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The Short-term Impacts of COVID-19 on the Malawian Economy, 2020–2021

A SAM multiplier modeling analysis

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ABSTRACT

This working paper builds on a report which was prepared for the 2020 ECAMA Lakeshore Conference in November 2020. It extends and updates the initial results of modeling undertaken by the International Food Policy Research Institute to assess the short-run impacts of COVID-19 control measures on the Malawian economy. We also consider the short-run effects of external shocks associated with disruptions in trade and tourism, investment, and remittance flows on the Malawian economy, as well as two medium-term paths assuming either faster or slower recovery during the remainder of 2020 and 2021. Using a Social Accounting Matrix multiplier model, we estimate GDP declines by around 16.5 percent during April/May 2020 due to social distancing measures. This leads to around 1.6 million people, mainly in rural areas, temporarily falling into poverty, although urban households suffer the largest income losses.

We also model the impact of a faster and a slower lifting of restrictions and external shocks during the remainder of 2020 and 2021. With faster easing of restrictions, cumulative GDP gains turn positive by the third quarter of 2021 under the fast recovery scenario and exceed their pre-COVID-19 levels by US$178 million before the end of 2021. However, under the slow recovery scenario, Malawi’s GDP continues to decline until the end of 2020 before recovering during quarters 1 and 4 of 2021. However, this is not sufficient to wipe out the losses in quarters 2 to 4 of 2020, resulting in cumulative losses under the slow recovery scenario of US$332 million over the two years. Relative to the without COVID-19 scenario, US$937 million of GDP is lost under the fast recovery scenario and US$1,447 million under the slow recovery one.

As both the development of the COVID-19 pandemic and the economic situation in Malawi are highly uncertain at the present time, the results reported in this paper should be regarded as interim estimates, which are subject to revision as the underlying health and economic data change.

Keywords: sub-Saharan Africa, Social accounting matrix (SAM) multiplier model, COVID-19, Malawi, agri-food system, tourism, economic growth.

1. INTRODUCTION

This working paper builds on a report which was prepared for the 2020 ECAMA Lakeshore Conference in November 2020. It extends and updates the initial results of modeling undertaken by the International Food Policy Research Institute (IFPRI) to assess the short-run impacts of the COVID-19 control measures on the Malawian economy (Baulch, Botha, Pauw 2020). We also consider the short-run effects of external shocks associated with disruptions in trade and tourism, investment, and remittance flows on the Malawian economy, as well as two medium-term paths assuming either faster or slower recovery during the remainder of 2020 and 2021. This analysis has been undertaken in order to inform the policy response to the COVID-19 pandemic in Malawi and represents an updated, although still interim, analysis of the short-term economic impacts of COVID-19 on the Malawian economy. It should be noted that, unlike NPC (2020) our estimates of the economic impact of COVID-19 on the Malawian economy do not extend beyond the end of 2021 and do not try to set a value on loss of life or life-years. They do, however, allow for a detailed breakdown of the direct and indirect impacts of COVID-19 on different sectors and sub-sectors of the Malawian economy.

We employ a Social Accounting Matrix (SAM) multiplier model to assess the short-term impact of COVID-19 on the Malawian economy. A SAM depicts the economy as a series of interrelated systems of transactions, which capture the circular flow of income in an economy in a disaggregated way. We use the SAM originally developed for Malawi in 2014 but update reported macroeconomic results to be consistent with the recently rebased current GDP estimate of US$10.8 billion (or MWK 8,099 billion) in 2019. The SAM contains 63 productive activities, 65 commodities and 15 representative household groups.

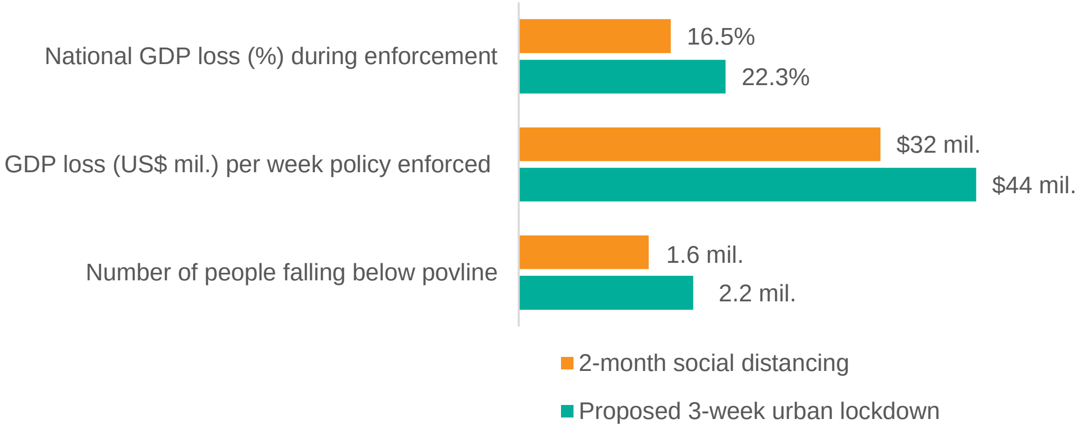
We assess the short-term impacts of COVID-19 arising from two types of shocks to the Malawian economy:

a) External shocks affecting exports, trade, and remittances,
b) Policy measures that restrict domestic economic activity and movement of people, which are motivated from the public health interventions implemented to combat the spread of COVID-19.

Expressing external shocks and policy measures as effective demand shocks, we use a SAM multiplier model to assess the economywide impact of COVID-19 during that period when social distancing policies were in full force (i.e., April to May), and under two stylized medium-term scenarios which factor in faster or slower recovery during the rest of 2020 and 2021.

Unlike many other African countries, Malawi has adopted a moderate policy of social distancing to curb the spread of the virus. A full lockdown was proposed in mid-April 2020 but never implemented, although social distancing measures were tightened following the change of Government in late June 2020. As shown in Figure 1, we estimate national GDP losses of 16.5 percent due to two months of social distancing and 22.3 percent under a hypothetical 21-day urban lockdown. This equates to GDP losses of approximately US$32 million (MWK 24 billion) and US$44 million (MWK 33 billion) per week, respectively, during the periods these restrictions are enforced. Between 1.6 and 2.2 million people fall temporarily into poverty under these two scenarios.

Figure 1: Headline economic impacts of social distancing versus urban lockdown



Source: Malawi SAM multiplier results.

Two recovery paths, involving the faster and slower easing of restrictions during the remainder of 2020 and 2021 are then modeled. These suggest that Malawi's GDP would decline by 8.3 to 11.3 percent in 2020 under the social distancing scenario, before recovering to close to their pre-COVID-19 level by the end of 2021.

2. MALAWI'S RESPONSE TO COVID-19

According to the World Health Organization, Malawi was one of last countries in Africa to be hit by the pandemic, not registering its first three cases until April 2, 2020. The detection of these cases post-dated the State of Disaster declared by the President on March 20, which closed all schools and universities, banned meetings with more than 100 people, and instituted social distancing measures for religious gatherings. Later in March, social distancing measures for markets and public transport were declared, the opening of the tobacco auctions was delayed, and all commercial flights were suspended from midnight on April 1. Other measures included the reduction of the liquidity reserve ratio for banks, fuel taxes and waiving the non-tourist levy to support the tourism industry. The Malawi Revenue Authority was also instructed to open up a voluntary tax compliance window for a period of six months to allow taxpayers with arrears to settle their tax obligations at a later date. All offices were advised to work in shifts except those working in essential services, and the Malawi Prison Services released some 1,400 prisoners who had committed "petty offences" to decongest the country's prisons. On April 20, non-essential government staff were instructed to work from home.

A national COVID-19 Preparedness and Response Plan with a budget of US$212 million was launched on April 8, with the International Monetary Fund approving debt service relief of US$9.8 million for Malawi on April 13, and the World Bank approving a US$37 million package of COVID-related support on April 15. On June 4, the budget for the Plan was increased to US$345 million, of which around a quarter remained unfunded as of the September.[1]

[1] United Nation COVID-19 situation update No 28, September 25, 2020

On April 14, the President announced a 21-day lockdown starting at midnight on April 18. However, on April 17, the Malawi High Court granted an injunction, which temporarily barred the Government from implementing the 21-day lockdown following a petition by the Human Rights Defenders Coalition, who had argued that more consultation was needed to prevent harm to the poorest and most vulnerable of society. At the time of writing (late October), the injunction against the lockdown is still in force. Alongside the announcement of the lockdown, the government also announced an emergency cash transfer program aimed at targeting around 172,000 households in the peri-urban areas of Malawi's four main cities (Lilongwe, Blantyre, Mzuzu, and Zomba). The program aimed to target 80,178 households in Lilongwe, 66,744 in Blantyre, 17,258 in Mzuzu, and 8,703 in Zomba. Implementation was scheduled to begin in May 2020 and run for six months. Each beneficiary household would receive MWK 35,000 (about US$40) per month via mobile money payments. In addition, the government also planned to provide cash top-ups to existing beneficiaries of the Malawi Social Cash Transfer Programme (MSCTP, commonly known as *Mtukula Pakhomo*) in all the 28 districts of the country. At the time of writing, neither emergency urban cash transfer program nor the top-ups to the MSCTP have been implemented.

