ECONOMIC IMPACT OF GOVERNMENT INTERVENTION IN RESPONSE TO COVID-19 IN SELECTED SUB-SAHARAN AFRICAN COUNTRIES

Dr Priviledge Cheteni (Corresponding author)
University of Fort Hare
Department of Sociology
East London 5200
South Africa
E-mail address: PCheteni@ufh.ac.za
orcid.org/0000-0002-1301-9486

Dr Adrino Mazenda
School of Public Management and Administration
Economic & Management Sciences, University of Pretoria
EMS 3-126 ;P. Bag X28 Hatfield, Pretoria, South Africa

ABSTRACT

This article provides insights into the economic impact of government actions in response to the COVID-19 pandemic in selected Sub-Saharan Africa countries, purposively selected. A fixed-effect modelling approach was utilised drawing on Oxford COVID-19 Government Response Tracker (OxCGRT) database from January 21 to September 17, 2020, in South Africa, Zambia, Zimbabwe, Tanzania and Uganda. Key findings entail those announcements of government lockdowns were positively related to COVID-19 cases and negatively related to restrictions on internal movement and interest rate decisions from the central banks. Governments' announcements regarding income support packages and debt relief were largely related to the increase in the number of COVID-19 cases. With most global economies grappling with a second wave, and the consequences of the first surge in both social well-being and economic growth, income and debt relief strategies should be continued to benefit households and companies. In addition, countries in the Africa-Sub Saharan region must create a relief fund to support members in distress. Finally, a sustainable regional model on business and tourism must be created to foster development and growth during periods of partial or total lockdown.

Key Words: Socio-Economic; Impact; Government Intervention; COVID-19; Sub-Saharan Africa

1. Introduction and Background

The outbreak of the highly infectious COVID-19 epidemic came as an unexpected episode with great uncertainty about how life-threatening the disease is and the speed of vaccine approval. In response, governments worldwide scrambled with containment measures, such as lockdowns, travel bans, rapid testing, and quarantine. Albeit the implications of these measures on the economy, various socio-economic relief interventions were introduced (Chen & Qiu, 2020). Similarly, in the Sub-Saharan Africa region, after discovering strains of infection mostly imported, the governments declared a national state of emergency. They adopted various restrictive measures, including social distancing, international travel restrictions, quarantine for returning citizens, screening at ports of entry, school closures, screening visits to houses, and the

implementation of digital technology (android-apple-application software for contact tracing). Also, nationwide lockdowns were imposed with only essential services allowed to function, to a limited extent, curfews (International Monetary Fund IMF, 2020).

Given the rapidly changing COVID-19 infection levels and the effects government interventions have on the economy, it is necessary to investigate government interventions' economic and social impact in managing the epidemiological conditions and economic costs in developing countries, in particular, Sub-Saharan Africa countries.

Literature though scant, posits an unavoidable trade-off between the disease control outcomes and economic effects, given that continuous government interventions have adverse effects on the socio-economic well-being of citizens and businesses. There are increased unemployment rates, as well as corporate bankruptcies (Coibion, Gorodnichenko & Weber, 2020, Gourinchas 2020, Fadinger & Shymik 2020, Rowthorn 2020, Thunstrom, Newbold, Finnoff, Ashworth & Shogren, 2020).

In studying the effects of various government interventions, Chang, Ta-Chou & Lin (2020) applied the Bass Susceptible-Infected-Recovered (Bass-SIR) model to analyse lock-down and social distancing consequences for province-specific epidemiological variables in China. The study showed that the domestic (cross-province) travel restrictions in China had a small effect on limiting the spread of COVID-19 from Wuhan to other provinces. Strict social distance initiatives within cities proved to be successful, however uncertain their longevity may be. Flaxman, Mishra, Gandy & Unwin (2020) used only the reported death results and suggested a Bayesian (non-SIR-based) model to study multiple intervention outcomes in 11 European countries. Varying intervention socio-economic impacts were identified in the selected countries, subject to the restrictive measures implemented. Consequently, Chowdry, et al, 2020) contacted a dynamic COVID-19 intervention multivariate prediction modelling study comparing 16 countries globally. The multi-country findings show that a potential mixture of containment and calming techniques may be a successful COVID-19 management approach. Such a "plan" can extend in particular to low-income countries where a single, prolonged intervention is unsuccessful. Consequently, the findings show that effective implementation of complex suppression strategies confers a proactive alternative to avoid acute medical exhaustion and death, improve preventive and therapeutic care, and mitigate economic distress. Finally, Chen. Chang, Liu, (2020) proposed a time-dependent SIR model and, subsequently, an Independent Cascade (IC) model for disease propagation to assess the effects of social distancing interventions, including reducing interpersonal interactions and the removal of mass gatherings. By linking the propagation probabilities in the IC model to the transmission and recovery rates in the Susceptible-Infected-Recovered (SIR) model, the study showed that the social distancing approach could reduce the basic reproduction number (Ro).

