The short-term economywide impacts of COVID-19 in Africa: Insights from Ethiopia

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Abstract
The COVID-19 impact on the global economy combined with partial lockdown measures in Ethiopia represents a large, unprecedented shock to the country’s economy. The social accounting matrix (SAM) multiplier model, built on the most up-to-date SAM (2017) for Ethiopia, shows that the country suffered a 14.3% loss in GDP (Birr 43.5 billion or US$1.9 billion) during the lockdown period compared to the no-COVID case during the same period. Nearly two-thirds of the losses come from the services sector. Although no direct restrictions were imposed on the agriculture sector, which is the primary means of livelihood for most, the sector faces a 4.7% loss in output due to its linkages with the rest of the economy. We find dissimilar income and poverty effects across households by income quintile and level of urbanization. The study also considers two recovery scenarios and generates relevant insights on the potential impacts of COVID-19 by the end of 2020. The earmarked relief and recovery plan resources can only help the economy to recover if targeted in an efficient way towards sectors most affected by COVID-19, and further resources are mobilized to support strategic sectors—those with the highest economywide multiplier effects—and vulnerable communities.

1 | INTRODUCTION

The COVID-19 pandemic has become a global health and economic challenge since its outbreak in December 2019. As of November 2020, more than 52 million people were diagnosed positive with the virus worldwide, with over 1.3 million causalities (WHO, 2020). The first COVID-19 case in Africa was reported on February 14, 2020 in Egypt, and since then over 1.4 million people were infected on the continent. The most infected countries in Africa as of September 2020 were South Africa (742,000 cases), Morocco (270,000 cases), Egypt (109,000 cases), Ethiopia (101,000 cases), and Kenya (66,000 cases). To reduce the socioeconomic impacts of the pandemic, countries introduced various response measures well before the virus was identified locally (Ozili, 2020). However, the degree of strictness of the response measures differs by country, with Rwanda and Nigeria emerging as African countries with relatively strict measures whereas Ethiopia and Malawi adopted relatively lax measures (Thurlow et al., 2020). The economic cost of the response measures varies accordingly (Amewu et al., 2020; Andam et al., 2020; Thurlow et al., 2020). Overall, real GDP in Africa is projected to contract by 1.7% in 2020, down by 5.6 percentage points from the growth projected before COVID-19 (AfDB, 2020a). This short-term growth projection is well below the 7%–8% sustained growth needed in the continent to reverse the spread of poverty (Ayanwu, 2006).
Being the second-most populous country in Africa with a rapidly expanding economy before the pandemic, and leading sub-Saharan Africa in the number of confirmed COVID-19 cases, Ethiopia is considered as a case country in this study. Like many other African countries, the virus was imported to Ethiopia in early March, and since then the country has taken several preventive measures to contain its spread. Whereas these measures have been critical in containing the viral transmission and the potential for widespread economic and human losses in Ethiopia, cases are increasing lately since the first observed case on March 13, 2020. Between the first local case and November 15, 2020, the virus has infected more than 101,000 people and killed more than 1500 in Ethiopia (WHO, 2020).

The pandemic is posing an unprecedented shock to the world economy because of the response measures countries adopt, including a partial or full shutdown of economic activities, simultaneously affecting both domestic and global value chains. Combined with the global effects, national measures have unavoidable considerable impacts on incomes, livelihoods, and the wider economy (Martin et al., 2020; Thurlow et al., 2020). Although the domestic response measures in place in Ethiopia are by far not as strict as in some countries in Africa, jointly with the external channels, these could cause massive disruptions in various sectors and the economy in general. Recognizing the negative impacts on GDP, IMF (2020) and AfDB (2020a) revised growth projections for Ethiopia from 6.2% and 6.1% to 3.2% and 3.7% in 2019/2020 and 2020/2021, respectively, despite significant policy support.

Understanding the nature of the impact channels and affected sectors is the first step to designing appropriate policy responses and relief measures that target the most vulnerable, aid in economic recovery efforts, and return the economy to its pre-COVID growth trajectory. This paper utilizes a social accounting matrix (SAM) based multiplier model and provides an assessment of the economic and welfare effects of COVID-19 related response measures in Ethiopia. In line with previous studies (Andam et al., 2020; Goshu et al., 2020; Zhang et al., 2020) that indicate that the pandemic affects sectors and segments of the society differently, this study provides a careful identification of the relevant impact channels. We also provide recommendations on potential areas of intervention to limit the economic effect of the pandemic.