As shown in Figures 2 and 3, the number of confirmed COVID-19 cases in Malawi did not start to accelerate until late May, when arrivals of Malawians returning from South Africa led to a sharp increase in the number of confirmed cases in southern Malawi, especially Mwanza (the main border crossing from Mozambique). Initially, there were some concerns that the relatively low incidence of COVID-19 case was a consequence of limited testing facilities. However, between the end of March and end of October, the number of testing centers nationwide expanded from 2 to 44.

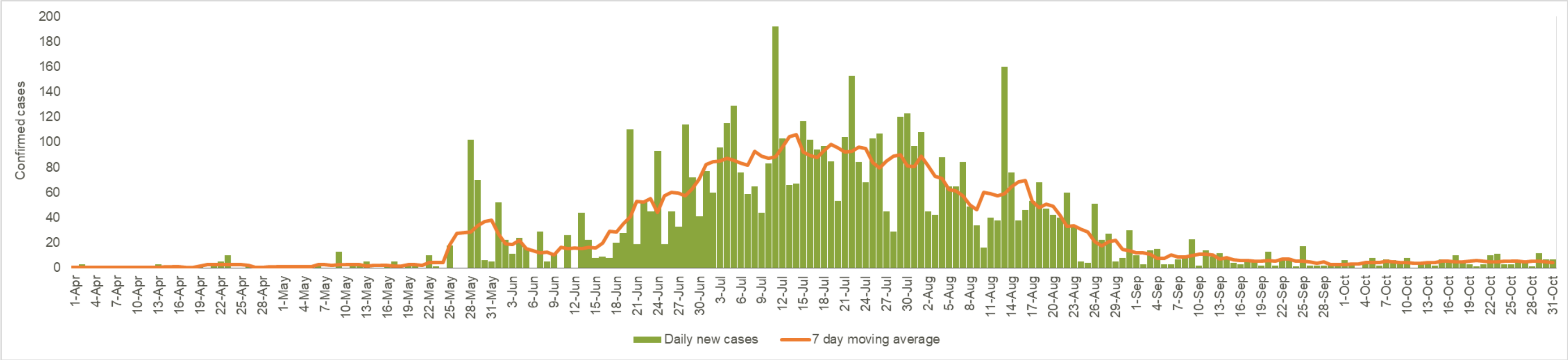
The relative low incidence of COVID-19 cases in Malawi, along with the decline in the numbers of active cases since July is still not well-understood but some of the more plausible explanations include:[2]

- Malawi's young age structure (according to the 2018 Census, 55.5 percent of the population is less than 20 years old, and only 5.1 percent is older than 59).
- Low urbanization (16 percent in 2018) and moderate population density in urban areas — though a few high-density slums (e.g., Mtandire and Falls Estate in Lilongwe, Ndirande and Mbayani in Blantyre) do exist.
- Poor transport infrastructure and limited mobility between urban and rural areas.

Model-based simulations for Malawi show that the 95 percent confidence interval for R_t, the time-varying effective reproduction number, has been stable and below one since August 2020 (MRC 2020).

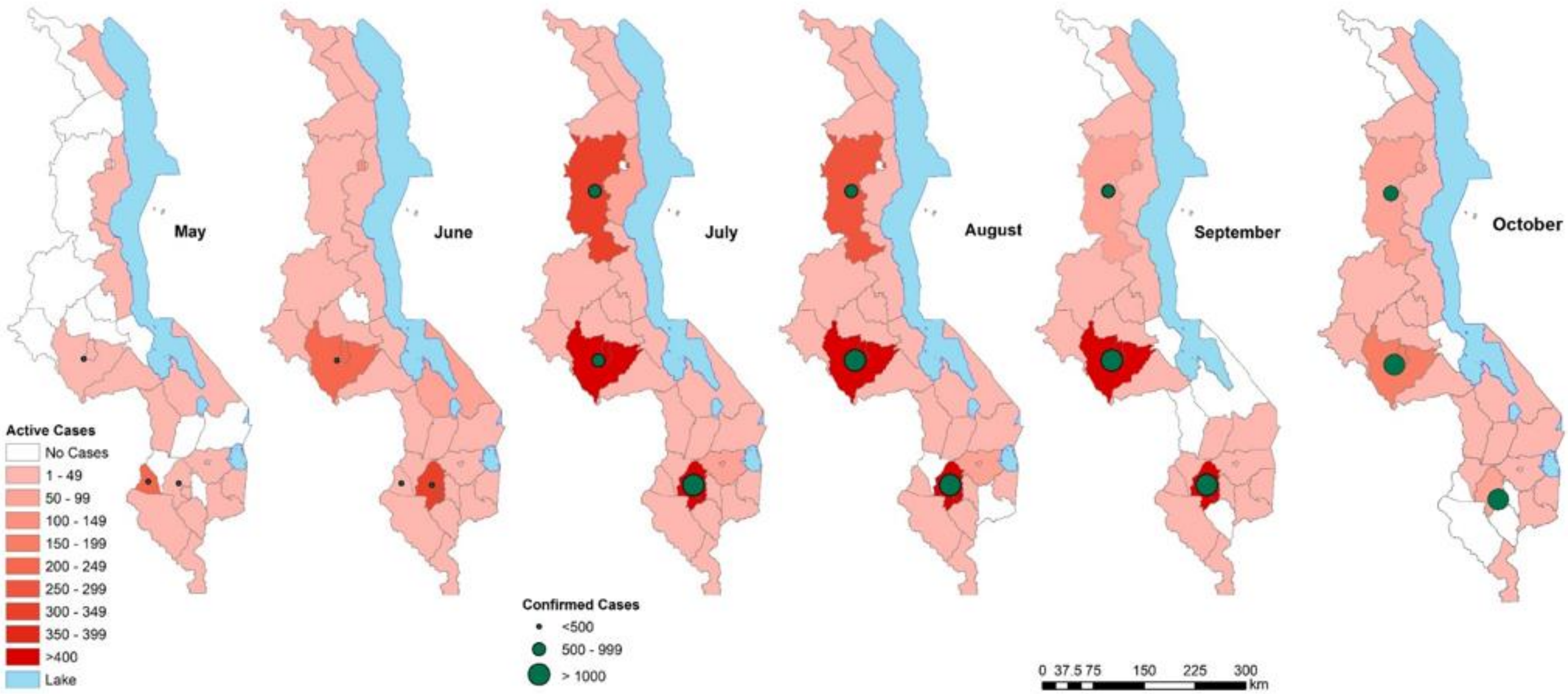
[2] Suggestions that the strain of the COVID-19 virus that is present in Malawi and neighboring countries in eastern and southern Africa are different from elsewhere in the world, and that their populations are less susceptible to the virus because of helminth infections and chronic exposure to pathogens, have also been made but remain unproven (Mbow et al. 2020).

Figure 2. Confirmed COVID-19 cases in Malawi, April to end October 2020



Source: Authors' construction using data from Ministry of Health COVID-19 situation updates.

Figure 3. Distribution of active COVID-19 cases by district and month



Source: Constructed from Ministry of Health situation reports (https://covid19.health.gov.mw/).

Note: Number of cases refers to active cases on the last day of each month.

Social distancing restrictions were loosely enforced during the re-run of the presidential elections on June 23, during which 4,445,699 Malawians are known to have voted. However, mass Independence Day celebrations on July 5 were cancelled due to the rising number of COVID-19 cases, and the Presidential Task Force on Coronavirus then banned street vending, and suspended entertainment gatherings, mobile markets and weddings, and imposed restrictions on funerals and other religious gatherings on July 10. New guidelines to prevent and respond to COVID-19 were then gazetted by the Government on August 7, which stipulated that wearing of face masks was mandatory, and that public gatherings should be restricted to 10 people.[3] Then on August 27, the lifting of the suspension of commercial flights was announced from the beginning of September, although in practice the first commercial flights did not arrive/depart until September 5.

