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Impact of Covid-19 Economic Support Measures on Food Insecurity in African Countries

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Abstract

The Covid-19 had a multidimensional impact on all countries in the world. This impact was even more apparent in terms of food insecurity, highly prevalent in African. This was mainly driven by economic, social and political factors with governments newly introduced policy responses to reduce the negative impact of the crisis on food insecurity. Thus, this study aims to assess impact of economic support measures on food insecurity in African countries. Hence, a panel data model estimated with the Poisson Quasi-Likelihood method has been used on a sample of 38 countries between 2019 and 2022. Result shows that direct income support and debt relief measures reduce food insecurity confirming the efficiency of the introduced policies during the pandemic. Standard effects have also been detected for economic factors; unemployment and prices increase food insecurity while GDP per capita reduce it. Thus, to reduce the impact on food security, government policies during crisis should focus more on direct cash transfer to vulnerable categories than global macroeconomic fiscal measures.

Keywords: Food insecurity, economic support, covid-19, pandemic, panel, Africa, Poisson Quasi-Likelihood.

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1. Introduction

The COVID-19 pandemic has had severe effects on global economies, with particularly an important impact on developing regions like Africa. Most concern has been toward the immediate health consequences, although, the economic effects of the pandemic have been equally devastating, exacerbating existing vulnerabilities and deepening food insecurity in already fragile economies (FAO, 2020) (IMF, 2021). To note that the severity of the COVID-19 pandemic varied significantly across African countries, both in terms of health outcomes and economic disruptions. For instance, South Africa and Egypt experienced the highest number of confirmed cases and deaths, with over 3.7 million cases and 100,000 deaths in South Africa by the end of 2021, and over 400,000 cases and 22,000 deaths in Egypt (Hale, et al., 2021). In contrast, smaller or less connected countries such as Burundi and Comoros reported relatively fewer cases, with just over 20,000 confirmed cases in Burundi and less than 5,000 in Comoros (Hale, et al., 2021).

Similarly, the economic impact was not uniform: countries heavily reliant on tourism like Seychelles and Mauritius, which saw declines in GDP by over 10% in 2020 due to reduced travel

(IMF African Dept, 2022) (IMF, 2022), or oil-exporting nations such as Nigeria and Angola, which faced steeper GDP contractions of 1.8% and 5.4% respectively in the same period (World Bank, 2021), experienced sharper economic downturns compared to more diversified economies like Kenya and Ghana, which had smaller GDP reductions. These differences underscore the need for a cross-country analysis to understand the heterogeneous effects of the pandemic and the varying effectiveness of government support measures across the continent.

Africa has been facing food insecurity since many years, although the economic disorders caused by the pandemic, including very intensive unemployment, inflation, and supply chain disruptions, have made the situation even more difficult (Workie & Al, 2020). Even before the pandemic, food insecurity in Africa was a persistent challenge. In 2019, approximately 250 million people in Africa were undernourished, representing about 19.1% of the continent's population (FAO & Al., 2020). Structural factors such as poverty, conflict, climate change, low agricultural productivity, and inadequate infrastructure have long constrained access to sufficient and nutritious food. For example, South Sudan and the Central African Republic reported severe food insecurity rates exceeding 60%, while Ghana and Algeria remained below 6%.

The pandemic worsened this situation dramatically. Disruptions in food supply chains, income losses, and inflation significantly affected both urban and rural populations. Lockdowns and border closures hindered the movement of goods, leading to food shortages and price spikes. In Nigeria, food prices rose by over 20% in 2020 (World Bank, 2021). Informal job losses hit urban workers hard; in Kenya, about 1.1 million people lost employment during the pandemic (FKE, 2021). At the same time, rural households dependent on subsistence agriculture faced declining incomes due to reduced access to seeds and fertilizers (Nchanji & Lutomia, 2021).

Regional impacts were highly uneven. East African countries like Ethiopia, Kenya, and Somalia suffered compounded shocks from conflict, locust infestations, and the pandemic. In Uganda, cross-border trade collapsed from \$44 million to just over \$1 million during 2020 (UN, 2021). In West Africa, the Sahel region saw food insecurity worsen for over 29 million people, while urban populations in coastal countries like Nigeria and Ghana experienced food access challenges due to economic slowdowns (FSIN, 2021). Southern African countries, such as Zimbabwe and Zambia, were hit by both drought and pandemic-induced market disruptions. North African nations, reliant on tourism and wheat imports, struggled with falling revenues and rising global prices. Wheat prices surged by more than 20%, severely affecting countries like Egypt (FAO, 2020).

Certain population groups were disproportionately affected. Women, who make up 60% of the agricultural labor force in Sub-Saharan Africa, faced heightened burdens from income loss and caregiving responsibilities (Buehren, 2023). Child malnutrition increased, with UNICEF estimating that over 3 million children in Africa were at risk of wasting. Conflict-affected populations, including internally displaced persons and refugees, faced heightened vulnerability; in the Sahel region alone, 4.7 million people in these categories suffered from acute food insecurity (IOM & WFP, 2021). On average, the prevalence of severe food insecurity in the African countries included in this study rose from 37.77% in 2019 to 39.68% in 2022, underscoring the negative impact of the pandemic. In response, governments across the continent, and in the World as a whole, introduced various economic support measures aimed at mitigating the negative effects of the crisis, including cash transfers, debt relief programs, and public employment schemes. However, the effectiveness of these interventions in reducing food insecurity remains unclear as very few research have been made on the subject at a macro level and even less in a cross-country perspective (Hale, et al., 2021) (Almenfi & Al., 2020).

This study aims to assess the impact of government interventions, including income support (cash transfers), debt relief measures, and fiscal policies on the prevalence of severe food insecurity during the Covid-19 pandemic in African countries. It also examines the effect of the known economic factors, such as GDP per capita, inflation, and unemployment, on food insecurity. Thus, a panel data model including 38 African countries over the period from 2019 to 2022 will be evaluated. By analysing

these factors, this research aims to provide insights into how economic factors and policy responses have impacted food security in the region during the pandemic and to offer recommendations for future policy strategies.

Therefore, this paper is structured as follows: first, an introduction on the food insecurity during Covid-19 era in African countries. Second, the paper will present a theoretical and empirical literature including food insecurity determinants and policy responses, especially economic measures, against the pandemic in African countries. Finally, an empirical analysis will be done on the effect of economic support measures on food insecurity during the Covid-19 era in African countries.

2. Literature review

2.1 Theoretical Framework

The theoretical relationship between food security and economic support measures is multidimensional, thus, many theories emerged from researchers' works. First, Amartya Sen's entitlement approach is foundational in understanding the relationship between economic policies and food security. Sen suggests that food insecurity arises not merely from a lack of food but from individuals' inability to access it due to insufficient entitlements, the set of resources legally and socially available to them (Sen, 1983). Economic support measures, such as cash transfers or subsidies, enhance individuals' entitlements by increasing their financial resources, thereby improving access to food.