Whereas the study contributes to our understanding of the potential economic cost of the pandemic, insights from this study should be looked at against several caveats behind the analysis. First, we only provide an analysis of the anticipated economic impacts associated with COVID-19 and response measures targeted at reducing the viral transmission, without accounting for the relief measures and behavioral responses by economic agents to changes in the socioeconomic conditions facing them. Second, assumptions made on the size, nature, and directions of the sectoral shocks are second best and evolving. Third, other policies and reform measures unrelated to COVID-19 that are being taken by the government are unaccounted for but could significantly determine the recovery dynamics of the economy.

The rest of the study is organized as follows. In the following section, we present Ethiopia’s key response measures to contain the transmission of COVID-19. Next, we describe the method and data used in the analysis. We then discuss the results of the study, followed by concluding remarks that emerge from these results.

2 | ETHIOPIA’S RESPONSES TO COVID-19

Albeit not at the level of some African countries (such as Rwanda and Nigeria), Ethiopia introduced several response measures to contain the spread of the coronavirus pandemic (Table 1). However, not only did these measures represent only a partial lockdown of the economy, they have not been strictly enforced in practice to the extent witnessed in some other countries. The first case in Ethiopia was recorded on March 13, 2020—just 2 months after the first confirmed case outside China on January 13, 2020. By mid-November 2020, the country reported 101,000 COVID-19 cases with over 1500 causalities (Figure 1) and about 40,000 active cases. The first COVID-19 related local death was recorded on April 5, 2020. In response to the risk posed by the spread of the virus, the government of Ethiopia took several response measures. The first set of measures were introduced by the Office of the Prime Minister on March 16, including the closure of schools, banning of public gatherings, restrictions on sporting activities, bars, and entertainment outlets, and restrictions on hotel and restaurant services that can have far-reaching implications on economic performance. We consider these measures as the start of a partial economic “lockdown” that extends for several weeks before the economy eventually relaxes—either voluntarily or involuntarily.

With the hope to limit cross-border transmission of the virus, Ethiopia also suspended several flights by the national carrier—Ethiopian Airlines—leaving the airline with a much lower revenue to date. Additionally, passengers entering the country through all borders were forced to undergo 14-day mandatory quarantine. To scale up the measures, authorities also closed all land borders, and federal and regional governments put restrictions on intercity transport—
TABLE 1  Policy measures taken in Ethiopia to contain COVID-19 transmission

| Date       | Policy measure                                                                                                                                 |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| March 13   | First confirmed COVID-19 case in Ethiopia                                                                                                    |
| March 16   | Authorities closed schools across the country and banned all public gatherings, including sports                                             |
| March 20   | The Ethiopian government announced that its state-carrier would suspend flights to 80 destinations                                             |
| March 23   | The Prime Minister suggested that the aid package announced in early March would be increased to Birr 5 billion (US$154 million)          |
| March 27   | Ethiopia's National Bank plans to inject Birr 15 billion ($456 million) as liquidity for private banks                                         |
| March 30   | Regional authorities ban public transportation which was later relaxed                                                                         |
| March 31   | Ethiopia has postponed its much-anticipated parliamentary election scheduled for August to a time when the pandemic is no more a health threat |
| April 2    | To help Ethiopia mitigate the effects of COVID-19, the World Bank Group approves $82.6 million ($41.3 million grant and $41.3 million credit) from the International Development Association |
| April 3    | The Prime Minister’s office announced a COVID-19 Multi-Sectoral National Emergency Response Plan (NERP), which will require US$1.64 billion in funding |
| April 5    | Ethiopia confirms the first COVID-19-related local death                                                                                     |
| April 8    | Ethiopia’s Prime Minister declared a nationwide state-of-emergency that gives it the mandate to take measures to further curb the transmission of the virus |
| April 13   | Authorities implement door-to-door screening in Addis Ababa, followed by cities in other regional states                                         |
| April 30   | The IMF’s executive board approves US$411 million in emergency assistance to Ethiopia to address the COVID-19 pandemic                       |
| May 2      | To stimulate the economy, the government introduced tax waivers, cost-sharing measures, and so forth, reaching Birr 78 billion that is hoped to benefit 80% of businesses affected by COVID-19 |
| July 3     | African Development Fund approves a grant of 120 million Units of Account (UA) or US$165 million to Ethiopia to support the NEPR          |

Source: Authors compilation, based on announcements issued by several institutions.