After several false starts, a phased re-opening of schools, colleges and universities was announced on August 27, starting on September 7 with standard 8, form 4, and final year university students—all/most of whom had been unable to take their previous end-of-year examinations. A second phase covering all remaining school, college and university classes, began on September 28.[4] Prior to re-opening, all schools and colleges were required to meet all requirements on the Ministry of Education checklist to prevent the further spread of COVID-19 among students and teaching staff.

Malawi's overall response to the COVID-19 pandemic has been relatively mild when compared to measures implemented in neighboring countries. This is confirmed by statistics drawn from both IFPRI's COVID-19 Policy Response Portal and the University of Oxford's COVID-19 Government Response Stringency Index in Table 1, which shows the number of policies implemented (since April 1) and the Stringency Index for selected countries.

Table 1 . Numbers of policies implemented and government response stringency index in selected African countries, April to October 2020

Country	Number of policies implemented	Government Response Stringency Index
Ethiopia	116	57
Kenya	88	69
Mozambique	114	54
Malawi	39	51
Rwanda	115	69
South Africa	n.a.	39
Tanzania	n.a.	14
Zambia	83	42
Zimbabwe	n.a.	71

Source: IFPRI (https://www.ifpri.org/project/covid-19-policy-response-cpr-portal and University of Oxford, Blavatnik School of Government (https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker). Accessed November 16, 2020.

Note: n.a. = denotes not available; Policies included in the IFPRI COVID-19 Policy Response Portal include: social protection, fiscal, trade, health, population movement, business, health, governance, monetary and financial policies. The University of Oxford, Blavatnik School of Government, COVID-19 Government Response Stringency covers border closures, market restrictions, economic policies (such as income support to citizens and foreign aid, and health system policies. The Stringency Index varies from 0 to 100 with higher values indicating more severe restrictions. Neither the IFPRI Policy Response Portal nor the Oxford Stringency Index attempt to measure strength of enforcement, which varies markedly between countries.

[3] Following protests by religious leaders, the number of people allowed to attend religious services was increased to 100 on August 14.

[4] Colleges training primary school teachers opened a week earlier on September 20. Note that a slightly different schedule for the reopening of schools, colleges and universities was originally announced by the Ministry of Education on September 1.

In our SAM multiplier modeling exercise, we have therefore focused on modeling the short-term economic impacts of the moderate social distancing measures that Malawi has adopted since late March 2020.

As of October 31, 2020, Malawi had registered a total of 5,930 confirmed COVID-19 cases, with 184 deaths and 5,323 recoveries (https://covid19.health.gov.mw/). Over this period, a total of 62,600 tests were carried out.

3. METHODOLOGY

Social Accounting Matrix (SAM) multiplier models are well suited to measuring short-term direct and indirect impacts of unanticipated, rapid-onset demand and supply-side economic shocks, such as those caused by the COVID-19 pandemic (Breisinger, Thomas, Thurlow 2009; Round 2003). At the heart of the multiplier model is a SAM, an economywide database that captures resource flows associated with all economic transactions that take place in the economy, usually over the course of a financial year. The SAM represents the structure of the economy for a calendar or financial year, showing the relationships between actors, i.e., productive activities, households, government, and foreign institutions, in terms of how they interact and transact via commodity and factor markets. The SAM multiplier model provides a mechanism for estimating the effects of an external shock – typically an exogenous change in final demand for goods and services – on sectoral and national production, factor incomes, and household incomes on the basis of the production, employment, and consumption relationships captured in the SAM database.

In addition to direct production effects in a sector affected by the demand change, other sectors are affected indirectly via changes in demand for intermediate inputs defined by input-output relationships in the SAM. Additionally, resulting changes in the levels or composition of employment could lead to further changes in household consumption demand. By capturing inter-industry and employment linkages, the model measures both the direct and indirect production and employment effects associated with demand shocks. The effects result in changes in household income, which are used to estimate changes in poverty with the aid of a survey-based microsimulation model linked to the multiplier model. The strength of the multiplier model lies in the fact that the multiple rounds of these indirect effects are fully estimated. The more detailed the SAM is in terms of the activities, commodities, factor, and household accounts it includes, the more refined the SAM multiplier analysis of the direct and indirect impact pathways and distributional effects of shocks will be.

We employ a SAM developed by IFPRI drawing on the National Accounts and the third Integrated Household Survey. The 2014 SAM for Malawi consists of 63 productive activities and 65 commodities, including goods and services (Thurlow 2017). The agriculture sector is disaggregated into 24 activities – 17 crop activities, 5 livestock activities, plus fishing, and forestry. The industry sector is disaggregated into 24 sub-sectors, and the services sector into 11 sub-sectors. Table 2 describes the contribution of these sectors to GDP based on the 2014 SAM.

A distinction is made in the model between rural and urban labor and, within these between several levels of skill, defined according to educational attainment. Rural and urban households are also disaggregated by their per capita consumption into quintiles, with a further distinction being made between rural farm and rural non-farm households. While the SAM itself refers to 2014, our multiplier results are scaled to current 2019 US dollar terms to permit an assessment of the likely impacts of COVID-19 in 2020.[5]

[5] We used the rebased GDP estimates (2017 = 100), released by the National Statistical Office in October 2020, adjusted to current 2019 US dollar terms. For details, please refer to http://www.nsomalawi.mw/index.php?option=com_content&view=article&id=229:press-release-on-rebasing-of-gdp-from-2010-to-2017&catid=3:reports

Table 2. Sectoral contribution to GDP based on the 2014 SAM

Sector	Percentage	Sector	Percentage
Agriculture	**29.1**	**Industry**	**16.4**
Crops	16.8	Mining	1.4
Livestock	2.9	Manufacturing	9.4
Forestry	8.5	Food processing	3.3
Fishing	0.9	Beverages and tobacco	3.3
Services	**54.5**	Textiles, clothing and leather	0.4
Wholesale and retail trade	17.4	Wood and paper products	0.7
Transport and communication	7.1	Chemicals and petroleum	1.0
Hotels and food services	1.5	Machinery, equipment and vehicles	0.5
Finance and business services	15.0	Furniture and other manufacturing	0.2
Public administration, health and education	8.5	Electricity and water	1.5
Other services	4.9	Construction	4.1
Subtotal	83.6	**Total**	100.0

Source: Extracted from Thurlow (2017).

The short-run analysis period assumes that technical input-output relationships, the output choices of producers, and the consumption patterns of households do not change in response to the simulated shocks. Such behavioral responses are better captured in computable general equilibrium models. However, the anticipated short-term nature of the COVID-19 shock and the likelihood that the economy will return to "business-as-usual" state once the crisis dissipates makes the SAM multiplier framework a more appropriate tool for analyzing one-off unanticipated shocks. For further discussion of SAMs and SAM multiplier models, see Appendix 2 of this working paper.

4. ECONOMIC SCENARIOS

In our previous analysis (Baulch, Botha, Pauw 2020), we considered two broad economic scenarios: (a) two months of social distancing applied in both rural and urban areas during April and May; and (b) a 21-day urban lockdown in the second half of April and early May combined with social distancing measures during the first half of April and the rest of May. These social distancing measures were based on the guidelines announced by the Ministry of Health in early April. In addition to shocks to the domestic sector, external trade shocks (reduced tobacco export revenues, and declining foreign remittances and foreign direct investment) arising from the effects of COVID-19 in the rest of the world were included.

In this analysis, we have updated the shocks and policy measures in the light of what has happened since June 2020, in particular the election of a new President on June 23 and subsequent appointment of a new government. While the new Tonse Alliance Government has tightened some public health and social distancing measures, it has not resurrected the idea of an urban lockdown and has generally adopted a more relaxed attitude to public (especially religious) gatherings than the previous government. We therefore have not updated our previous estimates of the short-term impacts of a (hypothetical) lockdown.

The magnitude of initial shocks applied are shown in Table 3 (see Appendix 1 for the shocks used in our previous SAM multiplier analysis).

Table 3. Impact channels and effective demand shocks applied during Q2, 2020

	Initial shocks during Q2		
Impact channels	**Social distancing (2-months)**	**Urban lockdown (21-days)**	**External shocks (Q2)**
Reduction in manufacturing operations	-5%	-30%	
Restricting non-essential wholesale/retail trade	-20%	-50%	
Transport and passenger travel restrictions	-20%	-80%	
Limiting hotel and restaurant operations	-80%	-80%	
Non-essential business services restricted		-30%	
Restrictions on other business services		-50%	
Government work-from-home orders	-20%	-30%	
Closing all schools in the country	-20%	-80%	
Banning sports & other entertainment	-25%	-50%	
Reduced tobacco exports			-20%
Falling foreign private remittances			-33%
Falling foreign direct investments			-10%

Source: Author's construction.