Second, the livelihoods framework, developed by Chambers and Conway, emphasizes the interplay between assets, strategies, and outcomes in achieving food security. Economic support measures are critical in this framework as they provide households with financial capital, enabling them to pursue diverse livelihood strategies (Chambers & Conway, 1992). For example, direct cash transfers can reduce reliance on adverse coping mechanisms, such as selling productive assets, thus preserving long-term food security.

Behavioral economics offers additional insights into how economic support measures affect food security. By providing financial resources, economic support reduces the cognitive load associated with poverty, enabling households to make better decisions about food procurement and consumption (Banerjee & Dufló, 2011). For instance, predictable and regular cash transfers can encourage investments in nutrition-rich foods rather than immediate calorie-dense options.

Other works focus on the channels through which the economic support measures impacts food security;

Through income augmentation: as economic support measures directly enhance households' disposable income, improving their ability to purchase food. Studies have shown that cash transfer programs, such as Brazil's Bolsa Família and India's Public Distribution System (PDS), significantly increase household food expenditures and dietary diversity (Soares, Ribas, & Osorio, 2010).

Through price stabilisation: subsidies and price controls are economic tools that stabilize food prices, making them affordable for low-income households. For example, agricultural input subsidies in Malawi and Zambia have been linked to increased food production and lower market prices, enhancing availability and access (Dorward & Chirwa, 2011).

Through employment programs: public employment schemes create income opportunities for vulnerable populations. These programs ensure a minimum level of income, reducing food insecurity by providing both direct earnings and stabilizing rural economies (Devereux & Solomon, 2006).

Finally, through social safety nets: Safety nets, including unemployment benefits and pensions, protect households from income shocks, enabling them to maintain food security during crises. During the COVID-19 pandemic, many countries expanded safety nets, mitigating the negative impacts of lockdowns on food access (Almenfi & Al., 2020).

Even, if the theoretical framework explained the mechanisms through which the economic support measures can affect food insecurity, studying the determinants of food insecurity is important

to understand the impact of different factors on food security to design the empirical model and design effective interventions.

2.2 Food insecurity determinants

2.2.1 Economic Determinants of Food Insecurity

First, poverty is widely acknowledged as a primary driver of food insecurity. In Sub-Saharan Africa, where over 40% of the population lives on less than \$1.90 per day, financial constraints severely limit access to sufficient and nutritious food (FAO & Al., 2021). Income inequality exacerbates the issue, as marginalized populations often face higher barriers to accessing resources. Studies such as Smith and Subandoro (2007) have shown that households in lower-income quintiles consistently experience higher rates of food insecurity.

Second, agriculture is the backbone of most African economies, employing 60–70% of the population, and thus constitutes a major factor of food security (Nsiah & Fayissa, 2019). Literature also highlights that smallholder farmers often face systemic challenges, including limited access to inputs such as seeds, fertilizers, and modern technology, and inadequate extension services, which limit their production capacity (Jayne, Chamberlin, & Headey, 2014) (Nchanji & Lutomia, 2021).

Last, market inefficiencies, including poor infrastructure and high transportation costs, hinder food distribution and contribute to regional disparities in food availability. In addition, price volatility, often driven by global markets, can make staple foods unaffordable for low-income households. Bellemare (2015) demonstrates how price spikes in basic commodities disproportionately affect food security in African countries, particularly during periods of economic shocks.

2.2.2 Environmental Determinants of Food Insecurity

Climate change is considered as a major factor of food insecurity as it affects directly the agricultural production (FAO, 2015). Africa is highly vulnerable to climate change, with rising temperatures, unpredictable rainfall patterns, and frequent droughts adversely affecting agricultural output. Some studies indicate that staple crop yields, such as maize, are expected to decline significantly due to climate stress (Schlenker & Lobell, 2010) (Emediegwu, Wossink, & Hall, 2022). Prolonged droughts in regions like the Sahel have led to recurrent food crises, further aggravating food insecurity.

This is worsened by water scarcity, another critical environmental determinant, limiting both crop irrigation and livestock rearing. A study by Falkenmark and Rockström (2004) underscores the challenges of water management in arid and semi-arid regions of Africa, where competition for water resources often leads to conflicts and further exacerbates food insecurity (Rockström & Falkenmark, 2004).

To the precedent factors, we can add land degradation, including soil erosion and desertification, that reduces arable land and diminishes agricultural productivity and may lead to food insecurity (Pozza & Field, 2020). This is even more important for African countries where a large area of the cropland is degraded. This phenomenon is particularly severe in areas reliant on rain-fed agriculture, where soil fertility directly impacts food production.

2.2.3 Political Determinants of Food Insecurity

Weak governance and poor policy implementation have been identified as significant contributors to food insecurity in Africa. Many governments lack the capacity or political will to invest in sustainable agricultural development or social safety nets. Among literature, food insecurity is often considered more severe in countries with unstable political environments (Devereux S. , 2009).

In the same way, armed conflicts and political instability have devastating impacts on food security by disrupting agricultural activities, displacing populations, and limiting access to markets. The Food and Agriculture Organization (FAO, 2022) estimates that conflict is the primary driver of acute food

insecurity in 70% of affected African regions (FAO & Al., 2022). For instance, the ongoing conflicts in the Horn of Africa have led to widespread famine and malnutrition.

Global trade policies and their implications also play an important role in food security. High dependency on food imports exposes African countries to global market fluctuations, while restrictive trade policies can limit access to affordable food. Barrett and Bellemare (2011) argue that African countries must balance import reliance with investments in domestic agriculture to achieve food security.

2.2.4 *Social Determinants of Food Insecurity*

The rapid population growth is considered as the most important food insecurity cause as animal and agricultural production is not able to follow (Roth & Galyon, 2024). By 2050, the continent’s population is projected to double, intensifying the demand for food (UN, 2019). Urbanization compounds this issue, as urban dwellers often rely on purchased food rather than subsistence farming. Frayne et al. (2014) highlight that urban households are particularly vulnerable to food price shocks (Frayne, Crush, & McLachlan, 2014).

Cultural practices and dietary preferences also play a role in shaping food security. Efforts to diversify diets through nutrition education and promotion of alternative crops have shown promise, as evidenced by studies such as those by (Ruel, Quisumbing, & Balagamwala, 2018). Traditional diets in many African societies rely heavily on staple grains, which may lack nutritional diversity.

Although, the determinants of food insecurity are deeply interconnected, creating a complex web of systemic challenges. For example, climate change exacerbates poverty by reducing agricultural yields, which in turn limits household income and access to food. Similarly, conflict often arises in resource-scarce environments, compounding both political and environmental challenges.