FIGURE 1  Daily cases of COVID-19 reported in Ethiopia, March 13–July 31, 2020. Source: Data from Worldmeters.info (2020).
public transport providers were asked to operate at half-capacity. However, as the outlook was not getting any better after the first COVID-19 related local death on April 5, the government declared a state of emergency that gives it the mandate to take measures to further curb the transmission of the virus (IMF, 2020). After building its response capacity, the government began door-to-door screening in the capital city and surrounding areas, followed by cities in other regional states. Seven months after the pandemic hit the country, some of these measures were already relaxed although the spread of the virus was showing no sign of slowing down.

The government not only imposed restrictive measures, but several relief measures have also been designed and implemented. Days after the first case in the country, Ethiopia announces a stimulus package of Birr 5 billion (US$154 million) (IMF, 2020) to build resilience against the virus and mitigate its socioeconomic impact. The central bank also commits to inject Birr 15 billion (US$456 million) as liquidity for private banks so that banks help businesses relax their financial constraints. The World Bank agrees a Birr 2.64 billion (US$82.6 million) worth of support to facilitate the government’s effort in the fight against the spread of COVID-19 (MoFED, 2020a). On a separate development, the Prime Minister’s office announced a COVID-19 Multi-Sectoral National Emergency Response Plan (NERP), which requires US$1.64 billion in funding (MoFED, 2020a). In the same line of support, AfDB (2020b) and the IMF approved a US$165 million and US$411 million emergency assistance to Ethiopia, respectively. To support local businesses that may have been affected by the pandemic, the government of Ethiopia itself announced a tax relief of close to Birr 78 billion (US$2.44 billion).

The country can learn a lot from the economic recovery practices from the recurrent catastrophic shocks it experienced over the past 5 years before COVID-19—floods in 2014; the worst El Nino in 50 years in 2015/2016; drought in 2017; and desert locust invasion in 2019/2020 altogether affected the livelihoods of more than 25 million people (Nega et al., 2010; Shigute et al., 2018; UN, 2020). During these times, recovery practices in the country focused on social protection of the most vulnerable, emergency seed distribution, small-scale irrigation projects, disaster risk reduction—including developing contingency plans—and strengthening government infrastructure (Nega et al., 2010; Shigute et al., 2018). In the past, this has been performed in coordination with local and international development partners to build sustainable livelihoods. Increased public–private partnerships are promoting investments in the region, gradually opening up access to opportunities and improving resilience (Anyawu, 2006).

Although the country has embarked on few relief and recovery interventions summarized above, our SAM multiplier analysis only focuses on the short-term economic impacts of the domestic and global restrictive measures aimed at containing the spread of the virus. Also, the country has not yet put in place strict lockdown measures comparable to some countries in Africa. But we consider measures put in place between mid-March to the first week of May as relatively active and these represent our lockdown scenario.

3 | SIMULATING THE ECONOMIC IMPACTS OF COVID-19

3.1 | SAM multiplier model for Ethiopia

This study applies a SAM multiplier model approach to analyze the short-term economywide impacts of COVID-19 in Ethiopia. SAM multiplier models have been one of the most widely used tools to study the economywide effects of policy and exogenous shocks and their impacts on output, income distribution, and welfare. SAM-based models are particularly well suited to measuring short-term direct and indirect impacts of unprecedented shocks such as those associated with COVID-19. With COVID-19 shocks being unexpected and at a high level of severity in such a short period, it is unlikely for the economy to fully adjust through smoothly changing relative commodity and factor prices. In such cases, fixed price multiplier models proved appropriate. Consequently, this study applies a multisector income multiplier model previously piloted in several countries in Africa (Amewu et al., 2020; Andam et al., 2020; Baulch et al., 2020; Thurlow et al., 2020) and now customized to the case of Ethiopia.