The main sectors affected in the social distancing scenario are hotels and restaurant operations, which with the exception of take away food services were mostly closed during April and May, followed by work from home orders for all non-essential government employees, and restrictions on freight and passenger transport (including the ban on all international flights from April 1). The closure of all schools, colleges and universities in the country from March 19 is also envisaged to have reduced demand by 20 percent despite the fact that teachers have continued to receive basic salaries, principally because of non-payment of school contributions and secondary school fees. Restrictions on wholesale and retailing, which to date have been less thoroughly enforced, have a smaller impact in the social distancing scenario but are ramped up along with transport during the 21-day lockdown scenario. Shocks on non-food manufacturing enterprises, businesses services and sports/entertainment are also envisaged during the 21-day lockdown scenario. However, agriculture, construction, health, and essential services are exempt from restrictions under both the social distancing and lockdown scenarios.

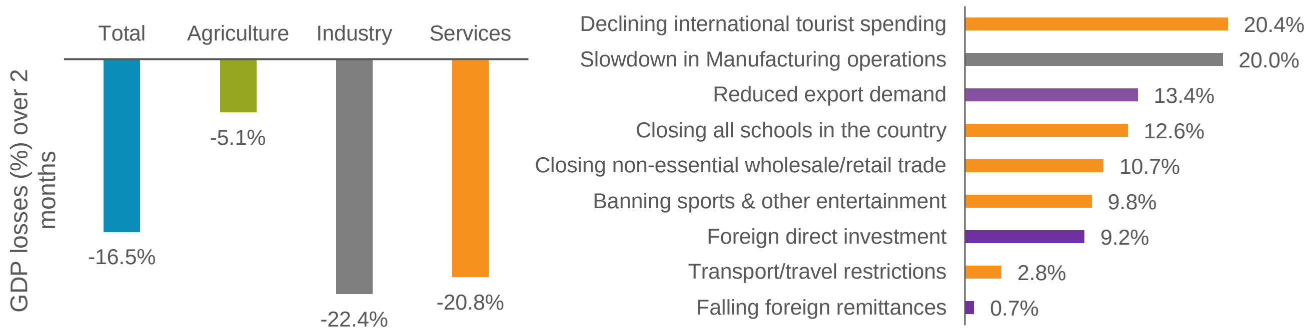
After modeling the short-term impact of these policies during their enforcement (two months for social distancing and 21 days for the lockdown), a faster and a slower easing of these restrictions are specified during the remainder of 2020 and 2021.

4.1. Short-term economic impacts due to social distancing

Our first scenario considers two-months of social distancing and corresponds roughly to what has been observed in Malawi since the beginning of April. Using the SAM multiplier model with the social distancing and external demand shocks specified in Table 3, we estimate that national GDP falls by 16.5 percent during April and May relative to the GDP that would have materialized in a without COVID-19 baseline scenario. This is equivalent to losses of approximately US$32 million per week or US$280 million over the two-month period. Assuming linearity in the effects of the shock over time, every week social distancing measures are extended beyond the simulated two-month period, total economic losses will increase by that same amount.

Figure 4 shows the breakdown of total GDP losses by sector on the left, and the share of GDP losses accounted for by different impact channel on the right. The industry sector is hit hardest, with its value added falling by 22.4 percent followed closely by services (-20.8 percent). However, because of the relative sizes of two sectors, services are by far the most affected in absolute terms with losses of US$192 million over the two-month period compared to US$63 million in industry. The sub-sectors that are hardest hit by social distancing within services are tourism and the wholesale retail trade, while external shocks due to foreign direct investment and remittances and reduced tobacco exports are also important. Closing of school and government work at home orders also account for substantial shares of total GDP losses.

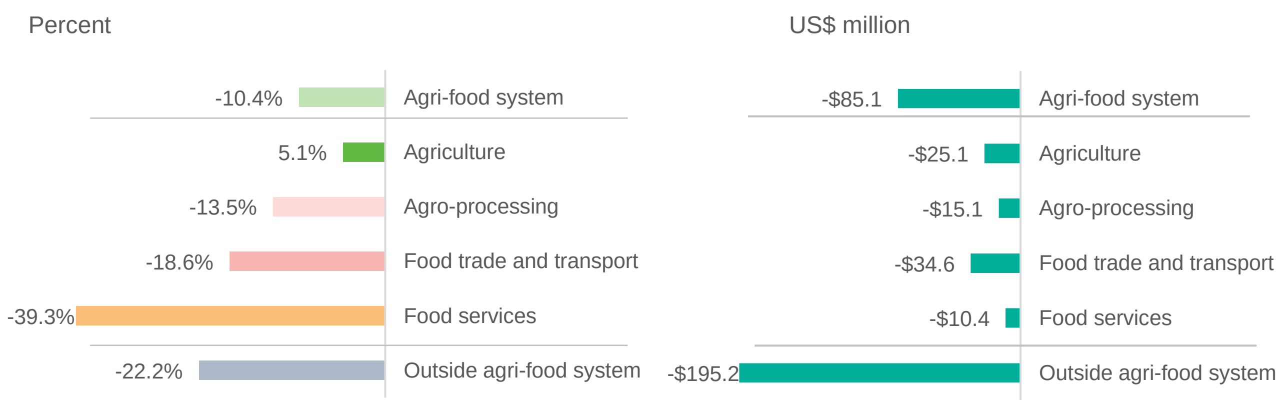
Figure 4. Sectoral effects of social distancing



Source: Malawi SAM multiplier results.

Although the agriculture sector, which was (and remains) exempted from most social distancing restrictions, experiences a relatively small contraction (5.1 percent) due to the knock-on effects of social distancing and the external impacts on tobacco exports, the broadly defined agri-food system contracts by 10.2 percent. Apart from primary agriculture, the agri-food system includes agro-processing, food trade and transport, and food services such as restaurants. All these downstream sectors experience significant losses in agriculture and account for significant losses in agri-food system GDP in absolute terms (Figure 5). Food services, though a relatively small sector in terms of GDP, experience a decline of 39.3 percent due to closure of restaurants and other food outlets to all but take away services during the two months of social distancing. Hotel occupancy rates have also been extremely low (< 20 percent) due to a decline in tourists since the beginning of 2020, and a halt in nearly all tourism since international flights were suspended at the beginning of April.

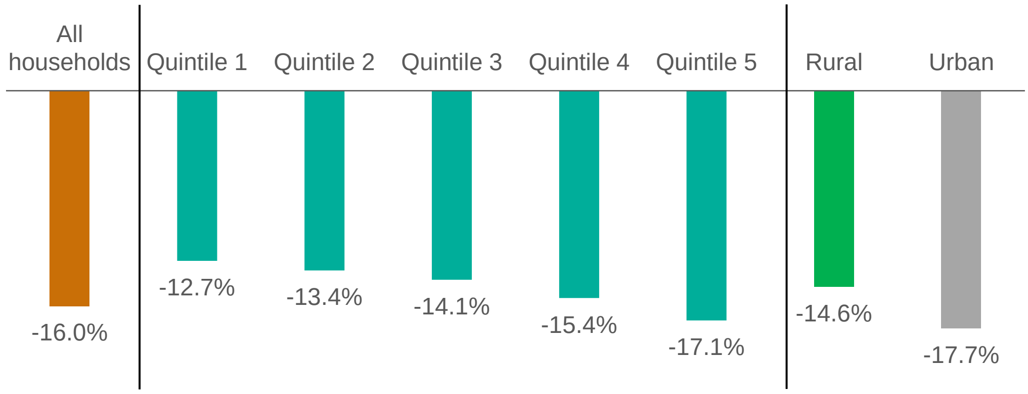
Figure 5: Change in agri-food system GDP during the 2-months of social distancing



Source: Malawi SAM multiplier model results.

