomings.

Greece's economic growth, on the other hand, has slowed to 2.37 percent a year. This country's economic performance is mostly dependent on the service industry. As a result, when domestic or global economic and financial crises arise, the

Table 1: Selection of the Best Model for the Estimation of Economic Growth

Variables	Common Effect Model	Fixed Effect Model	Random Effect Model
C	0.4449 ^{ns}	347.7902 ^{***}	-0.5311 ^{ns}
GFCF	-0.4693 ^{***}	3.3148 ^{***}	-0.3133 [*]
Population	0.8250 ^{***}	-25.4580 ^{***}	0.6708 ^{***}
Trade Openness	0.5270 ^{**}	3.8092 ^{***}	0.7172 ^{**}
Chow test	–	0.000 ^{***}	–
Hausman test	–	–	0.0000 ^{***}

Note: ns, *, **, and *** indicates non-significant and significance at the 10%, 5%, and 1% level.

Table 2: Agricultural Countries' Economic Growth (EG), GFCF Growth (GG), Population Growth (PG), and Trade Openness Growth (TOG), (% per Year During 2011–2020)

Country	EG	GG	PG	TOG	Country	EG	GG	PG	TOG
Albania	0.10	-0.75	-0.26	-2.39	Jordan	0.08	-9.71	0.13	-6.67
Algeria	0.09	0.11	0.11	-3.83	Kenya	0.23	0.14	0.11	-2.95
Argentina	-0.62	-4.89	0.05	-1.72	Kosovo	0.13	0.09	-0.10	-2.78
Armenia	0.16	-1.53	0.02	-2.50	Kyrgyz Republic	0.15	0.12	0.11	-4.73
Bangladesh	0.28	0.34	0.05	-4.48	Latvia	0.13	0.17	-0.89	0.05
Belarus	0.07	-4.26	-0.09	0.05	Liberia	0.10	0.06	0.12	-2.64
Belize	0.03	0.16	0.09	-0.22	Madagascar	0.12	0.06	0.13	0.17
Benin	0.23	0.44	0.13	-0.39	Malaysia	0.17	0.11	0.07	-3.00
Brazil	0.02	-2.59	0.06	-0.07	Mali	0.17	0.09	0.15	-1.14
Burundi	0.09	-1.78	0.13	0.09	Mauritania	0.15	0.08	0.14	-2.13
Cambodia	0.26	0.40	0.08	0.10	Moldova	0.15	0.17	-0.99	0.04
Cameroon	0.18	0.25	0.13	-1.30	Mongolia	0.29	0.08	0.10	0.26
Chad	0.11	-8.39	0.13	-1.41	Montenegro	0.05	0.10	0.00	-1.47
Chile	0.09	-0.05	0.05	-1.71	Namibia	0.09	0.05	0.10	-1.08
Hong Kong SAR, China	0.08	-2.23	0.04	-0.28	Nepal	0.19	0.05	0.06	0.14
Colombia	0.12	-0.19	0.06	-1.41	Nicaragua	0.14	0.13	0.06	-0.20
Congo, Dem. Rep.	0.25	0.15	0.14	0.05	Nigeria	0.13	0.04	0.12	-4.76
Congo, Rep.	-1.30	-10.87	0.12	0.07	Pakistan	0.18	0.15	0.09	-0.84
Costa Rica	0.13	0.10	0.05	0.02	Paraguay	0.13	0.13	0.06	-2.10
Dominican Republic	0.18	0.18	0.05	-2.74	Peru	0.12	0.03	0.06	-1.30
Ecuador	0.09	-0.57	0.08	0.01	Philippines	0.22	0.10	0.08	0.06
Egypt, Arab Rep.	0.17	0.14	0.09	-1.58	Romania	0.13	0.17	-0.49	0.13
El Salvador	0.08	0.11	0.03	-0.97	Rwanda	0.26	0.22	0.12	0.23
Gabon	0.14	-0.90	0.13	-0.36	Senegal	0.21	0.39	0.13	0.10
Georgia	0.17	0.17	-0.13	0.02	Serbia	0.10	0.31	-0.51	0.18
Greece	-2.37	-4.53	-0.40	0.14	Sri Lanka	0.17	0.17	0.06	-1.68
Guatemala	0.13	0.09	0.09	-0.74	Sudan	0.13	-0.19	0.11	-14.41
Guinea	0.27	-2.20	0.12	0.15	Tanzania	0.27	0.11	0.15	-4.95
Guinea-Bissau	0.14	0.16	0.12	-0.75	Thailand	0.10	0.23	0.03	-3.08
Haiti	0.08	-1.75	0.07	0.07	Togo	0.23	0.18	0.12	-3.73
Honduras	0.11	-1.62	0.09	-2.20	Turkey	0.22	0.21	0.08	-1.45
Iceland	0.12	0.27	0.08	-2.08	Uganda	0.22	0.17	0.15	-1.04
India	0.21	0.15	0.05	-3.94	Ukraine	-0.33	0.05	-0.39	-2.62
Indonesia	0.21	0.18	0.06	-4.05	Uruguay	0.08	-1.26	0.02	-1.48
Islamic Rep. of Iran	0.03	-6.72	0.06	-9.85	Uzbekistan	0.26	0.24	0.09	-1.92
Jamaica	-0.18	-0.32	0.04	0.04	Vietnam	0.28	0.40	0.04	0.27

