

The Socioeconomic Impacts of the COVID-19 Pandemic in Africa

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Abstract – This study is motivated by the conviction that pandemic diseases entail huge human and economic costs. It is in this light that this study was designed to explore the socioeconomic impacts of COVID-19 in Africa in order to provide sound policy recommendations which can aid in abating the spread of the disease which is crucial for achieving desirable sustainable economic development. We found that besides the loss of human lives, the COVID-19 pandemic can have enormous short and long-run negative impacts on economic growth through various channels including, education, employment, industrial production, as well as the tourism and agricultural sectors. Also, the study revealed that although Africa has recorded the least number of confirmed COVID-19 cases, the continent remains the worst affected with a fatality rate of over 23%. Consequently, in the short-run, African governments should step-up their community screening/testing capacities and ensure the respect of basic hygiene rules. Equally, African governments should rethink their health, educational and industrial policies in order to incorporate modern methods which make great use of digital technologies. Thus, they should increase investments in the health, educational and industrial sectors in order to render their economies more resilient to potential shocks in the long-run.

Keywords – Coronavirus; SARS-CoV-2; Pandemic; COVID-19, Africa; Disease.

I. INTRODUCTION

The dreadful novel COVID-19 pandemic is caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2¹). Although the disease initially broke out in

December 2019 in the Chinese city of Wuhan, it has already spread to over 200 countries in less than eight months and the disease is now believed to be the greatest health crisis in modern history. Symptoms of COVID-19 resemble that of the common cold, with those infected often experiencing

¹ SARS-CoV-2 just like COVID-19 originated from China. SARS-CoV-2 broke out in November 2002 in the Guangdong Province in China, and just like COVID-19 is a part of a large family of coronaviruses (CoV) which are generally believed to be transmitted from animals to people. However, the

COVID-19 strain of coronavirus is thought to have originated from a seafood market in the Chinese city of Wuhan in Hubei province [1].

fever, coughing, and breathing difficulties. However, infection can lead to pneumonia, multi-organ failure and even death, in more severe cases and especially among the elderly with pre-existing chronic health conditions ([1], [2], [3]).

The outbreak of the coronavirus disease 19 (COVID-19) has reawaken international consciousness on the need to improve human health and international cooperation. This is because the first five months following the outbreak of the disease brought the world to its knees as most world governments adopted stringent measures from late February 2020 in a bid to curb the spread of the disease. Among these measures are national lockdowns, travel bans and closure of international borders which in some countries lasted for over three months, and still counting [4]. Thus, the adoption of these measures has greatly slowed the economic performance of economies around the world. However, the formulation of appropriate macroeconomic policies in response to the COVID-19 is a very challenging task to policymakers owing to the highly uncertain nature of the evolution of the virus as well as its socioeconomic impacts.

Evidence from previous studies indicates that there are several channels through which a country's economy can be impacted by a pandemic disease. These channels include: the health, transportation, education, industry, agricultural and tourism sectors. In addition, the interdependence of modern economies implies that trade with other countries as well as global supply chains (GSCs) may also be impacted by a pandemic [5]. Whence, the devastating economic impact of COVID-19 led to the meltdown of the Chinese economy between January 2020 and March 2020. This was occasioned by the fact that the Chinese economy witnessed interruptions in production as well as disruptions in the functioning of GSCs following government's adoption of confinement as a means of curbing the spread of the disease. Consequently, the impacts of these disruptions in the Chinese economic performance rapidly spread to other countries around the world due to the importance of China in world trade.

As a result, besides the health impacts² of COVID-19, a majority of companies across the globe, which rely on inputs from China, have been experiencing declines in production. Transport limitations among countries and total confinement measures implemented by most countries have further decelerated global economic activities. Hence, [6] estimate that compared to the baseline situation, Chinese trade will fall by 3.73% while world trade would decline by 2.5%. The authors further posit that the volume of real trade will decline

by 2.48% and 1.87% in Europe and Sub-Saharan Africa (SSA) respectively. In addition, usual consumption patterns have been altered and market anomalies have been created as a result of anxiety among consumers and firms. Also, international financial markets have been affected as reflected in a plunge in global stock indices [7].

