Impact of Covid-19 on GDP and Trade: A Case of African Countries

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Abstract

This research aims to find out the impact of Covid-19 on the GDP and Trade of African countries. This research paper has employed a quantitative design to determine the relationship between Covid-19 and the GDP and Trade of African counties. This research has analyzed the historic data from 1961 to 2020 to study the differences in the economic growth caused due to the pandemic. Stata has been used for analyzing the data where descriptive statistics and Panel data regression have been applied. In particular, the GLS model has been applied due to heteroscedasticity in the variables. The quantitative data of the study that was collected for this research has shown that Covid-19 has negatively influenced the economic performance and productivity of African countries. The ten African countries selected for this research were influenced adversely in the context of trading activities and GDP growth.

Keywords

1. Introduction

With the Coronavirus (COVID-19) emerging in China and its pandemic, most of the concerned authorities have taken initiatives to limit the spread of this virus. In this manner, it has been determined that although the human costs are essential, the majority of the economic costs are because of the preventive behaviour of people along with the control policies which are provided or regulated by the government (Maliszewska et al., 2020; Ozili, 2020; Erokhin & Gao, 2020). This experience of the Coronavirus is no different from the previous epidemic, however, the intensity and spread of this virus are more in contrast to other viruses. With the spread of the virus internationally, most countries have taken appropriate measures or actions to limit the spread through social policies, which include limiting work, shutting the educational institutes and restricting the mobility of people. Therefore, preventive actions have a significant and immediate effect on all the economies through tourism, trade and partner economies. It has also been argued in the study of Sheridan et al. (2020) that the huge influence of COVID-19 pandemic on the economies of different nations has also restricted their growth. In this manner, it is essential for countries, especially developing ones, to take effective measures to reduce the effect of COVID-19 on the economy.

Moreover, the spread of COVID-19 has made it essential for the countries to revise their trade policies while the trade among most of the countries remained closed for several months. In this manner, most of the developing countries' economies declined, hugely dependent on export. It has also been stated in the study of Zimmermann et al. (2020) that trade among countries remained affected due to the spread of Coronavirus. With respect to the African countries, most of the countries in the continent are considered developing countries which are majorly dependent on trade with countries in other parts of the world. It has also been argued in the study of Manwa & Wijeweera (2016) that African countries' economies depend on trade with other countries. Therefore, the effect of trade due to the pandemic of COVID-19 has negatively impacted the trade and GDP of these countries. It is the reason that most companies' business operations are affected due to the restrictions on trade, and the countries cannot ensure the inflow of cash, which also influences the GDP. As a consequence of this, African countries face huge economic constraints as all the sectors in these countries are affected while the regulatory authorities are still not able to measure the effect of this COVID-19 pandemic on the country's economy.

On the other hand, there was also a severe effect on the production of goods in African countries due to the pandemic of COVID-19. In this manner, the monetary value of all the final goods and services is decreased, which has caused a negative effect on the GDP of countries. It has also been argued in the study of Ataguba (2020) that the GDP of African countries has been adversely effected due to the trade restrictions after COVID-19 pandemic. Therefore, this study is inclined toward determining the impact of COVID-19 on GDP and trade within the context of African countries. It is due to the reason that African countries contribute more towards global trade and the economies of most of these African countries are dependent on trade. The results of this study will help these African developing

countries to mitigate the effect of COVID-19 pandemic on the economic development in the region.

2. Literature Review

The spread of Coronavirus has largely affected the economy of various countries all over the world. Several restrictions on trade among countries has adversely effected the economies in terms of reduced exports and imports. It has been argued in the study of Senadza & Diaba (2017) that the lack of trade among most of the countries has negatively affected the trade and cash flow. In this manner, most of the countries had to face trade deficit in terms of increased imports or lack of exports. It has been due to the reason that most of the countries had to take preventive measures for the purpose of mitigating the widespread of novel corona virus. These measures reduced the production of goods in the country. Therefore, with the decreased production of goods in the country, the GDP of the country is also declined. However, most African countries depend on producing goods at cheap rates, which is also affected due to the policy implications and regulations. It has been stated in the study of Makridis & Hartley (2020) that there is a huge effect of COVID-19 on the GDP. In this manner, the first hypothesis of the study has been developed for the purpose of testing the effect of COVID-19 pandemic on African countries.
H1: There is significant effect of COVID-19 on GDP of African Countries.