Assume the endogenous accounts of a SAM are denoted by \( y \), the exogenous accounts by \( g \), and the square matrix representing the direct propensities by \( A_a \), the vector of endogenous accounts \( y \) in the SAM based income multiplier model can be computed from:

\[
y = A_a y + g = (I - A_a)^{-1} g = M_a g
\]

where \( M_a \) is the SAM multiplier matrix with \( \Delta y = M_a \Delta g \). The SAM based quantity model assumes that prices are fixed; hence they are also called fixed price models.
In this study, we used the most recent SAM for Ethiopia that captures economic transactions in 2017, showing the interlinkages and relationships between all economic actors. The SAM includes 79 production sectors and 80 commodity types. The production sectors employ eight types of labor classified by residence (rural–urban) and skill levels and combine them with a single land and three capital types. Factor incomes are distributed to 15 representative household groups classified by residence and income quintiles. Households spend incomes on consumption, make transfers to other households, pay taxes, and save the balance. The government receives taxes and makes payments, including transfers to households. There are also several tax accounts as well as the foreign market in the 2017 Ethiopia SAM.

In the SAM multiplier model, the shocks associated with COVID-19 are imposed in the simulations at the detailed sector level, taking into consideration their economywide interlinkages. We consider two main channels of the economic effects of COVID-19 (Figure 2): (a) a set of shocks induced by external factors, and (b) a set of shocks emerging from local lockdown measures taken to contain viral transmission. The external shocks are further categorized into shocks to export demand resulting from the exogenous decreases in demand from the rest of the world for the country’s exports and declines in remittance inflows resulting from slowdowns in economic activities in host countries of Ethiopian immigrants. These external channels were previously identified to have considerable effects on domestic economic performance in Africa (Efogo, 2020; Hussain & Gunter, 2006; Sridi & Guetat, 2020).

There are several pathways through which the local and global channels may affect the economy. In addition to direct restrictions to businesses, controls on population movement and transportation alter the ability of people to carry out their normal activities at service delivery sites, production facilities, administrative offices, and marketing outlets. This also affects supply chain logistics that are essential to accessing raw materials, intermediate inputs, and product markets. The decline in global trade and remittance flows is also predicted to have considerable impacts as both play a critical role in the Ethiopian economy. However, the response measures and external shocks are not applied uniformly across all sectors of the economy, and each path needs to be considered at the sectoral level.

In the SAM multiplier model, both external and domestic shocks are modeled on the demand side in a manner that then lowers the supply of commodities produced in the affected sectors—directly and indirectly through sectoral interlinkages. Output in sectors that are not directly affected by the shocks could still be noticeably affected particularly if input–output interlinkages are strong. As such, our impact channels are defined along sectors that are affected by the various COVID-19 related policy measures or external shocks. The impact channels are mapped to the 79 sectors in the Ethiopia model. The sector–channel mapping is not necessarily unique. The construction sector is a case in point—it is impacted directly via the partial lockdown of the construction sector as well as via reductions in government revenue

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**Figure 2** Framework for analyzing COVID-19 in a SAM multiplier model. Source: Adapted from IFPRI analyses of COVID-19 impacts on key countries and regions. See Aragie et al. (2020).
and foreign direct investment, which impact physical infrastructure spending. Further, underlying the 79 sectors in the model is usually a more disaggregated supply-and-use data, and the size of the shocks to individual sectors are first determined upon the detailed sectors in the supply-and-use data based on iterative consultations with local researchers. The sizes of the shock finally imposed on the SAM sectors are estimated as the weighted average of the shock across corresponding elements from the supply-and-use data. The global shocks are determined through reference to some published documents on the export (UN, 2020) and remittance sectors (World Bank, 2020).

As useful as they are for shock analysis, SAM multiplier models have several limitations. These models lack behavioral relationships; that is, they assume that technical input–output relationships, output choices of producers, and consumption patterns of households do not change in response to simulated shocks. Also, prices are assumed to be fixed, and changes caused by the shocks in simulations are all reported without a price effect. However, such fixed-price approaches are common in assessing short-term shocks in which the shock inhibits the ability of markets to adjust to a new equilibrium through endogenous price adjustment processes (Amewu et al., 2020; Thurlow et al., 2020).