Although the overall impacts of a pandemic may be detrimental to economic performance, the outbreak of a pandemic may however constitute a positive booster in certain sectors. Thus, the impacts of a pandemic within every economy may be twofold. While some sectors such as the pharmaceutical sector may witness a boom thereby encouraging scientific research, other sectors such as tourism and travel-related businesses notably hotels, airlines, as well as luxury and consumer goods sectors tend to suffer. For example, since the outbreak of COVID-19, both traditional and classical health researchers have constantly been proposing medications and measures that can provide some relieve or cure to persons infected by the disease. Medical personnel are however negatively affected as they become overworked following the skyrocketing numbers of patients who flood the hospital premises throughout the pandemic period. Unlike the boom in pharmaceutical stocks, the industrial sector which constitutes the backbone of the economy has witnessed great turbulence. This in turn has unavoidable impacts on economic growth.

The socioeconomic impacts of COVID-19 are severely felt by individuals, families, and economies as productivity declines and stock markets reflect increased global uncertainty. Hence, amidst these global challenges, the International Monetary Fund (IMF) and the World Bank in their recent reports on regional and global economic prospects and perspectives, estimate that global economic growth will drastically plummet in 2020. For example, while the global economy is projected to witness a decline in growth of about -3% in 2020 down from about 2.4% in 2019, that of the Euro zone is expected to fall from 1.2% in 2019 to -7.5% in 2020. Equally, SSA growth that has been dwindling over the years, for example passing from 2.7% to 2.4% between 2017 and 2019 is expected to further worsen following the deepening global economic crisis triggered by the COVID-19 pandemic ([8], [9], [10]).

Hence, it is projected that the GDP growth of Sub-Saharan Africa (SSA) may plummet to its lowest ever level of -1.6% in 2020. These effects are said to be further amplified by the sharp fall in crude oil prices in the first

2 The health impacts of the disease are often reflected through mortality and morbidity rates. Where, mortality takes into account those who die of the

disease while morbidity considers those who are incapacitated or caring for the incapacitated and unable to work for a given period [2].

quarter of 2020 by about 50% from its 2019 level, which is less than 40 US dollars per barrel [11]. Consequently, this study attempts to assess the socioeconomic impacts of COVID-19 in Sub-Saharan Africa economies.

After this brief introduction, section 2 highlights the evolution of the COVID-19 pandemic. Section 3 provides a synthesis of the macroeconomic impacts of a pandemic. Section 4 outlines some of the measures that have been employed to mitigate the spread of the COVID-19 pandemic. Lastly, the conclusion recommendations are contained in section 5.