Source: Secondary Data (World Bank) Analysis, 2021.

number of visitors from other countries decreases, resulting in slower economic growth. As a result, it is vital to disperse economic sectors proportionally to avoid widespread consequences if one business field fails.

4.2. Gross Fixed Capital Formation of Agricultural Countries

Investment is critical in agricultural countries, especially when it comes to expediting the conversion of agricultural commodities into intermediate or final products. More investment could be used to improve the quality of existing machines and tools or to purchase new equipment to process more raw materials and provide more outputs. According to the World Bank (2021d), agricultural countries' GFCF growth is lower than the global average of 3.97 percent. This result implies that agricultural countries have a lot of room to catch up in terms of investment. At the same time, gaining extra funds to spend on assets can be difficult.

Agricultural countries in Sub-Saharan Africa have the lowest and greatest GFCF growth rates in this analysis. Benin (–10.87 percent) and the Democratic Republic of Congo (–10.87 percent) (10.31 percent). These circumstances arise as a result of various macroeconomic variables. Oil mining is the Republic of Congo's principal business. The price of this commodity was falling to cat

on a global scale, causing the economy to decline (Ministry of Special Economic Zones Republic of Congo, 2020). The economy's situation has worsened due to a drop in the value of investments. This decision stems from the unthinkable investment in equipment and machinery during a downturn in the economy. If a country's economy is heavily reliant on oil, it is vital to diversify the market or the main sector.

Benin, on the other hand, has the highest GFCF percentage among the 72 nations studied, with an average GFCF rise of 10.31 percent every year. Benin is an agricultural country with agriculture as its foundation and principal industry, and it has a plentiful supply of agricultural commodities to meet domestic and international demands. Aside from that, the increased investment might boost the sector's performance by adding more value. According to Koffi et al. (2016), Benin received greater investment to increase manufacturing capacity to meet the needs of West African markets. Benin successfully maintains a healthy and stable economy and politics, allowing investors to feel safe about investing there.

4.3. Population of Agricultural Countries

Despite the world's growing population, ten countries saw their populations decline (Table 2). One of the most important variables influencing economic growth is the population. This contribution stems from the fact that labor

is one of the variables that facilitate manufacturing and, in some cases, even decides the amount and quality of the items to be produced. As a result, dependable human resource management must keep pace with the growing population.