2.3 *Policy responses to Covid-19 pandemic*

The COVID-19 pandemic presented unprecedented challenges globally, with African nations facing distinct socioeconomic and public health hurdles. Policymakers across the continent implemented a range of responses to mitigate the pandemic’s impact, focusing significantly on economic support measures.

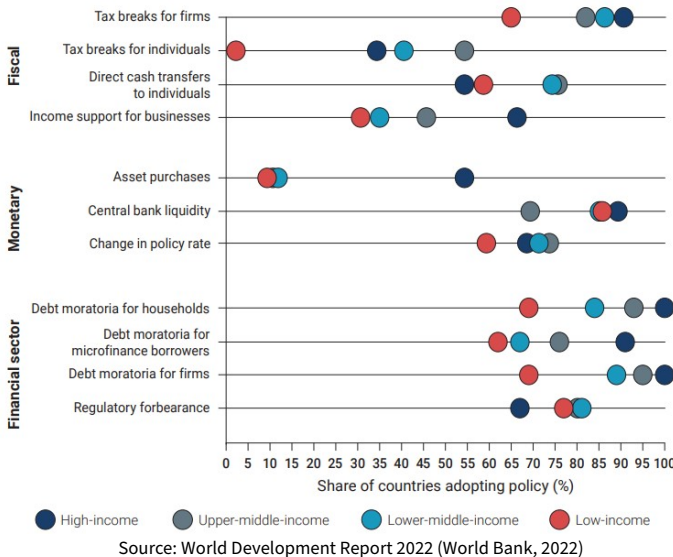


Figure 1. Policy responses to the COVID-19 crisis, by country income group

To note that the economic measures were highly dependant on income level of the countries and their economic system. Figure 01 present the percentage of countries adopting the measures for each income level. As we can see, high income countries focused more on firm support measures while low income countries focused on individuals support, even if the intensity is overall lower.

2.3.1 Fiscal and Monetary Policy Measures

African governments employed fiscal and monetary policies to address the economic crisis. Central banks across the continent adopted measures such as lowering interest rates, providing liquidity support, and deferring loan repayments. For example, the Central Bank of Kenya reduced its policy rate to 7% in 2020, the lowest in nine years, to stimulate borrowing and investment (CBK, 2020). Similarly, the South African Reserve Bank cut its policy rate by 300 basis points to 3.5% in 2020, the lowest in the country's history (SARB, 2020).

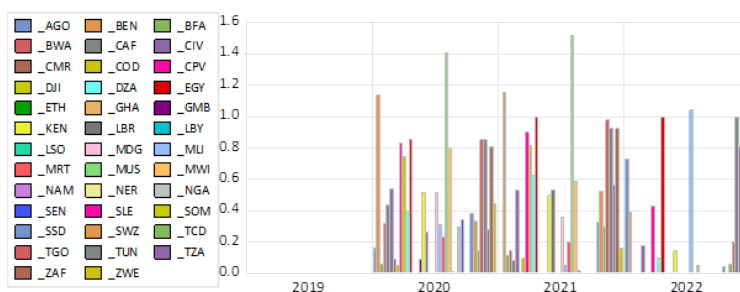
On the fiscal front, many African nations introduced stimulus packages to provide direct support to businesses and households. Income support measures were a critical part of these packages, aiming to alleviate the financial strain on the most vulnerable populations.

Cash transfer programs emerged as one of the most widely adopted economic support measures during the pandemic. Studies observed that countries with robust cash transfer mechanisms in place before the pandemic were better equipped to address food insecurity (Almenfi & Al., 2020).

In Brazil, the Auxílio Emergencial program significantly mitigated food insecurity among low-income households (Arruda & Al., 2021). Similarly, in Kenya, the government's cash transfer program helped urban households maintain basic food consumption levels despite pandemic-induced income losses (Egger & Al., 2021). In Ethiopia, the Urban Productive Safety Net Project (UPSNP) was expanded to provide cash transfers to vulnerable urban populations, effectively reducing food insecurity during lockdown periods (Hirvonen, De Brauw, & Abate, 2021). However, limitations such as delays in disbursement and exclusion of informal workers in some countries undermined the effectiveness of these programs (Holmes & Hunt, 2021).

Nigeria announced a 9.2 trillion Naira (approximately 24 billion USD) Economic Sustainability Plan (ESP), focusing on job creation, business support, social safety nets, and direct income transfers (Economic Sustainability Committee, 2020). South Africa's 26 billion USD relief package, equivalent to 10% of its GDP, included substantial allocations for unemployment benefits and direct income support for workers affected by the pandemic (National Treasury, 2020).

In South Africa, the COVID-19 Temporary Employer/Employee Relief Scheme (TERS) provided income support to workers who lost their jobs or were placed on unpaid leave due to lockdowns. This measure was instrumental in reducing household food insecurity, particularly in urban areas (Rogan & Skinner, 2022). However, in many LMICs, where informal employment is prevalent, unemployment benefits were either absent or insufficient. This gap underscored the need for more inclusive social protection systems (ILO, 2021).



Source : Authors, based on OxCGRT data (Hale, et al., 2021)

Figure 2. Income Support Measures (Index from 0 to 2)

The last figure present the intensity in scale of 0 to 2 of the income support measures introduced to mitigate Covid-19 effects in different African countries, each represented by a different color. We can notice that income support measures, started in 2020 with the beginning of Covid-19 in most African countries. The remaining countries introduced measures in 2021 while the precedent ones increased their support in most cases. To note that the most important income measures were Mauritius and Benin in the first two years. In 2022 most countries started to reduce their support or stopped it, while some countries maintained their efforts. We can notice an important income support measure from Mali in 2022, after very low effort in the first two years.

Debt relief for households also featured prominently. South Africa implemented temporary loan repayment holidays, particularly for mortgage and consumer loans, to ease financial pressures on households (Van der Berga, Patel, & Bridgman, 2022). Similarly, banks in Kenya worked with the government to restructure loans worth over 3 billion USD for individual borrowers and businesses (CBK, 2020). These measures helped stabilize household finances, preventing widespread defaults and ensuring access to basic needs.

2.3.2 *Social Protection and Direct Support to Households*

Social protection measures formed a critical component of the economic response. For instance, Ethiopia extended its Urban Productive Safety Net Program, targeting 604,000 individuals in urban areas affected by the pandemic (UNICEF, 2020). Kenya's Inua Jamii program provided cash transfers to vulnerable population, focusing on older persons, orphans, and persons with severe disabilities (Doyle & Ikutwa, 2021).

Additionally, utility subsidies and waivers were introduced to reduce the financial burden on households. Ghana absorbed electricity costs for the most vulnerable households and provided free water to all citizens for three months in 2020 (Antwi-Boasiako & Al., 2021).