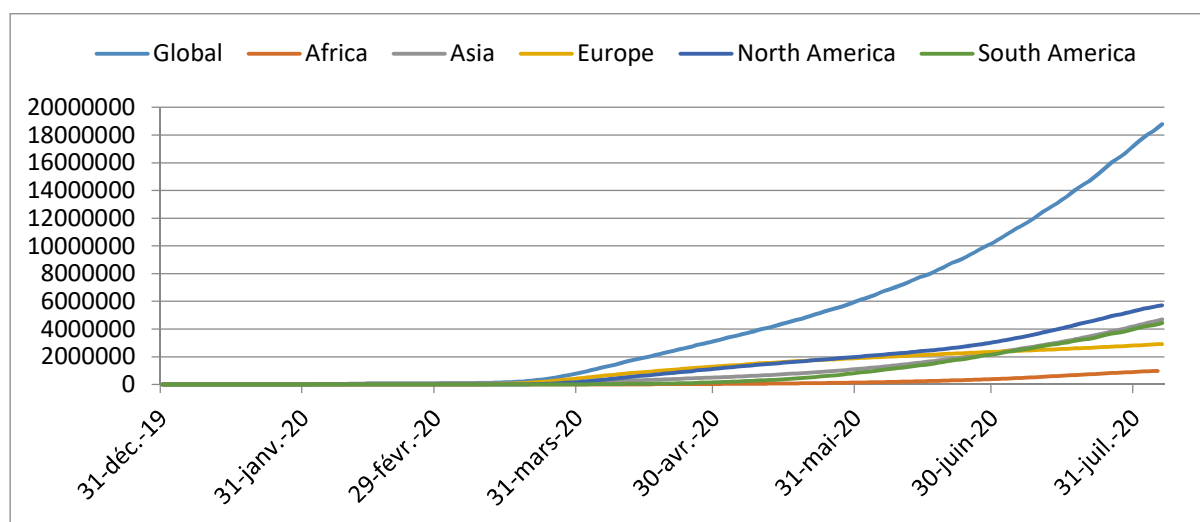
II. EVOLUTION OF THE COVID-19 PANDEMIC

As of December 31st 2019, barely few weeks after the first coronavirus case was reported in China, the total confirmed cases of COVID-19 were 27. While North America (precisely in the United States) was the first continent to register a confirmed COVID-19 case outside Asia on January 21st 2020, it was followed by the European continent whose first case was detected in the Paris city in France on January 24th 2020. The disease later spread to Africa, whose first confirmed case was in Egypt on February 14th 2020, before spreading to the South American continent on February 26th 2020 with the first case detected in Brazil. However, while the spread of the disease remained mild between December 2019 and early February 2020, the diseases rapidly spread

across many countries from mid-February 2020. Thus, by January 31st 2020, there were about 9,824 confirmed cases globally. This number increased to 85,237 by the end of February 2020, and has increased steadily since then. The global trend of COVID-19 for the over 200 affected countries across the world as of August 5th 2020 are highlighted in figures 1.

Figure 1 shows the evolution of the COVID-19 pandemic between December 31, 2019 and August 5th, 2020. We observe that confirmed COVID-19 cases have witnessed an exponential upsurge since the start of April 2020. The increased number of confirmed cases between April and July may be due to the increased global awareness of the disease and increased government and international spending on the purchase and adequate use of testing kits.

Furthermore, figure 1 reveals that while North America is the worst affected continent with about 5.5 million out of the over 19 million confirmed cases as of August 30th 2020, Africa remains the least affected region with a little over 1.2 million confirmed cases. This is followed by Europe with about 3.5 million confirmed cases even though, it was the most affected region between the months of March and May 2020. Also, although Asia initially served as the epicenter of the COVID-19 pandemic, it now occupies the second position (6.9 million cases) and is closely followed by South America with about 6.2 million confirmed cases.

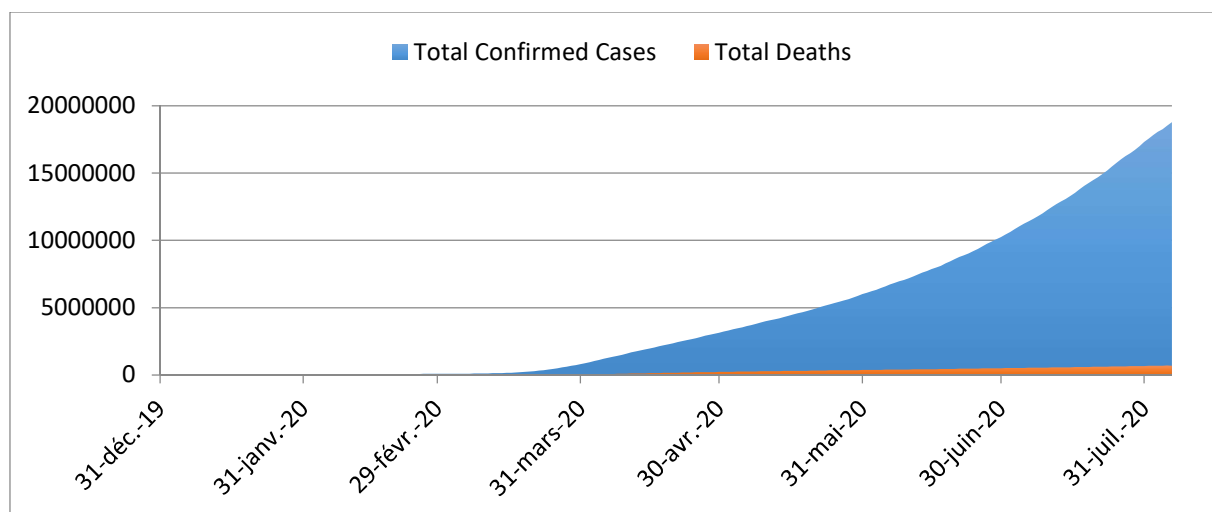


Source: Author's Computations from [12] Data

Figure 1: Global and Continental Evolution of the COVID-19 Pandemic

Nevertheless, of the over 25 million confirmed cases, about 847,044 persons have been reported dead across the world, giving a global fatality rate of about 3.4%. The global

death toll resulting from the COVID-19 pandemic is highlighted in figure 2.