As producers of agricultural commodities, agricultural countries have a strategic role in fulfilling human needs, especially food. However, if population growth is increasing more than the development of resources, the agricultural nation will be preoccupied with domestic affairs to meet the needs of its population rather than to gain added value from meeting the needs of the residents of other countries. According to the World Bank (2020b), in general, the population in agricultural countries grows 0.33% faster than the world population.

Moldova is the country with the fastest-dwindling population, as shown in Table 2. One of the explanations could be the population's high mobility. People of working age are more likely to relocate to foreign nations. Moldova According to UNFPA (2016), some of them may be working or studying in foreign nations to get international experience or improve their well-being. Unfortunately, these scholars and young people have chosen not to return to their homeland. Furthermore, many cardiovascular disorders in the adult population resulted in an increase in population mortality on the domestic front. To address this issue, greater health, education, and infrastructural facilities could be implemented.

On the contrary, Uganda experiences population escalation by 3.41% per year. According to Namasivayam et al. (2019), this nation is the most populous country in Africa. The main reason for this predicate is the relatively high fertility rate. Therefore, to prevent socio-economic issues, the government strived to make the family planning program more sustainable to reduce population growth.

4.4. Trade Openness of Agricultural Countries

Imposing export and import restrictions can assist agricultural countries in gaining greater benefits if they are more likely to collaborate with other nations. To reap these benefits, agricultural nations must also keep track of which items are in great demand or have a higher value. However, in terms of quality, quantity, and price, one country will compete with other exporters. As a result, to continue exporting, they must improve their products. Consumers in the destination country require specialized products that are developed to meet their needs. To get export allocations to suit the needs of segmented clients, special trade collaboration is required.

Table 2 demonstrates that Vietnam has the highest level of trade openness in this study. From 2010 to 2019, Vietnam's trade volumes increased faster than its imports, resulting in a trade balance surplus. Vietnam has gained approximately 184 billion USD per year during the last decade, according

to the World Bank (2021b, 2021e), but its import value is around 182 billion USD per year. Furthermore, according to Nguyen et al. (2021), this success is backed by the fact that Vietnam benefited from the trade diversion impact.

Compared to Vietnam, Sudan experienced the opposite condition. This nation goes through a deficit balance of trade. Sudan generates an export value of 374 million USD, while the import value is 444 million USD. Moreover, these values are much lower than this country’s GDP, approximately 51 billion USD. These facts indicate three things; firstly, Sudan has natural resources but cannot export in a large capacity because it has not met the destination country’s requirements. Second, Sudan has relatively few resources, focusing on meeting domestic needs. Third, people’s purchasing power is relatively low to access products abroad. Moreover, Khalifa (2016) explains that Sudan will be better off if it processes its raw material before sending the commodities abroad.

4.5. Determinant Factors of Agricultural Countries’ Economic Growth

The GFCF has a beneficial and considerable impact on agricultural countries’ economic growth, according to estimates (Table 3). GFCF, as a proxy for investment, can boost economic growth by assisting countries in the construction and development of infrastructure. Furthermore, stronger infrastructure can lead to increased investment in a bidirectional manner, since investors trust in investing in the country. Furthermore, GFCF can indicate how well an investment is performing, and a high GFCF can lead to increased investment, which is beneficial to the country’s economy. Furthermore, GFCF-assisted economic growth may assist countries in developing their economies. As a result, GFCF is a critical component in the development and acceleration of economic growth.

According to Meyer and Sanusi (2019), this explanatory variable favors the development of policies

such as low-interest rates, infrastructure improvements, and economic diversification. Low-interest rates may help to improve economic growth by allowing more loans to be issued and encouraging increased consumption. More agricultural loans might speed up the producer’s crop activities in the agricultural industry. Furthermore, infrastructure development has the potential to absorb more jobs while also lowering the unemployment rate. Finally, economic diversity encourages a sector’s ability to contribute more to overall growth. Furthermore, Zahir and Rehman (2019) proposed that the GFCF’s good impact should be complemented by ongoing efforts to strengthen the investment climate and infrastructure. Nantharath and Kang (2019) suggested, on the other hand, that the government should expand its infrastructure spending to entice investors and stimulate economic growth.