2.3.3 *Support for Small and Medium Enterprises (SMEs)*

SMEs, which account for approximately 80% of employment in Africa, faced significant disruptions due to COVID-19. To support these businesses, countries introduced financial assistance programs, tax reliefs, and grants. Rwanda's Economic Recovery Fund allocated 100 million Rwandan Franc to SMEs in the hospitality and manufacturing sectors, enabling them to access affordable loans (RDB, 2021).

In Nigeria, the Central Bank introduced the Targeted Credit Facility (TCF), providing around 2.7 billion USD in loans to SMEs and households affected by the pandemic (Economic Sustainability Committee, 2020). Similarly, South Africa's COVID-19 Loan Guarantee Scheme disbursed \$1.7 billion to businesses as of December 2020 (National Treasury, 2020). These fiscal measures not only sustained business operations but also safeguarded jobs and income sources for millions of individuals.

2.3.4 *International Assistance and Debt Relief*

Given limited fiscal space, many African nations relied on international assistance to finance their COVID-19 responses. The International Monetary Fund (IMF) provided \$24 billion in financial assistance to 22 African countries through its Rapid Credit Facility and Rapid Financing Instrument (IMF, 2021). The World Bank approved \$14 billion in emergency financing to support health systems and economic recovery across the world, and mostly in Africa (World Bank, 2020).

Debt relief initiatives also played a crucial role. The G20's Debt Service Suspension Initiative (DSSI) allowed 38 African countries to defer \$5 billion in debt payments in 2020, freeing up resources for pandemic-related expenditures (World Bank, 2020). These initiatives facilitated fiscal space for expanding income support programs and direct financial assistance to households, ensuring that economic relief reached those most in need.

Despite these efforts, the effectiveness of economic support measures was hindered by various challenges. Limited fiscal space and high debt levels constrained the ability of many countries to implement large-scale interventions. For instance, sub-Saharan Africa's average debt-to-GDP ratio increased from 62,6% in 2019 to 70,5% in 2020 (OECD/AUC/ATAF, 2021). Additionally, weak institutional capacity and corruption undermined the delivery of relief programs in some countries.

Another challenge was the uneven distribution of resources. Urban areas often received more attention and funding compared to rural regions, exacerbating existing inequalities. For example, in Nigeria, only 4% of households reported receiving government support during the pandemic, highlighting gaps in the reach of social protection programs (Lain & Vishwanath, 2021).

2.4 Empirical literature review

Many studies tried to assess determinants of Food security with different methods. (Jambor & Elias, 2024) using a Generalized Least Squares method with random effects on Asian countries with under-nourishment prevalence as a proxy for food insecurity and total population, gross domestic product, foreign direct investment, exchange rate, cereals import, share of agricultural employment, producer prices, temperature change, variables about military conflict and crises. The results confirmed the effect of GDP and employment while other variables had divergent or insignificant effects. More focused on African countries, the study of (Omay, Bahaga, & Fidar, 2025) uses four factors, rainfall, arable land, population and economic stability while using Pearson correlation coefficient to assess their relationship with three food security indicators, namely, cereal production, food producer prices and the number of undernourished people. Results showed significant impact but with variable effects on different proxy of food security.

In the other hand, most studies about the impact of Covid-19 and government responses rely on surveys and interviews. Thus, focusing on farms in Bangladesh, (Alam & Khatun, 2021) compare the gross margin of business before and during the Covid-19 crisis. Their results show that farmers were mostly affected by the reduction of their income and rising of food prices relying mostly on public relief programs. In Nigeria, also comparing the two periods, (Amare, Abay, Tiberti, & Chamberlin, 2021), assess knowledge about Covid-19 spread, prices and access to food, employment and income loss, food insecurity and wellbeing, number of covid-19 cases and lockdown measures. These variables are used afterward in a fixed effect model using the difference-in-difference methodology. Results showed that both covid-19 cases and lockdown measures raised the food insecurity in Nigeria. For Zambia, (Manda, 2022), conducted a survey on farmers resulting in negative effects of Covid-19 and containment measures and positive effect of social measures, while fiscal and monetary policies economics support measures had a very low effects. These studies are mainly micro-economical and more reliant on surveyed sample perception.

Using a pooled mean AutoRegressive Distributed Lag (ARDL) model, (Mugume & Muhumuza, 2021) assessed different Covid-19 indicator's effects on food security. Their results revealed a strong long term effect of food inflation, food trade and Covid cases. Another study by (Ubabukoha & Tampubolon, 2023) based on a dynamic probit model using food insecurity prevalence as dependant variable shows that household economic situation has a strong impact on food security while government transfers doesn't have a significant impact.

From these different studies, it appears that food security is represented through many indicators while the effects are different on each one, hence the importance of using multifaceted indicators. In the other hand many independent variables have been used from a study to another to comply with the aim of each study and the corresponding framework.

3. Methodology

The theoretical and empirical literature, in section 2, provides clear evidence that food insecurity at the macro level is closely shaped by economic conditions and public policy interventions. Cross-

country panel analyses (Hendriks, 2005) (Awad, 2023) (Jambor & Elias, 2024) (Shair, Afzal, Ahmad, & Iftikhar, 2024) consistently show that GDP per capita is a fundamental determinant of food security, with higher levels of income associated with reductions in undernourishment and food insecurity prevalence. This justifies the inclusion of GDP per capita in the present study as a proxy for aggregate economic welfare.

Inflation and food price shocks have also been repeatedly identified as critical drivers of food insecurity. Studies by Dorward & Chirwa (2011), Frayne, Crush & McLachlan (2014) or Bellemare (2015) demonstrate that consumer price increases and volatility significantly raise national food insecurity by eroding household purchasing power. Accordingly, the Consumer Price Index (CPI) is incorporated as an explanatory variable to capture the price effect on food access.

Labor market outcomes represent another robust channel highlighted in the literature. Devereux (2009) and Huang, Kim, and Birkenmaier (2016) find that unemployment is positively associated with food insecurity, especially in countries with limited safety nets. Thus, unemployment is introduced into the functional specification as a macroeconomic indicator of household vulnerability.

Furthermore, macro-economic studies highlights the effects of external shocks of food insecurity especially the Covid-19 expected to have a negative effect on food security (Abay & Al., 2020) (Dreze & Somanchi, 2021) (Laborde, Martin, & Vos, 2021). Also economic support measure shave been found to mitigate the effect on food insecurity (Pereira & Oliveira, 2020) (Antwi-Boasiako & Al., 2021) (Almenfi & Al., 2020) (Rogan & Skinner, 2022).