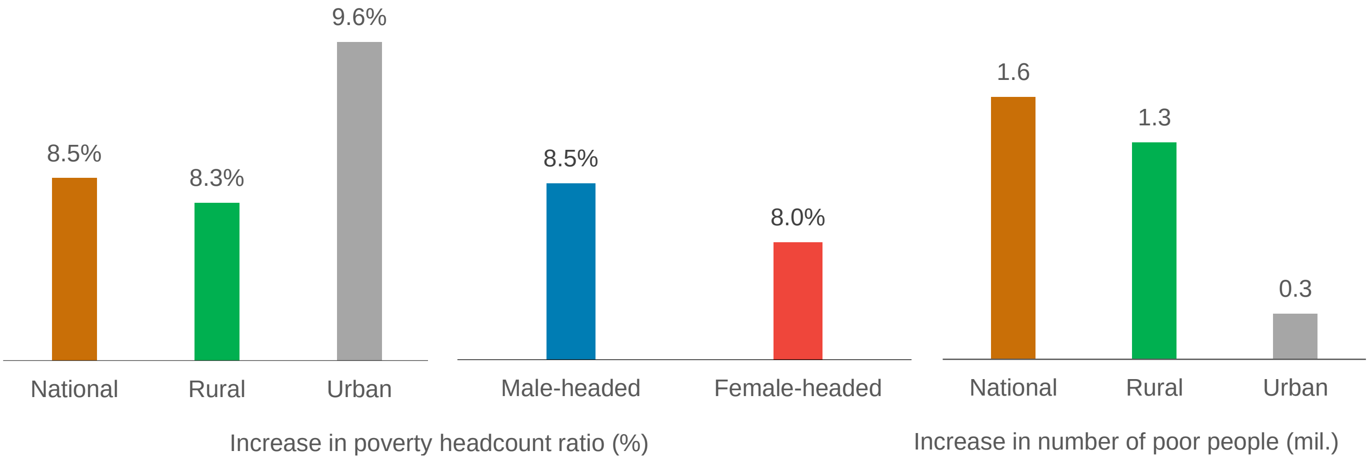
Losses in household incomes from two months of social distancing are expected across the income distribution, but with those in the richest income quintile and urban areas experiencing higher declines in their per capita incomes (Figure 6). Consequently, an additional 1.6 million poor people fall temporarily into poverty, most of whom, like the overall population, are in rural areas (Figure 7). Figure 7 also takes a first cut at estimating the gendered impacts of COVID-19 on poverty by distinguishing between female and male-headed households. While the national poverty rate increases by 8.5 percentage points, male headed households fall into poverty by 0.5 percentage points higher than female headed households.

Figure 6. Change in per capita incomes during social distancing



Source: Malawi SAM multiplier model results.

Figure 7. Change in poverty during 2-months of social distancing



Source: Malawi SAM multiplier model results.

4.2. Short-term economic impacts due to a hypothetical 21-day lockdown

A 21-day lockdown was announced in Malawi in mid-April but never implemented because of a High Court injunction. Nonetheless, as lockdowns are public health measures that have been imposed in a number of other countries in the region, including South Africa and Zimbabwe, we estimate what the combined impact of a hypothetical 21-day lockdown during late April/early May would be. We restrict the lockdown to urban areas only, as we consider it would not be possible for a lockdown to be enforced in rural areas.

As can be seen in Figure 8, a 21-day lockdown in urban areas is projected to result in a 22.3 percent decline in GDP during its period of enforcement, which equates to monetary losses of US$44 million per week, some US$11 million/week higher than the social distancing scenario. Now it is services that experiences the greatest losses in both absolute and relative terms, with the wholesale/retail trade, hotels and restaurants and non-essential business manufacturing being the hardest hit sub-sectors. Industrial production also declines by almost a quarter (24.5 percent) with restrictions on non-food manufacturing having the largest impacts.

Figure 8. Short-term economic impacts of a 21-day lockdown

Source: Malawi SAM multiplier model results.

The agriculture sector, which was to be exempt from lockdown restrictions, only declines by 5.4 percent during the 21-day lockdown, although direct and indirect impacts from other sectors mean that the wider agri-food system declines by 11.2 percent due to contractions in the food trade, food services and agro-processing.

4.3. Medium-term economic impacts under two recovery scenarios

Following the implementation of two months of moderate social distancing in April and May 2020, many movement restrictions were relaxed while some of the external shocks to foreign direct investment, tourism, trade and remittances eased to some extent. In this section, we model the impact of a faster and a slower lifting of restrictions and external shocks during the remainder of 2020 and 2021. These recovery scenarios are constructed so that by the fourth quarter of 2021 most restrictions and shocks will have disappeared. Table 4 describes the way domestic restrictions and external shocks are relaxed under these two recovery scenarios from June 2020 until the end of 2021.

Table 4. Easing of domestic restrictions and external shocks under fast and slow recovery scenarios

Period	Faster easing of restrictions	Slower easing of restrictions	External shocks
June 2020	70–90% of initial domestic shocks	95–100% of initial domestic shocks	No change
Quarter 3 2020	50–75% of initial domestic shocks	75–95% of initial domestic shocks	90% of quarter 2 levels
Quarter 4 2020	1–80% of initial domestic shocks	10–85% of initial domestic shocks	75% of quarter 2 levels
Quarter 1 2021	15–35% of initial domestic shocks	35–75% of initial domestic shocks	35% of quarter 2 levels
Quarter 2 2021	5–10% of initial domestic shocks	10–50% of initial domestic shocks	10% of quarter 2 levels
Quarter 3 2021	0–5% of initial domestic shocks	5–15% of initial domestic shocks	5% of quarter 2 levels
Quarter 4 2021	0% of initial domestic shocks	0–5% of initial domestic shocks	0% of quarter 2 levels

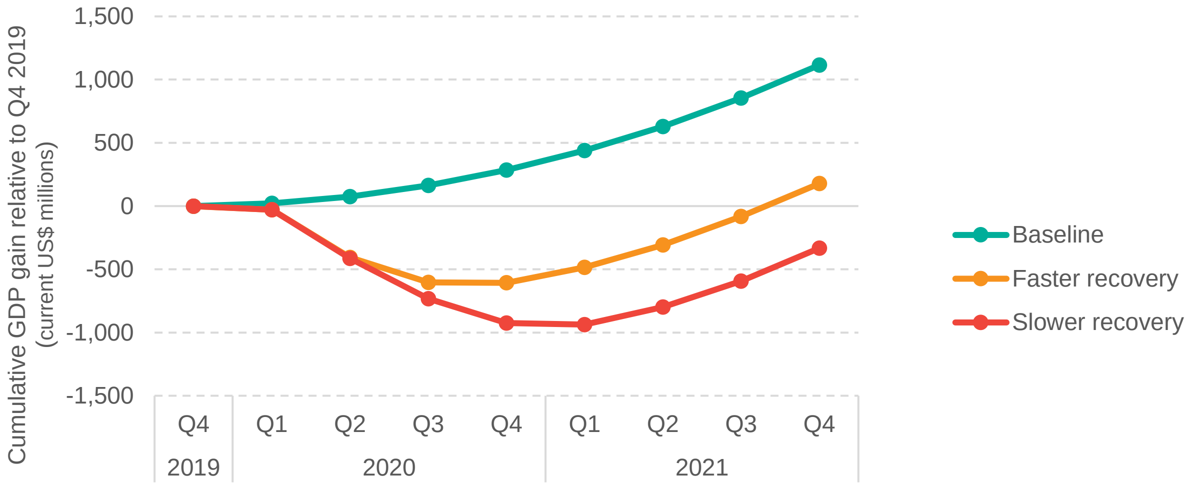
Source: Authors' compilation.

Figure 9 shows cumulative GDP losses and gains (in current 2019 US$ millions) by quarter during 2020 and 2021, along with the corresponding annualized growth rates on the right-hand side. The upper (teal) line shows the pre-COVID-19 projected growth path of 5.1 percent for 2020 and 2021 (MFEP&D 2019). This translates, over the course of eight quarters, into a cumulative gain of US$1.1 billion in GDP over two years. As with our earlier simulations, COVID-19 is projected to have little impact of the Malawian economy during quarter 1 of 2020, but to have an almost identical negative impact during quarter 2, when real GDP declines by around US$406 – 414 million due to the combined impact of two months of social distancing combined with external shocks. Thereafter, the growth paths for the rapid and slow recovery scenarios diverge with cumulative GDP losses of US$604 and 733 million respectively by the end of quarter 3. With continued easing of restrictions in quarter 4, 2020 and 2021 cumulative GDP gains turn positive by the third quarter of 2021 under the fast recovery scenario, with real GDP gains of US$178 million by the end of 2021. However, under the slow recovery scenario, Malawi's GDP continues to decline in quarter 4 of 2020 before recovering during quarters 1 and 4 or 2021. However, this is not sufficient to wipe out the losses in quarters 2 to 4 of 2020, resulting in cumulative losses under the slow recovery scenario of US$332 million over the two years. Relative to the without COVID-19 scenario, US$937 million of GDP is lost under the fast recovery scenario and US$1,447 million under the slow recovery one.