Based on the foregoing, this article seeks to provide insights on the economic impact of covid-19 in the selected sub-Saharan states. Furthermore, the article contributes to the rapidly expanding literature on COVID-19 impact in Africa, in particular studies that show heterogeneity between countries (Brauer et al, 2020; Wenham et al., 2020). To our knowledge, this study is the first cross-country analysis of government actions in the face of a pandemic. We also contribute to the emerging strand of literature on how the pandemic shapes government responses. Something which has been ignored in numerous COVID-19 studies. While some governments use COVID-19 cases to decide policies or strategies of influencing economic activity and reducing the transmission of the virus, it is a dangerous approach given that the virus cannot detect government policy in the long run. Finally, by discussing the impact of government response and actions, we

tell a story that resonates well within the African household on how government actions can subsequently diminish or enhance livelihoods.

The article utilises a panel fixed effect model on 5 Africa-Sub-Sahara countries (South Africa, Zambia, Zimbabwe, Tanzania, and Uganda) purposively selected on geographic and economic differences in the region. Data is drawn from the John Hopkins GitHub repository and Oxford COVID-19 Government Response Tracker (OxCGRT) database from January 20 to September 17, 2020. Key from the database are various government responses, utilised in the fixed-effect model, classified indexes (containment and health index, stringency index, and economic support index). The findings of the article are necessary for policy recommendations on the socio-economic impact of Africa Sub -Saharan countries' governments' intervention to global pandemics.

The article is structured as follows; After the introduction, materials and methods are provided. This is followed by discussion, policy implications and conclusions.

2. Materials and Methods

2.1 Data

We use COVID-19 data from the John Hopkins GitHub repository and Oxford COVID-19 Government Response Tracker (OxCGRT) database. This data consists of daily confirmed cases in each nation after the outbreak in January 2020. We estimate the number of new cases for each nation by subtracting the cumulative number of cases at the end of the day from the total number of cumulative cases from the previous day (Gagnon et al, 2020). This sampling approach yields a panel data set consisting of a total of cross-sectional units: 5; Number of periods: 271 and Range: 1:001 - 5:271 (n = 1355). The 5 countries were selected purposively due to their population vulnerabilities as shown in table 1.

Furthermore, the focus was on countries in the Sub-Saharan region with enough data on the early detection of COVID-19 and frequently updated. Our sample period is from January 20 to September 17, 2020. The selected sample period includes the period before the government responses, although they were already COVID-19 confirmed cases in each country, albeit at different times.

2.2 Selection of countries

The Economic Commission for Africa (2020) population vulnerabilities to COVID-19 guideline was used to purposively select the five countries. Numerous countries in Africa face challenges in the health care system which could make COVID-19 lethal and premature existing lockdowns riskier. At the same time, many African countries do not have the health capacity to manage a pandemic of this nature given that on average only 1,8 hospitals beds per 1000 people is accessible to people (World Bank, 2018). The data from various institutions globally show that COVID-19 mortality is highly correlated with age and other underlying conditions of an individual such as respiratory diseases, HIV/AIDS, kidney disease and cardiovascular diseases. The purposive selection of countries was based on the available data, stages of covid-19 infections, number of cases per 1000 people, and population vulnerabilities. It is hypothesized that covid-19 government responses add more strain on vulnerable populations.