Based on these empirical findings, the functional relationship guiding this study can be expressed as:

$$Foodinsecurity_{it} = f(GDPpercapita_{it}, CPI_{it}, Unemployment_{it}, Incomesupport_{it}, Debtrelief_{it}, Fiscalmeasures_{it})$$

Where the dependent variable is the prevalence of sever food insecurity (SFIS) as percentage of total population. This variable has been used in many studies to represent food insecurity (Smith, Rabbitt, & Coleman-Jensen, 2017) and more globally all studies using Food Insecurity Experience Scale (FIES) developed by the FAO.

To note that *i* represent countries while *t* represent time.

We can formulate the relation mathematically easily as follows:

$$SFIS_{it} = \alpha + \beta_1 GPP_{it} + \beta_2 CPI_{it} + \beta_3 UNP_{it} + \beta_4 CAS_{it} + \beta_5 E1_{it} + \beta_6 E2_{it} + \beta_7 E3_{it} + \varepsilon_{it}]$$

Where:

- GDP represents Gross domestic product per capita in constant 2015 USD.
- CPI represents Consumer price index (CPI), base 2010.
- UNP represent Unemployment (UNP), as percentage of active population.

CAS represents the Number of Covid-19 cases (CAS). Economic support measures are represented by two factors; income support (E1) and debt relief measures (E2). E1: Income support as direct cash payments as an index between 0 and 2. Original data was in ordinal scale (0= no support, 1= equal or less than 50% of income, 2= more than 50% of the income)

E2: Debt relief measures for households, excluding debt relief measures to business, as an index between 0 and 2. Original data was in ordinal scale (0= no debt/contract relief, 1= narrow relief, specific to one kind of contract, 2= broad debt/contract relief)

E3: Fiscal measures in US dollars

α represent the constant of the equation

For E1 and E2 variables, as initial data was ordinal in a daily basis, it has been transformed into annual monthly frequency using the mean of each month.

From literature review we can expect the following signs of the coefficients:

$$\beta_1 < 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 < 0, \beta_6 < 0, \beta_7 < 0$$

All the economic variables data; SFIS, GPP, CPI and UNP, are from World Bank world development indicators database.

Covid-19 related variables; CAS, E1, E2, E3 and E4 are from the Oxford COVID-19 Government Response Tracker (Hale, et al., 2021).

All variables are on monthly periodicity.

Sample and period of study:

As the study is aimed at the effect of economic support measures during Covid-19 era and given that those measures have only been introduced during this period, the starting year is 2019 and goes until 2022. No more recent data have been found.

The sample include 38 African countries from different regions of the continent; Angola, Benin, Burkina Faso, Botswana, Central African Republic, Côte d'Ivoire, Cameroon, Democratic Republic of Congo, Cape Verde, Djibouti, Algeria, Egypt, Ethiopia, Ghana, Gambia, Kenya, Liberia, Libya, Lesotho, Madagascar, Mali, Mauritania, Mauritius, Malawi, Namibia, Niger, Nigeria, Senegal, Sierra Leone, Somalia, South Sudan, Eswatini, Chad, Togo, Tunisia, Tanzania, South Africa, Zimbabwe. These countries have been chosen as they are the only African countries for which all needed data, food insecurity and explanatory factors, is available for the study period.

Pre-estimation tests and Model justification:

Before estimation the precedent equation some tests have been conducted to select the most appropriate estimation method. First we must note that the independent variables include many zero values, and so log based models, such as ARDL, can't be used while exponential models are more suitable for this case, directing us for a Generalized Linear Model with exponential method. Although, some tests should be done before confirming.

Table 1. Descriptive statistics

	E1	E2	E3	CAS	CPI	GPP	POP	UNP	SFIS
Mean	0.241	0.298	923846.6	112226.4	894.49	6081.1	28831912	9.185	22.57
Median	0.000	0.000	0.0000	14819.88	165.14	3803.1	16737221	5.758	20.30
Maximum	1.517	2.000	80815315	3887523.	22570.71	25739.35	2.23E+08	28.83	63.20
Minimum	0.000	0.000	0.0000	0.0000	108.35	582.82	514104.0	0.544	2.700
Std. Dev.	0.361	0.483	7004955.	396361.3	3419.1	5493.3	40720983	7.553	15.80
Skewness	1.456	1.712	10.635	7.3341	5.3050	1.4667	3.045566	0.925	0.873
Kurtosis	4.113	5.097	119.85	63.912	30.477	4.6192	13.47305	2.700	3.121
Jarque-Bera	58.32	96.80	84650.79	23552.87	5205.3	67.360	880.7202	21.07	18.40
Probability	0.00	0.00	0.0000	0.0000	0.0000	0.0000	0.000000	0.0000	0.000
Sum	34.83	42.92	1.33E+08	16160607	128806.8	875679.0	4.15E+09	1322.	3251.06
Sum Sq. Dev.	18.65	33.42	7.02E+15	2.25E+13	1.67E+09	4.32E+09	2.37E+17	8159.02	35703.24

Source : authors

The precedent table presents the descriptive statistics of the dependant and independent variables. The endogenous variable, SFIS, is strictly non-negative with a mean of 22.6 and a median of 20.3, and ranges from 2.7 to 63.2. The mean exceeding the median together with a skewness of 0.87 and kurtosis of 3.12 indicate a positively (right)-skewed, heavy-tailed distribution rather than a symmetric normal one.

The independent variables show even stronger asymmetry: The number of Covid-19 cases (CAS) has a mean of 112 226 but a median of only 14 820, with a skewness of 7.33 and kurtosis of 63.9; the fiscal-support variable (E3) is even more extreme with a skewness of 10.6 and kurtosis of 119.9. All variables reject the null hypothesis of normality at the 1% level according to the Jarque–Bera test (e.g., SFIS = 18.4, CAS = 23 553, CPI = 5 205; all with p-values < 0.01). The standard deviations are large relative to the means, implying variance greater than the mean (over-dispersion), a common feature in such macro-panel data.

These characteristics make estimators that rely on normally distributed errors and constant variance – such as ordinary least squares or log-linear regression – inappropriate and potentially inefficient. Instead, we use a Poisson quasi-maximum likelihood (QML) estimator with a log link. The Poisson QML framework is designed for non-negative, skewed outcomes; it models the conditional mean on the exponential scale so that fitted values remain positive, and it remains consistent even when the conditional variance differs from the mean.

The choice of Poisson QML is therefore fully supported by the observed empirical distribution of both the dependent variable and the regressors.

Limits and Reflexivity: A major challenge in conducting a multi-country analysis in the African context lies in the inconsistencies in data quality and reporting standards. Many African countries faced difficulties in systematically collecting and disseminating data during the pandemic, and even before, due to limited administrative capacity, infrastructural constraints, or political considerations. As a result, there may be inaccuracies in some of the variables used, such as unemployment rates, food insecurity levels, and economic indicators. These discrepancies could potentially introduce measurement errors that affect the robustness of the estimated relationships.