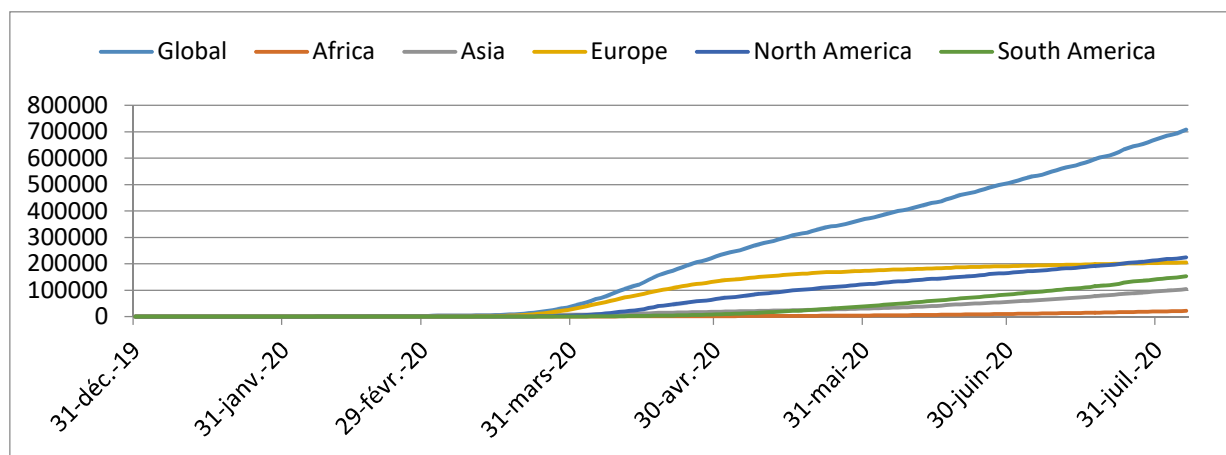


Source: Author's Computations from [12] Data

Figure 2: Global Confirmed COVID-19 Cases versus Deaths

Notwithstanding, as of August 5th 2020, while Africa remained the only continent with less than 22,000 deaths, North America remains the worst hit continent with a death toll of about 220,000 people. North America is closely followed by Europe which has lost about 200,000 lives. Europe has however witnessed tremendous improvements in containing the disease over the last month given that it

recorded the highest death toll between March and mid-July 2020. Equally, although the death toll was higher in Asia than in South America around mid-May 2020, Asia has been able to contain the disease and now counts about 100,000 deaths unlike South America with a little over 150,000 deaths. This continental trend of COVID-19 related deaths is presented in figure 3.



Source: Author's Computations from [12] Data

Figure 3: Global and Continental Death Toll of the COVID-19 Pandemic

Although Africa has the least number of confirmed COVID-19 cases, analysis of current data [3] reveals that the African continent has the highest fatality rate. Thus, as of August 30th 2020, while the global fatality rate of COVID-19 is 3.4%, that of Africa is about 23.7%, that of North America, with the highest number of confirmed cases is 3.7%, Europe

(5.8%), South America (3.2%) and Asia is least with a fatality rate of 2% (See table 1).

Table 1: Global Statistics of COVID-19*

Continent	Confirmed Cases	Deaths	Recoveries	Active Cases	Fatality Rate
Africa	1,241,912	29,472	972,908	239,532	23.7%
Europe	3,542,359	207,308	2,063,028	1,272,023	5.8%
South America	6,201,039	200,051	4,773,295	1,227,693	3.2%
Asia	6,901,523	139,788	5,524,603	1,237,132	2%
North America	7,271,857	269,770	4,181,078	2,821,009	3.7%
World	25,187,802	847,044	17,538,729	6,802,029	3.4%

Note: *As of 30th August 2020

Source: Authors' Computations from [3] Data

This scaring fatality rate observed in Africa may be blamed on the fact that, coupled with the poor medical facilities in most countries, African governments only started imposing strict barrier measures after a good number of persons had already been contaminated. Equally, the low testing capacity and lack of up to date statistics on COVID-19 may be the major reason behind this high fatality rate.