Given the high prevalence of HIV/AIDS in Southern Africa and elevated levels of malnourishment, chronic respiratory diseases, and tuberculosis, to name a few. Four of the five selected countries are in the SADC region with a high incidence of HIV/AIDS and high malnutrition cases as shown in table 1. However, Uganda was added to the panel because it has a high malnourished population and diseases that are almost like the selected Sub-Saharan Africa countries. Suggesting that the rate of COVID-19 transmission among the stated countries may be high due to economic activities and travel. Thus, the economic ties, trading partners and population vulnerabilities between selected countries played a major role in our sampling technique. For instance, South Africa's major trading partners in Africa are Zimbabwe and Zambia. According to the United Nations COMTRADE database, Uganda mostly exports agricultural products to Kenya, South Africa and DR Congo. All the selected countries have trade agreements, making it easy for contagion effects to be felt in every country. For instance, South Africa is one of Africa's biggest economies, a full lockdown to curb COVID-19 is likely to negatively impact its trading partners who rely on food security. Similar sentiments are concurred by WHO (2020), it is estimated that COVID-19 would disrupt food security in the drought-prone sub-Saharan region. As a result, a negative impact on South Africa's economy is expected to affect Zimbabwe, Tanzania, and Zambia due to the interconnectedness of trade between those countries. Table 1 provides a summary of population vulnerabilities which informed the panel of countries selected.

Table 1: Population vulnerabilities to COVID-19

	Undernourishment, % of population	Chronic respiratory disease, % of population	Chronic kidney disease, % of population	Chronic cardiovascular disease, % of population	HIV/AIDS, % of population	Incidence of tuberculosis, number per 100,000	Population
Tanzania	31	7	6	3	3	293	56,318,348
Uganda	41	6	5	3	4	335	45,741,007
South Africa	6	6	11	5	13	427	57,939,000
Zambia	47	5	5	3	7	374	17,351,822
Zimbabwe	51	6	7	4	9	498	14,439,018

Source: World Bank (2018)

2.3. Government Response

Following Hale et al., (2020), to capture government response to this pandemic, we used the OxCGRT database. OxCGRT has various government responses such as the containment and health index, stringency index, and economic support index. The containment and health index is coded from 3 indicators, namely testing policy, contact tracing, and public awareness campaigns. The stringency index captures information on social distance measures and is extracted from 8

indicators: cancel public events, school closing, cancel public events, social distancing measures, close public transport, restriction of domestic and restriction of international movement, and stay home requirement. Figure 1 illustrates that governments in different countries responded differently due to the pandemic.

The South African government response to the pandemic was very strict because COVID-19 cases were rising at an increased rate. As shown in figure 1, COVID-19 cases have surpassed 600000 in South Africa. Meanwhile, in other countries understudy, the cases are below 10000. However, Uganda and Zimbabwe imposed a stricter lockdown although the COVID-19 cases and deaths were low. As of September 2020, all countries are on partial lockdown.

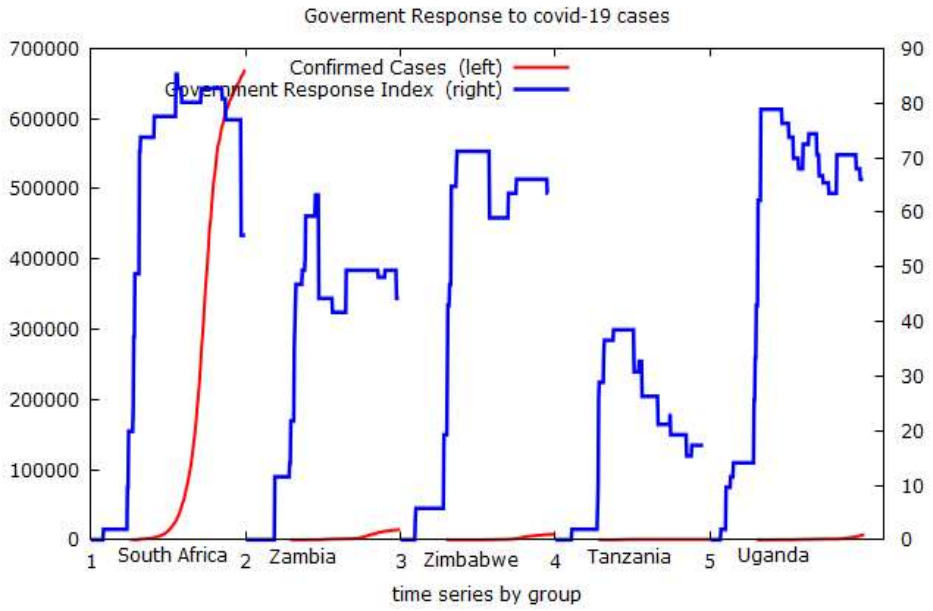

Figure 1: Government response to COVID-19 cases

In addition, a correlation matrix in terms of how governments responded towards high COVID-19 cases and death shows that many governments reacted passively towards the pandemic. Meanwhile, in advanced economies, governments reacted quickly, given the high death rates, which were being experienced compared to Africa. Compared to the five countries under study, South Africa is the leading African country in high death rates and confirmed cases of COVID-19. This is illustrated in figure 2.