According to empirical evidence, every additional unit of the population reduces economic growth to a certain extent. This study contradicts Agarwal (2014), who claimed that as the population grows, so does the quantity of skilled and sufficient workers, resulting in higher economic growth. As a result of the findings of this study, agricultural stakeholders are recommended to organize an education and training workshop. For example, the Indonesian government launched the Pre-Employment Card program. This program enables young people who are about to enter the labor market or who are unemployed to train and get more experience and knowledge to become better people who are ready to be hired or create new jobs. This policy was in line with the Asian Development Bank’s (2018) suggestion that policymakers should be concerned about establishing long-term work opportunities, particularly in a country with a large population.

Furthermore, according to Peterson (2017), an expanding population in agricultural countries may result in job losses because land availability does not keep pace with population increases. Later on, per capita productivity declines, perhaps

Table 3: Factors Affect the Agricultural Countries’ Economic Growth

Variables	Coefficient	Standard Error	t-test	Probability
C	347.7902***	36.7407	9.4661	0.0000
GFCF	3.314869***	0.6815	4.8639	0.0000
Population	-25.4586***	2.4043	-10.589	0.0000
Trade Openness	3.8092***	1.1626	3.2763	0.0011
R-squared	0.3803			
Adjusted R-squared	0.3093			
F-statistic	5.3501			
Prob(F-statistic)	0.000***			

Note: ***, ** Significant at 1% and 5% probability level.

resulting in reduced earnings. According to Peterson (2019), Dabrowski discovered that population expansion has a negative impact on economic growth since the elderly population dominates the population of the studied country.

Table 3 also revealed that trade openness has a positive and considerable impact on the economic growth of agricultural countries, implying that greater trade activities will help this cluster more. Countries engaging in international commerce may benefit economically if trade obstacles and limitations are removed. It can gain more and have more diverse partner countries, so it didn't congregate in one area since central partner countries can cause financial losses to the host country if financial or economic problems strike them. Furthermore, different partner countries may have varying demands, resulting in different export kinds for host countries (raw material, intermediate product, or final product). Aside from that, countries' openness to commerce allowed them to import the goods or services they required rapidly.

This finding is consistent with other research that shows that trade openness can boost economic growth (Ho et al., 2021; Hye et al., 2016). Agricultural countries benefit more from trade with non-agricultural countries, according to Yanikkaya (2003). Furthermore, according to Föllmi et al. (2018), a specific explanatory variable may have a positive impact on economic growth because nations that impose openness tend to boost their production and productivity as a result of increased product demand in the international trade market (2018, pp. 6–7). Furthermore, these countries are attempting to upgrade their products through the use of specialized items. According to Esaku (2021), agricultural countries should promote trade policies that involve technology and involve a more intermediate product in the manufacturing process. As a result, these restrictions may help agricultural countries maximize their trade potential.

5. Conclusion

The agricultural sector plays essential roles in economic development: labor absorption, food and raw material producers, and foreign exchange reserves. A substantial share of this sector in a country's economy made the nation predicate as an agricultural country. In encouraging economic development, the agricultural nations may be concerned about export and import because it may create more added value for the producers and fulfill consumer needs.

The outcome indicates that trade openness is beneficial and has a significant impact on agriculture economic growth. This influence demonstrates that when agricultural countries are actively engaged in export and import without restrictions, international commerce can contribute more to GDP. Specific commodities or surpluses from home production are sold at a greater price to other countries. At the

same time, industry and consumers can get the raw materials and items they need to run their businesses or meet their demands. As a result, agricultural countries must be worried about discovering the most profitable commodities. Raw material exports encourage reduction, whereas intermediate and final goods should be increased. On the other hand, import's objective is to provide the products that can be produced or accessed domestically. Moreover, further study is necessary to investigate the impact of trade openness on agricultural countries' economic growth based on this cluster stage of economic development.