Additionally, economic support measures data have been transformed from high frequency, daily, data to a lower frequency, monthly, data that can lead to a certain loss of data. Although, there is no missing data or gaps in the dataset.

Moreover, The Oxford COVID-19 Government Response Tracker (OxCGRT), while a valuable and widely used resource, is subject to its own methodological limitations. The OxCGRT indices (income support and debt relief) are primarily policy intention indicators, meaning they capture announced or legislated measures rather than actual implementation or effectiveness on the ground. This raises the possibility of policy–outcome mismatches, which could weaken the explanatory power of government support variables in the model. Furthermore, the OxCGRT relies on publicly available sources, media reports, and official statements, which may be incomplete or biased, particularly in countries with less press freedom or limited government transparency. This may influence how some African countries are scored, and thus affect cross-country comparability.

Furthermore, the analysis may still suffer from omitted variable bias due to unmeasured time-varying factors such as environmental phenomenon, political stability, governance quality, pre-existing safety nets, or donor support, which could influence both the implementation of economic measures and food insecurity outcomes. These unobserved dynamics may confound the estimated effects of government interventions. We should also notice that the period is limited to 2019–2022 where the Covid-19 and counter measures were prevalent in most African countries. which provides valuable insight into the short-term and immediate effects of COVID-19 and associated policy measures on food insecurity. However, this timeframe may not fully capture the longer-term consequences of the pandemic or the potential lagged effects of economic support interventions. For instance, structural changes in employment, agricultural production, or debt sustainability may manifest beyond the study period.

As researchers, we acknowledge that our perspectives and methodological choices direct the research process and outcomes. In variables' selection and data sources we may have, unintentionally, privileged countries with more accessible and better quality data. This could lead to an overrepresentation of some regions of Africa more than others in the analysis. To notice, also, that our

interpretation of the results may be influenced by our academic and/or cultural background and prior experiences in the field of food security, given its multifaceted nature. Although, we acknowledge this potential biases and assure that everything have been done to ensure a neutral analysis and promote transparency.

4. Results

As the data for exogenous variables include many 0 values, we choose to use the Poisson Quasi-Likelihood method, based on exponential, to estimate the elaborated equation. The results of the model estimation are presented in the next table:

Table 2. Model robustness

Dependent Variable: SFIS			
Method: Generalized Linear Model (Newton-Raphson / Marquardt steps)			
Sample: 2019 2022			
Included observations: 144			
Family: Poisson Quasi-likelihood			
Link: Log			
Dispersion fixed at 1			
Convergence achieved after 3 iterations			
Full Model		Null Model	
Deviance	973.29	Deviance	1550.49
Quasi-log likelihood	7163.24	Quasi-log likelihood	7125.84
Quasi-LR statistic	561.94		
Prob(Quasi-LR statistic)	0.00		

Source: Authors

From the precedent table presenting the estimation results, we can evaluate model robustness and goodness of fit. The Quasi-LR statistic probability is the p-value associated with the Quasi-Likelihood Ratio (Quasi-LR) statistic, which tests whether the full model (with all explanatory variables) significantly improves the fit of the data compared to the null model. In the estimated full model the p-value of Quasi-LR stat is equal to 0.00 meaning that the full model with all predictors is a significant improvement over the null model, strongly justifying the inclusion of the explanatory variables. We also note that convergence has been achieved after three iterations, which confirms that the estimation algorithm was able to find stable parameter estimates.

In the case of Poisson models, the deviance is a measure of the goodness of fit, but in order to have a significance it must be compared to the null model, including only the endogenous variable and the constant. In the present case the deviance of the null model is 1550.49 while the one of the full model is 973.29, this reduction indicates that the full model explains the endogenous variable in a much better way. The same result is indicated by the quasi-log likelihood that is higher in the full model (7163.24) than the null model (7125.84) indicating an improvement in the fit for the full model.

This variance can also be used to calculate a pseudo-R² using the following formula:

$$Pseudo\ R^2 = 1 - \frac{Full\ Model\ Deviance}{Null\ Model\ Deviance} = 1 - \frac{973.2913}{1550.494} = 1 - 0.6277 = 0.3722$$

The calculated pseudo R² is equal to 0.3722 meaning that the estimated model explains 37.22%

of the Severe food insecurity variations. The result is moderate and accurate for this kind of phenomenon.

After checking the global model robustness, we evaluate each variable significance, results are displayed in the next table:

Table 3. Estimation results

Variable	Coefficient	Prob.
C	3.28	0.00
GPP	-7.24×10^{-5}	0.00
CPI	2.92×10^{-5}	0.00
UNP	0.03	0.00
CAS	-1.53×10^{-7}	0.04
E1	-0.15	0.03
E2	-0.10	0.06
E3	-4.85×10^{-9}	0.27

Source: Authors

From last table we can confirm that all variables are significant besides E3, fiscal measures, that has a prob equal to 0.27. E2 prob is also slightly superior to 0.05 but still inferior to 0.10 limit for social sciences. Constant also is positive (3.28) and significant. In term of effects, GPP variable has a low negative coefficient, as an increase of gross domestic product per capita by 1% reduces the prevalence of severe food insecurity by $7.24 \times 10^{-5}\%$. CPI variable has a low positive coefficient, as an increase of consumer price index by 1% raises the prevalence of severe food insecurity by $2.92 \times 10^{-5}\%$. UNP variable has a positive coefficient as an increase of unemployment by 1% raises the prevalence of food insecurity by 0.03%. As about Covid-19 related variables, CAS variable has a very low negative coefficient as an increase of the cases of covid-19 by 1% reduce the prevalence of food insecurity by 1.53×10^{-7} while E1 and E2 have a negative coefficient as an increase of 1% in either income support or debt relief measures reduces severe food insecurity prevalence by, respectively 0.15% and 0.10%.

5. Discussion

This study aims to assess the impact of government economic support measures on food insecurity during the COVID-19. The finding highlights the economic determinants of food insecurity as well as policy intervention effects. In terms of economic factors, an increase in gross domestic product per capita slightly reduce severe food insecurity prevalence. As economic growth improves household incomes, access to resources, and resilience against shocks. Countries with higher GDP per capita often have stronger institutions, better social safety nets, and more robust food supply chains, all of which contribute to reducing food insecurity and poverty (Hendriks, 2005) (Barrett C. B., 2010).

In fact, during the pandemic, high-income countries were better positioned to absorb economic shocks and maintain food security through stimulus packages and enhanced public services (FAO & Al., 2022) . Conversely, low-income countries experienced amplified vulnerabilities, as lower GPP often correlates with greater reliance on informal economies, which were disproportionately affected by lockdown measures (Ohnsorge & Yu, 2022) (Awad, 2023). This relationship suggests that African countries with higher levels of economic development tend to have lower food insecurity. However, it is important to note that many African nations still face structural issues, including poor distribution of wealth, insufficient access to basic services, and economic inequality, which can temper the benefits of higher GDP on food security (FAO & Al., 2022).