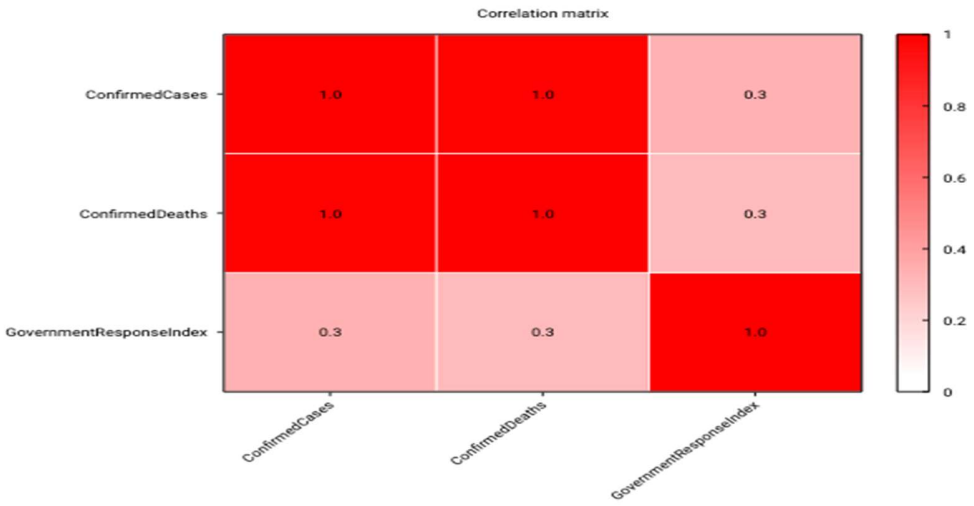

Figure 2: Correlation Matrix

2.4 Fixed Effects Model

This section provides the methods and variables which were used to analyse the data. To pursue our objective, we utilised a panel dataset comprised of daily data from 5 countries in the Sub-Saharan region. To facilitate the exposition of this test, we shall revisit the fixed effect model. Fixed-effects models are a type of regression model in which the levels of explanatory variables are considered to be fixed, and only the dependent variable adjust in response to the levels of explanatory variables (Salkind, 2010).

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \beta_2 Z_{it} + \mu_{it} \qquad \text{eq (1)}$$

Where *i*=1, 2, 3…. N; and *t* =1,2,3…T. Meanwhile, Z_i captures the factors that vary among the cross-section units at a given time but do not vary over time (e.g., location, demographic factors, etc.). There is no need to define Z_i because it gets absorbed into the intercept. μ_{it} is the error term. Given this exposition, our parsimonious model takes the following form:

$$Y_{c,t} = \propto_c + \beta_1 (Govt\ Response_{c,t}) + \beta_2 (Z_{c,t-1}) + \sum_{c=1}^{c-1} \beta_c C_c + \sum_{t=1}^{t-1} \epsilon_t D_t + \varepsilon_{c,t} \qquad \text{eq (2)}$$

Where, Y is the dependent variable and measures confirmed cases of COVID-19 in country *c* on day *t.* $\propto_c$ is a constant term. The government responses is being represented by the government response indexes from the OxCGRT dataset. Considering that our study sample is concise, most of the country-level factors remain fixed. As a result, we add a matrix of country fixed dummy variables. These variables control for factors that remain fixed. ε is the error term.

The fixed model is a model of choice in panel regression until the Hausman test proves otherwise. A Hausman test was applied, where the null hypothesis of no fixed effects was rejected at a 5 % significance level. Suggesting that a fixed model was a preferred choice in this case. Furthermore, our interest was analysing the impact of variables that vary over time.

2.4.1 Control variables

To control time-varying heterogeneities across countries, three indices from OxCGRT are added to the model. These indices are on internal movement restrictions, international travel, and fiscal stimulus. Internal movements restrictions are limitations placed on citizens when moving within the country. International travel restrictions are limitations place on people coming in and going out of the country. Fiscal stimulus are interventions that is done by the central banks in reaction to covid-19 economic impacts. The restriction on internal movement where: 0-no measures, 1-recommend not to travel between regions/cities, 2-internal movement restrictions in place. International travel controls have three values, namely: 0-- no restrictions, 1-screening arrivals, 2 - quarantine arrivals from some or all regions, 3-- ban arrivals from some regions, 4- -ban on all regions or total border closure.