GFCF has a positive and significant impact on agricultural countries' economic growth. This finding implies the need for improving the ease of doing business to attract more investors, both in the number of agencies or the value of the investment. Afterward, to generate a broader impact, the investment should be allocated to enhance the infrastructure and production activities (downstream/industrialization).

Lastly, the population has a negative and significant influence on agricultural countries' economic growth. Therefore, it is necessary to develop human capital by assembling more skillful human resources to increase productivity. In addition, regulation-makers should ensure sustainable job creation so that more employment opportunities will follow one unit addition in the population.

References

- Agarwal, S. (2014). Impact of India's population growth on economic development. *Paripex-Indian Journal of Research*, 3(5), 1–2. https://www.worldwidejournals.com/paripex/recent_issues_pdf/2014/May/May_2014_1400587316_c2cbd_91.pdf
- Agboola, M. O., & Bekun, F. V. (2019). Does agricultural value added induce environmental degradation? Empirical evidence from an agrarian country. *Environmental Science and Pollution Research*, 26, 27660–27676. <https://doi.org/10.1007/s11356-019-05943-z>
- Asian Development Bank. (2018). *Indonesia: Enhancing productivity through quality jobs*. <https://www.adb.org/sites/default/files/publication/400586/indonesia-enhancing-productivity-quality-jobs.pdf>
- Baltagi, B. H. (2005). *Econometric analysis of panel data* (3rd ed.). New York: John Wiley & Sons.
- Belloumi, M., & Alshehry, A. (2018). The impacts of domestic and foreign direct investments on economic growth in Saudi Arabia. *Economies*, 6(1), 1–17. <https://doi.org/10.3390/economies6010018>
- Crawley, A., Beynon, M., & Munday, M. (2013). Making location quotients more relevant as a policy aid in regional spatial analysis. *Urban Studies*, 50(9), 1854–1869. <https://doi.org/10.1177/0042098012466601>
- Dabrowski, M. (2019). Factors determining Russia's long-term growth rate. *Russian Journal of Economics*, 5(4), 328–353. <https://doi.org/10.32609/j.ruje.5.49417>