Nevertheless, since Africa recorded her first confirmed COVID-19 case on February 14th 2020 in Egypt, the pandemic has rapidly spread across 52 countries in the African continent. Thus, as of August 30th 2020, the continent counts over 1,241,912 confirmed cases. Thus table 1 reveals that out of these confirmed cases, Africa has recorded over 29,472 deaths, 972,908 recoveries and still counts about 239,532 active cases. Given the poor healthcare facilities and low testing capacity of most African countries, it is obvious that the number of infected persons may be higher than the current figures. This implies that many infected persons who have not yet been tested may likely die of the disease without being reported. Thus, the COVID-19 related death trend in Africa may continue to rise in the coming months following the easing of barrier measures across the continent.

III. THE MACROECONOMIC IMPACTS OF THE COVID-19 PANDEMIC

Historically, the socioeconomic impacts of pandemics have always been devastating. These impacts range from the loss of lives, temporal/sustained stagnation of economic activities leading to increased unemployment, declines in industrial production and consequently reductions in GDP growth and increased level of economic uncertainty. In this section, we attempt to provide a brief analysis of the impacts of COVID-19 on the health, education, employment and real GDP growth of Sub-Saharan Africa countries.

3.1 Health Impacts of COVID-19

Human health has become an integral part of development studies given the role of human capital on economic growth. Thus, according to [13] health is both human capital itself and an input to producing other forms of human capital. Being unhealthy depresses the ability to work productively as well as the ability and incentives to invest in human capital. Consequently, unhealthy countries tend to be poor. Even though a number of countries initially considered COVID-19 as a Chinese disease, its rapid spread to over 213 countries has reversed peoples' perceptions. The impacts of the disease are felt across all age groups, although the death toll is predominant among the ageing than the youthful or active population [18]. However, the impact of health on economic growth greatly depends on how health changes such as morbidity and mortality as well as the age structure (childhood, working age, or old age) of the population. Thus, improvements in health inevitably lead to improvements in economic growth. Hence, the need for various governments to develop the health sector in order to mitigate the ever-growing socioeconomic impacts of pandemic diseases such as COVID-19.

The role played by the international health institutions, state and territorial health officials in the health security of a nation cannot be overemphasized. Thus, the WHO and health personnel in various countries around the world have played a very instrumental role in curbing the detrimental effects of COVID-19. Health workers especially in African countries with inadequate health facilities and very poor working conditions face severe health challenges. For example, the increasing toll of confirmed COVID-19 cases put much pressure on the already limited infrastructural strength of the health sector in the sub region. Besides the death toll registered due to lack of adequate screening or testing devices, a number of health personnel have equally died in the course of discharging their duties.

These adverse effects have been blamed on the lack of financial resources or political will in developing the health structure in most countries. However, in some countries, the poor infrastructural development of the health sector is blamed on endemic corruption, in which funds destined for health projects are often syphoned or misappropriated by government officials who often flood European and Asian hospitals for regular medical check-ups [13]. Nevertheless,

the global stagnation of the world economy characterised by international travel bans following the outbreak of COVID-19 may serve as an eye-opener to most African governments who seemed to have undermined the lessons learnt from earlier pandemics. Nevertheless, table 2 provides a vivid comparison of the global mortality and morbidity levels between the COVID-19 pandemic and other major pandemics in history.