Furthermore, to capture the social impact on households, the income support (for households) and debt/contract relief (households) variables are also added to the model. Debt/contract relief record whenever the government freezes debt commitments for families (e.g. blocking repayment of debts, keeping water supplies open, or barring evictions). Record of income assistance whether the government makes direct cash transfers to individuals who lose their jobs or are unable to work. Ashraf (2020) used similar variables in their study while estimating the economic impact of government response in the financial markets. This study builds on some of the variables to capture the salient part of government actions relevant to the socio-economic impact of COVID-19.

To expand our analysis, we add the variables inflation and interest rate in the model. The steady fall in inflation rates is significant in sub-Saharan economies. In economic terms, a higher inflation rate is a significant source of uncertainty for consumers and suppliers regarding relative prices. It then helps households to respond more favourably to micro-level opportunities brought on by economic reforms (World Bank, 2018). Similarly, interest rate decisions or policies from the central bank or government have the likelihood of influencing demand and consumption in the economy. Given that governments offer support to businesses and people during this pandemic, it would be worthy to measure if these variables are influenced the pandemic. Table 2 provides a summary of variables.

Table 2 Summary of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Confirmed Cases	973	50838.73	153010.8	1	669498
Inflation	1,355	139.1639	279.5163	2.1	837.53
Interest rate	1,355	12.18609	10.20039	3.5	35
Lockdown	1,355	.6553506	.4754293	0	1
Income support	1,329	.241535	.4281749	0	1
International restrictions	1,328	2.292169	1.46875	0	4
Restriction internal	1,328	.9051205	.9252569	0	2
Debt relief	1,328	.5519578	.7814807	0	2
Fiscal measures	1,328	4.62e+07	1.14e+09	0	3.63e+10

2.4.2 Diagnostics tests

These sections provide an understanding of the diagnostics tools that were used in this study.

2.4.2.1 Hausman Test

The Hausman test examines the consistency of the random effects estimator. The test is based on measuring the distance between the fixed-effects and random-effects estimates. The null hypothesis is that the preferred model is random effects; The alternate hypothesis is that the model is fixed effects.

$$\begin{aligned}\chi^2(4) &= (b-B)'[(V_b - V_B)^{-1}](b-B) \\ &= 946.82 \\ Prob > \chi^2 &= 0.0000\end{aligned}$$

A Hausman test was applied, where the null hypothesis of no fixed effects was rejected at a 5 % significance level. As a result, equation 2 should be estimated by a fixed-effects regression.

2.4.2.2 Heteroscedasticity

Heteroscedasticity in panel data usually occurs when the distribution of the disturbance terms is different across panels. For instance, in group-wise heteroscedasticity, the disturbance term is heteroscedastic within some subsets but different across those subsets. In this case, heteroscedasticity can lead to biased standard error estimates and lead to spurious results (De Hoyos & Sarafidis, 2006).

A standard method to fix group-wise heteroscedasticity is to employ the Huber-White estimator to obtain homoscedastic standard errors (De Hoyos & Sarafidis, 2006). The Huber-White estimator is an equivalent of a standard fixed effects regression that clusters standard errors by country. In this case, the methods are sufficient to solve this problem.

2.4.2.3 Pesaran Test

The Pesaran CD test for cross-sectional correlation when the error terms are serially correlated in panel data models. Cross-sectional dependence is where the disturbance terms across panels are correlated. De Hoyos & Sarafidis (2006) pointed out that this is more common in macro-economic studies. Furthermore, if the dependence is from unobserved factors that are correlated to the disturbance term but uncorrelated with regressors, then it is likely that the estimates of the parameter coefficient in fixed effects will be consistent. However, the statistical significance would be incorrect due to biased standard errors.

The Pesaran test was used to determine if whether cross-sectional dependence was present in the data. The test statistic was significant at a 5 % level, suggesting that cross dependence was present in the data. Consequently, cross-dependence may likely be present between countries sharing similar features such as openness and trade flows, to name a few. For instance, South Africa and Zimbabwe likely have cross-dependence due to their proximity and massive trade flows within the SADC region. Nevertheless, Zambia and Zimbabwe may also have such cross dependence due to their proximity. The Pesaran test does not give more in-depth insight on how strong the dependence is or between panels.