Moreover, there is a huge role of trade in developing the economies of African countries. It is due to the reason that most of the countries in Africa like South Africa, Egypt, Ghana and Gambia are dependent on the trade. It has been argued in the study of Osakwe et al., (2018) that there is a huge dependence of African countries on trade with other countries all over the world. However, due to the pandemic of COVID-19, this trade of African countries is adversely effected which has caused increase in the trade deficit of these African countries. In this manner, the countries in Africa had to face huge loss in terms of economic development which had led to other socio-economic issues. It generates the need for the countries to determine the effect of COVID-19 on trade for the purpose of mitigating the negative effect and ensure the stable economic development in the country. It has been stated in the study of Maliszewska et al., (2020) that the pandemic of COVID-19 has negatively influence the trade of different countries. In this manner, the second hypothesis has been developed in this study for the purpose of testing the effect of COVID-19 on the trade of African countries. This hypothesis has been provided below:
H2: There is a significant effect of COVID-19 on trade of African countries.

Furthermore, there is a huge role of inflation in the economic development of the country. It is due to the reason that the low inflation can increase the employment rate in the country which can ensure the economic development of the country. It has also been argued in the study of Simionescu et al., (2017) that the decreased inflation helps the company in order to ensure the stable economic development. However, the trade and businesses all over the world are affected due to the spread of corona virus. Specifically, in the context of African countries, where

the inflation is already high, the restrictions made due to the spread of corona virus has further intensified the inflation rate. It has also been stated in the study of Geda (2020) that there is an impact of COVID-19 on the inflation rate of countries. In this manner, the third hypothesis of the study has been developed for the purpose of determining the effect of COVID-19 pandemic on the inflation rate of African countries has been tested. This hypothesis has been provided below:

H3: There is a significant effect of COVID-19 pandemic on the inflation rate of African countries.

3. Theoretical Framework

Since this study is grounded on determining the impact of COVID-19 on the GDP and trade of African countries, the computable general equilibrium model has been employed and adopted for this study. It is due to the reason that computable general equilibrium model use the economic data for the purpose of estimating the reaction of economy to external environmental changes. It has also been argued in the study of Carbone & Rivers (2017) that the computable general equilibrium model helps to predict that how the economy would change pertaining to changes on technology, policy and other external factors. In this manner, this relates to the topic of this study in which it is to be determined that how the changes made in technology and policies would influence the economic development of the African countries. For this purpose, the various African countries' GDP, trade, and inflation rates have been considered.

4. Methods and Materials

This research paper has employed a quantitative design in an attempt to determine the relationship between COVID-19 and GDP and Trade of African counties. Using a quantitative design has allowed the researcher to rely upon historic data of macroeconomic indicators such as GDP and Trade as percentage of GDP to analyze the way in which COVID-19 has harmed the economic growth of African countries. This research has analyzed the historic data from 1961 to 2020 to study the differences in the economic growth caused due to the pandemic. Stata has been used for analyzing the data where descriptive statistic and Panel data regression have been applied. In particularly the GLS model has been applied due heteroscedasticity in the variables.

5. Results and Discussions

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP Growth	600	3.452476	6.010104	-51	34.3137
Trade	600	48.71636	19.54889	6.320343	126.351

Descriptive statistics of the variables have been analyzed in order to analyze the statistical characteristics. The average GDP growth for the African countries during the time period ranging from 1961 to 2020 is 3.45%. Moreover, trade which was

measured with the help of trade as percentage of GDP, on an average for the period of 1961-2020 was 48.7%.

In an attempt to fulfil the aim of the research paper which is to find out the impact of COVID-19 on the economic growth and trade of African countries, fixed and random effects model was conducted. Through the Hausman test, it was suggested to use fixed effects model for the research. However, after carrying out certain diagnostic tests, it was found that using fixed effects model for interpreting the impact of variables was not suitable. The following table shows the results of the test conducted for testing heteroscedasticity in variables.

Table 2: Wald Test

	GDP	Trade
chi2 (10)	195.510	309.120
Prob>chi2	0.000	0.000

Table 2 indicates that for both the variables, the value of probability is less than 0.000 which means that the null hypothesis of Wald test has been rejected. Thus, there is presence of heteroskedasticity in both the variables. Considering these results, using fixed effect model was not suitable hence Generlised Least Squares Model (GLS) has been used. The following tables show the output of the models for each dependent variable.