Thus, African governments should focus on inclusive growth strategies that target marginalized populations by investing in rural infrastructure (roads, irrigation), universal access to health and

education and programs addressing regional and income inequalities. These investment could be realised, in limited fiscal capacity countries, partnerships with international development agencies, community-based approaches, and pro-poor budgeting frameworks that prioritize food security and poverty reduction.

In the other hand an increase in prices, represented by consumer price index in our study, translates into an increased food insecurity and poverty as inflation diminishes purchasing power. This is particularly accurate for African low-income countries where the households spend a large proportion of their income on food. The pandemic-induced supply chain disruptions caused food price spikes, exacerbating food insecurity, especially in import-dependent countries (Swinnen & McDermott, 2020). According to the Global Report on Food Crises (2022), rising food prices were a critical driver of food insecurity during the pandemic (FSIN, 2022), affecting over 30% of households in African countries.

Hence, African authorities should aim for food price stabilization by temporary price caps or subsidies for essential good, strategic grain reserves to mitigate supply shocks and promotion of local food production through subsidies and farmer input supports. Although, for some countries with limited fiscal budgets, it may be better to focus on public-private partnerships and targeted subsidies, rather than universal ones. Investing in logistics and local markets could also contribute to reduce internal food price volatility.

Same result is to be noticed about the unemployment, but with a higher impact than prices, an increase of unemployment rate translates into higher food insecurity as job loss directly reduces household income, limiting access to food and other necessities. Research shows that unemployment is a primary driver of food insecurity, especially during crises (Devereux S. , 2009) (Huang, Kim, & Birkenmaier, 2016). The International Labour Organization (ILO, 2021) estimated that the pandemic resulted in the loss of over 114 million jobs worldwide, disproportionately affecting women and informal workers, who already face greater food insecurity risks.

This is even more important in Africa where the informal sector often acts as a buffer for the unemployed, but this sector is also susceptible to external shocks, including the COVID-19 pandemic (Kiaga, Lapeyre, & Marcadent, 2020). Additionally, youth unemployment is a critical challenge, with many young people unable to find stable, formal employment, which increases their reliance on low-paying informal work and exacerbates food insecurity risks (UN, 2024). The pandemic has highlighted deep structural inequalities in many African economies, where lockdown measures disrupted daily work, especially in informal sectors, and exacerbated poverty and food insecurity (Calderon, et al., 2020).

This has reinforced the need for resilient economic systems that can withstand future shocks, whether health-related or economic. Some policy recommendations could reduce the negative effect of unemployment on food security such as an expansion of temporary job creation schemes (e.g., cash-for-work or public works programs), providing emergency unemployment allowance even temporary, introducing basic universal income pilots in rural or highly informal regions. This solutions could be difficult to apply in low income countries lacking formal unemployment insurance systems. In that case, digital platforms and mobile banking can be used to deliver support efficiently, building on tools already used during COVID-19.

The limited direct impact of COVID-19 cases on food insecurity in the model suggests that the severity of food insecurity was more strongly influenced by economic disruptions and government responses than by the number of cases. Although, countries with robust healthcare systems and effective containment measures may have avoided food crises. To face the effects of the Covid-19, governments of all countries in the world, and of course in Africa, introduced many measures, from which economic support measures that have been assessed in the estimated model.

First, we notice that direct income support (E1) has a significant positive effect, as direct cash transfers or income replacement programs enable households to maintain food consumption during

economic shocks. Studies from low- and middle-income countries, mostly from Africa, during COVID-19 showed that well-targeted income support programs reduced the prevalence of hunger and malnutrition (Egger & Al., 2021). This result induce some recommendation during crises and outside, policy makers should institutionalize and scale up cash transfer programs, with targeting mechanisms using national ID systems, mobile networks, or community targeting in areas with weak administrative systems.

This can also be done with delivery platforms, leveraging mobile money infrastructure, which is already widespread in countries like Kenya, Ghana, and Senegal. Their implementation should be cost-effective, especially in countries with limited fiscal budget, transfers can be temporarily targeted during crises and financed through donor grants or reallocated expenditures. In the same sense, challenges such as limited data systems or digital exclusion in rural areas can be addressed by investing in low-tech registration systems and partnering with NGOs that already work with vulnerable communities.

Second, debt relief measures (E2) contribute to reduce food insecurity by alleviating financial burdens and freeing up resources for essential expenditures, including food. For many African households, especially those relying on informal economies, debt obligations such as microloans or informal borrowing intensified during the COVID-19 pandemic. By easing repayment requirements or temporarily suspending debt obligations, these measures improve financial stability, enabling households to maintain access to basic necessities. In regions where economic shocks disproportionately impacted low-income populations, household debt relief helped mitigate the risk of hunger and malnutrition by preventing income from being diverted away from food.

However, while household debt relief provides critical financial breathing room, its impact on food insecurity may be less immediate than direct income support (E1). According to UNCTAD (2020), such measures during the pandemic alleviated short-term financial pressures but often required complementary interventions, such as food assistance programs or subsidies, to directly address hunger (UNCTAD, 2020). Additionally, the effectiveness of debt relief hinges on the structure of repayment suspensions, the scope of eligible households, and the overall economic environment.

For households in Africa, where food insecurity is influenced by systemic issues like inflation and supply chain disruptions, debt relief must work in tandem with policies targeting food availability, affordability, and access to achieve lasting improvements. Hence, national debt relief programs can be expanded to include micro-debt suspension schemes for informal loans and mobile credit, public guarantees for community-based lenders offering grace periods, debt relief with food and cash assistance programs. To ensure fiscal sustainability, governments can prioritize conditional or time-bound debt relief and explore regional pooled resources (e.g., through the African Union) to manage such schemes in times of crisis.

The lack of effect of the fiscal measures (E3) can be explained by the fact that macroeconomic fiscal measures, outside income support and debt relief measures, such as tax cuts or spending, may not directly reach food-insecure populations, limiting their effectiveness in reducing immediate hunger. However, the effect of these measures can be detected in a longer term. Thus, fiscal packages must be more targeted, instead of broad tax cuts or infrastructure spending. In fact authorities must allocate emergency budgets for food distribution and nutrition programs, ensure that spending benefits households directly through food vouchers or subsidies and include ex-ante poverty targeting in fiscal planning.