In this study, a Panel Corrected Standard Errors (PCSE) estimator was used to correct for cross-sectional heteroscedasticity and correlation. Beck and Katz (1995) demonstrated that a large *T* asymptotic based standard error correct for contemporaneous correlation between subjects performs well in small panels. Given our panel of 5 countries, this estimator is adequate to correct for correlation and cross dependence. Furthermore, Robust (HAC) standard errors were used to correct for group-wise heteroscedasticity.

3. Empirical results

This section provides the empirical result. As shown in Table 3, the summary statistics show the variables that were used to estimate the model. The results of the fixed model that was estimated with Robust (HAC) standard errors and Beck-Katz standard errors are shown in table 3. The dependent variable was confirmed cases of COVID-19. In model 1, the only significant variables were income support and debt relief. This suggests that there is a positive relationship between income support and the number of COVID-19 cases. The variable was significant at the 5% level. Most governments provided COVID-19 related support as the number of cases surged. On the other hand, the debt relief variable was statistically significant at the 1% level. Numerous governments provided debt relief to reduce the impact of COVID-19 on both businesses and people.

Table 3: Comparison of standard errors estimates for fixed-effect regression

Variables	Robust (HAC) standard errors	Beck-Katz standard errors
Restrictions on internal movement	−93240.6 (0.2345)	−93240.6 (0.0004***)
International Travel control	6111.65 (0.6830)	6111.65 (0.0864*)
Income support	88818.4 (0.0417**)	88818.4 (0.0151**)
Debt/contract relief	123377 (0.0020***)	123377 (0.0002***)
Fiscal measures	2.31225e-07 (0.8674)	2.31225e-07 undefined
inflation	33.2152 (0.9095)	33.2152 (0.75060
Interest rate	−3489.05 (0.4180)	−3489.05 (0.0021***)
Lockdown	32447.8 (0.5871)	32447.8 (0.0290**)
constant	31464.8 (0.5832)	31464.8 (0.1311)
Country fixed effects dummies	Yes	Yes
Observations	1355	1355
R-squared	0.505840	0.505840

Table 3, provides the coefficient estimates from the regression model in (2) estimated by fixed effects (within) regression. The *p-value* in the parentheses is based on standard errors estimates obtained from the covariance matric estimators in the column headings. The dataset contains

daily data from January 2020 to September 2020 for a panel of 5 countries in the sub-Saharan region. The dependent variable in the regression is the number of COVID-19 cases.
***Represent statistical significance at 1% levels.
**Represent statistical significance at 5% levels.
*Represent statistical significance at 10% levels.

Using the Beck-Katz standard errors, the results are quite different. The following variables were statistically significant at 1% level; interest rate, debt relief and restriction internal. Meanwhile, income support and international travel control were statistically significant at the 10% level.

4. Discussion

The findings presented in the article provide some evidence for the hypothesis to this objective. We show that the announcement of travel restrictions due to COVID-19 can have adverse and positive effects on households' socio-economic status. Currently, it is still unclear how government measures would affect economies in the long run. However, recent statistics from the World Bank (2020) estimated that many nations' growth will be modest.

The study results are robust on both standard errors estimators with fixed effects. The results contribute to the current debate on policies that focus on mitigating the pandemic. The following section provides discussions on the significant variables.

Lockdown has a positive and statistically significant coefficient, indicating that countries that introduced the lockdown had more new cases than countries that did not. This result contradicts Alfano and Ercolano (2020) who claimed that the lockdown was implemented by countries with fewer cases than those who did not. Possibly the divergence is caused by the countries which were used in the study since it focused on the European countries. Given the difference between African countries and European countries, this is expected. In addition, several European countries like Italy, Spain and Germany initiated lockdowns when the COVID-19 death rate escalated. Meanwhile, lockdowns in the selected African countries were mainly influenced by escalating cases of COVID-19 than high death rates experienced in European countries.

Thus, government measures such as lockdowns and restricted movement are expected to negatively and positively impact the economy. Chang, Ta-Chou and Lin (2020) pointed out that domestic travel restrictions in China had a small effect on limiting the spread of COVID-19 from Wuhan to other provinces. It was noted that social distancing proved to have more effect in reducing the spread of the virus. This study finds dissimilar results on domestic travel in the selected countries. Suggesting that domestic restricted movement was negatively related to COVID-19 cases. However, international travel restrictions proved to have a limited impact on the spread of COVID-19. This is particularly true given the fact that most of the COVID-19 cases in the sub-Saharan region were increased by local transmissionbecause international individuals were sent to quarantine centres upon arrival to their country of origin. In addition, there is limited international movement of citizens of the five countries under study, especially overseas during the COVID-19 outbreak announcement by the World Health Organisation.