3.2 Simulation scenarios and assumptions

Already several months through the COVID-19 pandemic, we are by now aware of the actual response measures the country has taken to contain the spread of the virus. However, as new cases are still occurring in the country, the pace of easing of the restrictions over the coming months is not fully clear. Hence, to have a wider picture of the potential effects of the pandemic, we consider the following three main scenarios: (a) the period of the 7-week lockdown; (b) a faster recovery scenario post lockdown, and (c) a slower recovery scenario. The faster recovery scenario assumes a faster coming back of the economy to normalcy by the end of 2020. By contrast, the slower recovery scenario considers only a modest rebound of economic activities by the end of the year and economic activity remaining at noticeably below pre-COVID levels. Both the faster and slower recovery scenarios assume comparable rates of easing for the period for which we already have an idea of the government measures, that is, through parts of September 2020. Given the unpredictability of how the situation will evolve over the future, the recovery rates assumed under the faster and slower recovery scenarios are hypothetical. The detailed assumptions on the recovery scenarios are reported in Table 2.

In summary, our study on the impact of the COVID-19 pandemic on the Ethiopian economy looks at a 7-week partial lockdown that was observed in the country between mid-March and early May 2020. Both domestic and global shocks are simulated as shocks on final demand that disrupt production in the affected sectors. Further, estimates of the economic costs are effects in the absence of any policy response by the government and other local and international development partners. The country implemented several relief measures including monetary policy stimuli, tax holidays, demand subsidy to households, mobilization of foreign assistance and lending, and other macroeconomic policy interventions (Table 1). Other policies and reform measures unrelated to COVID-19 that are being undertaken by the government are also unaccounted for.

| TABLE 2 | Recovery scenarios for Ethiopia’s economy |
|----------|----------------------------------------|
| Year and quarter | Month | Faster recovery | Slower recovery | Global shocks |
| 2019/2020 Q3 | January to March | No shocks in pre-COVID-19 period | | |
| 2019/2020 Q4 | April | 7-week lockdown period starts in mid-March | 7-week lockdown period starts in mid-March | Decline in remittances and export demand |
| | May | Direct shocks eased by 20% | Direct shocks eased by 20% | |
| | June | Direct shocks eased by 20% | Direct shocks eased by 20% | |
| 2020/2021 Q1 | July to September | Direct shocks eased by 50% (transport, hotels/bars, & sports by 40%) | Direct shocks eased by 50% (transport, hotels/bars, & sports by 40%) | Shocks reduced by 50% |
| 2020/2021 Q2 | October to December | Direct shocks eased by 100% (some services by 90%) | Direct shocks eased by 90% (some services by 80%) | Shocks reduced by 75% |

Note: We follow Ethiopia’s fiscal year in setting up the recovery scenarios and estimating the impacts on GDP. Ethiopia’s fiscal year starts on July 1 and ends on June 30.

Source: Authors’ compilation.
4 | MODEL RESULTS AND ANALYSIS

We first present the cost of the pandemic due to the partial ‘lockdown’ measures. This is followed by a discussion of the cost of the pandemic as the measures are relaxed—modeled by the two recovery scenarios. The discussion of results is in comparison to the no-COVID (or normal) economic situation.

4.1 | Economic impacts during the lockdown period

4.1.1 | Impacts on total and sectoral GDP

We first present the aggregate effects of COVID-19 on the Ethiopian economy, which will be followed by a detailed analysis of the predicted effects on the agri-food system (AFS) sectors. Model results suggest that Ethiopia’s GDP could fall by 14.3% during the 7-week economic lockdown period compared to the no-COVID case (Figure 3). The lockdown affected different subsectors at varying degrees of severity. The service sector GDP fell by 21.9% due primarily to large declines in the hospitality and trade sectors. The industrial sector GDP also fell by about 14%, driven primarily by large declines in mining (16.2%). Due to the absence of direct restrictions on the sector, agriculture fell only by 4.7%; that can be explained by the sector’s interlinkage with the rest of the economy and the relatively direct effect of the COVID-19-induced poor export performance.

Figure 4 ranks the various impact channels according to their contributions to the lockdown period economic cost. Each impact channel affects the economy directly because of the policy measures and indirectly due to the backward and forward linkages across sectors. Given the underlying nature of policy measures during the 7-week partial closure considered, the closing of hotels, bars, and restaurants has by far the largest effect on the economy. This channel accounts for 28.2% of the 14.3% fall in GDP. Falling export demand is the second main channel, explaining 22.0% of the GDP loss. Then, restrictions on construction activities (12.1%), the slowdown in transportation activities (7.9%), falling remittances (7.9%), and restrictions in wholesale and retail trade (7.7%) follow in that order. An important insight can be drawn from this finding. As the economy is gearing towards recovery from the effects of the pandemic, the government, together with development partners, will have to pay particular attention to sectors associated with the main channels that explain the cost to GDP.