These alternative growth paths imply revised GDP 'growth' rates of -3.6 to -6.8 percent for 2020 under the fast and slow recovery scenarios, followed by a rebound in year-on-year growth in 2021 of 14.2 to 16.0 percent. This outlook is significantly less optimistic than that from the forecasting models of other institutions, including the Ministry of Finance (1.9 percent), the Reserve Bank of Malawi (1.2 percent), and the International Monetary Fund (0.6 percent)[6]. However, our fast recovery scenario growth rate is comparable with the World Bank's lower-bound growth scenario of -3.5 percent, although the Bank is optimistic that the range is more likely to be in the 1.0 to 2.3 percent range. With a strong recovery in 2021 as projected in our comparative static simulations, the average annual growth over 2020 and 2021 is likely to be in the range 4.0 to 4.9 percent, i.e., only slightly below the projected 5.1 percent in the Ministry of Finance's pre-COVID projection. However, this is strongly predicated on the assumption that the economy can return to its pre-COVID productivity and employment levels in the final quarters of 2021.

[6] Mzale, D. 2020. "RBM, treasury differ on growth forecast." *The Nation (Malawi)*, November 9. https://www.mwnation.com/rbm-treasury-differ-on-growth-forecast/

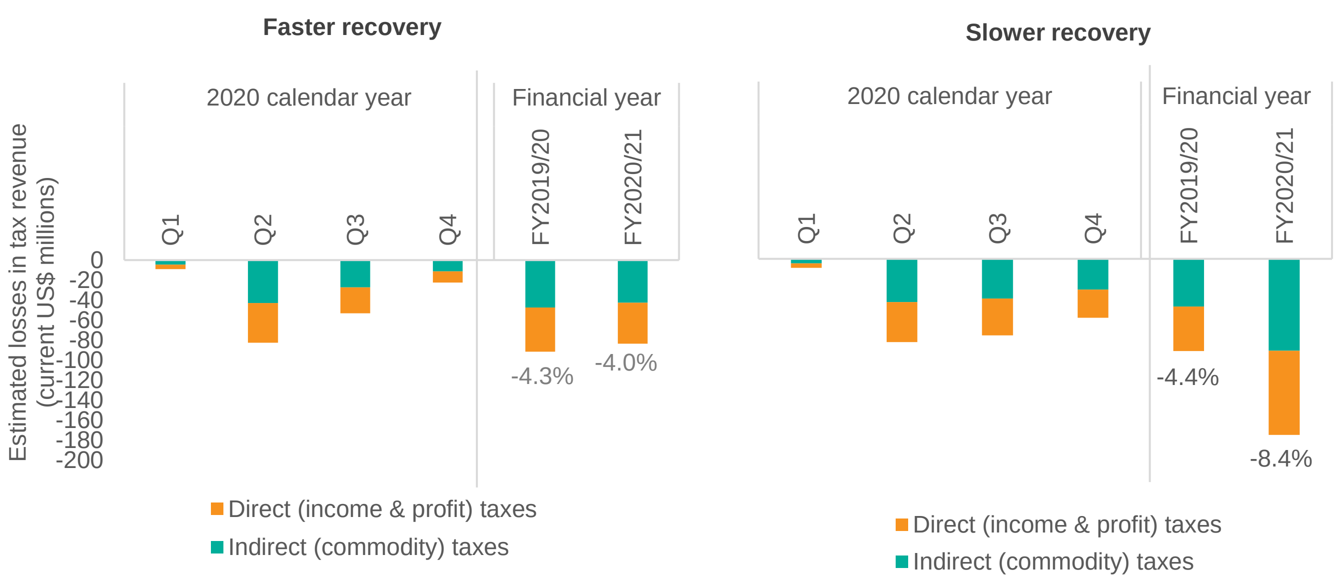
Figure 9. GDP growth per quarter during 2020 and 2021 with rapid and slow recovery from social distancing



Source: Malawi SAM multiplier results.

Figure 10 shows that estimated losses in government revenue from direct and indirect taxes by quarter and financial year. In the 2020 calendar year, the largest revenue losses occur in quarter 2, with indirect tax revenue falling by US$42.9 to US$ 43.8 million. Direct tax revenues over the same period declines by US$39.7 to US$40.4 million. In the 2019/20 financial year, government revenue falls by 4.3 percent in the fast recovery scenario, which translates into losses of about US$91.7 million, whereas in the slow recovery scenario revenue losses sum to US$93.3 million. In both scenarios, lost revenues from indirect taxes are slightly higher than for direct taxes, although the differences are not large. Revenue losses are then higher in the 2020/21 financial year, with tax revenue declining by 4.0 to 8.4 percent in the faster and slower recovery scenarios. This translates into US$83.8 million to US$178.1 million of lost revenue in comparison to the no COVID-19 case.

Figure 10. Losses in government revenue under the faster and slower recovery scenarios



Source: Malawi SAM multiplier model results.

5. COMPARISON OF MODELING RESULTS WITH THOSE IN OTHER COUNTRIES

IFPRI has also undertaken similar ─though not identical─ SAM multiplier modeling in 2020 for a number of other African countries (Pauw et al. 2020). Such cross-country comparisons should be made cautiously due to differences in: (a) the restrictions implemented and their enforcement; (b) the demand shocks assumed; and (c) the impact channels simulated. Nonetheless, Table 5 shows that the estimated GDP losses during the implementation of lockdowns in Ghana, Kenya, Nigeria, and South Africa are considerably higher than the losses during social distancing in Ethiopia, Malawi, and Sudan.[7] Furthermore, the economic losses of lockdowns are sustained through the remainder of 2020 under both faster and slower easing of restrictions. The lower short-term economic costs of more relaxed restrictions to counter COVID-19 must clearly be balanced against their public health costs and benefits in terms of reduced infections and 'flattening of the curve'. In addition, it is still too early to know if subsequent spikes in infections may result in lockdowns or other restrictions being implemented later in the year, especially in countries which adopted more relaxed restrictions. However, as events unfold, the SAM multiplier modeling framework used here is able to be updated relatively quickly and can be used to provide simulations of the short-term economic impacts of COVID-19 to assist in the formulation of COVID-19 control and recovery measures.

Table 5. Simulated impacts of lockdowns/restrictions in selected countries

			Change in total GDP (%)		Change in poverty headcount ratio (%-point)	
			During Q2 (Apr –Jun 2020)	Annual (Jan –Dec 2020)	End of Q2 (Jun 30, 2020)	End of year (Dec 31, 2020)
Countries with mild restrictions	Ethiopia		-12.2 to -12.9	-4.8 to -6.2	7.5 to 7.9	0.6 to 0.9
	Malawi	**Original***	**-11.1 to -11.4**	**-4.0 to -5.2**	**5.6 to 5.7**	**0.6 to 1.0**
		Revised	**-16.2 to -16.5**	**-8.3 to -11.3**	**-16.2 to -16.5**	**-8.3 to -11.3**
	Sudan		-12.8 to -15.8	-3.7 to -5.7	2.6 to 3.5	0.1 to 0.2
Countries with moderate restrictions	Ghana		-24.2 to -27.4	-8.6 to -12.3	10.5 to 12.1	0.8 to 1.7
	Indonesia		-13.2 to -16.2	-5.3 to -7.3	5.9 to 7.6	0.6 to 1.7
	Kenya		-18.6 to -19.8	-7.5 to -10.0	10.6 to 11.4	1.0 to 1.6
Countries with stringent restrictions	Myanmar		-22.7 to -27	-5.6 to -8.1	10.9 to 17.0	3.2 to 6.0
	Nigeria		-22.3 to -25.1	-6.8 to -8.6	8.3 to 9.3	0.2 to 0.7
	Rwanda		n.a.	n.a.	n.a.	n.a.
	South Africa		-34.9 to -44.9	-12.1 to -16.1	n.a.	n.a.

Source: Pauw et al. (2020) and Arndt et al. (2020) for South Africa.

Note: n.a. = denotes not available; *Baulch, Botha, Pauw 2020.

[7] Results from IFPRI's SAM multiplier modeling of the Rwandan economy are based on an unpublished assessment of the impact of policy restrictions put into place in March–April 2020 and are for the purposes of cross-country comparisons only. However, the placing of Rwanda in Table 5 indicates the approximate impacts of the hard lockdown in Rwanda.

6. SUMMARY AND CONCLUSIONS

This working paper provides estimates of the short-run impacts of COVID-19 on the Malawian economy, and is based on a report originally prepared for the 2020 ECAMA Lakeshore Conference. It extends and updates the initial results of modeling undertaken by IFPRI to assess the short-run impacts of COVID-19 control measures on the Malawian economy (Baulch, Botha, Pauw 2020).