On the other hand, there is a negative relationship between interest rate and COVID-19 cases, suggesting that as COVID-19 cases increase, the interest rate is reduced. This has been the approach used by numerous central banks to stimulate economic activity and improve liquidity

for households. In all 5 countries under study, central banks reduced interest rates more than once as the number of COVID-19 cases spiked. This is illustrated in figure 3. According to the IS-LM model, at lower interest rates, investment is higher which translates to high GDP. This causes a multiplier effect on consumption (Hicks, 1950). Thus, it can be deduced that central banks activities with regard to interest rate decisions influenced household consumption positively during the pandemic. In the process mitigating cases of food scarcity to a majority of poor households.

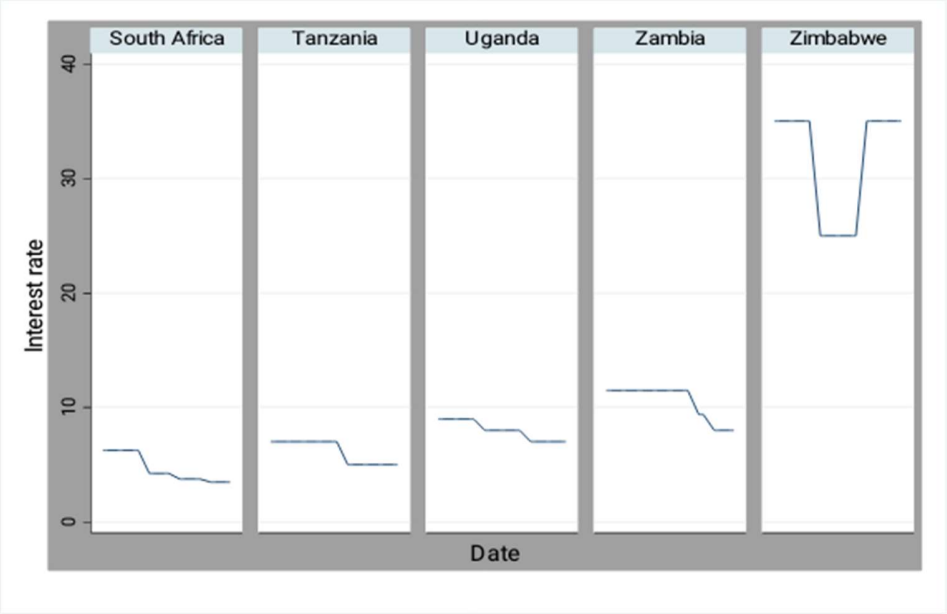

Figure 3: Central banks interest adjustment from Jan-September 2020

Source: World Bank, 2020

Meanwhile, there is a positive relationship between income support and COVID-19 cases. As the number of COVID-19 cases increases so is income support. In simple terms, as more cases were confirmed most nations increased their level of stringent regulations that were meant to curb movement. This has a direct impact on household income and business. Thus, if there is no economic activity, governments are forced to offer support to households to avoid a high mortality rate and starvation. For instance, South Africa provided the COVID-19 Social Relief of Distress Grants for the duration of the lockdown (SASSA, 2020). Yet, Zimbabwe announced a three-month social support cash grant targeting over 1 million vulnerable households (KPMG, 2020). The government restrictions on travel meant that income is reduced for those households who rely on the informal market. It is most likely that restricted movements of people and goods in selected countries does not only slow the transmission of COVID-19, but it also feeds directly to their food insecurity. Given that many people rely on the informal economy for their livelihoods. Lou et al (2020) and Wright et al. (2020) observed that compliance with stay home orders varies with class. Lower-income classes are likely not to follow directives and are more susceptible to the virus. As a result, income assistance is mainly given to the poor classes who would obey the directives. This strategy will lead to a decline in infection rates by allowing lower-income earners to stay at home.

Similarly, debt/contract relief is positively related to a high number of COVID-19 cases because anything that affects production negatively leads to missed income opportunities for both business and citizens. Consequently, as the numbers of cases increase so is the debt relief needed by businesses and households due to the lack of income caused by government regulations.