Table 2: 2019 Novel Coronavirus Compared to other Major Viruses

Virus	Year Identified	Cases	Deaths	Fatality Rate	Countries
Influenza	1918	500,000,000	21,000,000 ³	4.2%	200 ^E
Ebola	1976	33,577	13,562	40.4%	9
SARS	2002	8,096	774	9.6%	29
H1N1 - "swine flu"	2009	>762,630,000	284,500	0.02%	214***
MERS*	2012	2,494	858	34.4%	28
COVID-19**	2019	25,187,802	847,044	3.4%	215***

* As of November 2019; **As of August 12, 2020; *** Includes Countries and Overseas territories or communities; E denotes an approximated number

Source: Adapted from [14] and Supplemented by Authors

Table 1 reveals that although the 2019 COVID-19 and 1918 influenza pandemics remain the only pandemics with the lowest fatality rates below 5%, they remain the deadliest pandemics in the history of pandemics since the twentieth century. However, unlike the 1918 influenza pandemic in which the death toll was predominant among young people, the death toll of the novel COVID-19 pandemic is predominant among the ageing than the youthful or active population [18].

3.2 Impacts of COVID-19 on Employment

The health impacts of COVID-19 play a great role in the supply of labour both nationally and internationally. For example, health shocks through morbidity and mortality result to a decline in labour supply. Equally, funds meant for other purposes are often diverted by investors, consumers as well governments to tackle health concerns triggered by the pandemic. This diversion of funds however results to the disruption of production networks across countries, with the inherent tendency of laying-off workers [7]. In addition, this renders individuals with subsistence incomes even poorer, which unavoidably leads to a reduction in aggregate demand. This reduction in demand coupled with the complete closure of businesses in some countries during the peak period of

COVID-19 led to a fall in the volume of trade through declines in production levels, which further amplifies the level of unemployment.

Furthermore, it is likely that the closure of international borders as a containment measure has enormous negative impacts on the tourism sector, ranging from the loss of jobs and income that the sector usually generates from tourists. For example, most hotels and catering services are bound to shut down following the closure of international borders and limitation of persons in public gatherings or completely banning crowd-pulling public ceremonies. These measures have far-reaching consequences on employment and national output. Thus, it is predicted that tourism services could decline by 8.8% in 2020 triggered by the COVID-19 pandemic [6].

3.3 Impacts of COVID-19 on Education

The importance of education in ensuring human intellectual emancipation which is crucial in driving economic progress, sustainable development and lasting peace across the globe cannot be overemphasised. Besides the ever-growing poverty, armed conflict and other emergencies that keep many students out of school [19], the fourth Sustainable Development Goal (SDG4) of ensuring

³ The influenza pandemic death toll of 21 million according to [15] is highly controversial. For example, while [16] estimate the death toll between 24.7 and 39.3 million, [17] estimate the death toll to be far above 50 million.

inclusive and equitable quality education as well as promoting lifelong learning opportunities for all may be undermined following the prevailing novel coronavirus pandemic.

The educational sector has greatly been affected by the COVID-19 pandemic. This is because most governments proceeded to complete school closures as a strategy of mitigating the spread of the disease. School closure measures adopted by various countries around the world do not only undermine education, but equally hamper the provision of essential services to children and communities, including access to a balanced diet and parents' ability to go to work [20]. As of early August 2020, about 1 billion learners, representing over 60% of the student population worldwide were being deprived from attending classes due to school closures adopted by countries around the world in an attempt to contain the spread of the COVID-19 pandemic. This figure is however said to have improved from about 1.4 billion learners who could not attend classes in about 138 countries in mid-March 2020 [20]. Thus, while some countries have gradually started reopening their schools, others have remained closed.

This school closure measures are said to have devastating long term consequences on world economies. This is contained affirmed by the UN Secretary-General Antonio Guterres in a video statement to launch the Policy Brief (Education in the time of COVID-19 and beyond) in early August 2020. According to him, even though the world already faced a learning crisis before the pandemic, "we now face a generational catastrophe that could waste untold human potential, undermine decades of progress, and exacerbate entrenched inequalities." Consequently, UNESCO projects that about 24 million learners at all educational levels risk dropping out from school in 2020 following the COVID-19-induced closures. Out of this figure, about 5.3 million students at risk are in sub-Saharan Africa, while 5.9 million of the learners live in South and West Asia. The educational challenges initially faced by these regions even before the COVID-19 pandemic are likely to worsen. UNESCO further predicts that the highest dropout rate of 3.5% will likely be experienced in tertiary education, corresponding to 7.9 million fewer students. This will be followed by pre-primary education with a projected 2.8% decline in enrolment, which corresponds to 5 million fewer children enrolling. However, enrolment in primary and secondary education is projected to decline by 0.27% and 1.48% respectively, representing about 5.7 million boys and 5.2 million girls at both levels.