4.1.2 | Impacts on the AFS

The AFS is defined here as comprising all downstream and upstream economic activities related to agriculture, including agriculture itself, agro-processing, food trade and transport, and food services. The Ethiopia SAM multiplier model captures the impact of COVID-19 on the country’s AFS again relative to a no-COVID situation. Figure 5 indicates a 10.6% fall in AFS GDP during the 7-week lockdown period. As expected, the percentage decline in agricultural GDP—within the AFS—is modest at 4.7%. However, due to the size of the sector, it is one of the main contributors to the AFS GDP losses in monetary terms. Of the AFS components, food services GDP experiences the largest percentage decline at 83%, followed by agro-processing. Whereas food services are the leading contributors of the losses in absolute terms, agro-processing is generally the smallest component of the AFS and its contribution to the total losses in AFS GDP is minimal.
4.1.3 Impacts on household incomes and poverty

We expect considerable impacts on household incomes and poverty headcount due to the fall in economic activity and the associated loss in jobs. The Ethiopian SAM multiplier model includes 15 representative household groups classified by welfare quintiles and activity/residence: rural farm, rural nonfarm, and urban households.

Figure 6 reports aggregate household income effects. We noted several key findings from these results. First, incomes of households in the top three quintiles are more adversely affected, with income falling by 15.7% during the lockdown period. This finding is in line with findings from other African economies (Amewu et al., 2020; Andam et al., 2020). Second, the incomes of urban households are affected by a higher rate than rural households, with income for urban households falling by 19.0% compared to 12.6% for rural households. Third, among rural households, rural nonfarm households are affected more than farm households, with income falling by 17.7% for rural nonfarm households. These results are explained by the nature of the lockdown and the domestic effects of the external impact channels: (a) most economic activities that were restricted—in the service and industry sector—are located in urban areas, and (b) the export and remittance channel affects urban sectors more directly, jointly affecting the livelihoods of those who are more dependent on nonfarm activities.

As a result of declines in incomes, simulation results indicate an 8.8 percentage point temporary increase in the national poverty rate. Urban areas face the burden of the rise in poverty with a 12.5 percentage point increase compared with just 7.9 points in rural Ethiopia (Figure 7). This temporary increase in poverty is equivalent to 10.1 million more people falling into poverty nationally during the 7-week lockdown period, of which 7.3 million are in rural areas and 2.7 million are in urban areas. These findings suggest that although Ethiopia did not impose strict restrictions on economic activity, COVID-19 could significantly reverse the gain in poverty reduction registered over the past few years at least temporarily unless the economy recovers adequately in a shorter period.
After several months through the COVID-19 pandemic, it remains difficult to predict how the economy will recover from COVID-19-induced domestic and global shocks. We, therefore, consider two recovery scenarios: (a) a faster recovery where the economy quickly rebounds to normal situations by the end of 2020—that is, the second quarter of 2020/2021 in the Ethiopian fiscal calendar; and (b) a slower recovery pace where business operations assumed to remain below pre-COVID levels by the end of 2020. We assume an identical recovery trajectory for the period through early September as more is known about the domestic and global economic context. The two recovery scenarios differ from parts of September to the end of December (see Table 2).

### 4.2 Economic impacts under recovery scenarios

The assumptions under the two recovery scenarios are reflected in our simulation results (Figure 8). Under the faster recovery scenario, Ethiopia’s GDP in the second quarter of 2020/2021 is expected to be 2.7% lower than a no-COVID situation, whereas the economy is lower by 3.9% under the slower recovery scenario. This means that Ethiopia’s economy will be 2.4%–2.9% lower than what it would have been without the COVID pandemic. As highlighted earlier, the growth outlook of different sectors is affected differently, with generally a speedy recovery to normal situations under the faster recovery scenario.