This study has several implications for policymakers. Firstly, it is disastrous for the government to mirror its actions with the pandemic given that COVID-19 is likely to take years to be eradicated. The results show that as COVID-19 cases increase many governments resort to lockdown measures such as limited travel both local and international to avoid the spreading of the virus. However, countries like Sweden never had any lockdown prove otherwise that the virus may slow economic activity but does not need to disrupt people's livelihoods. Sweden managed to flatten the curve without a full lockdown of economic activity (Fiore, 2020). Given that the global death rate is between 1-3 per cent according to the WHO (2020) COVID-19 statistics.

Another dilemma is that in the sub-Saharan region most economies rely on the informal economy to sustain the livelihoods of the poor (World, Bank, 2018). In addition, the poor do not hold much savings but consume more. As a result, the simple imposing lockdown has led to more unemployment and poverty since most informal markets need one to travel between one place and the other to sell goods and services. For instance, Statistics South Africa in its latest Labour Quarterly Report (2020) stated that over 2 million people have filed for government assistance due to job losses. A similar trend is already happening in the panel of the countries under study due to their vulnerable economies to outside shocks.

Our findings are in line with Zaremba et al (2020) and Shanaey et al (2020) who showed that government policies are ineffective, particularly in low-income countries where violations are likely to be the routine as people struggle to survive. However, we also show that some measures are necessary for curbing the pandemic. Chen. Chang, Liu, (2020) stated that a sandwich of strategies like as social distancing and less stringent regulations have a likelihood of reducing the number of COVID-19 cases compared to stringent measures, which are likely to be counterproductive for poor households.

5. Conclusions

This article presented empirical evidence from a cross-country perspective on the government's response to the pandemic and the steps placed in place to curb the spread of COVID-19. In the empirical analysis, we used the daily data of covid-19 cases and announcements regarding government interventions from 5 countries over the period January 21 to September 17, 2020. The standard error estimates are robust to general forms of cross-dependence and temporal dependence. Cross dependence is a concern in panel studies as it occurs from unobserved common factors. However, we have found that the introduction of the lockdown and its implementation by governments had a positive relationship with the COVID-19 cases.

Our findings confirm that government intervention is motivated by COVID-19 cases, not the death rate. Government interventions had a dual effect, a direct negative impact on livelihoods and a positive impact on curbing the pandemic. Specifically, the announcement of restricted domestic travel measures results in negative cases of COVID-19 due to reduced movement between people. However, the same cannot be said for international travel restrictions. On the other hand, government announcements on income support and debt relief were largely based on positive COVID-19 cases.

6. Policy Implications

Our findings have important implications in highlighting that the number of COVID-19 cases is unlikely to be influenced by government intervention. Government intervention, however, was dependent on rising cases of COVID-19 and enforced lockdowns. At this point, it is difficult to predict with confidence the net effect on economic outcomes, and research needs to concentrate on this in the future if data is available.

With most global economies grappling with a second wave, and the consequences of the first surge in both social well-being and economic growth, income and debt relief strategies should be continued to benefit households and companies. While this looks ideal in eradicating food shocks, and poverty, it is not sustainable to keep these relief measures indefinitely. The inference is a cause for debt.

In addition, while lockdowns were maybe helpful in decreasing the spread of the virus, the usually lead to more vulnerable households being food insecure. Consequently, increases the countries' unemployment rate. Most African households rely on the informal economy, as their source of income. Depriving the vulnerable households of their income-generating activities means the governments have to weigh in, with a significant increase in bailouts from international organisations, such as the World Bank and IMF to fund the economic relief programmes.

An ideal measure is one where a sustainable regional model on business and tourism travel is created to foster economic growth during period cases where members are in total or partial lockdown.

7. Limitations and further research

It is also important to remember that the research was a cross-country review of five nations. This means that it can never be extended to the entire sub-Saharan region. Although there may be advantages in generalizing the findings and model, there are limitations in collecting data. For the specified purpose, future research should concentrate on the entire Sub-Saharan Africa region.

In addition, there is a need for longitudinal data that can allow researchers to study how government action can affect livelihoods, experience and actions. This will enable an examination of how such behaviour can have an effect on economic activity and how best to respond to the pandemic. Finally, an international comparison is required, given that each country is affected differently by the virus. The emphasis should be on policies adopted by governments in response to the pandemic, and how such policies can be of great benefit to the economy.

Competing Interests: All authors declare no competing interests.

Ethical Approval: Not required. This study uses existing data sources that are fully publicly available and anonymized.

Data Sharing: This study uses publicly accessible data.

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