While the empirical study has focused on the economic determinants of food insecurity and the role of government support measures during COVID-19, it is important to notice the effects of other factors affecting food security in African countries. Environmental challenges, particularly those driven by climate change, such as recurrent droughts, flooding, and pest outbreaks, have a direct impact on food availability and agricultural productivity. These issues are particularly critical for smallholder farmers, who form the backbone of food production in many African countries but

remain highly vulnerable to ecological disruptions (Nchanji & Lutomia, 2021). Moreover, social factors like gender inequality, limited access to education, and rapid urbanization affect household vulnerability and resilience (IFPRI, 2001). Women are often more confronted to food insecurity due to unequal access to land, income, and resources, while low education levels can limit awareness of nutrition and food options (Alderman & Headey, 2017). Even if these factors are not modeled in this study, they are important to understanding the full complexity of food insecurity in the African context.

6. Conclusion

The COVID-19 pandemic has significantly exposed the vulnerabilities of African nations, particularly in terms of food insecurity. By examining the relationship between economic indicators such as GDP per capita, unemployment, inflation, and government responses, this study highlights how the pandemic worsened food insecurity across the continent. The empirical results point to several factors, economic growth, inflation, unemployment, and the effectiveness of government interventions, as key determinants of food security in Africa. These findings are crucial in understanding the challenges faced by African countries, and they offer valuable insights into policy recommendations aimed at improving food security.

The study's analysis reveals that higher GDP per capita tends to reduce food insecurity. This result is accurate to most theoretical literature as economic growth enables households to access more resources, thereby increasing their capacity to afford food. The high GDP also translates, generally, into good infrastructures and economical system overall facilitating even more access to food. To notice that populations with higher income also have a better resistance to unexpected shocks like the Covid-19 pandemic. Even tough, countries with lower GDP per capita, such as Rwanda, have made significant strides in reducing food insecurity by implementing policies that address inequality and focus on inclusive development. This suggests that economic growth alone is not sufficient to ensure food security, and policy interventions must prioritize reducing inequality to make growth more inclusive.

The study's results show a strong correlation between rising unemployment rates and increased food insecurity during Covid-19 era. As we have seen all countries suffered employment loss due lockdown or firms difficulties worsening even more the food security situation in most countries. This effect was particularly pronounced in countries like Kenya or Tanzania, where the informal sector employs a significant portion of the population. During the pandemic, workers in this sector faced immediate income losses as businesses shut down and mobility restrictions were imposed. The absence of social safety nets for informal workers further intensified food insecurity, as many households lost their primary income source and struggled to afford basic food items. These findings underscore the importance of expanding social protection programs to cover informal workers, providing a safeguard against income losses during times of crisis.

Inflation, particularly the rising prices of food, was also a major driver of food insecurity during the pandemic. The results indicate that food price inflation had a direct and negative impact on food security. With supply chain disruptions caused by the pandemic leading to significant price increases, countries such as Nigeria, Ethiopia, and Egypt were particularly affected by the rise in food prices. Households, already facing reduced incomes, had to cut back on their food consumption, often opting for cheaper, lower-quality options. This highlights the need for effective policy measures to control inflation and stabilize food prices. Governments must prioritize price stabilization mechanisms to reduce the volatility that makes it difficult for households to plan their food budgets.

The empirical results also show that government interventions, such as cash transfers and debt relief measures, were crucial in mitigating food insecurity during the pandemic. Countries that implemented cash transfer programs, like Ethiopia and Uganda, saw a significant reduction in food insecurity. These programs helped maintain household purchasing power during a period of

economic downturn, allowing families to continue buying essential food items despite income losses. Cash transfers were particularly effective in reaching the most vulnerable populations, including informal workers, rural households, and those without savings. Debt relief measures also played a role in reducing financial stress, enabling households to redirect their resources towards food consumption instead of debt repayment. These findings suggest that direct income support is one of the most effective tools for addressing food insecurity during times of crisis.

However, not all economic measures had the same impact on food security. Fiscal policies such as tax cuts and increased government spending did not have a direct effect on food insecurity, according to the study's findings. While these measures may have contributed to broader economic recovery, they were less effective in addressing the immediate food security needs of vulnerable households. This highlights the need for more targeted interventions, such as cash transfers or subsidies for basic food items, to directly address food insecurity. Broader economic policies should complement, rather than replace, these direct measures.

The study also indicates that the effectiveness of government interventions in addressing food insecurity varied across countries. Nations with robust social protection systems, like South Africa, were able to respond more effectively to the food security crisis. In contrast, countries with weaker social safety nets, particularly in parts of West Africa, struggled to provide adequate support. This disparity highlights the importance of building resilient social protection systems that can quickly and effectively address food insecurity during times of crisis.

The COVID-19 pandemic has made it clear that food insecurity in Africa is not solely the result of economic downturns, but is also driven by the absence of robust social protection systems and the volatility of global food prices. While economic growth is important, it is equally essential for growth to be inclusive, ensuring that vulnerable populations benefit from development. The findings of this study highlight the need for African governments to prioritize the expansion of social protection systems, the stabilization of food prices, and the creation of more resilient economies.

One of the key recommendations emerging from these results is the expansion of social protection programs. Cash transfers, which proved to be an effective tool in mitigating food insecurity, should be expanded to reach informal workers and those in rural areas. Governments should invest in universal social safety nets that can provide targeted support to vulnerable populations, particularly in times of economic distress. Expanding social protection programs would not only address food insecurity but also help reduce poverty and inequality in the long run.

In addition to social protection, stabilizing food prices is a critical step toward reducing food insecurity. Governments should consider implementing policies to stabilize food prices, such as price controls or subsidies for essential food items. Strengthening local agricultural production is also essential for reducing reliance on global supply chains, which are vulnerable to disruptions during crises. Investments in local food production would help ensure a more stable food supply, which in turn would contribute to food price stability.

Unemployment and job insecurity is also crucial in the fight against food insecurity. The informal sector is a key source of employment in many African countries, yet it is often left out of formal social protection mechanisms. Governments should implement policies to support job creation, especially in sectors like agriculture, infrastructure, and small businesses. Public works programs can provide temporary employment during crises, while long-term investments in economic development can create sustainable job opportunities. Finally, in times of crisis, as the Covid-19 pandemic, it is important for governments to implement direct economic support measures such as cash transfer and debt relief measures for households to maintain a minimal consumption and nutrition.

In conclusion, the empirical findings of this study reveal that food insecurity in Africa is driven by a combination of economic factors, including GDP per capita, unemployment, inflation, and the effectiveness of government interventions. The results highlight the importance of inclusive economic growth, robust social protection systems, price stabilization and economic support measures

in addressing food insecurity. In addition to economic interventions, policies aimed at improving food security must address environmental vulnerabilities and social inequalities. Strengthening climate-resilient agricultural systems, supporting smallholder farmers, promoting gender equity, and investing in education are the most important factors of a comprehensive food security strategy in Africa. Thus, African governments must prioritize these areas in their policy responses to ensure that food insecurity does not become a persistent challenge in the future. By doing so, they can build more resilient economies and ensure that all citizens have access to sufficient and nutritious food.

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