3.4 Impacts of COVID-19 on Economic Growth

Education, health and employment constitute the major channels through which a pandemic like COVID-19 can affect economic growth. This is due to the high degree of correlation between health, education, employment and economic growth. Thus, it is obvious that the detrimental educational, health and employment effects of COVID-19 will lead to deterioration in the level of global economic growth. Historically, the economic impacts of pandemics have always been devastating. These impacts range from the loss of lives, temporal/sustained stagnation of economic activities leading to increased unemployment, declines in industrial production and consequently reductions in GDP growth and increased level of economic uncertainty. For example, the world witnessed enormous economic losses following the influenza pandemic that broke out in 1918, affecting over 500 million people. Thus, while [21] contend that the influenza pandemic led to over 18% decline in manufacturing activity within US states, [22] reveal that global GDP fell by about 6%. Similarly, while [23] estimate that the SARS pandemic that broke out in 2002 negatively affected economic growth as Chinese GDP fell by about 2%, [24] hold that global GDP declined by 1% in 2003. The effects of the SARS pandemic equally saw a decline in agricultural contribution to GDP. For example, while agricultural contribution fell by 11% from 2004 to 2005 in South Korea, that of China fell by 9% from 2002 to 2004 [25].

From what precedes, it is obvious that the adverse socioeconomic effects of pandemics can be long-lasting as they affect both aggregate supply and demand. Consequently, [26] reveal that the alarming death toll witnessed during the influenza pandemic resulted to a fall in labour force, with the inherent tendency of raising the ratio of capital to labour and lowering the rate of return to capital, slowing the pace of capital accumulation and GDP growth for many years. Furthermore, it is believed that in pandemic scenarios, the expected GDP losses can be as high as 11% where fatality reaches 3% ([27], [7]).

In addition, the International Monetary Fund (IMF) and the World Bank in their recent reports on regional and global economic prospects and perspectives, estimate that global economic growth will drastically plummet in 2020. For example, while the global economy is projected to witness a decline in growth of about -3% in 2020 down from about 2.4% in 2019, that of the Euro zone is expected to fall from 1.2% in 2019 to -7.5% in 2020. Equally, it is projected that SSA growth may plummet to its lowest ever level of -1.6%

in 2020 following the deepening global economic crisis triggered by the COVID-19 pandemic ([8], [9], [10]).

IV. CONTAINMENT THE SPREAD OF THE COVID-19

Since the escalation of confirmed coronavirus cases across the globe from mid-February this year, various measures to curb the spread of the disease have been proposed and implemented by national governments either collectively or individually. Equally, international bodies notably the WHO recommended a number of basic hygiene measures that have been adopted by a cross section of countries around the world. These basic hygiene measures proposed by the WHO include: regular washing of hands with soap and running water, use of hand sanitizers, wearing of face-masks in public, covering the mouth and nose when coughing or sneezing, avoid touching the face, practice social distancing, avoid handshaking, and staying at home as much as possible when sick or manifesting any symptoms of the disease.

Besides the basic hygiene measures proposed by the WHO, various governments have adopted stringent containment measures including: internal and international travel bans, school closures, workplace closures, confinement, fiscal or monetary policy measures, and above all national testing policies. It is worthy of note that while a majority of these policies have been implemented by some countries across the world, some countries have criticised the effectiveness of these measures in mitigating the spread of the novel coronavirus pandemic.

However, based on the government response stringency index (GRSI) rated on a scale from 0 to 100 [28], a global analysis on the one hand shows that government responses in curbing COVID-19 have been very strict in Asian, European and a majority of South American countries, as well as the US, South Africa and Northern African countries, with an average GRSI above 60. Most of these countries experienced complete lockdowns of their economies for at least 30 days between the months of March and June 2020. In addition, these countries proceeded to complete closure of schools, workplace closures, cancellation of public events or limitation of the number of persons per gathering, closure of public transport, confinement, and international travel bans among others. On the other hand, a look at the African continent shows that only a few countries implemented very strict measures. For example, South Africa which is the most hit African country observed over 60days of complete lockdown of her economy. Most Northern and Central African countries equally implemented strict barrier measures. However, most West African countries besides

Nigeria and Ivory Coast have not implemented very strict measures [4].