To date, Malawi's response to the COVID-19 pandemic has been relatively modest with social distancing measures adopted along with school closures and travel restrictions. Using a SAM multiplier model, we estimate that GDP declined by around 16.5 percent during April/May 2020 and between 8.3 to 11.3 percent over the 2020 calendar year. This leads to around 1.6 million people, the majority of whom live in rural areas, temporarily falling into poverty, although it is urban households who suffer the largest income losses. These economic losses are not as heavy as the impacts simulated for a hypothetical 21-day urban lockdown in late April to mid-May 2020, which result in a 22.3 percent decline in GDP during the lockdown, a 6 to 9.1 percent decline in annual GDP, with around 2.2 million people falling temporarily into poverty. They are also less than the GDP declines simulated using similar SAM multiplier models in other African countries, such as Nigeria and South Africa, that have implemented hard lockdowns.

The impacts of faster and slower lifting of restrictions and external shocks are then compared for the remainder of 2020 and 2021. Over this period, the pre-COVID-19 projected GDP cumulative gain (at a growth rate of 5.1 percent) would have been US$1.1 billion. In the post-COVID-19 faster easing of restrictions scenario, GDP stabilizes in the last quarter of 2020, and recovers to its pre-COVID level in the third quarter of 2021, with cumulative real GDP gains exceeding US$178 million by the end of 2021. However, under the slow recovery scenario, Malawi's GDP continues to decline until the end of 2020 before recovering during quarters 1 and 4 of 2021. However, this recovery is not sufficient to wipe out the losses in quarters 2 to 4 of 2020, resulting in cumulative losses under the slow recovery scenario of US$332 million over the two years. Relative to the without COVID-19 scenario, US$937 million of GDP is lost under the fast recovery scenario and US$1,447 million under the slow recovery one. Of course, the economic costs of COVID-19 restrictions must be set against their public health benefits and we do not yet know if the social distancing measures that Malawi has adopted have been as effective in 'flattening the curve' of infection[8]. Nonetheless minimizing the economic impact of COVID-19 requires: a) maintaining open markets and borders with appropriate hygiene/social distancing measures; b) social protection measures to protect the most vulnerable, especially workers in informal services and small retailers in urban areas; and c) protecting workers who have lost their jobs in the hard-hit tourism and manufacturing sectors. Looking forward, monitoring the impact of COVID-19 restrictions on the Malawian economy should pay special attention to the urban informal service sector, the wider agri-food system, hotels and restaurants, as well as tourism, exports, and remittances—as these are the sectors that our analysis shows to be most impacted by COVID-19 restrictions in Malawi.

Finally, it should be noted that since both the development of COVID-19 infections and the economic situation in Malawi are highly uncertain at the present time, the results reported in this paper should be regarded as interim estimates, which will be revised on a periodic basis as the underlying health and economic data change. In addition, since this is a comparative static exercise, the impact of recent economic events, such as the favorable harvest in 2020, are not considered. Furthermore, the mitigating effects of policy responses such as the economic recovery program await further specification of the budget and roll-out of these measures.

[8] More generally, comparing the economic and public health costs and benefits of COVID-19 over a longer time frame requires a fully integrated economic-epidemiological model, of which the most promising approach seems to be the COI-SIR (Cost of Illness-Susceptible Infected Recovered) framework. See Mueller et al. (2020).

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APPENDICES

Appendix 1. Impact channels and effective demand shocks applied in previous IFPRI analysis (June 2020)

	Initial shocks during Q2		
Impact channels	**Social distancing (2-months)**	**Urban lock-down (21-days)**	**External shocks (Q2)**
Restricting non-food manufacturing operations		-30%	
Restricting non-essential wholesale/retail trade	-15%	-50%	
Transport and passenger travel restrictions	-25%	-80%	
Limiting hotel and restaurant operations	-80%	-80%	
Non-essential business services restricted		-30%	
Restrictions on other business services		-50%	
Government work-from-home orders	-30%	-30%	
Closing all schools in the country	-80%	-80%	
Banning sports & other entertainment		-50%	
Reduced tobacco exports			-10%
Falling foreign private remittances			-50%
Falling foreign direct investments			-30%

Source: Authors' estimates.

Appendix 2. Structure and equations of the SAM multiplier model

This appendix describes the structure and equation of the SAM multiplier model, drawing on Breisinger, Thomas and Thurlow (2009). For simplicity, consider a simple two-sector economy represented by two demand equations, where supply (Z_1 and Z_2) equals the sum of intermediate input demand, private household demand, and final demand (E_1 and E_2), assumed here to include government demand, investments, and exports. Intermediate input demand is expressed as a function of domestic production, X_1 and X_2 and the relevant technical coefficients, a_{ij}, denote demand for commodity i required per unit of commodity j produced. Household demand is determined as a fixed share (c_i) of income Y.[9] Thus:

$$Z_1 = a_{11}X_1 + a_{12}X_2 + c_1Y + E_1 \quad [1a]$$

$$Z_2 = a_{21}X_1 + a_{22}X_2 + c_2Y + E_2 \quad [1b]$$

Supply is made up of domestically produced and imported goods and services. We assume that domestic production X_i is a fixed share (b_i) of income Z_i:

$$X_1 = b_1Z_1 \text{ and } X_2 = b_2Z_2 \quad [2]$$

Households derive income from employment, by assumption, a fixed share (v_i) of output:

$$Y = v_1X_1 + v_2X_2 \text{ or } Y = v_1b_1Z_1 + v_2b_2Z_2 \quad [3]$$

Substituting [3] into [1a] and [1b] yields the following equations:

$$Z_1 = a_{11}b_1Z_1 + a_{12}b_2Z_2 + c_1(v_1b_1Z_1 + v_2b_2Z_2) + E_1 \quad [4a]$$

$$Z_2 = a_{21}b_1Z_1 + a_{22}b_2Z_2 + c_2(v_1b_1Z_1 + v_2b_2Z_2) + E_2 \quad [4b]$$

Rearranging so that domestic supply components are on the left and the exogenous demand components are on the right, yields the multiplier system of equations:

$$(1 - a_{11}b_1 - c_1v_1b_1)Z_1 + (-a_{12}b_2 - c_1v_2b_2)Z_2 = E_1 \quad [5a]$$

$$(-a_{21}b_1 - c_2v_1b_1)Z_1 + (1 - a_{22}b_2 - c_2v_2b_2)Z_2 = E_2 \quad [5b]$$

These can be expressed in matrix format as follows:

$$\begin{pmatrix} 1 - a_{11}b_1 - c_1v_1b_1 & -a_{12}b_2 - c_1v_2b_2 \\ -a_{21}b_1 - c_2v_1b_1 & 1 - a_{22}b_2 - c_2v_2b_2 \end{pmatrix} \begin{pmatrix} Z_1 \\ Z_2 \end{pmatrix} = \begin{pmatrix} E_1 \\ E_2 \end{pmatrix} \quad [6]$$

The first term in [6] is the identity matrix (I) minus the coefficient matrix (M), while its inverse $(I - M)^{-1}$ is known as the multiplier matrix. Thus, in matrix notation with vectors Z and E, the final multiplier equation becomes:

$$Z = (I - M)^{-1}E \quad [7]$$

This allows us to calculate the change in domestic supply (Z) for a given change in exogenous demand (E). Output multipliers (derived from the output vector, X), employment multipliers, and income multipliers (derived from the income measure, Y) are calculated through substitution.

Equation [7] is generalizable for a SAM of any dimension.

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[9] Note when household demand [3] is treated as exogenous, this component of demand forms part of final demand (E) and the coefficient matrix (M) simply excludes the various share parameters (c_i, b_i and v_i).

Appendix 3. Postscript: Estimates of the long-term impact of COVID-19 based on historical data from the Great Influenza Pandemic in Nyasaland

Bob Baulch and Petros Mkandawire[10]

The main estimates presented in this paper concern the likely short-term impact of COVID-19 on the Malawian economy in 2020–2021 based on simulations using a SAM multiplier modeling approach. However, in this Annex, we adopt an entirely different approach and attempt to predict the long-term, worse-case impact of COVID-19 on Malawi based on historical data from the Great Influenza Pandemic of 1918–1920 in what was then the British protectorate of Nyasaland. In this analysis we closely follow the regression specifications estimated by the renowned American macroeconomist, Robert Barro and two colleagues in a recent NBER working paper (Barro, Ursúa, Weng 2020).