Table 3: GLS Regression- Trade

Estimated covariance	1				Number of obs.	590
Estimated autocorrelations	0				Number of groups	10
Estimated coefficients	3				Time Periods	59
					Wald chi2(2)	2851.59
log likelihood	-2065.58				Prob > chi2	0
Trade	Coef.	Std. Err	z	P>|z|	[95% Conf. Interval]	
Trade L1.	0.895033	0.017042	52.52	0	0.8616326	0.928434
COVID19	-30.7585	2.560808	-12.01	0	-35.7776	-25.7394
_cons	5.311615	0.899194	5.91	0	3.549227	7.074003

Based on the information give in the top section of Table 3, it is evident that the overall model is found to be significant indicating that COVID-19 has impacted trade activities of African countries since the probability value of model is 0.000. Further, the assessment of the table indicates that with COVID-19 there has been a negative influence on the trading activities given that the coefficient values show a negative sign (-30.75). The values of 95% confidence interval have the same sign which indicate that there is presence of statistical significance.

The following table shows the results of GLS Model for GDP Growth of African countries.

Table 4: GLS Model- GDP Growth

Estimated covariances	1	Number of obs	590
Estimated autocorrelations	0	Number of groups	10
Estimated coefficients	3	Time of Periods	59
		Wald chi2(2)	42.79
Log likelihood	-1872.26	Prob > chi2	0

GDPGrowth	Coef.	Std. Err.	z.	P>|z|	[95% Conf. Interval]	
GDPGrowth						
L1.	0.164826	0.0427393	3.86	0	0.081058	0.24859
COVID19	-9.62424	1.843698	-5.22	0	-13.2378	-6.0107
_cons	3.092996	0.2856717	10.83	0	2.53309	3.6529

It becomes evident from the output of Table 4 that the overall model is significant, indicating that COVID-19 has impacted the GDP growth or economic productivity of African countries since the probability value of the model is 0.000. Further, the assessment of the table indicates that COVID-19 there has a negative influence on GDP growth, given that the coefficient values show a negative sign (-9.62). The 95% confidence interval values have the same sign, indicating a presence of statistical significance.

Overall, the quantitative data of the study collected for this research has shown that COVID-19 has negatively influenced the economic performance and productivity of African countries. The ten African countries selected for this research were influenced adversely in the context of trading activities and GDP growth.

The findings from the research have suggested that both the hypothesis that were formed have been accepted. It is evident that COVID-19 has harmed the economy of African countries, and the effect is translated into the GDP growth as well as the trade of the countries. As the pandemic has taken over the world, many countries have gradually suffered negative consequences in light of the economy, society, and political uncertainty (Sheridan et al., 2020). African countries are no exception to this, and the pandemic of COVID-19 has resulted in impacting the economic output in a negative manner. The findings of this research along with the other research that has been carried out on different developing countries, have implied that the spread of COVID-19 has made it essential for the countries to revise their trade policies while the trade among most of the countries remained closed for several months. In this manner, most of the developing countries economies declined, hugely dependent on export.

6.   Conclusion

In alignment with the already conducted research papers and published articles, this research has shown that the GDP of countries has declined due to the uncertainty and loss of income during the pandemic of COVID-19. In alignment with the previous study, the paper's findings have shown that developing African countries have been influenced adversely due to the pandemic in terms of their GDP and trading output. The major policy implication derived from the findings of this research paper is that the government of African countries need to offer significant support to the households and businesses that have been influenced. This research paper has not evaluated certain important aspects that can influence economic growth and trade output, such as political uncertainty and social problems. The findings of this research can act as the basis for future research on other developing countries.

This paper has incorporated a comprehensive approach and methods to evaluate the aim and objectives; however, the study's limitations need to be acknowledged. Firstly, this research has undertaken in the context of African

countries, and a sample of 10 countries was selected. Given the different economic and social environments of all the African countries, the results cannot necessarily be generalized for all 54 countries. In this context, other countries not incorporated in this research paper should be considered for future research. Moreover, future research should be conducted on other countries from other continents to add value to the existing body of literature. There are many other economic indicators which could have explained the impact of COVID-19 in an efficient manner. Future research should use different macroeconomic indicators, such as inflation rate, exchange rate, purchasing power, etc., to analyze the effect of the pandemic on GDP and trade efficiently.

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