Nevertheless, despite the implementation of these strict measures by a host of countries, the number of confirmed coronavirus cases has continued rising. This may be due to the fact that most countries only started adopting stringent measures such as travel bans after some persons had already been tested positive of the disease, even though [7] had earlier warned on the dangers of attempting to close borders once a pandemic has started. Hence, although [4] contends that stricter government responses can help mitigate the spread of the COVID-19 pandemic in the long-run, the efficacy of these barrier measures in curbing the spread of the disease remains questionable given that the disease has become one of the deadliest pandemics in modern history.

V. CONCLUSION AND RECOMMENDATIONS

This study is motivated by the conviction that pandemic diseases entail huge human and economic costs. It is in this light that this study was designed to explore the socioeconomic impacts of COVID-19 in Africa in order to provide sound policy recommendations which can aid in abating the spread of the disease which is crucial for achieving desirable sustainable economic development. We found that besides the loss of human lives, the COVID-19 pandemic can have enormous short and long-run negative impacts on economic growth through various channels including, education, employment, industrial production, as well as the tourism and agricultural sectors. Also, the study found that although Africa has recorded the least number of confirmed COVID-19 cases, the continent remains the worst affected with over 22% fatality rate.

However, given that the spread of the COVID-19 pandemic has been on a steady rise despite the stringent government measures in curbing the spread of the disease, it is likely that the disease might last longer than expected. Consequently, this study proposes certain long-run policy adjustments that can be adopted by various governments across the world for the containment of the present COVID-19 pandemic as well as unforeseen future pandemics. Thus, with regard to the role played by education, health and industrialisation in the development process of world economies, the study makes recommendations aimed at boosting education, health and industrial productivity which inevitably will contribute to improving economic growth. The recommendations are thus threefold:

First, with respect to education, and in order to prevent the eminent growing school dropout rates worldwide and to ensure quality and equitable education for all, the study

recommends the following measures both at the national and international levels.

- At the global level, more coordinated and concerted efforts are necessary. Thus, the UNO through its educational arms notably UNICEF and UNESCO should increase their official development assistance for education especially in developing economies characterised by subsistence income levels.
- At the national level, governments should rethink educational policies in order to incorporate modern teaching methods which make great use of digital technologies. The use of digital technologies will ensure flexibility and greater resilience of the educational system to eventual pandemics. However, this can only be achieved if governments are willing and able to increase investments and public funding in the educational sectors given that digital technologies are somewhat costly.
- Governments should equally adopt education stimulus policies such as award of scholarships and provision of educational kits to education stakeholders as well as encourage public-private partnerships in the educational sector so as to take education closer to the people. This will go a long way to reduce the rate of school dropout which is likely to increase in the near future. However, irrespective of the measures taken to boost the quality of education, the emotional and social welfare of teachers, students and administrative staff must be ensured.

Second, with regard to health, and given the poorly equipped health structures and lack of highly specialized health personnel in most developing countries which may serve as vectors for unexpected future pandemics, it is imperative that:

- African governments should step-up their community screening/testing capacities and continuously organise health campaigns to sensitize the citizens on the importance of respecting COVID-19 barrier measures.
- Equally, African governments should rethink the health of their citizens by increasing investments in the health sector in order to prevent the devastating health impacts of unexpected future pandemics.
- Various governments can also provide scholarships to students willing to study specialized but costly scientific disciplines that can provide long term solutions to health related problems.

Third, given the role played by the industry in the development process of world economies through job creation, infrastructural development and production of goods and services, it is important for various governments

to adopt policies aimed at boosting investment in the industrial sector. Thus, if governments can encourage the private sector by providing subsidies or tax holidays for some businesses, this will go a long way to reduce production cost, which in turn will boost production and thereby enabling producers to hire more employees some of whom lost their jobs as a result of the deepening COVID-19 pandemic.

Nevertheless, Governments should be more proactive than simply being reactive in fighting pandemics. They should prevent future catastrophes by drawing lessons from the devastating health impacts of previous pandemics.

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