Figure 9 shows the cumulative change in quarterly GDP (in constant US$ millions) throughout 2019/2020 and 2020/2021. On the right-hand side of the figure are the corresponding annualized growth rates. The upper broken line shows the projected growth rate of 7.4% for 2019/2020–2020/2021 (AfDB, 2020c). This growth projection signifies a quarterly gain of about US$1.5 billion. As previously introduced in Table 2, COVID-19 is projected to have no impact on the Ethiopian economy during the first and second quarters of 2019/2020 and only slightly so during the third quarter which runs between January to March. With our assumption of an identical recovery trajectory for the period through part of September 2020, the two recovery scenarios have almost identical negative impacts for most of the period modeled. Thus, real GDP declined by US$2.4 billion at the end of quarter four due to the combined impact of domestic measures and external shocks. Thereafter, the growth paths for the faster and slower recovery scenarios slightly diverge with cumulative GDP losses of US$2.9 and 3.3 billion, respectively, under the faster and slower recovery trajectories by the end of the second quarter of 2020/2021. With the effect of COVID spreading across the country, the economy is projected to remain below pre-COVID levels for most of the period modeled.

![Figure 7](image1.png)  
**FIGURE 7** Change in poverty during 7-week lockdown period. *Source:* Ethiopia SAM multiplier model results.

![Figure 8](image2.png)  
**FIGURE 8** Change in total GDP under faster and slower recovery scenarios. *Note:* We follow Ethiopia’s fiscal year that starts on July 1 and ends on June 30. *Source:* Ethiopia SAM multiplier model results.
two fiscal years and the country implementing only lighter restrictive measures, cumulative gain in GDP remains positive throughout the period covered. However, relative to the on-COVID-19 scenario, US$5.7 billion of GDP is lost under the faster recovery scenario and US$6.1 billion under the slower recovery scenario.

4.2.2 Impacts on household incomes and poverty

The income changes reported above are reflected in household poverty. Figure 10 reports the poverty effects post lockdown throughout the first half of 2020/2021. After a higher increase in poverty (by 8.5%) in the fourth quarter of 2019/2020, the poverty rate is expected to stabilize by the end of 2020/2021 with business operations reaching closer to normal operations and more people returning to work. With a predicted faster recovery from the second half of September to the end of December, the poverty rate is expected to increase by only 1.5% compared to 2.1 percentage points in the slower recovery scenario. Our study suggests much smaller increases in poverty under the recovery scenarios compared to the partial lockdown period since those specifically exposed to the lockdown measures start to earn incomes that are in turn used to finance consumption expenditures. However, our estimates of the changes in poverty should be viewed with caution since we disregard the potential consumption smoothing efforts of households either through dissaving or sale of assets. Besides, we do not track changes in consumption preference by households as they optimize expenditures to achieve basic needs under a constrained budget environment.

5 HOW DOES ETHIOPIA’S ESTIMATES COMPARE WITH THOSE FROM OTHER AFRICAN COUNTRIES?

Similar SAM multiplier models have been employed to assess the impacts of COVID-19 on some African economies. We compare results from Ethiopia against those estimates from other countries. It is worth noting that the differences in estimates are not only due to differences in the composition and magnitude of response measures but could partly be due to slight differences in model assumptions. Regarding the level of response measures, those of Ethiopia do not only represent partial lockdown of the economy, but they have not been fully enforced to the extent observed in some African countries. There are also fundamental differences in input–output relationships across the country models that explain the structures of the economies. Table 3 reports GDP losses during the lockdown period and the two recovery scenarios from seven African countries including Ethiopia. The estimated GDP losses in Rwanda, Nigeria, and Ghana are considerably higher than estimates from Ethiopia. Rwanda and Nigeria are known to have strict lockdowns
stretches across most of the regions in the countries, ultimately resulting in higher estimated losses in GDP. Malawi is the only country with smaller GDP losses due to the loose social distancing measures taken in the country.

In most of these countries, the COVID-19 infection rates are escalating later than their stricter “lockdown” periods, suggesting a possibility of another round of lockdown as evidenced in Europe and America, possibly further pushing the costs of the lockdown measures specifically in countries that have so far adopted more relaxed restrictions such as Ethiopia and Malawi.