- Dao, M. Q. (2012). Population and economic growth in developing countries. *International Journal of Academic Research in Business and Social Sciences*, 2(1), 6–17. https://hrmars.com/papers_submitted/8747/population-and-economic-growth-in-developing-countries.pdf
- Esaku, S. (2021). The short- and long-run relationship between trade openness and economic growth in Uganda. *Cogent Economics & Finance*, 9(1), 1–22. <https://doi.org/10.1080/23322039.2021.1999060>
- Fathima Rinosha, K., & Mohamed Mustafa, A. M. (2021). Nexus between financial development and economic growth: Evidence from Sri Lanka. *Journal of Asian Finance, Economics and Business*, 8(3), 0165–0170. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0165>
- Föllmi, R., Fuest, A., an de Meulen, P., Micheli, M., Schmidt, T., & Zwick, L. (2018). Openness and productivity of the Swiss economy. *Swiss Journal of Economics and Statistics*, 154(1), 1–21. <https://doi.org/10.1186/s41937-018-0021-3>
- Golley, J., & Wei, Z. (2015). Population dynamics and economic growth in China. *China Economic Review*, 35, 15–32. <https://doi.org/10.1016/j.chieco.2015.05.005>
- Hardjoko, A. T., Santoso, D. B., Suman, A., & Sakti, R. K. (2021). The effect of industrial agglomeration on economic growth in East Java, Indonesia. *Journal of Asian Finance, Economics and Business*, 8(10), 0249–0257. <https://doi.org/10.13106/jafeb.2021.vol8.no10.0249>
- Ho, C. H. P., Pham, N. N. T., & Nguyen, K. T. (2021). Economic growth, financial development, and trade openness of leading countries in ASEAN. *Journal of Asian Finance, Economics and Business*, 8(3), 191–199. <https://doi.org/10.13106/jafeb.2021.vol8.no3.0191>
- Hye, Q. M. A., & Lau, W. Y. (2015). Trade openness and economic growth: empirical evidence from India. *Journal of Business Economics and Management*, 16(1), 188–205. <https://doi.org/10.3846/16111699.2012.720587>
- Hye, Q. M. A., Wizarat, S., & Lau, W. Y. (2016). The impact of trade openness on economic growth in China: An empirical analysis. *Journal of Asian Finance, Economics and Business*, 3(3), 27–37. <https://doi.org/10.13106/jafeb.2016.vol3.no3.27>
- Keho, Y. (2017). The impact of trade openness on economic growth: The case of Cote d'Ivoire. *Cogent Economics & Finance*, 5(1), 1–14. <https://doi.org/10.1080/23322039.2017.1332820>
- Khalifa, E. A. (2016). Economics of non-oil exports of Sudan. *Russian Journal of Agricultural and Socio-Economic Sciences*, 10(58), 45–54. <https://doi.org/10.18551/rjoas.2016-10.06>
- Koffi, D., Paterné, Z. I. B. T., & Komlan, G. (2016). Impact of the foreign direct investment on economic growth in Benin: A cointegration analysis. *Journal of Economics and Sustainable Development*, 7(1), 78–92. <https://doi.org/10.123561414/001231>
- Kong, Q., Peng, D., Ni, Y., Jiang, X., & Wang, Z. (2021). Trade openness and economic growth quality of China: Empirical analysis using ARDL model. *Finance Research Letters*, 38, 1–9. <https://doi.org/10.1016/j.frl.2020.101488>
- Laborte, A. G., de Bie, K. C. A. J. M., Smaling, E. M. A., Moya, P. F., Boling, A. A., & Van Ittersum, M. K. (2012). Rice yields and yield gaps in Southeast Asia: Past trends and future outlook. *European Journal of Agronomy*, 36(1), 9–20. <https://doi.org/10.1016/j.eja.2011.08.005>
- Li, Y. (2021). Analysis of our country's foreign trade of agricultural products. *Open Access Library Journal*, 8(6), 1–13. <https://doi.org/10.4236/oalib.1107582>
- Meyer, D. F., & Sanusi, K. A. (2019). A causality analysis of the relationships between gross fixed capital formation, economic growth, and employment in South Africa. *Studia Universitatis Babeş-Bolyai Oeconomica*, 64(1), 33–44. <https://doi.org/10.2478/subboec-2019-0003>
- Ministry of Special Economic Zones Republic of Congo. (2020). *The economy of the Republic of Congo*. <http://zes.gouv.cg/en/about/congo/economy>
- Mohsen, A. S., & Chua, S. Y. (2015). Effects of trade openness, investment and population on the economic growth: A case study of Syria. *Hyperion Economic Journal Year*, 2(3), 14–23. [http://hej.hyperion.ro/articles/2\(3\)_2015/HEJ%20nr2\(3\)_2015_A2Mohsen.pdf](http://hej.hyperion.ro/articles/2(3)_2015/HEJ%20nr2(3)_2015_A2Mohsen.pdf)
- Moldova UNFPA. (2016). *Population Situation Analysis in the Republic of Moldova*. https://moldova.unfpa.org/sites/default/files/pub-pdf/PSA_engleza.pdf
- Namasivayam, A., Lovell, S., Namutamba, S., & Schluter, P. J. (2019). Improved contraceptive use among women and men in Uganda between 1995–2016: A repeated cross-sectional population study. *PLoS ONE*, 14(7), e0219963, 1–16. <https://doi.org/10.1371/journal.pone.0219963>
- Nantharath, P., & Kang, E. (2019). The effects of foreign direct investment and economic absorptive capabilities on the economic growth of the Lao People's Democratic Republic. *Journal of Asian Finance, Economics and Business*, 6(3), 151–162. <https://doi.org/10.13106/jafeb.2019.vol6.no3.151>
- Nguyen, N. H., Nguyen, D. H., Vo, L. T. K., & Tran, C. Q. K. (2021). The impact of exchange rate on exports and imports: Empirical evidence from Vietnam. *Journal of Asian Finance, Economics and Business*, 8(5), 0061–0068. <https://doi.org/10.13106/jafeb.2021.vol8.no5.0061>
- Olajide, O. T., Akinlabi, B. H., & Tijani, A. A. (2012). Agriculture resource and economic growth in Nigeria. *European Scientific Journal*, 8(22), 103–115. <https://doi.org/10.19044/esj.2012.v8n22p%25p>
- Organization for Economic Co-operation and Development. (2021). *Investment (GFCF)*. <https://data.oecd.org/gdp/investment-gfcf.htm>
- Peterson, E. W. F. (2017). The role of population in economic growth. *SAGE Open*, October-December 2017, 1–15. <https://doi.org/10.1177/2158244017736094>
- Raghubra, C. (2020). The effect of trade openness on economic growth: Some empirical evidence from emerging market economies. *Journal of Public Affairs*, 20(3), 1–8. <https://doi.org/10.1002/pa.2081>