Barro, Ursúa, and Weng (2020, 2) argue that "a reasonable upper bound for the coronavirus's mortality and economic effects can be derived from the world's experience with the Great Influenza Pandemic […] which began and peaked in 1918 and persisted through 1920". The authors assembled historical data on flu and war related deaths from 48 European countries and their colonies, along with selected American and Western offshoot countries between 1918 and 1920. They then use panel regressions to predict the impact of flu related deaths on GDP and consumption growth and other macroeconomic variables during this period while controlling for war deaths. They find that an average flu death rate of 2.1 percent in 1918–1920 corresponded to economic declines of 6 percent of GDP and 8 percent of consumption in the typical country. Their results also show that the Great Influenza Pandemic was accompanied by substantial short-term declines in realized real return on stocks and short-term government debt (Treasury bills), and a sharp rise in inflation.

In Table A3.1, we reproduce some of Barro, Ursúa, and Weng's data on national flu death rates during the Great Influenza Pandemic along with an independent estimate of influenza deaths in Nyasaland between 1918–1919 from Malawian epidemiologist, Evanson Sambala's 2014 PhD thesis at the University of Nottingham. However, in contrast to Barro, Ursúa, and Weng's Table 1, which presents countries in alphabetical order, we sort countries in descending order of their flu death rates (influenza related deaths as a percentage of the national population). This makes it clear that, despite the popular name given to the Great Influenza ('the Spanish flu'), the highest cumulative death rates were actually in countries that were then British, Spanish or French colonies while European, American and some 'Western offshoot' countries (such as Argentina and Australia) were relatively lightly affected.[11] According to Sambala's estimates, the cumulative death rate in Nyasaland was almost as high as in colonial India (which then included modern day Bangladesh, and Pakistan), although the number of deaths in Malawi (approximately 60,000) was much lower than in India due to the relative sizes of their populations.

[10] Petros Mkandawire is a Research Analyst with IFPRI Malawi.

[11] Not all 'Western offshoots' countries were as lightly affected as Argentina (which remained neutral during World War I) and Australia (which participated in World War I but imposed strict quarantine regulations in 1918). For example, Canada and New Zealand (which both also participated in the war) and the Philippines (which was then a US colony and only sent a few troops to Europe) experienced flu death rates higher than in the UK and USA (Table A3.1).

Table A3.1: Flu death rates as a percentage of the national population, 1918–1920

Country	1918	1919	1920	Total
Kenya	3.64	2.14	0.00	5.78
India	4.10	0.86	0.26	5.22
Nyasaland (*now* Malawi)				**>5.00**
Guatemala	2.94	0.00	0.98	3.92
Madagascar	2.20	1.30	0.00	3.50
Nigeria	1.54	0.90		2.44
Philippines	1.07	0.82		1.88
South Africa	2.11	1.24	0.00	1.81
Sri Lanka	0.57	1.00	0.17	1.74
Spain	1.05	0.14	0.17	1.36
Austria	0.76	0.21	0.00	0.97
Germany	0.65	0.02	0.10	0.78
France	0.52	0.22	0.00	0.74
New Zealand	0.57	0.00	0.01	0.69
Brazil	0.48	0.21	0.00	0.69
Canada	0.40	0.15	0.01	0.62
United States	0.39	0.07	0.05	0.52
United Kingdom	0.34	0.12	0.00	0.46
Argentina	0.16	0.17	0.00	0.33
Australia	0.00	0.24	0.04	0.28
Aggregate (48 countries)	1.42	0.52	0.16	2.10

Source: Barro, Ursúa, Weng (2020) and Sambala (2014).

Figure A3.1 shows how cases of influenza spread in Nyasaland during the last two months of 1918 and the first two months of 1919.[12] The colonial records analyzed by Sambala show that the first cases of 'Spanish' flu were recorded in Nsanje on November 1, 1918, ten days before the cessation of hostilities on the Western Front. The pandemic spread quickly, reaching Blantyre on November 9, the then capital Zomba around November 13, Dedza on December 15, and the current capital Lilongwe just on December 20, 1918. From Lilongwe, flu infections continued to spread rapidly northwards, reaching Kasungu on December 27, Rumphi on January 9, Karonga on February 2, and finally Chitipa in the far north on February 14. The spread of the Great Influenza, which was an airborne influenza H1N1 virus subtype, was remarkable given the very basic transportation infrastructure at the time. As in other countries, troop movements and repatriation of soldiers and 'bearers

[12] The first case of 'Spanish' flu in Africa was recorded in Freetown, Sierra Leone on August 15, 1918, with the pandemic reaching southern Africa on September 14, when the first case was recorded in the port of Durban, South Africa. From there, the influenza spread to Beira in Portuguese East Africa (now Mozambique) on October 20, and then to Nyasaland (Sambala 2014).

(*mtengatenga*) played a key role in the spread of the influenza virus. Although, the colonial authorities in Nyasaland probably did more to respond to the pandemic than elsewhere in Africa, the influenza was blamed on the presence of Europeans by most Africans. In Nyasaland, this was intensified by recent memories of the brutal suppression of the 1915 uprising against the British authorities led by John Chilembwe, which had been caused in part by wartime conscription of troops and 'bearers' (Shepperson and Price 1958). The disease was also attributed to witchcraft and the forsaking of indigenous religions (Sambala 2014).

Figure A3.1: Spread of influenza in Nyasaland during the Great Influenza Pandemic, 1918–1919

Source: Sambala (2014).

From his detailed review of colonial records in the library of the former British Commonwealth Office, Sambala concluded that "judging from the correspondence records reaching the chief medical officer, 60,000 or more may have died in the entire country, about 5 percent of the 1.2 million [population] enumerated in 1919" (Sambala 2014, 14).

For war deaths, we rely on Harris Lunn's (2017) account of deaths of both soldiers and conscripted African laborers and 'bearer's during the First World War. Lunn estimates that 255,000 African soldiers, about 0.255 percent of the continent's probable pre-war population of just under 100 million, may have died during the First World War (Lunn 2017, 7). By the time that the Great Influenza Pandemic reached southern Africa in late 1918, hostilities between the Allied and Axis forces had largely ended.

In Table A3.2, we use the coefficients from Barro, Ursúa, and Weng's (2020) unlagged regression models to predict changes in the GDP and consumption growth rates for Nyasaland due to the Great Influenza Pandemic. Once the relatively small impact of cumulative war deaths has been controlled for, the basic unlagged model shows that GDP slumped by 17.4 percent while consumption growth fell by 23.9 percent due to the large coefficient on the cumulative flu death rate. These decreases in GDP and consumption would have represented large economic contractions to an economy already struggling to recover from the economic impacts of the First World War.

Table A3.2: Prediction for changes in GDP and consumption growth using unlagged models

		Dependent variables	
		GDP Growth	Consumption Growth
Independent variables	**Values**	**Coefficients**	**Coefficients**
Constant		0.0202	0.0179
Flu death rate (cumulative)	5.00%	-2.98	-4.06
War death rate (cumulative)	0.26%	-17.9	-21.2
Predictions		**-17.4%**	**-23.9%**

Source: Authors' calculations.

Even more speculatively, we also use Barro, Ursúa, and Weng's regression coefficients to estimate the possible impact of the Great Influenza Pandemic on inflation in Nyasaland between 1918 and 1920, obtaining a remarkable increase of 60.2 percent in general prices using the unlagged model. This is consistent with colonial records, which record high inflation in Europe, Turkey, and Soviet Russia in the immediate post-war era, as soldiers returned from the Western Front and price controls and rationing were lifted.[13] As few price controls and rationing devices have been introduced in response to COVID-19 (Hale et al. 2020), we do not pursue this historical comparison further.

To conclude, following Barro, Ursúa, and Weng (2020), this annex has sought to establish an upper bound for the impacts of COVID-19 in Malawi, using historical data from the Great Influenza Pandemic of 1918 to 1920. While many changes have clearly occurred in both the Malawian and global economy in the century since the First World War ended, advances in medical technology (in particular vaccine development) and knowledge of public health prevention and mitigation measures, make it unlikely that death rates from COVID-19 will be as high as those from the Great Influenza. Nonetheless, the magnitude of mortality (which Sambala estimates increased mortality in Nyasaland by 5 percent) and the economic shock from the Great Influenza Pandemic (which we estimate caused GDP in Nyasaland to contract by 17 to 24 percent) underlines the importance of assigning substantial resources to fighting COVID-19 in modern Malawi.

[13] In Germany, this led to the hyperinflation of 1921–23 which, in turn, contributed to the Munich putsch against the Government of the Weimar Republic, and the eventual rise of the Nazi Party.

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