### CONCLUSION

Various restrictive measures—including social distancing, travel restrictions, and closure of some businesses—were taken by many African countries even before COVID-19 cases were identified locally. In addition to domestic policy responses, partial or full lockdown measures elsewhere are disrupting global supply chains, which could translate into falling exports, foreign direct investment, development assistance, and private remittances. The objective of this study is to assess the economic impacts of COVID-19 in Africa using Ethiopia as a case country.

The SAM multiplier model applied in this study shows that many activities in the service and manufacturing sectors are affected both by the direct lockdown measures, global channels and through economywide linkage effects. Hence, national GDP is estimated to fall by 14.3% during the 7-week partial lockdown period, while AFS GDP losses are estimated at 10.9%, even though the food sector is largely excluded from the COVID-19 response measures. The faster and slower recovery scenarios show that annual GDP will be 4.0% lower over 2019/2020 and 2.4%–2.9% lower by the end of 2020/2021 than the baseline value due to the COVID-19 impact. This implies a GDP growth rate of 2.2% in 2019/2020 and 3.2%–3.7% growth for 2020/2021. Whereas our 2019/2020 growth estimate is significantly less than the 3.2% revised growth projection for the year, our 2020/2021 growth estimates are closer to the 3.7% revised projection for the corresponding year.

We also estimate that the national poverty headcount rate temporarily increases by 8.8 percentage points during the lockdown period from a base of 24%. This substantial increase, albeit temporary, translates into an additional 10.1 million people falling into poverty during the lockdown. As the economy gradually recovers, people return to work, incomes recover and consumer demand resumes. Hence by the end of 2020, the increase in the national poverty rate is predicted to stabilize at 1.5–2.1 percentage points under the faster and slower recovery scenarios, respectively, than at the start of the year. While the expected recovery is good news for most households, those close to the poverty line may require significant and targeted government support.

Further analysis may be needed to draw workable and precise policy recommendations, but this study has relevant implications for Ethiopia and some lessons for Africa and other developing countries. In cognizance of the estimated economic impacts of COVID-19, the study suggests that countries should prioritize short-term relief measures, such as direct transfers to the most affected, price subsidies on key consumption and intermediate commodities, and design business support packages such as tax holidays while maintaining the balance with their long-term economic

| Country       | Scenario                          | GDP loss during lockdown (%) | Annual GDP effects over four quarters (%) |
|---------------|-----------------------------------|------------------------------|------------------------------------------|
|               |                                   | Faster easing                | Slower easing                            |
| Ethiopia      | 7-week partial lockdown           | −14.3                        | −5.5                                     | −6.4 |
| Ghana         | 3-week lockdown in urban centers  | −27.9                        | −8.6                                     | −12.3 |
| Malawi        | 2-month social distancing         | −11.6                        | −4.0                                     | −5.2 |
| Nigeria       | 8-week lockdown across states     | −37.6                        | −8.9                                     | −17.1 |
| Rwanda        | 6-week lockdown                   | −39.1                        | −11.5                                    | −16.4 |
| Sudan         | 3-month extended lockdown         | −13.8–18.2                   | −4.8                                     | −9.8 |
| Senegal       | 4-week lockdown                   | −20.3                        | −5.5                                     | −7.4 |

*The comparable four-quarter GDP effects for Ethiopia under the faster and slower scenarios are roughly calculated since the four quarters of the COVID-19 period lie in two different fiscal years.

Source: Authors’ compilation from Abay et al. (2020), Amewu et al. (2020), Andam et al. (2020), Aragie et al. (2020), Baulch et al. (2020), and Fall et al. (2020).
development plans. Interventions should target sectors essential for food security and inclusive job creation. Acute budget constraints in most developing countries mean that currently earmarked relief and recovery plan resources should be properly targeted in an efficient way towards sectors with the highest economywide multiplier effects and those most affected by COVID-19 related response measures. A coordinated effort should also be scaled up to further mobilize domestic, regional, and global resources that can be utilized to support economic recovery. Estimates on the short-term economywide effects of COVID-19 reported in this study entail useful insights for the rest of Africa. Also, the approach used in this study and the suggested lines of development for the future are readily adaptable to other economies in Africa.

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**How to cite this article:** Aragie, E., Taffesse, A. S., & Thurlow, J. (2021). The short-term economywide impacts of COVID-19 in Africa: Insights from Ethiopia. *Afr Dev Rev*, 33, S152–S164. https://doi.org/10.1111/afdr.12519