- Rehman, N. U., & Hysa, E. (2021). The effect of financial development and remittances on economic growth. *Cogent Economics & Finance*, 9(1), 1–15. <https://doi.org/10.1080/23322039.2021.1932060>
- Rivera-Batiz, L. A., & Romer, P. M. (1991). International trade with endogenous technological change. *European Economic Review*, 35(4), 971–1001. [https://doi.org/10.1016/0014-2921\(91\)90048-N](https://doi.org/10.1016/0014-2921(91)90048-N)
- World Bank. (2020a). *Population, total*. <https://data.worldbank.org/indicator/SP.POP.TOTL>
- World Bank. (2020b). *Population growth (annual %)*. <https://data.worldbank.org/indicator/SP.POP.GROW?display=default>
- World Bank. (2021a). *Agriculture, forestry, and fishing, value added (annual % growth)*. <https://data.worldbank.org/indicator/NV.AGR.TOTL.KD.ZG?display=default>
- World Bank. (2021b). *Exports of goods and services (constant 2010 US\$)*. <https://data.worldbank.org/indicator/NE.EXP.GNFS.KD>
- World Bank. (2021c). *GDP (constant 2010 US\$)*. <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD>
- World Bank. (2021d). *Gross fixed capital formation (constant 2010 US\$)*. <https://data.worldbank.org/indicator/NE.GDI.FTOT.KD>
- World Bank. (2021e). *Imports of goods and services (constant 2010 US\$)*. <https://data.worldbank.org/indicator/NE.IMP.GNFS.KD>
- World Bank. (2021f). *Industry (including construction), value added (annual % growth)*. <https://data.worldbank.org/indicator/NV.IND.TOTL.KD.ZG?display=default>
- World Bank. (2021g). *Manufacturing, value added (annual % growth)*. <https://data.worldbank.org/indicator/NV.IND.MANF.KD.ZG?display=default>
- World Bank. (2021h). *Services, value added (annual % growth)*. <https://data.worldbank.org/indicator/NV.SRV.TOTL.KD.ZG?display=default>
- World Bank. (2021i). *World Bank Country and Lending Groups*. <https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>
- Yanikkaya, H. (2003). Trade openness and economic growth: A cross-country empirical investigation. *Journal of Development Economics*, 72, 57–89. [https://doi.org/10.1016/S0304-3878\(03\)00068-3](https://doi.org/10.1016/S0304-3878(03)00068-3)
- Zahir, S., & Rehman, Z. (2019). Linkage between gross fixed capital formation, trade deficit, exchange rate and economic growth of Pakistan. *Journal of Managerial Sciences*, 14(4), 48–57. https://www.qurtuba.edu.pk/jms/default_files/JMS/13_4/13_4_6.pdf